


# METHOD STATEMENT AT SITE

## E-2558 ALINVEST

CONSTRUCTION & COMMISSIONING DEPARMENT, INSERTEC

### ALINVEST, Czech Republic

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A	2025/06/30	EI	ALSE	Preliminary Method Statement
B	2025/08/29	AI	ALSE	Update document -new main pieces dimensions
C	2025/10/08	AE	ALSE	Where it is indicated 

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## 1. PURPOSE

The purpose of this procedure is to describe the sequence of operations and requirements applicable during the mechanical/electrical CONSTRUCTION AND COMMISSIONING of the following equipment at ALINVEST plant, Czech Republic in order mechanical and electrical contractor can offer the services describes on this document.

## 2. BRIEF DESCRIPTION OF THE PROJECT

ALINVEST is going go built an Aluminum Production Plant for Continuous Casting Round Forging Stock at Břidličná, in Czech Republic. This plant will focus on producing a high-volume quantity of Aluminum Forging Stock by means of one horizontal casting system with a capacity of 25 KTA at the beginning of 2026. After 2030, this will increase to 30KTA.

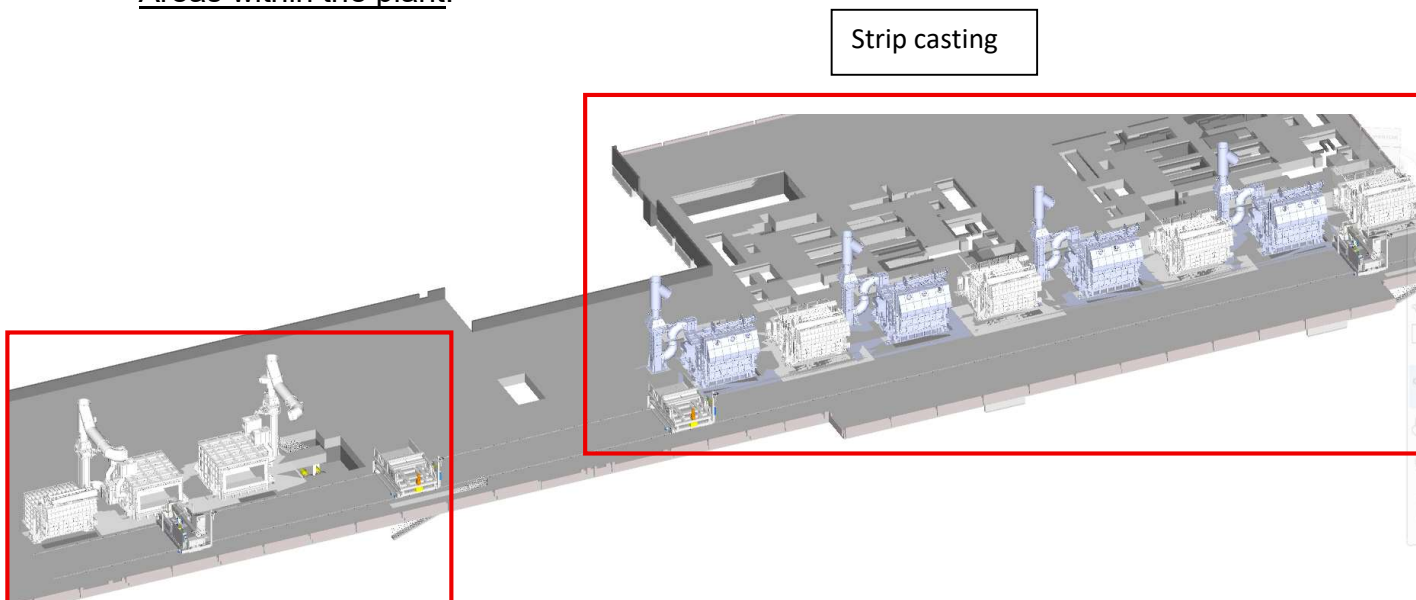
The project objective is the implementation of state-of-the-art technologies with reduced energy demand, primarily the reduction in natural gas and electrical consumption in the melting and casting procedure which would also lead to a considerable reduction in the environmental impact. In addition, the implementation of state-of-the-art technology will result in reduced waste.

Within this project, the company Insertec is going to carry out the engineering, fabrication, painting, transport and supervision of the erection and commissioning activities at the plant of several foundry equipment, listed in section 5 and located within the plant in two different areas, Billet casting and Strip casting.

For reference, Insertec (Ingeniería y Servicios Técnicos, S.A.) is a holding group of international companies settled around the World, with headquarters and main manufacturing facilities in Basauri, very close to Bilbao, north of Spain, but also in other countries (see web [www.insertec.biz](http://www.insertec.biz)). Insertec, worldwide supplier of Industrial Furnaces for many industrial sectors, such as the Aluminium Foundries or Secondary Recycling Plants.

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Areas within the plant:



Billet casting

Strip casting

#### EQUIPMENT OF BILLET CASTING:

- MELTER 35 TON #1 - FVRB-2,5-35
- MELTER 35 TON #2 - FVRB-2,5-35
- HOLDER 35 TON #1 - MVEB-35
- CHARGING MACHINE #1
- SKIMMING MACHINE #1 + 30 DROSS PANS
- RFI
- Permanent Magnet Stirrer
- LAUNDERS

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EQUIPMENT OF STRIP CASTING:

- MELTER 25 ton #1 - FVRB-2,7-25
- MELTER 25 ton #2 - FVRB-2,7-25
- MELTER 25 ton #3 - FVRB-2,7-25
- MELTER 25 ton #4 - FVRB-2,7-25
- HOLDER 25 ton #1 - MVEB-25
- HOLDER 25 ton #2 - MVEB-25
- HOLDER 25 ton #3 - MVEB-25
- HOLDER 25 ton #4 - MVEB-25
- CHARGING MACHINE #2
- SKIMMING MACHINE #2
- RFI x 4 units
- Permanent Magnet Stirrer x 3 units
- LAUNDERS x 4 units

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### 3. REFERENCES DOCUMENTS TO BE CONSIDERED ON THE PROPOSAL

- EN ISO 15614-1 “Specification and qualification of welding procedures for metallic materials”
- EN ISO 9606-1 - "Qualification testing of welders"
- EN ISO 9712 - “Non-destructive testing”
- EN ISO 9934 - “Magnetic particle testing”
- EN ISO 3452 - “Penetrant testing”.
- EN ISO 17636 - “Radiographic test”
- EN ISO 1092 – Visual inspección
- The low voltage directive (LVD) (2014/35/EU”
- ISO 45001:2018 – “Occupational health and safety”
- ISO 9001:2015 – “Quality management systems”
- ISO 14001:2015 – “Environmental management systems”
- OSHAS 18001 – “International standard for Occupational Health and Safety Management Systems”
- 2558-0000-GNL-G-LAY-0000-J “General Plant layout” (included in annexes)
- 2558-0000-GNL-G-TOP-0001-C “TOP”. Limitation of scope

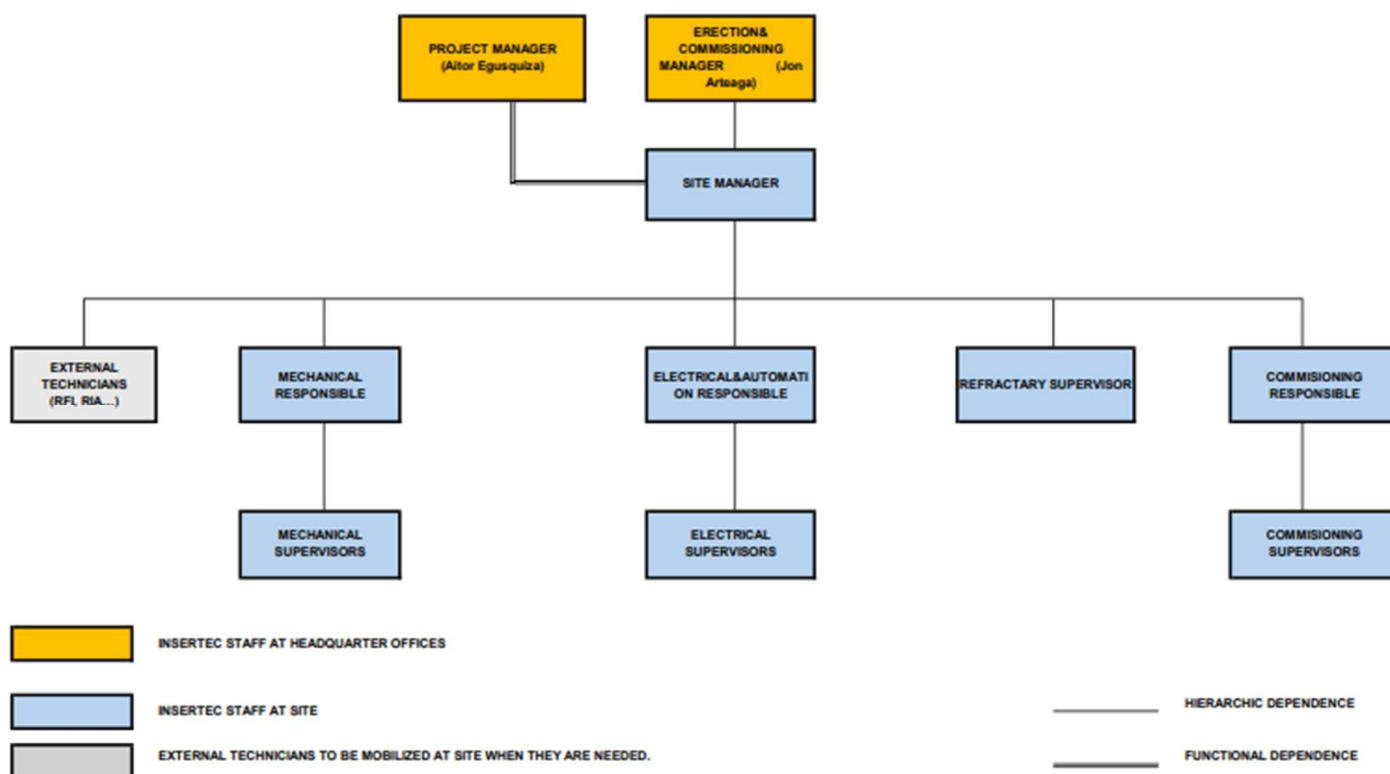
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## 4. ORGANIZATION OF COMPANIES AT PLANT

During the project, the owner (Alinvest) will have on-site personnel to coordinate the various activities (civil works, steel structure, piping, static equipment installation, electrical installation, etc.) to be performed at the plant. Likewise, Insertec, as main contractor, will provide personnel to supervise the mechanical/electrical construction and commissioning phases of the equipment (furnaces, auxiliary equipment listed on point 5), to be carried out by mechanical& electrical subcontractor or subcontractors.

The Organization of Insertec for the construction and commissioning activities supervision will be as follow:

**INSERTEC'S ORGANIZATION CHART AT SITE**



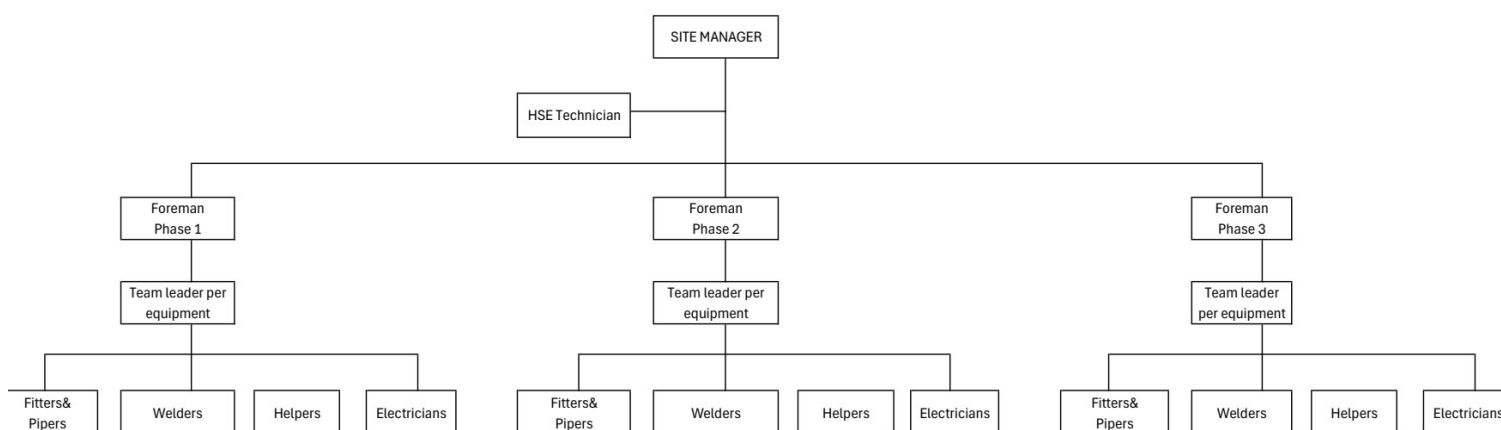
**NOTES:**

- The Site Manager may perform the functions of mechanical or commissioning responsible
- The supervisors will be on site on the dates on which the specific works applicable to their specialty are carried out.

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Therefore, the subcontractor to carry out the mechanical and electrical installation works, shall have at site, in addition to direct personnel (assemblers, assistants, welders, pipe fitters, electricians, etc.), a specific team leader for each furnace, as well as a foreman for each one of the 3 execution phases into which the project is divided.

Furthermore, and to ensure the work is carried out safely, the subcontractor shall have a HSE technician at site, reporting to the Site Manager, who will be the subcontractor's point of contact with Alinvest and Insertec.

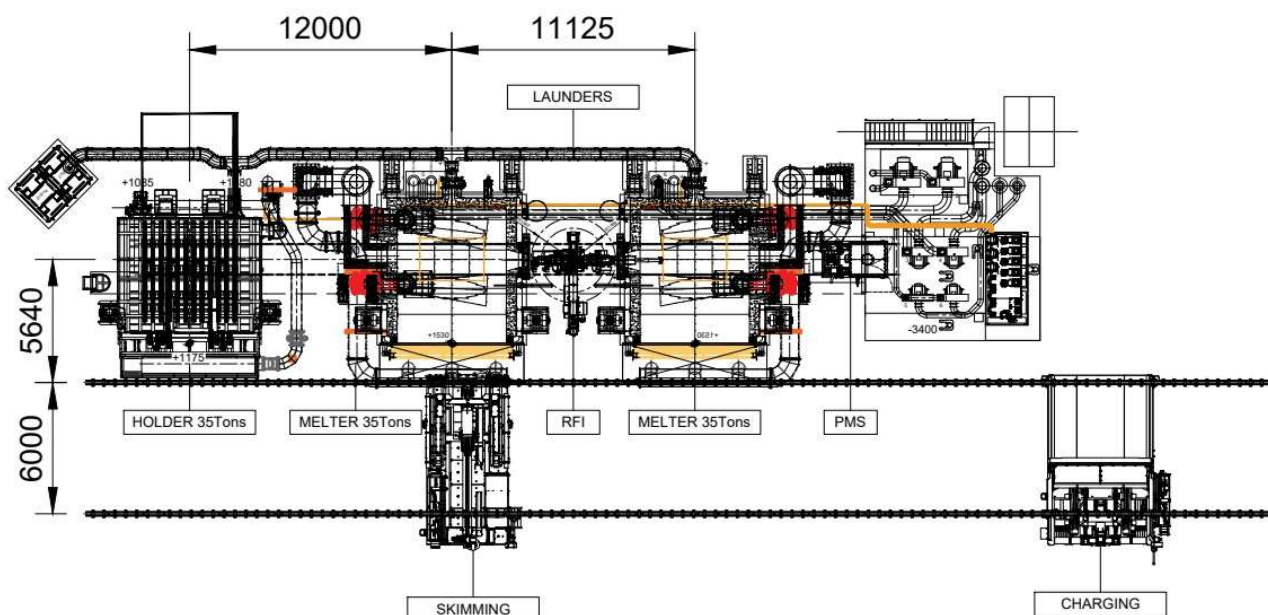


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## 5. SCOPE OF WORK

### 5.1 EQUIPMENT OF BILLET CASTING AREA:

- MELTER 35 TON #1 - FVRB-2,5-35
- MELTER 35 TON #2 - FVRB-2,5-35
- HOLDER 35 TON #1 - MVEB-35
- CHARGING MACHINE #1
- SKIMMING MACHINE #1 + 30 DROSS PANS
- RFI
- Permanent Magnet Stirrer
- LAUNDERS

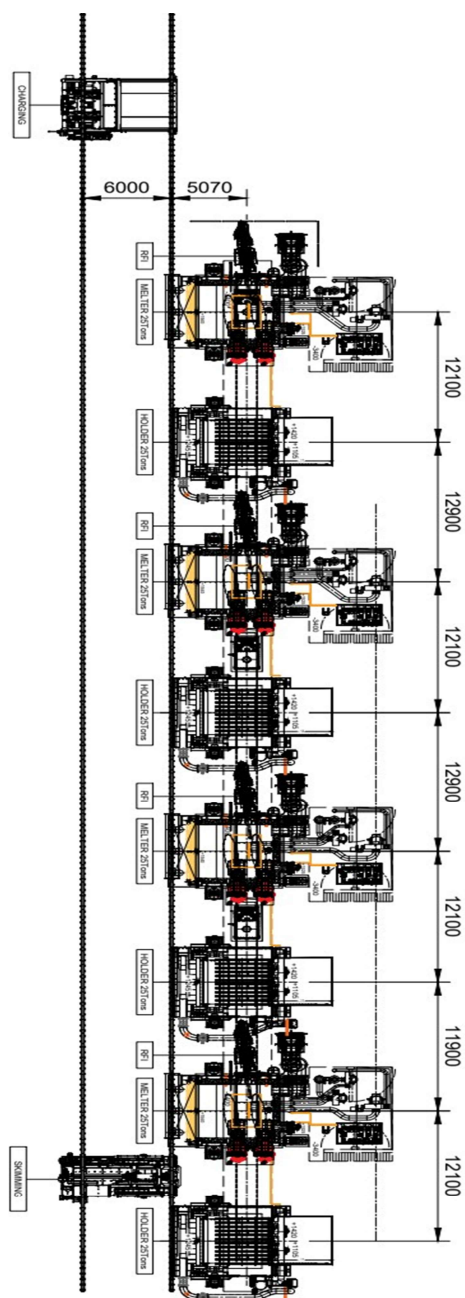




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## 5.2 EQUIPMENT OF STRIP CASTING AREA:

- MELTER 25 ton #1 - FVRB-2,7-25
- MELTER 25 ton #2 - FVRB-2,7-25
- MELTER 25 ton #3 - FVRB-2,7-25
- MELTER 25 ton #4 - FVRB-2,7-25
- HOLDER 25 ton #1 - MVEB-25
- HOLDER 25 ton #2 - MVEB-25
- HOLDER 25 ton #3 - MVEB-25
- HOLDER 25 ton #4 - MVEB-25
- CHARGING MACHINE #2
- SKIMMING MACHINE #2
- RFI x 4 units
- Permanent Magnet Stirrer x 3 units
- LAUNDERS x 4 units



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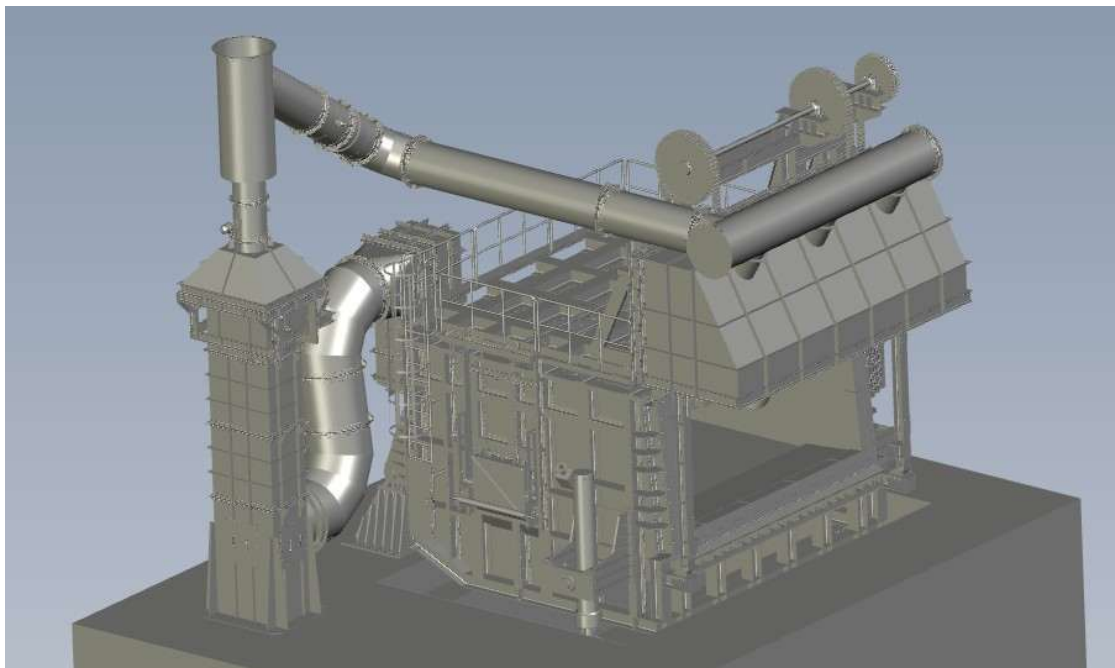
## 5.3 SHORT EQUIPMENT DESCRIPTION

### MELTER MELTING FURNACE.

This is a tilting type of reverb furnace designed to melt, hold and treat the molten metal at the required temperature until this is poured through the required launders to holders or to the casting process.

- Tilting by two (2) hydraulic cylinders on both lateral sides, with tilting axle aligned with pouring spout
- Main chamber is conceived as rectangular configuration, constructed with a polygonal floor and a compound angle ramp up to the door sill, flat area and angle ramp for complete empty to spout area.
- Skimming door in large side opposite to the pouring spout, to facilitate wider access with minimum distance.
- Door seals overlap with door precast shaped door frame.
- Main door with vertical slide.
- Auxiliary door for RFI.
- Combustion system with Regenerative burners.
- Internal pressure control system.

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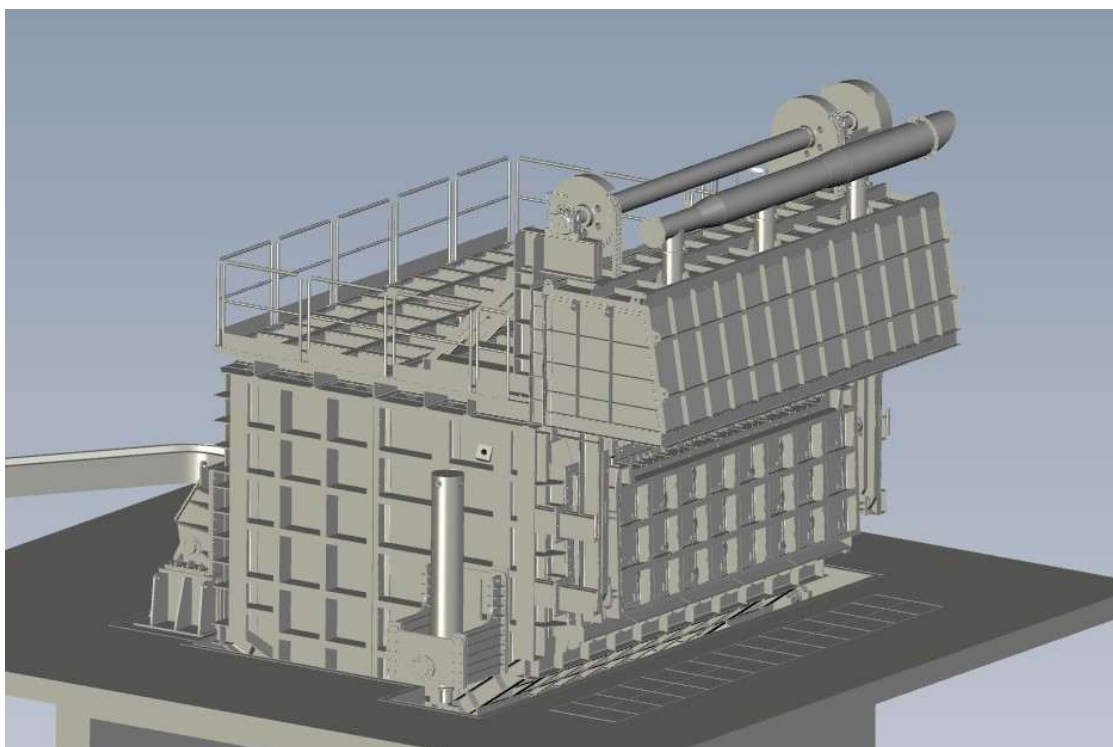
#### **HOLDER (Holding Furnace)**

After the melting phase, once the aluminum bath is clean from dross, with the furnace tilting system and through dedicated launders, the liquid aluminum will reach the holding furnace.

This is a tilting type of reverb furnace designed to hold and treat the molten metal at the required temperature until this is poured by tilting action through the required launders to the casting process.

- Tilting by two (2) hydraulic cylinders on both lateral sides, with tilting axle aligned with pouring spout.
- Main chamber is conceived as rectangular configuration, constructed with a polygonal floor and a compound angle ramp up to the door sill, flat area and angle ramp for complete empty to spout area.
- Skimming door in large side opposite to the pouring spout, to facilitate wider access with minimum distance.
- Door seals overlap with door precast shaped door frame.
- Main door with vertical slide.
- Molten metal entrance to receive aluminum from the melting furnaces.
- Heating system by electrical tube resistances as radiant roof

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### **CHARGING MACHINE**

The Charging Machine, once loaded, can travel from its parking position to the furnace and automatically put its load in the aluminum bath without an operator onboard the machine.

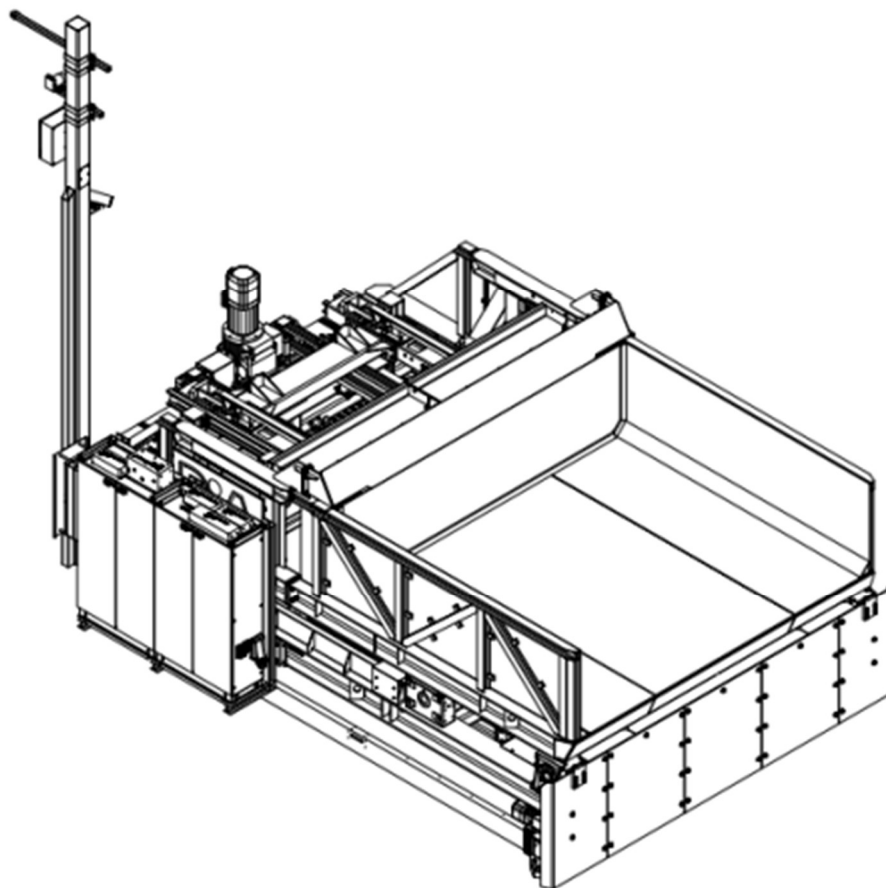
With the charging machine in its loading position, the container can be loaded from the side or front with forklift trucks or front-end loaders. The operator can see the current scrap weight on the container on a large display close to the machine.

After loading is complete the operator starts the automatic charging cycle from the operator desk, having a good view of the working area of the machine and in conjunction with the onboard camera. The machine moves automatically to the charging position in front of the melting furnace.

The furnace door opens, and the container moves into the furnace. Once the container is fully extended the pusher starts to push the scrap into the furnace.

**IMPORTANT NOTE:** The charging machines are interchangeable and thus the same charging machine can be shared between the melting furnaces for the Billets casting area and for the Strips casting area. This consideration is valid only if final layout ensures one common rail system for serving all melting furnaces.

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### **SKIMMING MACHINE**

The Skimming Machine is used to clean and remove dross from the aluminum bath of a reverb melting or holding furnace. Therefore, the machine will be positioned in front of the designated Furnace.

Skimming will start at one side of the Furnace. The boom enters the Furnace to the rear wall and retracts to the ramp and pulls the dross up onto the ramp. This process is completed for each track.

The Skim Blade will then be retracted, squeezing the Dross between the two matching profiled plates. This procedure allows a major part of the liquid aluminum in the dross to flow back into the bath.

The Machine can be operated from an operator cabin on the Machine manually or optionally in automatic mode.

**IMPORTANT NOTE:** The skimming machines are interchangeable and thus the same skimming machine can be shared between the furnaces for the Billets casting area and for the Strips casting area. This consideration is valid only if final layout ensures one common rail system for serving all melting furnace.



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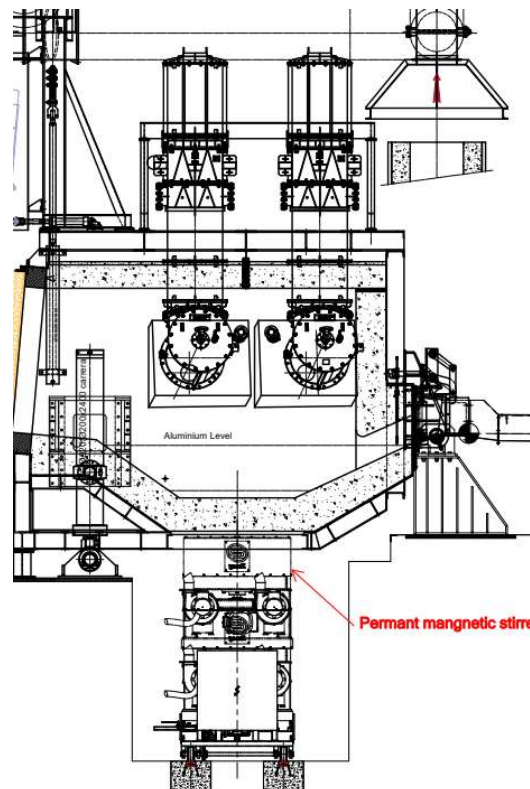
### **PERMANENT MAGNET STIRRER**

The Permanent Magnet Stirrer generates the stirring power by means of permanent magnets, so the power is inherent and does not need to be generated by means of electricity. It offers stable, reliable and predictable performance.

The proposed Permanent Magnet Stirrer is placed adjacent to a stainless-steel window installed on the furnace bottom, underneath the molten metal bath, mounted on a scissor-type lifting table with motorized translation, manually activated.

Translation system will allow moving the stirrer from one furnace to the adjacent one (each stirrer will serve to 2 furnaces), traveling over rails mounted in an underneath furnace pit.

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### **RFI - FURNACE REFINING SYSTEM**

#### **- Fixed Degasser for Continuous Casting Area**

Four (4) fixed aluminum furnace refining systems permanently installed at the furnace sidewalls. The nozzle is inserted on an angle through a side door to process the entire melt (operating position, see conceptual Illustration).

In the standby position, the mixing shaft and rotor are completely removed from the furnace.

#### **- Rotary Degasser for Forging Area**

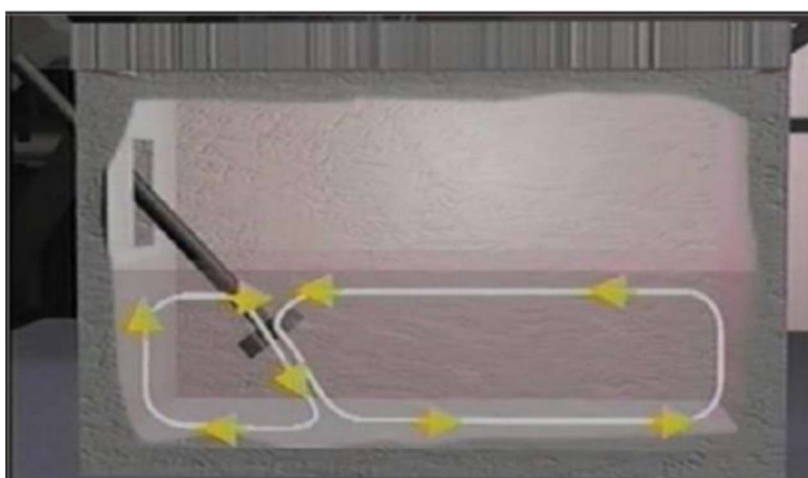
One (1) rotating aluminum furnace refining system permanently installed between two (2) furnaces. The system is floor mounted, installed on a rotating platform with gear motor to treat one or the other furnace

The nozzle is inserted on an angle through a side door to process the entire melt (operating position, see conceptual Illustration).

In the standby position, the mixing shaft and rotor are completely removed from the furnace.



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## 5.4 ALINVEST SCOPE ON SITE

The work includes, but not be limited:

- Foundation works and loads construction.
- Civil and foundation works for furnace and ancillary equipment, including charging machine rails.
- Baghouse filter unit for exhaust gases filtering
- Ducting from collecting hoods to the baghouse filter. Hood dampers are included on Insertec's scope.
- Supply of utilities to an approved point on the definitive layout close to the furnace installation, isolated, tagged and documented (compressed air, oxygen, argon, natural gas and electricity).
- Hydraulic oil for first change end refill tanks and circuits, and circuits flushing if required.
- During start up, provide material for testing together with competent operating personnel.
- Access to changing rooms, sanitarians, illumination, Office space during erection.
- Gas, electricity, compressed air, argon and water up to agreed TOP
- Filters for compressed air and desiccators of water or oil
- Waste material disposal
- Temporary safety protections around pits and trenches.
- Raw materials for trials.
- Any kind of UPS system, except PCP panels
- Air conditioned for Utility rooms
- Waste warehouse area
- Argon, Oxygen and Nitrogen storage area
- Diesel tank

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## 5.5 INSERTEC SCOPE ON-SITE

- Engineering, supply, fabrication, painting at workshop and transport at site of the equipment
- Refractory installation.
  - Manpower for refractory installation.
  - Cranes for the unloading and forklift/scaffolding for the refractory installation will be provided by Alinvest.
- Lining Dryout services & supervision
- Technical support at site
- Supervision during erection phase.
- Supervision and assistance during the start-up and performance testing.

## 5.6 SUBCONTRACTOR SCOPE ON-SITE

The work includes, but not be limited:

- Unloading of material.
  - Spreader beam might be necessary to unload big pieces.
- Verification of foundation works
  - Verification of Levels and axes as per drawings
  - Verification of dimensions and positions of anchor bolts according to Layout Drawings
  - Verification of trenches, ducts, holes in civil works according to drawings.
- Verification of materials received on site
- Manpower for mechanical assembly and electric installation.
- Cranes and other machinery for equipment offloading positioning and installation.
- Internal transportation of the storage area to final position
- Lifting platforms, forklifts and other means during assembly.

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- Work lighting during erection
- Welding machines and materials
- Erection hand tools
- Consumables (electrodes, wires, grinder discs..)
- Flushing of piping on board or to hydraulic room
- Chemical cleaning of piping on board or to hydraulic room if it is applicable
- Degreasing of stainless steel pipes for O2 lines.
- Cleaning of erection site prior and at end of work.
- Scaffolding



## 5.7 DESCRIPTION OF THE ACTIVITIES TO BE CARRIED OUT BY THE SUBCONTRACTOR AT THE PLANT

This section briefly describes some of the activities to be performed by Subcontractor during the mechanical& electrical installation and commissioning.

### 5.7.1 Subcontractor's documentation to access ALINVEST plant

Subcontractor, through the Site Manager, will request information from ALINVEST about the documentation required to be able to start working at the plant, both regarding the company, subcontractors and personnel.

The information will be required almost two months of time previous start site tasks to manage possible requirements.

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### 5.7.2 Verification of foundation works

Before starting the mechanical erection, the foundations of the civil works shall be checked to ensure that they comply with the tolerances required. Insertec supervisor will be responsible for verifying that the civil works are complete and correct, so that assembly activities can begin.

However, to check properly the civil works, topographer or trained personnel should be carried out.

- Verification of Levels and axes as per drawings
- Verification of dimensions and positions of anchor bolts according to Layout Drawings
- Verification of trenches, ducts, holes in civil works according to drawings.

Once it has been validated, Subcontractor and INSERTEC will inform to Alinvest to start with the installation.

### 5.7.3 Verification of materials received on site

Once the material is received at the plant, Subcontractor and INSERTEC will proceed to perform a visual inspection of it, so that it can identify any possible damage, deformation or problems associated with transportation, fabrication, etc.

If any anomaly is detected, Insertec shall fill the form 2558-DO-006-PUE-IDS "INCIDENCES DETECTED AT SITE", in which the Insertec's Site Manager will include photos, drawing/diagram ref. (if possible) about the issue, in addition to providing a possible corrective action.

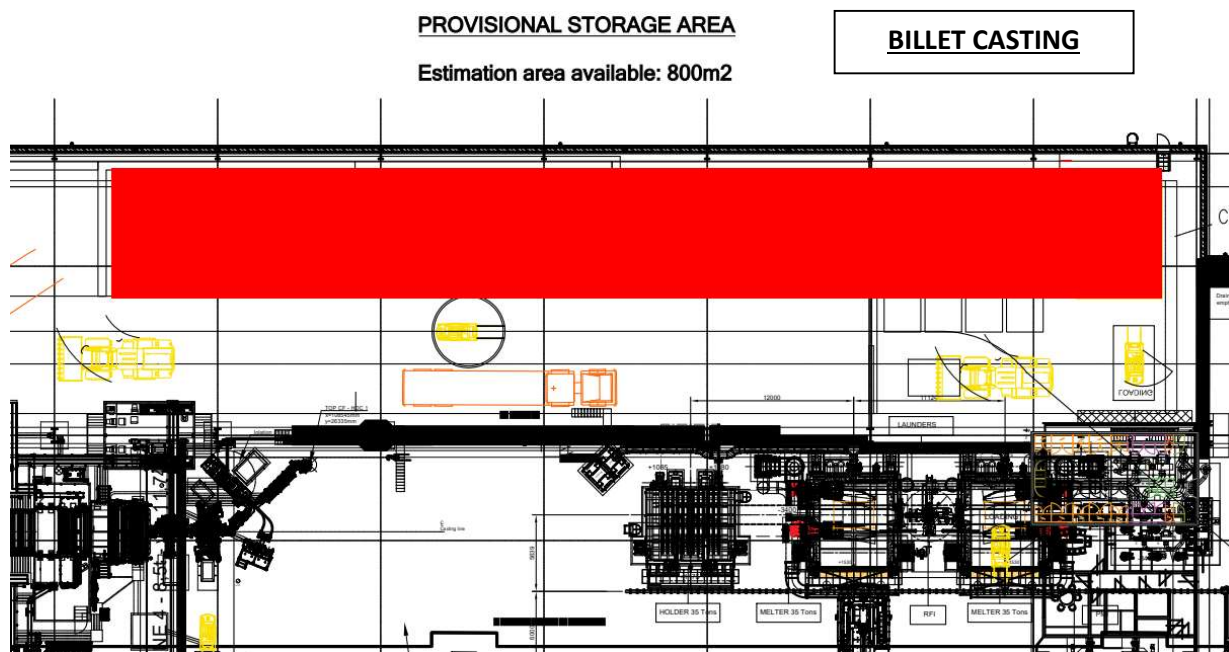
This document must be tracked by INSERTEC Project Manager, to get the approval or refuse of the solution provided by Site, in addition to analyzing internally the possible costs/planning implications, responsibilities, etc. However, the Insertec's Project Manager will inform to ALINVEST about incidences which have impact in the planification of the project or possible claims in case ALINVEST is responsible for its incidence.

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All incidences must be analyzed to determine if it is applicable to open a NON CONFORMITY according to Insertec QUALITY SYSTEM, in addition to registering them in the form 2557-DO-005-PUE-LIR (List of incidences registered).

#### 5.7.4 Storing and fabrication areas

Based on the preliminary documentation and layout received, initially the following area for storage is considered (located on Billet basting area). However, this area will be confirmed prior to the reception of the material and start of work with ALINVEST, because more companies will work in the same area accomplish several works.



However, as an initial reference, Insertec estimates that will be needed a storage area of approximately 750 m<sup>2</sup>, where refractory material and auxiliary parts (accesses, piping, ducts....) will be received. In any case, Insertec will try to send shipments based on assembly needs, in order to reduce the storage space required.

The main parts of the furnace, or those with the greatest weight/volume, should be installed directly from the truck in their final position to minimize the movements.



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### 5.7.5 Staff control at site

To have adequate control of the manpower resources on site, the Subcontractor's Site manager will provide to Alinvest comply daily the report with resources working at site, in which will be defined hours worked by worker for each equipment.

### 5.7.6 Construction

#### 5.7.6.1 *Checking of machinery at site*

Before using any machinery, hand tool and/or lifting element, the condition of the same must be verified, so that the maneuver or action can be carried out in a safe and adequate manner.

#### 5.7.6.2 *Equipment, platforms, material handling*

Before handling materials, platforms and/or equipment, check whether they have lifting lugs, so that if they do have them, they are used. However, if they do not have lifting lugs, the lift chain or lift wire rope shall be tied with fetter to ensure the lifting or if it is needed, lifting lugs will be welded at site.

The slings, hooks, chains, etc. required for lifting must be selected in accordance with the mechanical capacity required. The weights and dimensions of all the packages are indicated on the "Packing List".

#### 5.7.6.3 *Dimensions of material to be assembled on site*

Normally, the duct, conveyors, equipment and/or platforms will arrive on site in transportable dimensions (approx. 2.5 x 2.5 x 12m). However, others might exceed some of these dimensions due to their geometry.

Insertec logistic department will send a packing list detailed to Insertec staff at site to check what material will be received in each shipment and estimation time arrival.

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#### 5.7.6.4 *Fabrication of material*



Insertec will try to carry out as much prefabrication as possible at Insertec workshop. In case of some requirement on-site and some fabrication that could be necessary will be carried out at level 0, so that the work is safer and more appropriate. For this purpose, a small fabrication area could be adapted.

#### 5.7.6.5 *Erection phases*

The assembly sequence of the different equipment has been divided into 3 phases:



- Phase 1 (Billet Casting):
  - HOLDER 35 TON #1 - MVEB-35
  - MELTER 35 TON #1 - FVRB-2,5-35
  - MELTER 35 TON #2 - FVRB-2,5-35
  - CHARGING MACHINE #1
  - SKIMMING MACHINE #1 + 30 DROSS PANS
  - RFI
  - Permanent Magnet Stirrer
  - LAUNDERS
  
- Phase 2 (Strip Casting):
  - HOLDER 25 ton #1 - MVEB-25
  - MELTER 25 ton #1 - FVRB-2,7-25
  - HOLDER 25 ton #2 - MVEB-25
  - MELTER 25 ton #2 - FVRB-2,7-25
  - CHARGING MACHINE #2



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- SKIMMING MACHINE #2
  - RFI x 2 units
  - Permanent Magnet Stirrer x 3 units
  - LAUNDERS between furnaces
- Phase 3 (Strip Casting):
- HOLDER 25 ton #3 - MVEB-25
  - MELTER 25 ton #3 - FVRB-2,7-25
  - MELTER 25 ton #4 - FVRB-2,7-25
  - HOLDER 25 ton #4 - MVEB-25
  - RFI x 2 units
  - LAUNDERS between furnaces

Considering the different phases, an initial schedule has been issued, included as Annex 2, which indicates the different activities by color:

- Pink: unloading materials
- Green: mechanical & electrical assembly
- Orange: refractory activities
- Yellow: Cold commissioning
- Cyan blue: refractory drying
- Red: Hot Commissioning

Based on this schedule, Insertec will send materials and parts, starting the delivery at site from April 1, 2026.

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### Phase 1 Billet casting:



- Estimation weight of mechanical parts for reference (to be confirmed with the packing list for shipments):

- o Holder 35tons x 1 unit

	<b>ESTIMATION WEIGHT PER FURNACE (Kgs)</b>	<b>Comments</b>
<b>CHAMBER STEEL HOUSING</b>	11.325	HOUSING PART #1 of 5 (lower back) - transport drawing includede in annex 3
	9.055	HOUSING PART #2 of 5 (lower front) - transport drawing includede in annex 3
	6.813	HOUSING PART #3 of 5 (up back) - transport drawing includede in annex 3
	5.114	HOUSING PART #4 of 5 (up front) - transport drawing includede in annex 3
	2.330	HOUSING PART #5 of 5 (door frame) / weight doesn ´t include refractory pieces of the frame
<b>CAST FRAME</b>	721	Initially it is considered that it will be preassembly at workshop on the door frame
<b>DOOR ASSEMBLY</b>	2.532	
<b>DOOR LIFTING SUPPORT</b>	3.299	
<b>HOODS</b>	2.205	One piece
<b>ROOF ACCESS</b>	1.366	Transportable sections
<b>COLLECTORS</b>	607	
<b>VARIOS</b>	4.688	
<b>Total:</b>	<b>50.435</b>	

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- Melter 35tons x 2 units



	ESTIMATION WEIGHT PER FURNACE (Kgs)	Comments
<b>CHAMBER STEEL HOUSING</b>	10.252	HOUSING PART #3 of 5 (lower back) - transport drawing includede in annex 3
	12.512	HOUSING PART #4 of 5 (lower central part) - transport drawing includede in annex 3
	6.283	HOUSING PART #2 of 5 (up back) - transport drawing includede in annex 3
	8.078	HOUSING PART #1 of 5 (up front) - transport drawing includede in annex 3
	2.797	HOUSING PART #5 of 5 (door frame) / weight doesn ´t include refractory pieces of the frame
<b>CAST FRAME</b>	705	Initially it is considered that it will be preassembly at workshop on the door frame
<b>DOOR ASSEMBLY</b>	3.432	
<b>DOOR LIFTING SUPPORT</b>	4.211	
<b>HOODS</b>	3.902	One piece
<b>ROOF ACCESS</b>	2.868	Transportable sections
<b>COLLECTORS</b>	2.765	
<b>VARIOS</b>	9.878	
<b>Total:</b>	<b>67.683</b>	

- Skimming. Estimation weight: 28.600 Kgs

It will be sent at site in one piece.

It is included in annex 3 reference drawing

- Charging. Estimation weight: 53.000Kgs

It will be sent to the site in two/three pieces (to be confirmed with the packing list)

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Parameter	Metric
<i>Machine Dimensions</i>	
LENGTH	7.745 mm
WIDTH	5.910 mm
HEIGHT (W/O MAST)	3.478 mm

It is included in annex 3 reference drawing

- RFI. Estimation weight: 2,5-3,5 tons
- Permanent Magnet Stirrer. Estimation weight:3.900 + trolley

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> CONSTRUCTION & COMMISSIONING DEPARTMENT, INSERTEC	<b>ALINVEST</b> Member of <b>MTX</b> GROUP
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### Phase 2 and 3:

- Estimation weight of mechanical parts for reference (to be confirmed):



- Holder 25tons x 4 units

	ESTIMATION WEIGHT PER FURNACE (Kgs)	Comments
<b>CHAMBER STEEL HOUSING</b>	11.117	HOUSING PART #1 of 5 (lower back) - transport drawing includede in annex 3
	8.976	HOUSING PART #2 of 5 (lower front) - transport drawing includede in annex 3
	6.710	HOUSING PART #3 of 5 (up back) - transport drawing includede in annex 3
	5.160	HOUSING PART #4 of 5 (up front) - transport drawing includede in annex 3
	2.330	HOUSING PART #5 of 5 (door frame) / weight doesn´t include refractory pieces of the frame
<b>CAST FRAME</b>	721	Initially it is considered that it will be preassembled on the housing part 5 of 5 (door frame)
<b>DOOR ASSEMBLY</b>	2.532	
<b>DOOR LIFTING SUPPORT</b>	3.299	
<b>HOODS</b>	2.205	One piece
<b>ROOF ACCESS</b>	1.271	Transportable sections
<b>COLLECTORS</b>	390	
<b>VARIOS</b>	4.688	
<b>Total:</b>	<b>49.399</b>	

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- Melter 25tons x 4 units



	ESTIMATION WEIGHT PER FURNACE (Kgs)	Comments
<b>CHAMBER STEEL HOUSING</b>	10.001	HOUSING PART #3 of 6 (lower back) - transport drawing includede in annex 3
	7.740	HOUSING PART #4 of 6 (lower central part) - transport drawing includede in annex 3
	6.201	HOUSING PART #2 of 6 (up back) - transport drawing includede in annex 3
	6.061	HOUSING PART #1 of 6 (up front) - transport drawing includede in annex 3
	2.177	HOUSING PART #5 of 6 (door frame) / weight doesn ´t include refractory pieces of the frame
	2.696	HOUSING PART #6 of 6
<b>CAST FRAME</b>	721	HOUSING PART #5 of 6 (door frame) / weight doesn ´t include refractory pieces of the frame
<b>DOOR ASSEMBLY</b>	3.432	
<b>DOOR LIFTING SUPPORT</b>	4.211	
<b>HOODS</b>	3.902	One piece
<b>ROOF ACCESS</b>	2.868	Transportable sections
<b>COLLECTORS</b>	2765	
<b>VARIOS</b>	9.878	
<b>Total:</b>	<b>62.653</b>	

- Skimming. Estimation weight: 28.600 Kgs

It will be sent at site in one piece.

It is included in annex 3 reference drawing

- Charging. Estimation weight: 53.000Kgs

It will be sent to the site in two/three pieces. (to be confirmed with the packing list for shipments)

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Parameter	Metric
<i>Machine Dimensions</i>	
LENGTH	7.745 mm
WIDTH	5.910 mm
HEIGHT (W/O MAST)	3.478 mm

It is included in annex 3 reference drawing

- RFI x 4 units. Estimation weight per unit: 2,5-3,5 tons
- Permanent Magnet Stirrer x 3 units. Estimation weight per unit: 3.900 + trolley

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> CONSTRUCTION & COMMISSIONING DEPARTMENT, INSERTEC	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
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#### 5.7.6.6 Construction sequence

Included in Annexes 6 and 7 are 3D models that simulate the construction sequence of the most voluminous and heavy parts of the Holder and the Melter, which also include a table of tightening torques and welding to be performed. Furthermore, Annex 8 includes a description of the assembly to be carried out in skimming and charging.

However, before starting with the installation of the main parts of the furnaces into their final position, the Permanent Magnet Stirrer and its respective carriage will be positioned in the galleries.

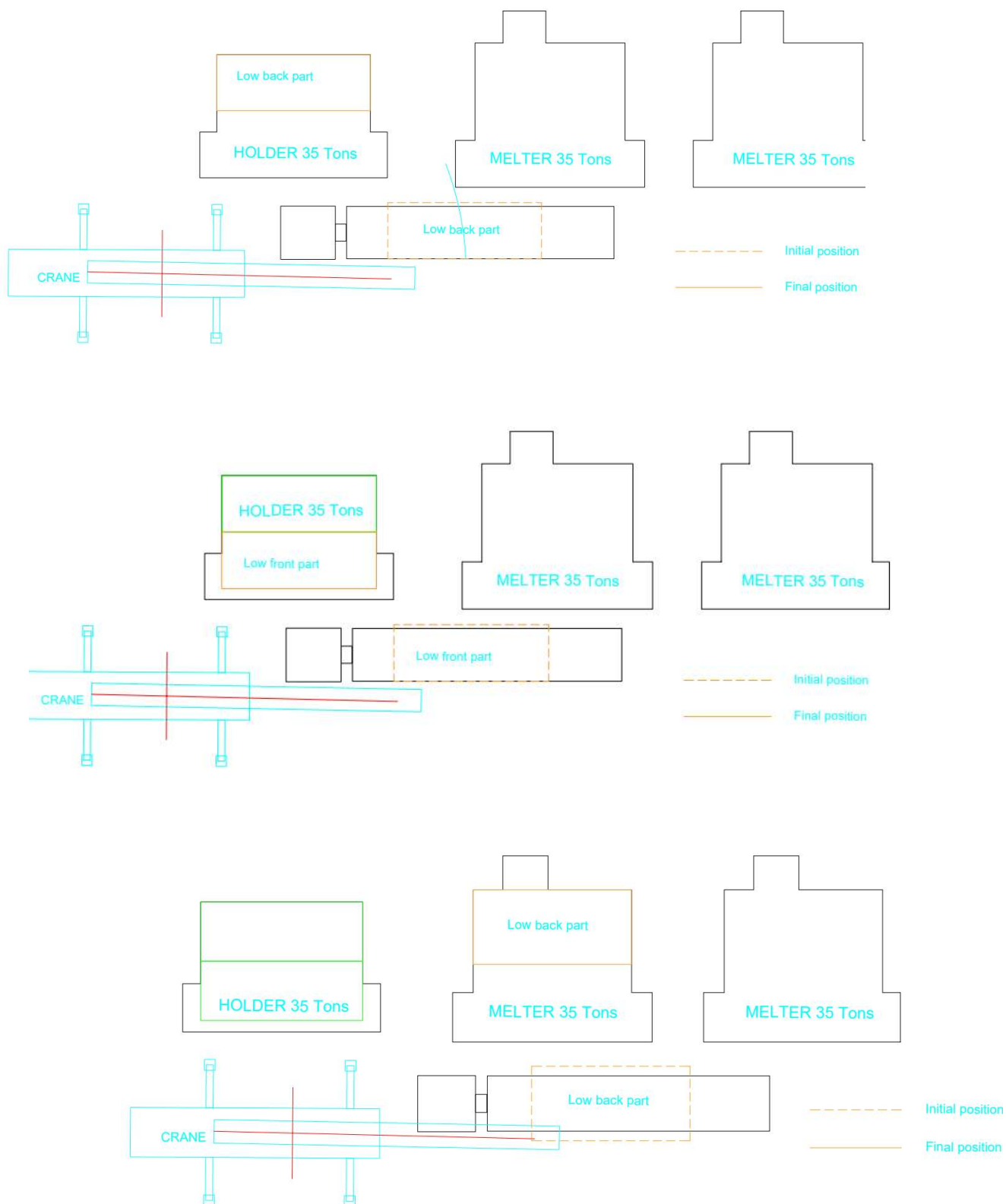
Likewise, it is important to note that general construction and commissioning sequence is defined in Annex 2 (Schedule), which outlines the execution times and construction sequence between the different equipment.

This schedule is based on beginning the erection works by unloading the main parts of the Phase I furnaces (holder 35 + 2 melters 35 ton) on their final positions, starting first with the installation of main parts of the holder 35tons (west) and continuing with the melters 35tons from west to east.

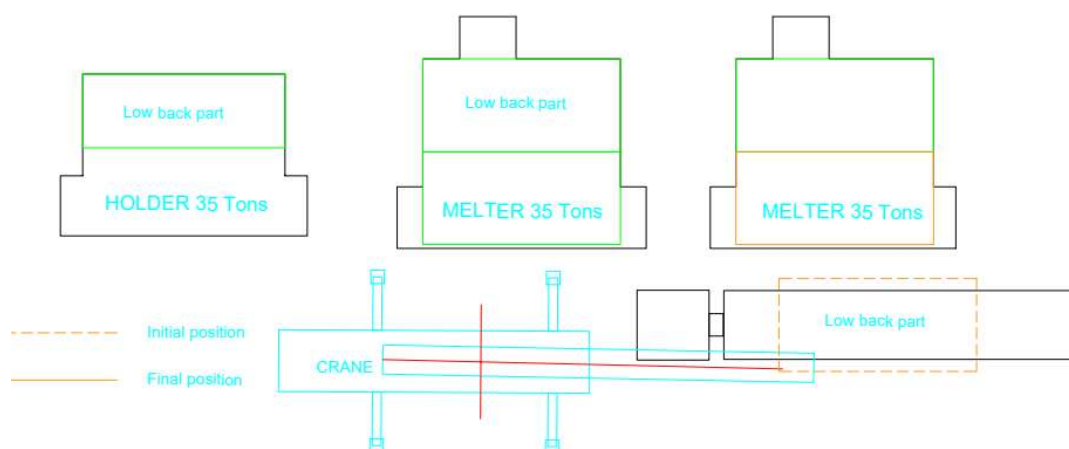
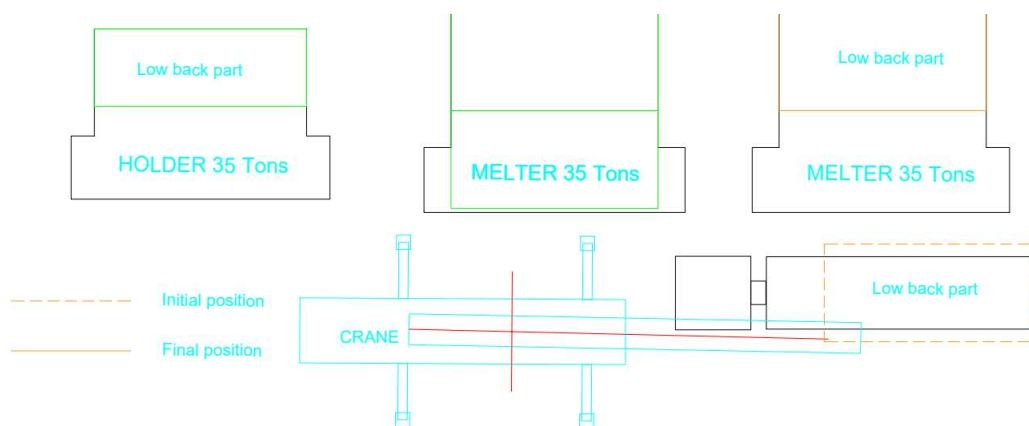
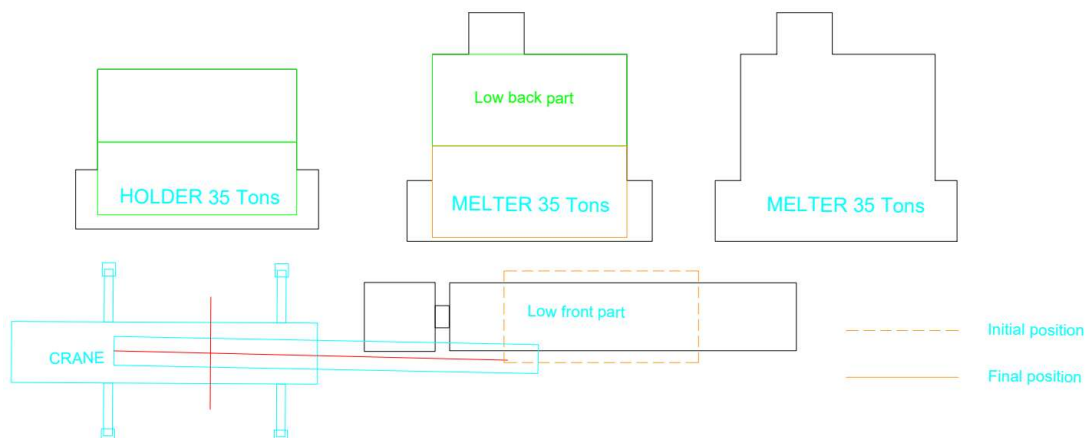
In order to understand correctly, the following sketches are attached, which represent the erection sequence of the main parts of the phase 1 furnaces, in which the operational sequence from west to east can be checked.



 <p><b>insertec</b> Furnaces &amp; Refractories</p>	<p><b>METHOD STATEMENT AT SITE</b> CONSTRUCTION &amp; COMMISSIONING DEPARTMENT, INSERTEC</p>	<p><b>ALINVEST</b> Member of <b>MTX</b> GROUP</p>	
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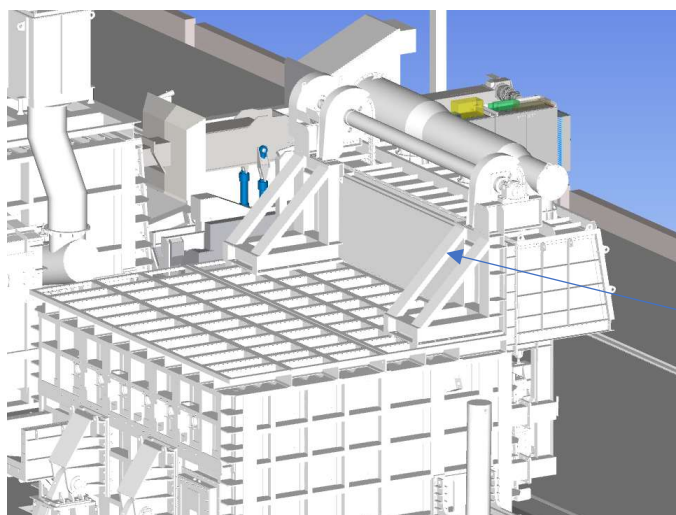
 <p><b>insertec</b> Furnaces &amp; Refractories</p>	<p><b>METHOD STATEMENT AT SITE</b> CONSTRUCTION &amp; COMMISSIONING DEPARTMENT, INSERTEC</p>	<p><b>ALINVEST</b> Member of <b>MTX</b> GROUP</p>	
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#### NOTES:

- 150 ton crane is estimated to be needed to unload the main parts of the furnaces.
- For the rest of the installation, it is consider using 40-ton crane or using telescopic handler.
- As the main parts that make up the melters are installed, the melter chimneys will be installed.
- The sequence of phases 2 and 3 will also be from west to east.
- Once the main parts of the furnaces are positioned, they are joined together with screws, installing 25mm fiber blanket on the joining flanges.
- Once the pieces are joined, the five parts will be welded according to welding map included on annex 9.
- In order to properly perform the welding, it is necessary to make a small bevel, so that we can ensure that the welding penetration enters.
- After welding, liquid penetrants must be applied to verify that there are no surface defects.
- Installation of door gantry and door elevation system.



Gantry

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- Refractory installation of furnace.
- Hood installation.
  - Hood might be installed before to start the refractory works
- Accesses installation
- Hydraulic piping to be installed. Holder and melter. An orientative pipe routing is included in Annex 10.

- Holder/Melter 35Tons: Piping.

Diameter estimated: Ø30x2,4mm (to be confirmed) & Ø 1 ¼" & Ø15mm - ASTM A312; AISI 304L or AISI 316L quality.

Hydraulic piping that can be pre-assembled on the shipped parts will be arrived already installed, but the piping and fittings from the connections to the tank, valve group and door opening cylinders and tightening shall be installed at site.

Flanged connections or socket weld shall always be made using a stainless steel flange with a neck in accordance with Standard EN 1092-1 Type 11 PN16 (DIN 2633) for piping higher than 30mm.

These flanges are included in ISO 7005-1:2011 and ISO 7005-2:1998. AISI 304L or AISI 316L grades.

- Cleaning and flushing of the hydraulic piping lines.
- Pneumatic piping: Carbon steel. Diameter estimated: ¾" sch 10S o STD

Pneumatic piping will be supplied in long commercial steel pipes. Pipe connections must be metallic, threaded, compression, flanged, or welded.

Pipe design must be such as to avoid tensile stresses at the joints.

Pipe ends and unconnected outlets must be sealed with plugs, welded caps, or metal blind flanges.

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Pipelines must be routed with the fewest possible connections. When inserts are made into a general pipeline, for example, to install pressure gauges, pressure switches, or the beginning of other auxiliary lines, they must be made directly into the pipe and their connection must be welded.

- Combustion pipe for melter: Stainless steel. An orientative pipe routing is included in Annex 10.
  - Gas: Diameter 2 ½” ASTM A312; AISI 304L or AISI 316L quality.  
Insertec will supply the properly finished gas ramps and commercially length pipes, elbows, and fittings for on-site assembly.  
10% of the welds made on site must be radiographed.
  - Oxygen: Diameter 10” sch 10 or STD. Stainless steel
- Exhaust ducts for melter. Internal diameter: 450mm Stainless steel
- Once the main parts, access and larger diameter pipes have been assembled, Alinvest must begin to assemble the electrical trays.
- Wiring routing installation
- Sensor installation, dampers, solenoid valve wiring...

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#### AUXILIARY EQUIPMENT:

- SKIMMING
- CHARGING
- RFI
- PMS
- LAUNDERS

This equipment will be sent at the plant wired (if it is applicable) and ready to be tested, except Charging, which shall be joined several parts.

## **5.8 Cold Test + Dry-out / Cold commissioning**

Once the construction (mechanical, refractory and electrical) has been completed, a test called COLD COMMISSIONING TEST will be carried out, whose mission is to certify the correct operation of the line in cold conditions (without combustion system running).

After or in parallel to the cold test, the refractory will be dried according to the curve defined by Insertec.

In order to correctly perform the cold start-up, the subcontractor will have personnel who can support with the adjustments.

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## 5.9 Hot Test / Hot commissioning

After the cold test, INSERTEC will provide supervision during hot commissioning whose mission is to certify the correct operation of the line in hot conditions (with combustion system running). In this period, it is possible to do trials with materials, etc. to test the equipment.

In order to correctly perform the cold start-up, the subcontractor will have personnel who can support with the adjustments.

## 6. PRELIMINARY MANPOWER HISTOGRAM

For reference, a preliminary histogram or similar is included in Annex 4 based on execution hours on similar projects.

However, the subcontractor must carry out its own analysis of direct hours, since no claim can be made based on this given reference.

## 7. PRELIMINARY MACHINERY, TOOLS AND CONSUMABLE LIST



A typical list of materials or devices required on site works. Depending on the kind of construction the list could change so this list should be considered as reference.

- Topographic level with ruler + legs.
- Laser level and metric tapes.
- Hydraulic test components and instruments to do control pressure test to avoid leaks
- Torque wrenches: 1unit M27 range 850Nm
- Several wrenches of all sizes.: 6 until 46 (mechanical hand tools)

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- GMAW/GTAW welding machines: 8 units
- SMAW welding machines (portable): 10 units
- Grinders / Cutting machines: 15units of small grinders(125mm) / 2units of big grinder (230mm)
- Pull-lifts: 3 units 1,5tons 5m
- Drills machines: 15 units
- Impact screwdriver: 8 units
- Chains and wire lifting rope: 8unit 10T - 4m / 10unit 5T - 3m
- Spreader beam: 20 tons



- Hoist: 3 units 1,5tons 5m
- Tractels: 3 units 2 tons with chain
- Electrical boxes: Complete electrical manual tools (one for each worker )
- Screwdrivers and spanners: (mechanical /electrical hand tools)
- Meter and gauges: 5m / 8m (mechanical hand tools)
- Blowtorch: 2units (oxygen + acetylene)
- Gases (oxygen, acetylene and argon): 25unit Argon C15 / 2unit oxygen - 2unit acetylene. Bottles must be replaced when they are empty.
- Welding consumables. Estimation is included in annex 10



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- Grinding discs. Estimation is included in annex 10
- Working tables. 4 units
- Tools chests: Complete mechanical hand tools (one for each Fitter and pipers)
- Scaffolding (2 units – 3 m height and 15 m length ; 1m height and 5 length with stairs)
- Telescopic stairs of 3m: 4 unit
- Manlifts. Number depending of activities. Articulated boomlift 12m and 18m
- Forklifts. 1 unit 4tons + Manitou 18m
- Cranes 150 Ton for unloading main pieces of furnaces, to be confirmed at site: One day to unload the main parts of each furnace and other day to install de door after it is refracted.
- Cranes 40-50 Ton for the rest of equipment: 1 crane for each phase

## 8. WORK SCHEDULE PROPOSED

From Monday to Saturday usually (10 working hours/day), except for refractory works in which INSERTEC might have 2 shifts per day depending on progress or necessity.

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## 9. HEALTH, SAFETY & ENVIRONMENT (HSE)

Before proceeding with the work on site, Subcontractor shall develop a Health, Safety and Environment Plan for the construction phase based on the general HSE plan from ALINVEST.

- In this HSE plan Insertec will include the following information, in case these are applicable:
- HSE objectives (e.g., zero incidents, zero harm etc.).
- Requirements to INSERTEC' HSE management systems.
- HSE risk management processes (e.g., overall construction risk picture, risk reduction measures, use of Safe Job Analyses).
- HSE meetings and safety walks.
- Reporting of accidents, incidents, and unsafe conditions / near misses.
- General requirements for safe work performance (e.g., Personal Protective Equipment (PPE), chemicals and other materials hazardous to health and environment, hot work, ditches, work at height, electrical installations, housekeeping and cleaning.
- Statutes related to driving, smoking, drugs, and photography.
- Consequences of breaching safety rules, disciplinary action.
- Emergency preparation plan (or as separate document).

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> CONSTRUCTION & COMMISSIONING DEPARTMENT, INSERTEC	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## 10. Annexes

### Annex 1 - Templates

- 2557-DO-005-PUE-LIR (List of incidents registered)
- 2557-DO-006-PUE-IDS-00X (incidences detected at site)

### Annex 2 – Schedule activities at site

### Annex 3 – Transport drawings / Sketches

### Annex 4 - Preliminary manpower histogram

### Annex 5 – Drawing Layout

- 2558-0000-GNL-G-LAY-0000-M “General Plant layout”

### Annex 6 – 3D Construction sequence for Melter

### Annex 7 – 3D Construction sequence for Holder

### Annex 8 – Skimming and charging construction sequence


### Annex 9 – Welding map - WPS/pWPS – welding consumables

### Annex 10 – Pipe lines


 <div> <b>insertec</b>  Furnaces &amp; Refractories </div>	<div> <b>METHOD STATEMENT AT SITE</b>  CONSTRUCTION &amp; COMMISSIONING  DEPARTMENT, INSERTEC </div>	<div> <b>ALINVEST</b>  Member of <b>MTX</b> GROUP </div>	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

### Annex 1 - Templates

- 2557-DO-005-PUE-LIR (List of incidents registered)
- 2557-DO-006-PUE-IDS-00X (incidences detected at site)



Furnaces & Refractories



ALINVEST

Member of MTX GROUP

E2558

PROJECT

INCIDENCES REGISTER LIST

2558-DO-005-PUE-LIR

xx/xx/xxxx

ID	REF.	MACHINE	OPENING DATE	DETAIL OF INCIDENT	STATUS 1-OPENED 2-CLOSED	RESPONSIBLE 1-IFI 2-CLIENT 3-CONTRACTOR	LEVEL OF CRITICABILITY 1-Low 2-Medium 3-High	DATE CLOSED	NON CONFORMITY PCE / RCL / MEJ / PDU / N/A
001									
002									
003									
004									
005									
006									
007									
008									
009									
010									
011									
012									
013									
014									
015									
016									
017									
018									
019									
020									
021									
022									
023									
024									
025									
026									

xxxx-DO-006-0-PUE-LDPP

1/2

<div><div><div>insertec</div><div>Furnaces &amp; Refractories</div></div><div><div>ALINVEST</div><div>Member of MTX GROUP</div></div></div>	<div>E2558 PROJECT</div>	2558-DO_006_PUE_IDS_001
	<div>INCIDENCES DETECTED AT SITE</div>	Pg. 1 de 2

ORIGINATOR	1. COMPANY:		NON CONFORMITY <input type="checkbox"/>	
	2. DISCIPLINE:			
	3. NAME:		Signature:	Date:
	4. SPECIFICATION /DRAWING No:			
	5. REQUEST/PROBLEM:			
	6. RECOMMENDED SOLUTION /ALTERNATE SOLUTION:			
	7. Hazards Analysis Required?      YES <input type="checkbox"/> NO <input type="checkbox"/>			
	ENGINEERING APPROVAL	8. Field Change?      YES <input type="checkbox"/> NO <input type="checkbox"/>		
9. Engineering Error?      YES <input type="checkbox"/> NO <input type="checkbox"/>				
10. Contractor Error?      YES <input type="checkbox"/> NO <input type="checkbox"/>				
11. Construction Error?      YES <input type="checkbox"/> NO <input type="checkbox"/>				
12. Change scope, quality, schedule or contract price?      YES <input type="checkbox"/> NO <input type="checkbox"/>				
13. Urgentness      YES <input type="checkbox"/> NO <input type="checkbox"/>				
ANSWER				
DEPARMENTS AFFECTED	Name: <input type="checkbox"/>			
	Approved <input type="checkbox"/>			
	Rejected <input type="checkbox"/>			
	CAUSES:			
SOLUTION:				
DEPARMENTS AFFECTED	COMMERCIAL <input type="checkbox"/>	PURCHASING <input type="checkbox"/>	CONSTRUCTION/COMMISSIONING <input type="checkbox"/>	
	ENGINEERING <input type="checkbox"/>	TECH. OFFICE <input type="checkbox"/>	PROJECT MANAGMENT <input type="checkbox"/>	
	PRODUCTION <input type="checkbox"/>	AUTO. & CONTROL <input type="checkbox"/>	LINING <input type="checkbox"/>	

APPROVAL		Engineering	Construction and Commissioning Manager	Project Manager	Client <i>(If required)</i>
	DATE:				
	NAME:				
	SIGNATURE				

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> CONSTRUCTION & COMMISSIONING DEPARTMENT, INSERTEC	<b>ALINVEST</b> Member of <b>MTX</b> GROUP
<b>E2558 Alinvest – Czech Republic</b>	<b>2558-IH-PUE-01</b>	<b>E2558</b>

**Annex 2 – Schedule activities at site**

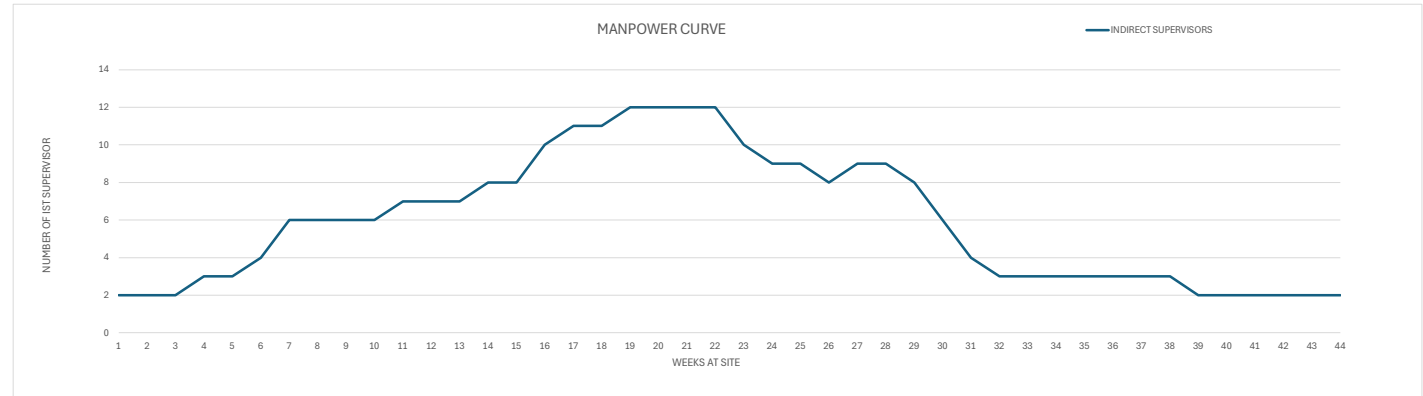


**ALINVEST SCHEDULE FOR CONSTRUCTION AND COMMISSIOING**

[illegible]

### MANPOWER OF INDIRECT INSERTEC'S SUPERVISORS

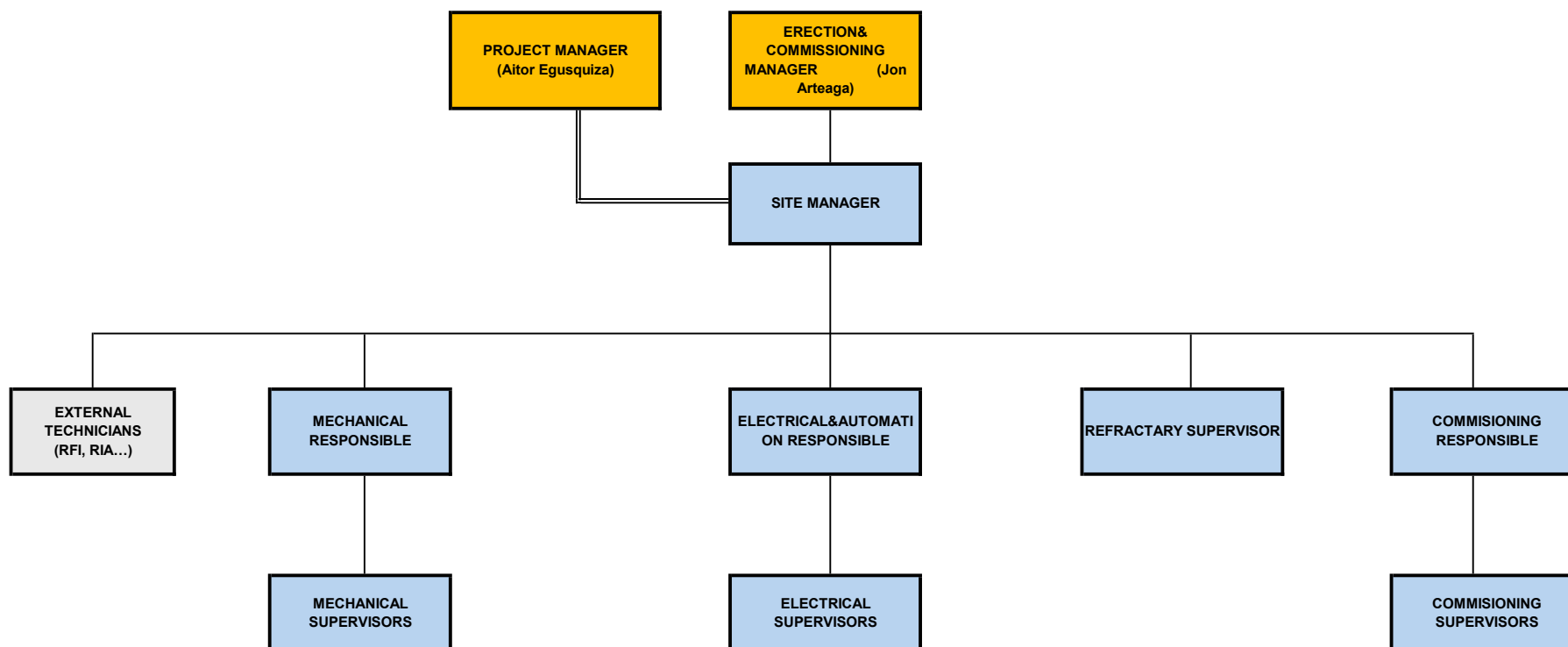
		Weeks 2026																																Weeks 2027													
Indirect workers		14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	1	2	3	4	5		
	Site Manager	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
1 <sup>st</sup> Ph	Mechanic, Responsible	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2 <sup>nd</sup> Ph	Mechanic, Supervisor				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1																								
3 <sup>rd</sup> Ph	Mechanic, Supervisor							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1 <sup>st</sup> Ph	Electrical Responsible									1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2 <sup>nd</sup> Ph	Electrical Supervisor														1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3 <sup>rd</sup> Ph	Electrical Supervisor																						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
	Refractory Supervisor							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1																									
1 <sup>st</sup> Ph	Commissioning responsible												1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2 <sup>nd</sup> Ph	Commissioning technicians															2	2	2	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	
3 <sup>rd</sup> Ph	Commissioning technicians																					2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1		
Specialists	RFI Supervisor																				1	1																									
	Combustion technician																					1	1																								
	RIA Supervisor							1	1	1			1							1	1	1																									
	Stirring Supervisor																		1	1																											
TOTAL:		2	2	2	3	3	4	6	6	6	6	7	7	7	8	8	10	11	11	12	12	12	12	10	9	9	8	9	9	8	6	4	3	3	3	3	3	3	3	2	2	2	2	2	2		



**IMPORTANT NOTES:**

- 1- The resources indicated are estimated and will fluctuate depending on the final receipt of materials and the progress of construction.
- 2- The Insertec Site Manager will define the final workforce, adapting it to the needs and issues that arise during the project.
- 3- The fact that a resource is indicated per week does not mean that they must be on duty for the entire week, but rather for the number of days required.
- 4- The staff will rotate through vacations, and Insertec will schedule these breaks so that project progress is not compromised. The duties of the staff who are on vacation rotation will be temporarily assumed by some of the other supervisors on site.
- 5- The Insertec Site Manager shall have a single point of contact on site from Alininvest.
- 6- The schedule and resource estimate are estimates and should be considered solely as a reference, as they will be updated as the project progresses. Therefore, the estimated resources should not be considered a reference or minimum resource to be implemented.

# INSERTEC'S ORGANIZATION CHART AT SITE



INSERTEC STAFF AT HEADQUARTER OFFICES



INSERTEC STAFF AT SITE



EXTERNAL TECHNICIANS TO BE MOBILIZED AT SITE WHEN THEY ARE NEEDED.

\_\_\_\_\_ HIERARCHIC DEPENDENCE

===== FUNCTIONAL DEPENDENCE

## NOTES:

- The Site Manager may perform the functions of mechanical or commissioning responsible
- The supervisors will be on site on the dates on which the specific works applicable to their specialty are carried out.

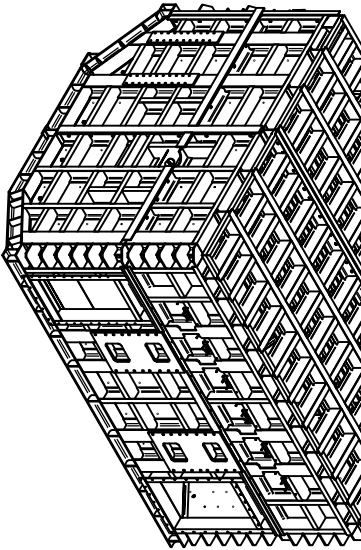
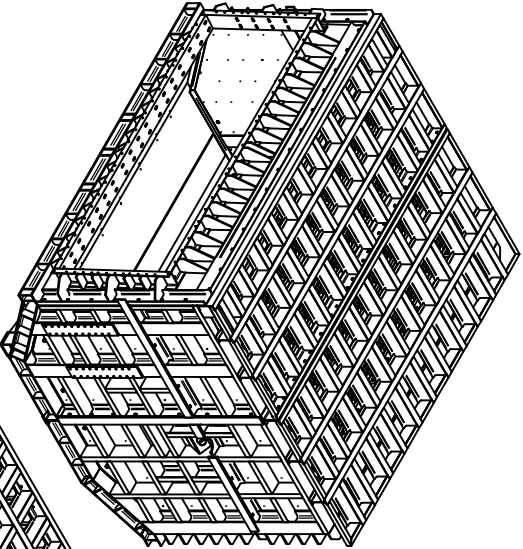
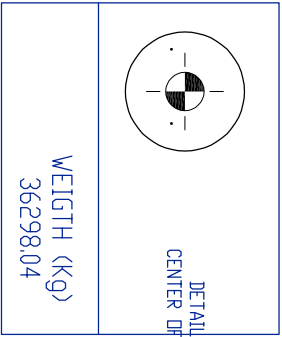
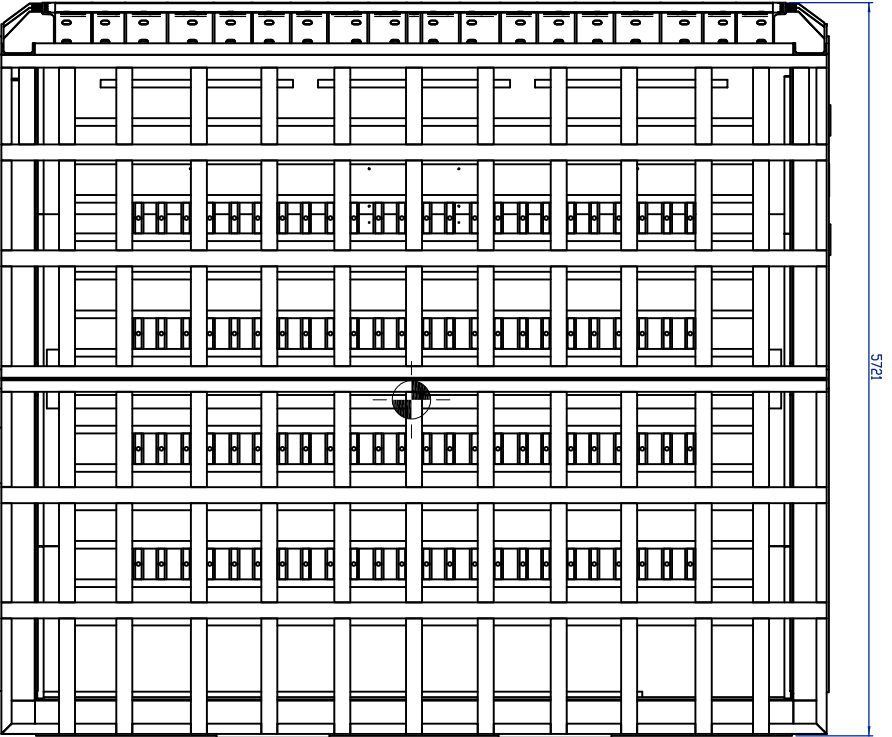
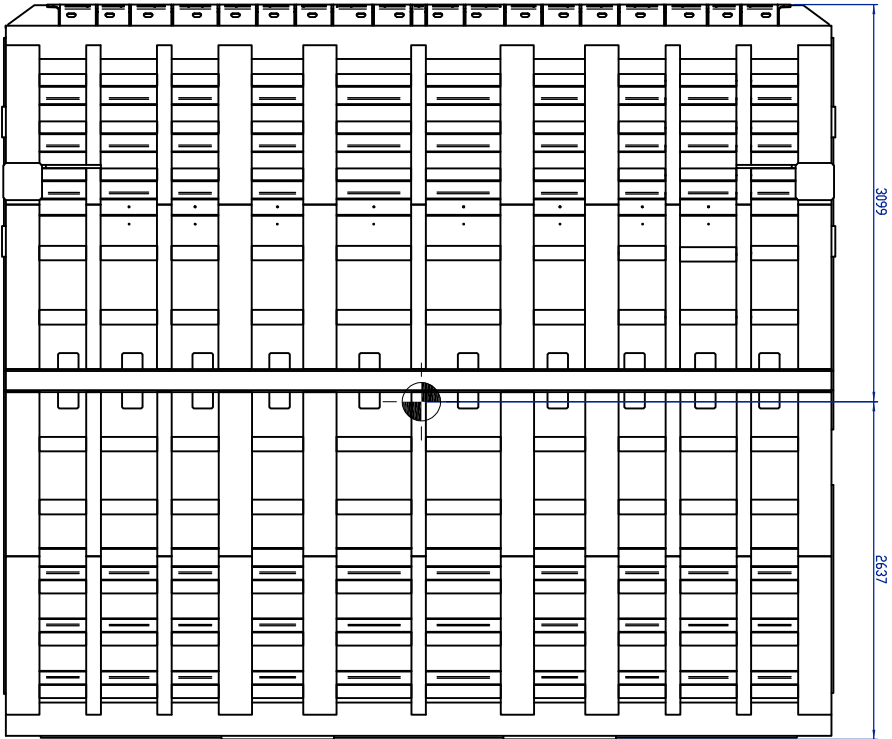
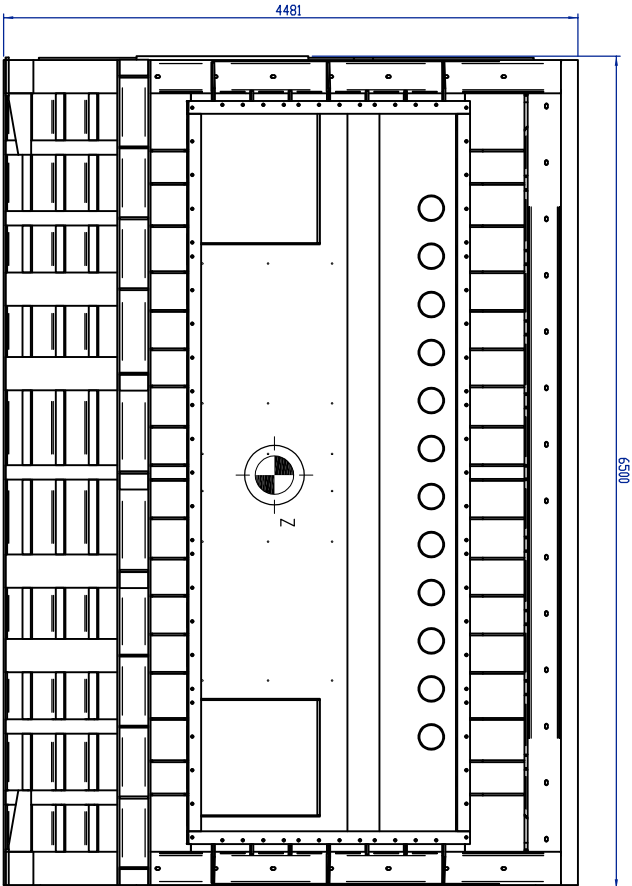
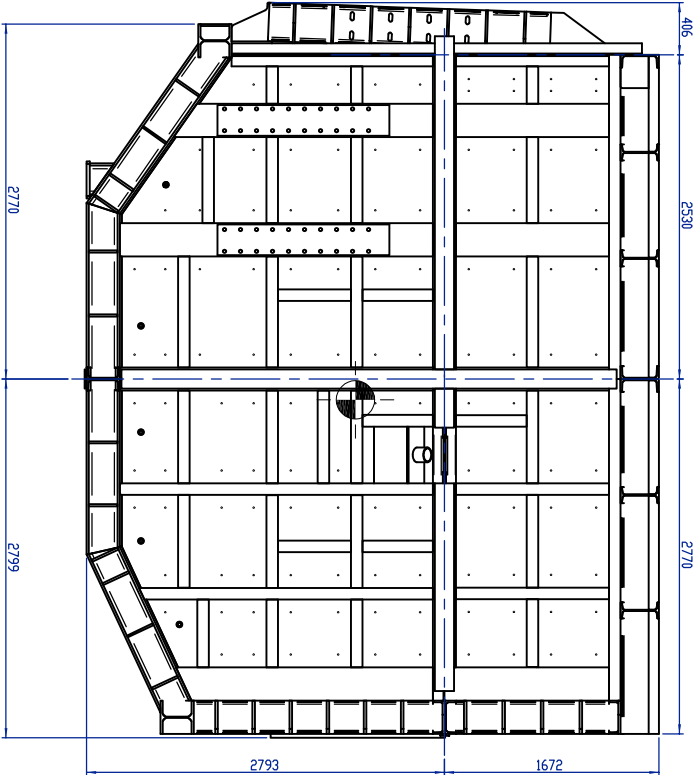
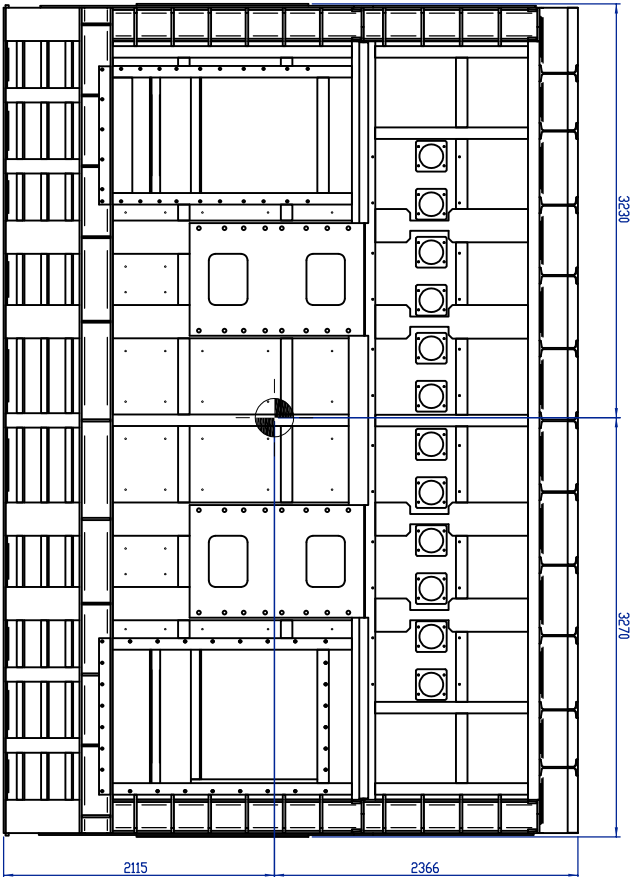
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<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

### Annex 3 – Transport drawings / Sketches

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> CONSTRUCTION & COMMISSIONING DEPARTMENT, INSERTEC	<b>ALINVEST</b> Member of <b>MTX</b> GROUP
<b>E2558 Alinvest – Czech Republic</b>	<b>2558-IH-PUE-01</b>	<b>E2558</b>

**Annex 3 – Transport drawings / Sketches**

HOLDER 35Tons

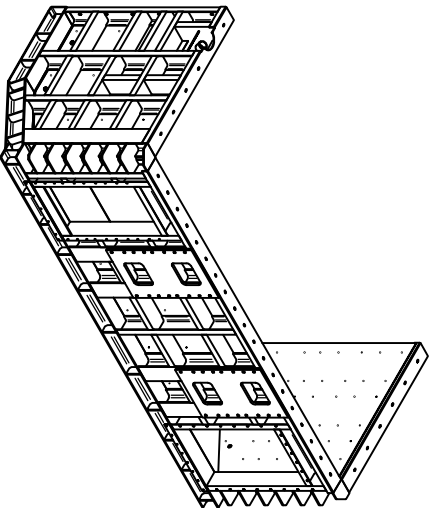
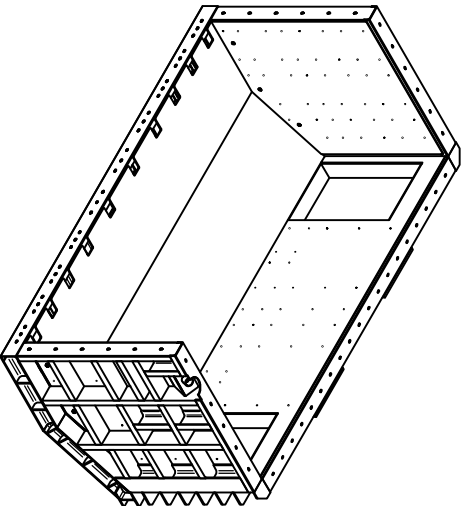
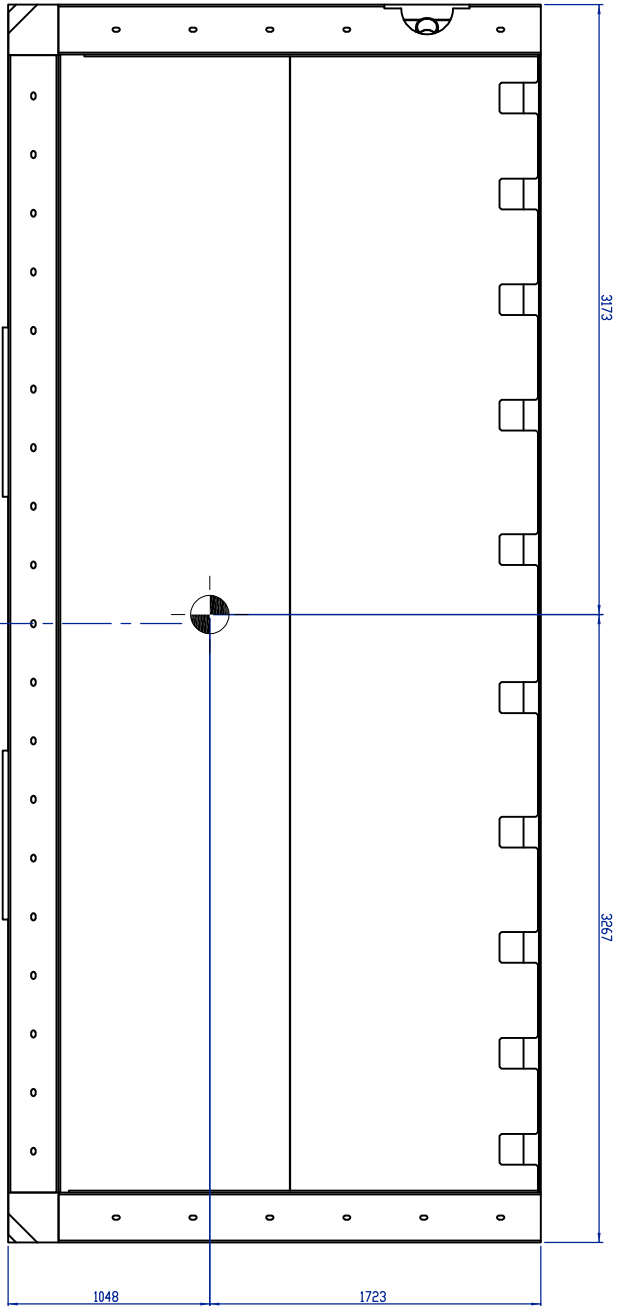
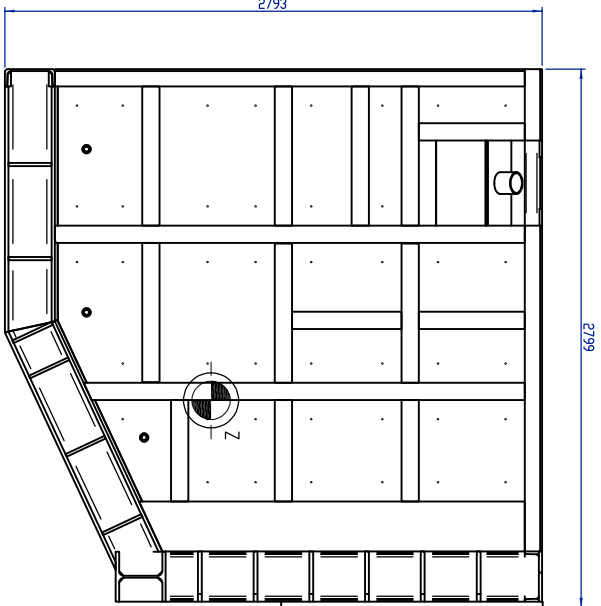
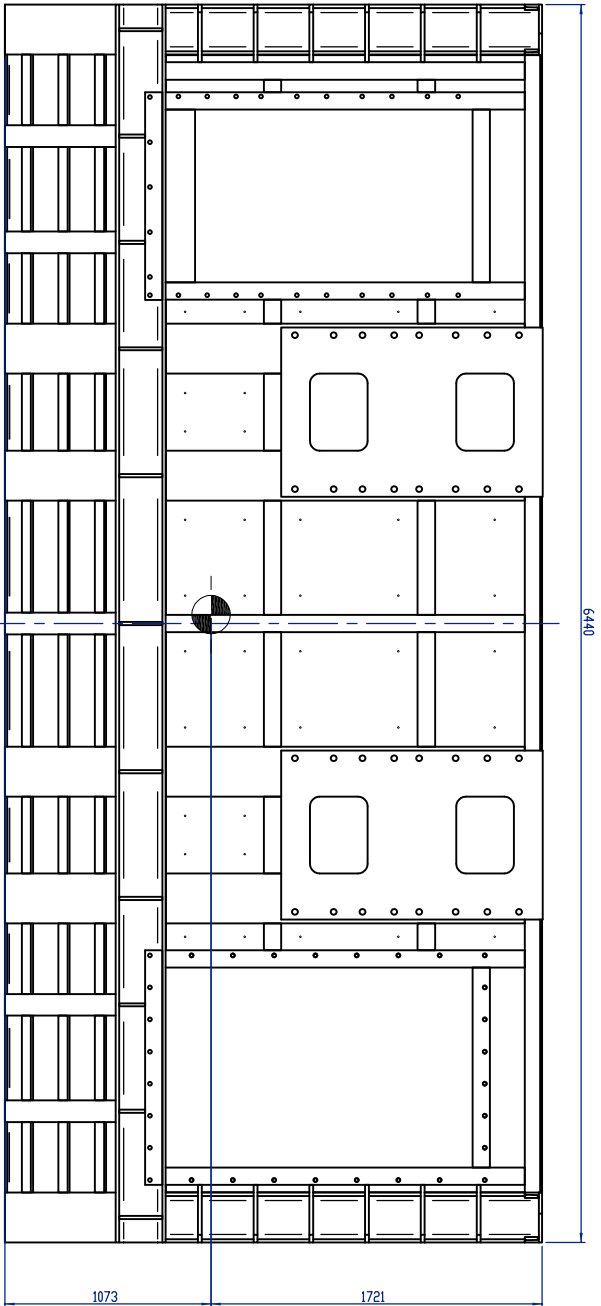


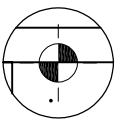
VIEW AS PER 'A'

This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.

Rev.	Modification	Date	Name									
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This is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization												
Tolerance for dimensions without tol. according to ISO 2768-MK												
Dev. min.	0.5	3	5	30	120	400	1000	2000	Drawn	Date	Rev.	Material
Dev. max.	3	6	30	120	400	1000	2000	4000	10/09/2025	10/09/2025	BJ	Weight (kg)
Machine Tool	1	1	1	1	1	1	1	1	Decided	10/09/2025	BJ	36298.04
Verified	1	1	1	1	1	1	1	1	Verified	10/09/2025	BJ	
Customer	1	1	1	1	1	1	1	1	Time			
ALINVEST												
Holder 35 ton #1 - WLEC-35												
HOLDING CHAMBER												
MAIN EQUIPMENT												
Scale 1:30												
Project Method												
Part Number												
2558-3311-THD-HCH01-HQ001												
Customer Number												
Revision												
A												
Sheet 1/1												







DETAIL Z  
CENTER OF MASS

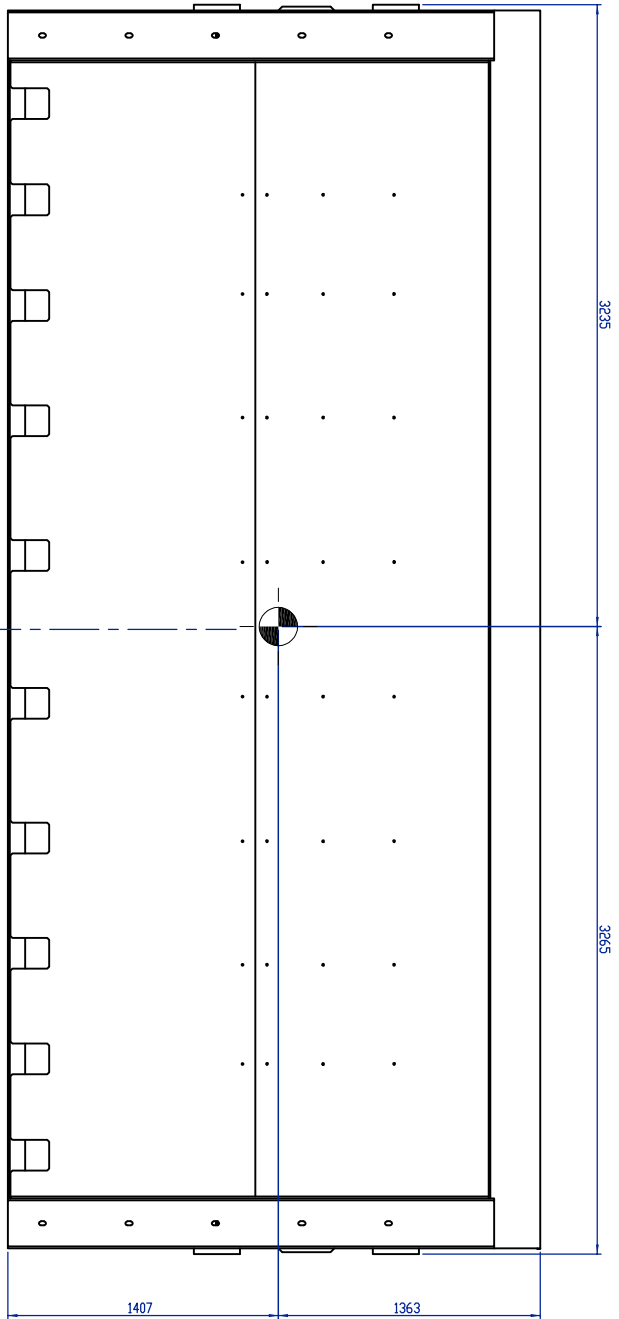
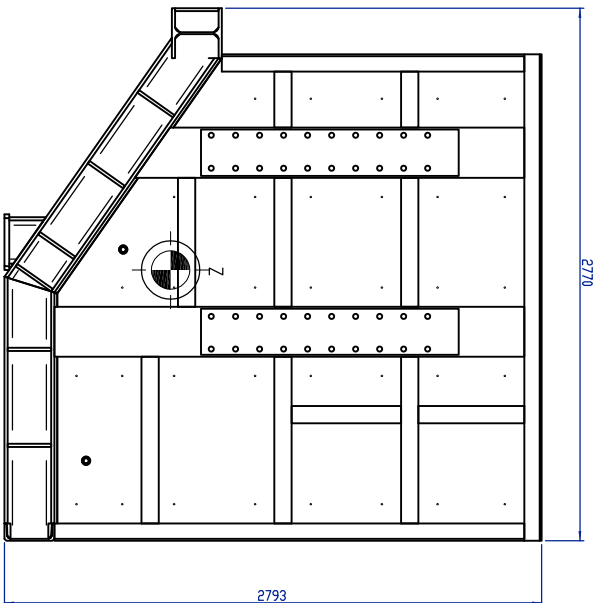
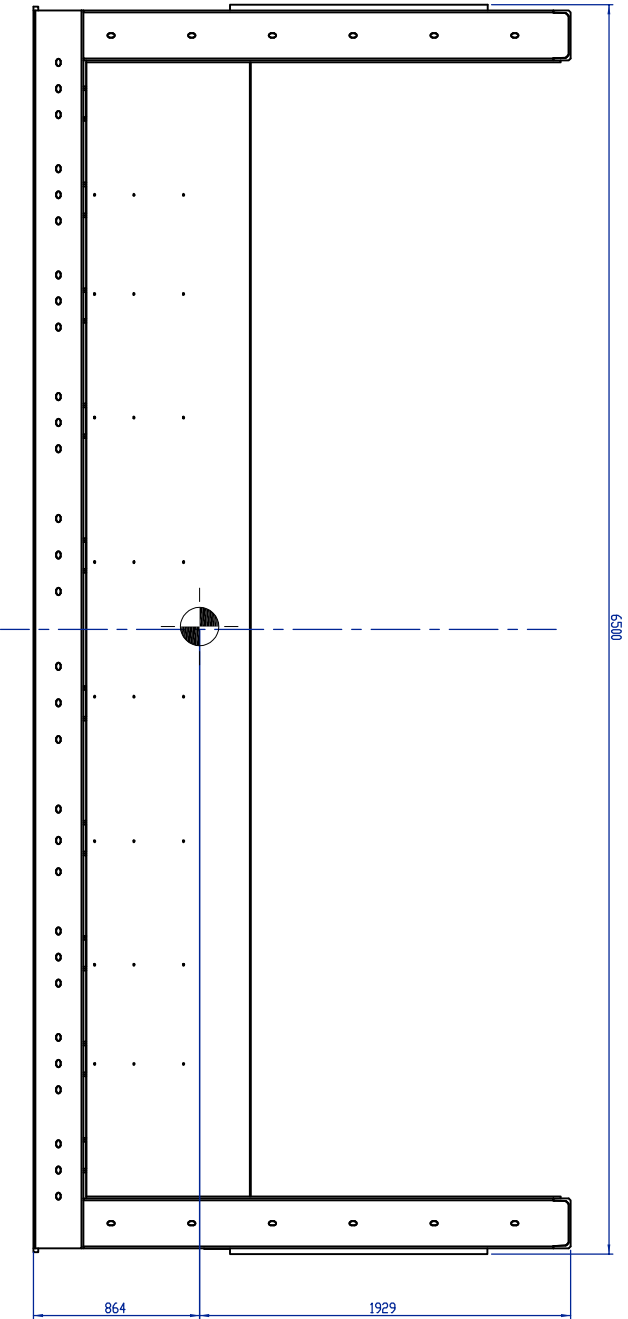
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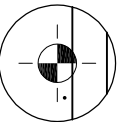
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This is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization												
Rev.		Modification										
A												
		Date										
		Name										
Tolerance for dimensions without tol. according to ISO 2768-mK												
More than		0,5	3	5	30	120	400	1000	2000	Drawn	Date	Name
Less		3	6	30	120	400	1000	2000	4000	Decided	10/09/2025	BJ
Machine tool		+	+	+	+	+	+	+	+	Weight (kg)		
Validated		tol	tol	tol	tol	tol	tol	tol	tol	11325,22		
Customer		ISO	1	15	2	3	5	10	15	Time		
ALINVEST												
A1												
Scale												
1:20												
Project												
Part Number												
2558-3311-THD-HC-H01-H0101-01												
Customer Number												
Holder 35 ton #1 - MVEB-35												
HOUSING CHAMBER												
HOUSING PART #1 of 5												
Revision												
A												
Sheet												
1/1												



Furnaces & Refractories

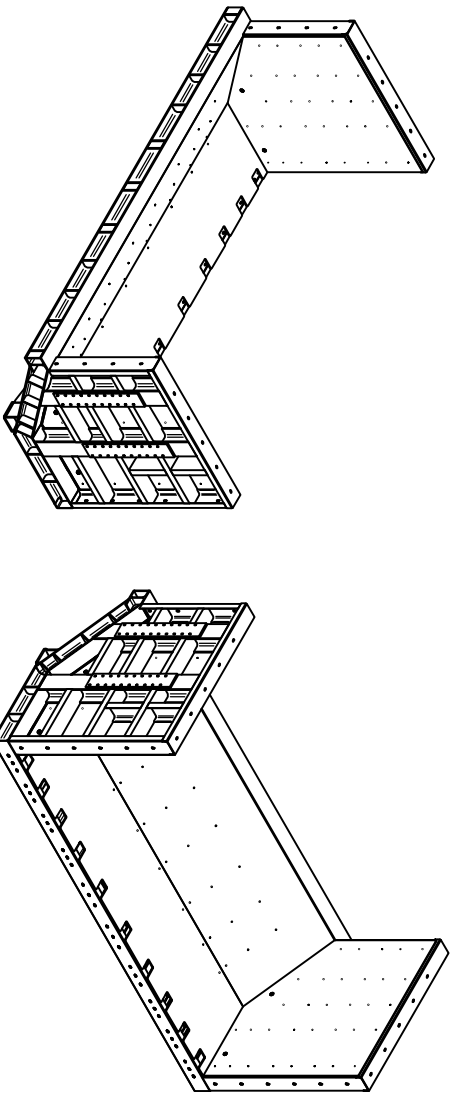




DETAIL Z  
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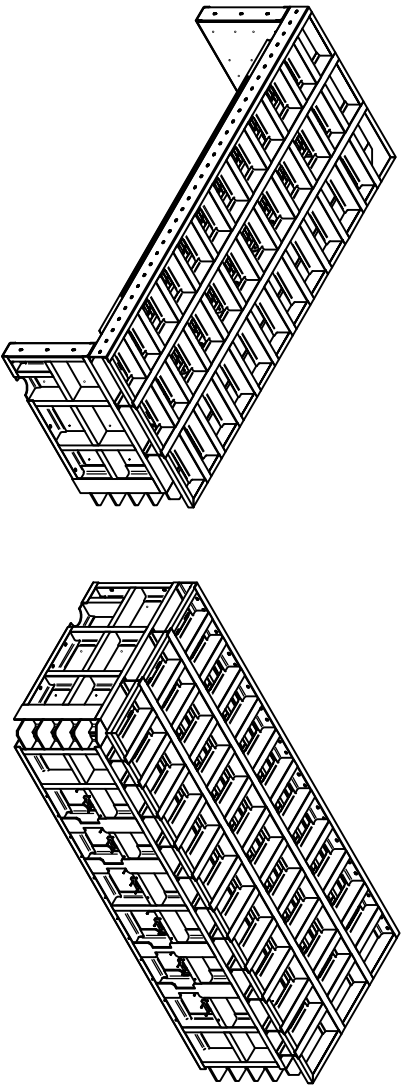
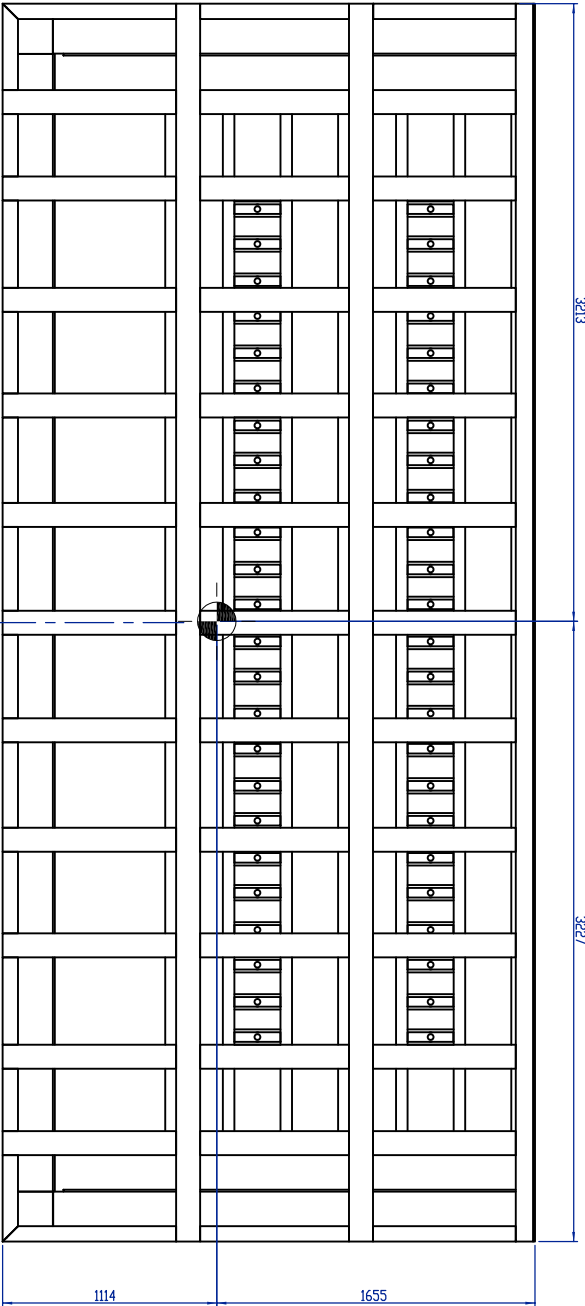
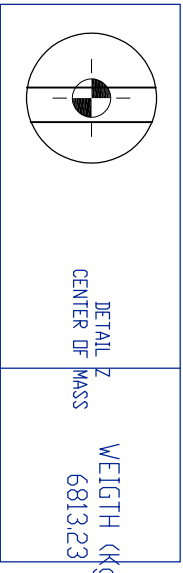
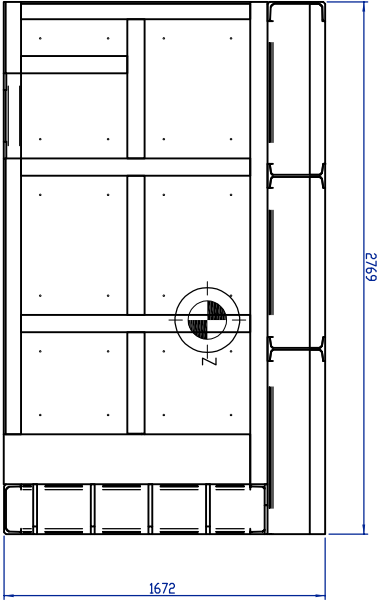
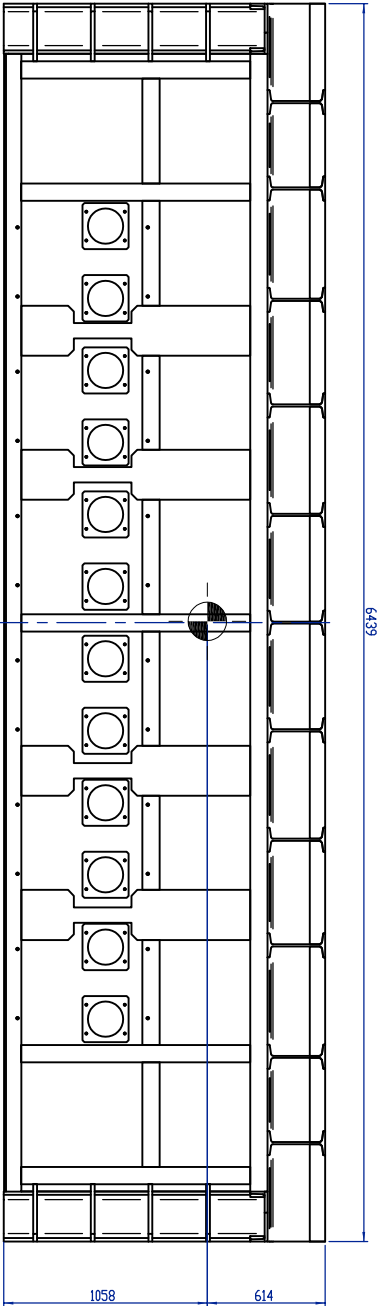
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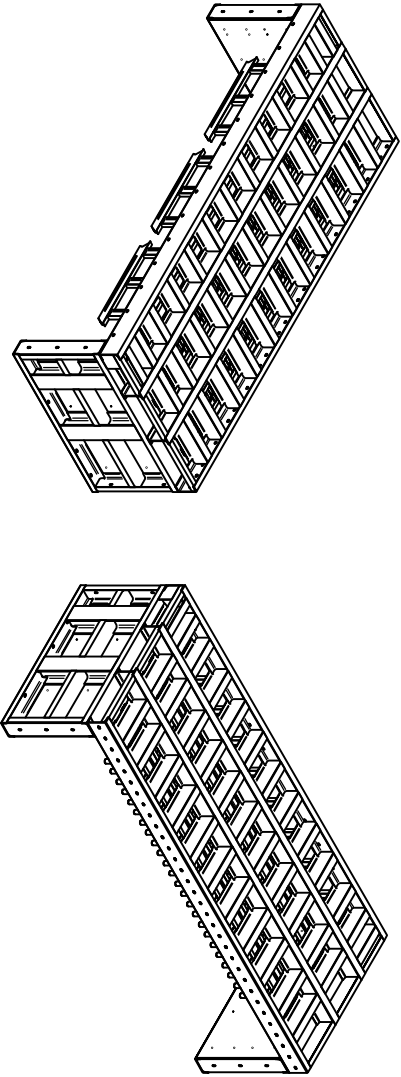
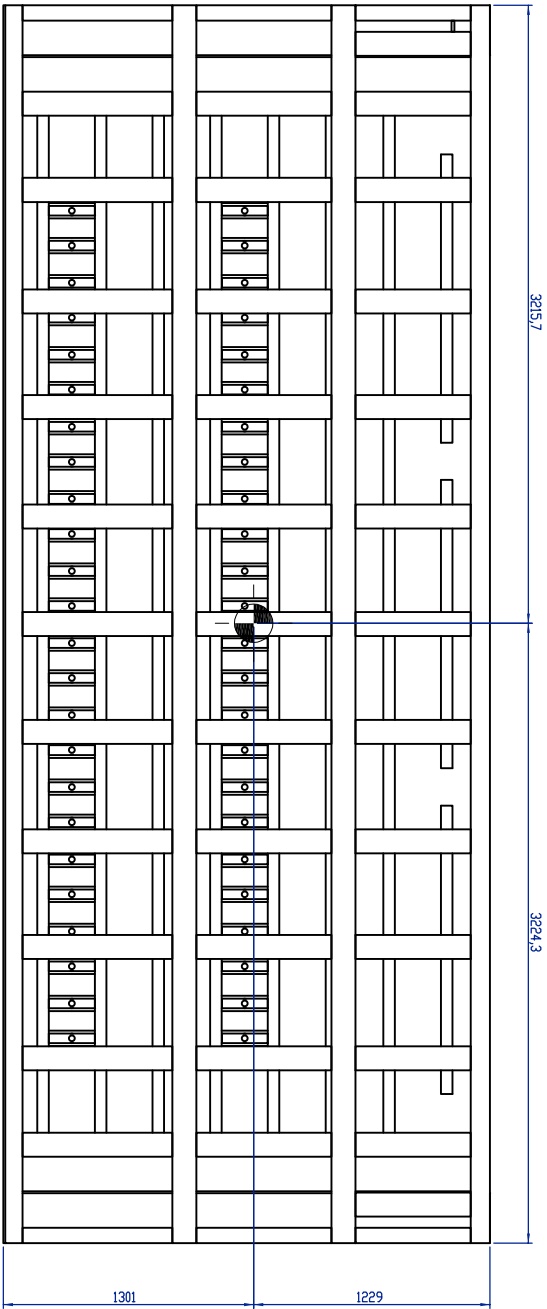
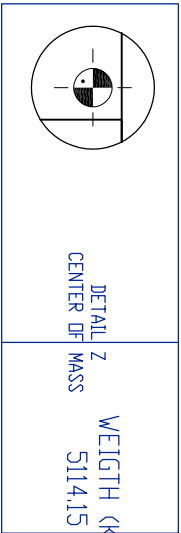
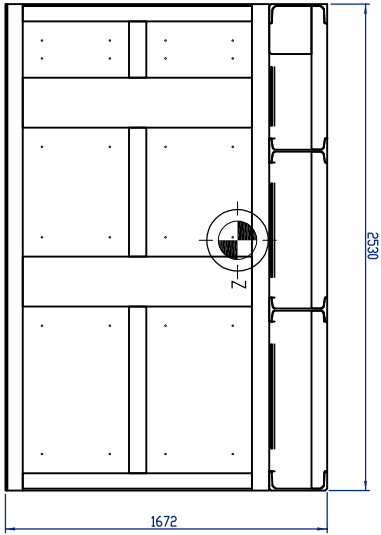
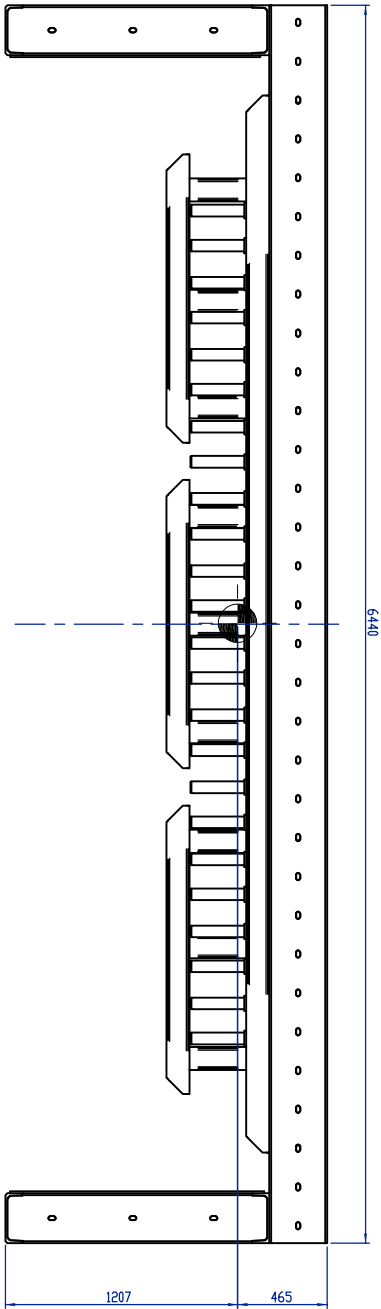
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1600	40	400	1600
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2500	63	630	2500
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25000000	630000	6300000	25000000
31500000	800000	8000000	31500000
40000000	1000000	10000000	40000000
50000000	1250000	12500000	50000000
63000000	1600000	16000000	63000000
80000000	2000000	20000000	80000000
100000000	2500000	25000000	100000000
125000000	3150000	31500000	125000000
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200000000	5000000	50000000	200000000
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125000000000	3150000000	31500000000	125000000000
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250000000000	6300000000	63000000000	250000000000
315000000000	8000000000	80000000000	315000000000
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500000000000	12500000000	125000000000	500000000000
630000000000	16000000000	160000000000	630000000000
800000000000	20000000000	200000000000	800000000000
1000000000000	25000000000	250000000000	1000000000000
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2500000000000	63000000000	630000000000	2500000000000
3150000000000	80000000000	800000000000	3150000000000
4000000000000	100000000000	1000000000000	4000000000000
5000000000000	125000000000	1250000000000	5000000000000
6300000000000	160000000000	1600000000000	6300000000000
8000000000000	200000000000	2000000000000	8000000000000
10000000000000	250000000000	2500000000000	10000000000000
12500000000000	315000000000	3150000000000	12500000000000
16000000000000	400000000000	4000000000000	16000000000000
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25000000000000	630000000000	6300000000000	25000000000000
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80000000000000	2000000000000	20000000000000	80000000000000
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50000000000000000	1250000000000000	12500000000000000	50000000000000000
63000000000000000	1600000000000000	16000000000000000	63000000000000000
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16000000000000000000	400000000000000000	4000000000000000000	16000000000000000000
20000000000000000000	500000000000000000	5000000000000000000	20000000000000000000
25000000000000000000	630000000000000000	6300000000000000000	25000000000000000000
31500000000000000000	800000000000000000	8000000000000000000	31500000000000000000
40000000000000000000	100000000000		



This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization											
Rev.		Modification						Date	Name		
Tolerance for dimensions without tol. according to ISO 2768-mK											
Drawn	1:5	3	5	30	120	400	1000	2000	Material	ST52JR	
Check	3	6	30	120	400	1000	2000	4000	Drawn	10/09/2025	
Machine Tool	1	1	1	1	1	1	1	1	Checked	10/09/2025	
Validated	10	1	1	1	1	1	1	1	Verified	10/09/2025	
Customer		10	1	1	1	1	1	1	Project		
ALINVEST		Scale		1:20		Part Number		2558-3311-1HD-HCH01-HQU01-03			
HOLDING CHAMBER		Holder 35 ton #1 - MYEB-35		HOLDING PART #3 of 5		Customer Number		2558-3311-1HD-HCH01-HQU01-03			
insertec		Furnaces & Refractories		Project		Material		Weight (kg)		Revision	





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Rev.	Modification										Date	Name	
This is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization													
Tolerance for dimensions without tol. according to ISO 2768-mK													
Dev.	tol.	3	5	30	120	400	1000	2000	Material	Date	Name		
Ass.	125	3	6	30	120	400	1000	2000	4000	Dev.	10/09/2025	BU	SE75.R
Machine	Tool	+	+	+	+	+	+	+	Decided	10/09/2025	AP	Weight (kg)	
Weighted	tol.	10	15	15	15	15	15	15	15	15	15	5114.15	
Customer	ISO	1	15	2	3	5	10	15	15	15	15	15	
ALINVEST													
Scale: 1:20													
Project: 2558-3311-1HD-HCH01-HOU01-04													
Part Number: 2558-3311-1HD-HCH01-HOU01-04													
Customer Number: 2558-3311-1HD-HCH01-HOU01-04													
Revision: A													
Sheet: 1/1													



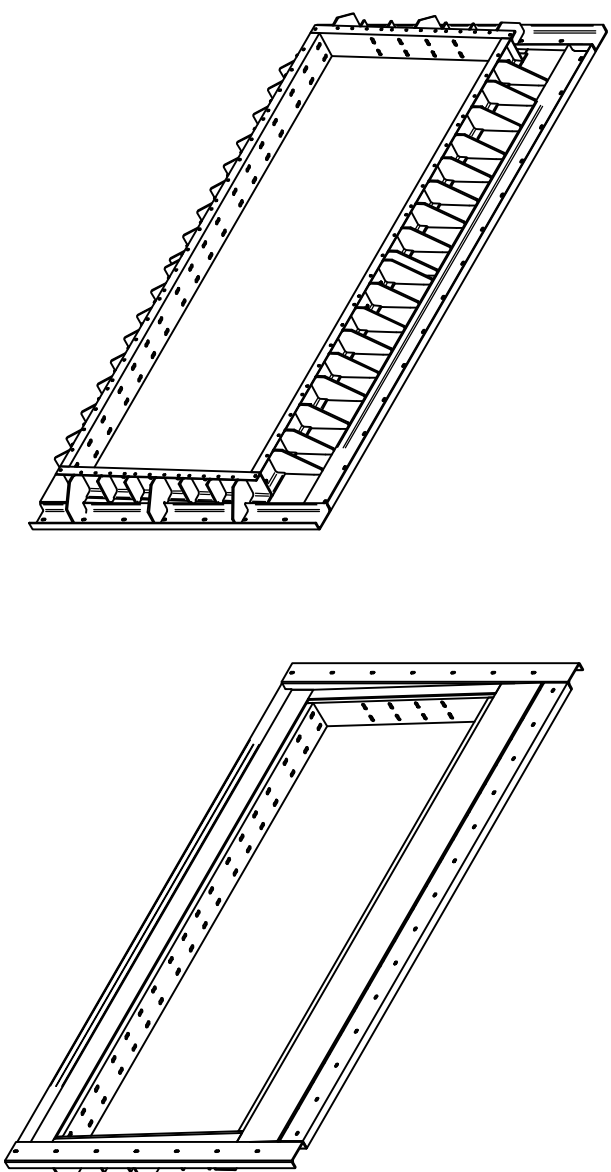
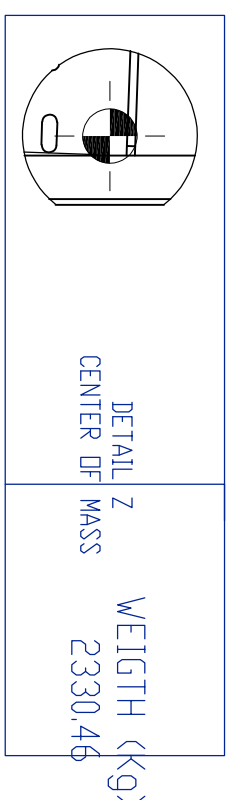
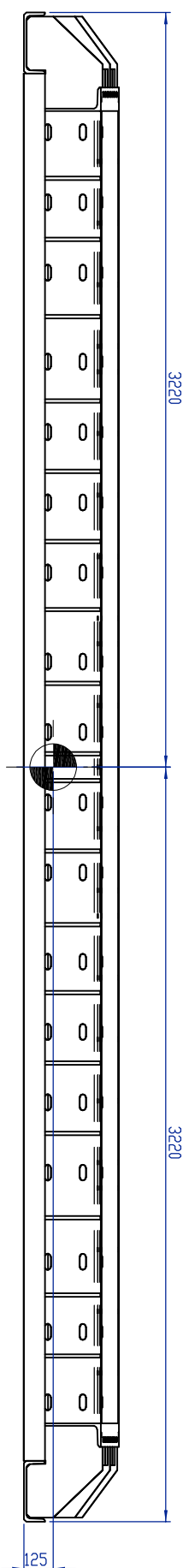
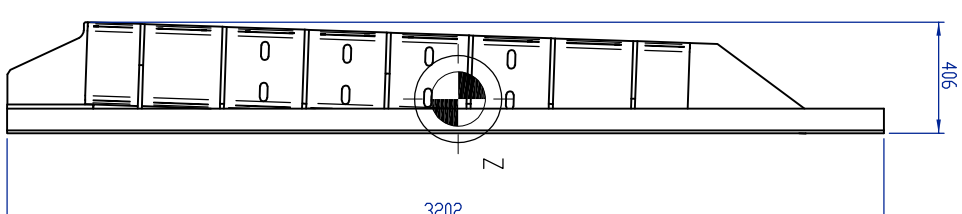
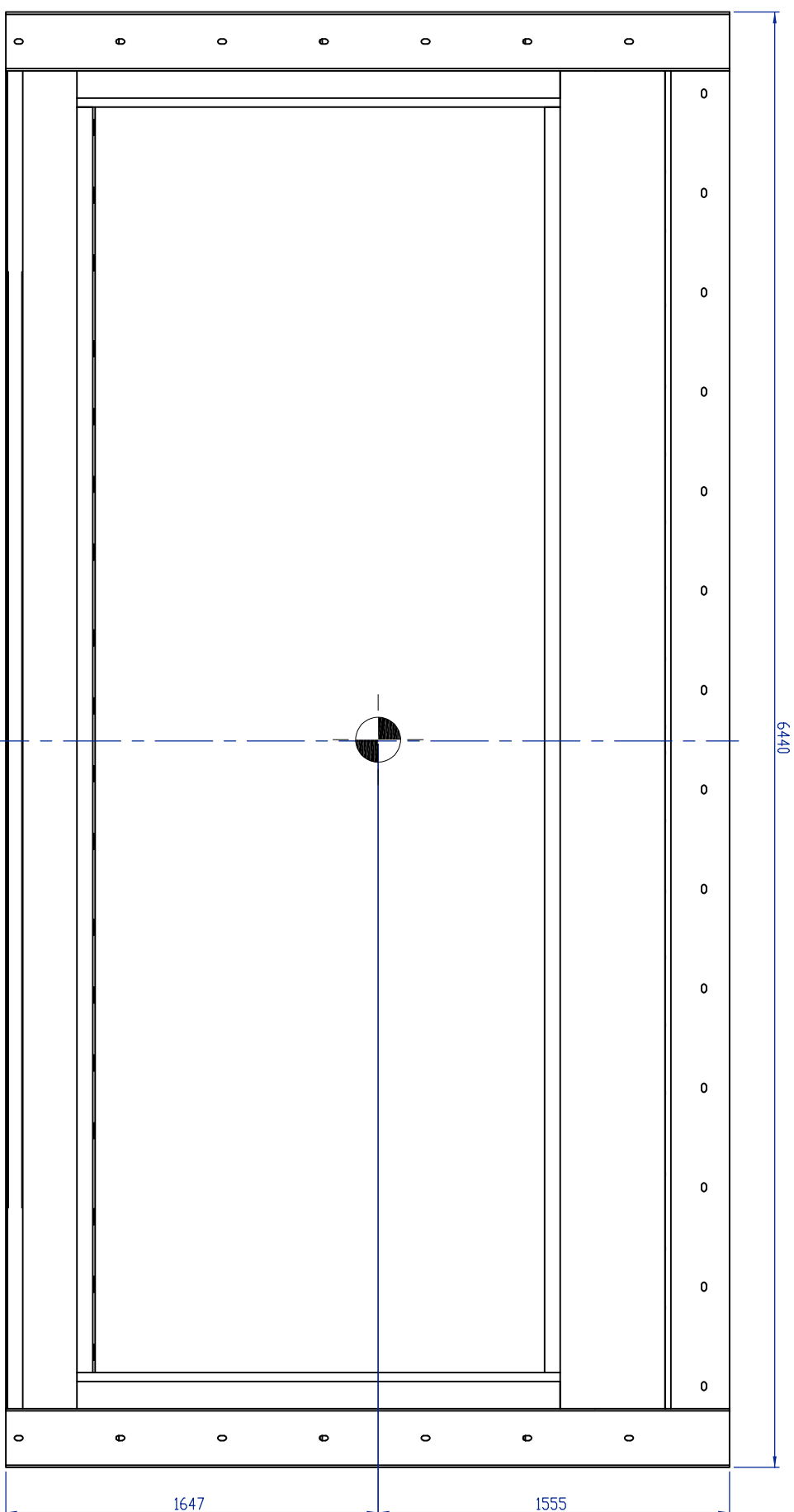
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Part Number: 2558-3311-1HD-HCH01-HOU01-04

Customer Number: 2558-3311-1HD-HCH01-HOU01-04

Revision: A

Sheet: 1/1

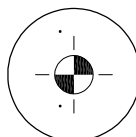
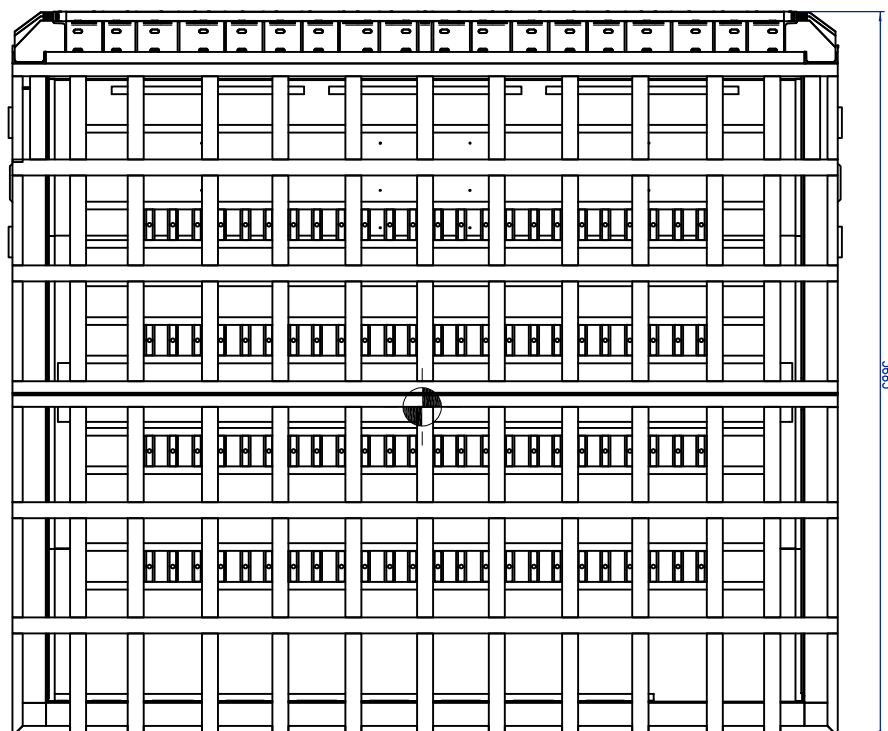
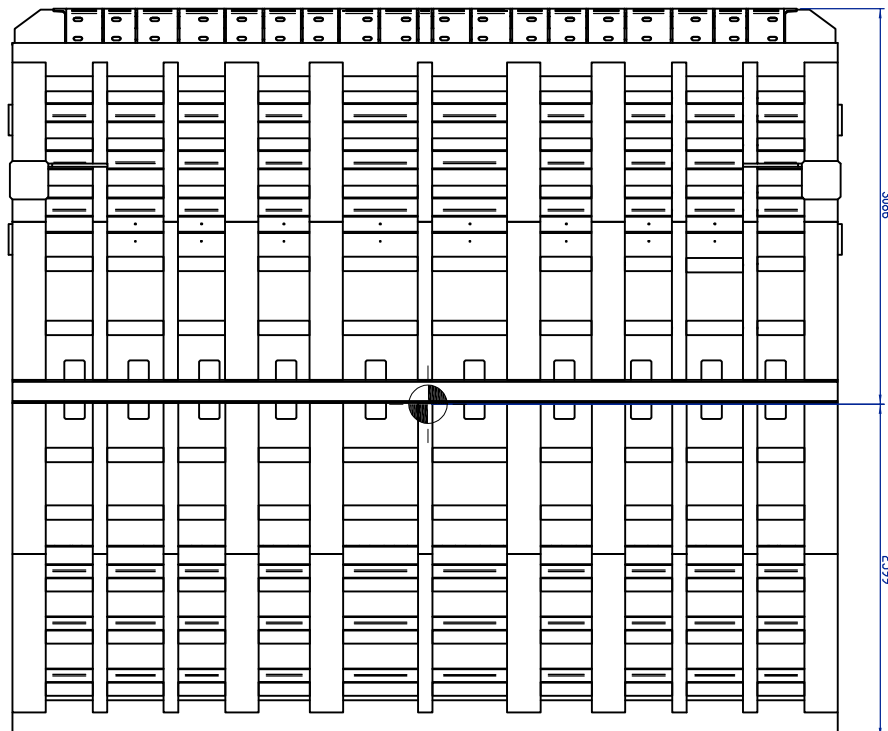
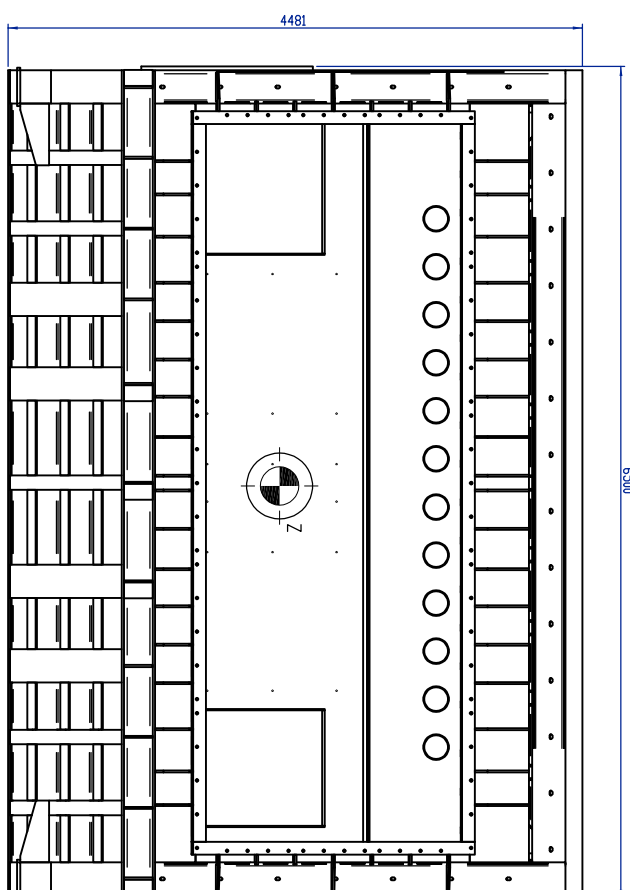
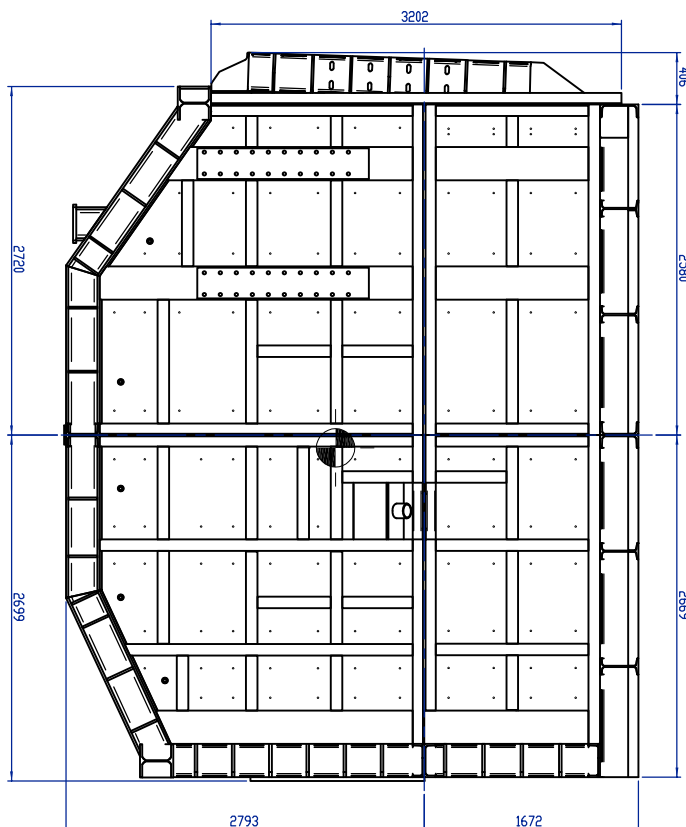
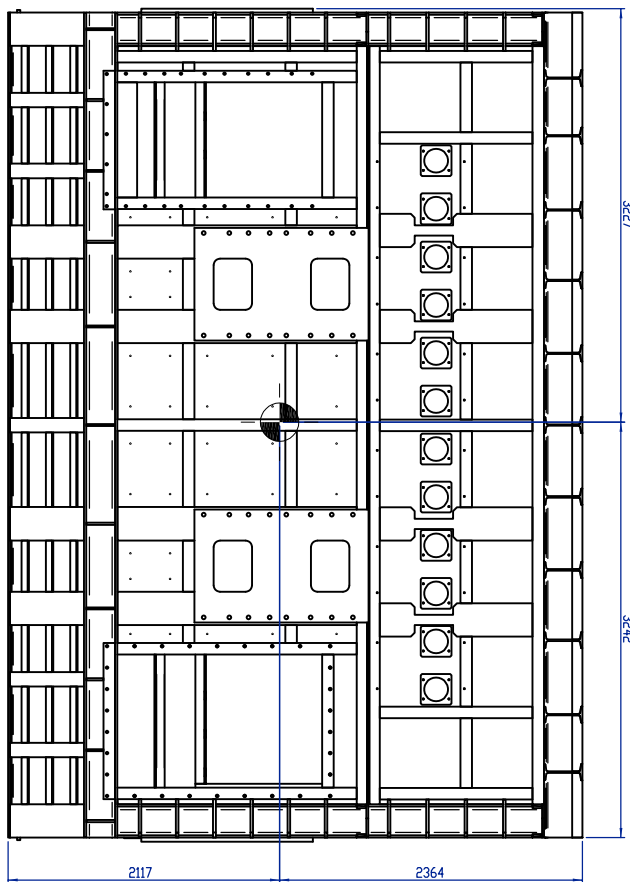


Rev.	Modification										Date	None
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization												
Tolerance for dimensions without tol according to ISO 2768-mK												
More than	0.5	3	6	30	120	400	1000	2000	Drawn	11/09/2025	None	Material
Less	3	6	30	120	400	1000	2000	4000				S275JR
Machine Tool	±	±	±	±	±	±	±	±	Checked	11/09/2025	ALP	Weight (kg)
Valided	0.1	0.1	0.2	0.3	0.5	0.8	1.2	2	Verified	11/09/2025	BU	2330.46
Customer:	015		1		15		2		3		Fact 6	
<div> <div>ALINVEST</div> <div> <div>A2</div> <div> <div>Holder 35 ton #1 - MVEB-35</div> <div>HOLDING CHAMBER</div> <div>HOUSING PART #5 of 5</div> </div> </div> </div>												
<div> <div> <div>Scale</div> <div>1:20</div> </div> <div> <div>Project</div> <div>Me:trode:</div> </div> </div>												
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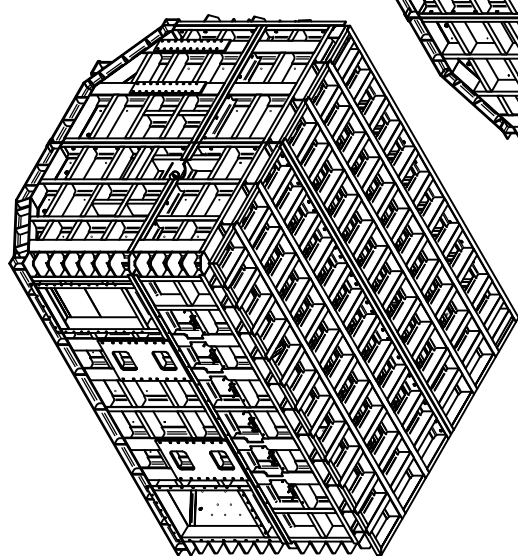
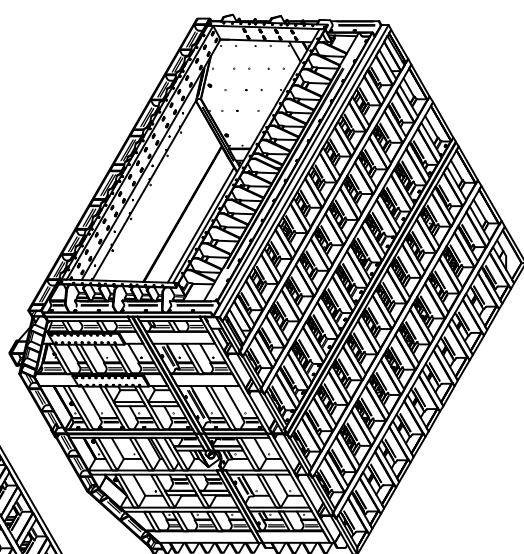
 <div> <b>insertec</b>  Furnaces &amp; Refractories </div>	<div> <b>METHOD STATEMENT AT SITE</b>  CONSTRUCTION &amp; COMMISSIONING  DEPARTMENT, INSERTEC </div>	<div> <b>ALINVEST</b>  Member of <b>MTX</b> GROUP </div>	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

### Annex 3 – Transport drawings / Sketches

HOLDER 25Tons



WEIGHT (Kg)  
35386.73






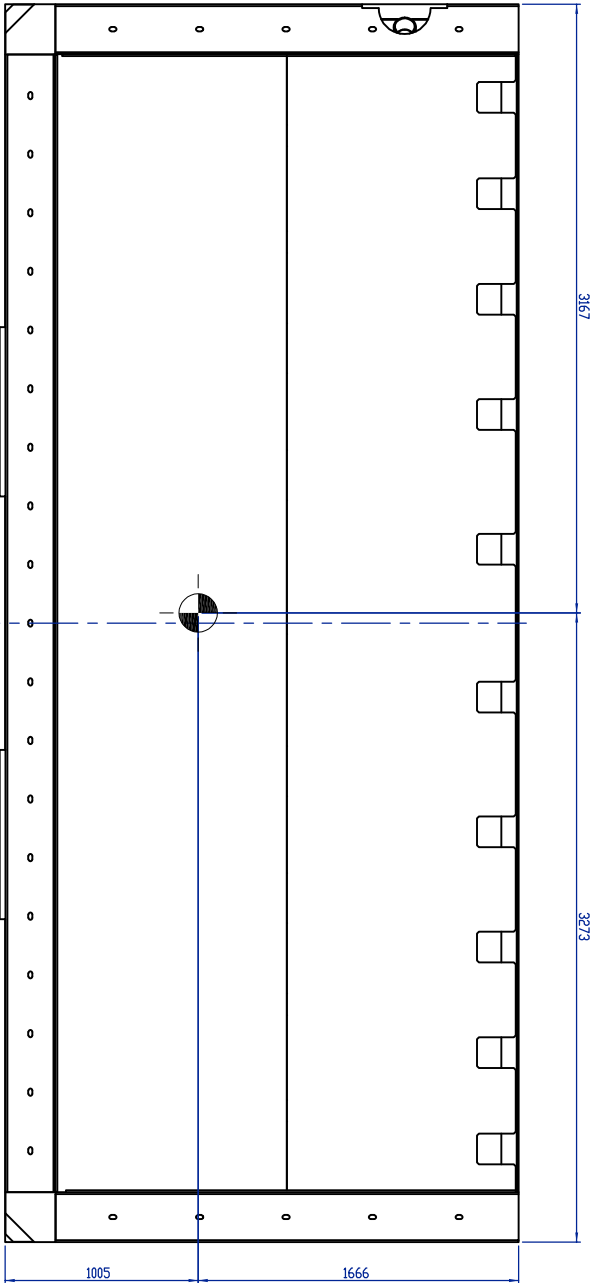
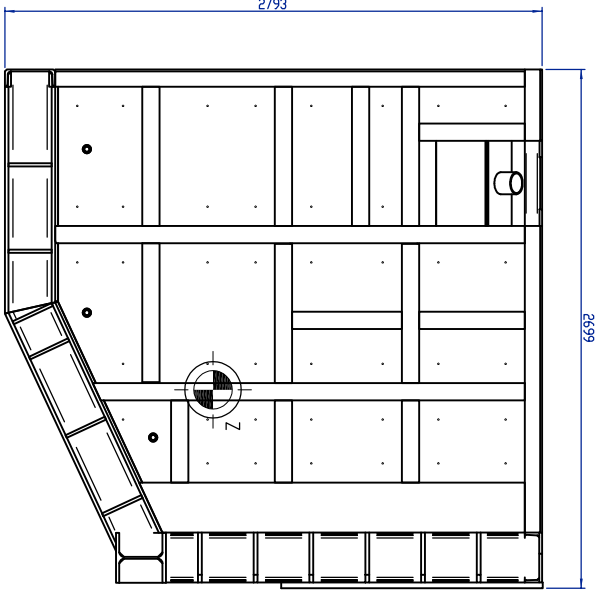
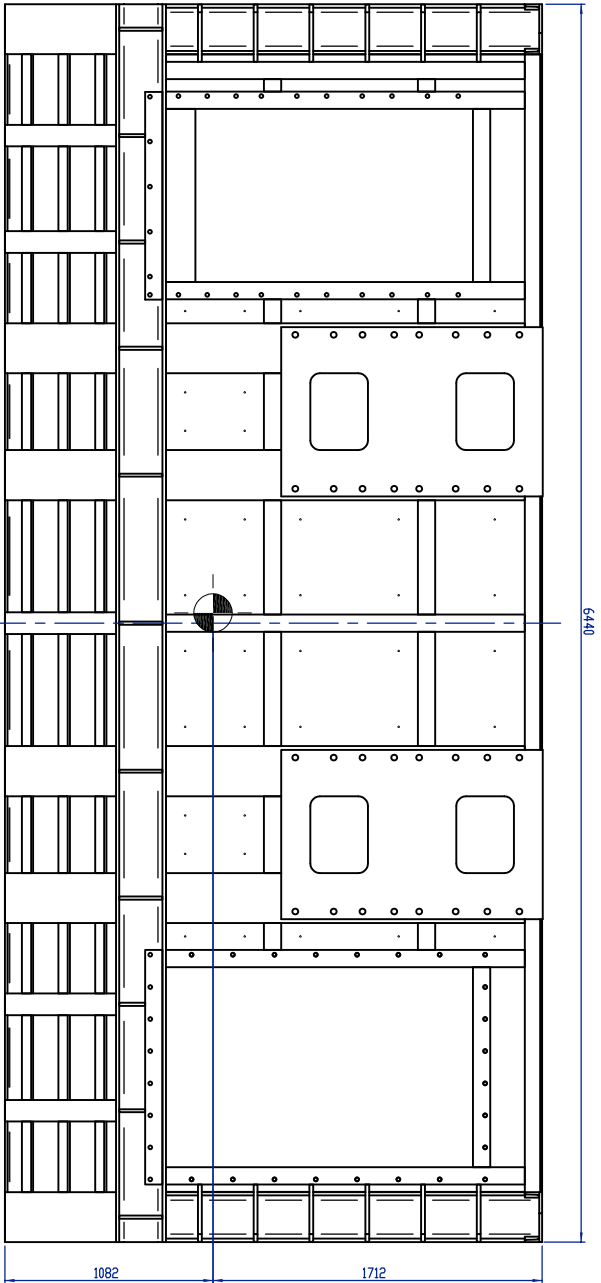
Rev.	Modification	Date	Name

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Distance for dimension without tool according to ISO 27656-6	Distance for dimension with tool according to ISO 27656-6	Drum	Weight	kg	35986.73		
0.5	3	6	30	120	400	1000	2000
1	6	30	120	400	1000	2000	4000
2	30	120	400	1000	2000	4000	8000
3	60	240	800	2000	4000	8000	16000
4	90	360	1200	3000	6000	12000	24000
5	120	480	1600	4000	8000	16000	32000
6	150	600	2000	5000	10000	20000	40000
7	180	720	2400	6000	12000	24000	48000
8	210	840	2800	7000	14000	28000	56000
9	240	960	3200	8000	16000	32000	64000
10	270	1080	3600	9000	18000	36000	72000
11	300	1200	4000	10000	20000	40000	80000
12	330	1320	4400	11000	22000	44000	88000
13	360	1440	4800	12000	24000	48000	96000
14	390	1560	5200	13000	26000	52000	104000
15	420	1680	5600	14000	28000	56000	112000
16	450	1800	6000	15000	30000	60000	120000
17	480	1920	6400	16000	32000	64000	128000
18	510	2040	6800	17000	34000	68000	136000
19	540	2160	7200	18000	36000	72000	144000
20	570	2280	7600	19000	38000	76000	152000
21	600	2400	8000	20000	40000	80000	160000
22	630	2520	8400	21000	42000	84000	168000
23	660	2640	8800	22000	44000	88000	176000
24	690	2760	9200	23000	46000	92000	184000
25	720	2880	9600	24000	48000	96000	192000
26	750	3000	10000	25000	50000	100000	200000
27	780	3120	10400	26000	52000	104000	208000
28	810	3240	10800	27000	54000	108000	216000
29	840	3360	11200	28000	56000	112000	224000
30	870	3480	11600	29000	58000	116000	232000
31	900	3600	12000	30000	60000	120000	240000
32	930	3720	12400	31000	62000	124000	248000
33	960	3840	12800	32000	64000	128000	256000
34	990	3960	13200	33000	66000	132000	264000
35	1020	4080	13600	34000	68000	136000	272000
36	1050	4200	14000	35000	70000	140000	280000
37	1080	4320	14400	36000	72000	144000	288000
38	1110	4440	14800	37000	74000	148000	296000
39	1140	4560	15200	38000	76000	152000	304000
40	1170	4680	15600	39000	78000	156000	312000
41	1200	4800	16000	40000	80000	160000	320000
42	1230	4920	16400	41000	82000	164000	328000
43	1260	5040	16800	42000	84000	168000	336000
44	1290	5160	17200	43000	86000	172000	344000
45	1320	5280	17600	44000	88000	176000	352000
46	1350	5400	18000	45000	90000	180000	360000
47	1380	5520	18400	46000	92000	184000	368000
48	1410	5640	18800	47000	94000	188000	376000
49	1440	5760	19200	48000	96000	192000	384000
50	1470	5880	19600	49000	98000	196000	392000
51	1500	6000	20000	50000	100000	200000	400000
52	1530	6120	20400	51000	102000	204000	408000
53	1560	6240	20800	52000	104000	208000	416000
54	1590	6360	21200	53000	106000	212000	424000
55	1620	6480	21600	54000	108000	216000	432000
56	1650	6600	22000	55000	110000	220000	440000
57	1680	6720	22400	56000	112000	224000	448000
58	1710	6840	22800	57000	114000	228000	456000
59	1740	6960	23200	58000	116000	232000	464000
60	1770	7080	23600	59000	118000	236000	472000
61	1800	7200	24000	60000	120000	240000	480000
62	1830	7320	24400	61000	122000	244000	488000
63	1860	7440	24800	62000	124000	248000	496000
64	1890	7560	25200	63000	126000	252000	504000
65	1920	7680	25600	64000	128000	256000	512000
66	1950	7800	26000	65000	130000	260000	520000
67	1980	7920	26400	66000	132000	264000	528000
68	2010	8040	26800	67000	134000	268000	536000
69	2040	8160	27200	68000	136000	272000	544000
70	2070	8280	27600	69000	138000	276000	552000
71	2100	8400	28000	70000	140000	280000	560000
72	2130	8520	28400	71000	142000	284000	568000
73	2160	8640	28800	72000	144000	288000	576000
74	2190	8760	29200	73000	146000	292000	584000
75	2220	8880	29600	74000	148000	296000	592000
76	2250	9000	30000	75000	150000	300000	600000
77	2280	9120	30400	76000	152000	304000	608000
78	2310	9240	30800	77000	154000	308000	616000
79	2340	9360	31200	78000	156000	312000	624000
80	2370	9480	31600	79000	158000	316000	632000
81	2400	9600	32000	80000	160000	320000	640000
82	2430	9720	32400	81000	162000	324000	648000
83	2460	9840	32800	82000	164000	328000	656000
84	2490	9960	33200	83000	166000	332000	664000
85	2520	10080	33600	84000	168000	336000	672000
86	2550	10200	34000	85000	170000	340000	680000
87	2580	10320	34400	86000	172000	344000	688000
88	2610	10440	34800	87000	174000	348000	696000
89	2640	10560	35200	88000	176000	352000	704000
90	2670	10680	35600	89000	178000	356000	712000
91	2700	10800	36000	90000	180000	360000	720000
92	2730	10920	36400	91000	182000	364000	728000
93	2760	11040	36800	92000	184000	368000	736000
94	2790	11160	37200	93000	186000	372000	744000
95	2820	11280	37600	94000	188000	376000	752000
96	2850	11400	38000	95000	190000	380000	760000
97	2880	11520	38400	96000	192000	384000	768000
98	2910	11640	38800	97000	194000	388000	776000
99	2940	11760	39200	98000	196000	392000	784000
100	2970	11880	39600	99000	198000	396000	792000

ALINVEST		HOLDING CHAMBER MAIN EQUIPMENT
AL	Scale	
1:30		

 <b>insertec</b> Furnaces & Refractories		Part Number 2556-3321-THD-HC-H01-HD001	Revision A
		Customer Number	Sheet 1/1



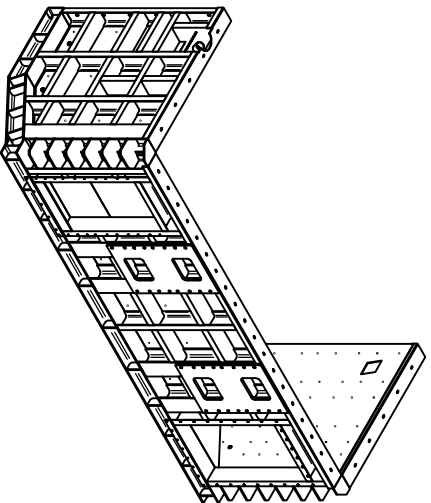
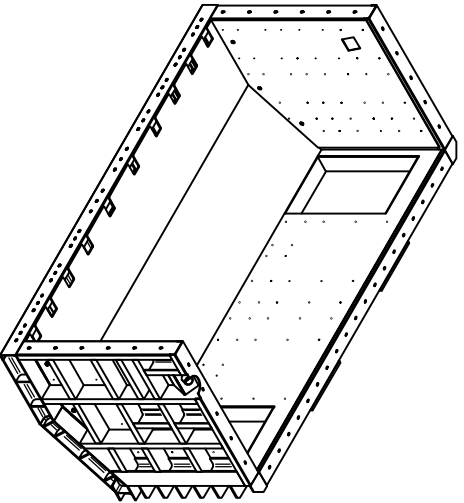


DETAIL Z

CENTER OF MASS

WEIGHT (kg)

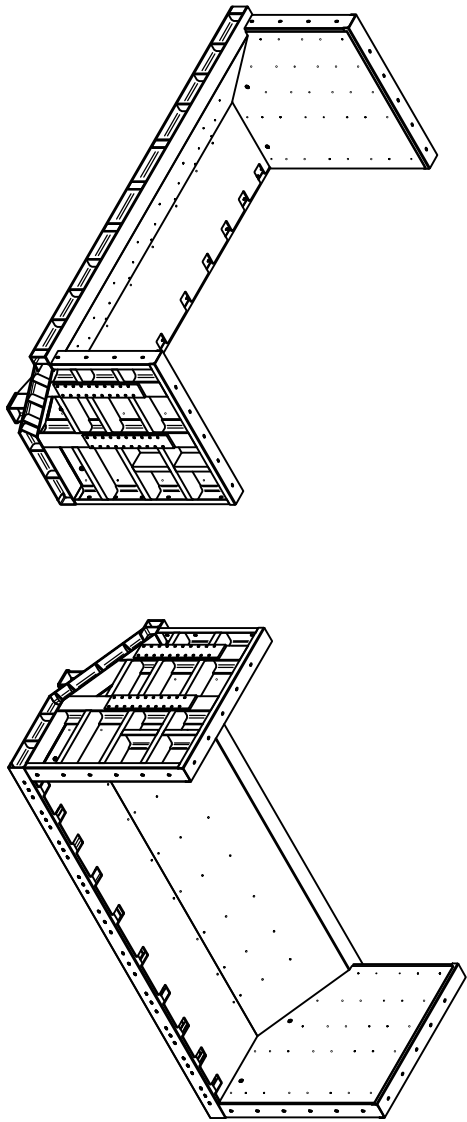
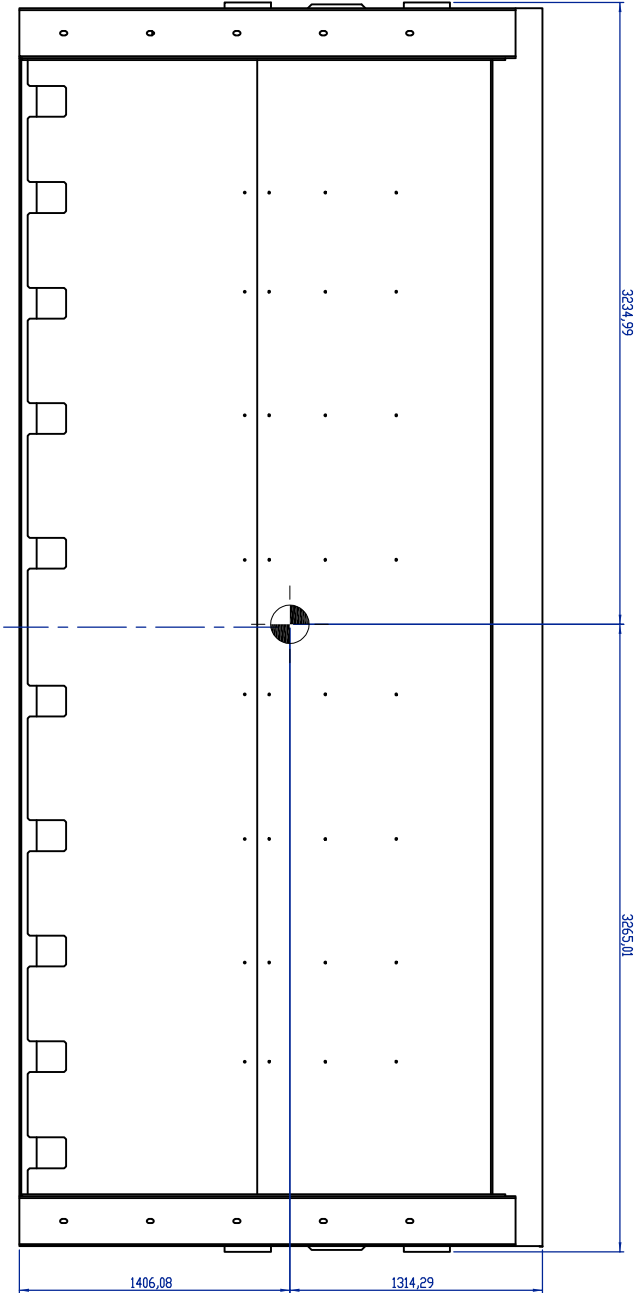
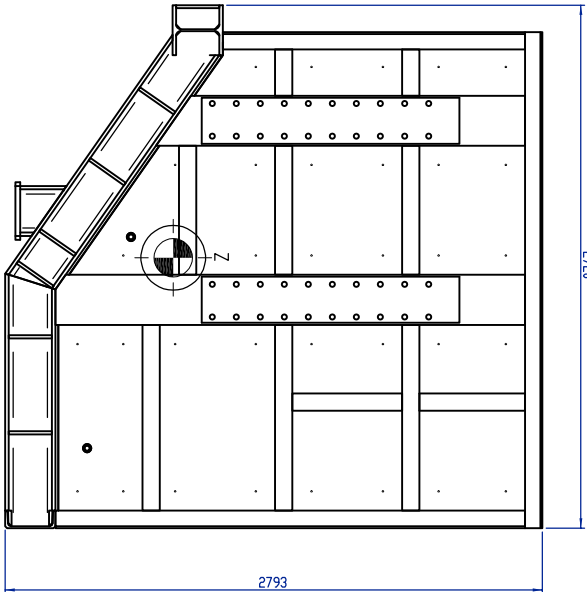
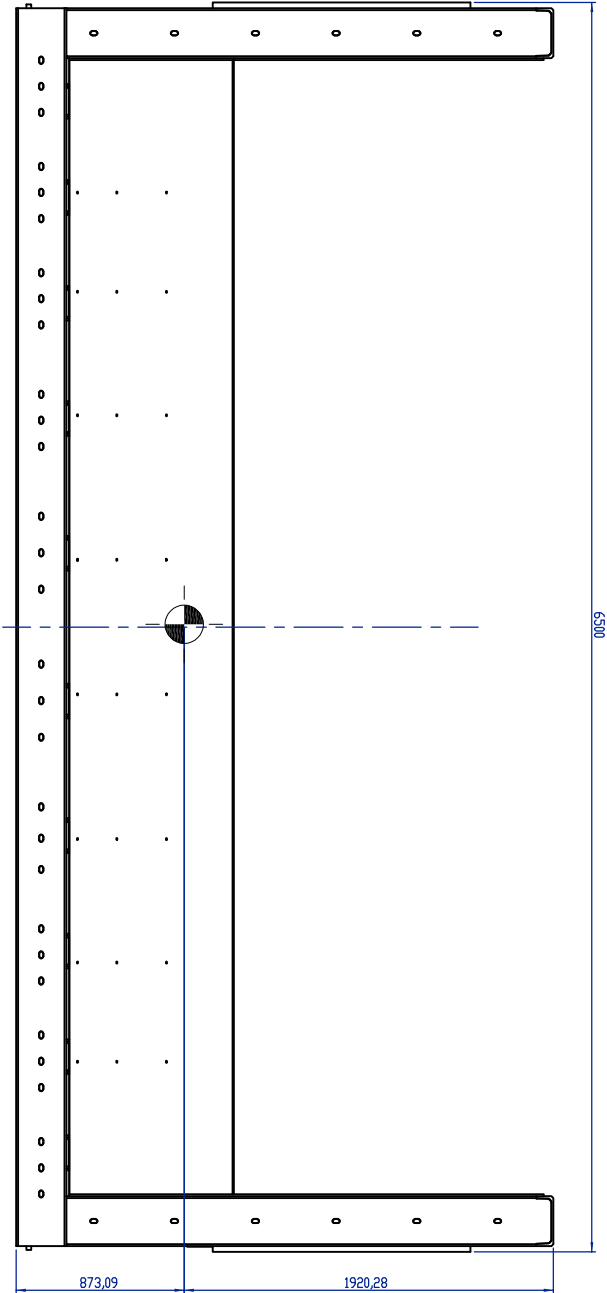
11117.84



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Rev.		Modification		Date	Name
1		Initial			
This is property of INSERTEC. Must not be copied or transferred to third parties in any way without authorized					
Tolerance for dimensions without ISO 2768-MK					
More than		0.5	3	5	30
Less than		3	6	30	120
Machine tool		1	1	1	1
Verified		1	1	1	1
Customer		1	1	1	1
ALINVEST					
Project		Scale			
Method		1:20			
Part Number		2558-3211-1HD-HC-H01-H01-01			
Customer Number					
Revision		A			
Sheet		1/1			
Title		Holder 25 Ton #1 - WEB-25			
Material		Al			
Weight (kg)		11117.84			
Housing Part #1 of 5					





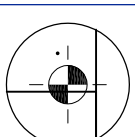
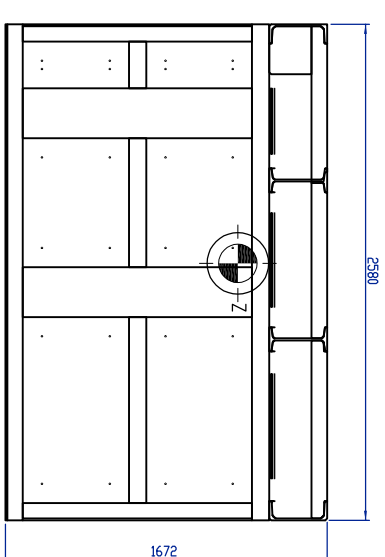
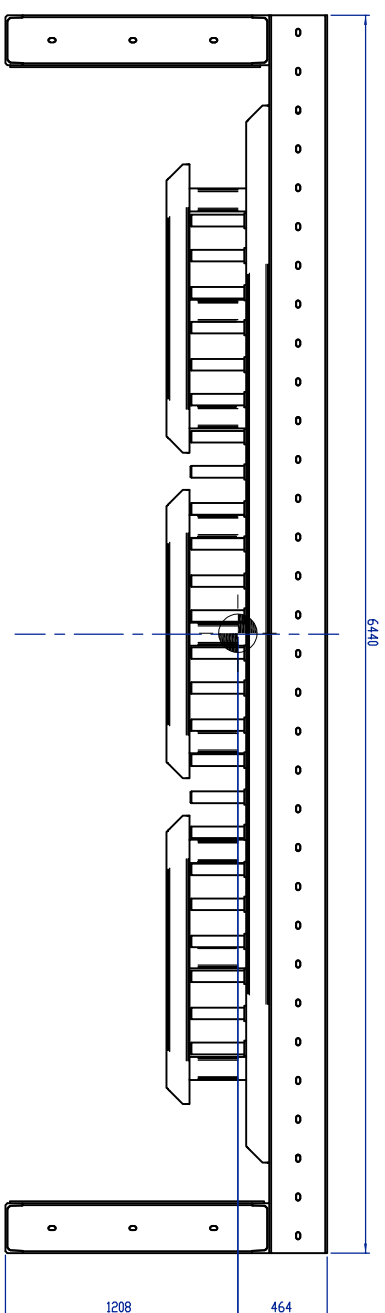
Rev.	Modification	Date	Name

This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.			
Tolerance for dimensions without tol. according to ISO 2768-mK			
Size	1:5	1:3	1:6
Scale	1:5	1:3	1:6
Machine Tool	1	1	1
Verified	1	1	1
Customer	1	1	1
ALINVEST			
Holder 25 Ton #1 - WEB-25			
HOLDING CHAMBER			
HOLDING PART #2 of 5			
Project	2558-3211-1HD-HCH01-HOU01-02	Part Number	2558-3211-1HD-HCH01-HOU01-02
Material	AL	Weight (kg)	8976.01
Revision	A	Sheet	1/1

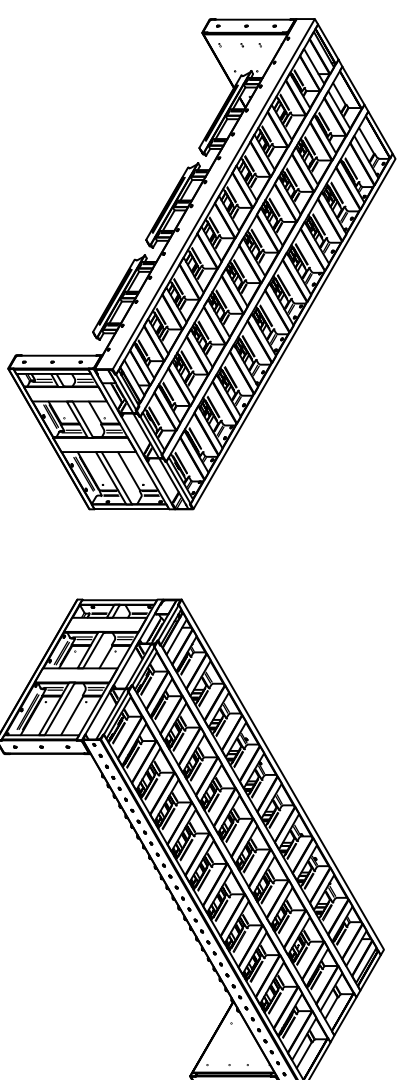
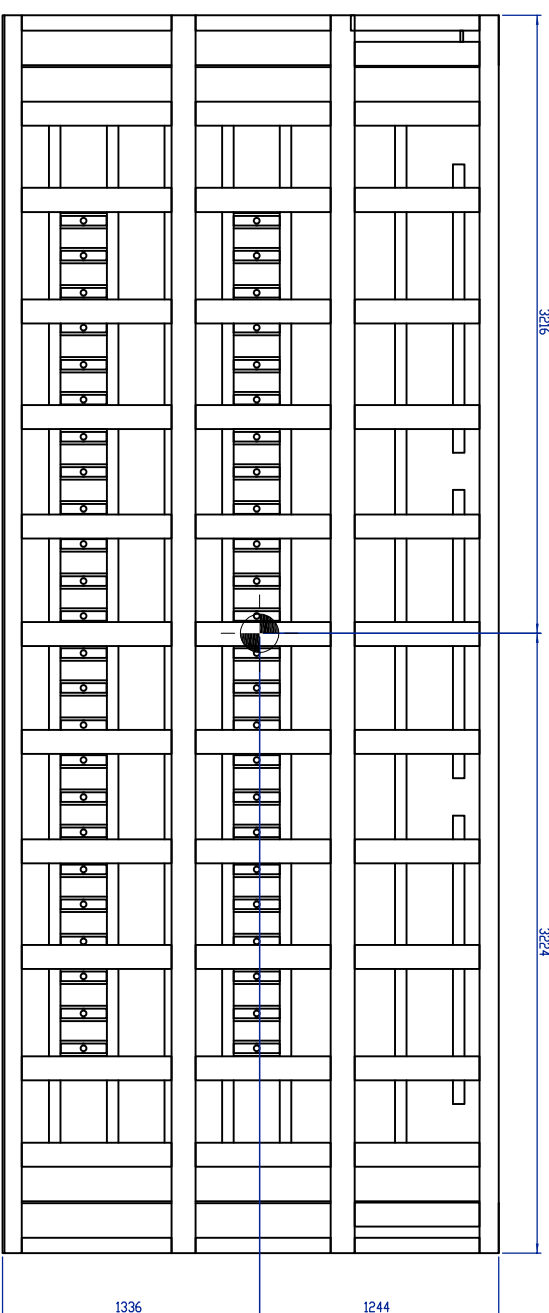








DETAIL Z	WEIGHT (kg)
CENTER OF MASS	5160.67



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Order no.	Material	Date	Price
1	275 JR	10/19/25	RU
2	Veget 1 cup	10/19/25	JP
3	564.67	10/19/25	JP
4	M/T/D 25	10/19/25	JP
5	M/T/D 25	10/19/25	JP

ALINVEST

HOUSING PART #4 of 5

HOUSING PART #4 of 5

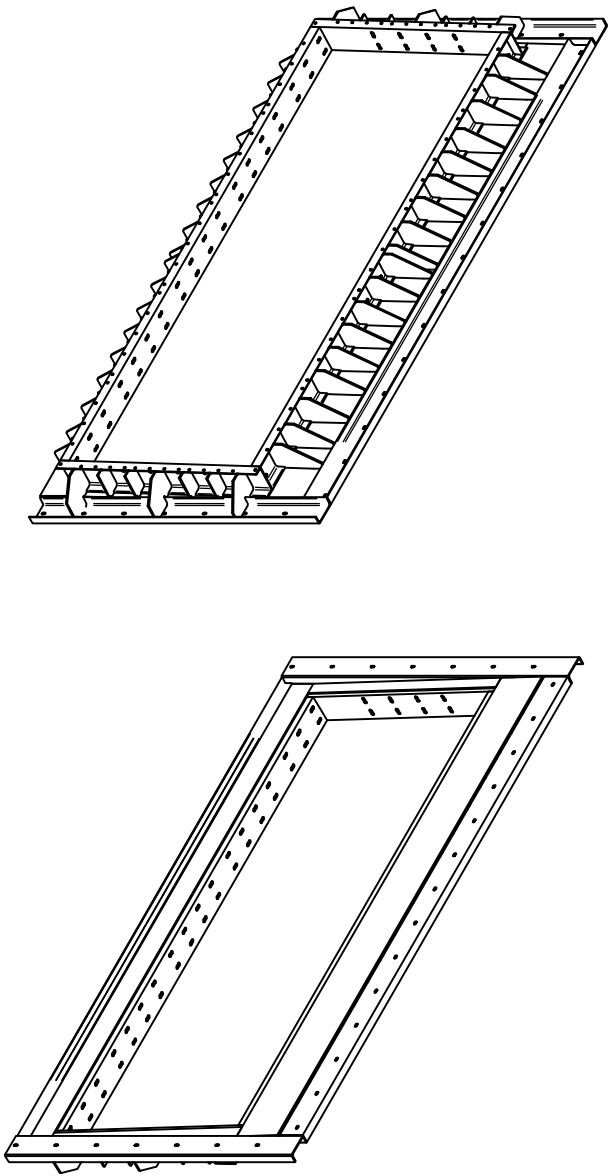
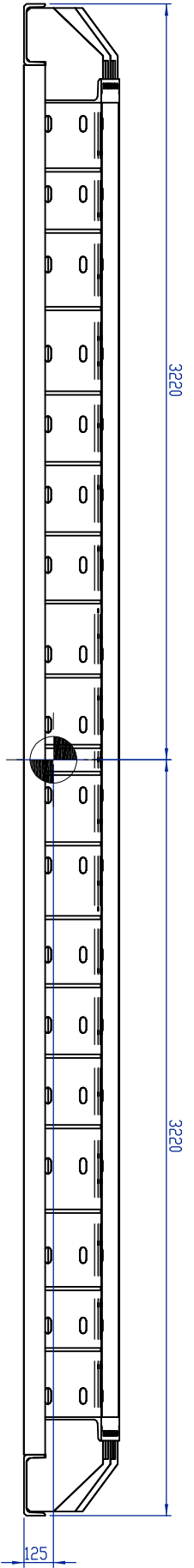
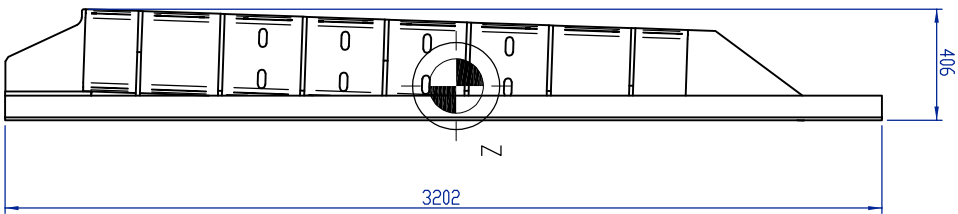
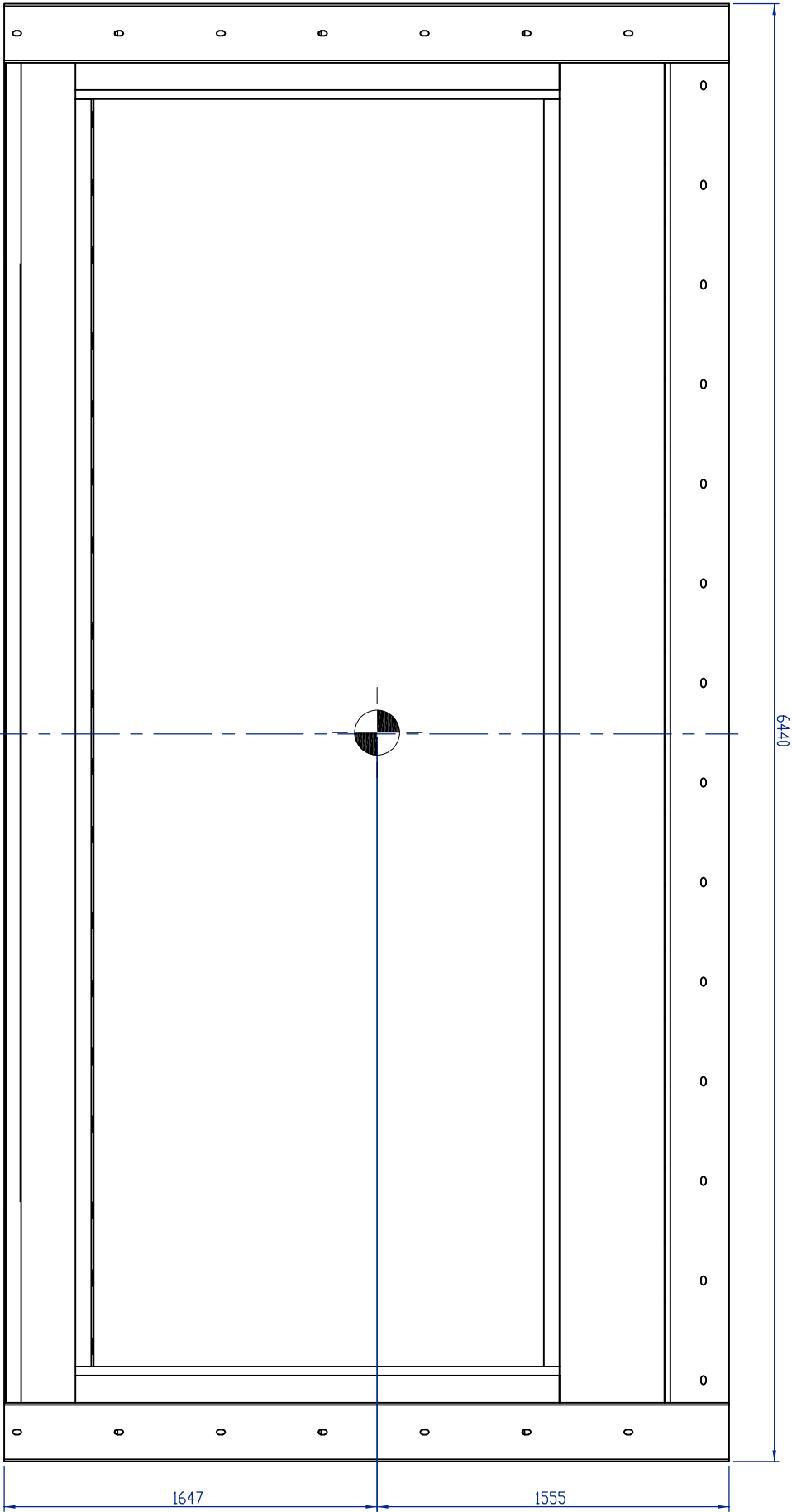
2558-321-THD-HCHO1-HDU01-04



**insertec**  
Furnaces & Refractories

A  
Sheet  
1/1





This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.

Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization										
Rev.		Modification							Date	Name
Tolerance for dimensions without tol. according to ISO 2768-MK										
More than	0.5	3	6	30	120	400	1000	2000		Date
Less	3	6	30	120	400	1000	2000	4000	Dr-awn	11/09/2005
Machine Tool	±	±	±	±	±	±	±	±	Checked	11/09/2005
Welded	0.1	0.1	0.2	0.3	0.5	1.0	1.5	2	Verified	11/09/2005
Material										Material
										SE75JR
										Weight (kg)
										2330.46

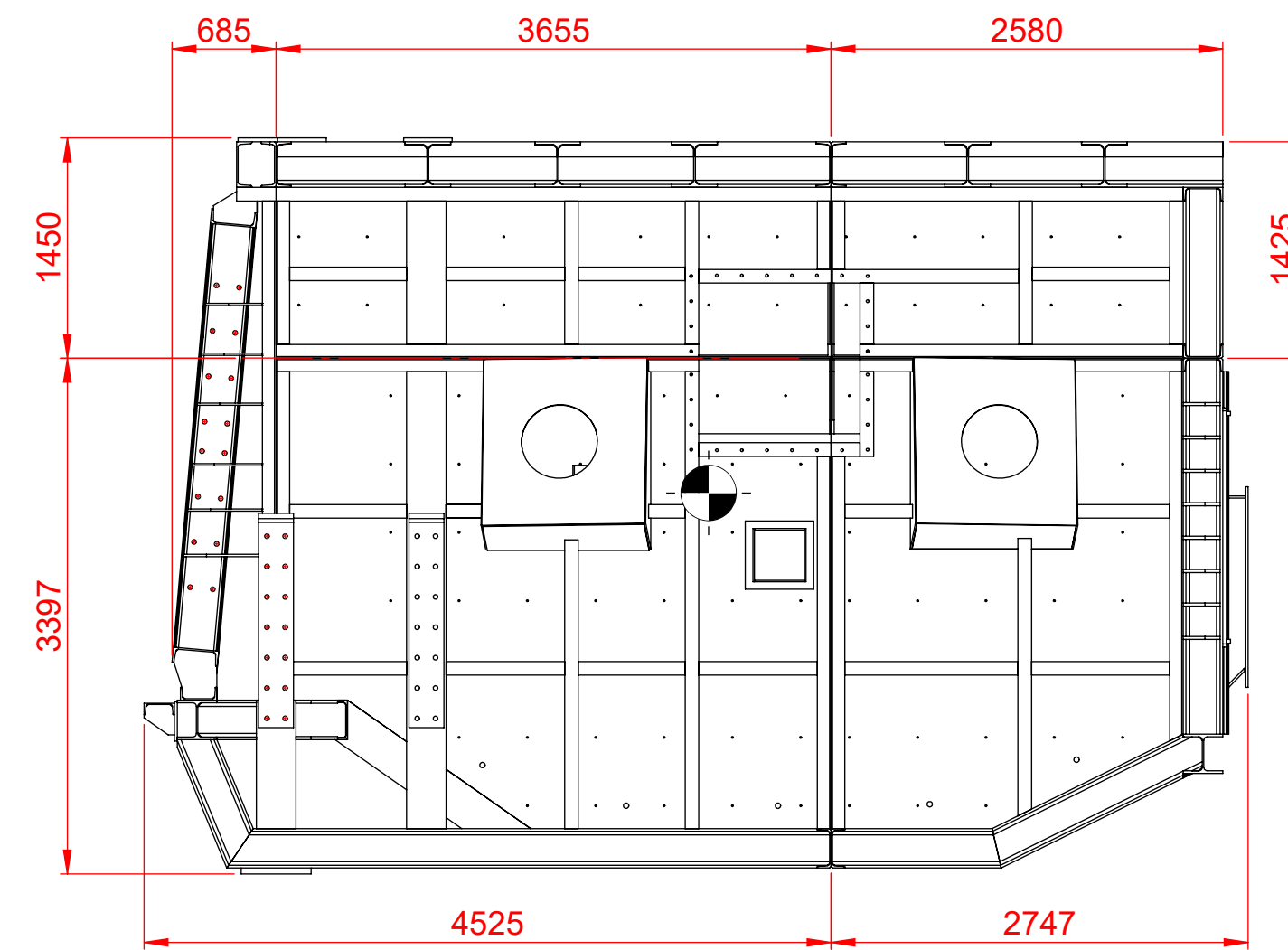
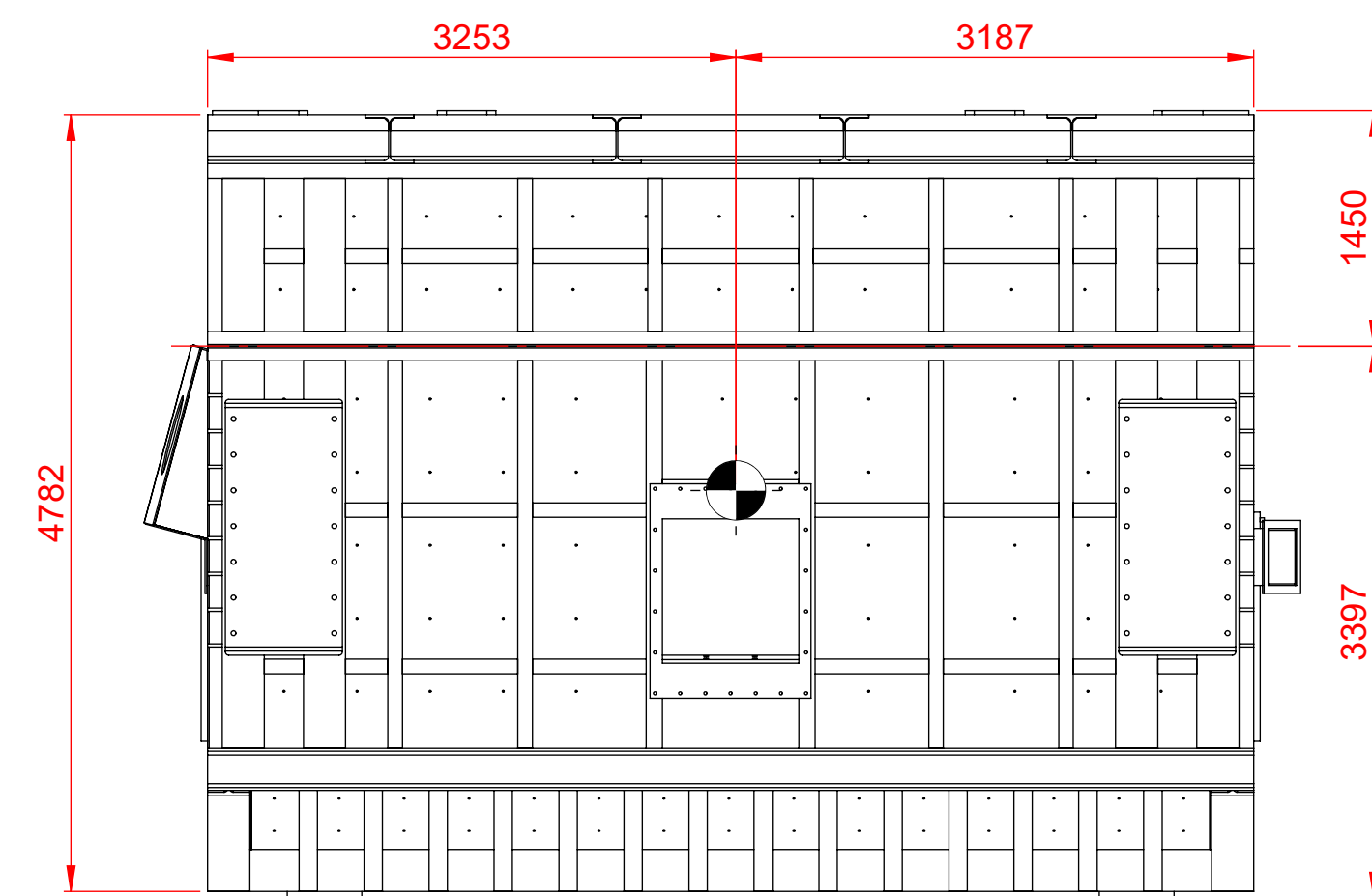
ALINVEST		Holder 25 ton #1 - M/EB-25	
Scale: 1:20		HOLDING CHAMBER	
Project: 2558-3321-THD-HCH01-HDU01-05		HOUSING PART #5 of 5	

insertec		Furnaces & Refractories	
Project: 2558-3321-THD-HCH01-HDU01-05		Revision: A	
Customer Number		Sheet 1/1	

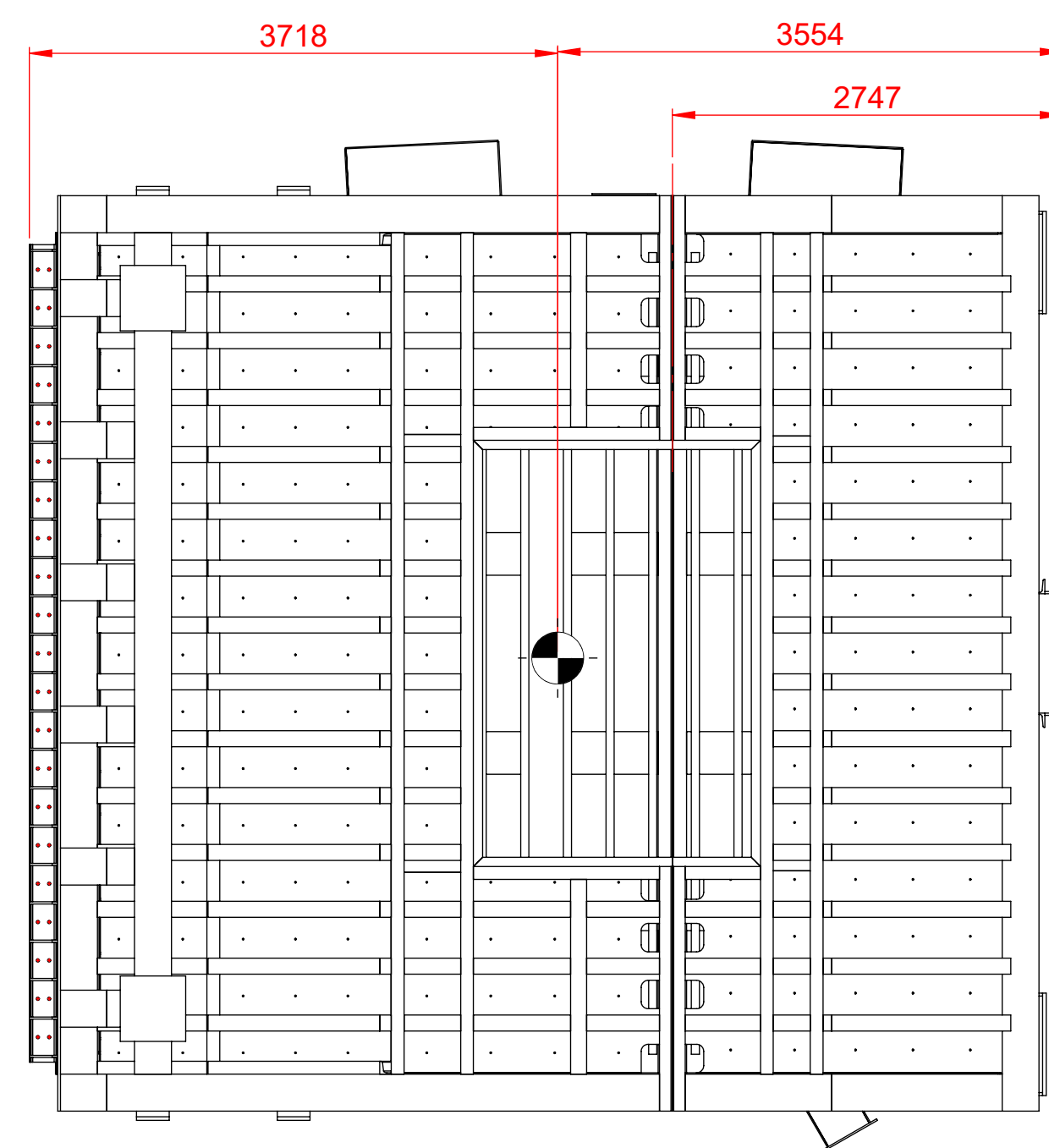
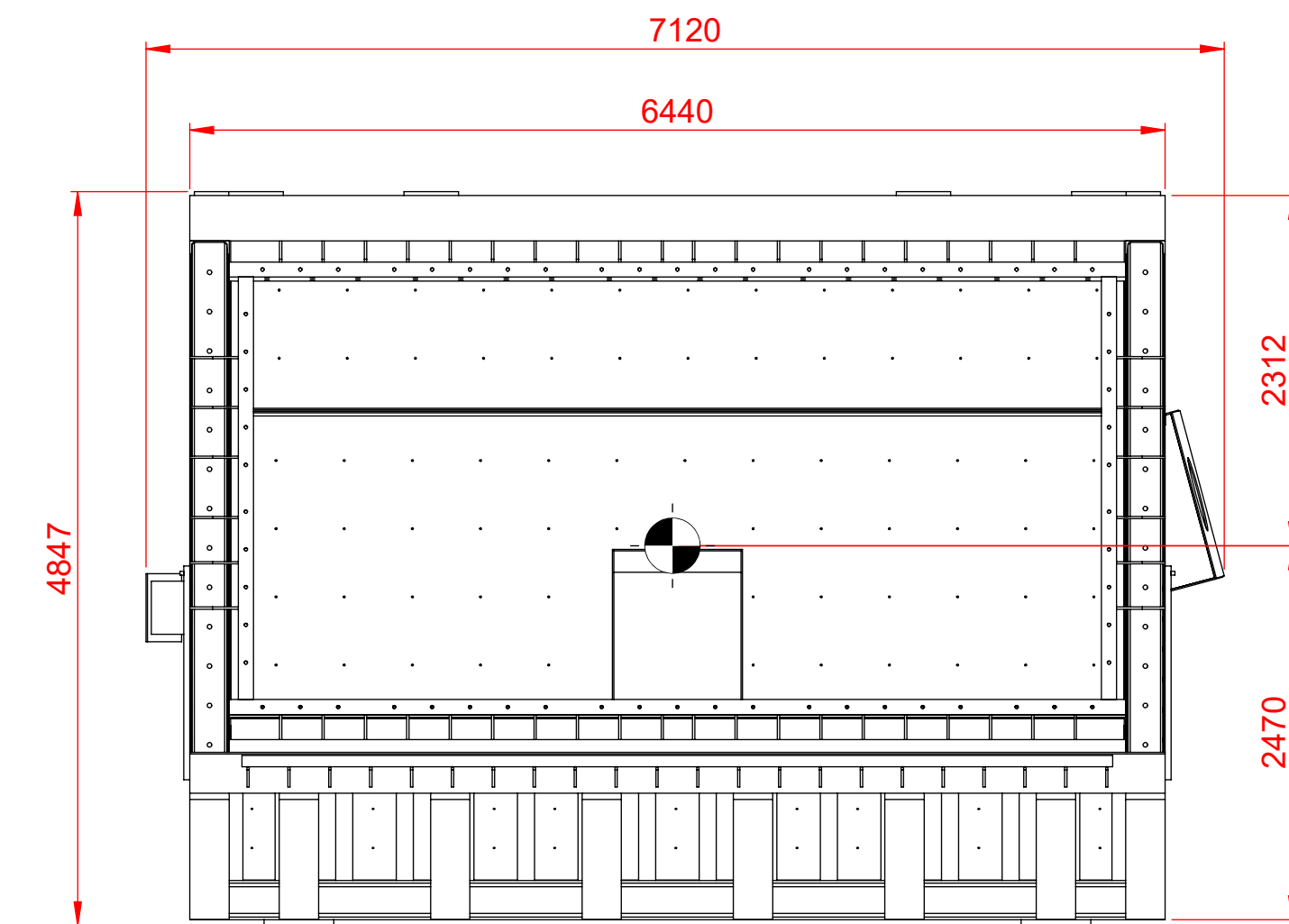
 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> CONSTRUCTION & COMMISSIONING DEPARTMENT, INSERTEC	<b>ALINVEST</b> Member of <b>MTX</b> GROUP
<b>E2558 Alinvest – Czech Republic</b>	<b>2558-IH-PUE-01</b>	<b>E2558</b>

**Annex 3 – Transport drawings / Sketches**

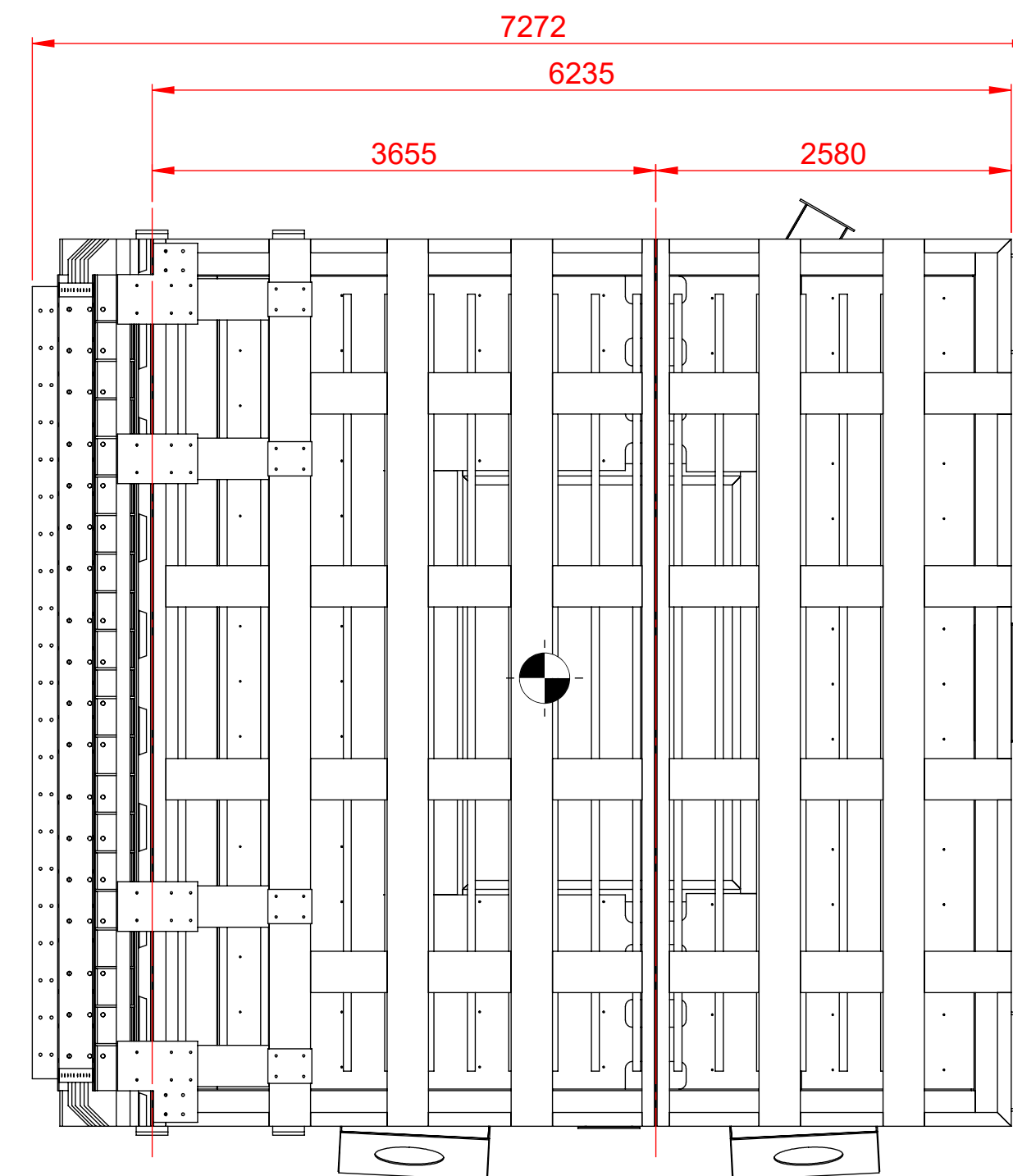
MELTER 35Tons



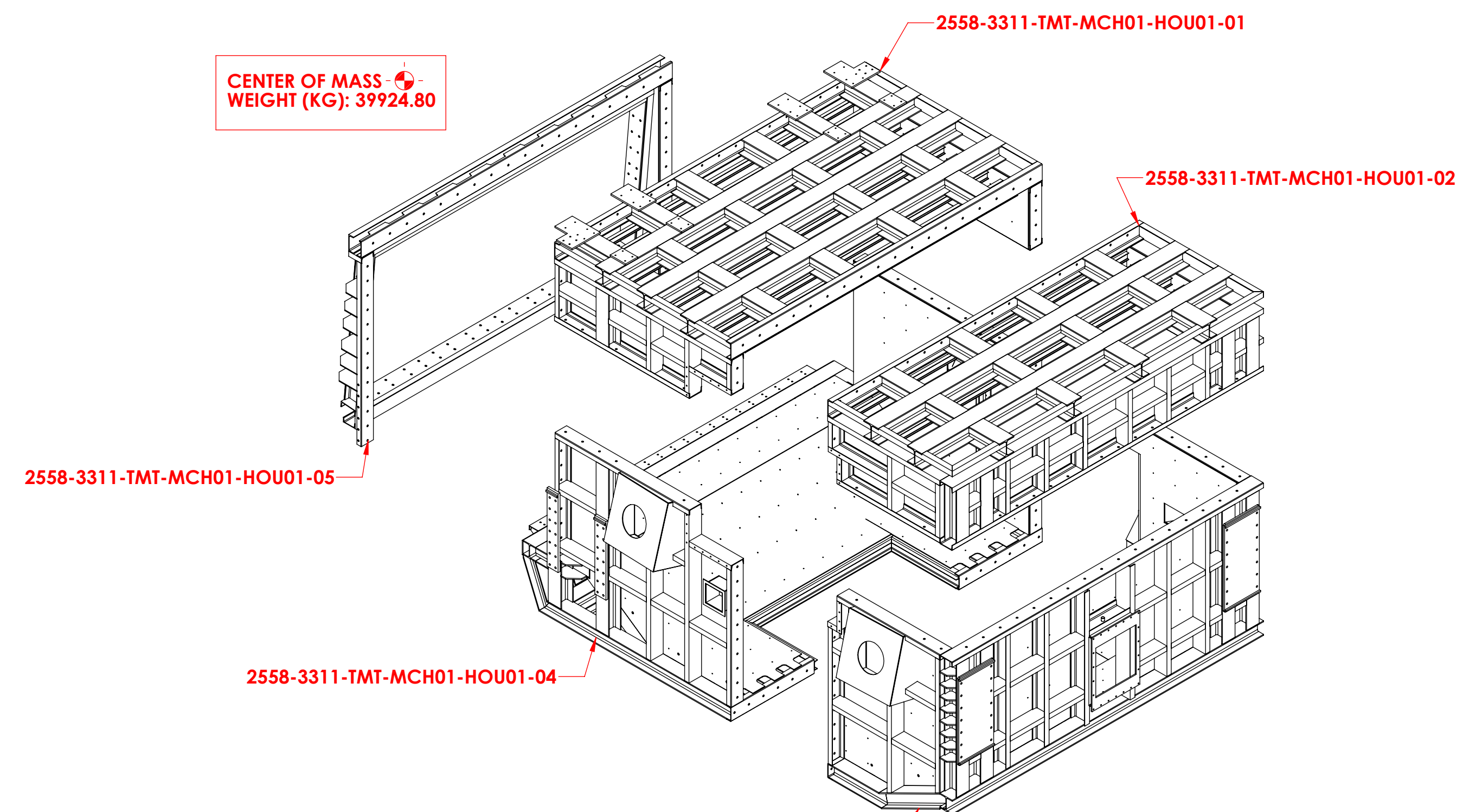
**A**



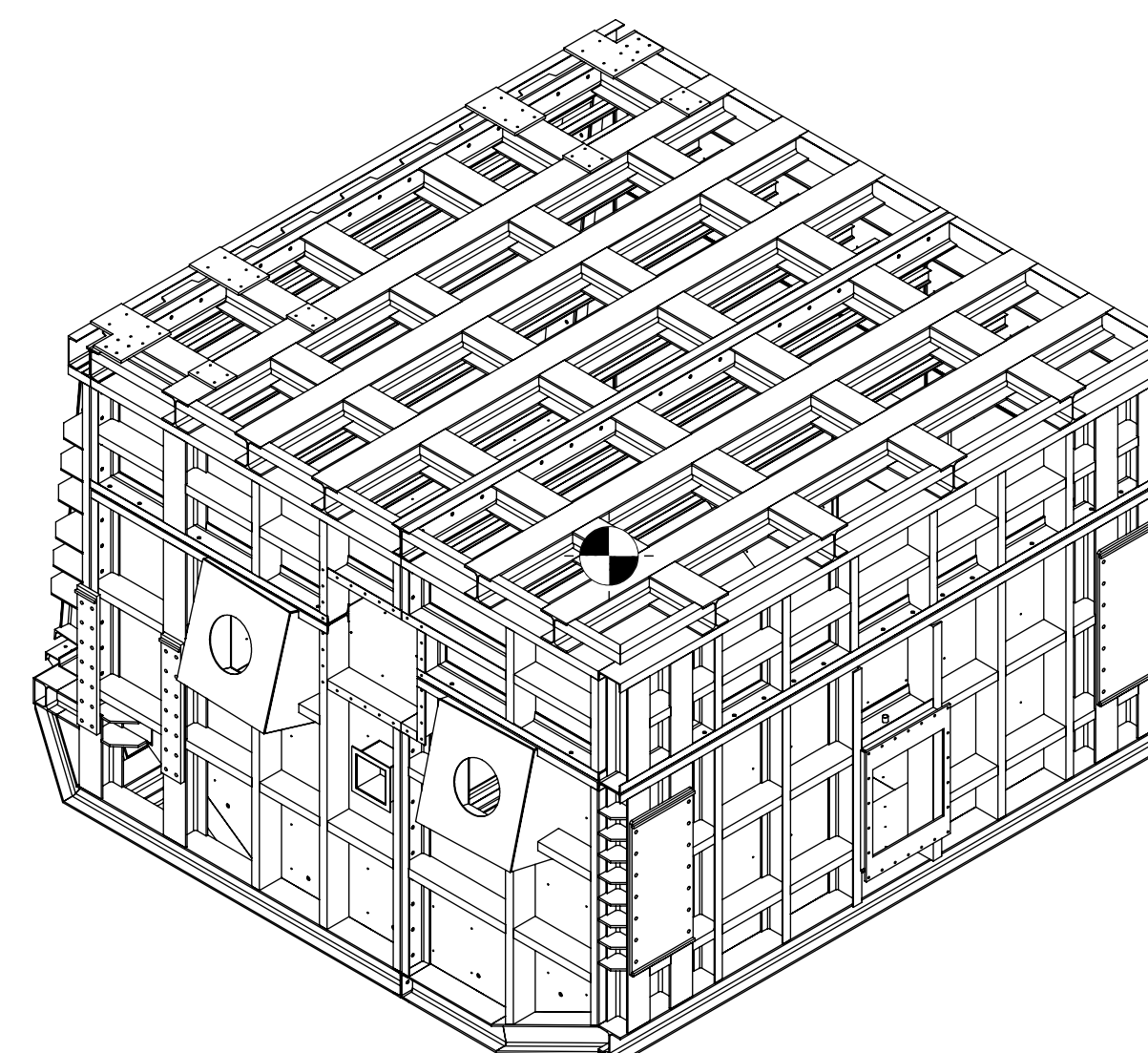
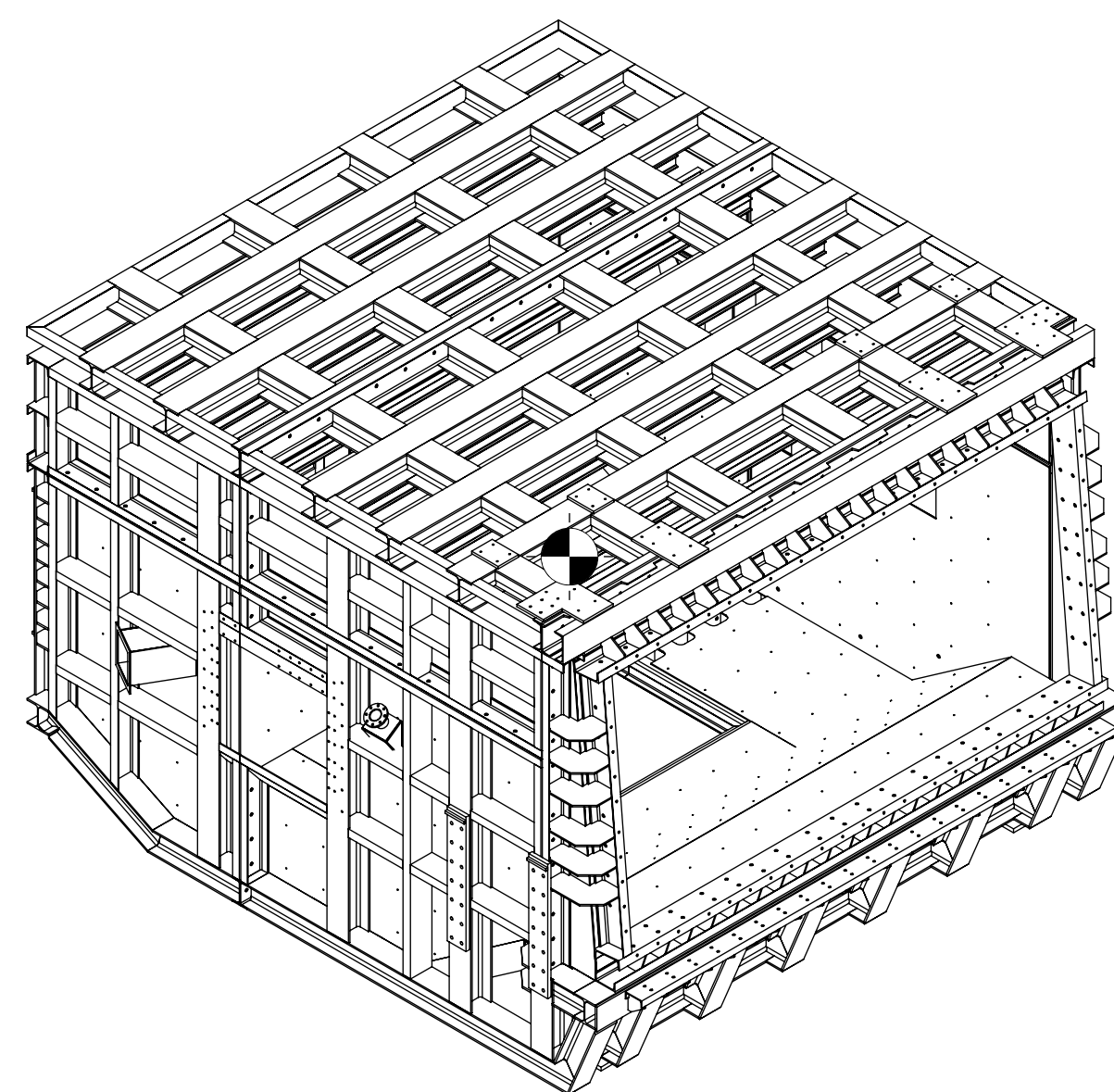
**VIEW AS PER "A"**


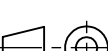


**CENTER OF MASS -  -  
WEIGHT (KG): 39924.80**

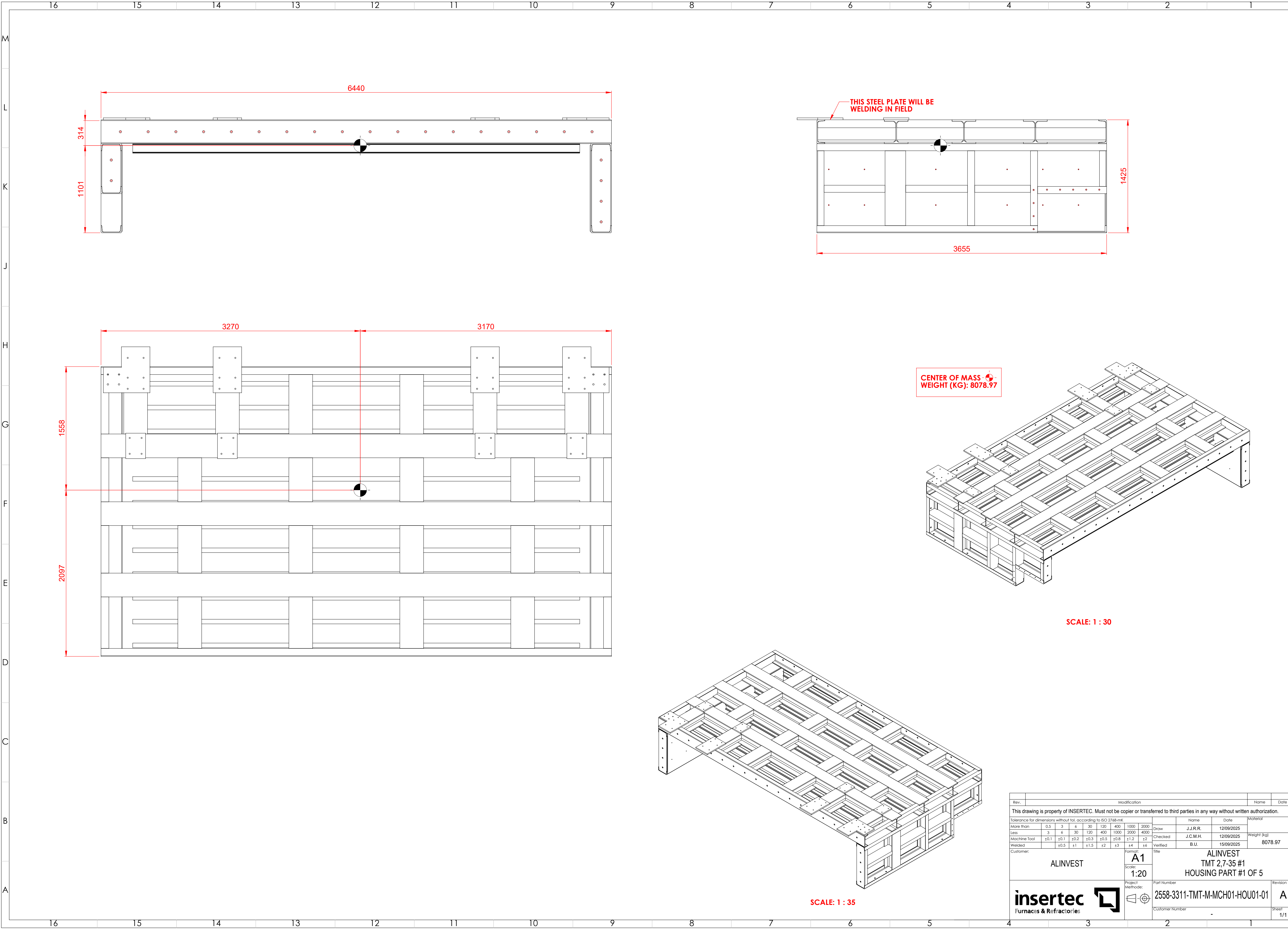



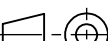
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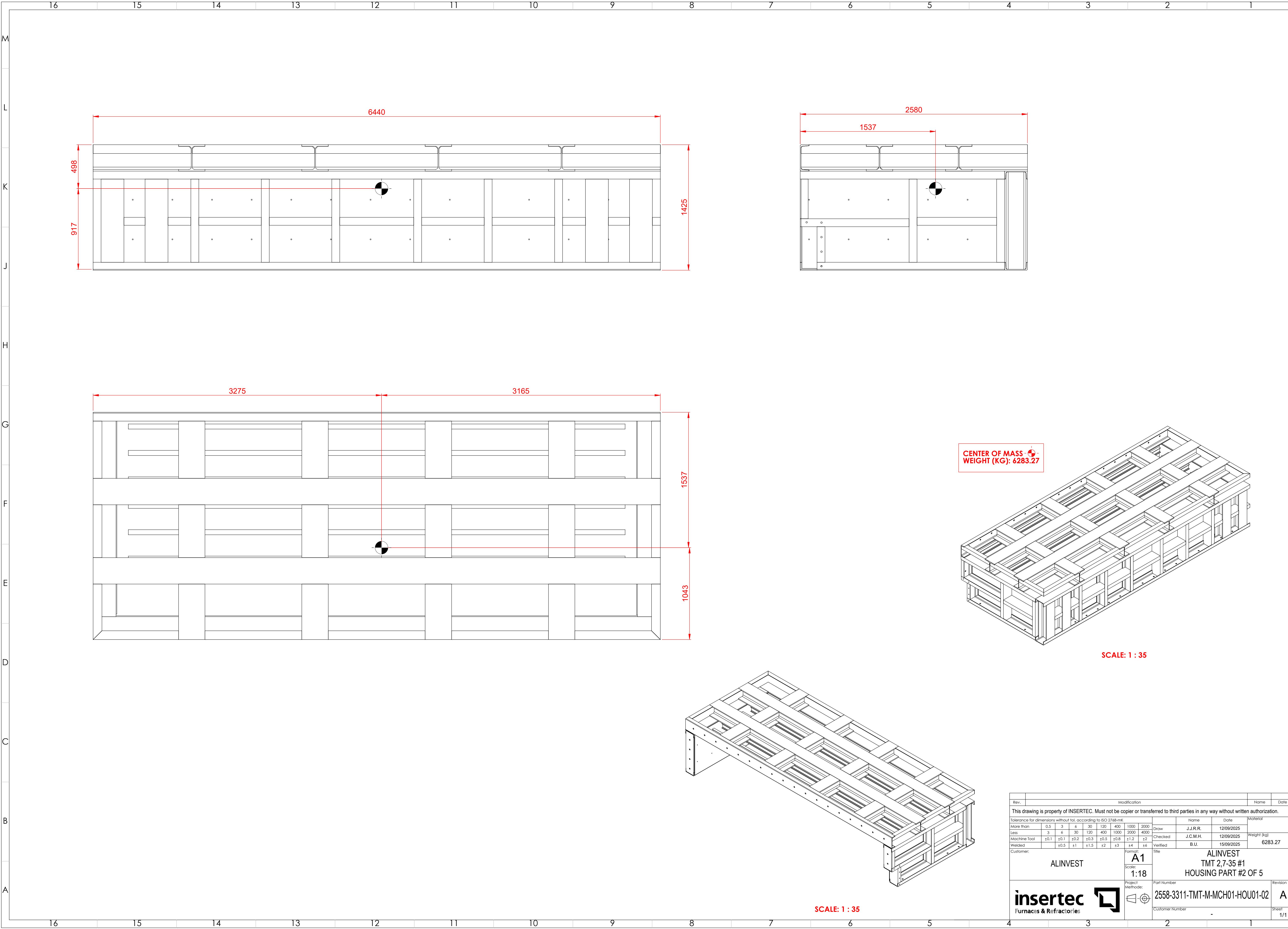




Rev.	Modification								Name	Date			
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More than	0.5	3	6	30	120	400	1000	2000	Draw	Name	Date	Material	
less	3	6	30	120	400	1000	2000	4000		J.J.R.R.	12/09/2025		
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	1.2	2.0	Checked	J.C.M.H.	12/09/2025	Weight (kg)	
Welded	±0.5	±1	±1.5	±2	±3	±4	±6	±8	Verified	B.U.	15/09/2025	39924.22	
Customer:	<div><div>Formet:</div><div>A1</div><div>Scale:</div><div>1:45</div></div>								Title			ALINVEST TMT 2-7-35 #1 MAIN EQUIPMENT	
<div><div><div>insertec</div><div>Furnaces &amp; Refractories</div></div><div><div></div><div></div></div></div>									Part Number			Revision	
					2558-3311-TMT-M-MCH01-HOU01-SHIPING			A					
					Customer Number			-		Sheet 1/1			



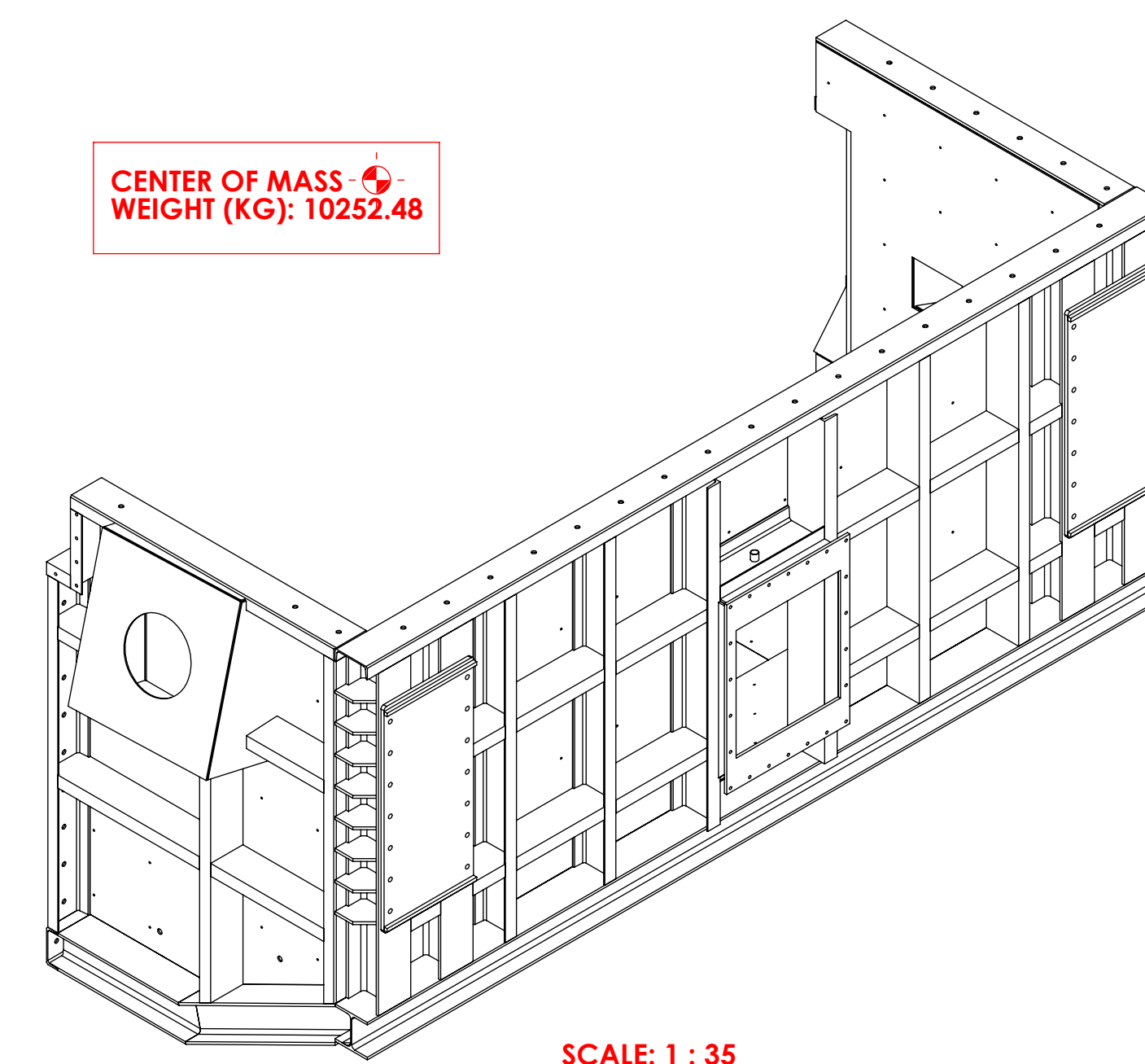
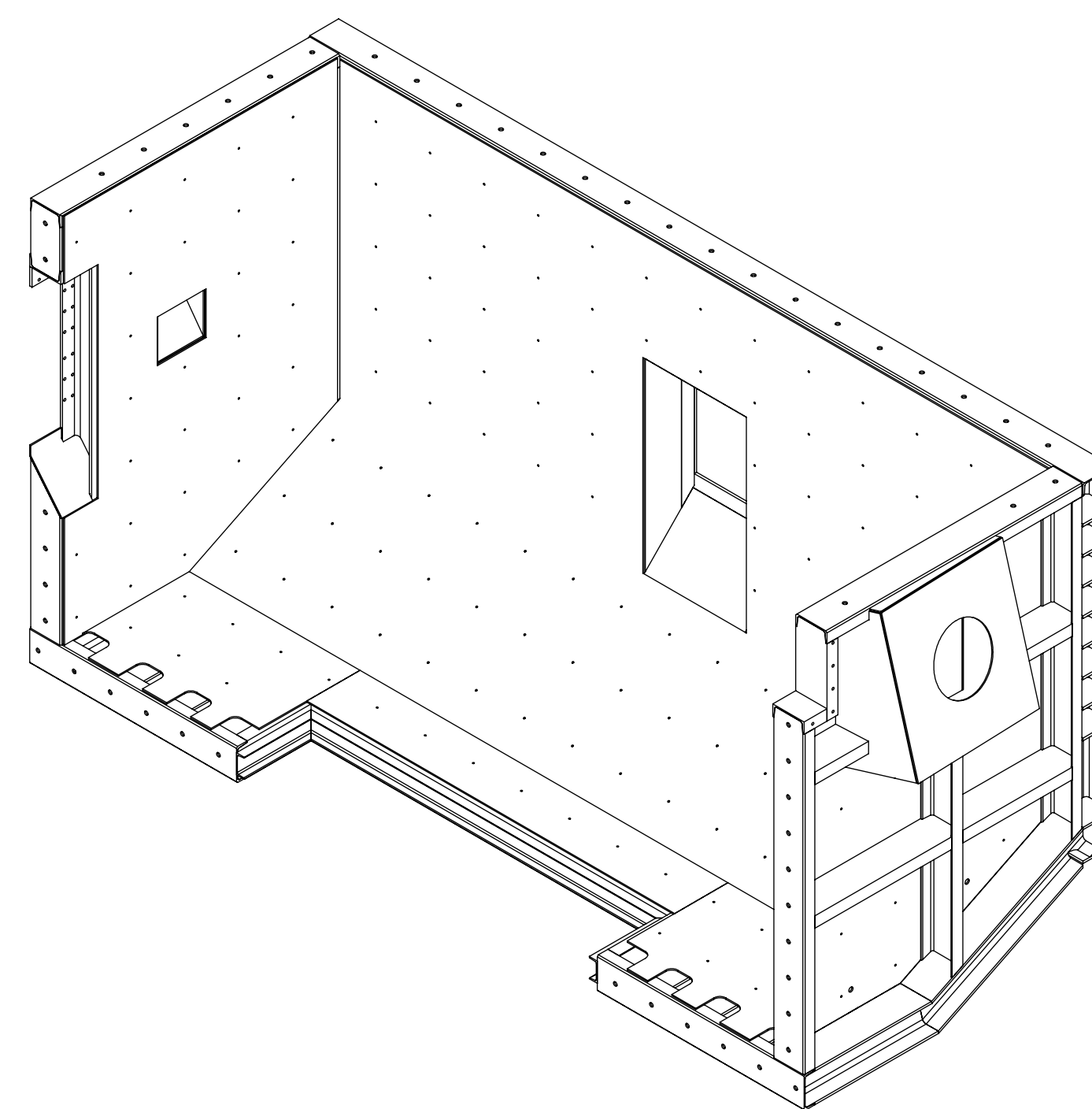
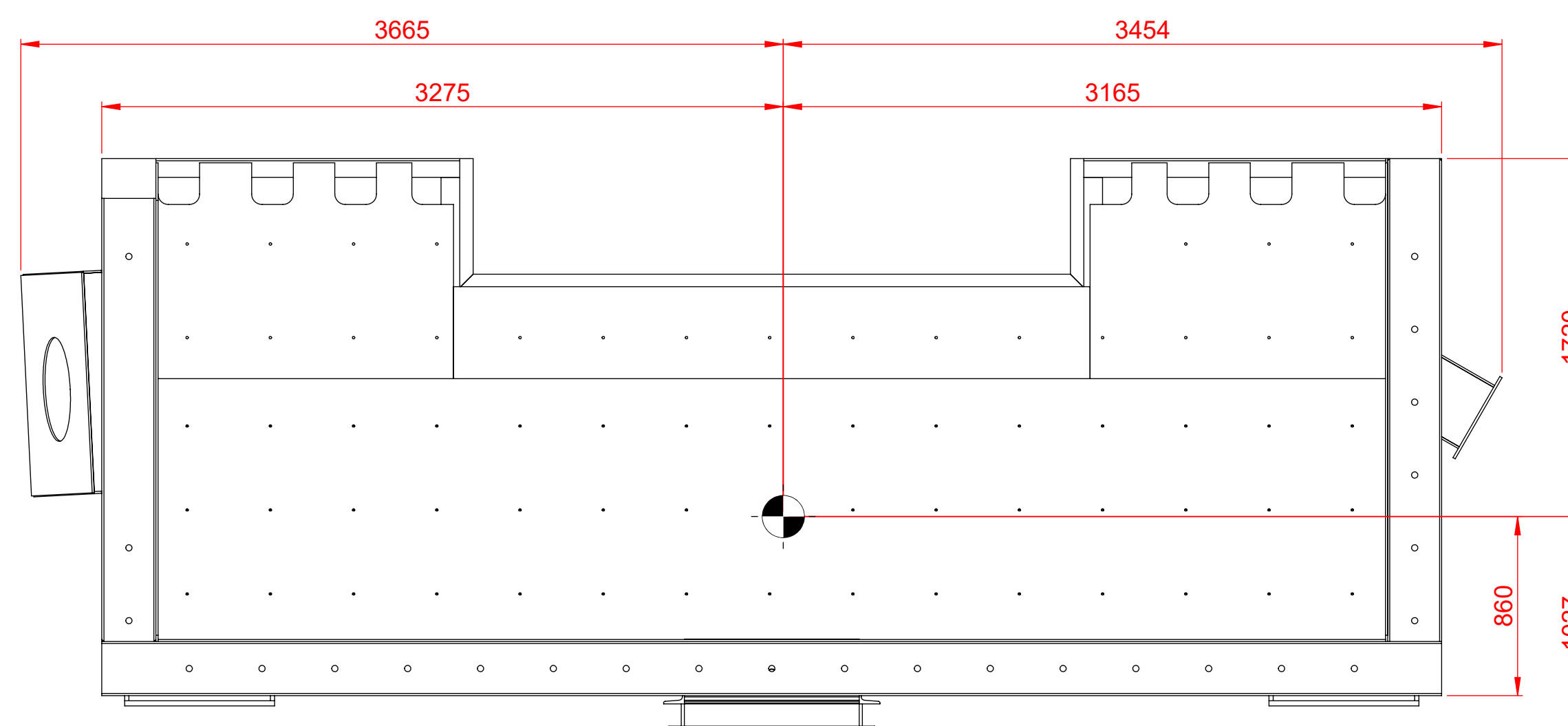
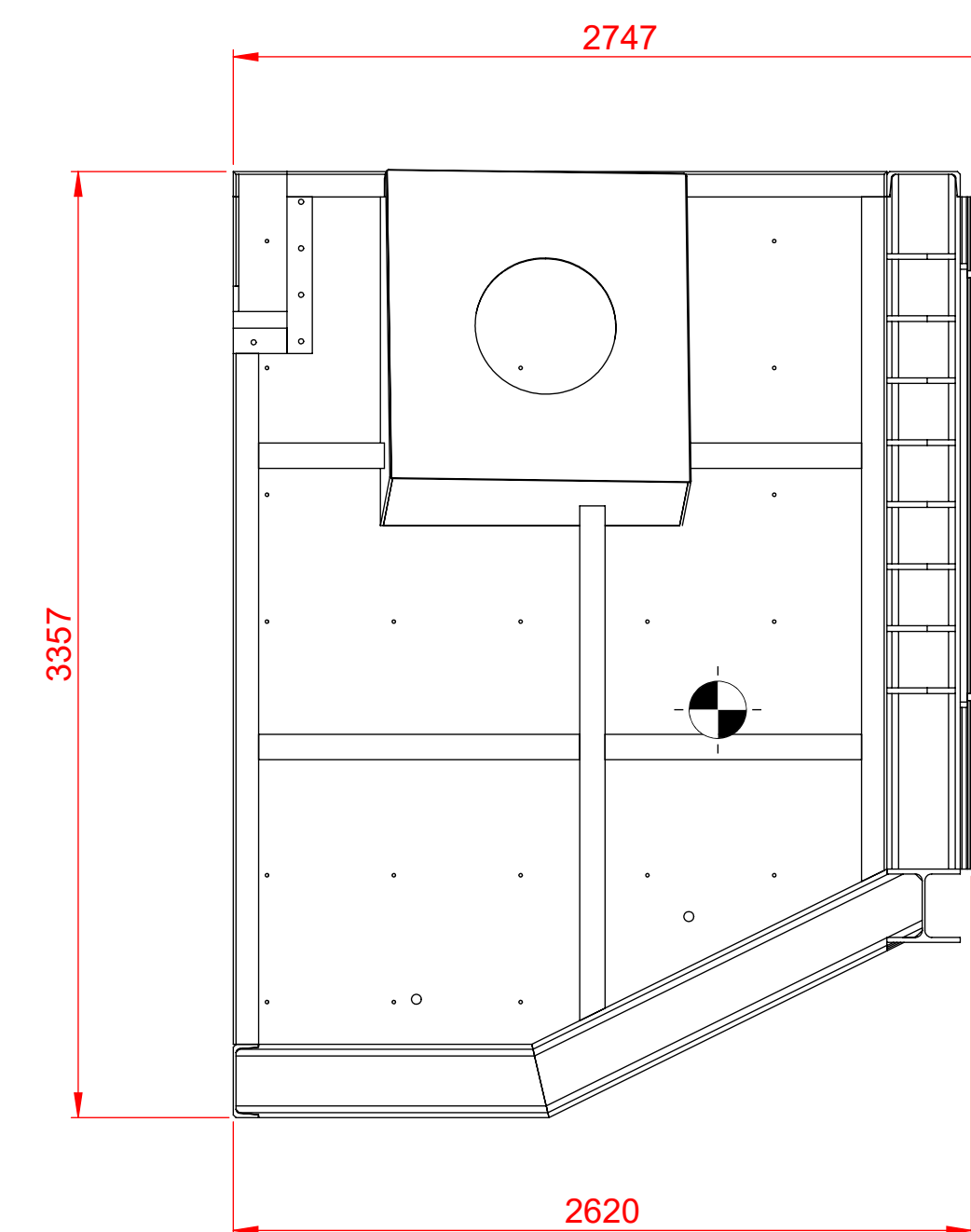
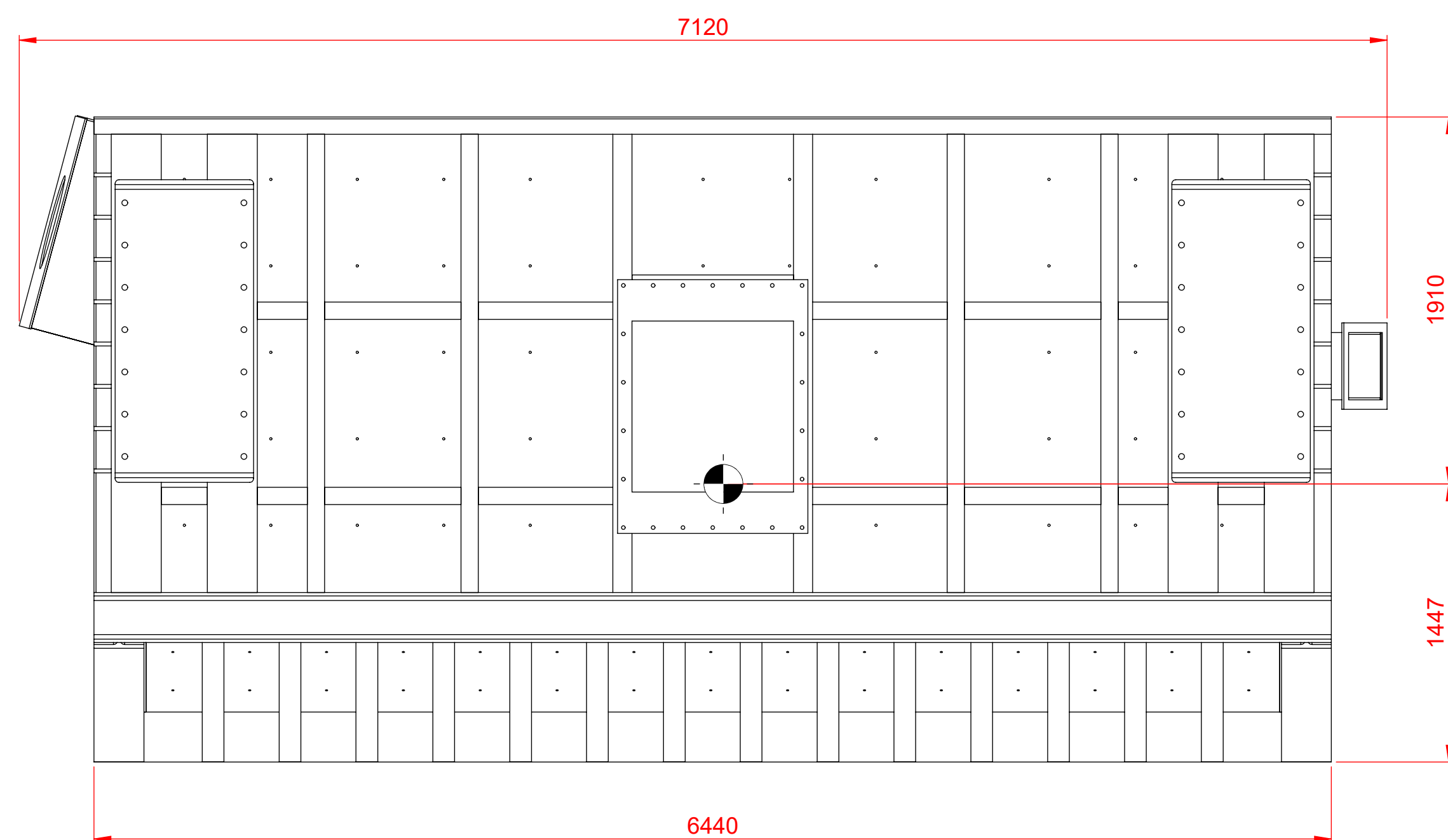






Rev.	Modification										Name	Date
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.												
Tolerance for dimensions without tol. according to ISO 2768-mK												
More than	0.5	3	6	30	120	400	1000	2000	Draw	J.J.R.R.	12/09/2025	Material
Less	3	6	30	120	400	1000	2000	4000	Checked	J.C.M.H.	12/09/2025	Weight (kg)  8078.97
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	B.U.	15/09/2025	
Welded	±0.5	±1	±1.5	±2	±3	±4	±6					
Customer:									Format:		Title	
ALINVEST									A1		ALINVEST TMT 2,7-35 #1 HOUSING PART #1 OF 5	
									Scale: 1:20			
 Furnaces & Refractories									Project Method:		Revision	
											Part Number	
											2558-3311-TMT-M-MCH01-HOU01-01	
									Customer Number		Sheet	
									-		1/1	

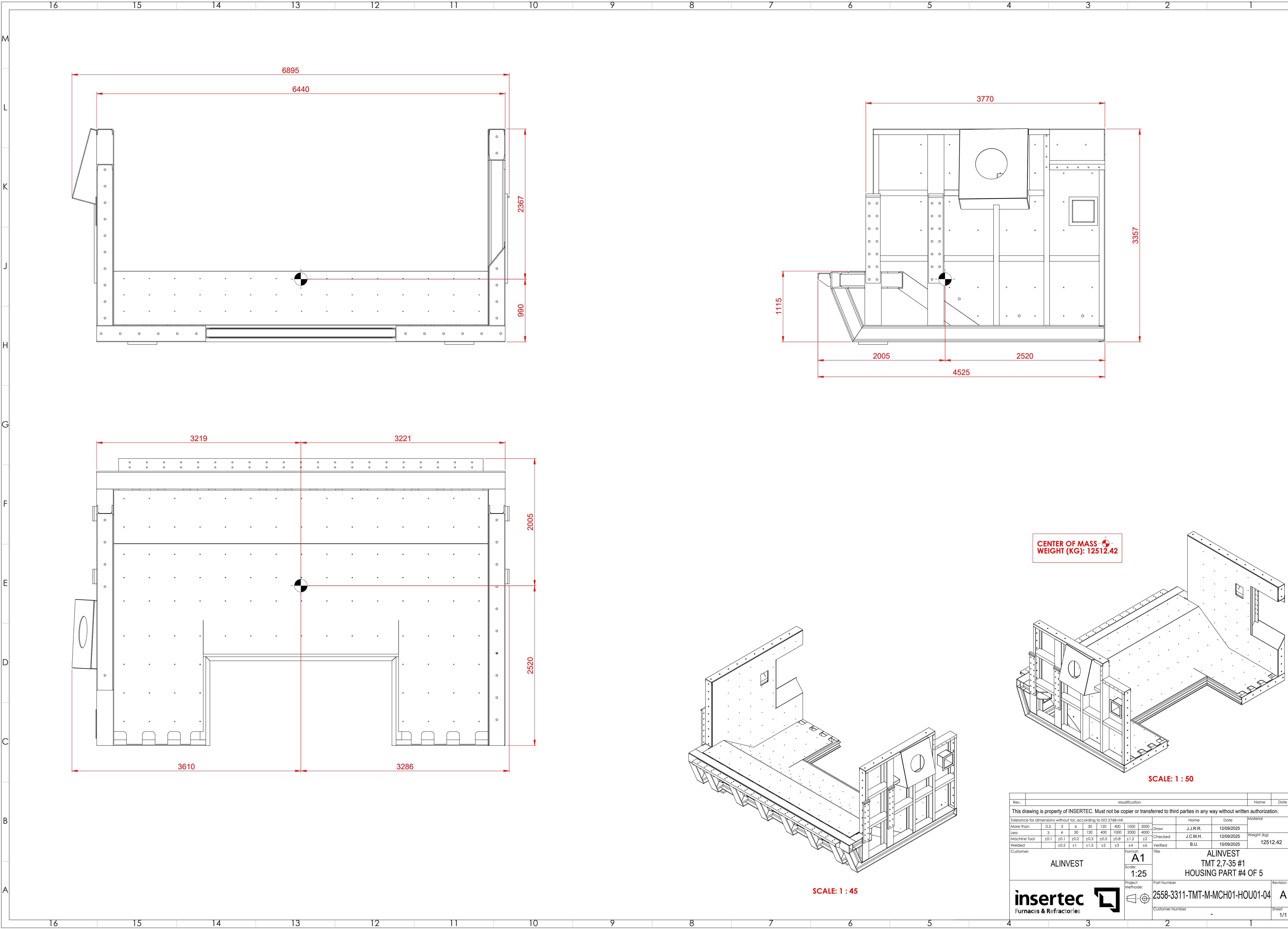



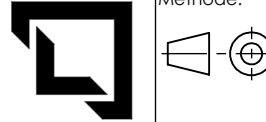
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Less	3	6	30	120	400	1000	2000	4000	Checked	J.C.M.H.	12/09/2025	Weight (kg)  6283.27	
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	B.U.	15/09/2025		
Welded	±0.5	±1	±1.5	±2	±3	±4	±6						
Customer:									Format:	Title			
ALINVEST									A1	ALINVEST TMT 2,7-35 #1 HOUSING PART #2 OF 5			
									Scale: 1:18				
 Furnaces & Refractories										Project	Part Number		Revision
										Method:	2558-3311-TMT-M-MCH01-HOU01-02		A
												Customer Number	



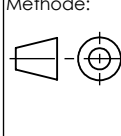


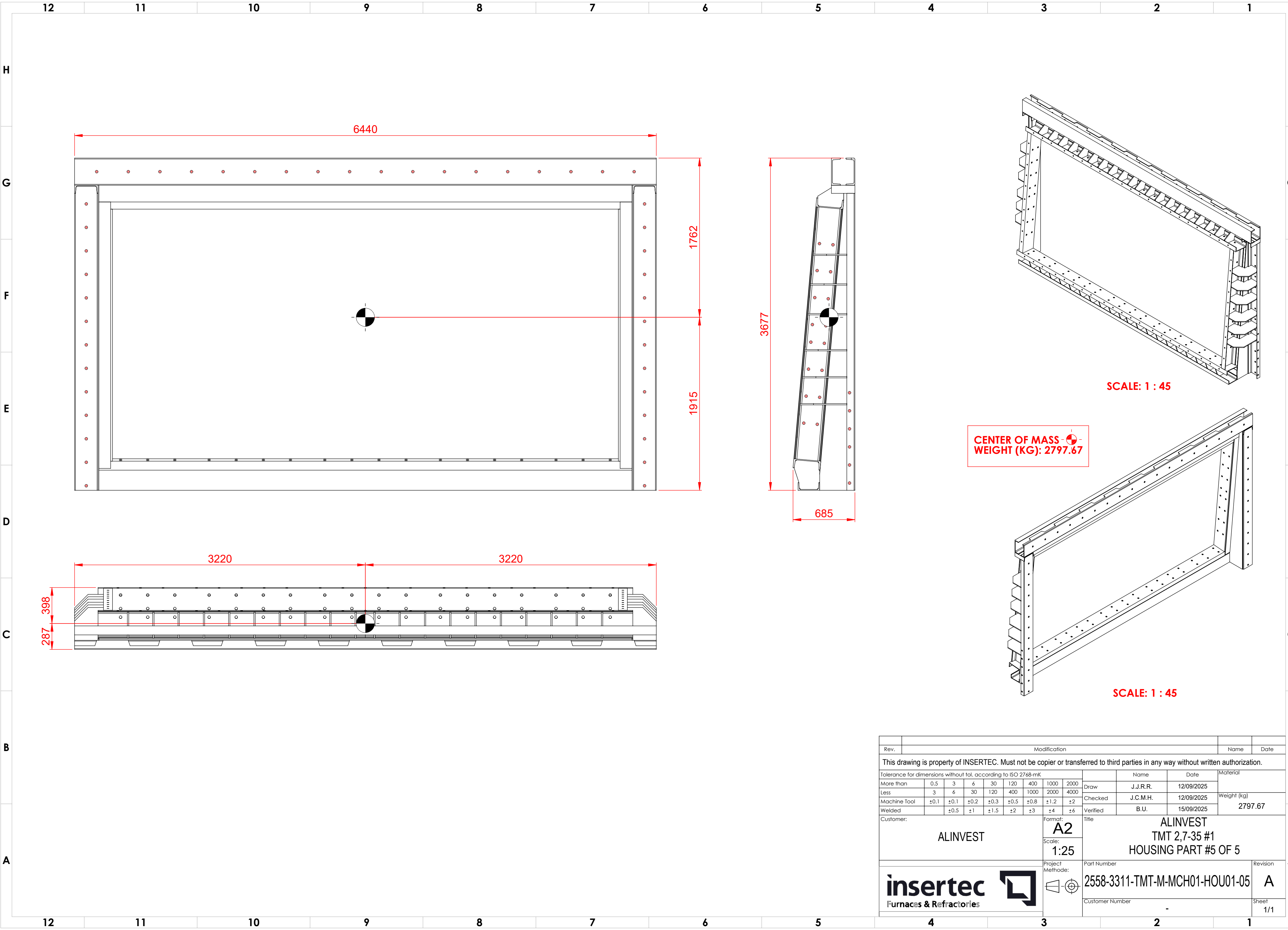
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Tolerance for dimensions without tol. according to ISO 2768-mK													
More than	0.5	3	6	30	120	400	1000	2000	Draw	Name	Date	Material	
Less	3	4	30	120	400	1000	2000	4000					
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Checked	J.C.M.H.	12/09/2025	Weight (kg)	
Welded	±0.5	±1	±1.5	±2	±3	±4	±6		Drawn	B.U.	15/09/2025	10252.48	
Customer:	ALINVEST			Format:		ALINVEST							
A1				TMT 2,7-35 #1									
Scale:				HOUSING PART #3 OF 5									
1:25		Project Method:		Part Number								Revision	
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				Customer number								Sheet 1/1	
								-					


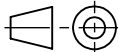


Rev.	Modification										Name	Date	
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Tolerance for dimensions without tol. according to ISO 2768-mK													
More than	0.5	3	6	30	120	400	1000	2000	Draw	J.J.R.R.	12/09/2025	Material  Weight (kg)  12512.42	
Less	3	6	30	120	400	1000	2000	4000	Checked	J.C.M.H.	12/09/2025		
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	B.U.	15/09/2025		
Welded		±0.5	±1	±1.5	±2	±3	±4	±6					
Customer:						Format:		Title					
ALINVEST						A1		ALINVEST TMT 2,7-35 #1 HOUSING PART #4 OF 5					
						Scale:							
						1:25							
 Furnaces & Refractories								Project		Part Number		Revision	
								Method:		2558-3311-TMT-M-MCH01-HOU01-04		A	
										Customer Number		-	

**insertec**  
Furnaces & Refractories





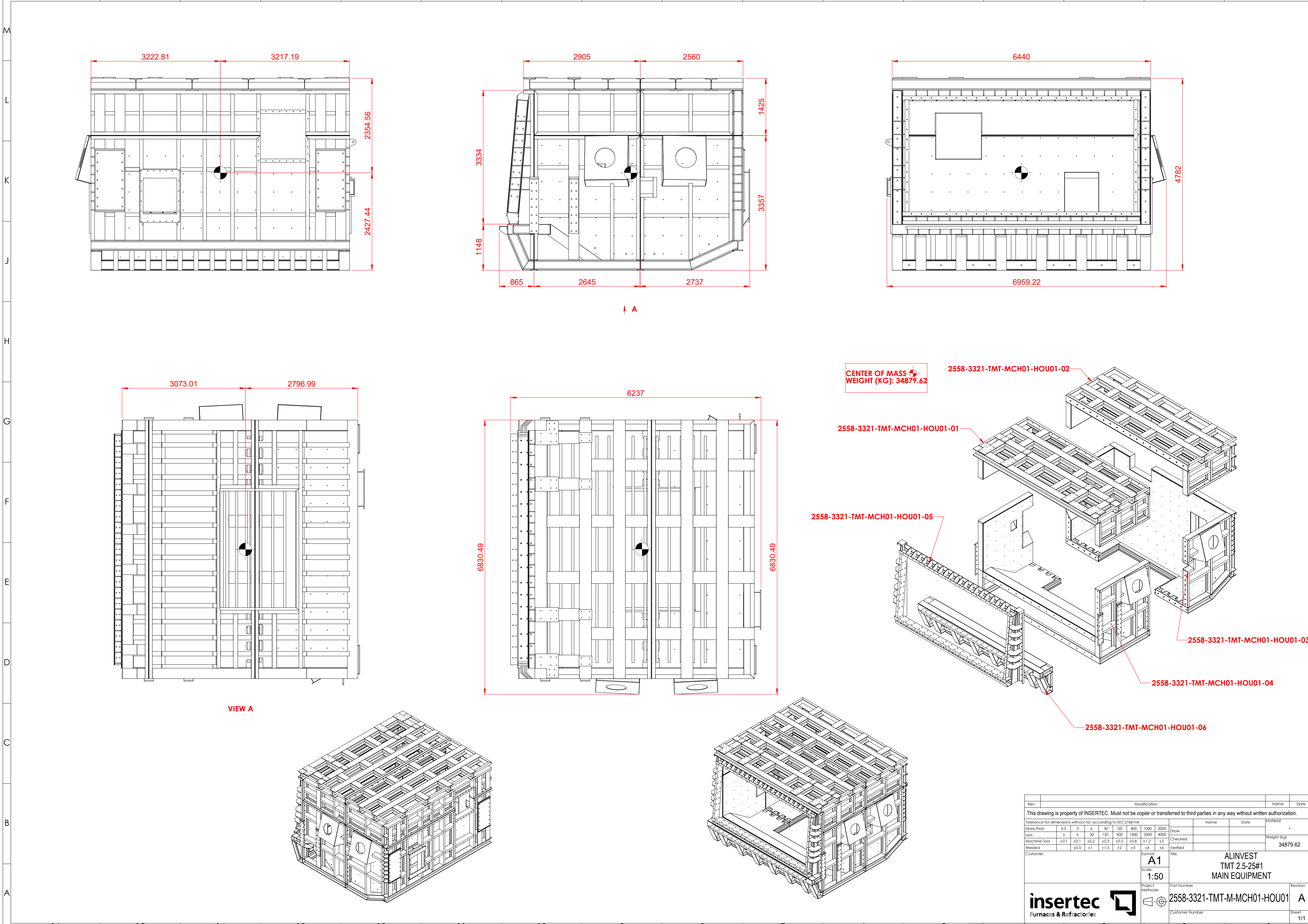
Rev.		Modification							Name		Date						
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Tolerance for dimensions without tol. according to ISO 2768-mK											Name		Date		Material		
More than		0.5	3	6	30	120	400	1000	2000	Draw		J.J.R.R.		12/09/2025			
Less		3	6	30	120	400	1000	2000	4000	Checked		J.C.M.H.		12/09/2025		Weight (kg)	
Machine Tool		±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified		B.U.		15/09/2025		2797.67	
Welded			±0.5	±1	±1.5	±2	±3	±4	±6								
Customer:									Format:		Title		ALINVEST TMT 2,7-35 #1 HOUSING PART #5 OF 5				
ALINVEST									A2								
									Scale:								
									1:25								
									Project Methode:		Part Number		Revision				
											2558-3311-TMT-M-MCH01-HOU01-05		A				
									Customer Number		Sheet						
									-		1/1						







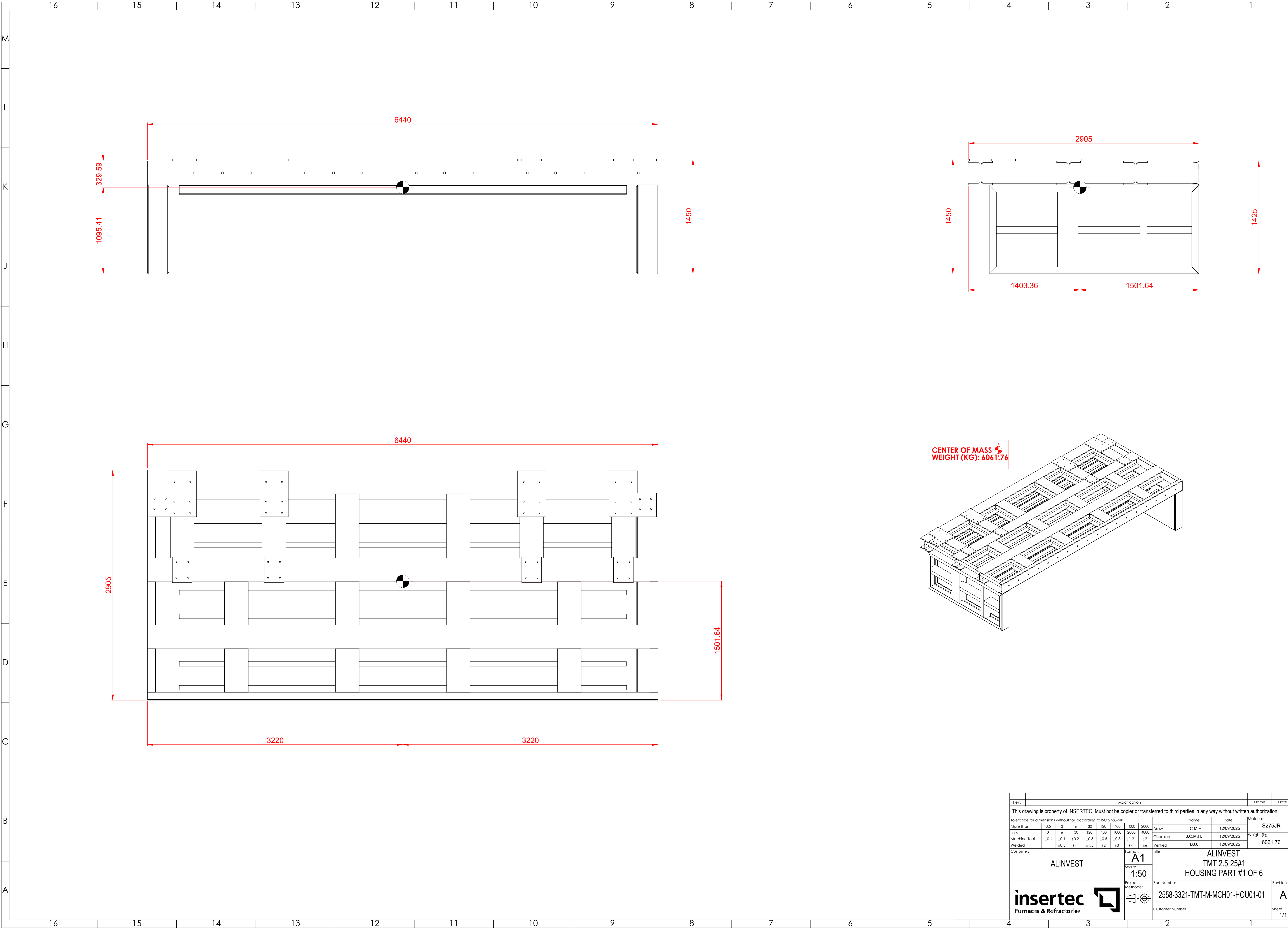
 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> CONSTRUCTION & COMMISSIONING DEPARTMENT, INSERTEC	<b>ALINVEST</b> Member of <b>MTX</b> GROUP
<b>E2558 Alinvest – Czech Republic</b>	<b>2558-IH-PUE-01</b>	<b>E2558</b>




**Annex 3 – Transport drawings / Sketches**

MELTER 25Tons

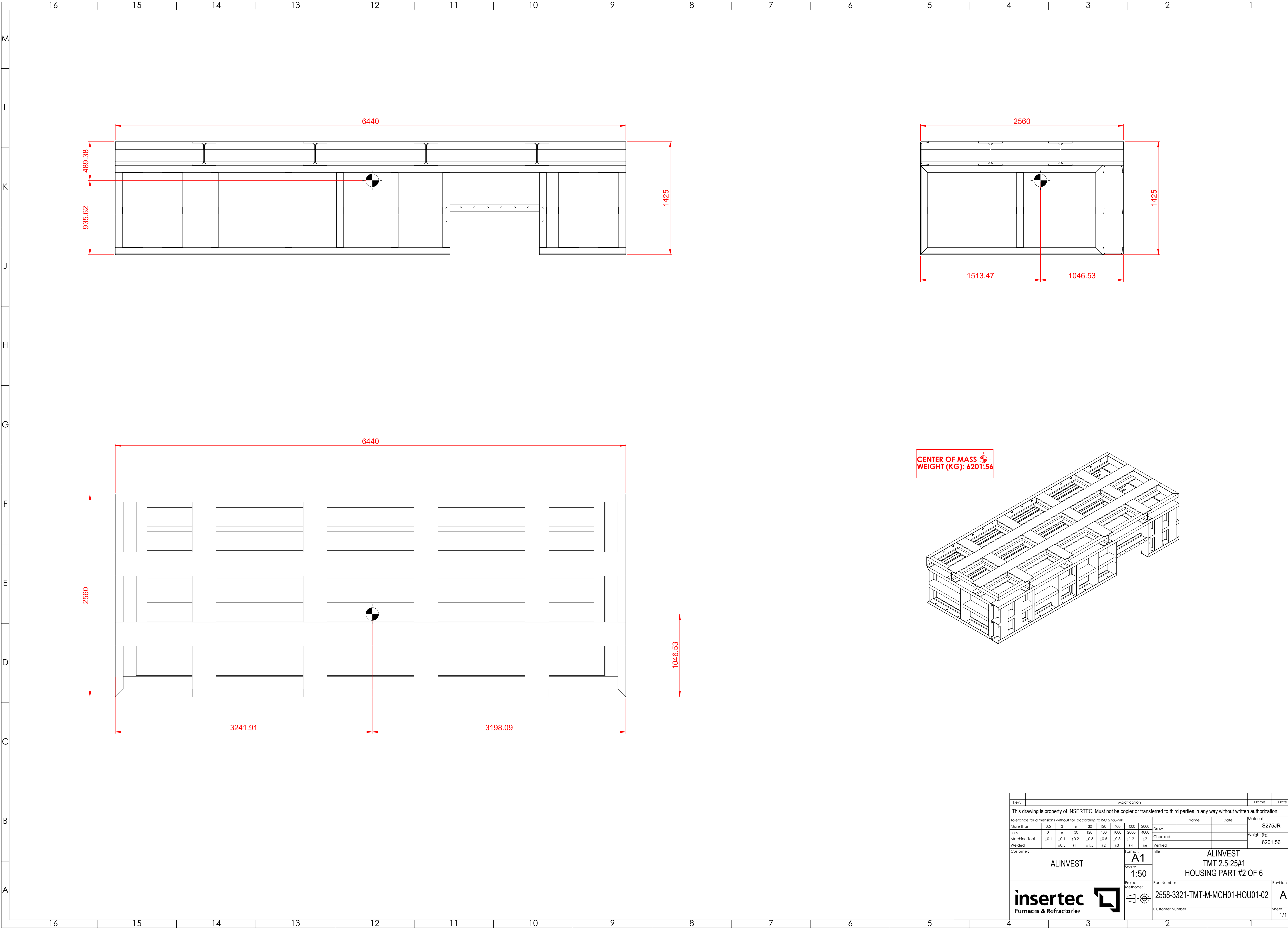




Rev.	Modification										Name	Date
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Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2				
Welded		±0.5	±1	±1.5	±2	±3	±4	±6	Verified			
Customer:										Title		
 										ALINVEST		
										TMT 2.5-25#1		
										MAIN EQUIPMENT		
Project Method:										Part Number		Revision
 										2558-3321-TMT-M-MCH01-HOU01		A
										Customer Number		Sheet
												1/1

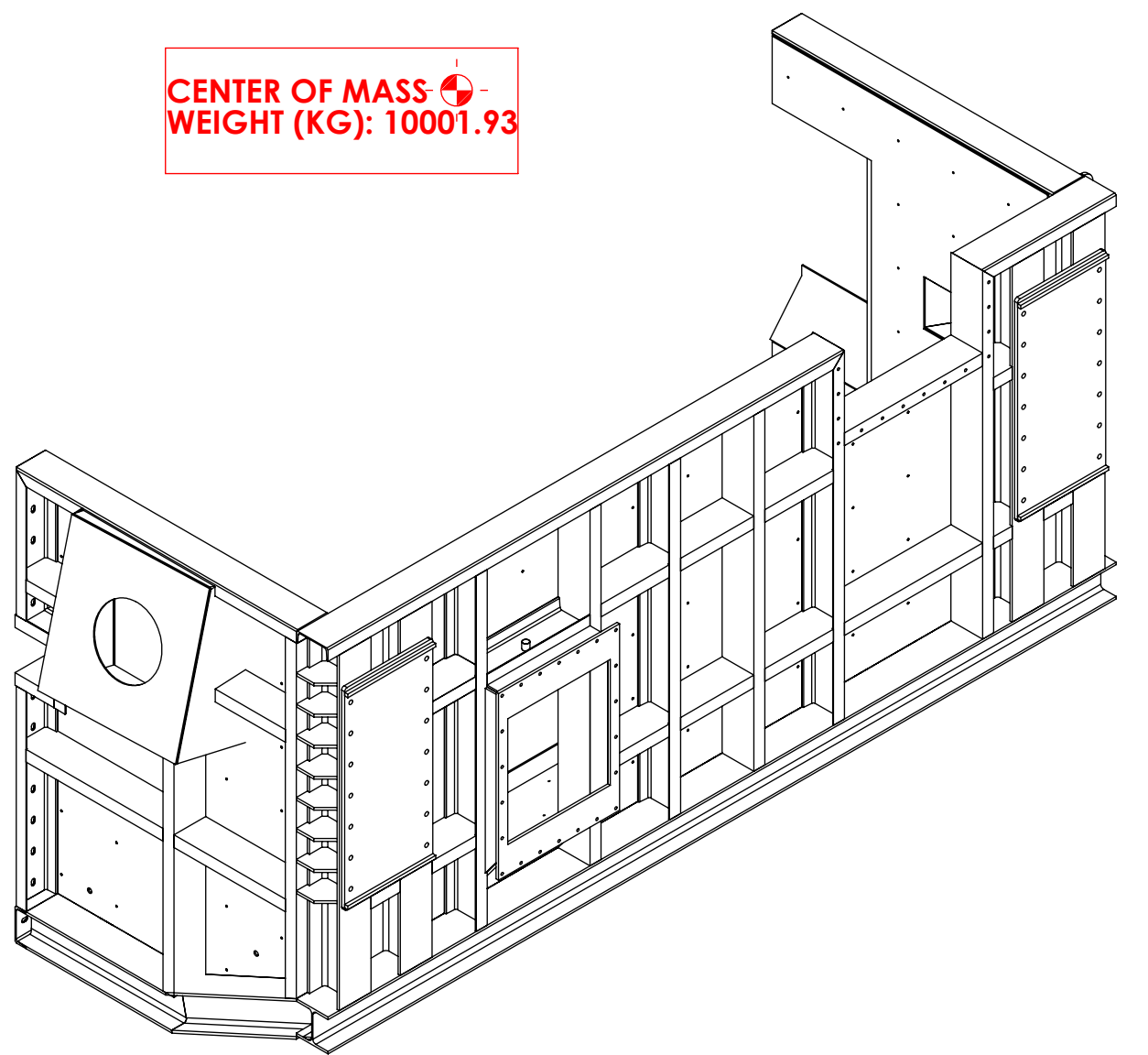
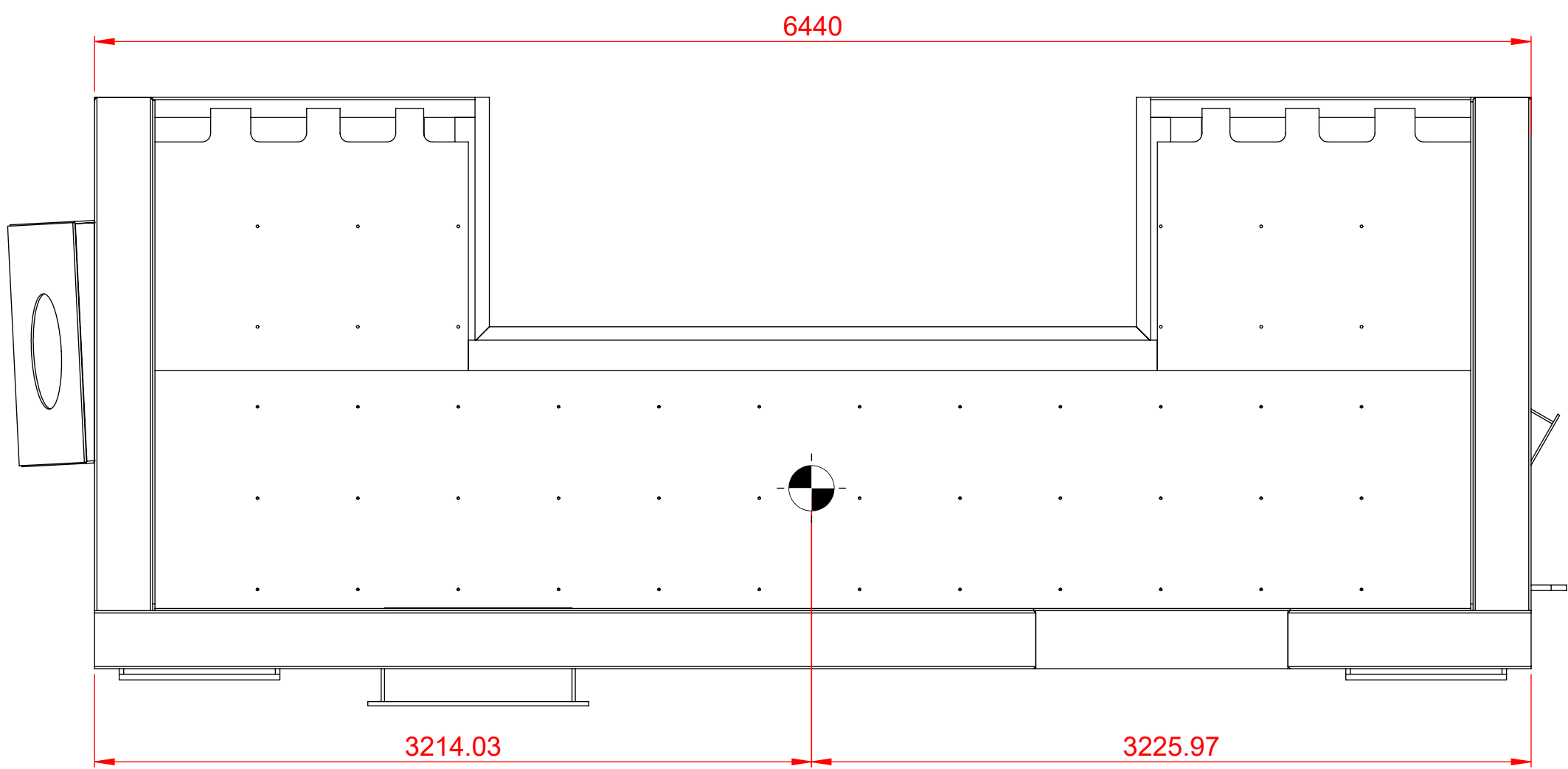
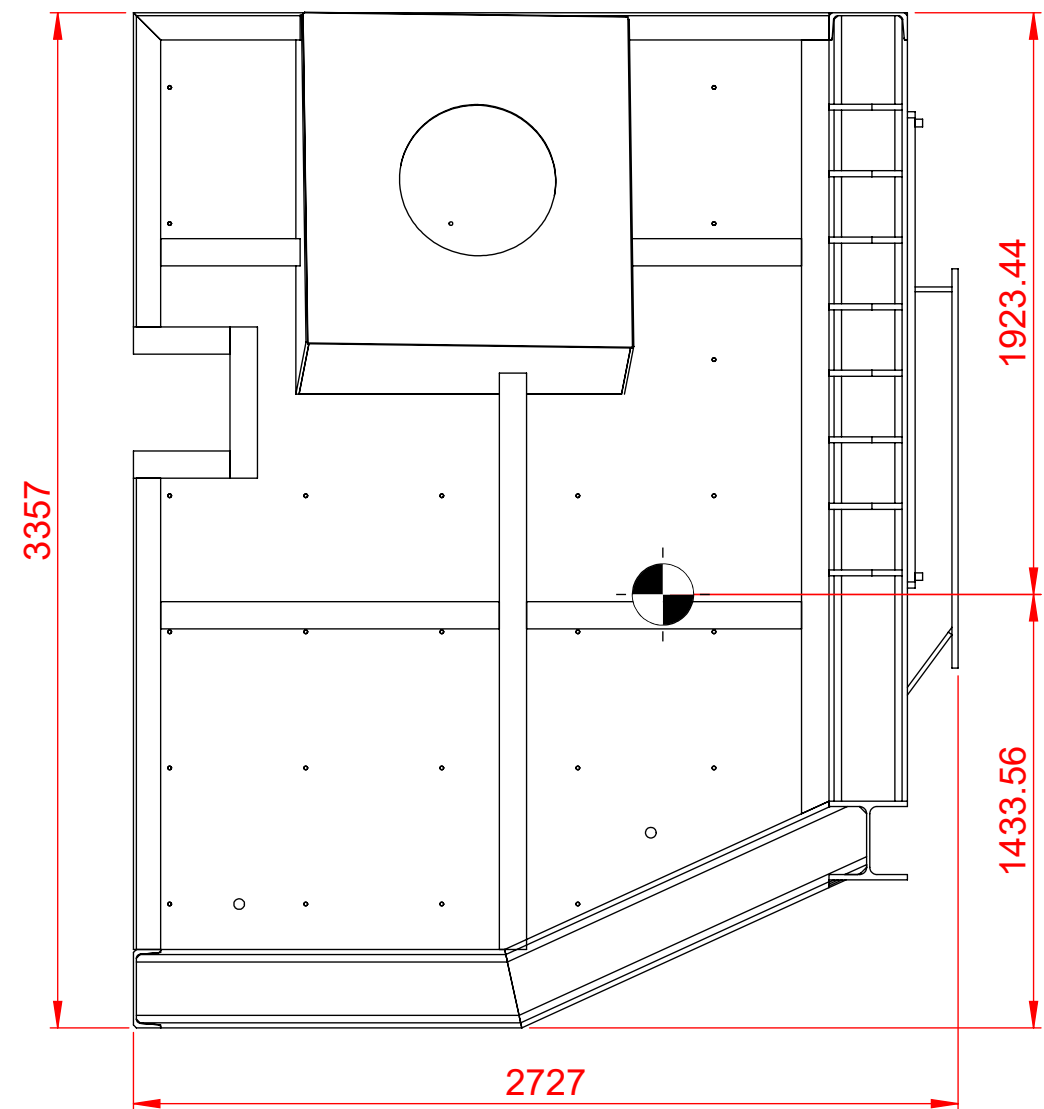
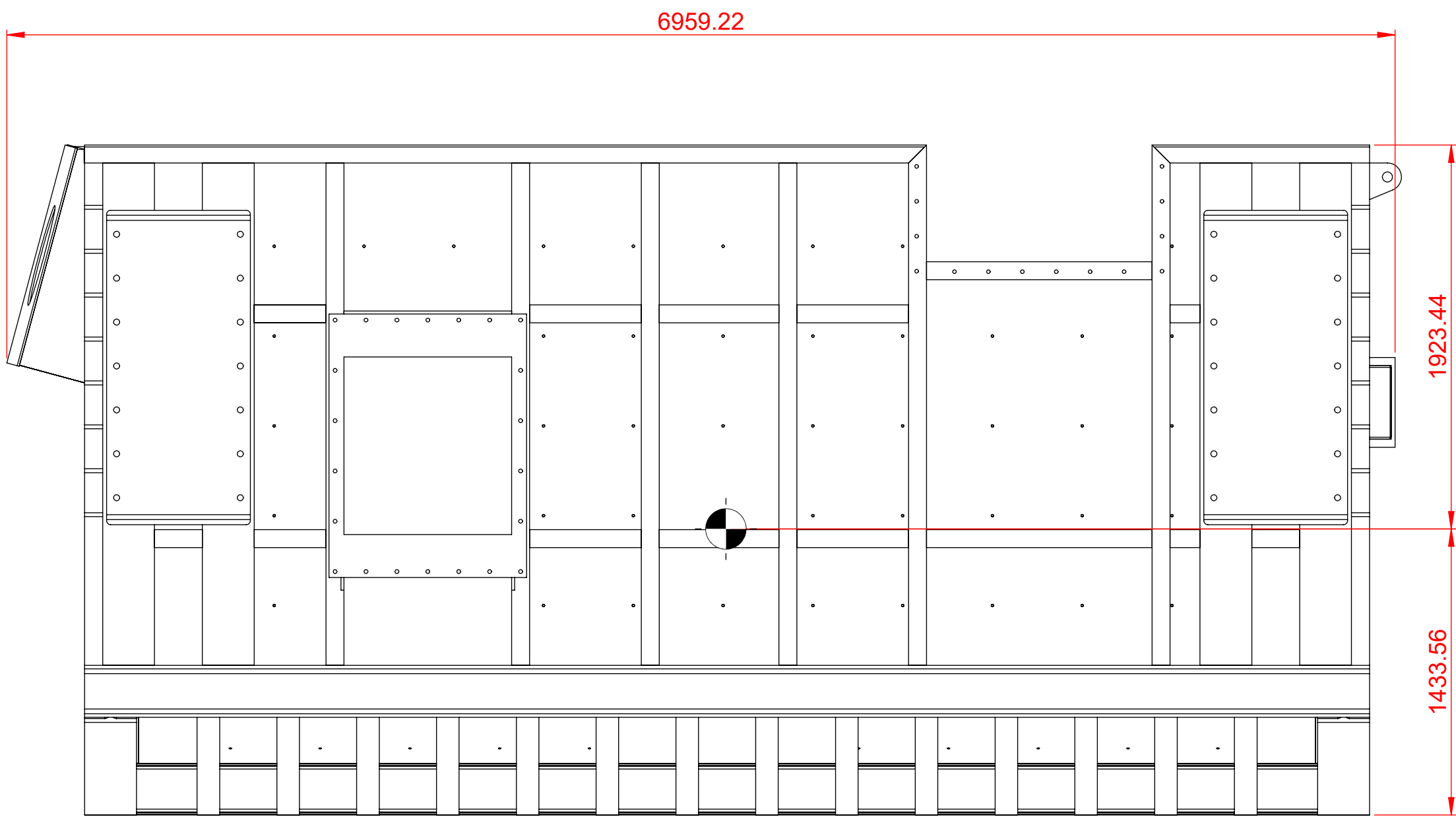




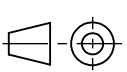

Rev.	Modification										Name	Date
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.												
Tolerance for dimensions without tol. according to ISO 2768-mK												
More than	0.5	3	6	30	120	400	1000	2000	Draw	Name	Date	Material
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Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	J.C.M.H.	12/09/2025	Weight (kg)
Welded	±0.5	±1	±1.5	±2	±3	±4	±6		Verified	B.U.	12/09/2025	6061.76
Customer: ALINVEST									Format: A1	Title: ALINVEST TMT 2.5-25#1 HOUSING PART #1 OF 6		
Scale: 1:50												
Project Methode:									Part Number			Revision
  									2558-3321-TMT-M-MCH01-HOU01-01			A
Furnaces & Refractories									Customer Number			Sheet 1/1

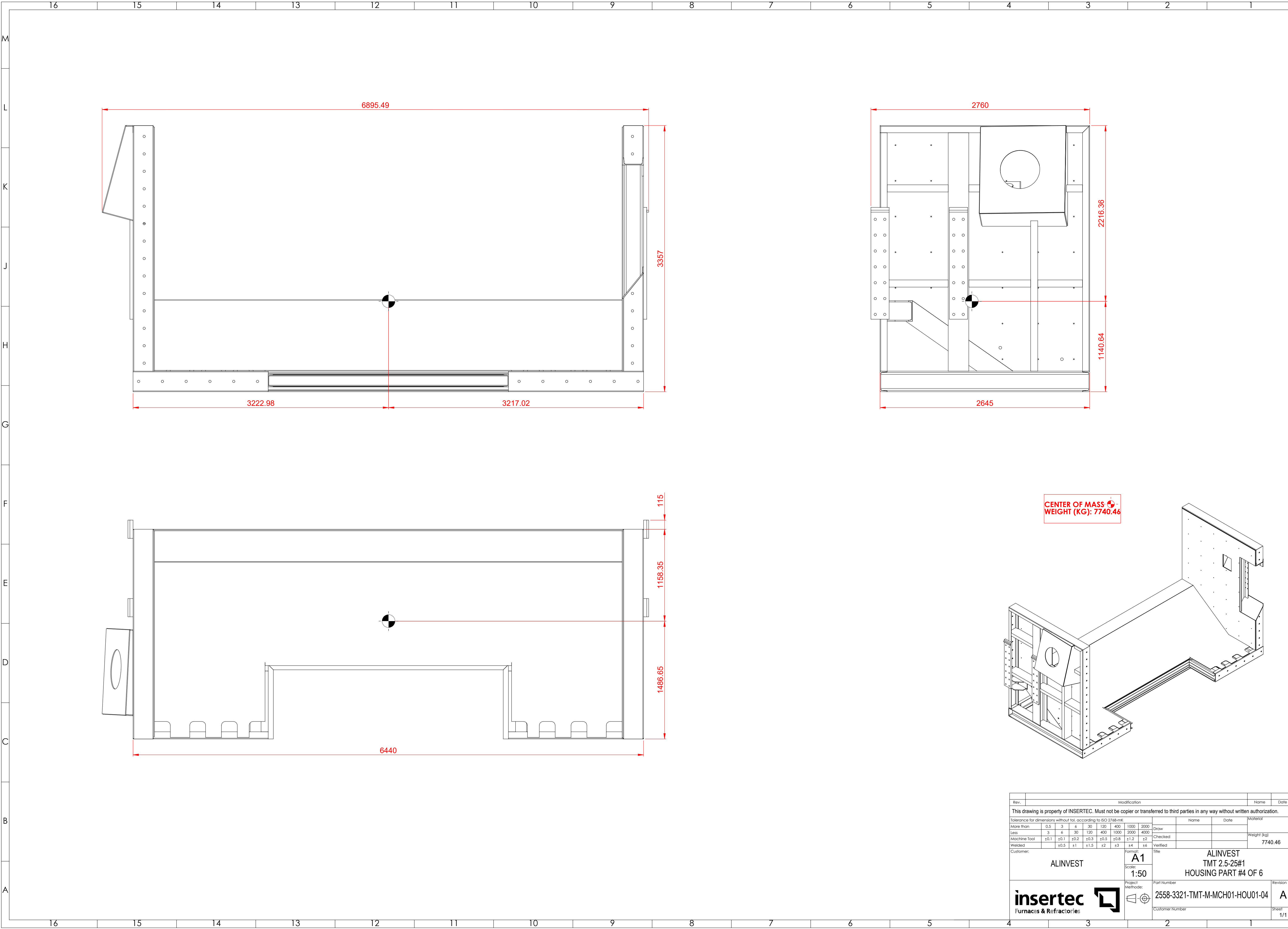






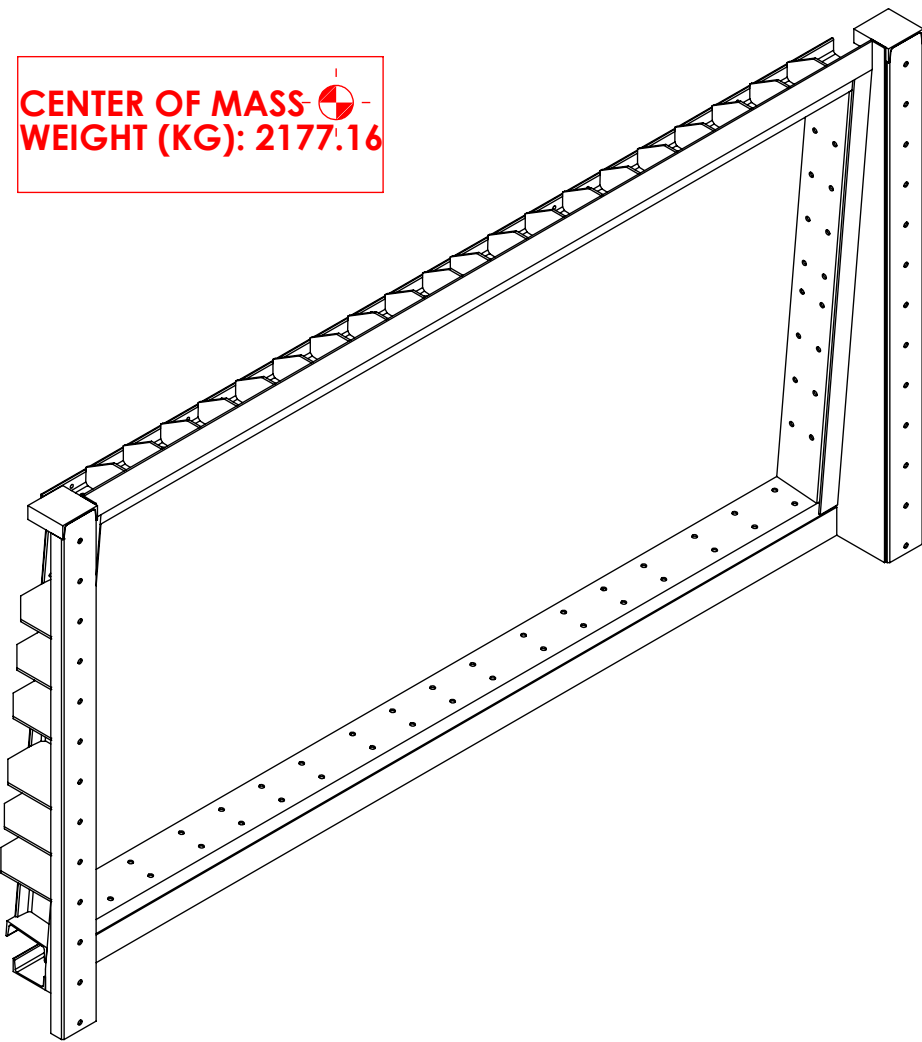
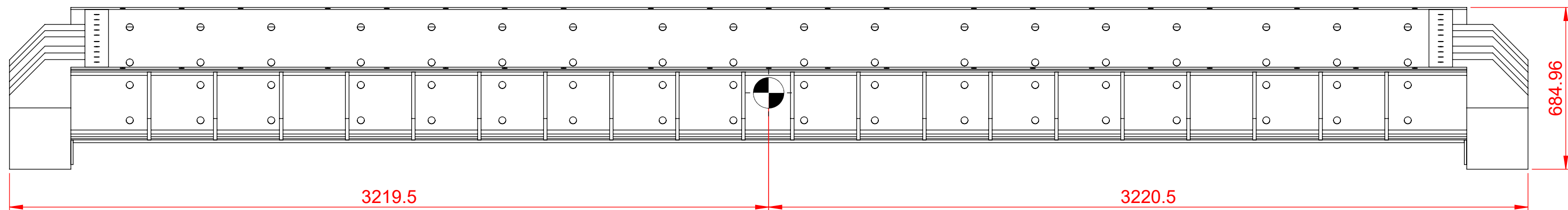
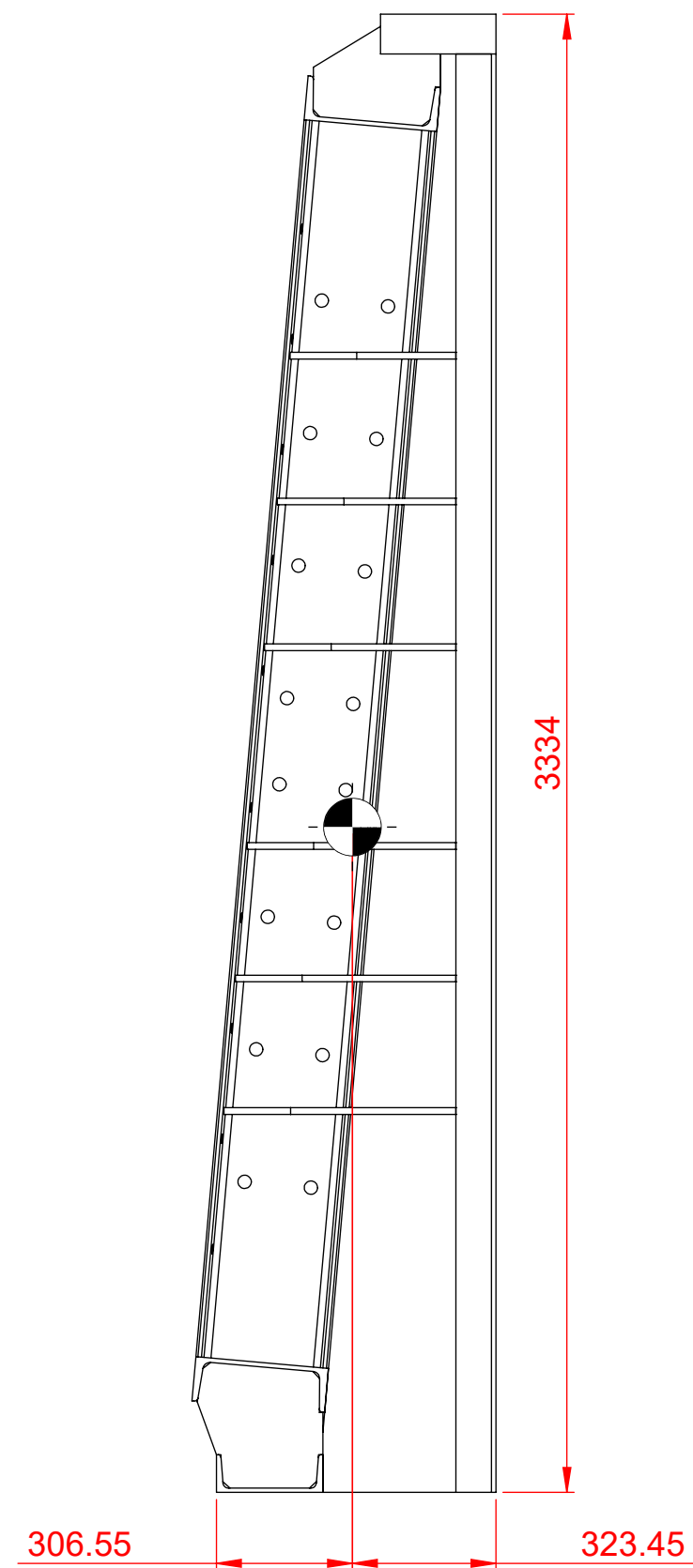
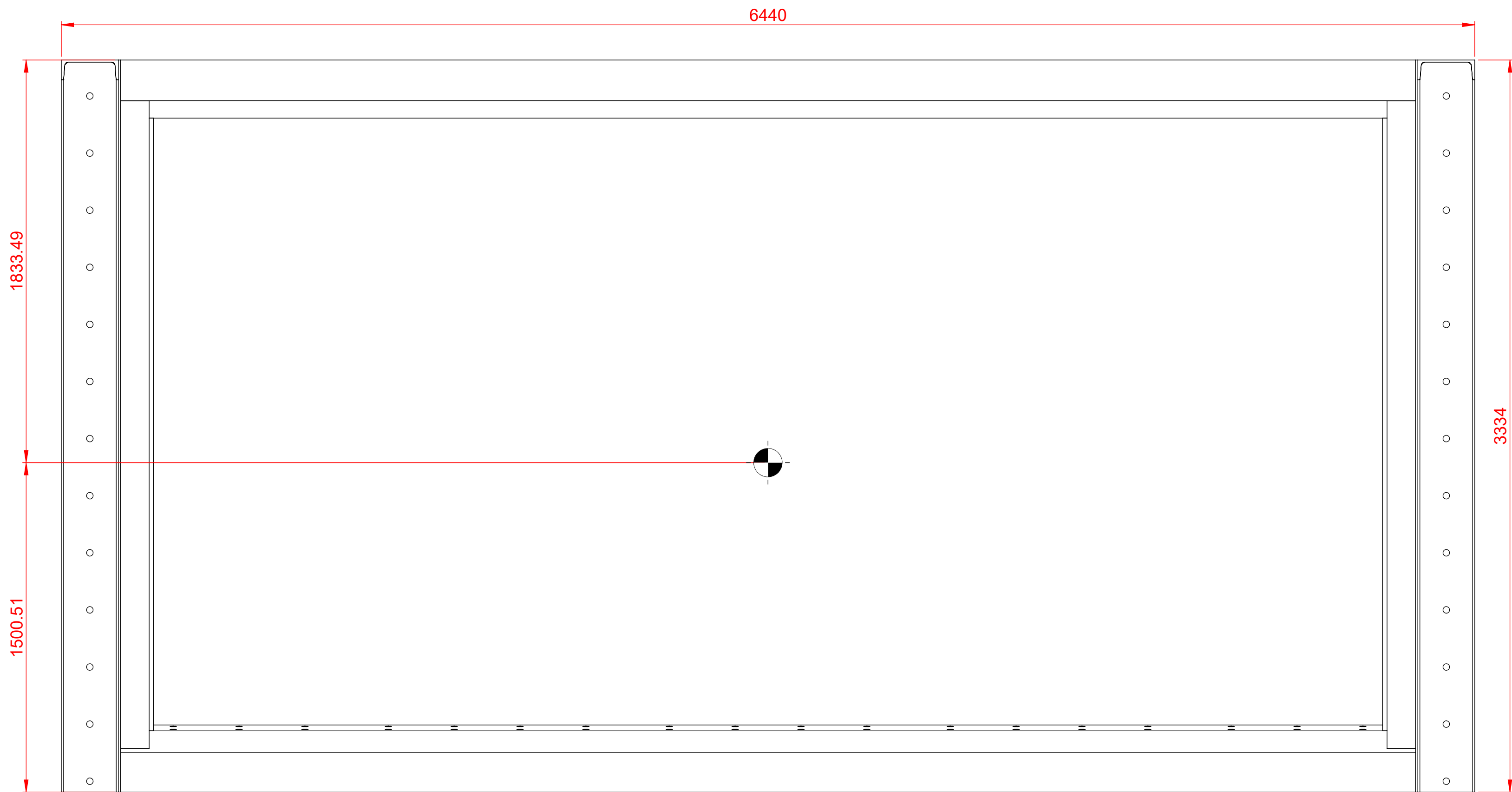
Rev.	Modification										Name		Date
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.													
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More than	0.5	3	6	30	120	400	1000	2000	Draw			S275JR	
Less	3	6	30	120	400	1000	2000	4000	Checked			Weight (kg)	
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified			6201.56	
Welded	±0.5	±1	±1.5	±2	±3	±4	±6						
Customer: ALINVEST										Title: ALINVEST TMT 2.5-25#1 HOUSING PART #2 OF 6			
Format: A1 Scale: 1:50										Revision: A			
Project Method: 										Part Number: 2558-3321-TMT-M-MCH01-HOU01-02		Revision: A	
 Furnaces & Refractories										Customer Number		Sheet 1/1	





Rev.	Modification										Name	Date
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.												
Tolerance for dimensions without tol. according to ISO 2768-mK										Material		
More than	0.5	3	6	30	120	400	1000	2000	Draw	Name	Date	Weight (kg)  10001.93
Less	3	6	30	120	400	1000	2000	4000				
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Checked			
Welded	±0.5	±1	±1.5	±2	±3	±4	±6	Verified				
Customer:						Format:		Title				
ALINVEST						A1		ALINVEST TMT 2.5-25#1 HOUSING PART #3 OF 6				
						Scale:						
 Furnaces & Refractories						1:50						
						Project Method:		Part Number		Revision		
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 Furnaces & Refractories								Customer Number		Sheet		
										1/1		



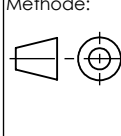
Rev.	Modification										Name	Date			
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.															
Tolerance for dimensions without tol. according to ISO 2768-mK															
More than	0.5	3	6	30	120	400	1000	2000	Draw	Name	Date	Material			
Less	3	6	30	120	400	1000	2000	4000							
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Checked			Weight (kg)			
Welded	±0.5	±1	±1.5	±2	±3	±4	±6	Verified							
Customer:									Format: A1						
ALINVEST									Scale: 1:50						
 Furnaces & Refractories									Project Method: 						
									Title: ALINVEST TMT 2.5-25#1 HOUSING PART #4 OF 6						
Customer Number										Revision		A			
										Sheet					
										1/1					

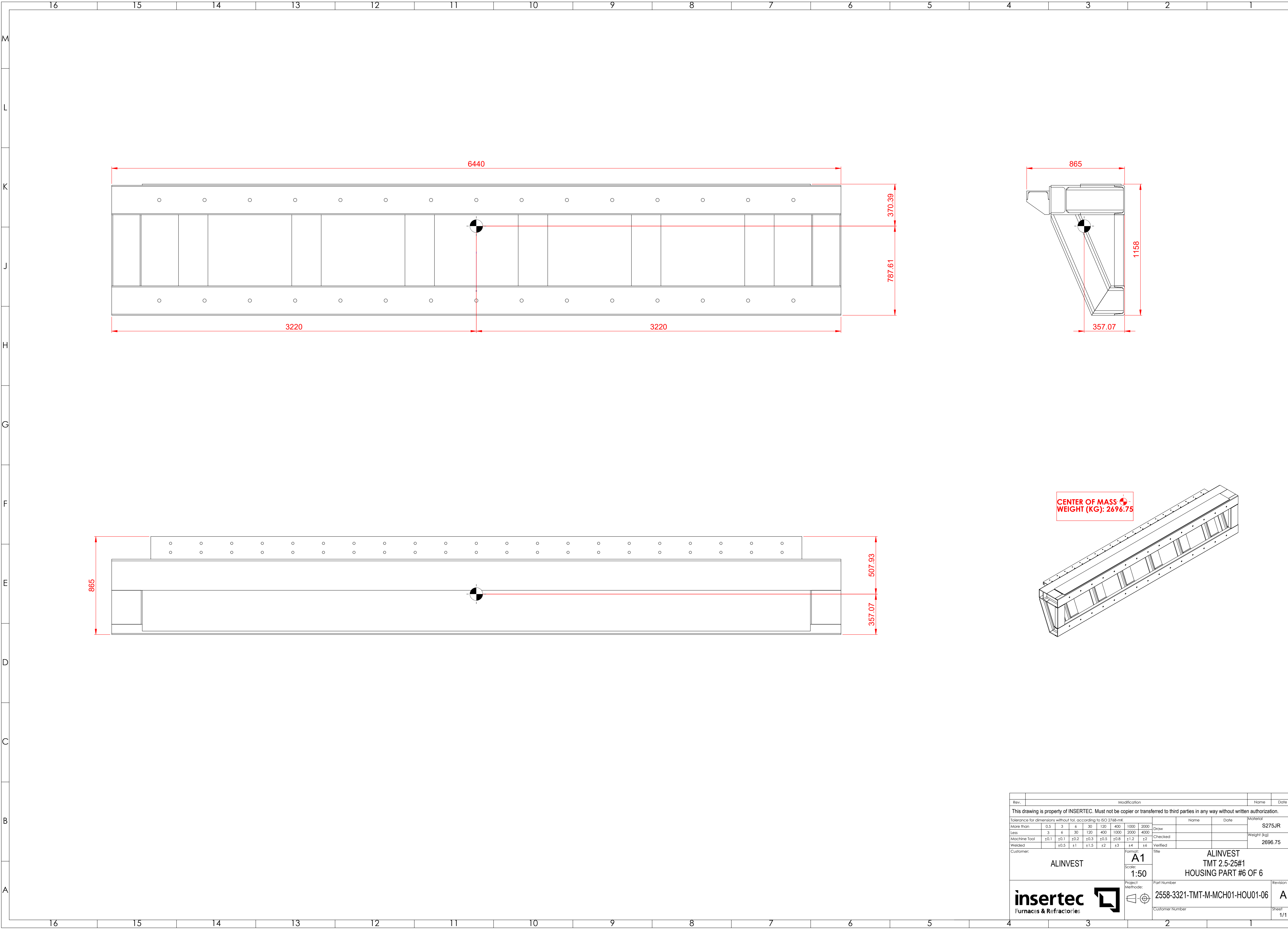



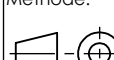
CENTER OF MASS  
WEIGHT (KG): 2177.16

Rev.	Modification										Name	Date		
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.														
Tolerance for dimensions without tol. according to ISO 2768-mK														
More than	0.5	3	6	30	120	400	1000	2000	Draw	Name	Date	Material		
Less	3	6	30	120	400	1000	2000	4000	Checked	J.C.M.H.	12/09/2025	S275JR		
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	J.C.M.H.	12/09/2025	Weight (kg)		
Welded	±0.5	±1	±1.5	±2	±3	±4	±6			B.U.	12/09/2025	2177.16		
Customer:									Format:	Title				
ALINVEST									A1	ALINVEST TMT 2.5-25#1 HOUSING PART #5 OF 6				
									Scale: 1:50					
 Furnaces & Refractories									Project Method:	Revision				
									Part Number				Revision	
									2558-3321-TMT-M-MCH01-HOU01-05				A	
									Customer Number				Sheet	
													1/1	

insertec  
Furnaces & Refractories



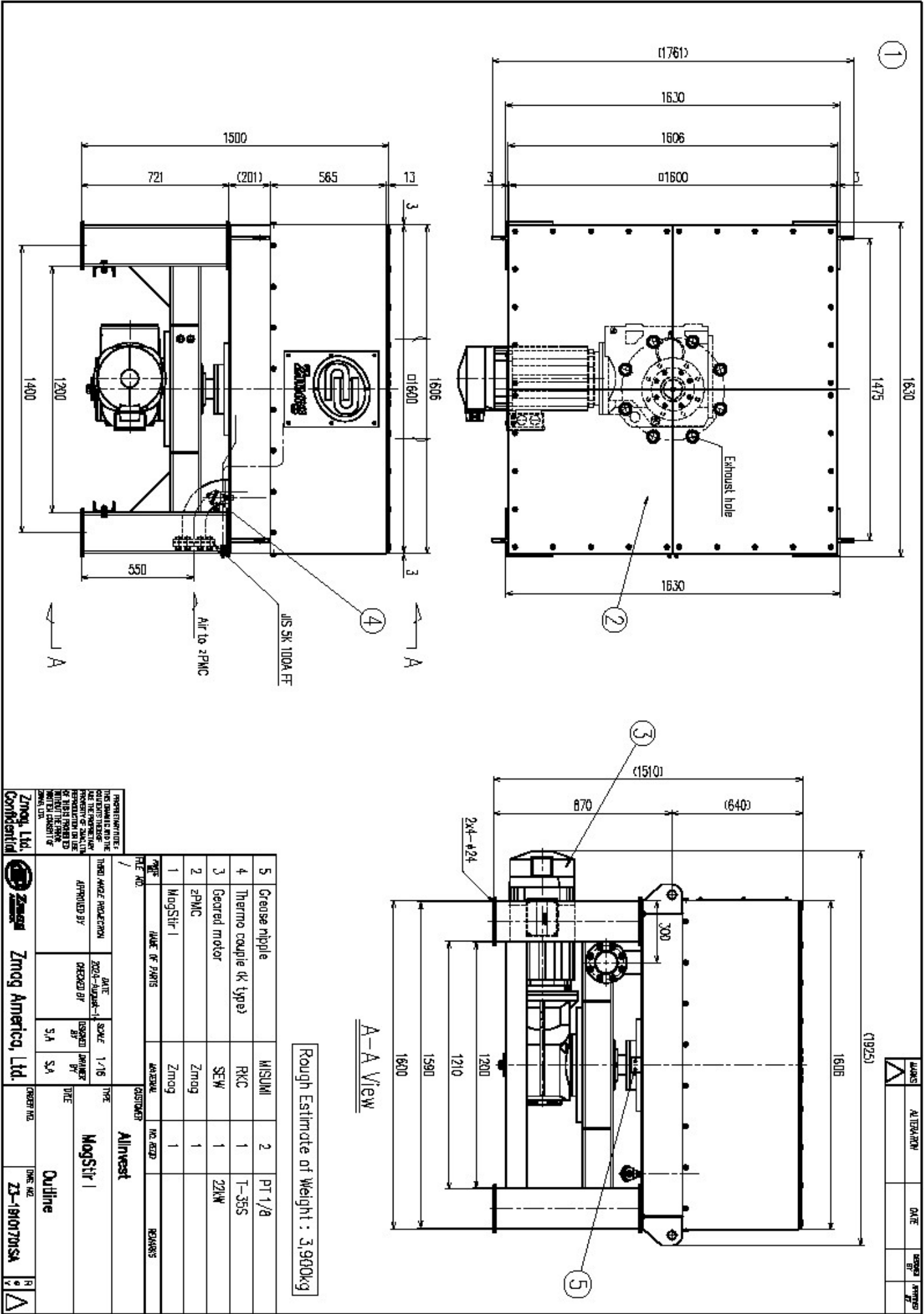


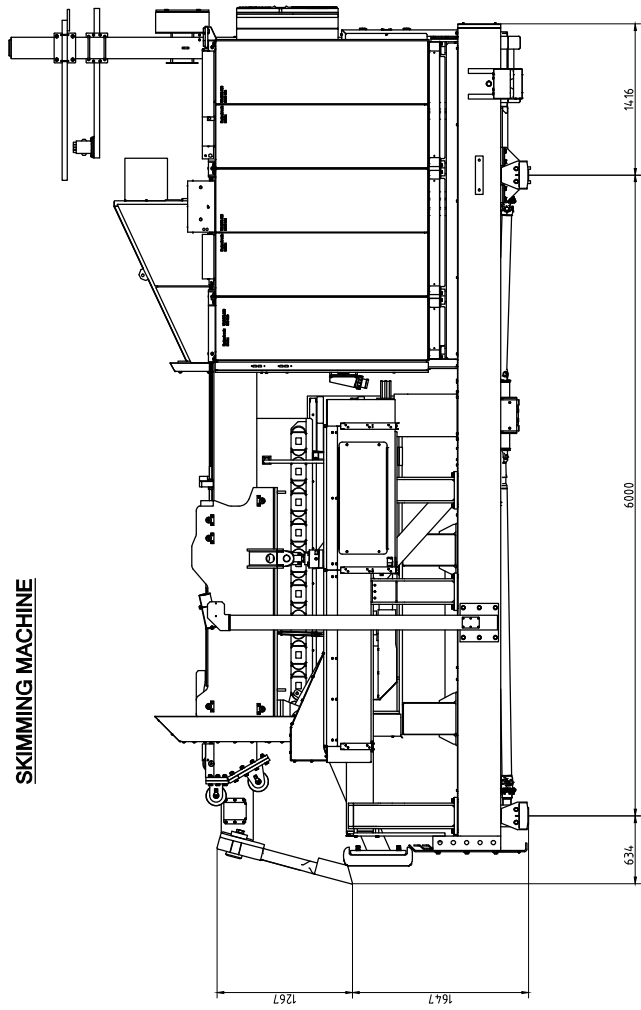
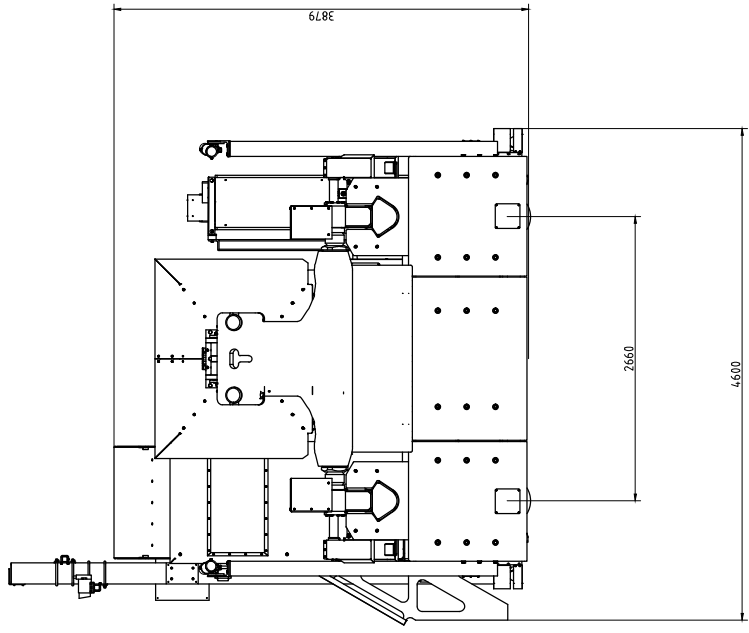
Rev.	Modification										Name		Date
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.													
Tolerance for dimensions without tol. according to ISO 2768-mK:										Material			
More than	0.5	3	6	30	120	400	1000	2000	Draw			S275JR	
Less	3	6	30	120	400	1000	2000	4000					
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Checked		Weight (kg)		
Welded		±0.5	±1	±1.5	±2	±3	±4	±6	Verified		2696.75		
Customer:						Format:		Title					
ALINVEST						A1		ALINVEST TMT 2.5-25#1 HOUSING PART #6 OF 6					
						Scale: 1:50							
 Furnaces & Refractories								Part Number		Revision			
								2558-3321-TMT-M-MCH01-HOU01-06		A			
								Customer Number		Sheet			
		1/1											



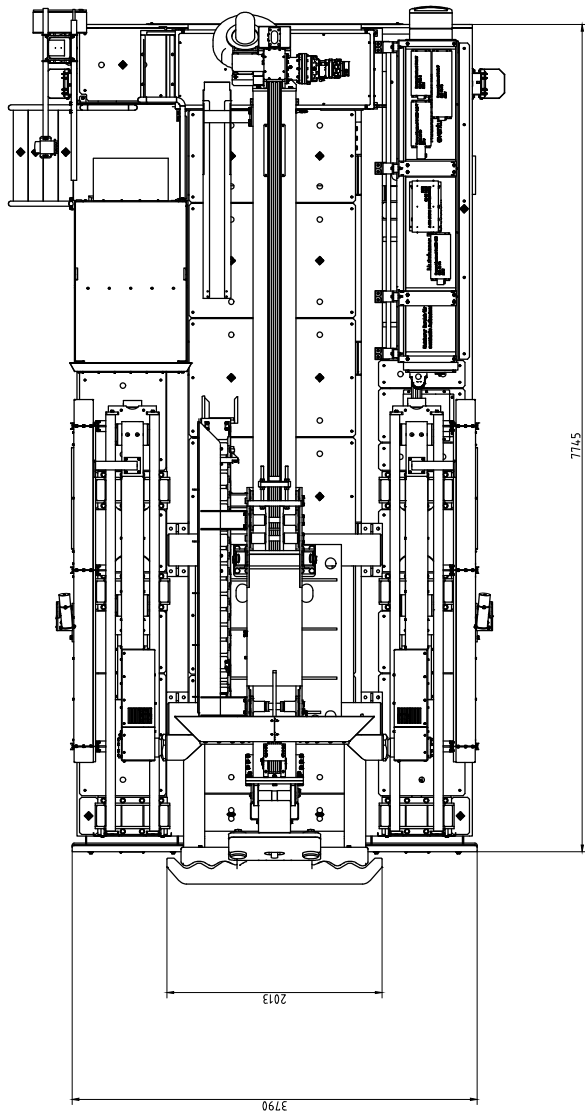
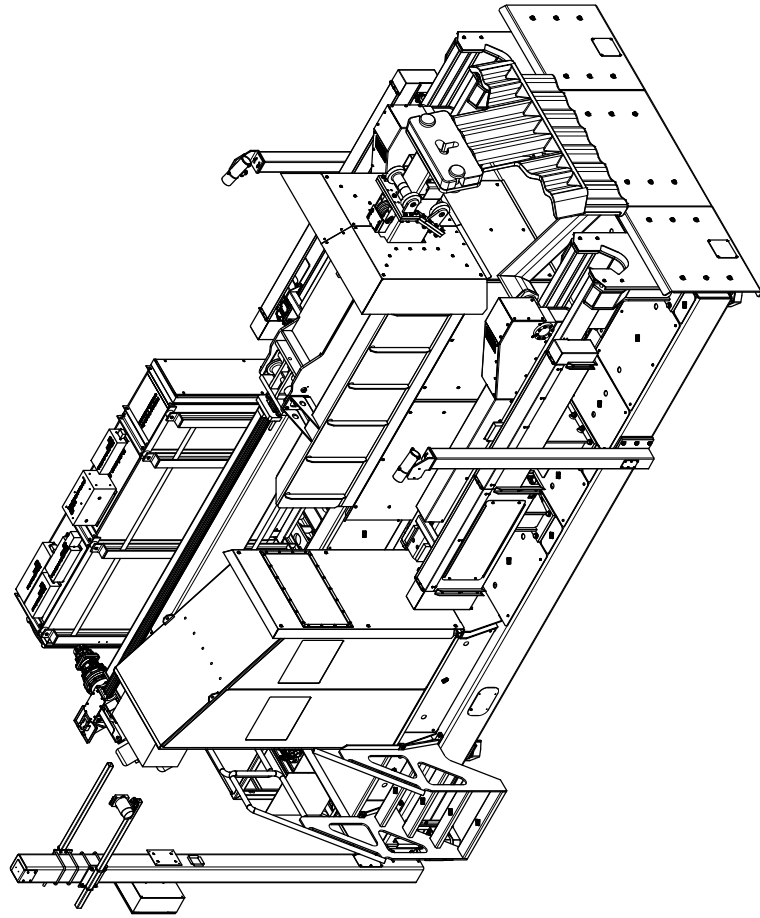
Drawings

Reference purposes only. Details will be discussed among ALINVEST, INSERTEC, and Zmag.





## SKIMMING MACHINE

[illegible]

Technical drawings of a container crane, showing side, front, and top views with dimensions.

**Side View (Left):** Dimensions include 3778, 1865, 1200, 3800, 6000, 7745, 1443, and 302.

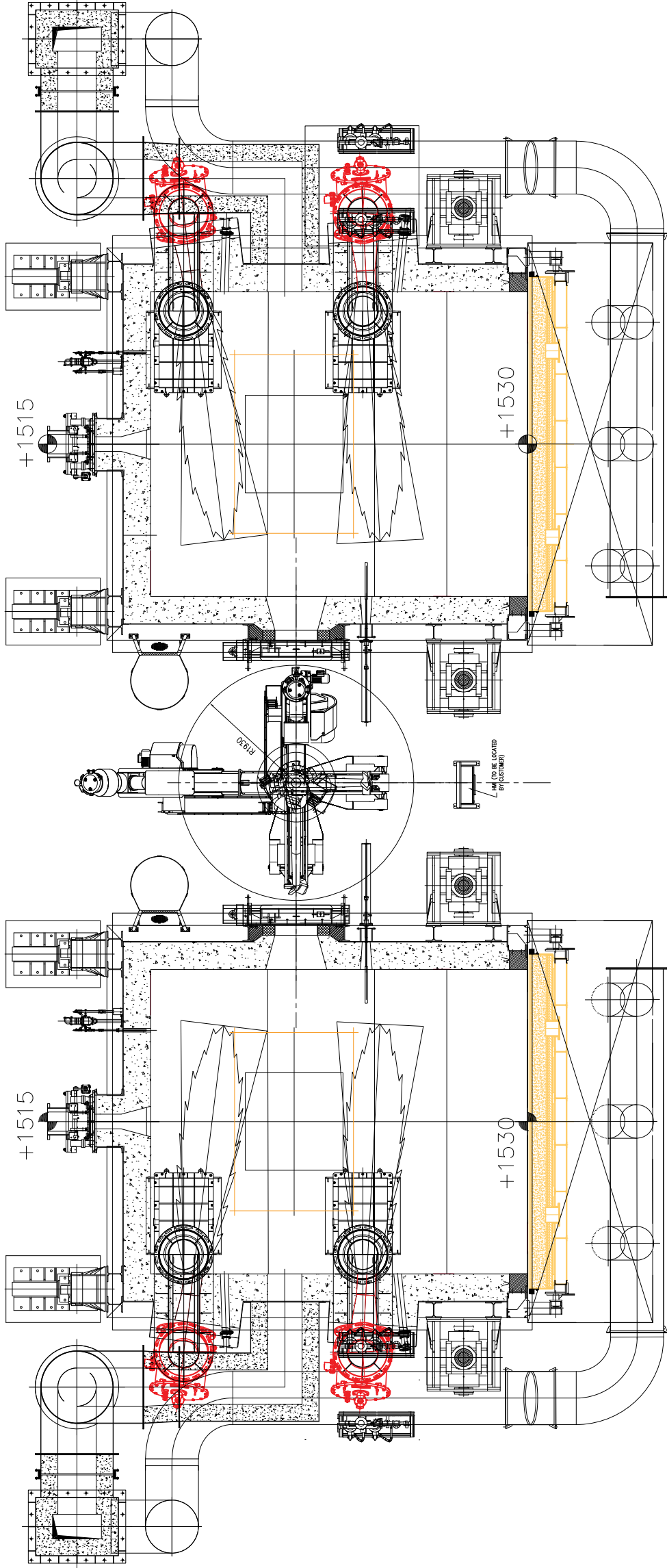
**Front View (Right):** Dimensions include 4700 and 4700.

**Top View (Bottom):** Dimensions include 4530 and 5910.

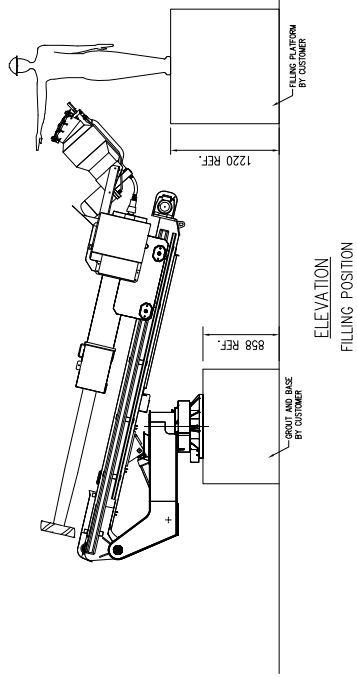
**Bottom View (Top):** Dimensions include 4830 and 4830.

<b>INSTEREC for AIR</b> <b>Charging &amp; Skimming Equip</b> <b>Project-Nr.: D2022-00118</b> <b>Contract-Nr.: D2022-00118</b>		<b>Serial:</b> 2780 820 <b>Year:</b> 2018	<b>Serial:</b> 1 <b>Year:</b> 2018	<b>Weight:</b> 53.000 kg
<b>INSTEREC for AIR</b> <b>Charging &amp; Skimming Equip</b> <b>Project-Nr.: D2022-00118</b> <b>Contract-Nr.: D2022-00118</b>		<b>Serial:</b> 2780 820 <b>Year:</b> 2018	<b>Serial:</b> 1 <b>Year:</b> 2018	<b>Weight:</b> 53.000 kg
<b>INSTEREC for AIR</b> <b>Charging &amp; Skimming Equip</b> <b>Project-Nr.: D2022-00118</b> <b>Contract-Nr.: D2022-00118</b>		<b>Serial:</b> 2780 820 <b>Year:</b> 2018	<b>Serial:</b> 1 <b>Year:</b> 2018	<b>Weight:</b> 53.000 kg

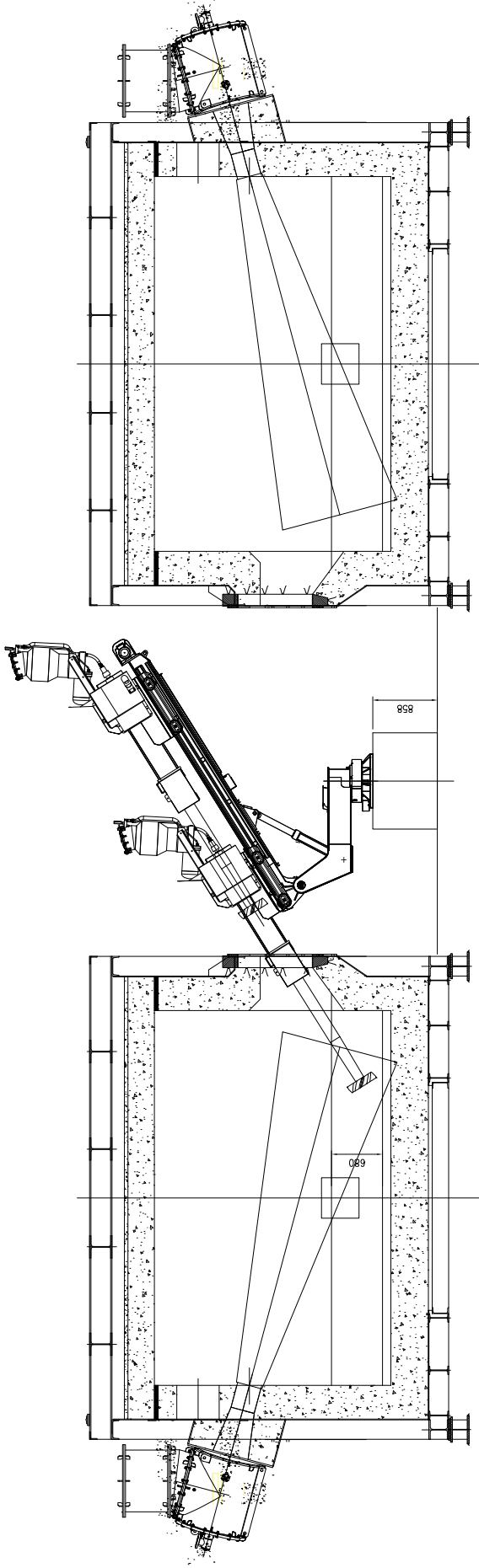
RFI



PLAN



ELEVATION  
FILLING POSITION



ELEVATION

FOR PROPOSAL ONLY

NOTES	
1-ROTOR POSITIONING	THE EQUIPMENT MUST BE INSTALLED AS PER THIS DRAWING TO ENSURE THE PROPER POSITIONING OF THE ROTOR. THE POSITIONING OF THE RFI/RFI ROTOR IN THE MELT IS OF THE UTMOST IMPORTANCE TO ENSURE RELIABLE AND SAFE OPERATION.
2-DEPTH OF METAL FOR TREATMENT	OPTIMUM EFFICIENCY IS REACHED AT THE NOMINAL METAL LEVEL OF THE FURNACE (DEPTH OF METAL FOR TREATMENT). A LOWER DEPTH OF METAL COULD REDUCE THE EFFICIENCY OF THE OPERATION AND COULD LEAD TO DROSS GENERATION AND METAL SPLASHING.

STAS		ALIVEST-VA INSERTEC	
35 MT MELTING FURNACES		RFI-FIXED ROTATING	
GENERAL ARRANGEMENT PROPOSAL		A0 OPP4974MP1	
R. ANCTIL		S. CLAVEAU	
2024-08-22		2024-08-22	
FURNACE UPDATES		FURNACE UPDATES	
DATE		DATE	
2024-08-02		2024-08-02	
REVISION		REVISION	
NO. DESIGN/REVISION NO.		NO. DESIGN/REVISION NO.	
TYPE/FILE		TYPE/FILE	
DESSINS DE REFERENCE/REFERENCE DRAWINGS		DESSINS DE REFERENCE/REFERENCE DRAWINGS	
CONFIDENTIAL		CONFIDENTIAL	

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> CONSTRUCTION & COMMISSIONING DEPARTMENT, INSERTEC	<b>ALINVEST</b> Member of <b>MTX</b> GROUP
<b>E2558 Alinvest – Czech Republic</b>	<b>2558-IH-PUE-01</b>	<b>E2558</b>

**Annex 4 - Preliminary manpower histogram - SUBCONTRACTOR**

**SUBCONTRACT - PRELIMINARY MANPOWER HISTOGRAMM (ONLY FOR REFERENCE)**

[illegible]



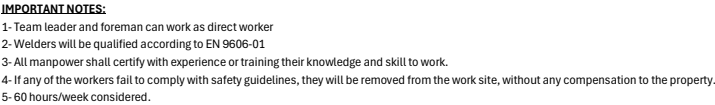
**SUBCONTRACT - PRELIMINARY MANPOWER HISTOGRAMM (ONLY FOR REFERENCE)**

[illegible]

**SUBCONTRACT - PRELIMINARY MANPOWER HISTOGRAMM (ONLY FOR REFERENCE)**

### MANPOWER OF INDIRECT MECHANICAL AND ELECTRICAL SUPERVISOR

TOTAL:	6	8	10	17	22	24	24	25	27	27	36	40	40	50	60	66	66	66	66	66	53	48	39	38	38	38	34	34	31	27	24	14	14	14	14	10	5	5	5	5	0	0	0	0	0	0	0	0
--------	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	---	---	---	---	---	---	---	---	---	---	---	---



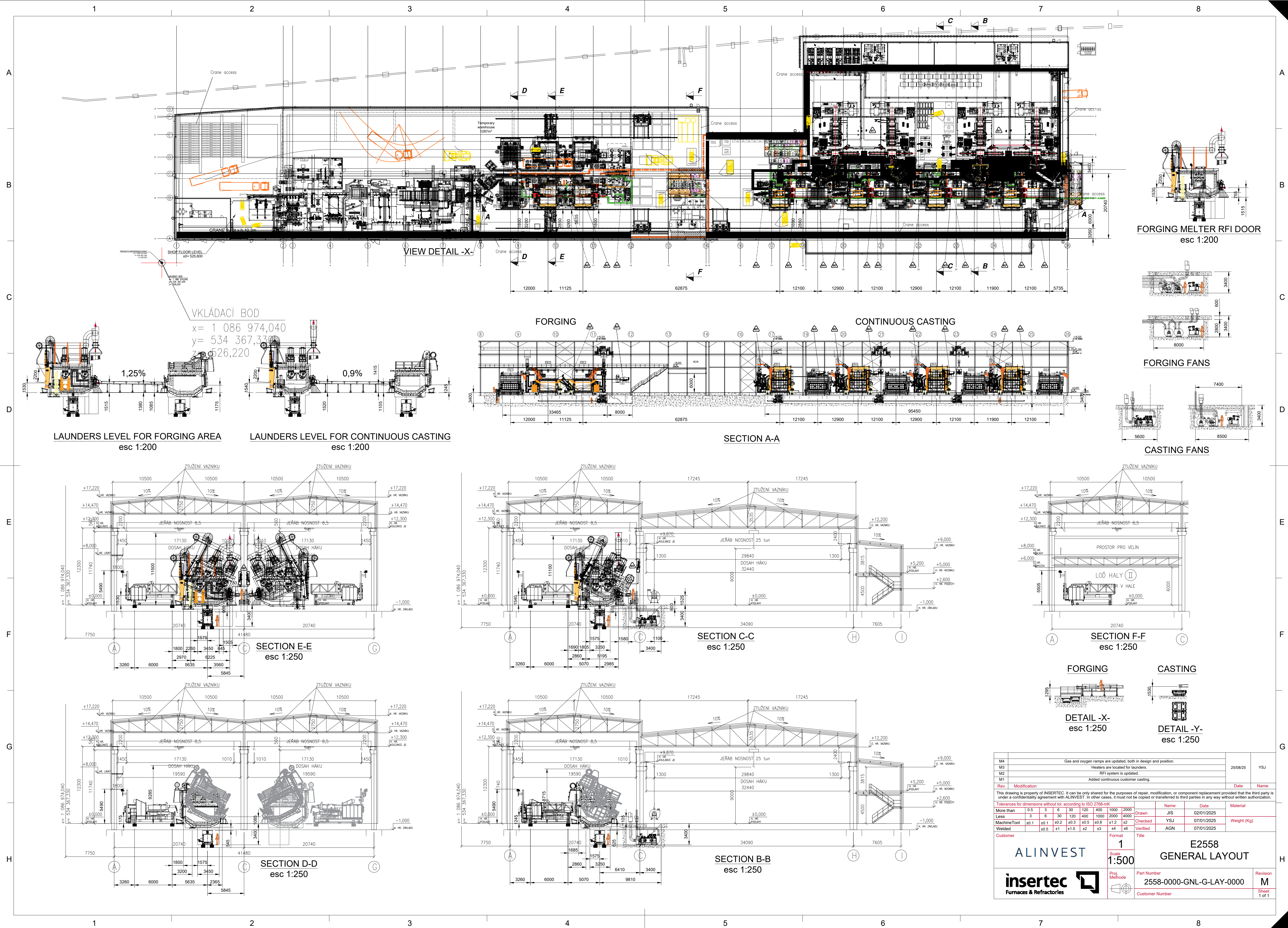
WEEKS	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	1	2	3	4	5
SUBCONTRACTOR'S MANPOWER	6	8	10	17	22	24	24	25	27	27	36	40	40	50	60	66	66	66	66	53	48	39	38	38	38	34	34	31	27	24	14	14	14	10	5	5	5	5	0	0	0	0	0	0



 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> CONSTRUCTION & COMMISSIONING DEPARTMENT, INSERTEC	<b>ALINVEST</b> Member of <b>MTX</b> GROUP
<b>E2558 Alinvest – Czech Republic</b>	<b>2558-IH-PUE-01</b>	<b>E2558</b>

Annex 5 - Drawing layout



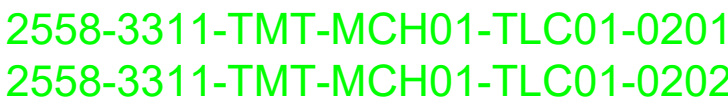


M4	Gas and oxygen ramps are updated, both in design and position.											25/08/25	YSJ	
M3	Heaters are located for launders.													
M2	RFI system is updated.													
M1	Added continuous customer casting.													
Rev.	Modification											Date	Name	
This drawing is property of INTERTEC. It can be only shared for the purposes of repair, modification, or component replacement provided that the third party is under a confidentiality agreement with INTERTEC. In other cases, it must not be copied or transferred to third parties in any way without written authorization.														
Tolerances for dimensions without tol. according to ISO 2768-mK														
More than	0.5	3	6	30	120	400	1000	2000		Drawn	JIS	02/01/2025	Material	
Less	3	6	30	120	400	1000	2000	4000		Checked	YSJ	07/01/2025	Weight (Kg)	
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	±2	Verified	AGN	07/01/2025		
Welded	±0.5	±1	±1.5	±2	±3	±4	±6	±8	±10	Format				
Customer										Title				
ALINVEST										1	E2558			
insertec										Scale	1:500	GENERAL LAYOUT		
Furnaces & Refractories										Proj. Methode		H		
										Part Number	2558-0000-GNL-G-LAY-0000	Revision	M	
										Customer Number		Sheet	1 of 1	



 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> CONSTRUCTION & COMMISSIONING DEPARTMENT, INSERTEC	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

Annex 6 -3D Construction sequence for Melter



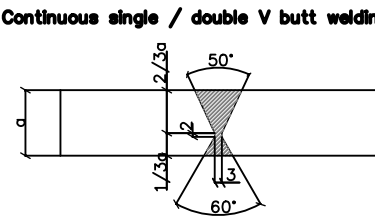
**TOTAL ASSEMBLY WEIGHT - 2.000kg**

This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.

**insertec**  
Furnaces & Refractories

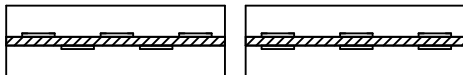


Thickness of the plate  $<10 \Rightarrow 0^\circ$   
 Thickness of the plate between 10 and 30  $\Rightarrow 45^\circ$   
 Thickness of the plate between 30 and 60  $\Rightarrow 35^\circ$   
 Thickness of the plate  $>60 \Rightarrow 30^\circ$

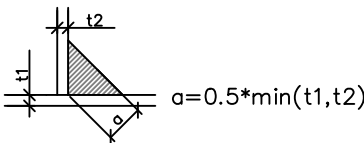


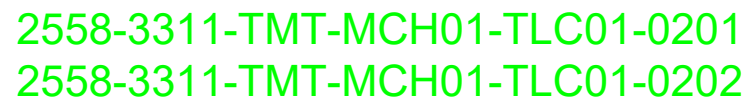
Intermittent external welding:

Maximum value:	Minimum value:
s <= 15*a	>= 15*a
s <= 300	>= 40



**Continuous fillet welding:**

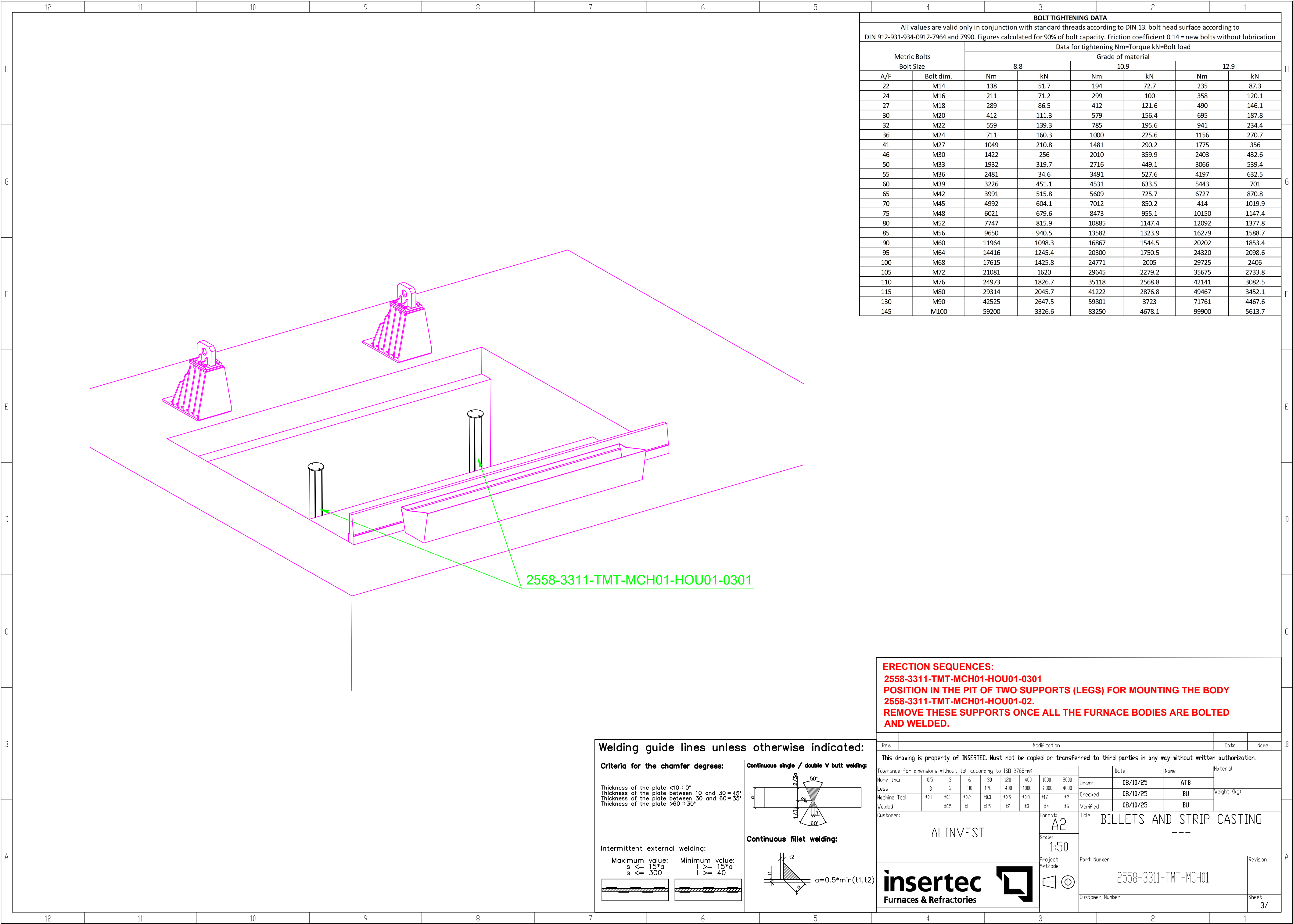




**TOTAL ASSEMBLY WEIGHT - 2.000kg**

**ERECTION SEQUENCES:**  
2558-3311-TMT-MCH01-TLC01-0201  
POSITION THE SECOND SUPPORT ON THE FOUNDATION, LEAVING IT LOOSE.  
DO NOT WELD.

**insertec**  
Furnaces & Refractories



BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
Metric Bolts		Data for tightening Nm=Torque kN=Bolt load					
		Grade of material					
Bolt Size		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

**ERECTION SEQUENCES:**  
**2558-3311-TMT-MCH01-HOU01-0301**  
**POSITION IN THE PIT OF TWO SUPPORTS (LEGS) FOR MOUNTING THE BODY**  
**2558-3311-TMT-MCH01-HOU01-02.**  
**REMOVE THESE SUPPORTS ONCE ALL THE FURNACE BODIES ARE BOLTED AND WELDED.**

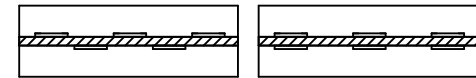
Welding guide lines unless otherwise indicated:

Criteria for the chamfer degrees:

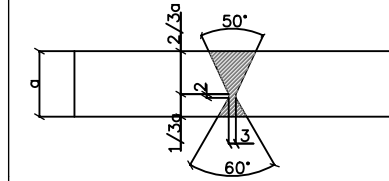
Thickness of the plate <10= 0°  
Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

Intermittent external welding:

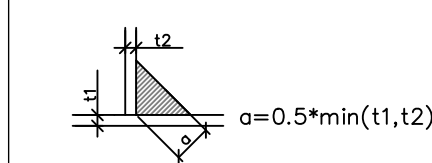
Maximum value: s ≤ 15\*a  
Minimum value: s ≤ 300  
I ≥ 15\*a  
I ≥ 40



Continuous single / double V butt welding:



Continuous fillet welding:



Rev.		Modification		Date	Name
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.					
Tolerance for dimensions without tol. according to ISO 2768-mK		Date		Name	
More than	0.5	3	6	30	120
Less	3	6	30	120	400
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5
Welded	±0.5	±1	±1.5	±2	±3
Customer:	ALINVEST		Format:	A2	
			Scale:	1:50	
			Project Methode:	Part Number	
				2558-3311-TMT-MCH01	
				Customer Number	
				Sheet 3/	



composed of :

- 11-TMT-MCH01-HOU01-0201
- 11-TMT-MCH01-HOU01-0202
- 11-TMT-MCH01-HOU01-0203
- 11-TMT-MCH01-HOU01-0205

The diagram illustrates the assembly of a container unit. The main body is a rectangular structure with a door on the left side. A crane hook is shown lifting a long, thin component (likely a roof or floor beam) into place. The weight of this component is indicated as 11.900kg. The unit is shown sitting on a base with support legs. The exploded view shows the door, the main body, and the base components.

**TOTAL ASSEMBLY WEIGHT - 11.900kg**

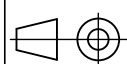
**2558-3311-TMT-MCH01-HOU01-02**  
**POSITION AND SUPPORT 2558-3311-TMT-MCH01-HOU01-02 ON TWO MOUNTING**  
**SUPPORTS (See attached drawing 2558-3311-TMT-MCH01-HOU01-0301) INSIDE**  
**THE PIT.**

Welding guide lines unless otherwise indicated:

Thickness of the plate  $<10 \Rightarrow 0^\circ$   
 Thickness of the plate between 10 and 30  $\Rightarrow 45^\circ$   
 Thickness of the plate between 30 and 60  $\Rightarrow 35^\circ$   
 Thickness of the plate  $>60 \Rightarrow 30^\circ$

Maximum value:	Minimum value:
s <= 15*a	>= 15*a
s <= 300	>= 40

$a = 0.5 * \min(t_1, t_2)$



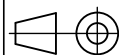


Customer Number	Sheet 4
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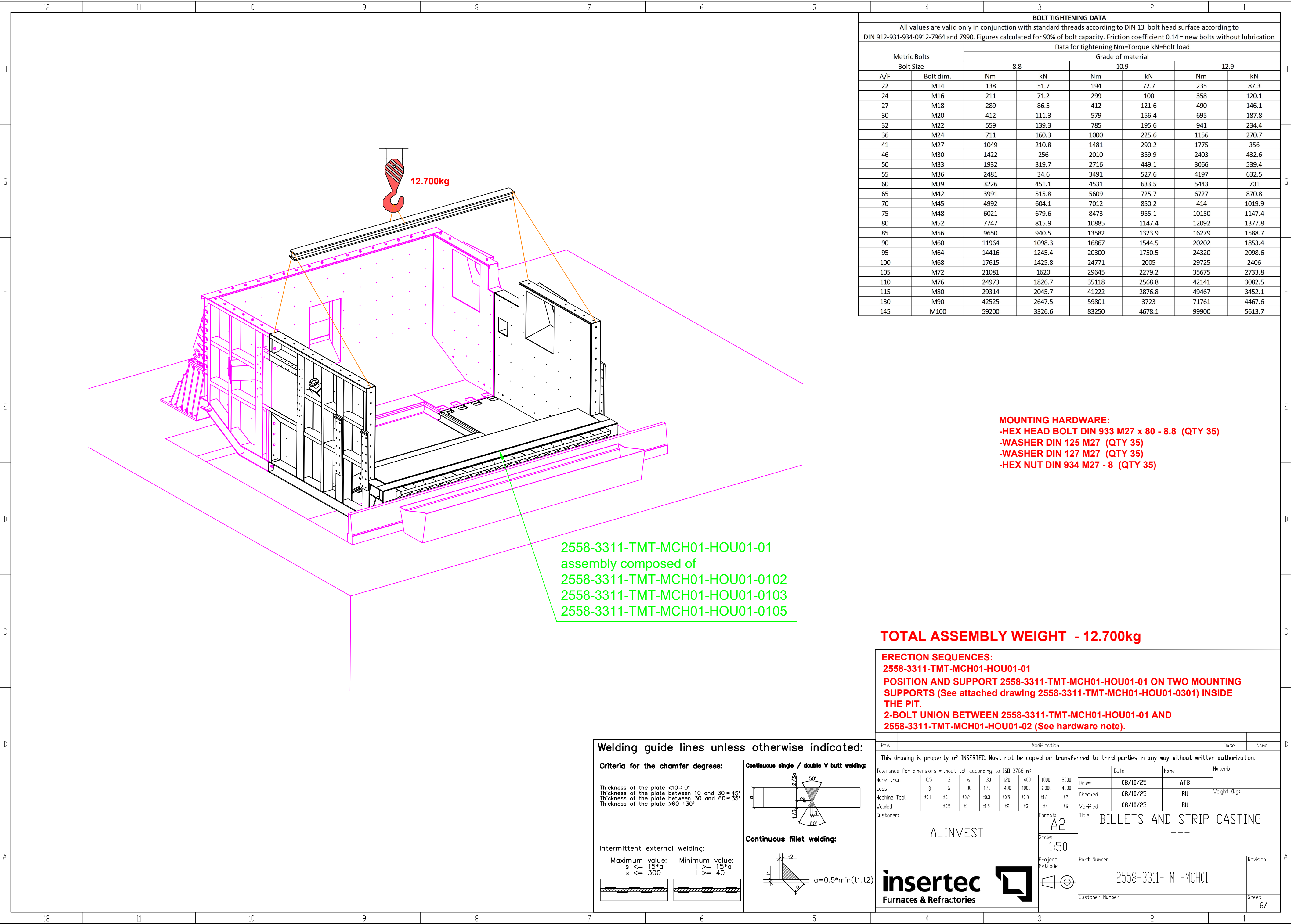


BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
Metric Bolts		Data for tightening Nm=Torque kN=Bolt load					
		Grade of material					
Bolt Size		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

2558-3311-TMT-MCH01-HOU01-0301  
POSITION IN THE PIT OF TWO OTHER SUPPORTS (LEGS) FOR MOUNTING THE  
BODY 2558-3311-TMT-MCH01-HOU01-01.  
REMOVE THESE SUPPORTS ONCE ALL THE FURNACE BODIES ARE BOLTED  
AND WELDED.

Rev.	Modification										Date	Name		
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.														
Tolerance for dimensions without tol. according to ISO 2768-mK									Date	Name	Material			
More than	0.5	3	6	30	120	400	1000	2000	Drawn	08/10/25	ATB	Weight (kg)		
Less	3	6	30	120	400	1000	2000	4000		08/10/25	BU			
Machine Tool	+0.1	+0.1	+0.2	+0.3	+0.5	+0.8	+1.2	+2	Checked	08/10/25	BU			
Welded		+0.5	+1	+1.5	+2	+3	+4	+6	Verified	08/10/25	BU			
Customer:									Format:	Title				
ALINVEST									A2	BILLETS AND STRIP CASTING ---				
									Scale:					
									1:50					
 									Project Methode:	Part Number				Revision
														
									Customer Number				Sheet	
													5/	





BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
Data for tightening Nm=Torque kN=Bolt load							
Metric Bolts		Grade of material					
		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

**MOUNTING HARDWARE:**  
-HEX HEAD BOLT DIN 933 M27 x 80 - 8.8 (QTY 35)  
-WASHER DIN 125 M27 (QTY 35)  
-WASHER DIN 127 M27 (QTY 35)  
-HEX NUT DIN 934 M27 - 8 (QTY 35)

**TOTAL ASSEMBLY WEIGHT - 12.700kg**

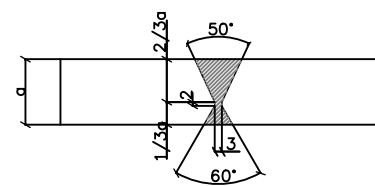
**ERECTION SEQUENCES:**  
**2558-3311-TMT-MCH01-HOU01-01**  
**POSITION AND SUPPORT 2558-3311-TMT-MCH01-HOU01-01 ON TWO MOUNTING SUPPORTS (See attached drawing 2558-3311-TMT-MCH01-HOU01-0301) INSIDE THE PIT.**  
**2-BOLT UNION BETWEEN 2558-3311-TMT-MCH01-HOU01-01 AND 2558-3311-TMT-MCH01-HOU01-02 (See hardware note).**

Welding guide lines unless otherwise indicated:

Criteria for the chamfer degrees:

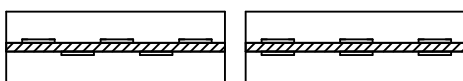
Thickness of the plate <10= 0°  
Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

Continuous single / double V butt welding:

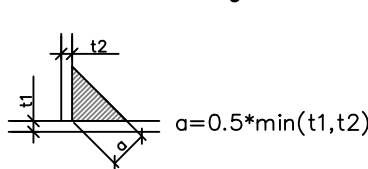



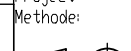
Intermittent external welding:

Maximum value: s ≤ 15\*a  
Minimum value: s ≤ 300  
I ≥ 15\*a  
I ≥ 40

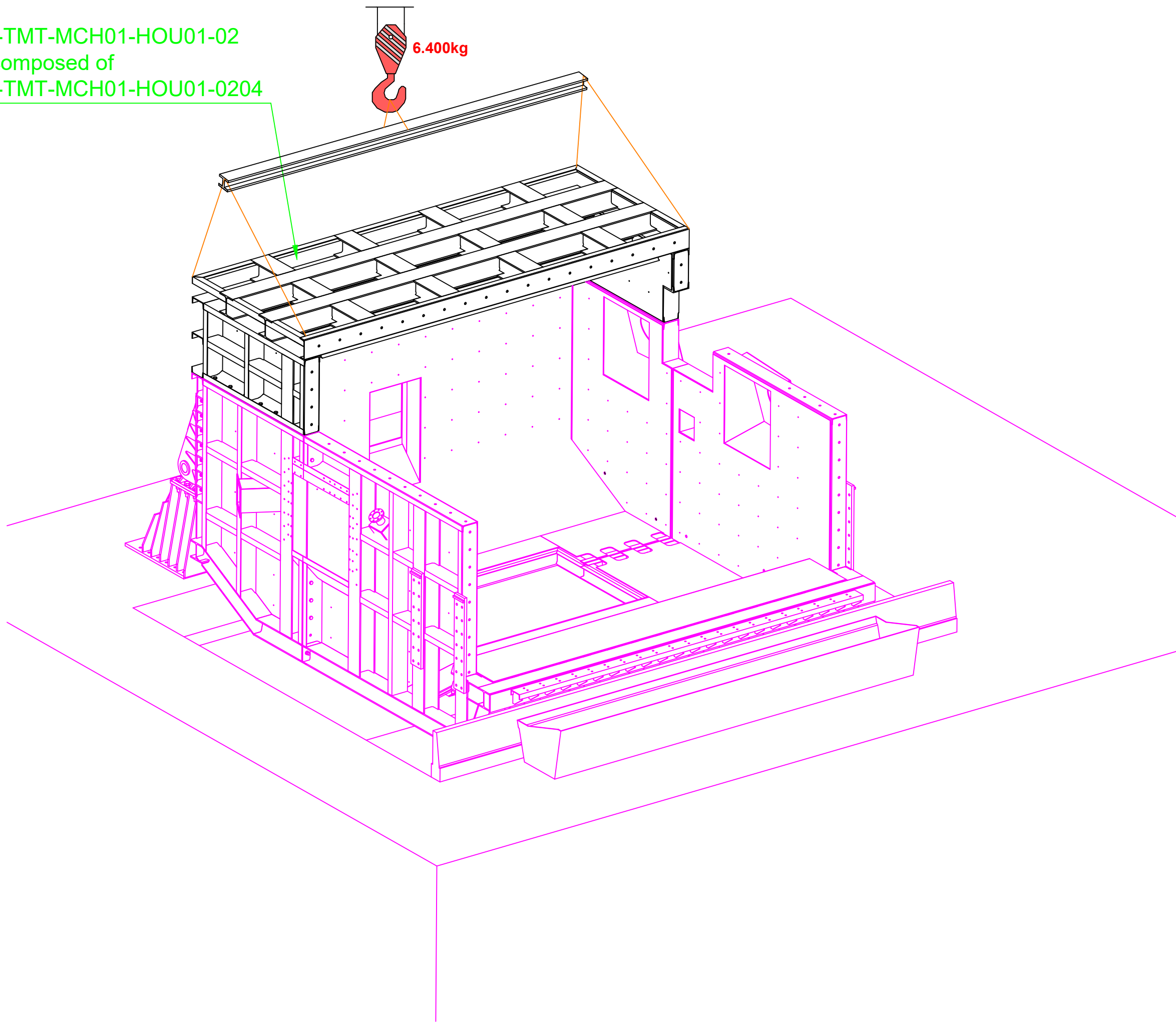


Continuous fillet welding:



Rev.	Modification										Date	Name	
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.													
Tolerance for dimensions without tol. according to ISO 2768-mK													
More than	0.5	3	6	30	120	400	1000	2000	Date	Name	Material		
Less	3	6	30	120	400	1000	2000	4000	Drawn	08/10/25	ATB		
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Checked	08/10/25	BU Weight (kg)		
Welded	±0.5	±1	±1.5	±2	±3	±4	±6		Verified	08/10/25	BU		
Customer:	ALINVEST								Format:	Title BILLETS AND STRIP CASTING			
									A2	---			
									Scale:	1:50			
								Project Methode:	Part Number				Revision
									2558-3311-TMT-MCH01				
								Customer Number				Sheet	
												6/	

2558-3311-TMT-MCH01-HOU01-02  
assembly composed of  
2558-3311-TMT-MCH01-HOU01-0204



**MOUNTING HARDWARE:**  
-HEX HEAD BOLT DIN 933 M27 x 80 - 8.8 (QTY 35)  
-WASHER DIN 125 M27 (QTY 35)  
-WASHER DIN 127 M27 (QTY 35)  
-HEX NUT DIN 934 M27 - 8 (QTY 35)

**TOTAL ASSEMBLY WEIGHT - 6.400kg**

**ERECTION SEQUENCES:**  
**2558-3311-TMT-MCH01-HOU01-0204**  
**1-POSITION AND SUPPORT ON THE LOWER BODY.**  
**2-BOLT UNION BETWEEN 2558-3311-TMT-MCH01-HOU01-0204**  
**2558-3311-TMT-MCH01-HOU01-02 (See hardware note).**

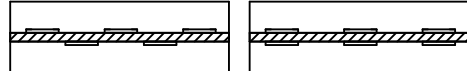
Welding guide lines unless otherwise indicated:

Criteria for the chamfer degrees:

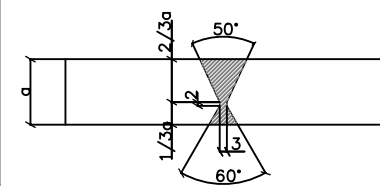
Thickness of the plate <10= 0°  
Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

Intermittent external welding:

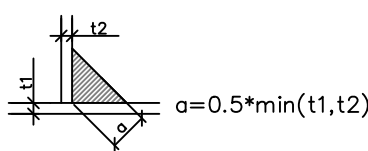
Maximum value: s ≤ 15\*a  
Minimum value: s ≤ 300  
I ≥ 15\*a  
I ≥ 40




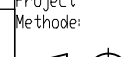
Continuous single / double V butt welding:



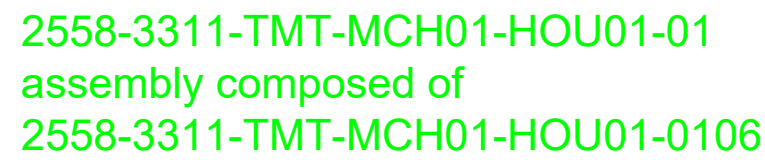
Continuous fillet welding:



**ERECTION SEQUENCES:**  
**2558-3311-TMT-MCH01-HOU01-0204**  
**1-POSITION AND SUPPORT ON THE LOWER BODY.**  
**2-BOLT UNION BETWEEN 2558-3311-TMT-MCH01-HOU01-0204**  
**2558-3311-TMT-MCH01-HOU01-02 (See hardware note).**

Rev.	Modification								Date	Name			
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.													
Tolerance for dimensions without tol. according to ISO 2768-mK													
More than	0.5	3	6	30	120	400	1000	2000	Material				
Less	3	6	30	120	400	1000	2000	4000					
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2		Weight (kg)			
Welded		±0.5	±1	±1.5	±2	±3	±4	±6					
Customer:	ALINVEST					Format:	A2			Title	BILLETS AND STRIP CASTING ---		
						Scale:	1:50						
					Project Methode:					Part Number	Revision		
									2558-3311-TMT-MCH01				
									Customer Number				Sheet 7/





**MOUNTING HARDWARE:**  
**-HEX HEAD BOLT DIN 933 M27 x 80 - 8.8 (QTY 50)**  
**-WASHER DIN 125 M27 (QTY 50)**  
**-WASHER DIN 127 M27 (QTY 50)**  
**-HEX NUT DIN 934 M27 - 8 (QTY 50)**

**TOTAL ASSEMBLY WEIGHT - 7.500kg**

**ERECTION SEQUENCES:**

2558-3311-TMT-MCH01-HOU01-0106

### 1-POSITION AND SUPPORT ON THE LOWER BODY.

**2-BOLT UNION BETWEEN 2558-3311-TMT-MCH01-HOU01-0106,**

**2558-3311-TMT-MCH01-HOU01-0204 AND 2558-3311-TMT-MCH01-HOU01-01**  
**(See hardware note).**

Welding guide lines unless otherwise indicated:

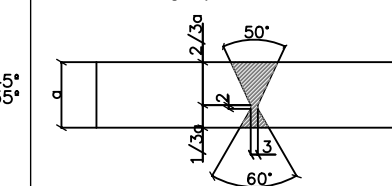
**Criteria for the chamfer degrees:**

Thickness of the plate	$<10 \Rightarrow 0^\circ$
Thickness of the plate	between 10 and 30 $\Rightarrow 45^\circ$
Thickness of the plate	between 30 and 60 $\Rightarrow 35^\circ$
Thickness of the plate	$>60 \Rightarrow 30^\circ$

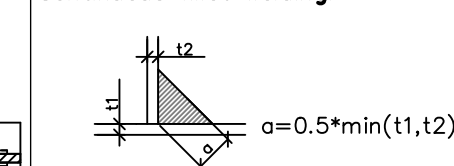
Intermittent external welding:

Maximum value:	Minimum value:
s <= 15*a	>= 15*a
s <= 300	>= 40

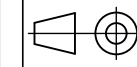
**Continuous single / double V butt welding:**



**Continuous fillet welding:**



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Title	BILLETS AND STRIP CASTING
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Part Number	2558-3311-TMT-MCH01
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Customer Number
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Revision

8/


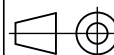


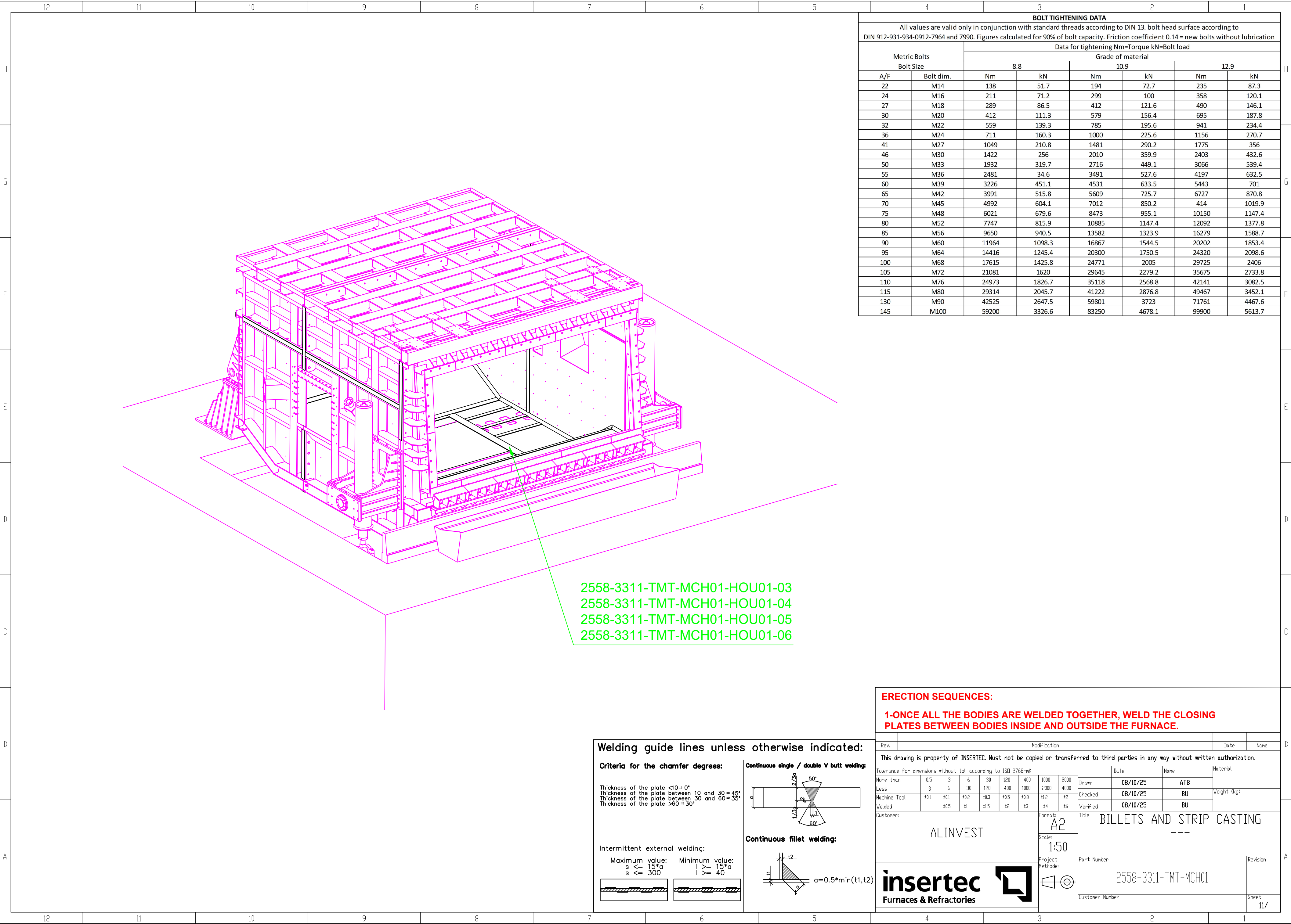




**MOUNTING HARDWARE:**  
**-HEX HEAD BOLT DIN 933 M27 x 130 - 8.8 (QTY 65)**  
**-WASHER DIN 125 M27 (QTY 65)**  
**-WASHER DIN 127 M27 (QTY 65)**  
**-HEX NUT DIN 934 M27 - 8 (QTY 65)**

**ERECTION SEQUENCES:**  
**2558-3311-TMT-MCH01-TLC01**  
**1-POSITION AND FIX THE CYLINDER SUPPORTS AND FURNACE SUPPORTS.**

Rev.		Modification										Date		Name					
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.																			
Tolerance for dimensions without tol. according to ISO 2768-mK										Date		Name		Material					
More than		0.5	3	6	30	120	400	1000	2000	Drawn		08/10/25				ATB			
Less		3	6	30	120	400	1000	2000	4000	Checked		08/10/25		BU		Weight (kg)			
Machine Tool		±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1	±2	Verified		08/10/25		BU					
Welded				±0.5	±1	±1.5	±2	±3	±4	±6									
Customer:										Format:		Title							
ALINVEST										A2		BILLETS AND STRIP CASTING ---							
										Scale:									
										1:50									
										Project Methode:		Part Number						Revision	
												2558-3311-TMT-MCH01							
										Customer Number						Sheet 10/			



2558-3311-TMT-MCH01-HOU01-03  
2558-3311-TMT-MCH01-HOU01-04  
2558-3311-TMT-MCH01-HOU01-05  
2558-3311-TMT-MCH01-HOU01-06

BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
Data for tightening Nm=Torque kN=Bolt load							
Metric Bolts		Grade of material					
Bolt Size		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

ERECTION SEQUENCES:

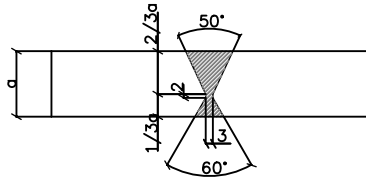
1-ONCE ALL THE BODIES ARE WELDED TOGETHER, WELD THE CLOSING PLATES BETWEEN BODIES INSIDE AND OUTSIDE THE FURNACE.

Welding guide lines unless otherwise indicated:

Criteria for the chamfer degrees:

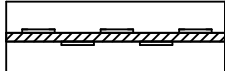
Thickness of the plate <10= 0°  
Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

Continuous single / double V butt welding:

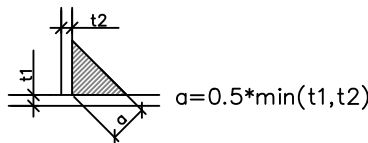


Intermittent external welding:

Maximum value: s ≤ 15\*a  
Minimum value: l ≥ 15\*a  
s ≤ 300  
l ≥ 40



Continuous fillet welding:



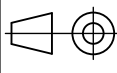
ALINVEST

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Format: A2

Scale: 1:50

Project Methode:



Rev.	Modification	Date	Name

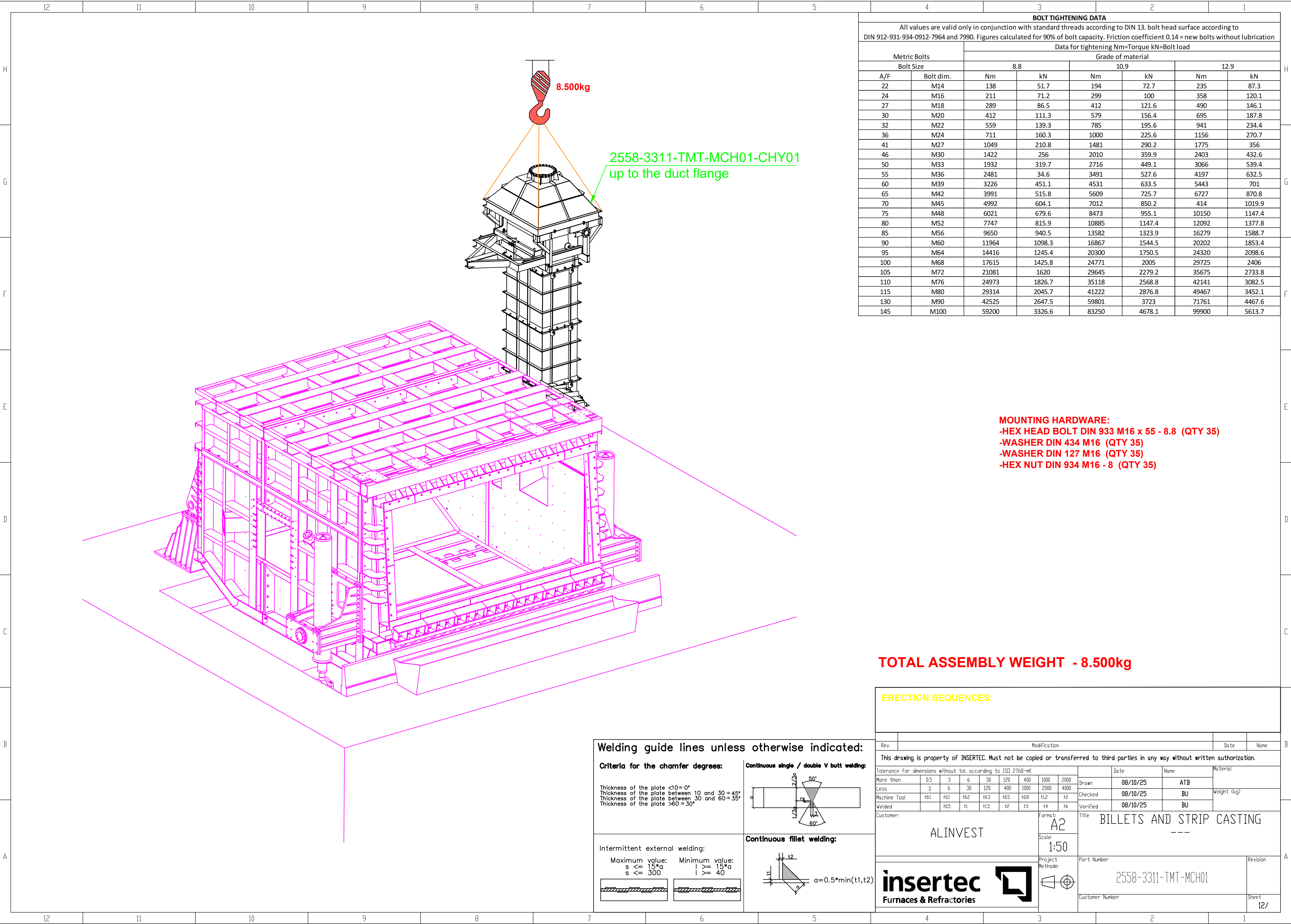
Drawn	Date	Name	Material
	08/10/25	ATB	
Checked	Date	BU	Weight (kg)
	08/10/25	BU	
Verified	Date	BU	
	08/10/25	BU	

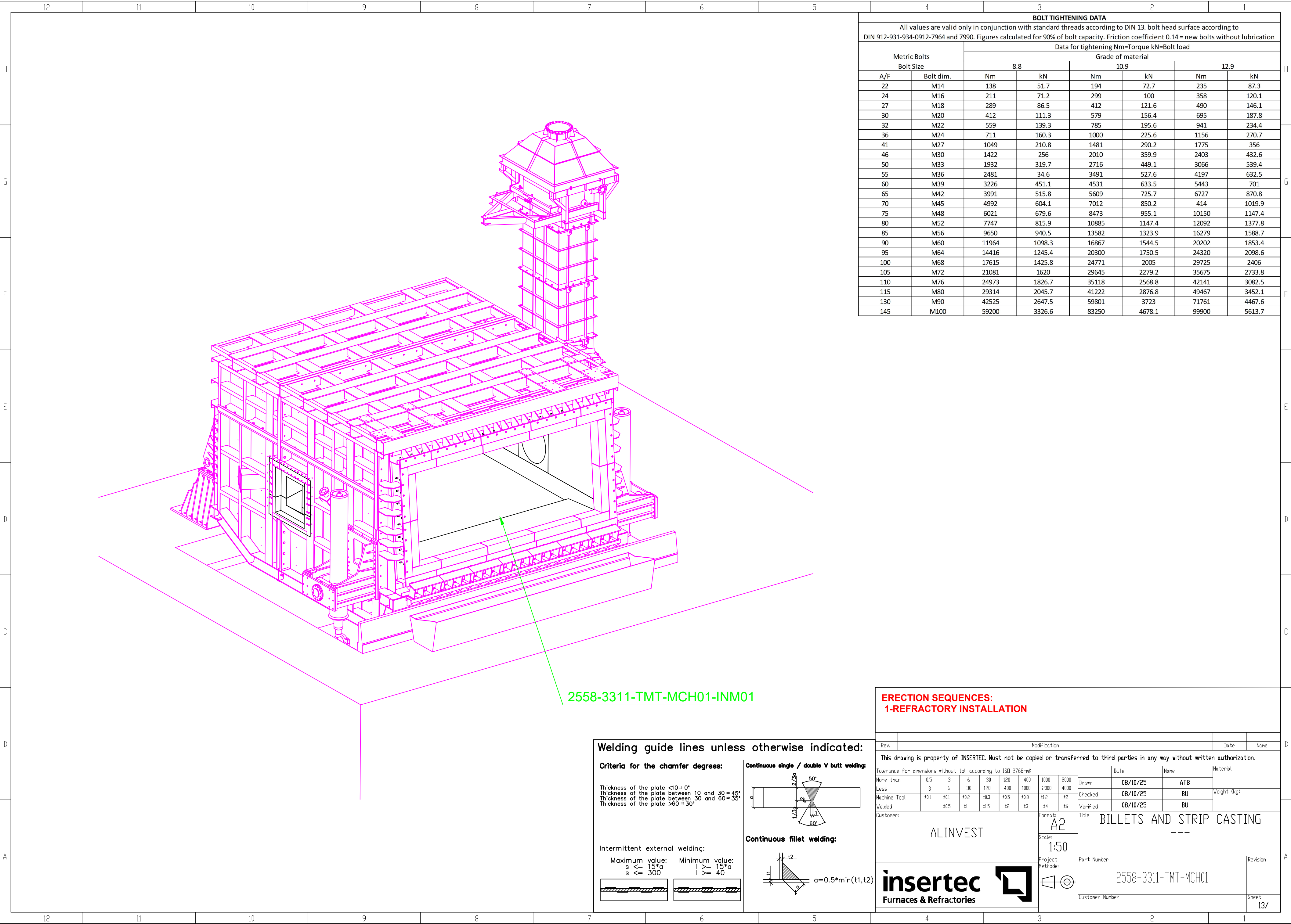
Title BILLETS AND STRIP CASTING

Part Number 2558-3311-TMT-MCH01

Customer Number Sheet 11/



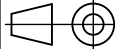




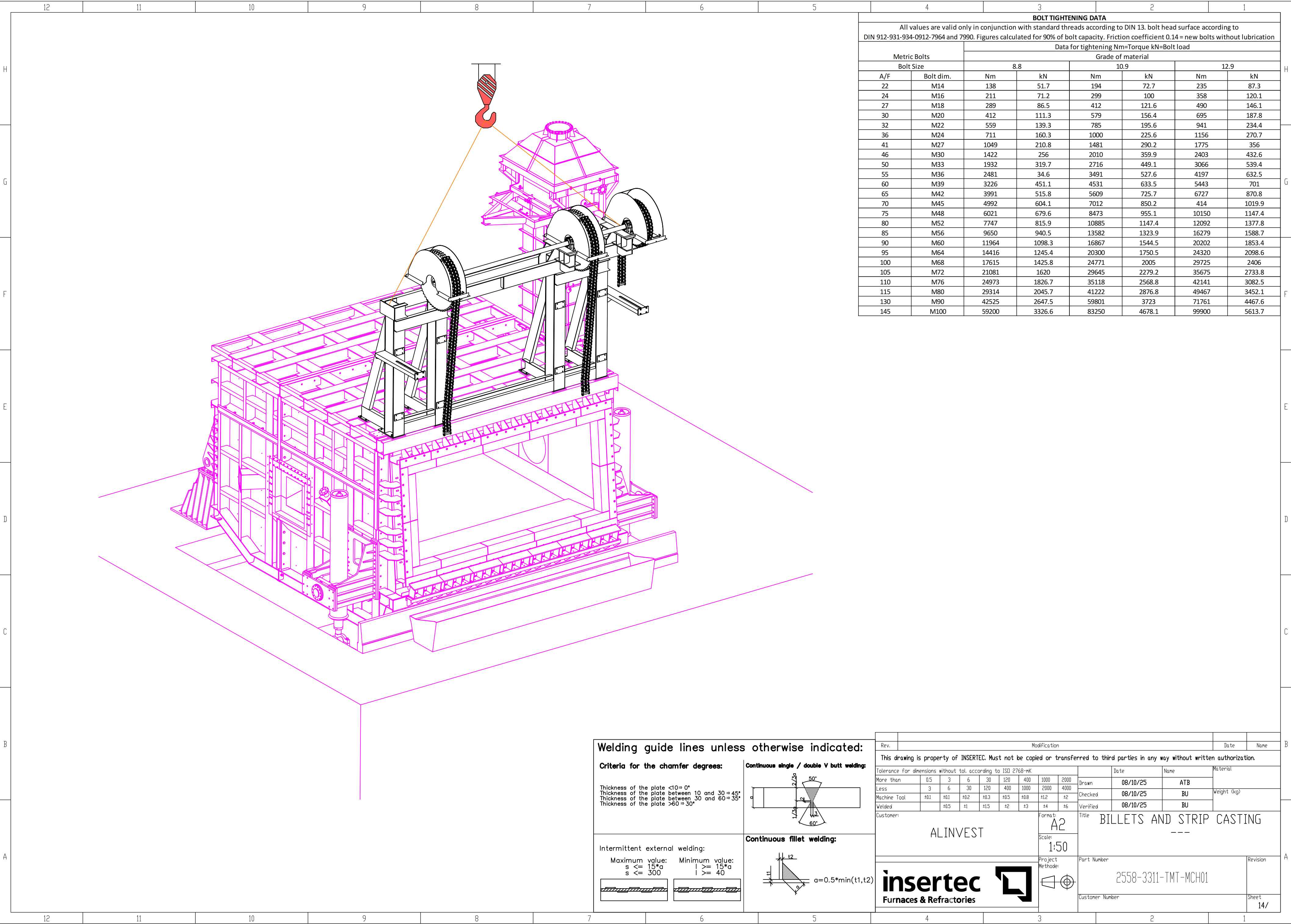
2558-3311-TMT-MCH01-INM01

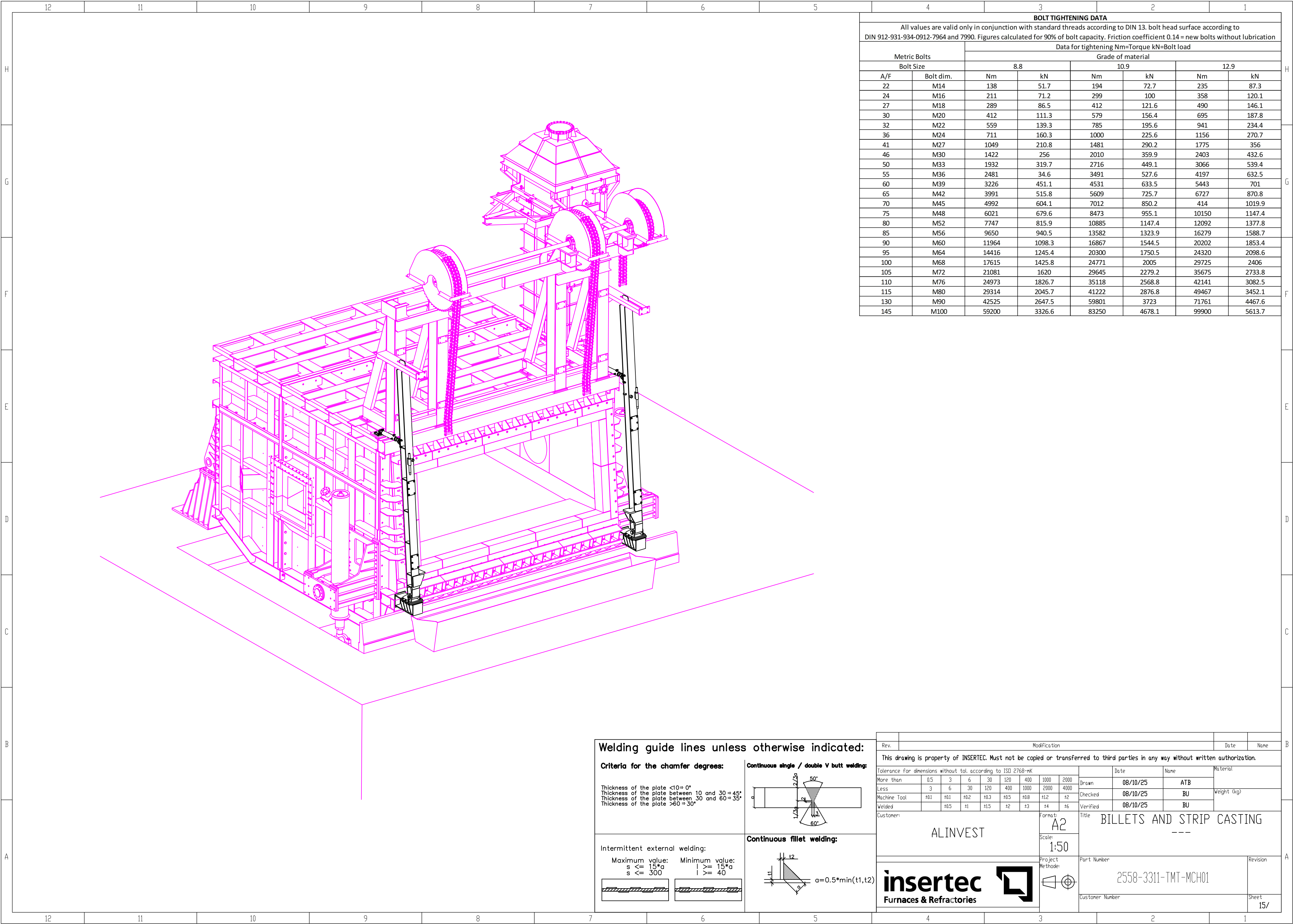
BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
		Data for tightening Nm=Torque kN=Bolt load					
Metric Bolts		Grade of material					
Bolt Size		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

ERECTION SEQUENCES:  
1-REFRACTORY INSTALLATION

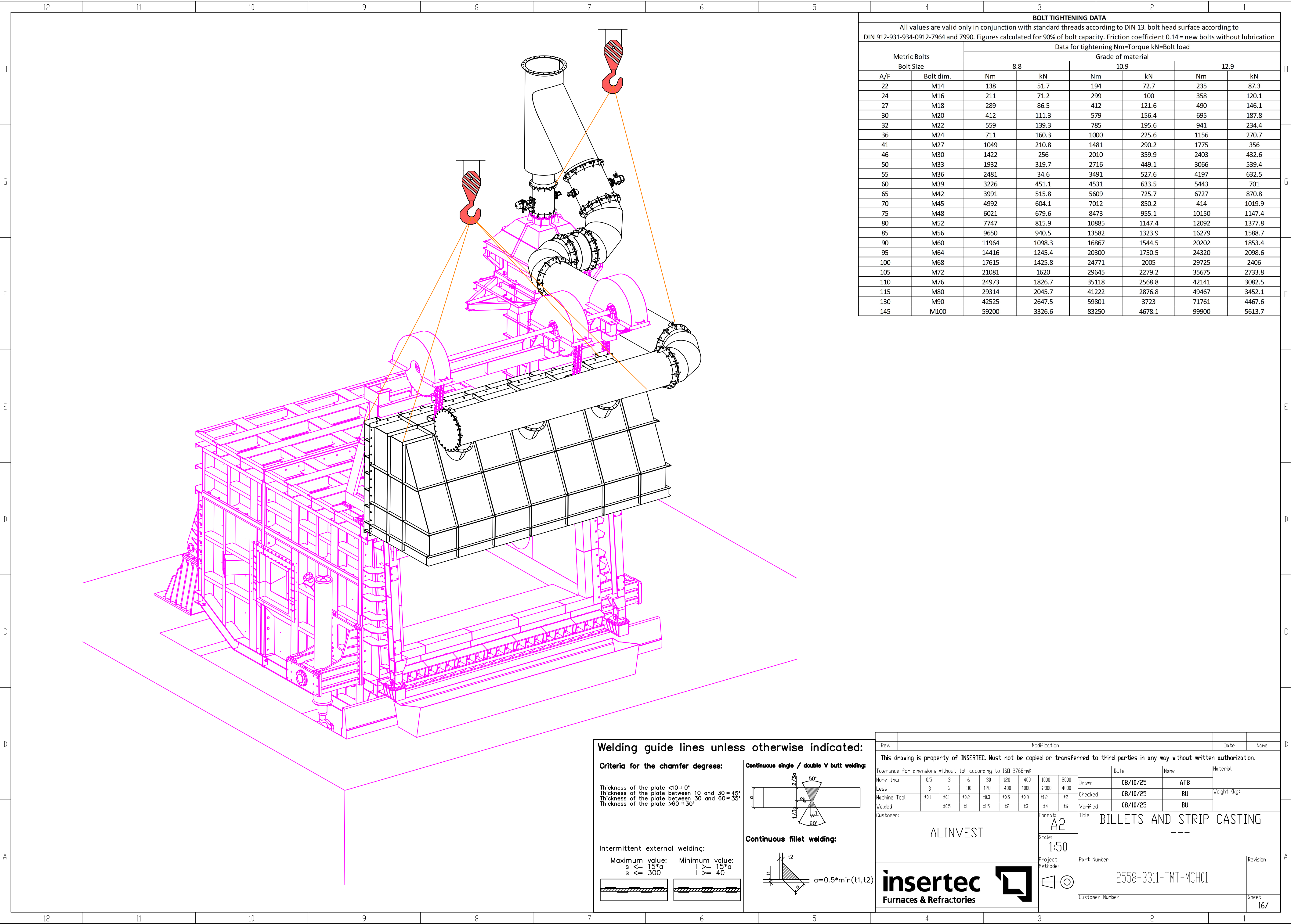
Rev.	Modification								Date	Name			
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.													
Tolerance for dimensions without tol. according to ISO 2768-mK											Date	Name	Material
More than	0.5	3	6	30	120	400	1000	2000	Drawn	08/10/25	ATB	Weight (kg)	
Less	3	6	30	120	400	1000	2000	4000					
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Checked	08/10/25	BU		
Welded		±0.5	±1	±1.5	±2	±3	±4	±6	Verified	08/10/25	BU		
Customer:	ALINVEST								Format:	Title BILLETS AND STRIP CASTING ---			
									A2				
									Scale:	1:50			
<div>insertec</div> <div>Furnaces &amp; Refractories</div>									Project Methode:	Part Number  2558-3311-TMT-MCH01			Revision
													











BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
Data for tightening Nm=Torque kN=Bolt load							
Metric Bolts		Grade of material					
		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

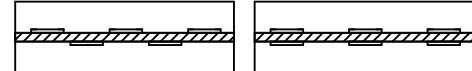
Welding guide lines unless otherwise indicated:

Criteria for the chamfer degrees:

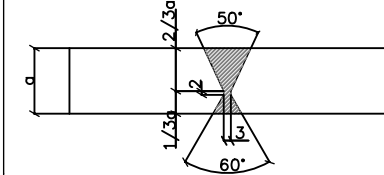
Thickness of the plate <10= 0°  
Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

Intermittent external welding:

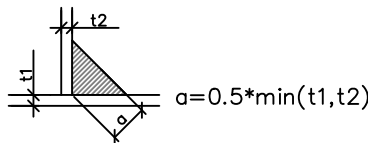
Maximum value: s ≤ 15\*a  
Minimum value: s ≤ 300  
I ≥ 15\*a  
I ≥ 40


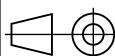


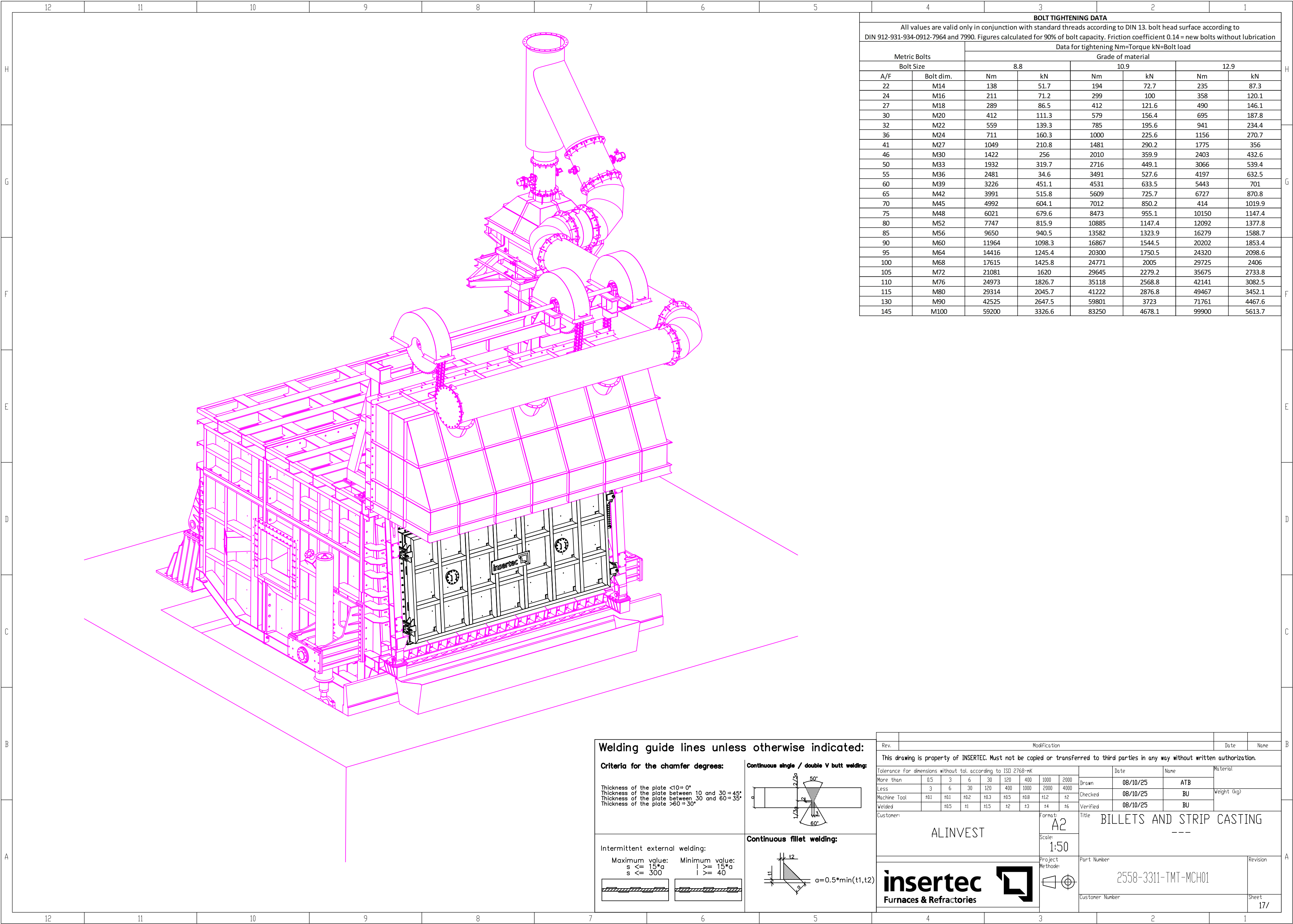
Continuous single / double V butt welding:



Continuous fillet welding:



Rev.	Modification										Date	Name		
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.														
Tolerance for dimensions without tol. according to ISO 2768-mK										Date		Name	Material	
More than	0.5	3	6	30	120	400	1000	2000	Drawn	08/10/25	ATB	Weight (kg)		
Less	3	6	30	120	400	1000	2000	4000						
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Checked	08/10/25	BU			
Welded		±0.5	±1	±1.5	±2	±3	±4	±6	Verified	08/10/25	BU			
Customer:										Format: A2			Title: BILLETS AND STRIP CASTING ---	
ALINVEST										Scale: 1:50				
										Project Methode:		Part Number		Revision
												2558-3311-TMT-MCH01		
										Customer Number		Sheet 16/		



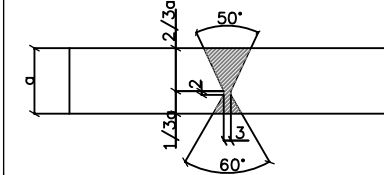
BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
Metric Bolts		Data for tightening Nm=Torque kN=Bolt load					
		Grade of material					
Bolt Size		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

Welding guide lines unless otherwise indicated:

Criteria for the chamfer degrees:

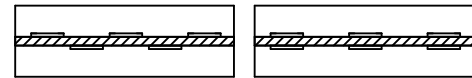
Thickness of the plate <10= 0°  
Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

Continuous single / double V butt welding:

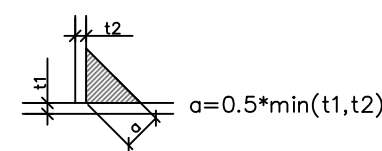




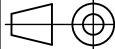
Intermittent external welding:

Maximum value: s ≤ 15\*a  
Minimum value: l ≥ 15\*a  
s ≤ 300  
l ≥ 40

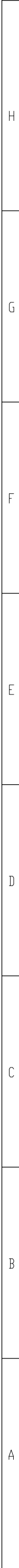


Continuous fillet welding:



Rev.	Modification										Date	Name			
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.															
Tolerance for dimensions without tol. according to ISO 2768-mK												Date	Name	Material	
More than	0.5	3	6	30	120	400	1000	2000	Drawn	08/10/25	ATB	Weight (kg)			
Less	3	6	30	120	400	1000	2000	4000		08/10/25	BU				
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Checked	08/10/25	BU				
Welded		±0.5	±1	±1.5	±2	±3	±4	±6	Verified	08/10/25	BU				
Customer:										Format: A2		Title: BILLETS AND STRIP CASTING			
ALINVEST										Scale: 1:50		---			
 										Project Methode: 		Part Number			Revision
												2558-3311-TMT-MCH01			
										Customer Number			Sheet 17/		



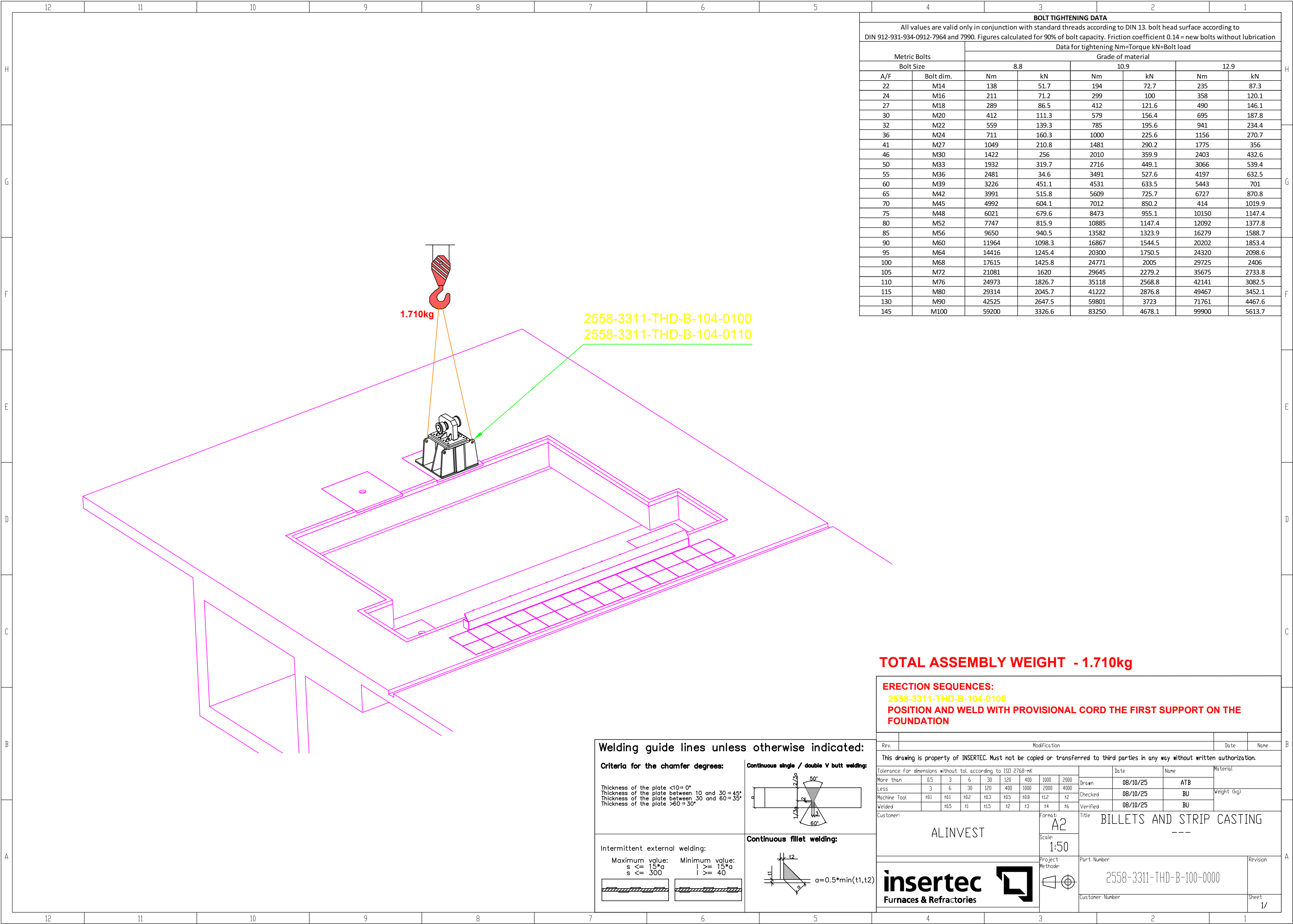


A	B	C	D	E	F	G	H
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1

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> CONSTRUCTION & COMMISSIONING DEPARTMENT, INSERTEC	<b>ALINVEST</b> Member of <b>MTX</b> GROUP
<b>E2558 Alinvest – Czech Republic</b>	<b>2558-IH-PUE-01</b>	<b>E2558</b>

Annex 7- 3D Construction sequence for Holder



BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
		Data for tightening Nm=Torque kN=Bolt load					
Metric Bolts		Grade of material					
Bolt Size		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

TOTAL ASSEMBLY WEIGHT - 1.710kg

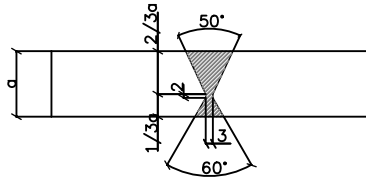
ERECTION SEQUENCES:  
2558-3311-THD-B-104-0100  
POSITION AND WELD WITH PROVISIONAL CORD THE FIRST SUPPORT ON THE FOUNDATION

Welding guide lines unless otherwise indicated:

Criteria for the chamfer degrees:

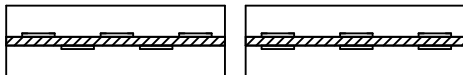
Thickness of the plate <10= 0°  
Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

Continuous single / double V butt welding:

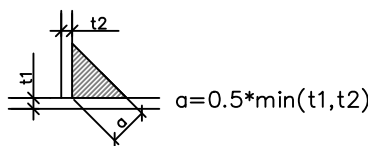


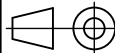
Intermittent external welding:

Maximum value: s ≤ 15\*a  
Minimum value: s ≤ 300  
I ≥ 15\*a  
I ≥ 40

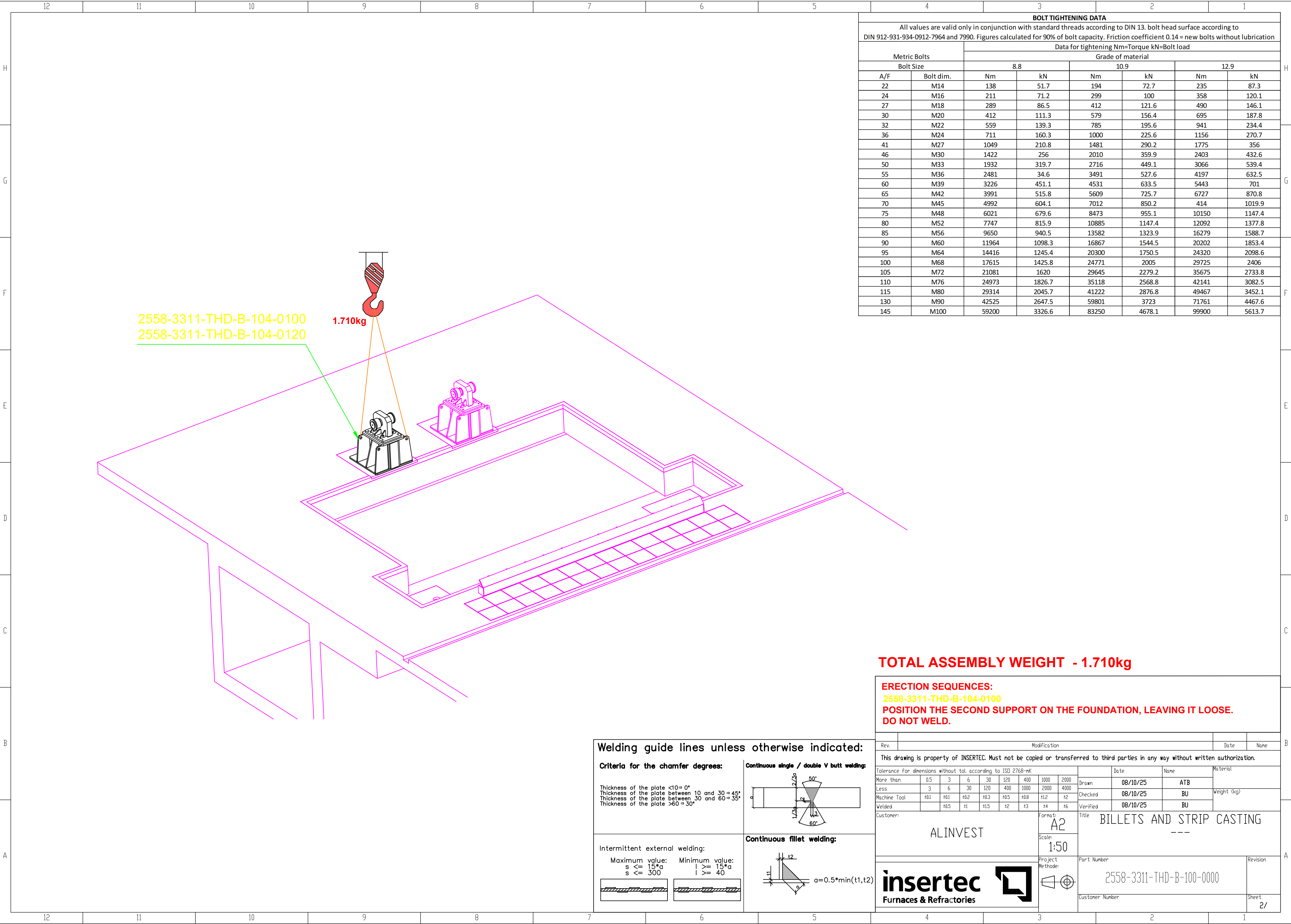


Continuous fillet welding:



Rev.	Modification										Date	Name		
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.														
Tolerance for dimensions without tol. according to ISO 2768-mK										Date		Name	Material  Weight (kg)	
More than	0.5	3	6	30	120	400	1000	2000	Drawn	08/10/25	ATB			
Less	3	6	30	120	400	1000	2000	4000	Checked	08/10/25	BU			
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	08/10/25	BU			
Welded		±0.5	±1	±1.5	±2	±3		±4						
Customer: ALINVEST										Format: A2		Title: BILLETS AND STRIP CASTING		
										Scale: 1:50		---		
<div>insertec</div> <div>Furnaces &amp; Refractories</div>										Project Methode: 		Part Number		Revision
												2558-3311-THD-B-100-0000		
												Customer Number		Sheet 1/





2558-3311-THD-B-104-0100  
2558-3311-THD-B-104-0120

BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
		Data for tightening Nm=Torque kN=Bolt load					
Metric Bolts		Grade of material					
Bolt Size		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

TOTAL ASSEMBLY WEIGHT - 1.710kg

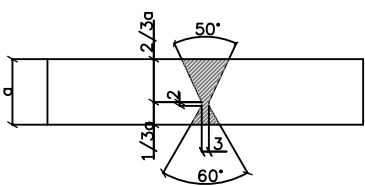
ERECTION SEQUENCES:  
2558-3311-THD-B-104-0100  
POSITION THE SECOND SUPPORT ON THE FOUNDATION, LEAVING IT LOOSE.  
DO NOT WELD.

Welding guide lines unless otherwise indicated:

Criteria for the chamfer degrees:

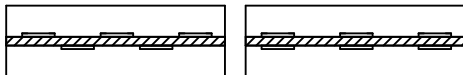
Thickness of the plate <10= 0°  
Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

Continuous single / double V butt welding:

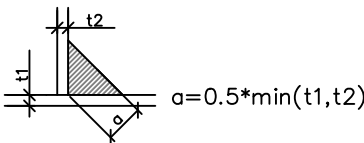


Intermittent external welding:

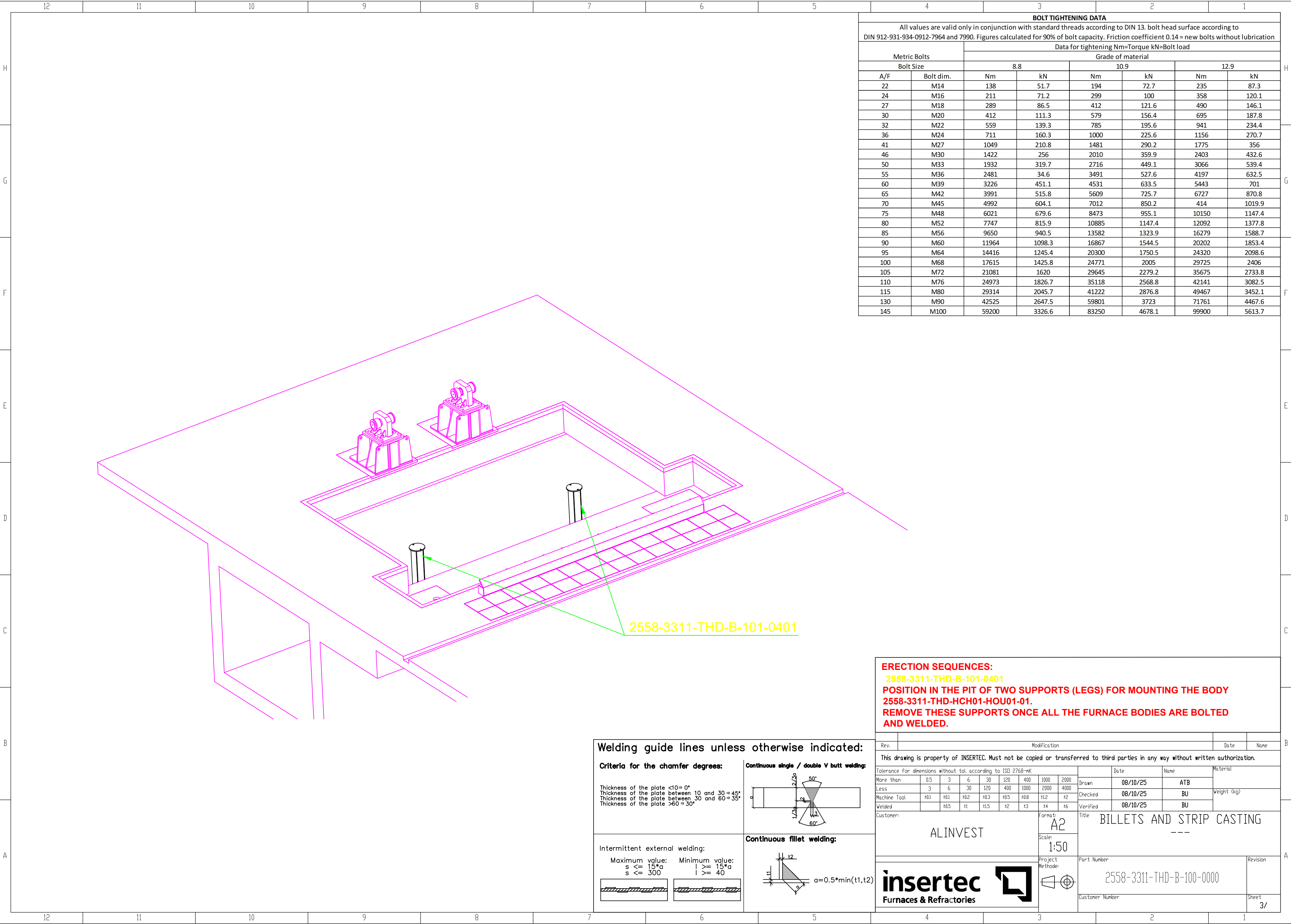
Maximum value: s ≤ 15\*a  
Minimum value: l ≥ 15\*a  
s ≤ 300 l ≥ 40



Continuous fillet welding:



Rev.	Modification	Date	Name
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.			
Tolerance for dimensions without tol. according to ISO 2768-mK		Date	Name
More than	0.5 3 6 30 120 400 1000 2000	08/10/25	ATB
Less	3 6 30 120 400 1000 2000 4000	08/10/25	BU
Machine Tool	±0.1 ±0.1 ±0.2 ±0.3 ±0.5 ±0.8 ±1.2 ±2	08/10/25	BU
Welded	±0.5 ±1 ±1.5 ±2 ±3 ±4 ±6		
Customer:	ALINVEST	Format: A2	Title: BILLETS AND STRIP CASTING
		Scale: 1:50	---
		Project Methode:	Part Number: 2558-3311-THD-B-100-0000
			Revision: 2/
			Customer Number:



BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
Metric Bolts		Data for tightening Nm=Torque kN=Bolt load					
		Grade of material					
Bolt Size		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

**ERECTION SEQUENCES:**  
**2558-3311-THD-B-101-0401**  
**POSITION IN THE PIT OF TWO SUPPORTS (LEGS) FOR MOUNTING THE BODY**  
**2558-3311-THD-HCH01-HOU01-01.**  
**REMOVE THESE SUPPORTS ONCE ALL THE FURNACE BODIES ARE BOLTED AND WELDED.**

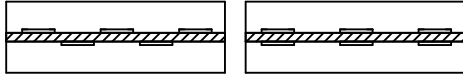
Welding guide lines unless otherwise indicated:

Criteria for the chamfer degrees:

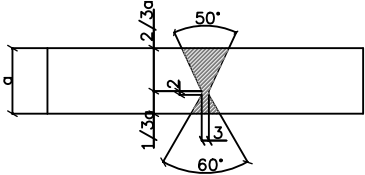
Thickness of the plate <10= 0°  
Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

Intermittent external welding:

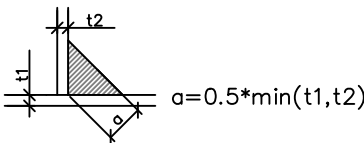
Maximum value: s ≤ 15\*a  
Minimum value: l ≥ 15\*a  
s ≤ 300  
l ≥ 40



Continuous single / double V butt welding:

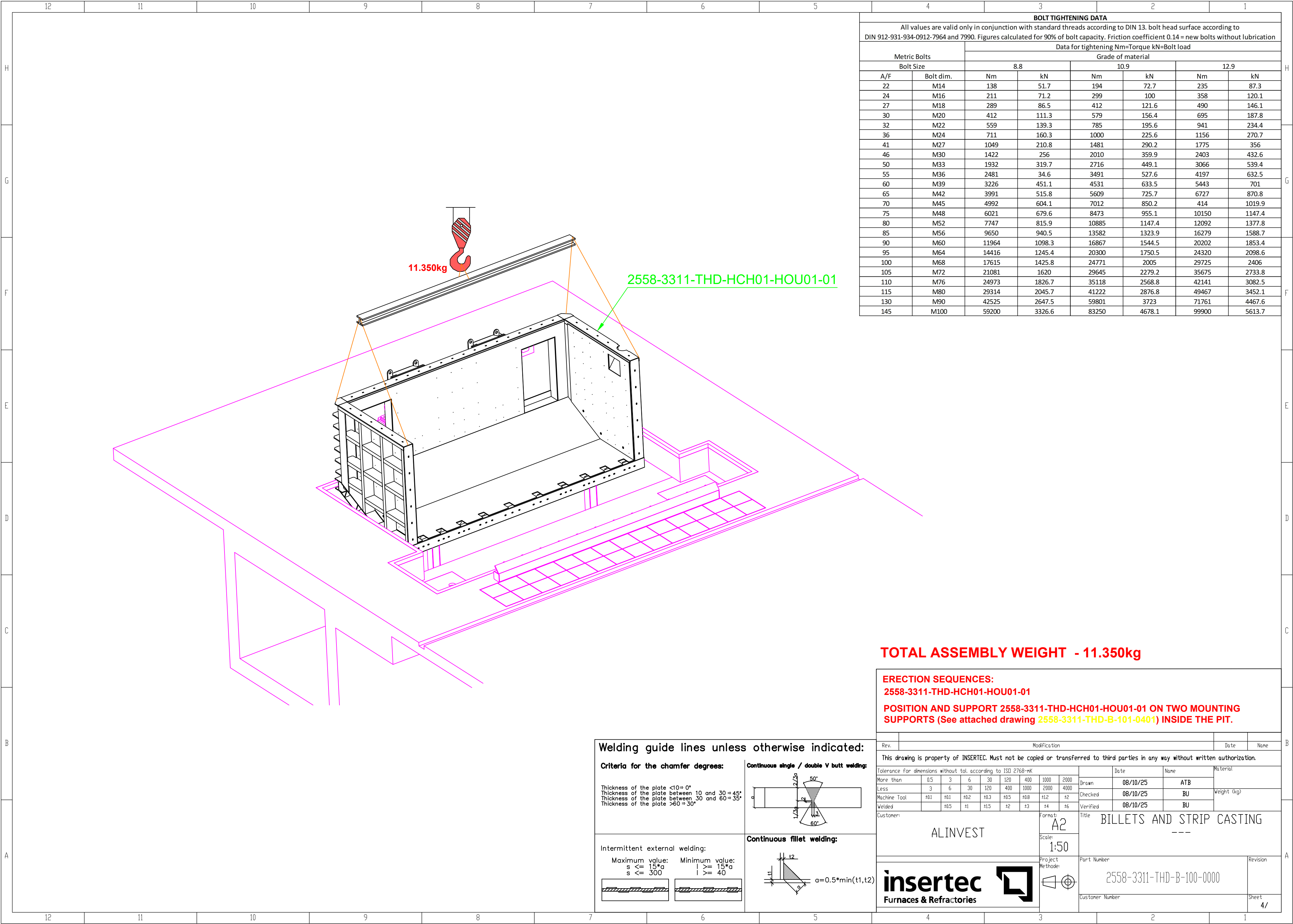


Continuous fillet welding:



Tolerance for dimensions without tol. according to ISO 2768-mK							
More than	0.5	3	6	30	120	400	1000
Less	3	6	30	120	400	1000	2000
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2
Welded	±0.5	±1	±1.5	±2	±3	±4	±6
Customer:	ALINVEST						Format: A2
						Scale: 1:50	Date: 08/10/25
						Project Methode:	Name: ATB
						Title: BILLETS AND STRIP CASTING	
						Part Number: 2558-3311-THD-B-100-0000	
						Customer Number: ---	
						Revision: ---	
						Sheet 3/	




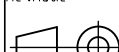


**TOTAL ASSEMBLY WEIGHT - 11.350kg**

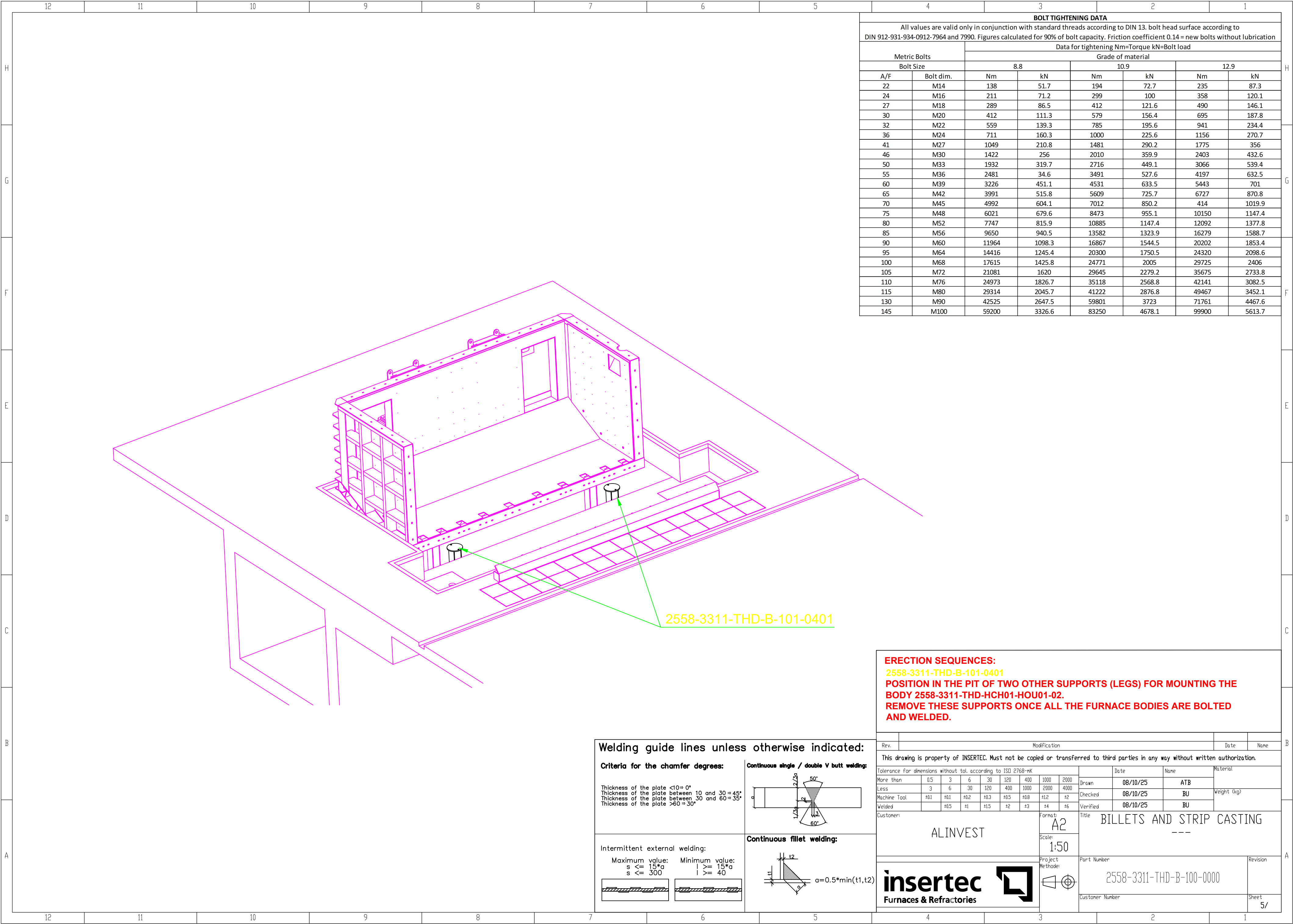
**ERECTION SEQUENCES:**

**2558-3311-THD-HCH01-HOU01-01**

**POSITION AND SUPPORT 2558-3311-THD-HCH01-HOU01-01 ON TWO MOUNTING SUPPORTS (See attached drawing 2558-3311-THD-B-101-0401) INSIDE THE PIT.**

Rev.	Modification								Date	Name		
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.												
Tolerance for dimensions without tol. according to ISO 2768-mK												
More than	0.5	3	6	30	120	400	1000	2000	Date	Name	Material	
Less	3	6	30	120	400	1000	2000	4000	Drawn	08/10/25	ATB	
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Checked	08/10/25	BU	Weight (kg)
Welded	±0.5	±1	±1.5	±2	±3	±4	±6		Verified	08/10/25	BU	
Customer:					Format:				Title			
ALINVEST					A2				BILLETS AND STRIP CASTING ---			
					Scale:							
					1:50							
					Project Methode:				Part Number			Revision
									2558-3311-THD-B-100-0000			
									Customer Number			Sheet
												4/





BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. Bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
		Data for tightening Nm=Torque kN=Bolt load					
Metric Bolts		Grade of material					
Bolt Size		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

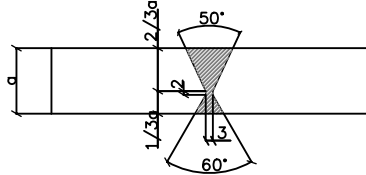
**ERECTION SEQUENCES:**  
**2558-3311-THD-B-101-0401**  
**POSITION IN THE PIT OF TWO OTHER SUPPORTS (LEGS) FOR MOUNTING THE BODY 2558-3311-THD-HCH01-HOU01-02.**  
**REMOVE THESE SUPPORTS ONCE ALL THE FURNACE BODIES ARE BOLTED AND WELDED.**

Welding guide lines unless otherwise indicated:

Criteria for the chamfer degrees:

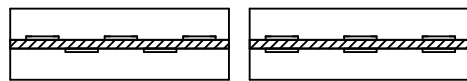
Thickness of the plate <10= 0°  
Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

Continuous single / double V butt welding:

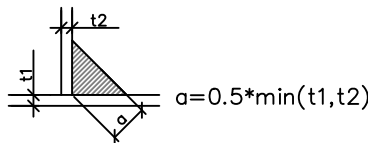




Intermittent external welding:

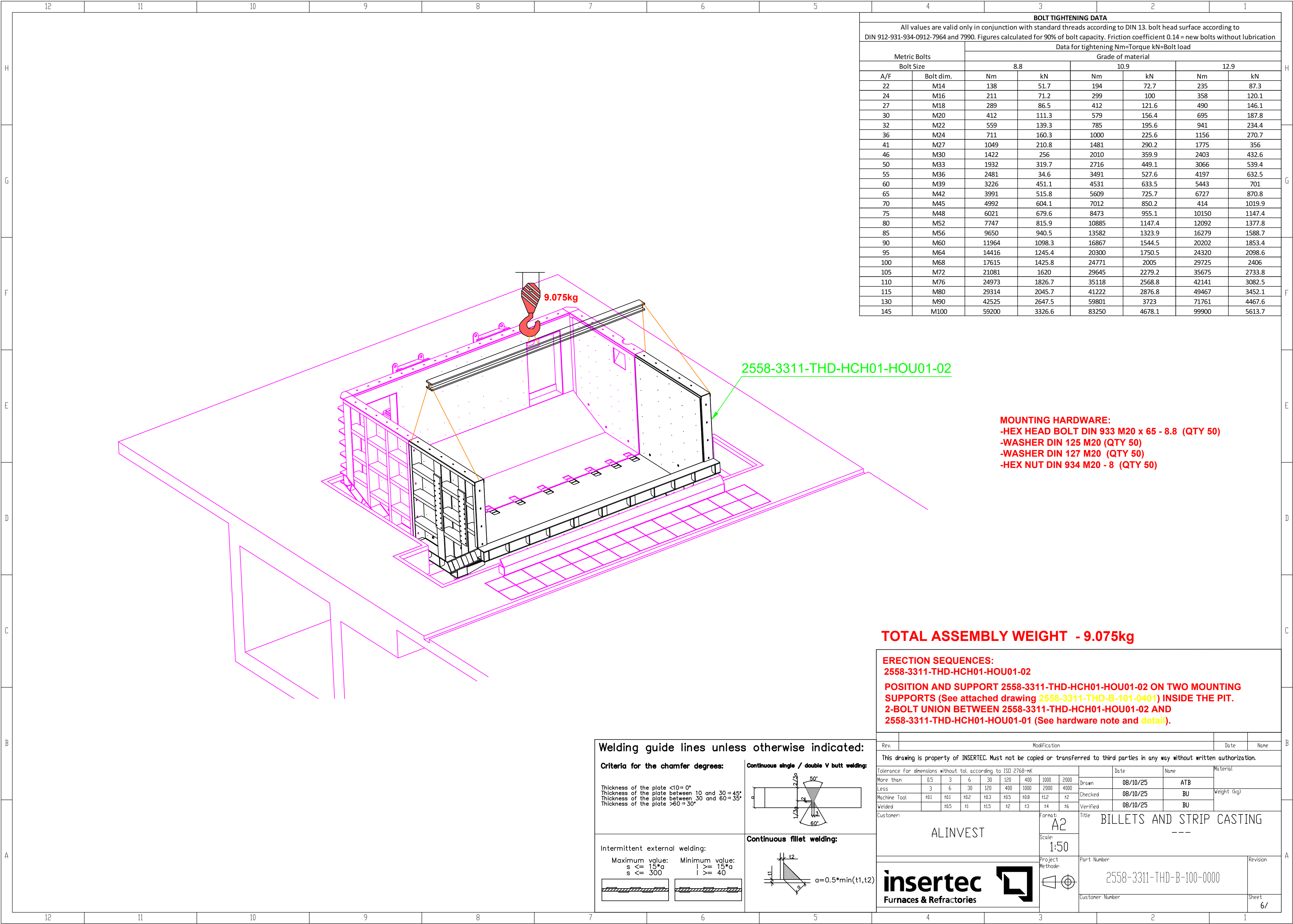
Maximum value: s ≤ 15\*a  
Minimum value: l ≥ 15\*a  
s ≤ 300  
l ≥ 40



Continuous fillet welding:



Rev.	Modification								Date	Name			
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.													
Tolerance for dimensions without tol. according to ISO 2768-mK									Date		Name	Material	
More than	0.5	3	6	30	120	400	1000	2000	Drawn	08/10/25	ATB		
Less	3	6	30	120	400	1000	2000	4000	Checked	08/10/25	BU		
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	08/10/25	BU		
Welded		±0.5	±1	±1.5	±2	±3	±4	±6				Weight (kg)	
Customer:									Format:		Title		
ALINVEST									A2		BILLETS AND STRIP CASTING		
									Scale:		---		
									1:50				
<div></div>									Project		Part Number		Revision
									Methode:				
											2558-3311-THD-B-100-0000		
											Customer Number		
											Sheet		
											5/		



BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
Metric Bolts		Data for tightening Nm=Torque kN=Bolt load					
		Grade of material					
		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

MOUNTING HARDWARE:  
-HEX HEAD BOLT DIN 933 M20 x 65 - 8.8 (QTY 50)  
-WASHER DIN 125 M20 (QTY 50)  
-WASHER DIN 127 M20 (QTY 50)  
-HEX NUT DIN 934 M20 - 8 (QTY 50)

TOTAL ASSEMBLY WEIGHT - 9.075kg

ERECTION SEQUENCES:  
2558-3311-THD-HCH01-HOU01-02  
POSITION AND SUPPORT 2558-3311-THD-HCH01-HOU01-02 ON TWO MOUNTING SUPPORTS (See attached drawing 2558-3311-THD-B-101-0401) INSIDE THE PIT.  
2-BOLT UNION BETWEEN 2558-3311-THD-HCH01-HOU01-02 AND 2558-3311-THD-HCH01-HOU01-01 (See hardware note and detail).

Welding guide lines unless otherwise indicated:

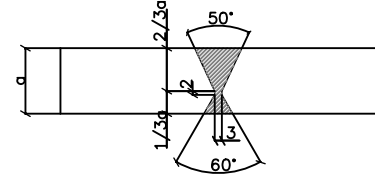
Criteria for the chamfer degrees:

Thickness of the plate <10= 0°  
Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

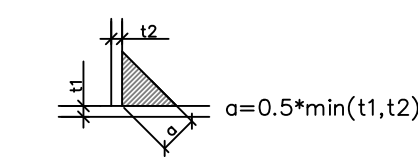
Intermittent external welding:

Maximum value: s ≤ 15\*a  
Minimum value: s ≤ 300  
I ≥ 15\*a  
I ≥ 40

Continuous single / double V butt welding:

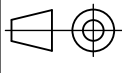


Continuous fillet welding:

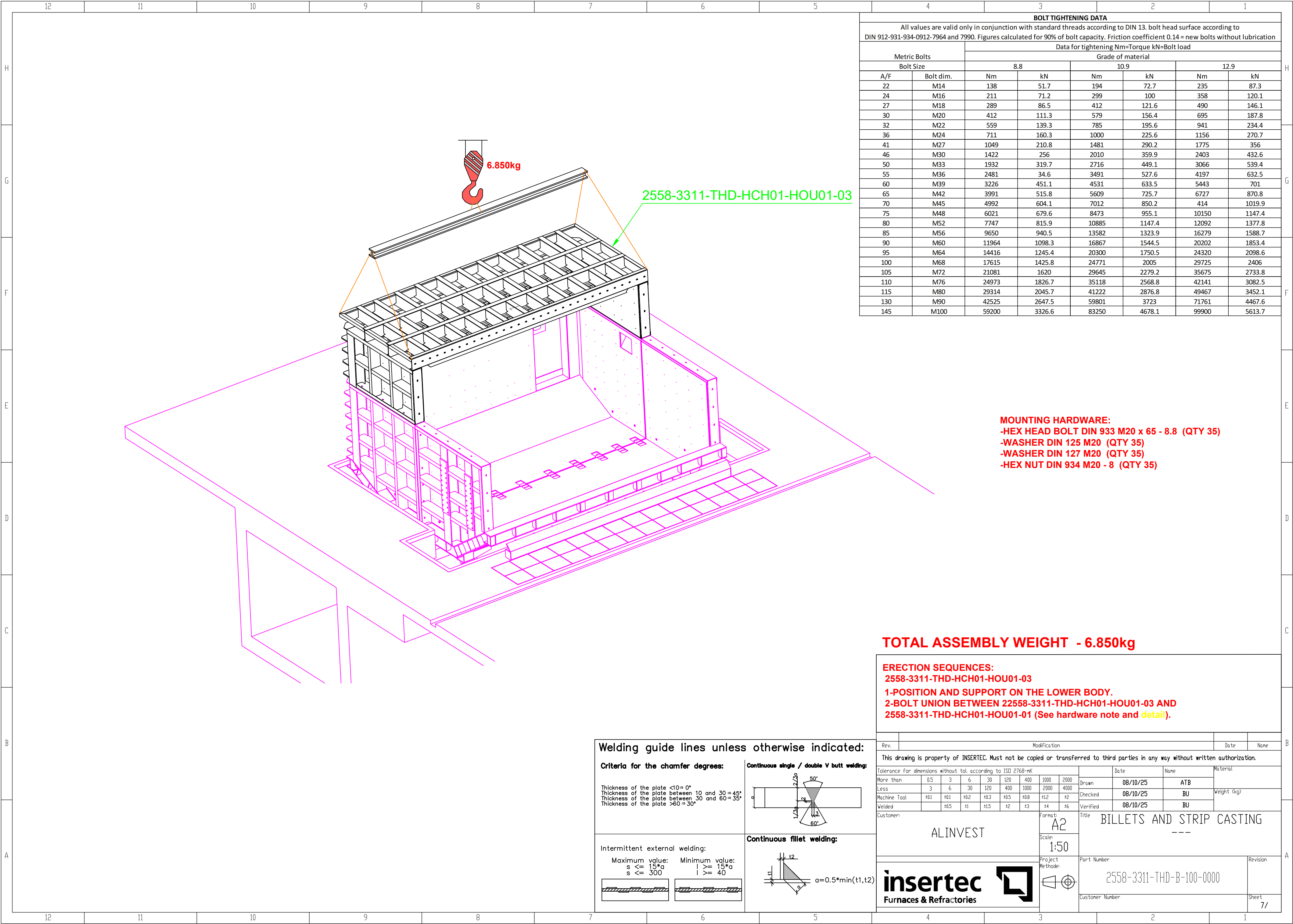


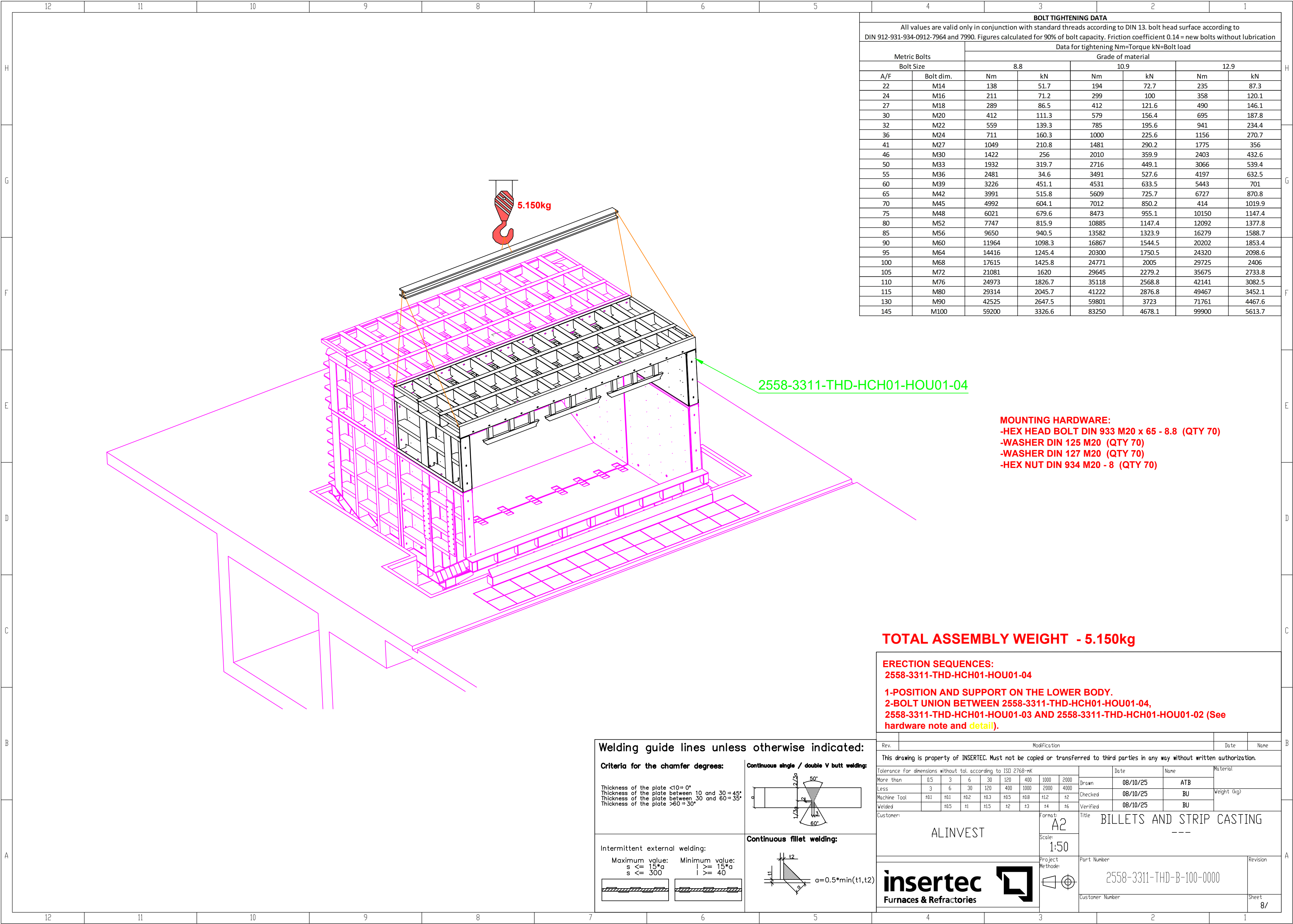
Rev.	Modification										Date	Name		
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.														
Tolerance for dimensions without tol. according to ISO 2768-mK										Date		Name	Material	
More than	0.5	3	6	30	120	400	1000	2000	4000	Drawn	08/10/25	ATB	Weight (kg)	
Less	3	6	30	120	400	1000	2000	4000	4000	Checked	08/10/25	BU		
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2		Verified	08/10/25	BU		
Welded		±0.5	±1	±1.5	±2	±3	±4	±6						
Customer:										Format:	Title			
ALINVEST										A2	BILLETS AND STRIP CASTING			
										Scale:	---			
										1:50				
										Project	Part Number		Revision	
										Method:	2558-3311-THD-B-100-0000			
										Customer Number		Sheet		
												6/		

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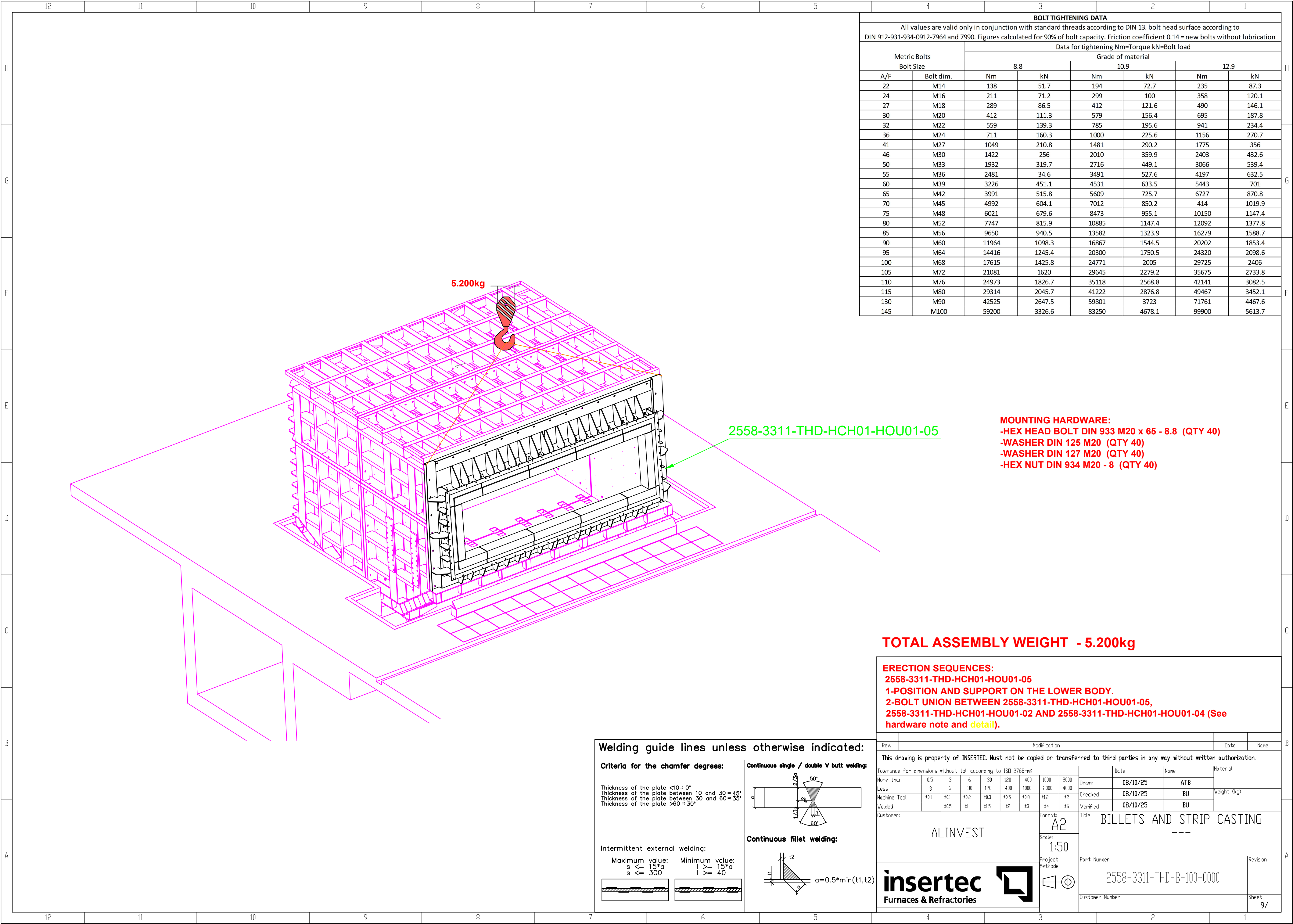


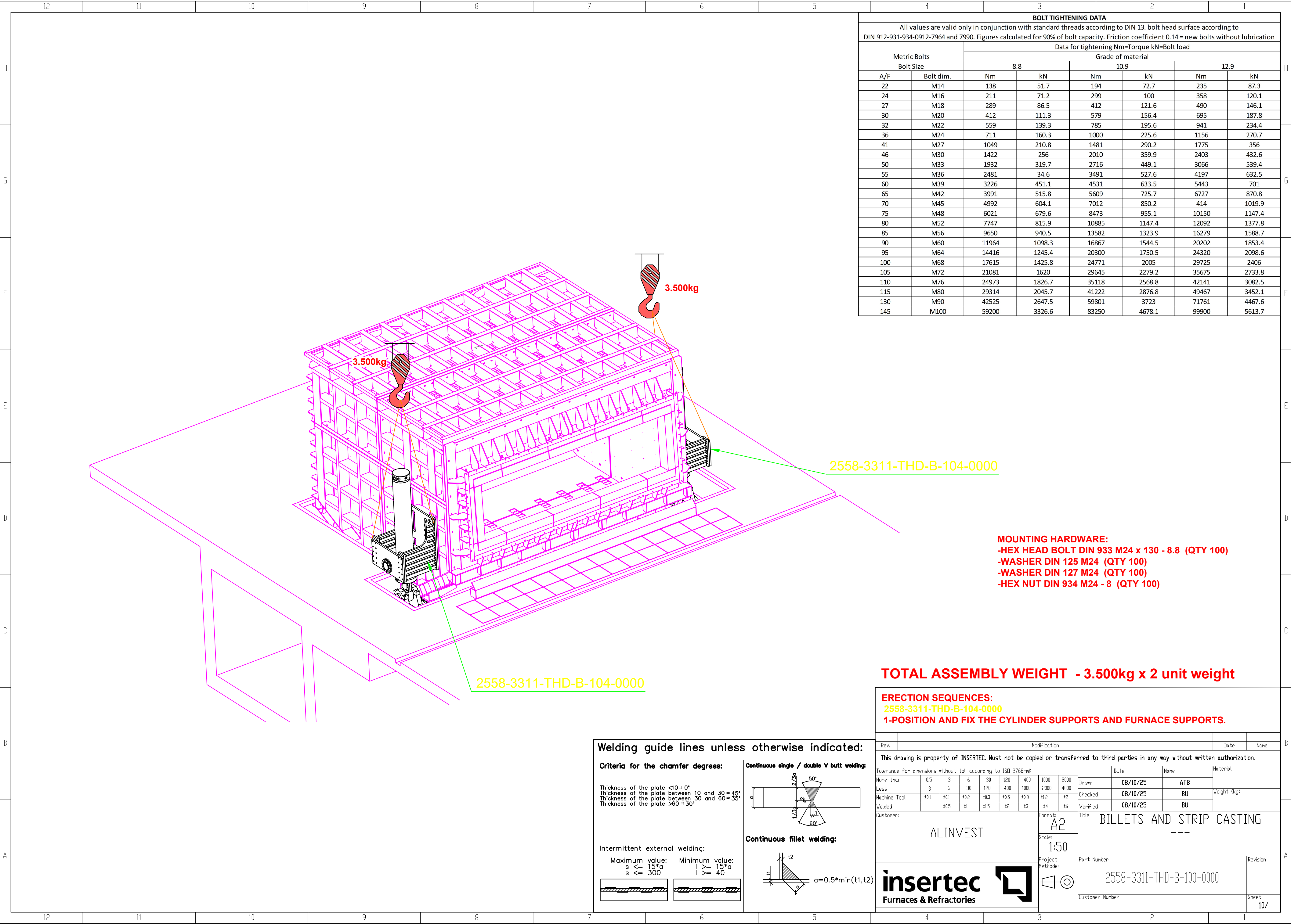












BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
Data for tightening Nm=Torque kN=Bolt load							
Metric Bolts		Grade of material					
		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

MOUNTING HARDWARE:  
-HEX HEAD BOLT DIN 933 M24 x 130 - 8.8 (QTY 100)  
-WASHER DIN 125 M24 (QTY 100)  
-WASHER DIN 127 M24 (QTY 100)  
-HEX NUT DIN 934 M24 - 8 (QTY 100)

TOTAL ASSEMBLY WEIGHT - 3.500kg x 2 unit weight

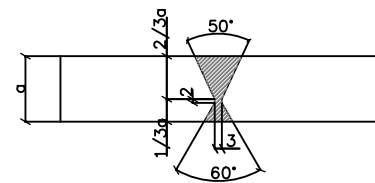
ERECTION SEQUENCES:  
2558-3311-THD-B-104-0000  
1-POSITION AND FIX THE CYLINDER SUPPORTS AND FURNACE SUPPORTS.

Welding guide lines unless otherwise indicated:

Criteria for the chamfer degrees:

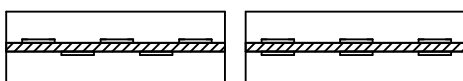
Thickness of the plate <10= 0°  
Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

Continuous single / double V butt welding:

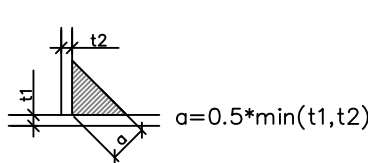


Intermittent external welding:

Maximum value: s ≤ 15\*a  
Minimum value: l ≥ 15\*a  
s ≤ 300 l ≥ 40

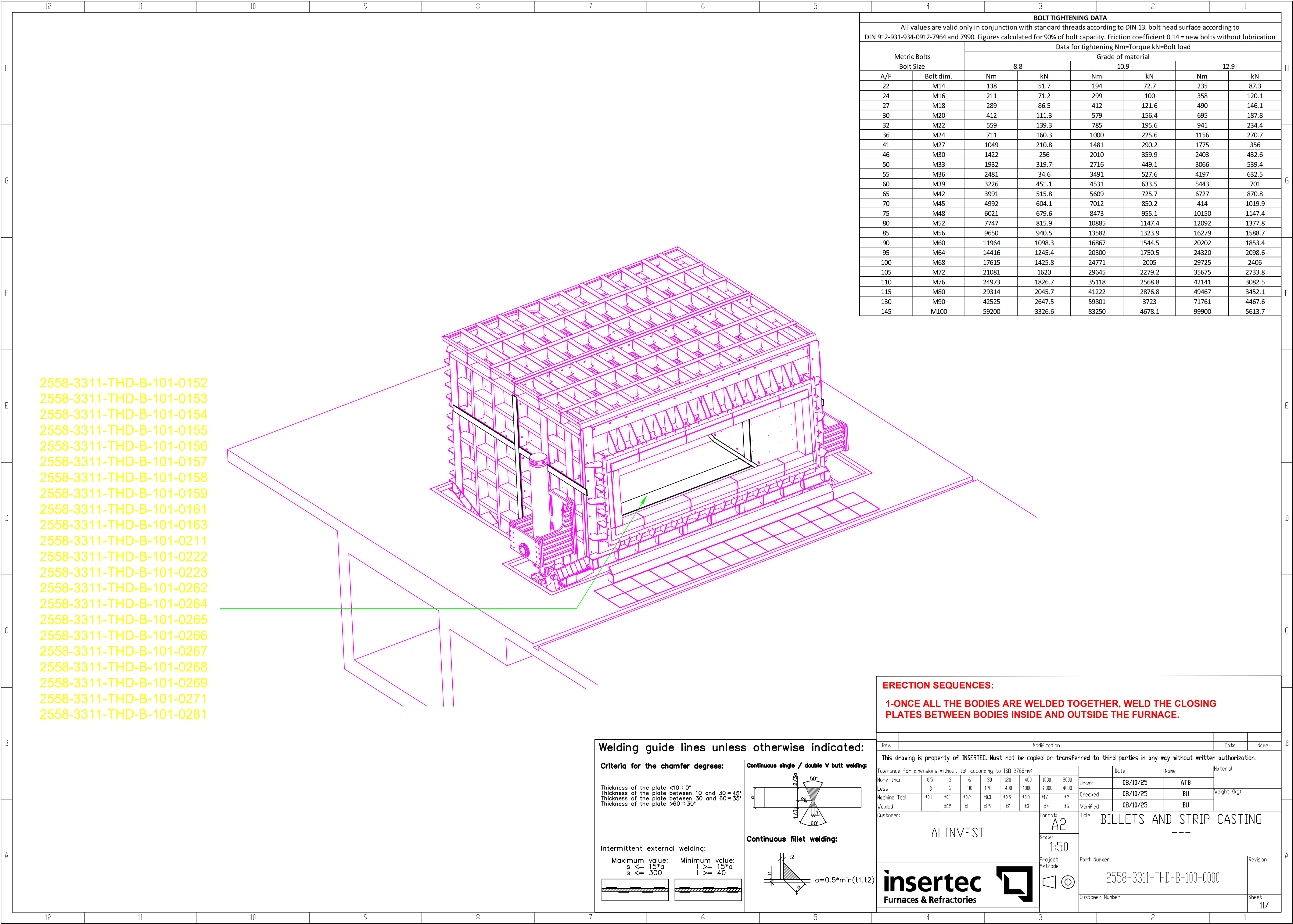


Continuous fillet welding:



Rev.	Modification	Date	Name
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.			
Tolerance for dimensions without tol. according to ISO 2768-mK		Date	Name
More than	0.5 3 6 30 120 400 1000 2000	08/10/25	ATB
Less	3 6 30 120 400 1000 2000 4000	08/10/25	BU
Machine Tool	±0.1 ±0.1 ±0.2 ±0.3 ±0.5 ±0.8 ±1.2 ±2	08/10/25	BU
Welded	±0.5 ±1 ±1.5 ±2 ±3 ±4 ±6		
Customer:	ALINVEST	Format: A2	Title: BILLETS AND STRIP CASTING
		Scale: 1:50	---
		Project Methode:	Part Number: 2558-3311-THD-B-100-0000
			Revision:
			Sheet 10/





- 2558-3311-THD-B-101-0152
- 2558-3311-THD-B-101-0153
- 2558-3311-THD-B-101-0154
- 2558-3311-THD-B-101-0155
- 2558-3311-THD-B-101-0156
- 2558-3311-THD-B-101-0157
- 2558-3311-THD-B-101-0158
- 2558-3311-THD-B-101-0159
- 2558-3311-THD-B-101-0161
- 2558-3311-THD-B-101-0163
- 2558-3311-THD-B-101-0211
- 2558-3311-THD-B-101-0222
- 2558-3311-THD-B-101-0223
- 2558-3311-THD-B-101-0262
- 2558-3311-THD-B-101-0264
- 2558-3311-THD-B-101-0265
- 2558-3311-THD-B-101-0266
- 2558-3311-THD-B-101-0267
- 2558-3311-THD-B-101-0268
- 2558-3311-THD-B-101-0269
- 2558-3311-THD-B-101-0271
- 2558-3311-THD-B-101-0281

BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
		Data for tightening Nm=Torque kN=Bolt load					
Metric Bolts		Grade of material					
Bolt Size		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

**ERECTION SEQUENCES:**

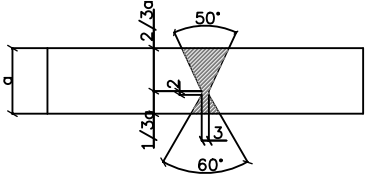
**1-ONCE ALL THE BODIES ARE WELDED TOGETHER, WELD THE CLOSING PLATES BETWEEN BODIES INSIDE AND OUTSIDE THE FURNACE.**

Welding guide lines unless otherwise indicated:

Criteria for the chamfer degrees:

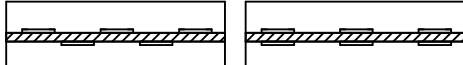
Thickness of the plate <10= 0°  
Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

Continuous single / double V butt welding:

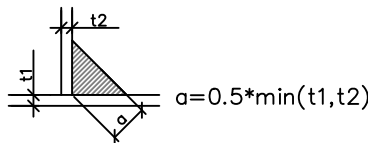


Intermittent external welding:

Maximum value: s ≤ 15\*a  
Minimum value: l ≥ 15\*a  
s ≤ 300  
l ≥ 40



Continuous fillet welding:

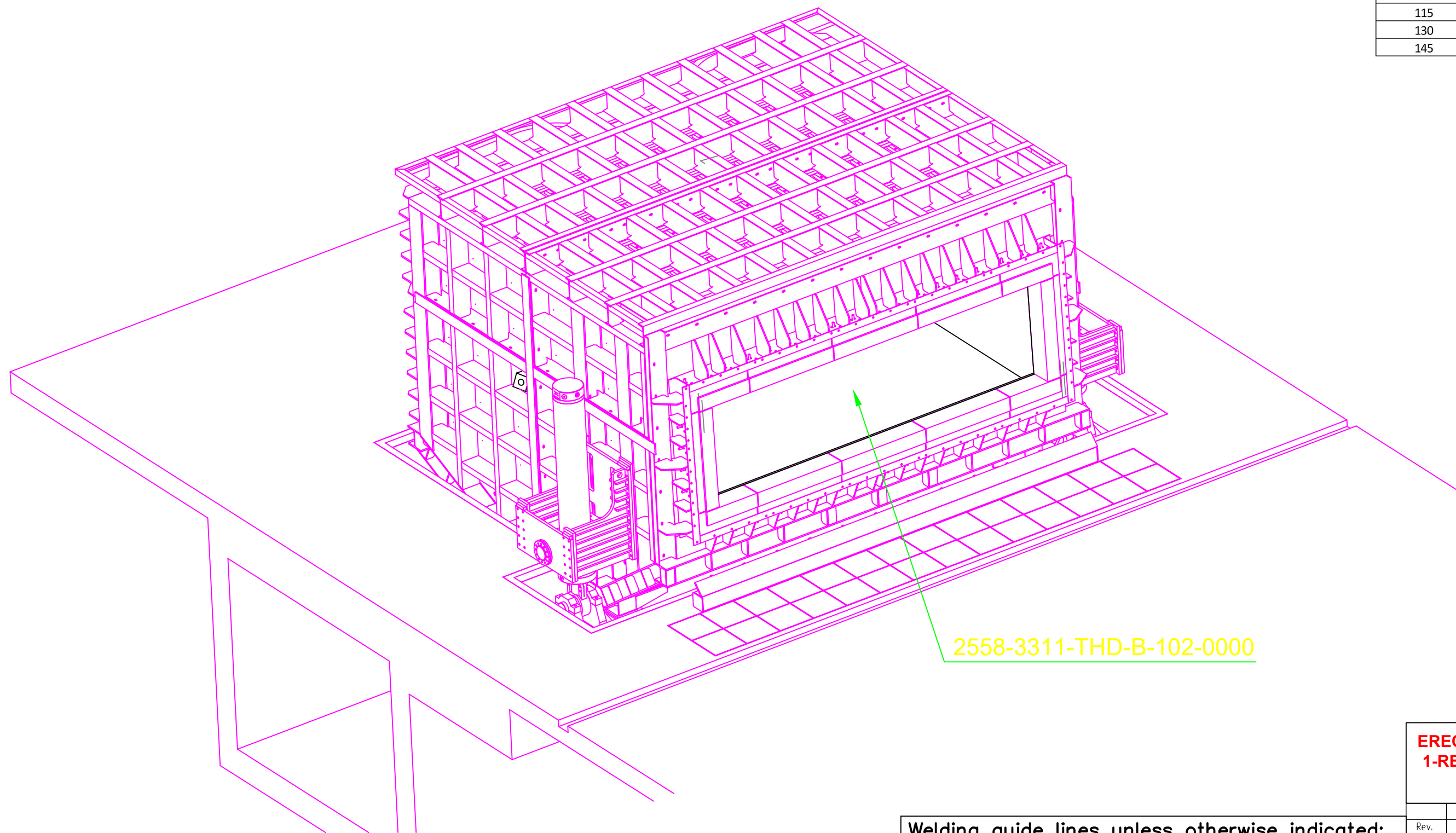


ALINVEST


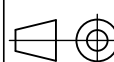
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Rev.	Modification	Date	Name
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.			
Tolerance for dimensions without tol. according to ISO 2768-mK		Date	Name
More than	0.5 3 6 30 120 400 1000 2000	08/10/25	ATB
Less	3 6 30 120 400 1000 2000 4000	08/10/25	BU
Machine Tool	±0.1 ±0.1 ±0.2 ±0.3 ±0.5 ±0.8 ±1.2 ±2	08/10/25	BU
Welded	±0.5 ±1 ±1.5 ±2 ±3 ±4 ±6	Title	
Customer:	ALINVEST		BILLETS AND STRIP CASTING
Format:	A2	Scale:	
Scale:	1:50	Part Number	
Project Methode:	2558-3311-THD-B-100-0000		Revision
Customer Number		Sheet	
		11/	

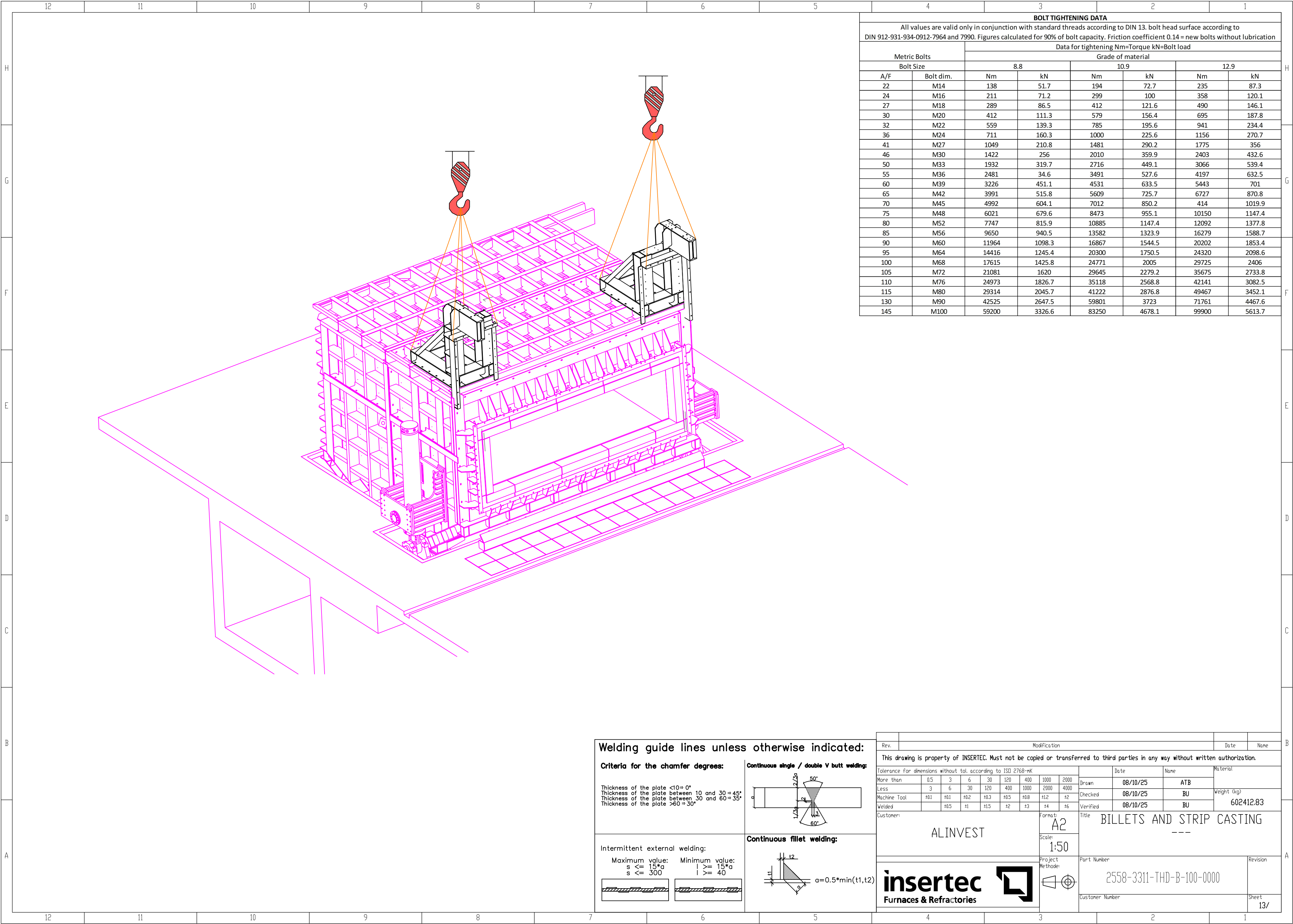
BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
Metric Bolts		Data for tightening Nm=Torque kN=Bolt load					
		8.8		10.9		12.9	
Bolt Size	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

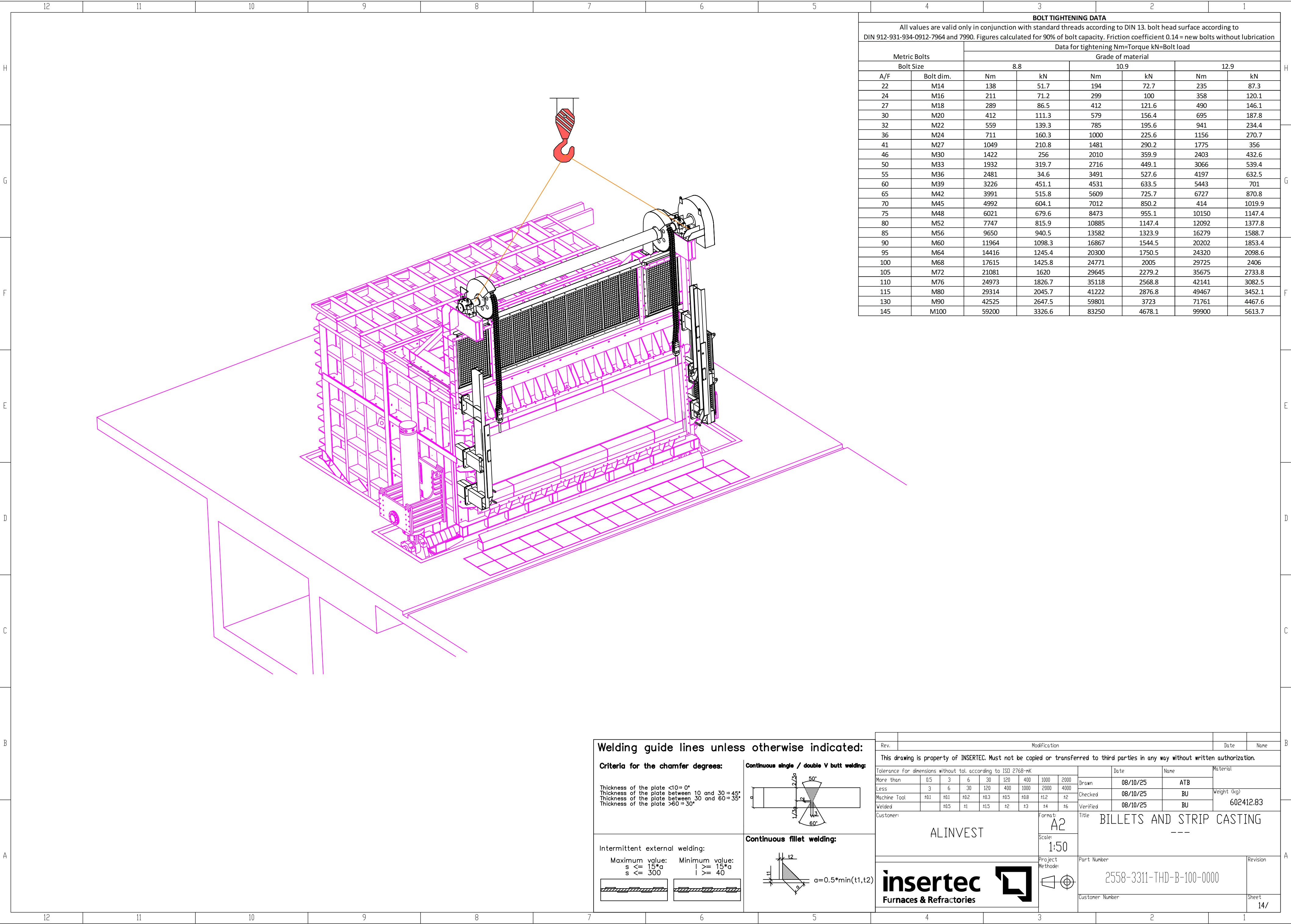


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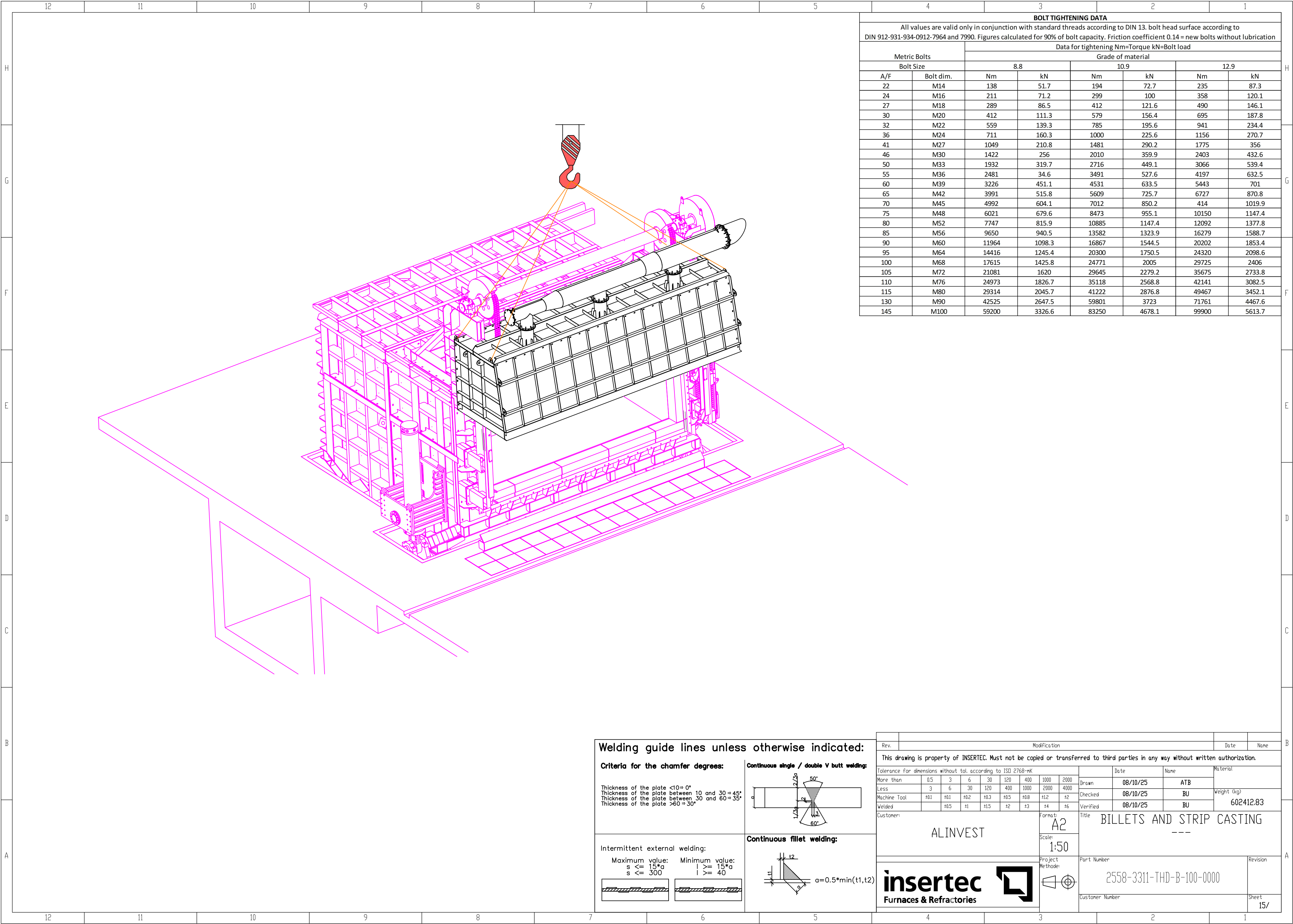
Rev.										Modification										Date										Name																																																	
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.																																																																															
Tolerance for dimensions without tol. according to ISO 2768-mK																														Date										Name										Material																													
More than					0.5					3					6					30					120					400					1000					2000					Drawn 08/10/25 ATB																																		
Less					3					6					30					120					400					1000					2000					4000																																							
Machine Tool										#01					#01					#02					#03					#05					#08					#12					#2					Checked 08/10/25 BU																													
Welded															#05					#1					#15					#2					#3					#4					#6																																		
Customer:																				Format:																				Title																																							
ALINVEST																				A2																				BILLETS AND STRIP CASTING																																							
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																																								Customer Number																				Sheet																			
																																																												12/																			











BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
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Metric Bolts		Grade of material					
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A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
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30	M20	412	111.3	579	156.4	695	187.8
32	M22	559	139.3	785	195.6	941	234.4
36	M24	711	160.3	1000	225.6	1156	270.7
41	M27	1049	210.8	1481	290.2	1775	356
46	M30	1422	256	2010	359.9	2403	432.6
50	M33	1932	319.7	2716	449.1	3066	539.4
55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
80	M52	7747	815.9	10885	1147.4	12092	1377.8
85	M56	9650	940.5	13582	1323.9	16279	1588.7
90	M60	11964	1098.3	16867	1544.5	20202	1853.4
95	M64	14416	1245.4	20300	1750.5	24320	2098.6
100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
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130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

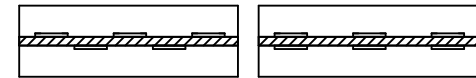
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Criteria for the chamfer degrees:

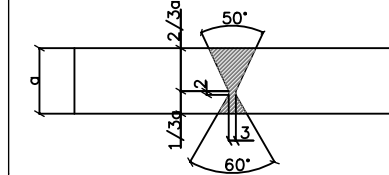
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Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

Intermittent external welding:

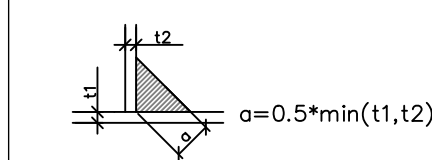
Maximum value: s ≤ 15\*a  
Minimum value: l ≥ 15\*a  
s ≤ 300  
l ≥ 40



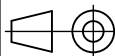


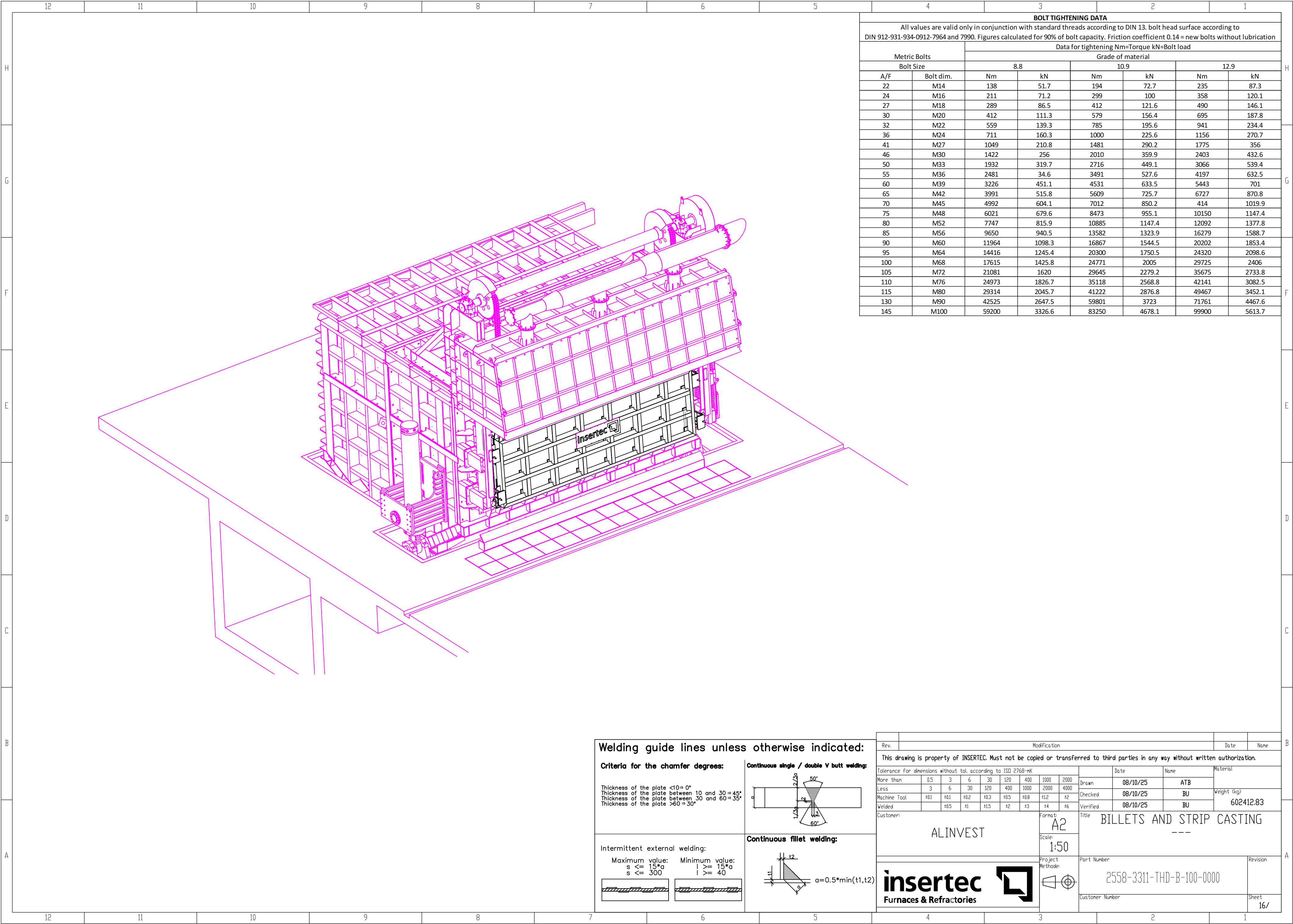
Continuous single / double V butt welding:



Continuous fillet welding:



Rev.	Modification										Date	Name		
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.														
Tolerance for dimensions without tol. according to ISO 2768-mK										Date		Name	Material	
More than	0.5	3	6	30	120	400	1000	2000	Drawn	08/10/25	ATB	Weight (kg)  602412.83		
Less	3	6	30	120	400	1000	2000	4000	Checked	08/10/25	BU			
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	08/10/25	BU			
Welded		±0.5	±1	±1.5	±2	±3	±4	±6						
Customer:  ALINVEST										Format: A2		Title BILLETS AND STRIP CASTING ---		
										Scale: 1:50				
 										Project Methode:		Part Number		Revision
												2558-3311-THD-B-100-0000		
												Customer Number		Sheet 15/



BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
Data for tightening Nm=Torque kN=Bolt load							
Metric Bolts		Grade of material					
Bolt Size		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
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32	M22	559	139.3	785	195.6	941	234.4
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55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
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130	M90	42525	2647.5	59801	3723	71761	4467.6
145	M100	59200	3326.6	83250	4678.1	99900	5613.7

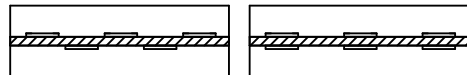
Welding guide lines unless otherwise indicated:

Criteria for the chamfer degrees:

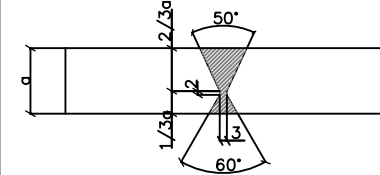
Thickness of the plate <10= 0°  
Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

Intermittent external welding:

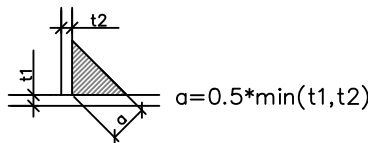
Maximum value: s ≤ 15\*a  
Minimum value: l ≥ 15\*a  
s ≤ 300 l ≥ 40



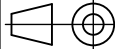


Continuous single / double V butt welding:

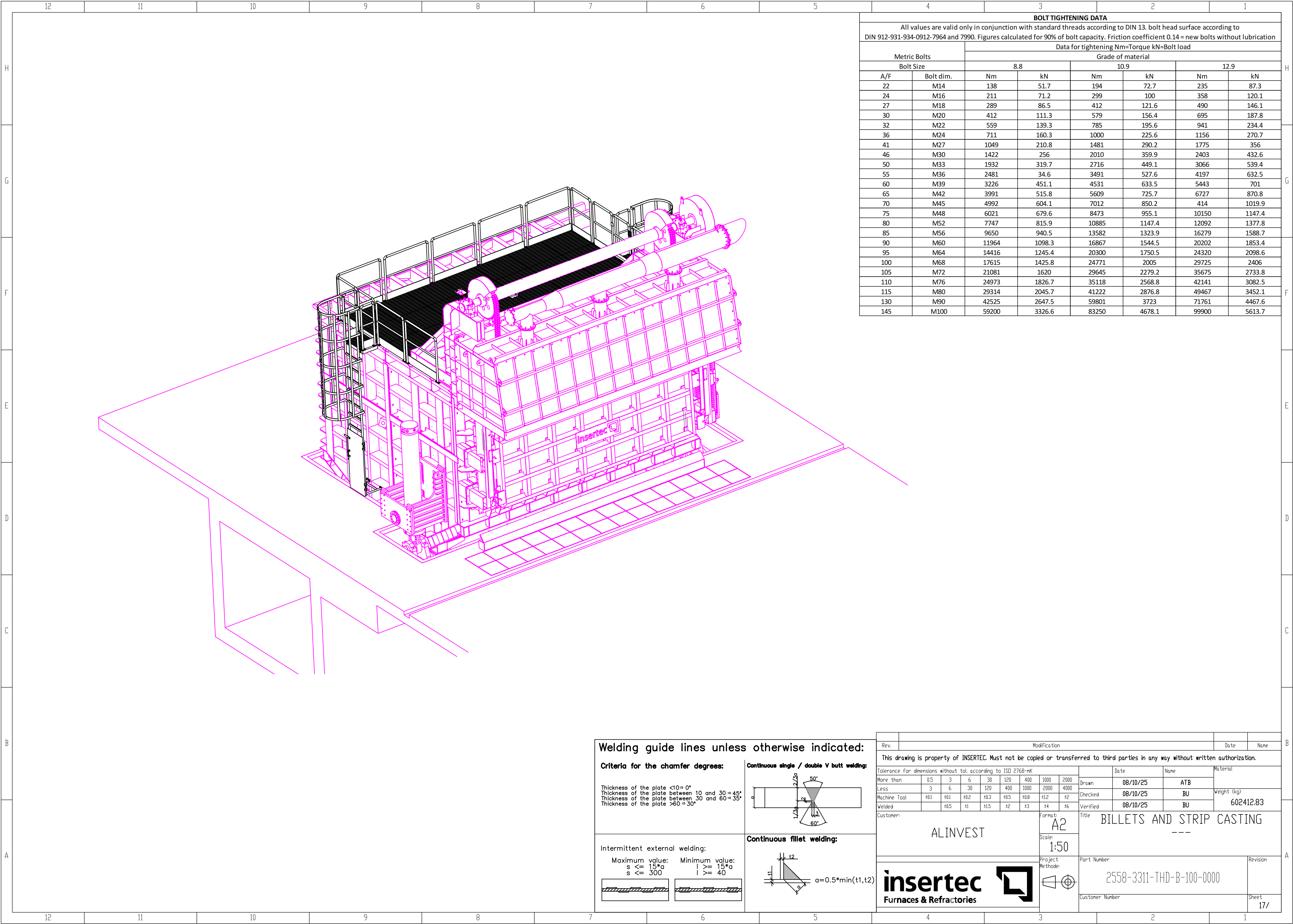


Continuous fillet welding:



Rev.	Modification										Date	Name			
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.															
Tolerance for dimensions without tol. according to ISO 2768-mK												Date	Name	Material	
More than	0.5	3	6	30	120	400	1000	2000	Drawn	08/10/25	ATB	Weight (kg)  602412.83			
Less	3	6	30	120	400	1000	2000	4000	Checked	08/10/25	BU				
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	08/10/25	BU				
Welded		±0.5	±1	±1.5	±2	±3	±4	±6							
Customer:  ALINVEST										Format: A2		Title BILLETS AND STRIP CASTING ---			
										Scale: 1:50					
 										Project Methode:		Part Number		Revision	
												2558-3311-THD-B-100-0000			
												Customer Number		Sheet 16/	





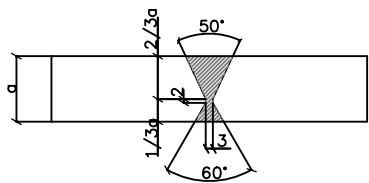
BOLT TIGHTENING DATA							
All values are valid only in conjunction with standard threads according to DIN 13. bolt head surface according to DIN 912-931-934-0912-7964 and 7990. Figures calculated for 90% of bolt capacity. Friction coefficient 0.14 = new bolts without lubrication							
Data for tightening Nm=Torque kN=Bolt load							
Metric Bolts		Grade of material					
		8.8		10.9		12.9	
A/F	Bolt dim.	Nm	kN	Nm	kN	Nm	kN
22	M14	138	51.7	194	72.7	235	87.3
24	M16	211	71.2	299	100	358	120.1
27	M18	289	86.5	412	121.6	490	146.1
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55	M36	2481	34.6	3491	527.6	4197	632.5
60	M39	3226	451.1	4531	633.5	5443	701
65	M42	3991	515.8	5609	725.7	6727	870.8
70	M45	4992	604.1	7012	850.2	414	1019.9
75	M48	6021	679.6	8473	955.1	10150	1147.4
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100	M68	17615	1425.8	24771	2005	29725	2406
105	M72	21081	1620	29645	2279.2	35675	2733.8
110	M76	24973	1826.7	35118	2568.8	42141	3082.5
115	M80	29314	2045.7	41222	2876.8	49467	3452.1
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145	M100	59200	3326.6	83250	4678.1	99900	5613.7

Welding guide lines unless otherwise indicated:

Criteria for the chamfer degrees:

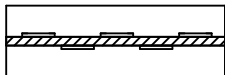
Thickness of the plate <10= 0°  
Thickness of the plate between 10 and 30 = 45°  
Thickness of the plate between 30 and 60 = 35°  
Thickness of the plate >60 = 30°

Continuous single / double V butt welding:

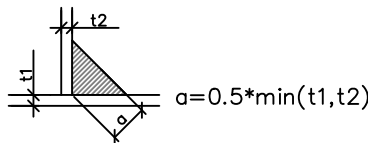



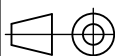
Intermittent external welding:

Maximum value: s ≤ 15\*a  
Minimum value: s ≤ 300  
I ≥ 15\*a  
I ≥ 40



Continuous fillet welding:



Rev.	Modification										Date	Name		
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.														
Tolerance for dimensions without tol. according to ISO 2768-mK												Date	Name	Material
More than	0.5	3	6	30	120	400	1000	2000	Drawn	08/10/25	ATB			
Less	3	6	30	120	400	1000	2000	4000	Checked	08/10/25	BU	Weight (kg)		
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	08/10/25	BU		602412.83	
Welded		±0.5	±1	±1.5	±2	±3	±4	±6						
Customer:  ALINVEST					Format: A2		Title BILLETS AND STRIP CASTING ---							
					Scale: 1:50									
					Project Methode: 		Part Number  2558-3311-THD-B-100-0000					Revision		
							Customer Number					Sheet 17/		

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> CONSTRUCTION & COMMISSIONING DEPARTMENT, INSERTEC	<b>ALINVEST</b> Member of <b>MTX</b> GROUP
<b>E2558 Alinvest – Czech Republic</b>	<b>2558-IH-PUE-01</b>	<b>E2558</b>

Annex 8 - Skimming and charging construction sequence

## **Installation Method and Procedure**



**P2023-0018\_11 CHM I**

**P2023-0018\_12 CHM II**

**P2023-0018\_21 SKM I**

**P2023-0018\_22 SKM II**

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## **1 | INTRODUCTION**

### **1.1 | Content**

This document outlines the framework and technical steps required for the safe and effective installation of the equipment specified hereafter. The first part - Installation Method - defines the organizational, safety, and logistical measures necessary to ensure a compliant and risk-mitigated installation process. The second part - Installation Procedure - provides a structured, step-by-step guide detailing the practical execution of the installation, including alignment, connection, and final handover activities.

### **1.2 | Scope and Subject of Description**

Unless otherwise stated, the following statements refer to all machines - P23018-11 and \_12 CHMs (furnace charging machines) and P23018-21 and \_22 SKMs (furnace skimming machines) - within the framework of the project with the RIA internal designation P2023-0018 AIB Břidličná, CZE.

### **1.3 | Location of Installation**

The work described in the following sections will be carried out on the main customer's premises. The construction site address is: Bruntálská 167, 793 51 Břidličná, Czech Republic (hereinafter referred to as "construction site"). The equipment will be installed at a facility for processing aluminum scrap.

### **1.4 | Environmental Conditions**

The environmental conditions at the equipment installation site may include dust, noise, heat, adverse weather, poor or restricted transport routes or staging surfaces, limited visibility and/or lighting conditions, hazardous objects (e.g. scrap) and numerous parallel activities by third-party trades. The latter include, among other things, the construction of the building structures and adjacent plant components (primarily the furnaces and casting infrastructure) and associated activities such as lifting loads or hot work. To ensure safe installation, all these factors must be considered and appropriate safety precautions taken. In addition, or in addition to these, the local safety regulations of the client (customer) or the relevant authorities apply.

### **1.5 | Roles and Responsibilities**

RIA Cast House Engineering GmbH will manage the installation work through specialized personnel (supervisors). A supervisor will be on-site for the entire duration of the installation, responsible for both mechanical and electrical work. Depending on the complexity of the work, a third, lead supervisor may be appointed by the contractor. This supervisor—or, in the absence of the latter, one of the two aforementioned supervisors—will also serve as the permanent technical and organizational contact for the responsible customer representatives or representatives of relevant external trades (e.g., during construction meetings). The project manager responsible remains the contact person for all organizational questions that arise.

If subcontractors are employed, a representative of the subcontractor will also be designated as the responsible foreman. Communication with any subcontractor is the responsibility of the contractor's supervisors to ensure a clear line of command.

The supervisors seconded by RIA are responsible for ensuring that all employees working on behalf of the contractor on site follow the instructions of the client representative(s) and that applicable HSE regulations are implemented.

## 1.6 | Timeline

The installation timeline ATG-RIA-X18-001 in its latest revision applies to the activities described below.

## 2 | INSTALLATION METHOD

### 2.1 | Risk Assessment

As part of the project, a detailed risk analysis was prepared for each machine (ATG-RIA-I02-001 Risk Analysis CHM and ATG-RIA-I02-002 Risk Analysis SKM), which contains a section specifically addressing assembly and examining assembly-specific risks as well as outlining appropriate countermeasures and precautions. Specific hazards arising from the nature of the work to be performed or the environment/specific assembly site in which this work is performed are addressed here, and appropriate mitigations are described. If work that poses a particular hazard can be avoided, alternative procedures are preferred.

All safety measures described here and elsewhere serve the top priority of zero accidents!

### 2.2 | Resources and Equipment

#### 2.2.1 | Personnel

A total of ten to 15 workers are directly involved in the assembly of the machine(s). They are composed as follows:

Trade	Number of Workers	Company
Mechanical Supervisor	1 to 2	Contractor (RIA)
Electrical Supervisor	1	Contractor (RIA)
Assistants	2	Subcontractor
Mechanical Fitter	4	Subcontractor
Welders <sup>1</sup>	4	Subcontractor
(Equipment) Operators <sup>2</sup>	2	Subcontractor

1) Welders are only required for the installation of a charging machine (CHM);

2) Operators are only required when the appropriate equipment is used.

It may happen that workers are both fitters and welders; since welding is often isolated from other activities, the total number of workers employed may be reduced accordingly. Hydraulic systems, where existing, are usually pre-installed to such an extent before final assembly that no specialist is required for final assembly. The number of workers, the number of machines to be installed, various trades, and parallel work require a high level of organization and coordination. This is based on the installation timeline (see ATG-RIA-X18-001 of the project documentation), which specifies not only the time frame but also the sequence of assembly and other steps, as well as the technical documentation (drawings, wiring and piping diagrams, or checklists). The contractor's supervisors participate in at least one meeting with the project team prior to the start of installation to discuss the installation where they are

thoroughly prepared for the upcoming work. In addition, mechanical and electrical supervisors were often already involved in the pre-assembly phase.

### 2.2.2 | Equipment

For the erection of the machine(s) different equipment will be required depending on the local conditions (assembly and installation area, ceiling height, transport routes, location of storing and staging areas, delivery logistics, etc.). In any case, some kind of lifting and handling equipment is required. The following table shows some typical machinery for installation:

Machinery	Capacity	Number of Units	Usage
Mobile Crane	< 180 t / < 20,00 m	1 to 2	Heavy weight components lifting, setting / unloading trucks or containers
Overhead Crane	n / a	n / a	Installation of equipment <sup>1</sup>
Tele-Handler	< 20 t / < 12,00 m	1 to 2	Medium weight components lifting, setting / unloading trucks or containers
HD Forklift	< 7,5 t	1 to 2	Installation of medium or light weight components / unloading / pulling trailers
LD Forklift	< 3,0 t	1	Intermediate transport (pallets, boxes) / unpacking boxes or crates / installation of smaller components / pulling trailers
Trolley / Trailer	< 12,0 t	1	Intermediate transport of big and heavy components
HD Casters	< 35 t	4 to 6	Taxi of CHM / SKM to rails <sup>2</sup>

1) Only utilized if available

2) Only used when a machine is built off the rails and has to be transferred onto the rails later

In addition to lifting and handling equipment, a number of smaller equipment and machinery is utilized during the installation, such as hydraulic presses, power torque wrenches, welding machines, generators, fans, or construction lighting.

RIA typically does not specify specific welding equipment requirements. MIG/MAG welding machines with wire spools, water- or gas-cooled, are typically used. But electrode welding with appropriate accessories is also permitted.

No equipment will be used without the required operating permit or current test certificate.

### 2.2.3 | Tools

Numerous tools and smaller equipment are used for installation. By the help of a tools list, inventory is kept, and tools are tracked. This way, damaged or malfunctioning tools can be sorted out and replaced respectively.

Standard tools include all types of hand tools such as wrenches (open-end, ring, and socket), pliers, allen keys, hammers, clamps, mandrels, files, brushes, screw drivers etc.; In addition, there are various power tools such as impact wrenches, drills, and grinders with corresponding accessories such as sockets, drill bits, grinding wheels, and batteries. Measuring instruments such as laser distance meters, calipers, spirit levels, tape measures, etc., complement the inventory of standard tools. In addition, there are a number of special tools, especially electricians or hydraulics tools such as crimping pliers or specialized wrenches.

A range of smaller horizontal and vertical (manual) lifting devices and lifting aids are also used. These include chain and lever hoists, mechanical winches, hydraulic presses (car jacks), and tensioning straps.

Lifting gear like slings, eyelets, lashing straps, shackles, etc. are also regularly inspected and are only used with a valid test seal.

All tools and equipment are thoroughly inspected before shipment to the construction site – where necessary by appropriately authorized and/or qualified personnel – and are only brought to the construction site in perfect condition. A daily (visual) inspection is conducted on site to detect damage in a timely manner and to sort and replace any tools or equipment that are in need.

All tools, gear, and equipment are stored in locked boxes, inaccessible to third parties or unauthorized people. This shall prevent deliberate damage or theft (and thus the pressure to use untested or defective tools). All tools are also kept in sufficient quantities to ensure replacements are available if needed.

To secure maximum safety, all tools, gears and equipment are chosen by high quality standards, reliability, durability, and ergonomics.

## **2.2.4 | Auxiliary and Operating Materials**

Auxiliary and operating materials include paints and varnishes, lubricants, emulsions, greases, coolants, and other chemicals. These are properly labeled and stored in a locked container (unless local regulations require otherwise). Empty containers will be disposed of properly.

## **2.3 | Safety and Control Measures**

### **2.3.1 | Personal Protective Equipment (PPE)**

Unless otherwise prescribed or required by local circumstances, all RIA employees and subcontractor's workers will be wearing hard hats, safety boots and high visibility, long-sleeved, fire-resistant clothing as a minimum standard. In addition, safety goggles, hearing protection, work gloves and fall protection are kept ready for use on site as required.

### **2.3.2 | Technical Protective Devices (TPD)**

Where additionally required or otherwise not possible, personal protective equipment must be supplemented or replaced with technical protective equipment. This includes fall protection such as railings, grilles, etc., barriers, handrails, grab handles, and warning signs.

## **2.4 | Work Permits and Approvals**

It may be necessary to coordinate certain work with the client or external trades, register it, or obtain approval for it. Such work may include hot work (welding, grinding), working at heights, working on electrical systems, working in confined spaces, or handling hazardous substances such as gases, paints, varnishes, or oils.

All contractor employees are instructed not to perform such work on their own initiative or without permission or coordination. The supervisor responsible must ensure that necessary permits are applied for and granted in a timely manner and that such work is not carried out without them.



### 2.5 | Daily Routines

To ensure that all employees under the contractor's supervision are up to date with the latest developments regarding the installation process, safety regulations, and relevant developments in the installation site environment, the designated supervisor holds short daily meetings ("toolbox talks") before work begins. Similarly, all parties involved are informed at the end of each workday about the work scheduled for the following day. If requested by the client, a daily work plan is prepared, which outlines the upcoming activities, any resulting hazards for participants and bystanders, and appropriate safety precautions.

In addition, as required and depending on the work to be carried out on a daily basis, specific safety training may be provided, for example on work involving fire hazards, the operation of certain lifting or conveying equipment or tools, special protective equipment and the like. The most important daily routines are listed again below.

Time	Routine	Content
Begin of workday	Toolbox Talk	Explanation of planned activities and procedures for this day, description of resulting risks and appropriate measures
End of workday	Daily Wrap-Up	Summary of the previous day's work, evaluation of any dangerous situations that may have occurred and the crew's general safety behavior; agreement on the next day's actions
Not defined	Jour-Fixe	Coordination of daily tasks, work areas, planned resources and machines and the progress achieved
If necessary	Safety Briefing	Specific instruction in the use of certain machines or tools; explanation of appropriate safety measures
If required	Work Permits	If requested by the customer, work certificates will be prepared and/or work permits will be obtained for specific activities (e.g. work in confined spaces, on electrical systems, work involving fire hazards, etc.)

## 3 | INSTALLATION PROCEDURE

### 3.1 | Getting Set

#### 3.1.1 Packing, Transportation and Delivery

The machine(s) are delivered to the construction site either by truck or in containers (or both). For this purpose - especially for container transport - the machines are gradually disassembled, placed on wooden transport crates, and wrapped in foil for preservation. Small parts and accessories are packed in wooden crates. Each package is marked accordingly to ensure unique identification in the transport documents. This facilitates later retrieval and sorting of individual components<sup>1</sup>.



**Fig. 3.1.1-1** packed machine components inside container (left) / on wooden crate (right)

Some components may be too large to fit into a standard container or to be transported within local road transport regulations. Flat racks are used for this (sea transport), or oversized components are combined into a single package. These oversized packages are often protected separately and have special attachment points for lifting and securing on the respective means of transport.



**Fig. 3.1.1-2** oversized package on a truck (red lashes are for lifting and securing)

Upon delivery, the integrity of the packaging of these components is therefore first checked. If it is damaged, further inspection is required to determine whether any damage occurred during transport.

<sup>1</sup> The machine parts are packed in containers or on trucks with the aim of maximizing space efficiency, rather than according to the chronology of their assembly. This results in a chaotic distribution of the individual components across all load carriers, which is why a certain degree of sorting on the construction site is essential.

Especially where multiple machines are being installed at the same time, or where equipment delivery does not take place in the presence of a RIA supervisor, accurate labeling and tracking of packages is crucial for a smooth and rapid start to assembly. Upon arrival, the assembly personnel will therefore always check whether the equipment has reached its destination completely and undamaged.

### 3.1.2 Site Equipment

Before installation work begins, all involved personnel participate in the required safety briefings. These include information on escape and rescue routes, first aid facilities, designated shelters, and systems for alerting the fire department and emergency services. Following this, a site orientation is conducted. It covers the location and usage regulations for parking areas and traffic routes, the assignment of office, break, and common rooms, sanitary facilities, and the workspaces of designated contacts. Additionally, hazardous material storage areas and the disposal infrastructure are introduced.

At the same time, the construction site is prepared both logistically and organizationally. This includes the marking and barricading of the designated installation areas as well as the setup of staging and storage zones. Toolboxes and tools, storage and office containers equipped with the necessary technical infrastructure, and mobile sanitary units are installed. The connection and commissioning of a suitable site power distribution unit is also part of the basic setup.

Furthermore, the required materials and auxiliary equipment are laid out in readiness. The work areas are illuminated using appropriate lighting systems. Depending on the weather conditions and season, ventilation, heating, or cooling units are installed. Suitable work surfaces and workbenches are provided for manual tasks. Where necessary, weather protection measures are implemented to ensure uninterrupted work progress regardless of environmental influences.

### 3.1.3 Preliminary Checks

Preliminary checks primarily relate to the local conditions regarding assembly clearance, storage areas, and transport routes on the site. Assembly clearance, in particular, plays a key role in efficient installation. Among other things, clearances in passageways, ceiling heights, pivoting ranges, working areas of cranes and other handling equipment, and any interfering contours of other system components (experience has shown that the technical building infrastructure is particularly important here) must be thoroughly assessed. Structures that may not be installed until later (e.g., gas lines, electrical cables, etc.) should also be included in the preliminary checks.

A second aspect of the preliminary assessment is preliminary work by third-party trades or the client themselves. This primarily includes the rails. Are they installed according to specifications and within the permissible tolerances? Are the track width and position correct? Furthermore, the power supply may be part of a third-party scope of work; in this case, careful inspection is also required in order to identify possible deviations early on and avoid costly subsequent modifications.

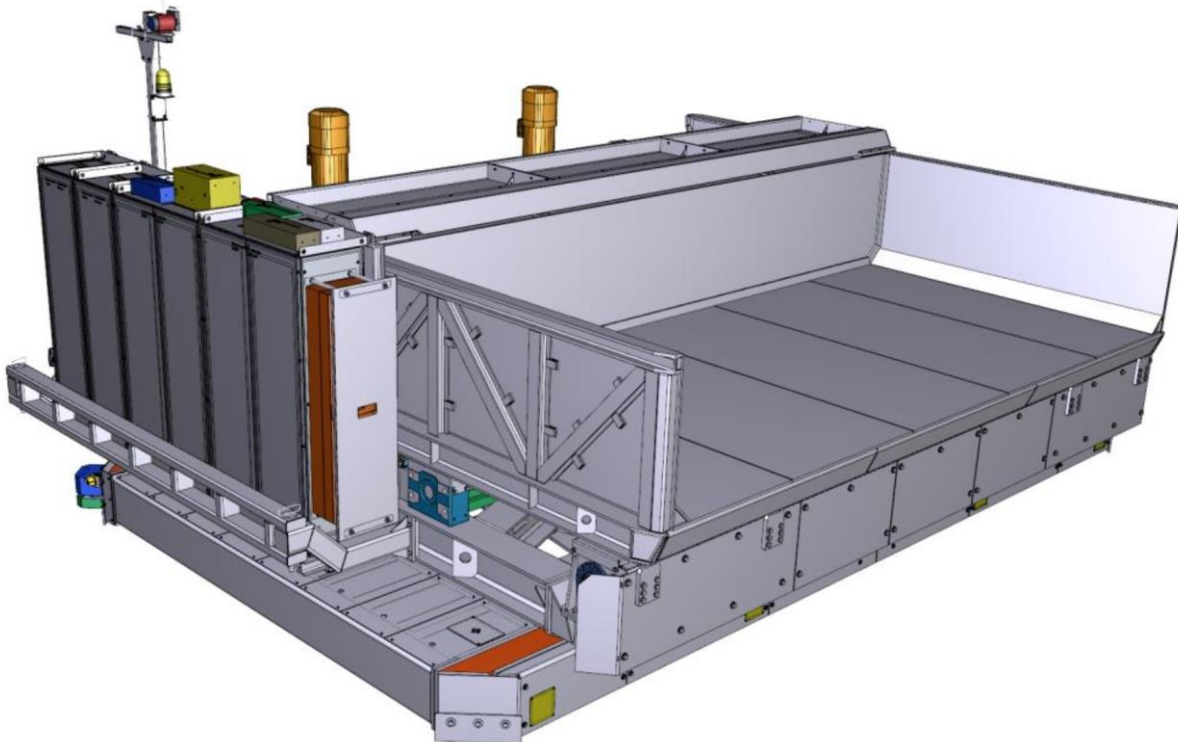
## 3.2 | Equipment Erection

### 3.2.1 General Procedure

Generally, the assembly of CHM and SKM takes place in individual functional levels or functional groups. Depending on the size and complexity of the machines, each level or group consists of one or more pre-assembled segments. These are mounted one above the other, starting with the lowest level – the base frame. Individual segments are positioned, aligned, and bolted together. Cable runs, piping, or smaller mechanical attachments (such as cover plates, mechanical safeguards, etc.) are installed or attached. If individual functional groups are electrically or hydraulically connected, these connections are established once all relevant segments have been mechanically assembled. The assembly of CHM and SKM differs considerably, as will become clear in the following sections.

The dimensions and weights of the segments to be moved can vary considerably. However, individual segments rarely exceed unit weights of 9,000 kg and component lengths of 11,900 mm. The width of such a segment can range from 2,200 mm to 3,600 mm for large components. Since these are primarily frame segments, the segment height is negligible. It is typically less than 2,000 mm, but in certain cases can be up to 2,350 mm (e.g., control cabinets). A theoretical segment with maximum assumed dimensions and weight would be 11,900 x 3,600 x 2,350 mm, with a unit weight of 9,000 kg. These dimensions are generally manageable for assembly with the lifting equipment listed above. However, the local conditions must always be examined in detail and checked to see whether there is sufficient space for swiveling and lifting when handling with a mobile crane or other lifting equipment.

### 3.2.2 Charging Machine (CHM)



**Fig. 3.2.2-1** depiction of a Charging Machine (actual machine may differ in detail from the illustration)

The CHM's level-by-level construction is particularly evident. Here, the base frame, weighing frame (where present), intermediate frame, and the structures built upon them - the container and upper carriage - are



literally stacked one on top of the other. The control cabinet and cabinet frame are located to the side or rear of the chassis or intermediate frame. The upper carriage also contains the pusher. The deflector, which is located above the container, is usually also mounted on the intermediate since it does not move (into the furnace).

Power can be supplied using various solutions, but often an electrical mast or a mobile cable reel is also attached to the base frame or intermediate frame, less frequently to the control cabinet frame. Other attachments can include camera masts, safety fences, or other protective devices.

The individual levels – or frames – consist primarily of bolted and welded steel profiles and are typically divided into several segments – often three. These segments are positioned, aligned, and bolted together. After bolting, the weighing frame, intermediate frame, container, and superstructure segments are additionally welded at the beam joints. The flanges of the frame beams are prepared accordingly at the factory.

Ideally, the machines are assembled directly on the rails. This allows for precise alignment of the base frame, eliminating the need for laborious later mounting of the machine on the rails. In such a case, special requirements apply – both for assembly off the rail and for subsequent transport onto the rail – which will not be discussed further here.

The individual frames are connected to each other differently. For example, the base frame and weighing or intermediate frame are only positively and force-fitted in the downward direction (toward the base frame) to ensure the functionality of the weighing system<sup>2</sup>. The intermediate frame and upper carriage/container, or the upper carriage and pusher, are connected via chain drives.

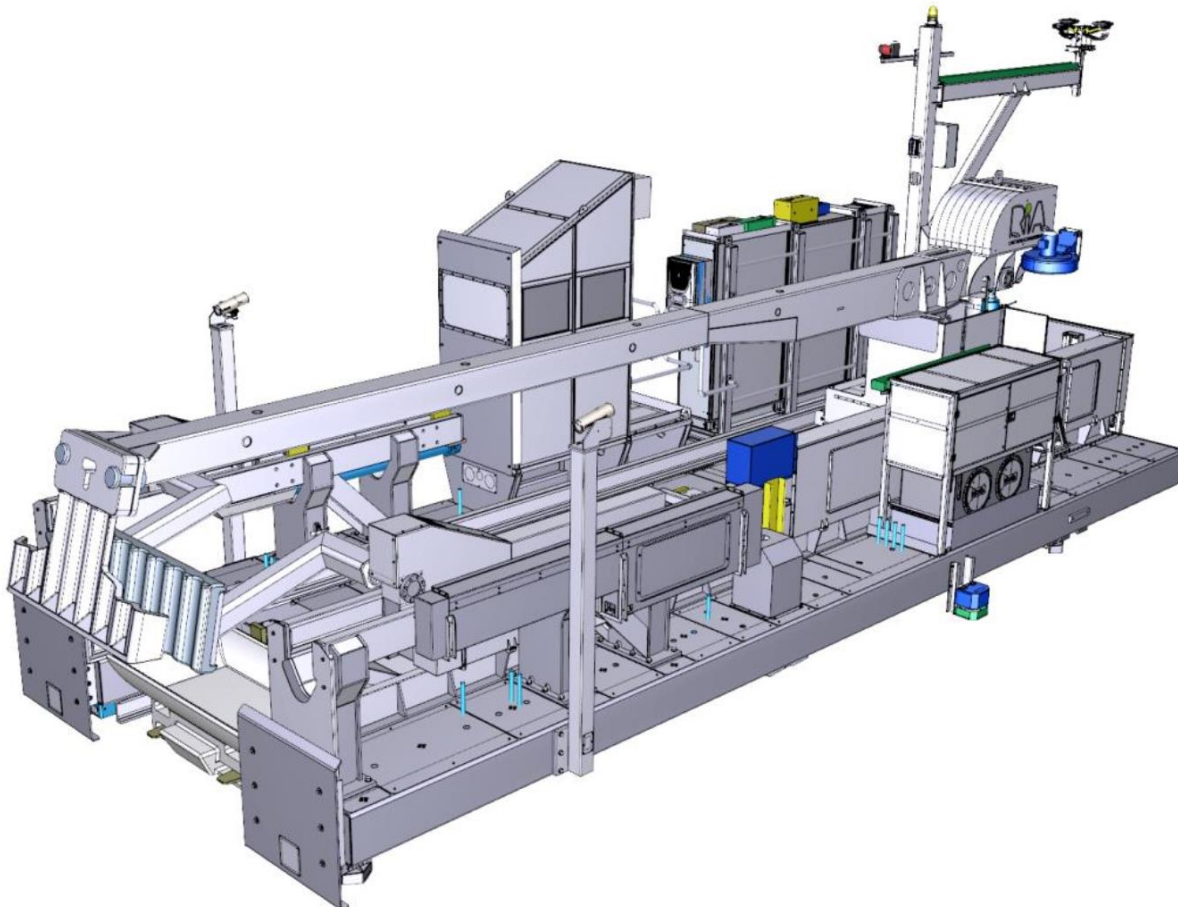
Moving functional groups are guided on rollers in C-profiles. Relative movements are limited by hard stops. Therefore, during assembly, it is important to ensure that moving parts are always secured against unintentional movement until the assembly of all components is complete!

CHMs may also include hydraulic functions. Further information on the installation of the hydraulic system can be found in Section 3.2.3 *Skimming Machine*; hydraulics are always installed there. Details of the electrical installation are explained in section 3.2.4 *Electrical Installation*.

---

<sup>2</sup> The load cells are located in the base frame. They support the load of all the structures above them (weighing/intermediate frames, containers, superstructure, etc.) rest only on the load cells and are otherwise not vertically connected to the chassis. Therefore, lifting the entire machine above the base frame therefore is not possible.

### 3.2.3 Skimming Machine (SKM)



**Fig. 3.2.3-1** depiction of a Skimming Machine (actual machine may differ in detail from the illustration)

The SKM is also divided into various functional groups, although the level-by-level structure is less pronounced here. However, the chassis, which supports all other functional groups and enables the machine to move, is located at the bottom. The base frame supports the boom carriage and skim boom, the throttle press, control cabinet, operator cabin, and hydraulic power unit. These are assembled one after the other, also from individual segments, on the base frame and connected accordingly. Particular attention is paid to the piping and connection of the hydraulic lines, which are already completed to a certain extent during pre-assembly.

### 3.2.4 Electrical Installation

Cable routes within the individual levels are already prepared during pre-assembly and simply need to be reconnected on site. The cables are then re-inserted into the cable guides and connected accordingly. Since the electrical installation is usually limited to the machines themselves, the effort involved is manageable due to the high degree of pre-assembly. Nevertheless, all connections must be correctly re-established and tested according to the technical documentation. This applies to the power supply as well as sensor or data cables at all relevant points on the machine. Moving parts are often connected by flex tracks, which must be re-wired during final assembly. The main part of the electrical installation is the reconnection of the control cabinet.

### **3.3 | Final Adjustments**

Final adjustments include the complete assembly of all attachments (cover and heat shields, enclosures, protective devices, sensors and limit switches, accessories), as well as the alignment and fine-tuning of all moving components. This includes greasing and lubricating bearings, pre-tensioning the chain drives, filling with operating fluids (hydraulic oil), and finally, properly tightening all screw connections.

Fine adjustment generally affects all limit switches and fixed stops (these later define the range of motion of the functional units). Furthermore, it also includes the fine alignment of all moving parts. The latter applies, for example, to the pusher (CHM) or boom carriage (SKM), where guide rollers must be adjusted and aligned within the guide rails. It can generally be advantageous if partial commissioning has already taken place for this remaining work, so that individual components can already be moved via the machine control system.

### **3.4 | Commissioning & Testing**

The commissioning processes (mechanical commissioning, cold and hot commissioning) and the final test procedures are explained in detail in a separate document. The same applies to the training of operating and maintenance personnel; a separate training plan applies for this.

Generally, after mechanical and electrical or hydraulic assembly and mechanical commissioning (lubrication, fine-tuning, etc.) have been completed, the machines are individually connected to the power supply, and the individual functions are started up and tested independently of the environment. All safety functions are checked first. Furthermore, if not already done beforehand, all functions that (can) run independently of the environment (e.g., furnaces, other equipment, etc.) are parameterized. This also includes setting up certain automated processes. Ideally, during this phase, the empty (cold) furnaces and the entire operating area (rails) can also be accessed, and important positions in the operating environment can be integrated into the parameterization. These processes can be summarized under the term "cold commissioning."

This is followed by hot commissioning, where scrap is charged into the hot furnace for the first time, or molten metal is skimmed in the furnace for the first time. After successfully completing these processes, it becomes clear to what extent further fine-tuning is required. If the hot commissioning demonstrates the desired operating behavior, actual production with the equipment can begin. Typically, the Production Acceptance Test (PAT) takes place during this time; successful completion of this test fulfills all criteria for technical acceptance.

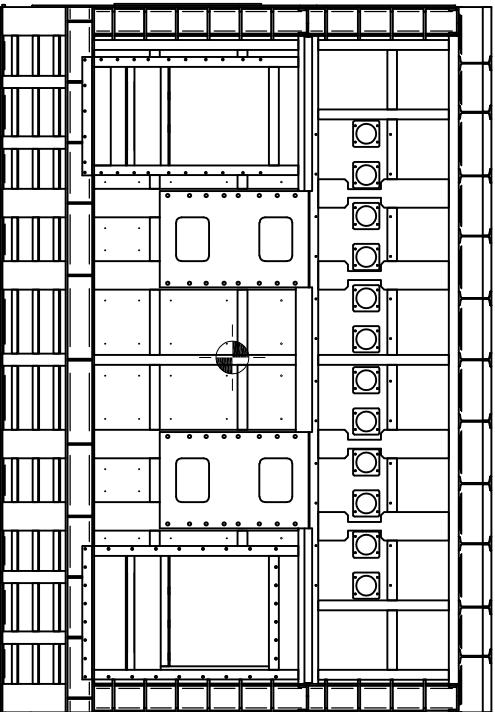
The PAT report records the acceptance process in detail and includes any changes or adjustments that were made. With the signatures of the client and contractor on the PAT report, the acceptance is technically complete.

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> CONSTRUCTION & COMMISSIONING DEPARTMENT, INSERTEC	<b>ALINVEST</b> Member of <b>MTX</b> GROUP
<b>E2558 Alinvest – Czech Republic</b>	<b>2558-IH-PUE-01</b>	<b>E2558</b>

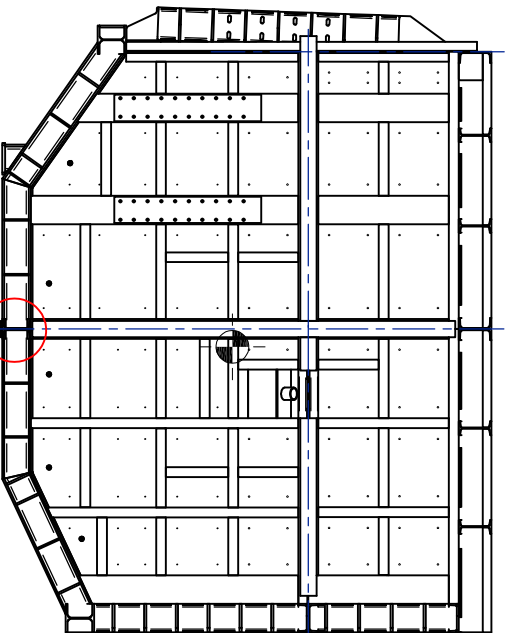
Annex 9 - Welding map - WPS/pWPS - welding consumables



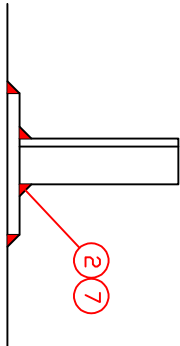
MAIN PARTS OF THE FURNACES



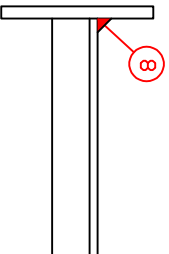
WELDING MAP



Carbon steel structure  
(platforms / support)

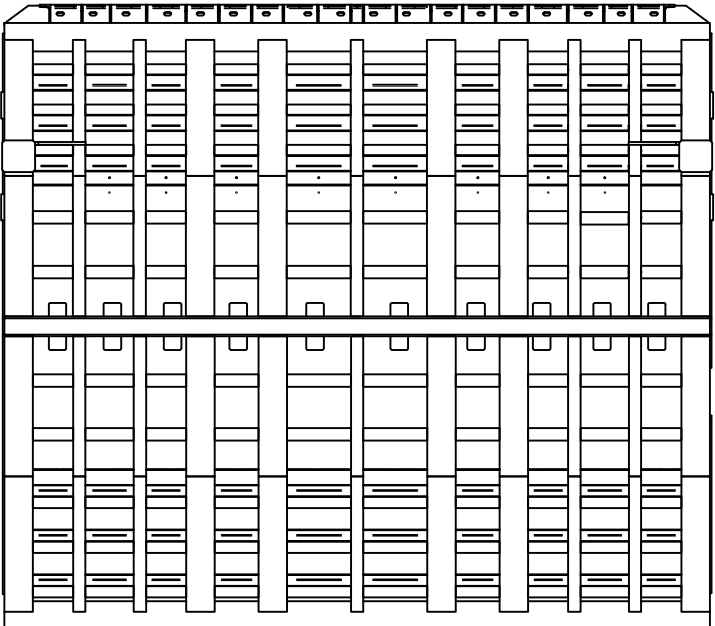
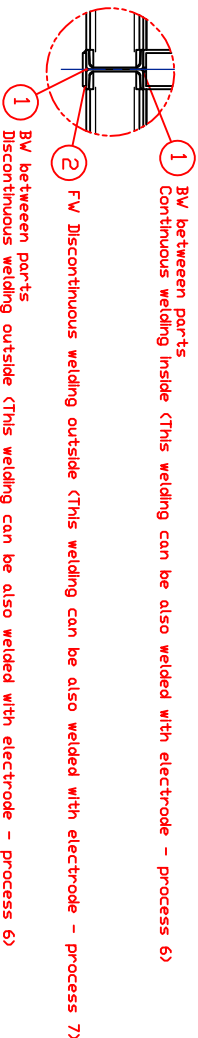


Carbon steel – Stainless steel



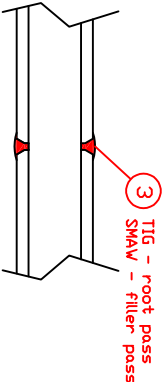
Detail A

Detail A  
(welding detail between main parts)



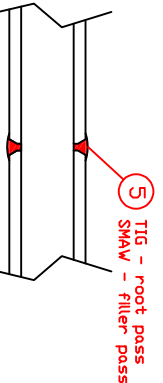
Stainless steel piping

VIEW AS PER 'A'



③ TIG – root pass  
SMAW – filler pass

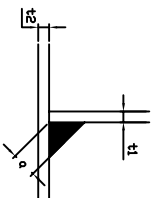
Carbon steel piping



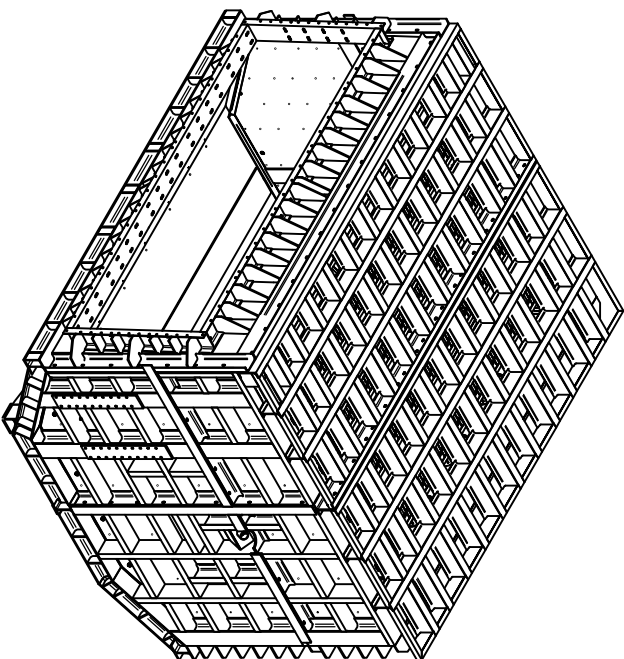
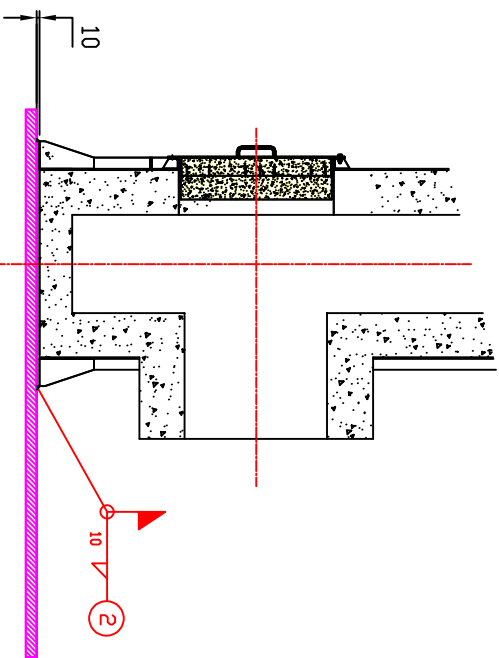
⑤ TIG – root pass  
SMAW – filler pass

WELDING SIZE

CONTINUOUS FILLET WELDING (TYP)



a = 0.5 min (t1, t2)



ITEM	WELDING PROCESS	BASIC MATERIAL	TYPE OF WELDING	Imposed weld metal thickness (mm)	CONFORMANCE	WPS
1	ISO 6254(DIN1170)	CS / CS	Butt welding (GV)	3 < t < 24mm	EN ISO 14343-A-2 4 W 351 / 328 3 CI 351 (Equivalent AWS S18 E70S3)	210091-W
2	ISO 6254(DIN1170)	CS / CS	Fillet welding (GV)	t < 24mm	EN ISO 14343-A-2 4 W 351 / 328 3 CI 351 (Equivalent AWS S18 E70S3)	210091-W
3	ISO 6254(DIN1170)	SS / SS	Butt welding (GV)	3 < t < 11,08 mm	ISO 14343-A-2 19 9 + E 19 9 L R 3 2	210094-W
4	III (GVW)	SS / SS	Fillet welding (GV)	t < 11,08 mm	E 19 9 L R 3 2 (Equivalent AWS SFA 5.6 E308-L17)	210094-W
5	ISO 6254(DIN1170)	CS / CS	Butt welding (GV)	3 < t < 11,08 mm	ISO 6254-A-2 3 W 351 + E 19 9 L R 3 2	210096-W
6	III (GVW)	CS / CS	Butt welding (GV)	3 < t < 11,08 mm	E 19 9 L R 3 2 (Equivalent AWS SFA 5.6 E308-L17)	210096-W
7	III (GVW)	CS / CS	Fillet welding (GV)	t < 11,08 mm	E 19 9 L R 3 2 (Equivalent AWS SFA 5.6 E308-L17)	210096-W
8	III (GVW)	CS / SS	Fillet welding (GV)	t < 11,08 mm	E 19 9 L R 3 2 (Equivalent AWS SFA 5.6 E308-L17)	210096-W

Rev.	Modification	Date	Drawn
1	Initial design	10/09/2025	ALINVEST

Item	Welding process	Basic material	Type of welding	Imposed weld metal thickness (mm)	Conformance	WPS
1	ISO 6254(DIN1170)	CS / CS	Butt welding (GV)	3 < t < 24mm	EN ISO 14343-A-2 4 W 351 / 328 3 CI 351 (Equivalent AWS S18 E70S3)	210091-W

Item	Welding process	Basic material	Type of welding	Imposed weld metal thickness (mm)	Conformance	WPS
2	ISO 6254(DIN1170)	CS / CS	Fillet welding (GV)	t < 24mm	EN ISO 14343-A-2 4 W 351 / 328 3 CI 351 (Equivalent AWS S18 E70S3)	210091-W

Item	Welding process	Basic material	Type of welding	Imposed weld metal thickness (mm)	Conformance	WPS
3	ISO 6254(DIN1170)	SS / SS	Butt welding (GV)	3 < t < 11,08 mm	ISO 14343-A-2 19 9 + E 19 9 L R 3 2	210094-W

Item	Welding process	Basic material	Type of welding	Imposed weld metal thickness (mm)	Conformance	WPS
4	III (GVW)	SS / SS	Fillet welding (GV)	t < 11,08 mm	E 19 9 L R 3 2 (Equivalent AWS SFA 5.6 E308-L17)	210094-W

Item	Welding process	Basic material	Type of welding	Imposed weld metal thickness (mm)	Conformance	WPS
5	ISO 6254(DIN1170)	CS / CS	Butt welding (GV)	3 < t < 11,08 mm	ISO 6254-A-2 3 W 351 + E 19 9 L R 3 2	210096-W

Item	Welding process	Basic material	Type of welding	Imposed weld metal thickness (mm)	Conformance	WPS
6	III (GVW)	CS / CS	Butt welding (GV)	3 < t < 11,08 mm	E 19 9 L R 3 2 (Equivalent AWS SFA 5.6 E308-L17)	210096-W

Item	Welding process	Basic material	Type of welding	Imposed weld metal thickness (mm)	Conformance	WPS
7	III (GVW)	CS / CS	Fillet welding (GV)	t < 11,08 mm	E 19 9 L R 3 2 (Equivalent AWS SFA 5.6 E308-L17)	210096-W

Item	Welding process	Basic material	Type of welding	Imposed weld metal thickness (mm)	Conformance	WPS
8	III (GVW)	CS / SS	Fillet welding (GV)	t < 11,08 mm	E 19 9 L R 3 2 (Equivalent AWS SFA 5.6 E308-L17)	210096-W

Item	Welding process	Basic material	Type of welding	Imposed weld metal thickness (mm)	Conformance	WPS
9	III (GVW)	CS / SS	Fillet welding (GV)	t < 11,08 mm	E 19 9 L R 3 2 (Equivalent AWS SFA 5.6 E308-L17)	210096-W

Item	Welding process	Basic material	Type of welding	Imposed weld metal thickness (mm)	Conformance	WPS
10	III (GVW)	CS / SS	Fillet welding (GV)	t < 11,08 mm	E 19 9 L R 3 2 (Equivalent AWS SFA 5.6 E308-L17)	210096-W

Item	Welding process	Basic material	Type of welding	Imposed weld metal thickness (mm)	Conformance	WPS
11	III (GVW)	CS / SS	Fillet welding (GV)	t < 11,08 mm	E 19 9 L R 3 2 (Equivalent AWS SFA 5.6 E308-L17)	210096-W

Item	Welding process	Basic material	Type of welding	Imposed weld metal thickness (mm)	Conformance	WPS
12	III (GVW)	CS / SS	Fillet welding (GV)	t < 11,08 mm	E 19 9 L R 3 2 (Equivalent AWS SFA 5.6 E308-L17)	210096-W

Item	Welding process	Basic material	Type of welding	Imposed weld metal thickness (mm)	Conformance	WPS
13	III (GVW)	CS / SS	Fillet welding (GV)	t < 11,08 mm	E 19 9 L R 3 2 (Equivalent AWS SFA 5.6 E308-L17)	210096-W

# REGISTRO DE CUALIFICACIÓN DE PROCEDIMIENTO DE SOLDEO Nº 2100091-P (WPQR)

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)  
(UNE-EN ISO 15614-1: 2018 / NIVEL 2)

<b>Fabricante:</b> Manufacturer	INDUSTRIAL FURNACES INSERTEC, S.L.	<b>Fecha de soldeo:</b> Welding Date	07/04/21
<b>Dirección:</b> Address	CM/ Etserre, 21, C.P.: 48970. Basauri – Vizcaya		
<b>WPS del Fabricante. Nº de Referencia:</b> Manufacturer's WPS	2100091-W	<b>Nivel de ensayo:</b> Test level	2

## RANGO DE CUALIFICACIÓN WELDING QUALIFICATION RANGE

<b>Proceso(s) de soldeo:</b> Welding process	135
<b>Tipo de unión:</b> Joint type	BW / FW
<b>Grupo(s) y subgrupo(s) de material base:</b> Base metal group(s) & sub-group(s)	Grupo 1. Subgrupo 1.2 a Grupo 1 (Igual o inferior límite elástico dentro del mismo grupo)
<b>Espesor del material base:</b> Base metal thickness	3 – 24 mm
<b>Espesor del material depositado:</b> Deposited weld metal thickness	t ≤ 24 mm
<b>Tamaño de garganta:</b> Fillet size	SIN RESTRICCIÓN
<b>Pasada simple/multipasada:</b> Single pass/multipass	ml
<b>Diámetro exterior:</b> Outside diameter	Ø>500mm; Ø>150mm en PC; PF y PA rotando
<b>Designación del material de aporte:</b> Filler metal designation	EN ISO 14341-A: G42 4 M 21 3Si1 / G38 3 C1 3Si1 ó Equivalentes propiedades químicas, mecánicas y de recubrimiento.
<b>Marca y fabricante del material de aporte:</b> Filler metal trademark & manufacturer	TODAS
<b>Tamaño del material de aporte:</b> Filler metal dimensions	S / INPUT
<b>Gas de protección / fundente:</b> Shielding gas / flux	Ar + CO <sub>2</sub> (85% + 15%) Gr M2-1 (±20% del CO <sub>2</sub> )
<b>Gas de respaldo:</b> Backing gas	N/A
<b>Tipo de corriente y polaridad:</b> Current and polarity	DCEP / (+)
<b>Modo de transferencia:</b> Transfer mode	Todas excepto cortocircuito
<b>Aporte térmico:</b> Heat input	Input ≥ 9.8 KJ/cm
<b>Posiciones de soldeo:</b> Welding Positions	PA / PF
<b>Temperatura de precalentamiento:</b> Preheat temperatura	≥ 5 °C
<b>Temperatura entre pasadas:</b> Interpass temperature	≤ 160 °C
<b>Precalentamiento antes de la pasada de peinado:</b> Preheating before cap layer welding	N/A
<b>Post-calentamiento:</b> Post-heating	CON / SIN
<b>Tratamiento térmico post-soldadura:</b> Post weld heat treatment	N/A
<b>Otra información:</b> Other information	---



**Se certifica que los datos de este registro son correctos y que los cupones de ensayos fueron preparados, soldados y ensayados satisfactoriamente de acuerdo con los requisitos de la norma UNE-EN ISO 15614-1:2018.**

We hereby certify that the data recorded is correct and the test welds were prepared, welded and tested satisfactorily, according to UNE-EN ISO 15614-1:2018

**FECHA** (Date): 11/05/21

**FABRICANTE** (Manufacturer): INDUSTRIAL FURNACES  
INSERTEC, S.L.

**Fdo.** (Signature):

**ORGANISMO EXAMINADOR** (Examining body):

SERVICIOS DE CONTROL E INSPECCION, S.A.

**Fdo.** (Signature): V. PEDROSA / A. GARCIA

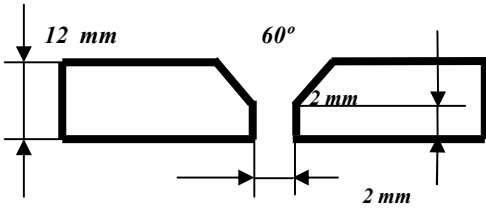
# REGISTRO DE CUALIFICACIÓN DE PROCEDIMIENTO DE SOLDEO Nº 2100091-P (WPQR)

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)  
(UNE-EN ISO 15614-1: 2018 / NIVEL 2)

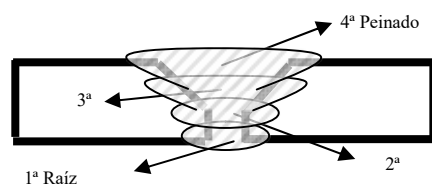
## REGISTRO DE ENSAYO DE SOLDADURA WELDING TEST RECORD

<b>Nombre del soldador(es):</b> Welders name(s)	José María Gago	<b>Identificación del soldador:</b> Welder Identification	J.M.G.
<b>Proceso(s) de soldeo:</b> Welding Process(es)	135	<b>Tipo de unión:</b> Joint type	A TOPE. BW / P
<b>Espec. del material base:</b> Base metal specification	EN 10028-3:2017 P355NL1. Gr1.2	<b>Posición de soldeo:</b> Welding Position	PF
<b>Espesor del material base:</b> Base metal thickness	12 mm	<b>Diámetro exterior:</b> Outside diameter	N/A
<b>Modo de transferencia:</b> Transfer mode	ARCO SPRAY	<b>Métodos de prep. y limpieza:</b> Preparing & cleaning methods	Cepillado y amolado

### Diseño de la unión (Joint desing)



### Secuencia de soldeo (Welding sequence)



Pasada Pass	Proceso de soldeo Process	Ø Material de aporte (mm) Filler metal Ø	Intensité (A) Current	Voltaje (V) Voltage	Tipo de corriente y polaridad Current type & polarity	Velocidad de hilo (m/min) Wire feed speed	Velocidad de avance (cm/min) Travel speed	Aporte térmico (KJ/cm) Heat input
1ª Raíz	135	1	130	18.2	DCEP (+)	339	7.5	15.1
2ª	135	1	130	18.2	DCEP (+)	339	8.5	13.4
3ª	135	1	140	19.5	DCEP (+)	339	9.3	14.1
4ª Peinado	135	1	135	18.8	DCEP (+)	339	9.3	13.1

<b>Material de aporte y flux</b> Filler metal & flux	<b>Designación:</b> Designation:	EN ISO 14341-A: G42 4 M 21 3Si1 / G38 3 C1 3Si1 Ø = 1 mm / Lote: PVU44034010B
	<b>Fabricante y marca:</b> Manufacturer and trademark	ESAB

<b>Requisitos especiales de secado:</b> Special requirements for drying	S/ Fabricante	<b>Oscilación:</b> Oscillation	S / INPUT
<b>Gas / Flux:</b> Gas / Flux	<b>Protección:</b> Shielding	<b>Detalles de soldeo pulsado:</b> Pulsed arc welding parameters	N/A
	<b>Respaldo:</b> Backing	<b>Diámetro de tobera y distancia a pieza:</b> Nozzle diameter / tube-work distance:	N/A
<b>Caudal de gas:</b> Gas flow rate	<b>Protección:</b> Shielding	<b>Detalles de soldeo por plasma:</b> Plasma welding parameters	N/A
	<b>Respaldo:</b> Backing	<b>Ángulo de ataque:</b> Welding angle	N/A
<b>Electrodo de wolframio (tipo y Ø):</b> Tungsten electrode (type and Ø):	N/A	<b>Fijación por:</b> Fixation made by:	Por puntos
<b>Detalles del Respaldo:</b> Backing details	ssnb	<b>Detalles del resanado:</b> Back gouging details	Cepillado & Amolado
<b>Temperatura precalentamiento:</b> Preheat Temperature	15 °C (Ambiente)	<b>Temperatura entre pasadas:</b> Interpass temperature	MAX 110 °C
<b>Precalentamiento antes del peinado:</b> Preheating before cap layer welding	N/A	<b>Número de electrodos:</b> Number of electrodes	ÚNICO
<b>Post calentamiento:</b> Post heating:	SIN	<b>Metal de aporte suplementario:</b> Supplemental filler metal	N/A

### TRATAMIENTO TERMICO POST-SOLDADURA: POST WELD HEAT TREATMENT

<b>Temperatura:</b> Temperature	N/A	<b>Tiempo:</b> Time	N/A	<b>Método:</b> Method	N/A
<b>Velocidad de Calentamiento/Enfriamiento:</b> Speed of heating and cooling			N/A		



**FECHA** (Date): 11/05/21

**FABRICANTE** (Manufacturer): INDUSTRIAL FURNACES  
**INSERTEC, S.L.**

**Fdo.** (Signature):

**ORGANISMO EXAMINADOR** (Examining body):

SERVICIOS DE CONTROL E INSPECCION, S.A.  
**Fdo.** (Signature): V. PEDROSA / A. GARCIA

# REGISTRO DE CUALIFICACIÓN DE PROCEDIMIENTO DE SOLDEO Nº 2100091-P (WPQR)

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)  
(UNE-EN ISO 15614-1: 2018 / NIVEL 2)

## ENSAYOS NO DESTRUCTIVOS (END)

NON DESTRUCTIVE TESTING (NDT)

<b>Inspección visual</b> (Visual inspection):	ACEPTABLE	<b>Informe(s) Nº</b> (Report(s) Nº):	210031ENDORT-OT0001-IV01
<b>Líquidos penetrantes</b> (Liquid Penetrant):	ACEPTABLE	<b>Informe(s) Nº</b> (Report(s) Nº):	210031ENDORT-OT0001-PT01
<b>Partículas magnéticas</b> (Magnetic Particles):	N/A	<b>Informe(s) Nº</b> (Report(s) Nº):	N/A
<b>Radiografía</b> (Radiography):	ACEPTABLE	<b>Informe(s) Nº</b> (Report(s) Nº):	210031ENDORT-OT0001-RT01
<b>Ultrasonidos</b> (Ultrasonics):	N/A	<b>Informe(s) Nº</b> (Report(s) Nº):	N/A
<b>Otros</b> (Others):	N/A	<b>Informe(s) Nº</b> (Report(s) Nº):	N/A

## ENSAYOS DESTRUCTIVOS

DESTRUCTIVE TESTING

<b>Informe(s) de laboratorio Nº:</b> (Lab. Report(s) Nº)	E-210575LMEMAD-OT0001-IF01-Rv00
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<b>Ensayo de tracción:</b> (Tension test):						
<b>Tipo/Probeta nº</b> Type/Specimen nº	<b>Rp0,2 (L.E.)</b> Yield strength (N/mm <sup>2</sup> )	<b>Rm</b> Ultimate tensile strength (N/mm <sup>2</sup> )	<b>Alargamiento</b> Elongation (%)	<b>Estricción</b> Reduction of area (%)	<b>Localización de la Rotura</b> Break point	<b>Observaciones</b> Remarks
<b>Requisitos:</b> Requirements		470 a 630				
E210575-1-1		536			M. Aportado	
E210575-1-2		543			M. Aportado	

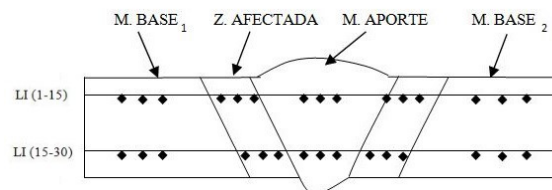
<b>Ensayo de doblado:</b> (Bend test):					
<b>Tipo/Probeta nº</b> Type/Specimen nº	<b>Diámetro madril</b> Jig Diameter	<b>Angulo de plegado</b> Bend angle	<b>Elongacion</b> Elongation	<b>Resultados</b> Results	
E210575-1-LT-1	4 x e	180°		ACEPTABLE	
E210575-1-LT-2	4 x e	180°		ACEPTABLE	
E210575-1-LT-3	4 x e	180°		ACEPTABLE	
E210575-1-LT-4	4 x e	180°		ACEPTABLE	

<b>Ensayo de resiliencia:</b> Charpy impact test		<b>Requisitos:</b> Requirements				
<b>Probeta/Situación de la entalla</b> Test piece/position	<b>Dimensiones</b> Dimensions	<b>Temperatura</b> (Test Temperature) (°C)	<b>Energía absorbida</b> Absorbed energy (J)	<b>Media</b> Average (J)	<b>Expansión lateral</b> Lateral expansion (mm)	<b>Area Dúctil</b> Shear Area (%)

<b>Examen Macrográfico</b> (Macrographic Exam)	ACEPTABLE	<b>Examen Micrográfico</b> (Micrographic Exam)	
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<b>Ensayo de dureza</b> (Hardness Test)		<b>Tipo y Carga:</b> (Type/Load)			
<b>Metal base</b> (Base Metal)	<b>Max:</b> 175	<b>Min:</b> 160	<b>Metal Aportado</b> (Weld Metal)	<b>Max:</b> 200	<b>Min:</b> 179
<b>ZAT</b> (HAZ)	<b>Max:</b> 230	<b>Min:</b> 186	<b>Línea de fusión</b> (Fusion Line)	<b>Max:</b> ---	<b>Min:</b> ---

**Croquis de dureza:** (Sketch of Hardness test):



**SCI**  
CONTROL & INSPECCION  
Organismo Notificado  
(Nº 1348)  
Ctra. Ajalvir - Torrejón, Km. 1,8  
Ajalvir 28864 (Madrid) España.  
T:+34 91 884 4393 F:+34 91 884 4324

**FECHA** (Date): 11/05/21

**FABRICANTE** (Manufacturer): INDUSTRIAL FURNACES  
**INSERTEC, S.L.**

**Fdo.** (Signature):

**ORGANISMO EXAMINADOR** (Examining body):

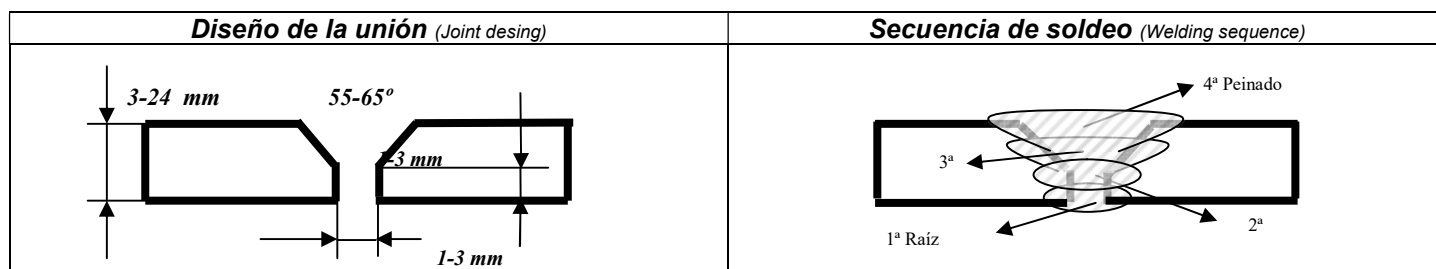
SERVICIOS DE CONTROL E INSPECCION, S.A.  
**Fdo.** (Signature): V. PEDROSA / A. GARCIA



# ESPECIFICACIÓN DE PROCEDIMIENTO DE SOLDEO (WPS) DEL FABRICANTE 2100091-W

WELDING PROCEDURE SPECIFICATION OF MANUFACTURER  
(UNE-EN ISO 15609-1:2020)

<b>Fabricante:</b> Manufacturer	<b>INDUSTRIAL FURNACES INSERTEC, S.L.</b>	<b>Lugar:</b> Place	CM/ Etserre, 21, C.P.: 48970. Basauri – Vizcaya
<b>Nº del WPQR:</b> WPQR Nº	2100091-P	<b>Proceso(s) de soldeo:</b> Welding process(es)	135
<b>Nombre del soldador:</b> Welder's Name	José María Gago	<b>Tipo de unión:</b> Joint type	BW / FW
<b>Material base en WPQR:</b> Base material used in the WPQR	EN 10028-3:2017 P355NL1. Gr1.2	<b>Espesor del material base:</b> Base metal thickness	$3 \leq t \leq 24$ mm
<b>Grupo(s) del material base cualificado:</b> Group(s) of base material qualified:	Grupo 1, Subgrupo 1.2 a Grupo 1 (Igual o inferior dentro del mismo grupo)	<b>Espesor depositado:</b> Deposited weld metal thickness	$t \leq 24$ mm
<b>Método de preparación y limpieza:</b> Cleaning and preparation method	Cepillado / Amolado	<b>Tamaño de garganta:</b> Fillet size	SIN RESTRICCIÓN
<b>Detalles del Respaldo:</b> Backing details	Ss (nb, mb) / bs	<b>Diámetro exterior:</b> Outside diameter	$\varnothing > 500$ mm; $\varnothing > 150$ mm en PC; PF y PA rotando
<b>Fijación por:</b> Fixation made by:	Por puntos	<b>Posición(es) de soldeo:</b> Welding position(s)	PA, PF



Parámetros de soldeo (Welding Parameters) (\*) Función del tipo de unión y espesor a soldar / (\*\*) Según ISO/TR 17671-1

Pasada Layer (*)	Proceso Process	Ø Metal de aporte Ø Filler Metal (*) (mm)	Intensidad Current (A)	Voltaje Voltage (V)	Tipo de corriente y Polaridad Current type and Polarity	Velocidad de alimentación del alambre Wire feed speed (m/min)	Velocidad de avance Travel speed (cm/min)	Aporte Térmico Heat Input (KJ/cm) (**)
1ª Raíz	135	F Input Térmico	162 – 97	22.8 – 13.7	DCEP (+)	424 - 254	9.4 – 5.6	> 11.4
2ª	135	F Input Térmico	162 – 97	22.8 – 13.7	DCEP (+)	424 - 254	10.6 – 6.4	> 10.0
3ª	135	F Input Térmico	175 – 105	24.4 – 14.6	DCEP (+)	424 - 254	11.6 – 7.0	> 10.3
4ª Peinado	135	F Input Térmico	169 - 101	23.5 – 14.1	DCEP (+)	424 - 254	11.6 – 7.0	> 9.8
<b>Metal de aporte y flux:</b> Filler metal and flux		<b>Designación:</b> Designation	EN ISO 14341-A: G42 4 M 21 3Si1 / G38 3 C1 3Si1 ó Equivalentes propiedades químicas, mecánicas y de recubrimiento.					
		<b>Fabricante y marca:</b> Manufacturer and trademark	TODAS					
<b>Requisitos especiales de secado:</b> Special requirements for drying			S/ Fabricante			<b>Oscilación:</b> Oscillation		
						S / INPUT		
<b>Gas/Fundente:</b> Gas/Flux	<b>Protección:</b> Shielding	Ar + CO <sub>2</sub> (±20%) (85% + 15%) Gr M2-1	<b>Detalles de soldeo pulsado:</b> Pulsed arc welding parameters			N/A		
	<b>Respaldo:</b> Backing	N/A	<b>Diámetro de tobera y distancia a pieza:</b> Nozzle diameter / tube-work distance:			N/A		
<b>Caudal de gas:</b> Gas flow rate	<b>Protección:</b> Shielding	40 – 24 l/min	<b>Parámetros para soldeo por plasma:</b> Plasma welding parameters			N/A		
	<b>Respaldo:</b> Backing	N/A	<b>Ángulo de ataque:</b> Welding angle			N/A		
<b>Electrodo de wolframio (tipo y Ø):</b> Tungsten electrode (type and Ø)			N/A			<b>Post-calentamiento:</b> Post-heating		
						CON / SIN		
<b>Detalles del Resanado:</b> Back gouging details			Cepillado & Amolado			<b>Tratamiento térmico post-soldadura:</b> Post weld heat treatment		
						N/A		
<b>Temperatura de precalentamiento:</b> Preheating temperature			$\geq 5$ °C			<b>Veloc. de calentamiento y enfriamiento:</b> Heating and cooling speed		
						N/A		
<b>Mantenimiento del precalentamiento:</b> Preheating maintenance			N/A			<b>Temperatura entre pasadas:</b> Interpass temperature		
						$\leq 160$ °C		
<b>Precalentamiento antes del peinado:</b> Preheating before cap layer welding			N/A			<b>Número de electrodos:</b> Number of electrodes		
						ÚNICO		
<b>Modo de transferencia:</b> Transfer mode			Todos excepto cortocircuito			<b>Metal de aporte suplementario:</b> Supplemental filler metal		
						N/A		

**FABRICANTE:** INDUSTRIAL FURNACES  
INSERTEC, S.L.  
(Manufacturer)  
**Nombre, fecha y firma**  
Name date and signature

**SERVICIOS DE CONTROL E INSPECCION, SCI**  
**Nombre, fecha y firma:** V. PEDROSA 11/05/2021  
Name date and signature

# REGISTRO DE CUALIFICACIÓN DE PROCEDIMIENTO DE SOLDEO Nº 2100092-P (WPQR)

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)  
(UNE-EN ISO 15614-1: 2018 / NIVEL 2)

<b>Fabricante:</b> Manufacturer	<b>INDUSTRIAL FURNACES INSERTEC, S.L.</b>	<b>Fecha de soldeo:</b> Welding Date	<b>07/04/21</b>
<b>Dirección:</b> Address	<b>CM/ Etserre, 21, C.P.: 48970. Basauri – Vizcaya</b>		
<b>WPS del Fabricante. Nº de Referencia:</b> Manufacturer's WPS	<b>2100092-W</b>	<b>Nivel de ensayo:</b> Test level	<b>2</b>

## RANGO DE CUALIFICACIÓN WELDING QUALIFICATION RANGE

<b>Proceso(s) de soldeo:</b> Welding process	<b>141</b>
<b>Tipo de unión:</b> Joint type	<b>BW / FW ramificaciones ≥ 60 °</b>
<b>Grupo(s) y subgrupo(s) de material base:</b> Base metal group(s) & sub-group(s)	<b>Grupo 1. Subgrupo 1.2 a Grupo 1 (Igual o inferior límite elástico dentro del mismo grupo)</b>
<b>Espesor del material base:</b> Base metal thickness	<b>1.38 – 5.54 mm</b>
<b>Espesor del material depositado:</b> Deposited weld metal thickness	<b>≤ 5.54 mm</b>
<b>Tamaño de garganta:</b> Fillet size	<b>Sin restricción</b>
<b>Pasada simple/multipasada:</b> Single pass/multipass	<b>sl, ml</b>
<b>Diámetro exterior:</b> Outside diameter	<b>∅ ≥ 1/4"</b>
<b>Designación del material de aporte:</b> Filler metal designation	<b>AWS-SFA 5.18-ER70S6 / ISO 636-A-W 42 3 W 3Si1 ó Equivalentes propiedades químicas, mecánicas y de recubrimiento.</b>
<b>Marca y fabricante del material de aporte:</b> Filler metal trademark & manufacturer	<b>TODAS</b>
<b>Tamaño del material de aporte:</b> Filler metal dimensions	<b>S / INPUT</b>
<b>Gas de protección / fundente:</b> Shielding gas / flux	<b>Ar 99.9%. ±0.1% - Gr I</b>
<b>Gas de respaldo:</b> Backing gas	<b>NO</b>
<b>Tipo de corriente y polaridad:</b> Current and polarity	<b>DCEN / (-)</b>
<b>Modo de transferencia:</b> Transfer mode	<b>N/A</b>
<b>Aporte térmico:</b> Heat input	<b>Input ≥ 6.3 KJ/cm</b>
<b>Posiciones de soldeo:</b> Welding Positions	<b>TODAS (Excepto PG, PJ y J-L045)</b>
<b>Temperatura de precalentamiento:</b> Preheat temperatura	<b>≥ 15 °C</b>
<b>Temperatura entre pasadas:</b> Interpass temperature	<b>MAX155°C</b>
<b>Precalentamiento antes de la pasada de peinado:</b> Preheating before cap layer welding	<b>N/A</b>
<b>Post-calentamiento:</b> Post-heating	<b>CON / SIN</b>
<b>Tratamiento térmico post-soldadura:</b> Post weld heat treatment	<b>N/A</b>
<b>Otra información:</b> Other information	<b>---</b>



**Se certifica que los datos de este registro son correctos y que los cupones de ensayos fueron preparados, soldados y ensayados satisfactoriamente de acuerdo con los requisitos de la norma UNE-EN ISO 15614-1:2018.**

We hereby certify that the data recorded is correct and the test welds were prepared, welded and tested satisfactorily, according to UNE-EN ISO 15614-1:2018

**FECHA** (Date): **11/05/21**

**FABRICANTE** (Manufacturer): **INDUSTRIAL FURNACES INSERTEC, S.L.**

**Fdo.** (Signature):

**ORGANISMO EXAMINADOR** (Examining body):

**SERVICIOS DE CONTROL E INSPECCION, S.A.**

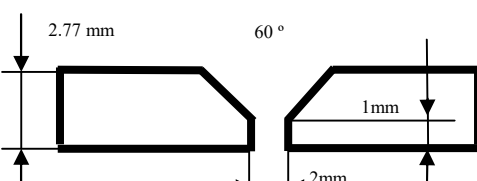
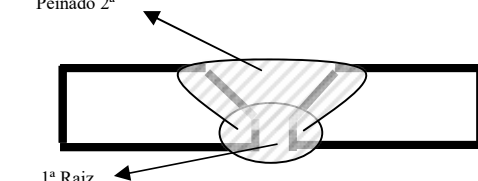
**Fdo.** (Signature): **V. PEDROSA / A. GARCIA**

# REGISTRO DE CUALIFICACIÓN DE PROCEDIMIENTO DE SOLDEO Nº 2100092-P (WPQR)

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)  
(UNE-EN ISO 15614-1: 2018 / NIVEL 2)

## REGISTRO DE ENSAYO DE SOLDADURA WELDING TEST RECORD

<b>Nombre del soldador(es):</b> Welders name(s)	José María Gago	<b>Identificación del soldador:</b> Welder Identification	J.M.G.
<b>Proceso(s) de soldeo:</b> Welding Process(es)	141	<b>Tipo de unión:</b> Joint type	A TOPE. BW / T
<b>Espec. del material base:</b> Base metal specification	EN 10025-2: 2002 S355 Gr 1.2	<b>Posición de soldeo:</b> Welding Position	HL-045
<b>Espesor del material base:</b> Base metal thickness	2.77 mm	<b>Diámetro exterior:</b> Outside diameter	1/2"
<b>Modo de transferencia:</b> Transfer mode	N/A	<b>Métodos de prep. y limpieza:</b> Preparing & cleaning methods	Cepillado y amolado

Diseño de la Unión (Drawing of the Joint)	Secuencia de soldeo (Welding Sequence)
	

### Parámetros de soldeo (Welding Parameters)

Pasada Pass	Proceso de soldeo Process	Ø Material de aporte (mm) Filler metal Ø	Intensité (A) Current	Voltaje (V) Voltage	Tipo de corriente y polaridad Current type & polarity	Velocidad de hilo (m/min) Wire feed speed	Velocidad de avance (cm/min) Travel speed	Aporte térmico (KJ/cm) Heat input
1ª Raíz	141	Ø 2	84	12	DCEN (-)	N/A	4.3	8.4
2ª Peinado	141	Ø 2	84	12	DCEN (-)	N/A	4.3	8.4

<b>Material de aporte y flux</b> Filler metal & flux	<b>Designación:</b> Designation:	AWS-SFA 5.18-ER70S6 / ISO 636-A-W 42 3 W 3Si1 Ø=2.4 / Lote: PVR51061677
	<b>Fabricante y marca:</b> Manufacturer and trademark	ESAB

<b>Requisitos especiales de secado:</b> <i>Special requirements for drying</i>		S/ Fabricante	<b>Oscilación:</b> <i>Oscillation</i>	S / INPUT
<b>Gas / Flux:</b> <i>Gas / Flux</i>	<b>Protección:</b> <i>Shielding</i>	Ar 99.9% Gr I	<b>Detalles de soldeo pulsado:</b> <i>Pulsed arc welding parameters</i>	N/A
	<b>Respaldo:</b> <i>Backing</i>	NO	<b>Diámetro de tobera y distancia a pieza:</b> <i>Nozzle diameter / tube-work distance:</i>	N/A
<b>Caudal de gas:</b> <i>Gas flow rate</i>	<b>Protección:</b> <i>Shielding</i>	16 L/min	<b>Detalles de soldeo por plasma:</b> <i>Plasma welding parameters</i>	N/A
	<b>Respaldo:</b> <i>Backing</i>	NO	<b>Ángulo de ataque:</b> <i>Welding angle</i>	N/A
<b>Electrodo de wolframio (tipo y Ø):</b> <i>Tungsten electrode (type and Ø)</i>		2% To. Ø 2.4 mm	<b>Fijación por:</b> <i>Fixation made by:</i>	Por puntos
<b>Detalles del Respaldo:</b> <i>Backing details</i>		ssnb	<b>Detalles del resanado:</b> <i>Back gouging details</i>	N/A
<b>Temperatura precalentamiento:</b> <i>Preheat Temperature</i>		18 °C	<b>Temperatura entre pasadas:</b> <i>Interpass temperature</i>	105°C
<b>Precalentamiento antes del peinado:</b> <i>Preheating before cap layer welding</i>		N/A	<b>Número de electrodos:</b> <i>Number of electrodes</i>	N/A
<b>Post calentamiento:</b> <i>Post heating:</i>		SIN	<b>Metal de aporte suplementario:</b> <i>Supplemental filler metal</i>	N/A

### TRATAMIENTO TERMICO POST-SOLDADURA:

<b>Temperatura:</b> Temperature	N/A	<b>Tiempo:</b> Time	N/A	<b>Método:</b> Method	N/A
<b>Velocidad de Calentamiento/Enfriamiento:</b> Speed of heating and cooling	N/A				



Organismo Notificado  
(Nº 1348)

Ctra. Ajalvir - Torrejón, Km. 1,8  
Ajálvir 28864 (Madrid) España.  
T:+34 91 884 4393 F:+34 91 884 4324

FECHA (Date): 11/05/21

FABRICANTE (Manufacturer): INDUSTRIAL FURNACES  
INSERTEC, S.L.

Fdo. (Signature):

ORGANISMO EXAMINADOR (Examining body):

SERVICIOS DE CONTROL E INSPECCION, S.A.  
Fdo. (Signature): V. PEDROSA / A. GARCIA

# REGISTRO DE CUALIFICACIÓN DE PROCEDIMIENTO DE SOLDEO Nº 2100092-P (WPQR)

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)  
(UNE-EN ISO 15614-1: 2018 / NIVEL 2)

## ENSAYOS NO DESTRUCTIVOS (END)

NON DESTRUCTIVE TESTING (NDT)

<b>Inspección visual</b> (Visual inspection):	ACEPTABLE	<b>Informe(s) N°</b> (Report(s) N°):	210031ENDORT-OT0001-IV02
<b>Líquidos penetrantes</b> (Liquid Penetrant):	ACEPTABLE	<b>Informe(s) N°</b> (Report(s) N°):	210031ENDORT-OT0001-PT02
<b>Partículas magnéticas</b> (Magnetic Particles):	N/A	<b>Informe(s) N°</b> (Report(s) N°):	N/A
<b>Radiografía</b> (Radiography):	ACEPTABLE	<b>Informe(s) N°</b> (Report(s) N°):	210031ENDORT-OT0001-RT02
<b>Ultrasonidos</b> (Ultrasonics):	N/A	<b>Informe(s) N°</b> (Report(s) N°):	N/A
<b>Otros</b> (Others):	N/A	<b>Informe(s) N°</b> (Report(s) N°):	N/A

## ENSAYOS DESTRUCTIVOS

DESTRUCTIVE TESTING

<b>Informe(s) de laboratorio N°:</b> (Lab. Report(s) N°)	E-210575LMEMAD -OT0001-IF02-Rv00
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<b>Ensayo de tracción:</b> (Tension test):						
<b>Tipo/Probeta n°</b> Type/Specimen n°	<b>Rp0,2 (L.E.)</b> Yield strength (N/mm <sup>2</sup> )	<b>Rm</b> Ultimate tensile strength (N/mm <sup>2</sup> )	<b>Alargamiento</b> Elongation (%)	<b>Estricción</b> Reduction of area (%)	<b>Localización de la Rotura</b> Break point	<b>Observaciones</b> Remarks
<b>Requisitos:</b> Requirements		510 - 680				
E210575-2-1-1		640			M. Base	
E210575-2-2-1		637			M. Base	

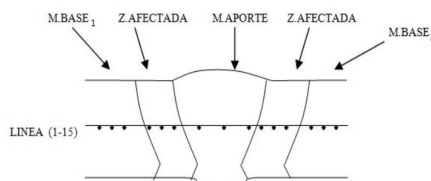
<b>Ensayo de doblado:</b> (Bend test):				
<b>Tipo/Probeta n°</b> Type/Specimen n°	<b>Diámetro madril</b> Jig Diameter	<b>Angulo de plegado</b> Bend angle	<b>Elongacion</b> Elongation	<b>Resultados</b> Results
E210575-2-3-C-1	4 x e	180°		ACEPTABLE
E210575-2-3-C-2	4 x e	180°		ACEPTABLE
E210575-2-4-R-1	4 x e	180°		ACEPTABLE
E210575-1-4-R-2	4 x e	180°		ACEPTABLE

<b>Ensayo de resiliencia:</b> Charpy impact test		<b>Requisitos:</b> Requirements				
<b>Probeta/Situación de la entalla</b> Test piece/position	<b>Dimensiones</b> Dimensions	<b>Temperatura</b> (Test Temperature) (°C)	<b>Energía absorbida</b> Absorbed energy (J)	<b>Media</b> Average (J)	<b>Expansión lateral</b> Lateral expansion (mm)	<b>Area Dúctil</b> Shear Area (%)

<b>Examen Macrográfico</b> (Macrographic Exam)	ACEPTABLE	<b>Examen Micrográfico</b> (Micrographic Exam)	----
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<b>Ensayo de dureza</b> (Hardness Test)		<b>Tipo y Carga:</b> (Type/Load)	<b>10KGF VICKERS</b>		
<b>Metal base</b> (Base Metal)	<b>Max:</b> 229	<b>Min:</b> 225	<b>Metal Aportado</b> (Weld Metal)	<b>Max:</b> 228	<b>Min:</b> 214
<b>ZAT (HAZ)</b>	<b>Max:</b> 337	<b>Min:</b> 317	<b>Línea de fusión</b> (Fusion Line)	<b>Max:</b> ---	<b>Min:</b> ---

**Croquis de dureza:** (Sketch of Hardness test):



**FECHA** (Date): 11/05/21

**FABRICANTE** (Manufacturer): **INDUSTRIAL FURNACES  
INSERTEC, S.L.**

**Fdo.** (Signature):

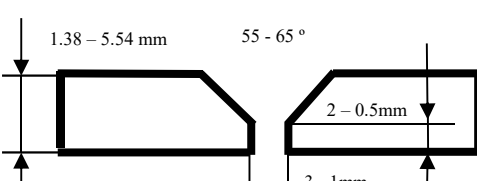
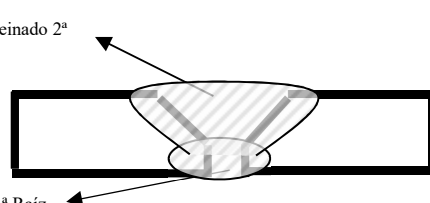
**ORGANISMO EXAMINADOR** (Examining body):  
SERVICIOS DE CONTROL E INSPECCION, S.A.  
**Fdo.** (Signature): **V. PEDROSA / A. GARCIA**



# ESPECIFICACIÓN DE PROCEDIMIENTO DE SOLDEO (WPS) DEL FABRICANTE WPS 2100092-W

WELDING PROCEDURE SPECIFICATION OF MANUFACTURER  
(UNE-EN ISO 15609-1:2020)

<b>Fabricante:</b> Manufacturer	INDUSTRIAL FURNACES INSERTEC, S.L.	<b>Lugar:</b> Place	CM/ Etserre, 21, C.P.: 48970. Basauri – Vizcaya
<b>Nº del WPQR:</b> WPQR Nº	2100092-P	<b>Proceso(s) de soldeo:</b> Welding process(es)	141
<b>Nombre del soldador:</b> Welder's Name	José María Gago	<b>Tipo de unión:</b> Joint type	BW / FW Ramificaciones $\geq 60^\circ$
<b>Material base en WPQR:</b> Base material used in the WPQR	EN 10025-2: 2002 S355 Gr 1.2	<b>Espesor del material base:</b> Base metal thickness	1.38 – 5.54 mm
<b>Grupo(s) del material base cualificado:</b> Group(s) of base material qualified:	Grupo 1. Subgrupo 1.2 a Grupo 1 (Igual o inferior límite elástico dentro del mismo grupo)	<b>Espesor depositado:</b> Deposited weld metal thickness	$t \leq 5.54$ mm
<b>Método de preparación y limpieza:</b> Cleaning and preparation method	Cepillado / Amolado	<b>Tamaño de garganta:</b> Fillet size	SIN RESTRICCIÓN
<b>Detalles del Respaldo:</b> Backing details	ss (nb, mb) / bs	<b>Diámetro exterior:</b> Outside diameter	$\varnothing \geq 1/4"$
<b>Fijación por:</b> Fixation made by:	Por puntos	<b>Posición(es) de soldeo:</b> Welding position(s)	TODAS (Excepto PG, PJ y J-L045)

Diseño de la Unión (Drawing of the Joint)	Secuencia de soldeo (Welding Sequence)
	

**Parámetros de soldeo (Welding Parameters)** (\*) Función del tipo de unión y espesor a soldar / (\*\*) Según ISO/TR 17671-1

Pasada Layer (*)	Proceso Process	Ø Metal de aporte Ø Filler Metal (*) (mm)	Intensidad Current (A)	Voltaje Voltage (V)	Tipo de corriente y Polaridad Current type and Polarity	Velocidad de alimentación del alambre Wire feed speed (m/min)	Velocidad de avance Travel speed (cm/min)	Aporte Térmico Heat Input (KJ/cm) (**)
1ª	141	F Input Térmico	105 - 63	15 - 9	DCEN (-)	N/A	5.4 - 3.2	$\geq 6.3$
Peinado	141	F Input Térmico	105 - 63	15 - 9	DCEN (-)	N/A	5.4 - 3.2	$\geq 6.3$

<b>Metal de aporte y flux:</b> Filler metal and flux		<b>Designación:</b> Designation	AWS-SFA 5.18-ER70S6 / ISO 636-A-W 42 3 W 3Si1 ó equivalentes propiedades químicas, mecánicas y de recubrimiento.					
		<b>Fabricante y marca:</b> Manufacturer and trademark	TODAS					
<b>Requisitos especiales de secado:</b> Special requirements for drying			S/ Fabricante			<b>Oscilación:</b> Oscillation		
						S/ INPUT		
<b>Gas/Fundente:</b> Gas/Flux	<b>Protección:</b> Shielding	Ar 99.9% Gr I $\pm 0.1\%$	<b>Detalles de soldeo pulsado:</b> Pulsed arc welding parameters			N/A		
	<b>Respaldo:</b> Backing	NO	<b>Diámetro de tobera y distancia a pieza:</b> Nozzle diameter / tube-work distance:			N/A		
<b>Caudal de gas:</b> Gas flow rate	<b>Protección:</b> Shielding	20 - 12 L/min	<b>Parámetros para soldeo por plasma:</b> Plasma welding parameters			N/A		
	<b>Respaldo:</b> Backing	NO	<b>Ángulo de ataque:</b> Welding angle			N/A		
<b>Electrodo de wolframio (tipo y Ø):</b> Tungsten electrode (type and Ø)			<b>Post-calentamiento:</b> Post-heating			CON / SIN		
<b>Detalles del Resanado:</b> Back gouging details			<b>Tratamiento térmico post-soldadura:</b> Post weld heat treatment			N/A		
<b>Temperatura de precalentamiento:</b> Preheating temperature			<b>Veloc. de calentamiento y enfriamiento:</b> Heating and cooling speed			N/A		
<b>Mantenimiento del precalentamiento:</b> Preheating maintenance			<b>Temperatura entre pasadas:</b> Interpass temperature			MAX 155 °C		
<b>Precalentamiento antes del peinado:</b> Preheating before cap layer welding			<b>Número de electrodos:</b> Number of electrodes			N/A		
<b>Modo de transferencia:</b> Transfer mode			<b>Metal de aporte suplementario:</b> Supplemental filler metal			N/A		

**FABRICANTE:** INDUSTRIAL FURNACES  
INSERTEC, S.L.  
(Manufacturer)

**Nombre, fecha y firma**  
Name date and signature

**SERVICIOS DE CONTROL E INSPECCION, SCI**  
**Nombre, fecha y firma:** V. PEDROSA 11/05/2021  
Name date and signature

# REGISTRO DE CUALIFICACIÓN DE PROCEDIMIENTO DE SOLDEO Nº 2100095-P (WPQR)

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)  
(UNE-EN ISO 15614-1: 2018 / NIVEL 2)

<b>Fabricante:</b> Manufacturer	<b>INDUSTRIAL FURNACES INSERTEC, S.L.</b>	<b>Fecha de soldeo:</b> Welding Date	<b>07/04/21</b>
<b>Dirección:</b> Address	<b>CM/ Etserre, 21, C.P.: 48970. Basauri – Vizcaya</b>		
<b>WPS del Fabricante. Nº de Referencia:</b> Manufacturer's WPS	<b>2100095-W</b>	<b>Nivel de ensayo:</b> Test level	<b>2</b>

## RANGO DE CUALIFICACIÓN WELDING QUALIFICATION RANGE

<b>Proceso(s) de soldeo:</b> Welding process	<b>141 + 111</b>
<b>Tipo de unión:</b> Joint type	<b>BW / FW ramificaciones ≥ 60 °</b>
<b>Grupo(s) y subgrupo(s) de material base:</b> Base metal group(s) & sub-group(s)	<b>Grupo 1. Subgrupo 1.2 a Grupo 1 (Igual o inferior límite elástico dentro del mismo grupo)</b>
<b>Espesor del material base:</b> Base metal thickness	<b>3.00 – 11.08 mm</b>
<b>Espesor del material depositado:</b> Deposited weld metal thickness	<b>s(141)= 2.4mm, rango ≤ 4.8mm / s(111)= 3.14, rango ≤ 6.28mm</b>
<b>Tamaño de garganta:</b> Fillet size	<b>Sin restricción</b>
<b>Pasada simple/multipasada:</b> Single pass/multipass	<b>sl, ml</b>
<b>Diámetro exterior:</b> Outside diameter	<b>Ø ≥ 1"</b>
<b>Designación del material de aporte:</b> Filler metal designation	<b>141: AWS-SFA 5.18-ER70S6 / ISO 636-A-W 42 3 W 3Si1 111: AWS A5.1: E7018 / EN ISO 2560-A: E 42 4 B 32 H5 ó equivalentes propiedades químicas, mecánicas y recubrimiento.</b>
<b>Marca y fabricante del material de aporte:</b> Filler metal trademark & manufacturer	<b>TODAS</b>
<b>Tamaño del material de aporte:</b> Filler metal dimensions	<b>S / INPUT</b>
<b>Gas de protección / fundente:</b> Shielding gas / flux	<b>141: Ar 99.998%. ±0.1%</b>
<b>Gas de respaldo:</b> Backing gas	<b>N/A</b>
<b>Tipo de corriente y polaridad:</b> Current and polarity	<b>141: DCEN / (-) / 111: DCEP / (+)</b>
<b>Modo de transferencia:</b> Transfer mode	<b>N/A</b>
<b>Aporte térmico:</b> Heat input	<b>141: Input ≥ 3.9 KJ/cm / 111: Input ≥ 5.8 KJ/cm</b>
<b>Posiciones de soldeo:</b> Welding Positions	<b>TODAS (Excepto PG, PJ y J-L045)</b>
<b>Temperatura de precalentamiento:</b> Preheat temperature	<b>≥ 5 °C</b>
<b>Temperatura entre pasadas:</b> Interpass temperature	<b>≤ 195°C</b>
<b>Precalentamiento antes de la pasada de peinado:</b> Preheating before cap layer welding	<b>N/A</b>
<b>Post-calentamiento:</b> Post-heating	<b>CON / SIN</b>
<b>Tratamiento térmico post-soldadura:</b> Post weld heat treatment	<b>N/A</b>
<b>Otra información:</b> Other information	<b>---</b>



**Se certifica que los datos de este registro son correctos y que los cupones de ensayos fueron preparados, soldados y ensayados satisfactoriamente de acuerdo con los requisitos de la norma UNE-EN ISO 15614-1:2018.**

We hereby certify that the data recorded is correct and the test welds were prepared, welded and tested satisfactorily, according to UNE-EN ISO 15614-1:2018

**FECHA** (Date): **14/05/21**

**FABRICANTE** (Manufacturer): **INDUSTRIAL FURNACES  
INSERTEC, S.L.**

**Fdo.** (Signature):

**ORGANISMO EXAMINADOR** (Examining body):

**SERVICIOS DE CONTROL E INSPECCION, S.A.**

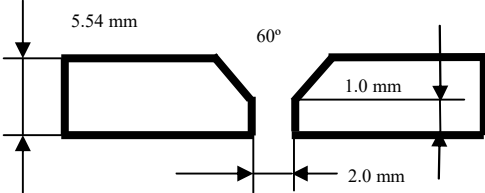
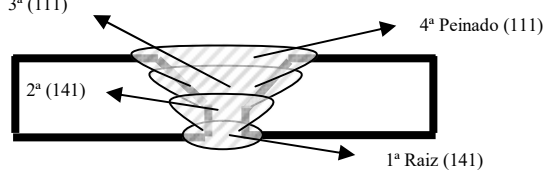
**Fdo.** (Signature): **V. PEDROSA / A. GARCIA**

# REGISTRO DE CUALIFICACIÓN DE PROCEDIMIENTO DE SOLDEO Nº 2100095-P (WPQR)

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)  
(UNE-EN ISO 15614-1: 2018 / NIVEL 2)

## REGISTRO DE ENSAYO DE SOLDADURA WELDING TEST RECORD

<b>Nombre del soldador(es):</b> Welders name(s)	José María Gago	<b>Identificación del soldador:</b> Welder Identification	J.M.G.
<b>Proceso(s) de soldeo:</b> Welding Process(es)	141 + 111	<b>Tipo de unión:</b> Joint type	A TOPE. BW / T
<b>Espec. del material base:</b> Base metal specification	EN 10025-2: 2002 S355 Gr 1.2	<b>Posición de soldeo:</b> Welding Position	HL045
<b>Espesor del material base:</b> Base metal thickness	5.54 mm	<b>Diámetro exterior:</b> Outside diameter	2"
<b>Modo de transferencia:</b> Transfer mode	N/A	<b>Métodos de prep. y limpieza:</b> Preparing & cleaning methods	Cepillado y amolado

<b>Diseño de la unión (Joint desing)</b>	<b>Secuencia de soldeo (Welding sequence)</b>
	


## Parámetros de soldeo (Welding Parameters)

Pasada Pass	Proceso de soldeo Process	Ø Material de aporte (mm) Filler metal Ø	Intensité (A) Current	Voltaje (V) Voltage	Tipo de corriente y polaridad Current type & polarity	Velocidad de hilo (m/min) Wire feed speed	Velocidad de avance (cm/min) Travel speed	Aporte térmico (KJ/cm) Heat input
1ª Raíz	141	2.4	82	12	DCEN (-)	N/A	6.9	5.1
2ª	141	2.4	114	14	DCEN (-)	N/A	6.3	9.1
3ª	111	2.5	84	23	DCEP (+)	N/A	12	7.7
4ª Pein.	111	2.5	84	23	DCEP (+)	N/A	12	7.7

<b>Material de aporte y flux</b> Filler metal & flux	<b>Designación:</b> Designation:	141: ISO 636-A-W 42 3 W 3Si1 - Ø= 2.4 - Lote: PVR51061677 111: EN ISO 2560-A: E 42 4 B 32 H5 - Ø= 2.5 - Lote: SBS03083
	<b>Fabricante y marca:</b> Manufacturer and trademark	141: ESAB 111: ESAB

<b>Requisitos especiales de secado:</b> Special requirements for drying		S/ Fabricante	<b>Oscilación:</b> Oscillation	141: S / INPUT 111: Máx 3 X Ø
<b>Gas / Flux:</b> Gas / Flux	<b>Protección:</b> Shielding	141: Ar 99.998% Gr I	<b>Detalles de soldeo pulsado:</b> Pulsed arc welding parameters	N/A
	<b>Respaldo:</b> Backing	N/A	<b>Diámetro de tobera y distancia a pieza:</b> Nozzle diameter / tube-work distance:	N/A
<b>Caudal de gas:</b> Gas flow rate	<b>Protección:</b> Shielding	141: 20 L/min	<b>Detalles de soldeo por plasma:</b> Plasma welding parameters	N/A
	<b>Respaldo:</b> Backing	N/A	<b>Ángulo de ataque:</b> Welding angle	N/A
<b>Electrodo de wolframio (tipo y Ø):</b> Tungsten electrode (type and Ø)		141: 2% To. Ø 2.4 mm	<b>Fijación por:</b> Fixation made by:	Por puntos
<b>Detalles del Respaldo:</b> Backing details		ss, nb	<b>Detalles del resanado:</b> Back gouging details	N/A
<b>Temperatura precalentamiento:</b> Preheat Temperature		15 °C (Ambiente)	<b>Temperatura entre pasadas:</b> Interpass temperature	145 °C
<b>Precalentamiento antes del peinado:</b> Preheating before cap layer welding		N/A	<b>Número de electrodos:</b> Number of electrodes	N/A
<b>Post calentamiento:</b> Post heating:		SIN	<b>Metal de aporte suplementario:</b> Supplemental filler metal	N/A

## TRATAMIENTO TERMICO POST-SOLDADURA: POST WELD HEAT TREATMENT

<b>Temperatura:</b> <i>Temperature</i>	N/A	<b>Tiempo:</b> <i>Time</i>	N/A	<b>Método:</b> <i>Method</i>	N/A	 <b>Organismo Notificado</b> <b>(Nº 1348)</b>
<b>Velocidad de Calentamiento/Enfriamiento:</b> <i>Speed of heating and cooling</i>			N/A		<b>Ctra. Ajalvir - Torrejón, Km. 1,8</b> <b>Ajalvir 28864 (Madrid) España.</b>	

**FECHA (Date):** 14/05/21

**FABRICANTE (Manufacturer):** INDUSTRIAL FURNACES  
**INSERTEC, S.L.**

**Fdo. (Signature):**

**ORGANISMO EXAMINADOR (Examining body):**

SERVICIOS DE CONTROL E INSPECCION, S.A.  
**Fdo. (Signature):** V. PEDROSA / A. GARCIA

# REGISTRO DE CUALIFICACIÓN DE PROCEDIMIENTO DE SOLDEO Nº 2100095-P (WPQR)

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)  
(UNE-EN ISO 15614-1: 2018 / NIVEL 2)

## ENSAYOS NO DESTRUCTIVOS (END)

NON DESTRUCTIVE TESTING (NDT)

<b>Inspección visual</b> (Visual inspection):	ACEPTABLE	<b>Informe(s) Nº</b> (Report(s) Nº):	210031ENDORT-OT0001-IV05
<b>Líquidos penetrantes</b> (Liquid Penetrant):	ACEPTABLE	<b>Informe(s) Nº</b> (Report(s) Nº):	210031ENDORT-OT0001-PT05
<b>Partículas magnéticas</b> (Magnetic Particles):	N/A	<b>Informe(s) Nº</b> (Report(s) Nº):	N/A
<b>Radiografía</b> (Radiography):	ACEPTABLE	<b>Informe(s) Nº</b> (Report(s) Nº):	210031ENDORT-OT0001-RT05
<b>Ultrasonidos</b> (Ultrasonics):	N/A	<b>Informe(s) Nº</b> (Report(s) Nº):	N/A
<b>Otros</b> (Others):	N/A	<b>Informe(s) Nº</b> (Report(s) Nº):	N/A

## ENSAYOS DESTRUCTIVOS

DESTRUCTIVE TESTING

<b>Informe(s) de laboratorio Nº:</b> (Lab. Report(s) Nº)	E-210575LMEMAD-OT0001-IF05-Rv00
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<b>Ensayo de tracción:</b> (Tension test):						
<b>Tipo/Probeta nº</b> Type/Specimen nº	<b>Rp0,2 (L.E.)</b> Yield strength (N/mm <sup>2</sup> )	<b>Rm</b> Ultimate tensile strength (N/mm <sup>2</sup> )	<b>Alargamiento</b> Elongation (%)	<b>Estricción</b> Reduction of area (%)	<b>Localización de la Rotura</b> Break point	<b>Observaciones</b> Remarks
<b>Requisitos:</b> Requirements		510 - 680				
E210575-5-1-1	---	540	---	---	M. Base	---
E210575-5-1-2	---	536	---	---	M. Base	---

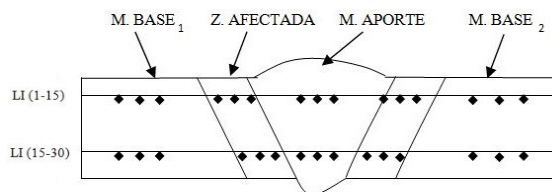
<b>Ensayo de doblado:</b> (Bend test):				
<b>Tipo/Probeta nº</b> Type/Specimen nº	<b>Diámetro madril</b> Jig Diameter	<b>Angulo de plegado</b> Bend angle	<b>Elongacion</b> Elongation	<b>Resultados</b> Results
E210575-5-2-C-1	4 x e	180°	---	ACEPTABLE
E210575-5-2-C-2	4 x e	180°	---	ACEPTABLE
E210575-5-2-R-1	4 x e	180°	---	ACEPTABLE
E210575-5-2-R-2	4 x e	180°	---	ACEPTABLE

<b>Ensayo de resiliencia:</b> Charpy impact test		<b>Requisitos:</b> Requirements				
<b>Probeta/Situación de la entalla</b> Test piece/position	<b>Dimensiones</b> Dimensions	<b>Temperatura</b> (Test Temperature) (°C)	<b>Energía absorbida</b> Absorbed energy (J)	<b>Media</b> Average (J)	<b>Expansión lateral</b> Lateral expansion (mm)	<b>Area Dúctil</b> Shear Area (%)

<b>Examen Macrográfico</b> (Macrographic Exam)	ACEPTABLE	<b>Examen Micrográfico</b> (Micrographic Exam)	--
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<b>Ensayo de dureza</b> (Hardness Test)		<b>Tipo y Carga:</b> (Type/Load)	<b>10KGF VICKERS</b>		
<b>Metal base</b> (Base Metal)	<b>Max:</b> 177	<b>Min:</b> 161	<b>Metal Aportado</b> (Weld Metal)	<b>Max:</b> 205	<b>Min:</b> 171
<b>ZAT</b> (HAZ)	<b>Max:</b> 214	<b>Min:</b> 198	<b>Línea de fusión</b> (Fusion Line)	<b>Max:</b> ---	<b>Min:</b> ---

**Croquis de dureza:** (Sketch of Hardness test):



**Organismo Notificado**  
(Nº 1348)  
Ctra. Ajalvir - Torrejón, Km. 1,8  
Ajálvir 28864 (Madrid) España.  
T:+34 91 884 4393 F:+34 91 884 4324

**FECHA** (Date): 14/05/21

**FABRICANTE** (Manufacturer): INDUSTRIAL FURNACES  
**INSERTEC, S.L.**

**Fdo.** (Signature):

**ORGANISMO EXAMINADOR** (Examining body):

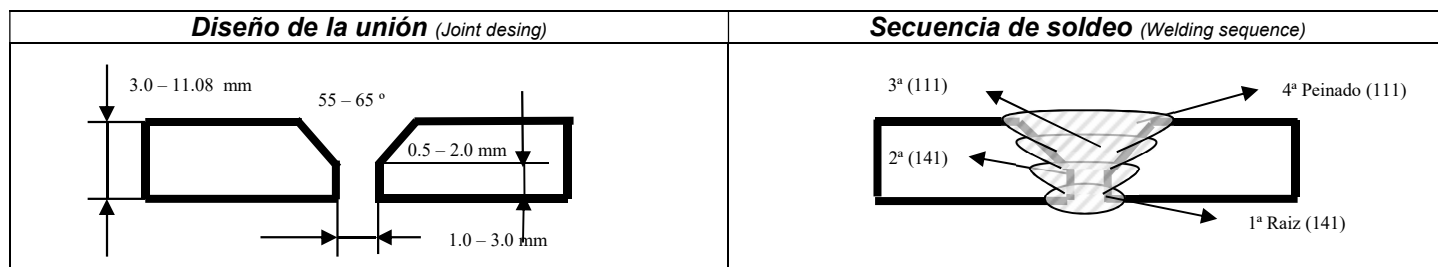
SERVICIOS DE CONTROL E INSPECCION, S.A.  
**Fdo.** (Signature): V. PEDROSA / A. GARCIA



# ESPECIFICACIÓN DE PROCEDIMIENTO DE SOLDEO (WPS) DEL FABRICANTE Nº 2100095-W

WELDING PROCEDURE SPECIFICATION OF MANUFACTURER  
(UNE-EN ISO 15609-1:2020)

<b>Fabricante:</b> Manufacturer	INDUSTRIAL FURNACES INSERTEC, S.L.	<b>Lugar:</b> Place	CM/ Etserre, 21, C.P.: 48970. Basauri – Vizcaya
<b>Nº del WPQR:</b> WPQR Nº	2100095-P	<b>Proceso(s) de soldeo:</b> Welding process(es)	141 + 111
<b>Nombre del soldador:</b> Welder's Name	José María Gago	<b>Tipo de unión:</b> Joint type	BW / FW Ramificaciones $\geq 60^\circ$
<b>Material base en WPQR:</b> Base material used in the WPQR	EN 10025-2: 2002 S355 Gr 1.2	<b>Espesor del material base</b> Base metal thickness	3.00 – 11.08 mm
<b>Grupo(s) del material base cualificado:</b> Group(s) of base material qualified:	Grupo 1. Subgrupo 1.2 a Grupo 1 (Igual o inferior límite elástico dentro del mismo grupo)	<b>Espesor depositado</b> Deposited weld metal thickness	141: $s \leq 4.80$ mm 111: $s \leq 6.28$ mm
<b>Método de preparación y limpieza:</b> Cleaning and preparation method	Cepillado / Amolado	<b>Tamaño de garganta:</b> Fillet size	SIN RESTRICCIÓN
<b>Detalles del Respaldo:</b> Backing details	ss (nb, mb) / bs	<b>Diámetro exterior</b> Outside diameter	$\varnothing \geq 1"$
<b>Fijación por:</b> Fixation made by:	Por puntos	<b>Posición(es) de soldeo</b> Welding position(s)	TODAS (Excepto PG, PJ y J-L045)



**Parámetros de soldeo (Welding Parameters) (\*) Función del tipo de unión y espesor a soldar / (\*\*) Según ISO/TR 17671-1**

Pasada Layer (*)	Proceso Process	Ø Metal de aporte Ø Filler Metal (*) (mm)	Intensidad Current (A)	Voltaje Voltage (V)	Tipo de corriente y Polaridad Current type and Polarity	Velocidad de alimentación del alambre Wire feed speed (m/min)	Velocidad de avance Travel speed (cm/min)	Aporte Térmico Heat Input (KJ/cm) (**)
1ª Raíz	141	F Input Térmico	102 – 61	15 – 9	DCEN (-)	N/A	8.6 – 5.2	$\geq 5.1$
2ª	141	F Input Térmico	142 – 85	17 – 10	DCEP (+)	N/A	7.9 – 4.7	$\geq 9.1$
3ª	111	F Input Térmico	105 - 63	29 - 17	DCEP (+)	N/A	15 - 9	$\geq 5.8$
4ª Peinado	111	F Input Térmico	105 - 63	29 - 17	DCEP (+)	N/A	15 - 9	$\geq 5.8$

<b>Metal de aporte y flux:</b> Filler metal and flux	<b>Designación:</b> Designation	141: AWS-SFA 5.18-ER70S6 / ISO 636-A-W 42 3 W 3Si1 111: AWS A5.1: E7018 / EN ISO 2560-A: E 42 4 B 32 H5 ó equivalentes propiedades químicas, mecánicas y de recubrimiento.
	<b>Fabricante y marca:</b> Manufacturer and trademark	TODAS

<b>Requisitos especiales de secado:</b> Special requirements for drying	S/ Fabricante	<b>Oscilación:</b> Oscillation	141: S / INPUT 111: Máx 3 X Ø
<b>Gas/Fundente:</b> Gas/Flux	<b>Protección:</b> Shielding	<b>Detalles de soldeo pulsado:</b> Pulsed arc welding parameters	N/A
	<b>Respaldo:</b> Backing	<b>Diámetro de tobera y distancia a pieza:</b> Nozzle diameter / tube-work distance:	N/A
<b>Caudal de gas:</b> Gas flow rate	<b>Protección:</b> Shielding	<b>Parámetros para soldeo por plasma:</b> Plasma welding parameters	N/A
	<b>Respaldo:</b> Backing	<b>Ángulo de ataque:</b> Welding angle	N/A
<b>Electrodo de wolframio (tipo y Ø):</b> Tungsten electrode (type and Ø)	141: 2% To. Ø 2.4 mm	<b>Post-calentamiento:</b> Post-heating	CON / SIN
<b>Detalles del Resanado:</b> Back gouging details	N/A	<b>Tratamiento térmico post-soldadura:</b> Post weld heat treatment	N/A
<b>Temperatura de precalentamiento:</b> Preheating temperature	$\geq 5^\circ\text{C}$	<b>Veloc. de calentamiento y enfriamiento:</b> Heating and cooling speed	N/A
<b>Mantenimiento del precalentamiento:</b> Preheating maintenance	N/A	<b>Temperatura entre pasadas:</b> Interpass temperature	$\leq 195^\circ\text{C}$
<b>Precalentamiento antes del peinado:</b> Preheating before cap layer welding	N/A	<b>Número de electrodos:</b> Number of electrodes	N/A
<b>Modo de transferencia:</b> Transfer mode	N/A	<b>Metal de aporte suplementario:</b> Supplemental filler metal	N/A

**FABRICANTE:** INDUSTRIAL FURNACES  
INSERTEC, S.L.  
(Manufacturer)

**Nombre, fecha y firma**  
Name date and signature

**SERVICIOS DE CONTROL E INSPECCION, SCI**

**Nombre, fecha y firma:** V. PEDROSA. 14/05/2021  
Name date and signature

# REGISTRO DE CUALIFICACIÓN DE PROCEDIMIENTO DE SOLDEO Nº 2100093-P (WPQR) WELDING PROCEDURE QUALIFICATION RECORD (WPQR) (UNE-EN ISO 15614-1: 2018 / NIVEL 2)

<b>Fabricante:</b> Manufacturer	<b>INDUSTRIAL FURNACES INSERTEC, S.L.</b>	<b>Fecha de soldeo:</b> Welding Date	<b>08/04/21</b>
<b>Dirección:</b> Address	<b>CM/ Etserre, 21, C.P.: 48970. Basauri – Vizcaya</b>		
<b>WPS del Fabricante. Nº de Referencia:</b> Manufacturer's WPS	<b>2100093-W</b>	<b>Nivel de ensayo:</b> Test level	<b>2</b>

## RANGO DE CUALIFICACIÓN WELDING QUALIFICATION RANGE

<b>Proceso(s) de soldeo:</b> Welding process	<b>141</b>
<b>Tipo de unión:</b> Joint type	<b>BW / FW ramificaciones ≥ 60 °</b>
<b>Grupo(s) y subgrupo(s) de material base:</b> Base metal group(s) & sub-group(s)	<b>Grupo 8. Subgrupo 8.1 a Grupo 8 (Igual o inferior subgrupo dentro del mismo grupo)</b>
<b>Espesor del material base:</b> Base metal thickness	<b>1.38 – 5.54 mm</b>
<b>Espesor del material depositado:</b> Deposited weld metal thickness	<b>≤ 5.54 mm</b>
<b>Tamaño de garganta:</b> Fillet size	<b>Sin restricción</b>
<b>Pasada simple/multipasada:</b> Single pass/multipass	<b>sl, ml</b>
<b>Diámetro exterior:</b> Outside diameter	<b>Ø ≥ 1/4"</b>
<b>Designación del material de aporte:</b> Filler metal designation	<b>AWS-SFA 5.9-ER308L / ISO 14343-A-W 19 9 L ó Equivalentes propiedades químicas, mecánicas y de recubrimiento.</b>
<b>Marca y fabricante del material de aporte:</b> Filler metal trademark & manufacturer	<b>TODAS</b>
<b>Tamaño del material de aporte:</b> Filler metal dimensions	<b>S / INPUT</b>
<b>Gas de protección / fundente:</b> Shielding gas / flux	<b>Ar 99.998%. ±0.1% - Gr I</b>
<b>Gas de respaldo:</b> Backing gas	<b>Ar 99.998%. ±0.1% - Gr I</b>
<b>Tipo de corriente y polaridad:</b> Current and polarity	<b>DCEN / (-)</b>
<b>Modo de transferencia:</b> Transfer mode	<b>N/A</b>
<b>Aporte térmico:</b> Heat input	<b>Sin restricción</b>
<b>Posiciones de soldeo:</b> Welding Positions	<b>TODAS (Excepto PG, PJ y J-L045)</b>
<b>Temperatura de precalentamiento:</b> Preheat temperatura	<b>≥ 5 °C</b>
<b>Temperatura entre pasadas:</b> Interpass temperature	<b>MAX160°C</b>
<b>Precalentamiento antes de la pasada de peinado:</b> Preheating before cap layer welding	<b>N/A</b>
<b>Post-calentamiento:</b> Post-heating	<b>CON / SIN</b>
<b>Tratamiento térmico post-soldadura:</b> Post weld heat treatment	<b>N/A</b>
<b>Otra información:</b> Other information	<b>---</b>



**Se certifica que los datos de este registro son correctos y que los cupones de ensayos fueron preparados, soldados y ensayados satisfactoriamente de acuerdo con los requisitos de la norma UNE-EN ISO 15614-1:2018.**

We hereby certify that the data recorded is correct and the test welds were prepared, welded and tested satisfactorily, according to UNE-EN ISO 15614-1:2018

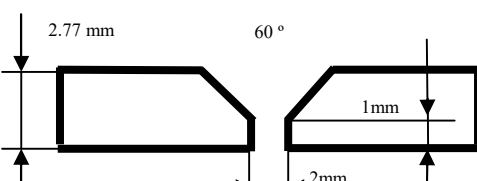
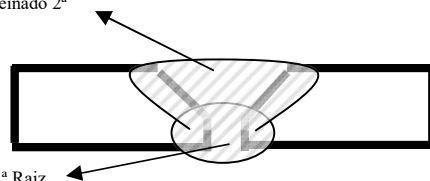
**FECHA** (Date): **14/05/21**  
**FABRICANTE** (Manufacturer): **INDUSTRIAL FURNACES INSERTEC, S.L.**  
**Fdo.** (Signature):

**ORGANISMO EXAMINADOR** (Examining body):  
**SERVICIOS DE CONTROL E INSPECCION, S.A.**  
**Fdo.** (Signature): **V. PEDROSA / A. GARCIA**

# REGISTRO DE CUALIFICACIÓN DE PROCEDIMIENTO DE SOLDEO Nº 2100093-P (WPQR) WELDING PROCEDURE QUALIFICATION RECORD (WPQR) (UNE-EN ISO 15614-1: 2018 / NIVEL 2)

## REGISTRO DE ENSAYO DE SOLDADURA WELDING TEST RECORD

<b>Nombre del soldador(es):</b> Welders name(s)	José María Gago	<b>Identificación del soldador:</b> Welder Identification	J.M.G.
<b>Proceso(s) de soldeo:</b> Welding Process(es)	141	<b>Tipo de unión:</b> Joint type	A TOPE. BW / T
<b>Espec. del material base:</b> Base metal specification	EN 10216-5: 2013 1.4306 (TP304L) Gr 8.1	<b>Posición de soldeo:</b> Welding Position	HL-045
<b>Espesor del material base:</b> Base metal thickness	2.77 mm	<b>Diámetro exterior:</b> Outside diameter	1/2"
<b>Modo de transferencia:</b> Transfer mode	N/A	<b>Métodos de prep. y limpieza:</b> Preparing & cleaning methods	Cepillado y amolado


<b>Diseño de la Unión (Drawing of the Joint)</b>	<b>Secuencia de soldeo (Welding Sequence)</b>
	

### Parámetros de soldeo (Welding Parameters)

Pasada Pass	Proceso de soldeo Process	Ø Material de aporte (mm) Filler metal Ø	Intensité (A) Current	Voltaje (V) Voltage	Tipo de corriente y polaridad Current type & polarity	Velocidad de hilo (m/min) Wire feed speed	Velocidad de avance (cm/min) Travel speed	Aporte térmico (KJ/cm) Heat input
1ª Raíz	141	Ø 2	75	12	DCEN (-)	N/A	5	6.5
2ª Peinado	141	Ø 2	75	12	DCEN (-)	N/A	5	6.5

<b>Material de aporte y flux</b> Filler metal & flux		<b>Designación:</b> Designation:	AWS-SFA 5.9-ER308L / ISO 14343-A-W 19 9 L Ø=1.6 / Lote: PV3403724590	
		<b>Fabricante y marca:</b> Manufacturer and trademark	ESAB	
<b>Requisitos especiales de secado:</b> Special requirements for drying		S/ Fabricante	<b>Oscilación:</b> Oscillation	S / INPUT
<b>Gas / Flux:</b> Gas / Flux	<b>Protección:</b> Shielding	Ar 99.998% Gr I	<b>Detalles de soldeo pulsado:</b> Pulsed arc welding parameters	N/A
	<b>Respaldo:</b> Backing	Ar 99.998% Gr I	<b>Diámetro de tobera y distancia a pieza:</b> Nozzle diameter / tube-work distance:	N/A
<b>Caudal de gas:</b> Gas flow rate	<b>Protección:</b> Shielding	16 L/min	<b>Detalles de soldeo por plasma:</b> Plasma welding parameters	N/A
	<b>Respaldo:</b> Backing	12 L/min	<b>Ángulo de ataque:</b> Welding angle	N/A
<b>Electrodo de wolframio (tipo y Ø):</b> Tungsten electrode (type and Ø)		2% To. Ø 2.4 mm	<b>Fijación por:</b> Fixation made by:	Por puntos
<b>Detalles del Respaldo:</b> Backing details		ssgb	<b>Detalles del resanado:</b> Back gouging details	N/A
<b>Temperatura precalentamiento:</b> Preheat Temperature		20 °C	<b>Temperatura entre pasadas:</b> Interpass temperature	110°C
<b>Precalentamiento antes del peinado:</b> Preheating before cap layer welding		N/A	<b>Número de electrodos:</b> Number of electrodes	N/A
<b>Post calentamiento:</b> Post heating:		SIN	<b>Metal de aporte suplementario:</b> Supplemental filler metal	N/A

### TRATAMIENTO TERMICO POST-SOLDADURA:

POST WELD HEAT TREATMENT						
<b>Temperatura:</b> Temperature	N/A	<b>Tiempo:</b> Time	N/A	<b>Método:</b> Method	N/A	<b>Organismo Notificado</b> (Nº 1348)
<b>Velocidad de Calentamiento/Enfriamiento:</b> Speed of heating and cooling			N/A		Ctra. Ajalvir - Torrejón, Km. 1,8 Ajálvir 28864 (Madrid) España.	



Organismo Notificado  
(Nº 1348)

Ctra. Ajalvir - Torrejón, Km. 1,8  
Ajálvir 28864 (Madrid) España.  
T:+34 91 884 4393 F:+34 91 884 4324

**FECHA (Date):** 14/05/21

**FABRICANTE (Manufacturer):** INDUSTRIAL FURNACES  
**INSERTEC, S.L.**

**Fdo. (Signature):**

**ORGANISMO EXAMINADOR (Examining body):**

SERVICIOS DE CONTROL E INSPECCION, S.A.  
**Fdo. (Signature):** V. PEDROSA / A. GARCIA

# REGISTRO DE CUALIFICACIÓN DE PROCEDIMIENTO DE SOLDEO Nº 2100093-P (WPQR)

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)  
(UNE-EN ISO 15614-1: 2018 / NIVEL 2)

## ENSAYOS NO DESTRUCTIVOS (END)

NON DESTRUCTIVE TESTING (NDT)

<b>Inspección visual</b> (Visual inspection):	ACEPTABLE	<b>Informe(s) N°</b> (Report(s) N°):	210031ENDORT-OT0001-IV03
<b>Líquidos penetrantes</b> (Liquid Penetrant):	ACEPTABLE	<b>Informe(s) N°</b> (Report(s) N°):	210031ENDORT-OT0001-PT03
<b>Partículas magnéticas</b> (Magnetic Particles):	N/A	<b>Informe(s) N°</b> (Report(s) N°):	N/A
<b>Radiografía</b> (Radiography):	ACEPTABLE	<b>Informe(s) N°</b> (Report(s) N°):	210031ENDORT-OT0001-RT03
<b>Ultrasonidos</b> (Ultrasonics):	N/A	<b>Informe(s) N°</b> (Report(s) N°):	N/A
<b>Otros</b> (Others):	N/A	<b>Informe(s) N°</b> (Report(s) N°):	N/A

## ENSAYOS DESTRUCTIVOS

DESTRUCTIVE TESTING

<b>Informe(s) de laboratorio N°:</b> (Lab. Report(s) N°)	E-210575LMEMAD -OT0001-IF03-Rv00
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<b>Ensayo de tracción:</b> (Tension test):						
<b>Tipo/Probeta n°</b> Type/Specimen n°	<b>Rp0,2 (L.E.)</b> Yield strength (N/mm <sup>2</sup> )	<b>Rm</b> Ultimate tensile strength (N/mm <sup>2</sup> )	<b>Alargamiento</b> Elongation (%)	<b>Estricción</b> Reduction of area (%)	<b>Localización de la Rotura</b> Break point	<b>Observaciones</b> Remarks
<b>Requisitos:</b> Requirements		460 - 680				
E210575-3-1-1		612			M. Base	
E210575-3-2-1		602			M. Base	

<b>Ensayo de doblado:</b> (Bend test):					
<b>Tipo/Probeta n°</b> Type/Specimen n°	<b>Diámetro madril</b> Jig Diameter	<b>Angulo de plegado</b> Bend angle	<b>Elongacion</b> Elongation	<b>Resultados</b> Results	
E210575-3-3-C-1	4 x e	180°		ACEPTABLE	
E210575-3-3-C-2	4 x e	180°		ACEPTABLE	
E210575-3-4-R-1	4 x e	180°		ACEPTABLE	
E210575-3-4-R-2	4 x e	180°		ACEPTABLE	

<b>Ensayo de resiliencia:</b> Charpy impact test		<b>Requisitos:</b> Requirements				
<b>Probeta/Situación de la entalla</b> Test piece/position	<b>Dimensiones</b> Dimensions	<b>Temperatura</b> (Test Temperature) (°C)	<b>Energía absorbida</b> Absorbed energy (J)	<b>Media</b> Average (J)	<b>Expansión lateral</b> Lateral expansion (mm)	<b>Area Dúctil</b> Shear Area (%)

<b>Examen Macrográfico</b> (Macrographic Exam)	ACEPTABLE	<b>Examen Micrográfico</b> (Micrographic Exam)	----
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<b>Ensayo de dureza</b> (Hardness Test)		<b>Tipo y Carga:</b> (Type/Load)	<b>10KGF VICKERS</b>		
<b>Metal base</b> (Base Metal)	<b>Max:</b> ---	<b>Min:</b> ---	<b>Metal Aportado</b> (Weld Metal)	<b>Max:</b> ---	<b>Min:</b> ---
<b>ZAT</b> (HAZ)	<b>Max:</b> ---	<b>Min:</b> ---	<b>Línea de fusión</b> (Fusion Line)	<b>Max:</b> ---	<b>Min:</b> ---

**Croquis de dureza:** (Sketch of Hardness test):

NO PROCEDE

**FECHA** (Date): 14/05/21

**FABRICANTE** (Manufacturer): INDUSTRIAL FURNACES  
**INSERTEC, S.L.**

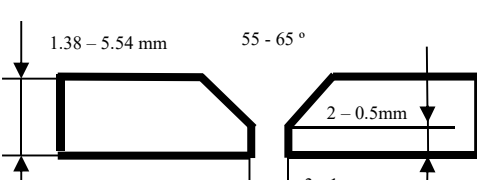
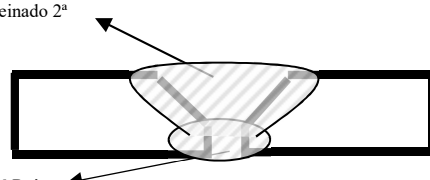
**Fdo.** (Signature):

**ORGANISMO EXAMINADOR** (Examining body):  
SERVICIOS DE CONTROL E INSPECCION, S.A.  
**Fdo.** (Signature): V. PEDROSA / A. GARCIA



# ESPECIFICACIÓN DE PROCEDIMIENTO DE SOLDEO (WPS) DEL FABRICANTE WPS 2100093-W WELDING PROCEDURE SPECIFICATION OF MANUFACTURER (UNE-EN ISO 15609-1:2020)

<b>Fabricante:</b> Manufacturer	INDUSTRIAL FURNACES INSERTEC, S.L.	<b>Lugar:</b> Place	CM/ Etserre, 21, C.P.: 48970. Basauri – Vizcaya
<b>Nº del WPQR:</b> WPQR Nº	2100093-P	<b>Proceso(s) de soldeo:</b> Welding process(es)	141
<b>Nombre del soldador:</b> Welder's Name	José María Gago	<b>Tipo de unión:</b> Joint type	BW / FW Ramificaciones $\geq 60^\circ$
<b>Material base en WPQR:</b> Base material used in the WPQR	EN 10216-5: 2013 1.4306 (TP304L) Gr 8.1	<b>Espesor del material base</b> Base metal thickness	1.38 – 5.54 mm
<b>Grupo(s) del material base cualificado:</b> Group(s) of base material qualified:	Gr. 8. Subgr 8.1 a Gr. 8 (Igual o inferior subgrupo dentro del mismo grupo)	<b>Espesor depositado</b> Deposited weld metal thickness	$t \leq 5.54$ mm
<b>Método de preparación y limpieza:</b> Cleaning and preparation method	Cepillado / Amolado	<b>Tamaño de garganta:</b> Fillet size	SIN RESTRICCIÓN
<b>Detalles del Respaldo:</b> Backing details	ss (gb, mb) / bs	<b>Diámetro exterior</b> Outside diameter	$\varnothing \geq 1/4"$
<b>Fijación por:</b> Fixation made by:	Por puntos	<b>Posición(es) de soldeo</b> Welding position(s)	TODAS (Excepto PG, PJ y J-L045)

Diseño de la Unión (Drawing of the Joint)	Secuencia de soldeo (Welding Sequence)
	

**Parámetros de soldeo (Welding Parameters)** (\*) Función del tipo de unión y espesor a soldar / (\*\*) Según ISO/TR 17671-1

Pasada Layer (*)	Proceso Process	$\varnothing$ Metal de aporte $\varnothing$ Filler Metal (*) (mm)	Intensidad Current (A)	Voltaje Voltage (V)	Tipo de corriente y Polaridad Current type and Polarity	Velocidad de alimentación del alambre Wire feed speed (m/min)	Velocidad de avance Travel speed (cm/min)	Aporte Térmico Heat Input (KJ/cm) (**)
1ª	141	F Input Térmico	94 - 56	15 - 9	DCEN (-)	N/A	6.3 - 3.8	Sin restricción
Peinado	141	F Input Térmico	94 - 56	15 - 9	DCEN (-)	N/A	6.3 - 3.8	Sin restricción

<b>Metal de aporte y flux:</b> Filler metal and flux		<b>Designación:</b> Designation	AWS-SFA 5.9-ER308L / ISO 14343-A-W 19 9 L ó equivalentes propiedades químicas, mecánicas y de recubrimiento.					
		<b>Fabricante y marca:</b> Manufacturer and trademark	TODAS					
<b>Requisitos especiales de secado:</b> Special requirements for drying			S/ Fabricante			<b>Oscilación:</b> Oscillation		S/ INPUT
<b>Gas/Fundente:</b> Gas/Flux	<b>Protección:</b> Shielding	Ar 99.998% Gr I $\pm 0.1\%$	<b>Detalles de soldeo pulsado:</b> Pulsed arc welding parameters			N/A		
	<b>Respaldo:</b> Backing	Ar 99.998% Gr I $\pm 0.1\%$	<b>Diámetro de tobera y distancia a pieza:</b> Nozzle diameter / tube-work distance:			N/A		
<b>Caudal de gas:</b> Gas flow rate	<b>Protección:</b> Shielding	20 - 12 L/min	<b>Parámetros para soldeo por plasma:</b> Plasma welding parameters			N/A		
	<b>Respaldo:</b> Backing	15 - 9 L/min	<b>Ángulo de ataque:</b> Welding angle			N/A		
<b>Electrodo de wolframio (tipo y <math>\varnothing</math>):</b> Tungsten electrode (type and $\varnothing$ )			2% To. $\varnothing$ 2.4 mm			<b>Post-calentamiento:</b> Post-heating		CON / SIN
<b>Detalles del Resanado:</b> Back gouging details			N/A			<b>Tratamiento térmico post-soldadura:</b> Post weld heat treatment		N/A
<b>Temperatura de precalentamiento:</b> Preheating temperature			$\geq 5^\circ\text{C}$			<b>Veloc. de calentamiento y enfriamiento:</b> Heating and cooling speed		N/A
<b>Mantenimiento del precalentamiento:</b> Preheating maintenance			N/A			<b>Temperatura entre pasadas:</b> Interpass temperature		MAX 160 $^\circ\text{C}$
<b>Precalentamiento antes del peinado:</b> Preheating before cap layer welding			N/A			<b>Número de electrodos:</b> Number of electrodes		N/A
<b>Modo de transferencia:</b> Transfer mode			N/A			<b>Metal de aporte suplementario:</b> Supplemental filler metal		N/A

**FABRICANTE:** INDUSTRIAL FURNACES  
INSERTEC, S.L.  
(Manufacturer)

**Nombre, fecha y firma**  
Name date and signature

**SERVICIOS DE CONTROL E INSPECCION, SCI**  
**Nombre, fecha y firma:** V. PEDROSA, 14/05/2021  
Name date and signature



# RESGISTRO DE CUALIFICACIÓN DE PROCEDIMIENTO DE SOLDEO Nº 2100094-P (WPQR)

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)  
(UNE-EN ISO 15614-1: 2018 / NIVEL 2)

<b>Fabricante:</b> Manufacturer	INDUSTRIAL FURNACES INSERTEC, S.L.	<b>Fecha de soldeo:</b> Welding Date	07/04/21
<b>Dirección:</b> Address	CM/ Etserre, 21, C.P.: 48970. Basauri – Vizcaya		
<b>WPS del Fabricante. Nº de Referencia:</b> Manufacturer's WPS	2100094-W	<b>Nivel de ensayo:</b> Test level	2

## RANGO DE CUALIFICACIÓN WELDING QUALIFICATION RANGE

<b>Proceso(s) de soldeo:</b> Welding process	141 + 111
<b>Tipo de unión:</b> Joint type	BW / FW ramificaciones $\geq 60^\circ$
<b>Grupo(s) y subgrupo(s) de material base:</b> Base metal group(s) & sub-group(s)	Grupo 8. Subgrupo 8.1 a Grupo 8 (Igual o inferior subgrupo dentro del mismo grupo)
<b>Espesor del material base:</b> Base metal thickness	3.00 – 11.08 mm
<b>Espesor del material depositado:</b> Deposited weld metal thickness	s(141)= 2.4mm, rango $\leq 4.8$ mm / s(111)= 3.14, rango $\leq 6.28$ mm
<b>Tamaño de garganta:</b> Fillet size	Sin restricción
<b>Pasada simple/multipasada:</b> Single pass/multipass	sl, ml
<b>Diámetro exterior:</b> Outside diameter	$\varnothing \geq 1"$
<b>Designación del material de aporte:</b> Filler metal designation	141: AWS-SFA 5.9-ER308L / ISO 14343-A-W 19 9 L 111: AWS A5.4: E308L-17 / EN ISO 3581-A: E 19 9 L R 3 2 ó Equivalentes propiedades químicas, mecánicas, y recubrimiento.
<b>Marca y fabricante del material de aporte:</b> Filler metal trademark & manufacturer	TODAS
<b>Tamaño del material de aporte:</b> Filler metal dimensions	S / INPUT
<b>Gas de protección / fundente:</b> Shielding gas / flux	141: Ar 99.998%. $\pm 0.1\%$
<b>Gas de respaldo:</b> Backing gas	141: Ar 99.998%. $\pm 0.1\%$
<b>Tipo de corriente y polaridad:</b> Current and polarity	141: DCEN / (-) / 111: DCEP / (+)
<b>Modo de transferencia:</b> Transfer mode	N/A
<b>Aporte térmico:</b> Heat input	Sin restricción
<b>Posiciones de soldeo:</b> Welding Positions	TODAS (Excepto PG, PJ y J-L045)
<b>Temperatura de precalentamiento:</b> Preheat temperature	$\geq 5^\circ\text{C}$
<b>Temperatura entre pasadas:</b> Interpass temperature	$\leq 148^\circ\text{C}$
<b>Precalentamiento antes de la pasada de peinado:</b> Preheating before cap layer welding	N/A
<b>Post-calentamiento:</b> Post-heating	CON / SIN
<b>Tratamiento térmico post-soldadura:</b> Post weld heat treatment	N/A
<b>Otra información:</b> Other information	---



**Se certifica que los datos de este registro son correctos y que los cupones de ensayos fueron preparados, soldados y ensayados satisfactoriamente de acuerdo con los requisitos de la norma UNE-EN ISO 15614-1:2018.**

We hereby certify that the data recorded is correct and the test welds were prepared, welded and tested satisfactorily, according to UNE-EN ISO 15614-1:2018

**FECHA** (Date): 14/05/21  
**FABRICANTE** (Manufacturer): INDUSTRIAL FURNACES  
**INSERTEC, S.L.**  
**Fdo.** (Signature):

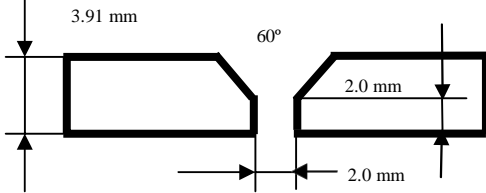
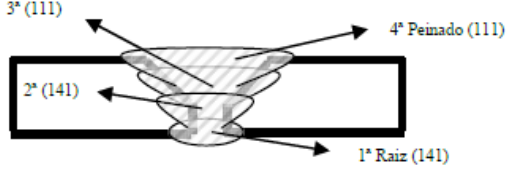
**ORGANISMO EXAMINADOR** (Examining body):  
SERVICIOS DE CONTROL E INSPECCION, S.A.  
**Fdo.** (Signature): **V. PEDROSA / A. GARCIA**  
430646541  
ANTONIO  
GARCIA (R:  
A78024668)

# REGISTRO DE CUALIFICACIÓN DE PROCEDIMIENTO DE SOLDEO Nº 2100094-P (WPQR)

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)  
(UNE-EN ISO 15614-1: 2018 / NIVEL 2)

## REGISTRO DE ENSAYO DE SOLDADURA WELDING TEST RECORD

<b>Nombre del soldador(es):</b> Welders name(s)	José María Gago	<b>Identificación del soldador:</b> Welder Identification	J.M.G.
<b>Proceso(s) de soldeo:</b> Welding Process(es)	141 + 111	<b>Tipo de unión:</b> Joint type	A TOPE. BW / T
<b>Espec. del material base:</b> Base metal specification	EN 10216-5: 2013 1.4307 (TP304L) Gr 8.1	<b>Posición de soldeo:</b> Welding Position	HL045
<b>Espesor del material base:</b> Base metal thickness	5.54 mm	<b>Diámetro exterior:</b> Outside diameter	2"
<b>Modo de transferencia:</b> Transfer mode	N/A	<b>Métodos de prep. y limpieza:</b> Preparing & cleaning methods	Cepillado y amolado

Diseño de la unión (Joint desing)	Secuencia de soldeo
	

### Parámetros de soldeo (Welding Parameters)

Pasada Pass	Proceso de soldeo Process	Ø Material de aporte (mm) Filler metal Ø	Intensité (A) Current	Voltaje (V) Voltage	Tipo de corriente y polaridad Current type & polarity	Velocidad de hilo (m/min) Wire feed speed	Velocidad de avance (cm/min) Travel speed	Aporte térmico (KJ/cm) Heat input
Raíz	141	1.6	81	12	DCEN (-)	N/A	6.8	5.1
Relleno	111	2.5	60	23	DCEP (+)	N/A	12	5.5
Relleno	111	2.5	60	23	DCEP (+)	N/A	12	5.5
Peinado	111	2.5	60	23	DCEP (+)	N/A	12	5.5

<b>Material de aporte y flux</b> Filler metal & flux		<b>Designación:</b> Designation:	141: ISO 14343-A-W 19 9 L – Ø= 1.6 - Lote: PV3403724590 111: EN ISO 3581-A: E 19 9 L R 3 2 – Ø= 2.5 - Lote: 2151856
		<b>Fabricante y marca:</b> Manufacturer and trademark	141: ESAB 111: VOESTALPINE BÖHLER
<b>Requisitos especiales de secado:</b> Special requirements for drying		S/ Fabricante	<b>Oscilación:</b> Oscillation
			141: S / INPUT 111: Máx 3 X Ø
<b>Gas / Flux:</b> Gas / Flux	<b>Protección:</b> Shielding	Ar 99.998% Gr I	<b>Detalles de soldeo pulsado:</b> Pulsed arc welding parameters
	<b>Respaldo:</b> Backing	Ar 99.998% Gr I	N/A
<b>Caudal de gas:</b> Gas flow rate	<b>Protección:</b> Shielding	20 L/min	<b>Diámetro de tobera y distancia a pieza:</b> Nozzle diameter / tube-work distance:
	<b>Respaldo:</b> Backing	12 L/min	N/A
<b>Electrodo de wolframio (tipo y Ø):</b> Tungsten electrode (type and Ø)		2% To. Ø 2.4 mm	<b>Detalles de soldeo por plasma:</b> Plasma welding parameters
<b>Detalles del Respaldo:</b> Backing details		ss, gb	<b>Ángulo de ataque:</b> Welding angle
<b>Temperatura precalentamiento:</b> Preheat Temperature		15 °C (Ambiente)	N/A
<b>Precalentamiento antes del peinado:</b> Preheating before cap layer welding		N/A	<b>Fijación por:</b> Fixation made by:
<b>Post calentamiento:</b> Post heating:		SIN	<b>Detalles del resanado:</b> Back gouging details
			N/A
			<b>Temperatura entre pasadas:</b> Interpass temperature
			98 °C
			<b>Número de electrodos:</b> Number of electrodes
			N/A
			<b>Metal de aporte suplementario:</b> Supplemental filler metal
			N/A

### TRATAMIENTO TERMICO POST-SOLDADURA: POST WELD HEAT TREATMENT

<b>Temperatura:</b> Temperature	N/A	<b>Tiempo:</b> Time	N/A	<b>Método:</b> Method	N/A
<b>Velocidad de Calentamiento/Enfriamiento:</b> Speed of heating and cooling		N/A			

**FECHA** (Date): 14/05/21

**FABRICANTE** (Manufacturer): INDUSTRIAL FURNACES  
**INSERTE, S.L.**

**Fdo.** (Signature):

**ORGANISMO EXAMINADOR** (Examining body):  
SERVICIOS DE CONTROL E INSPECCION, S.A.

**Fdo.** (Signature): V. PEDROSA / A. GARCIA

47075873W  
VICENTE PEDROSA

Firmado digitalmente por 43064654Y  
ANTONIO GARCIA (R: 47075873W, VICENTE PEDROSA (C: A78024668))

Fecha: 2021.05.14  
17:35:38 +02'00'

A78024668

# REGISTRO DE CUALIFICACIÓN DE PROCEDIMIENTO DE SOLDEO Nº 2100094-P (WPQR)

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)  
(UNE-EN ISO 15614-1: 2018 / NIVEL 2)

## ENSAYOS NO DESTRUCTIVOS (END)

NON DESTRUCTIVE TESTING (NDT)

<b>Inspección visual</b> (Visual inspection):	ACEPTABLE	<b>Informe(s) Nº</b> (Report(s) Nº):	210031ENDORT-OT0001-IV04
<b>Líquidos penetrantes</b> (Liquid Penetrant):	ACEPTABLE	<b>Informe(s) Nº</b> (Report(s) Nº):	210031ENDORT-OT0001-PT04
<b>Partículas magnéticas</b> (Magnetic Particles):	N/A	<b>Informe(s) Nº</b> (Report(s) Nº):	N/A
<b>Radiografía</b> (Radiography):	ACEPTABLE	<b>Informe(s) Nº</b> (Report(s) Nº):	210031ENDORT-OT0001-RT04
<b>Ultrasonidos</b> (Ultrasonics):	N/A	<b>Informe(s) Nº</b> (Report(s) Nº):	N/A
<b>Otros</b> (Others):	N/A	<b>Informe(s) Nº</b> (Report(s) Nº):	N/A

## ENSAYOS DESTRUCTIVOS

DESTRUCTIVE TESTING

<b>Informe(s) de laboratorio Nº:</b> (Lab. Report(s) Nº)	E-210575LMEMAD-OT0001-IF04-Rv00
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<b>Ensayo de tracción:</b> (Tension test):						
<b>Tipo/Probeta nº</b> Type/Specimen nº	<b>Rp0,2 (L.E.)</b> Yield strength (N/mm <sup>2</sup> )	<b>Rm</b> Ultimate tensile strength (N/mm <sup>2</sup> )	<b>Alargamiento</b> Elongation (%)	<b>Estricción</b> Reduction of area (%)	<b>Localización de la Rotura</b> Break point	<b>Observaciones</b> Remarks
<b>Requisitos:</b> Requirements		460 - 680				
E210575-4-1-1	---	609	---	---	M. Aportado	---
E210575-4-1-2	---	553	---	---	M. Aportado	---

<b>Ensayo de doblado:</b> (Bend test):				
<b>Tipo/Probeta nº</b> Type/Specimen nº	<b>Diámetro madril</b> Jig Diameter	<b>Angulo de plegado</b> Bend angle	<b>Elongacion</b> Elongation	<b>Resultados</b> Results
E210575-4-2-C-1	4 x e	180°	---	ACEPTABLE
E210575-4-2-C-2	4 x e	180°	---	ACEPTABLE
E210575-4-2-R-1	4 x e	180°	---	ACEPTABLE
E210575-4-2-R-2	4 x e	180°	---	ACEPTABLE

<b>Ensayo de resiliencia:</b> Charpy impact test		<b>Requisitos:</b> Requirements				
<b>Probeta/Situación de la entalla</b> Test piece/position	<b>Dimensiones</b> Dimensions	<b>Temperatura</b> (Test Temperature) (°C)	<b>Energía absorbida</b> Absorbed energy (J)	<b>Media</b> Average (J)	<b>Expansión lateral</b> Lateral expansion (mm)	<b>Area Dúctil</b> Shear Area (%)

<b>Examen Macrográfico</b> (Macrographic Exam)	ACEPTABLE	<b>Examen Micrográfico</b> (Micrographic Exam)	--
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<b>Ensayo de dureza</b> (Hardness Test)		<b>Tipo y Carga:</b> (Type/Load)		<b>10KGF VICKERS</b>	
<b>Metal base</b> (Base Metal)	<b>Max:</b> ---	<b>Min:</b> ---	<b>Metal Aportado</b> (Weld Metal)	<b>Max:</b> ---	<b>Min:</b> ---
<b>ZAT</b> (HAZ)	<b>Max:</b> ---	<b>Min:</b> ---	<b>Línea de fusión</b> (Fusion Line)	<b>Max:</b> ---	<b>Min:</b> ---

**Croquis de dureza:** (Sketch of Hardness test):

**NO PROCEDE**



**FECHA** (Date): 14/05/21

**FABRICANTE** (Manufacturer): INDUSTRIAL FURNACES

**INSERTEC, S.L.**

**Fdo.** (Signature):

**ORGANISMO EXAMINADOR** (Examining body):

SERVICIOS DE CONTROL E INSPECCION, S.A.

**Fdo.** (Signature): V. PEDROSA / A. GARCIA

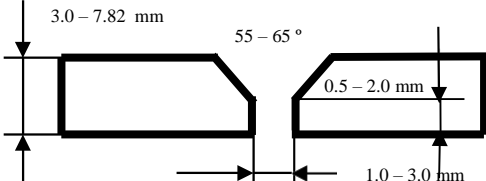
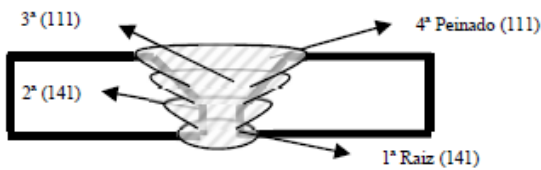
VICENTE PEDROSA (C: A78024668) ANTONIO GARCIA (R: A78024668)



# ESPECIFICACIÓN DE PROCEDIMIENTO DE SOLDEO (WPS) DEL FABRICANTE Nº 2100094-W

WELDING PROCEDURE SPECIFICATION OF MANUFACTURER  
(UNE-EN ISO 15609-1:2020)

<b>Fabricante:</b> Manufacturer	INDUSTRIAL FURNACES INSERTEC, S.L.	<b>Lugar:</b> Place	CM/ Etserre, 21, C.P.: 48970. Basauri – Vizcaya
<b>Nº del WPQR:</b> WPQR Nº	2100094-P	<b>Proceso(s) de soldeo:</b> Welding process(es)	141 + 111
<b>Nombre del soldador:</b> Welder's Name	José María Gago	<b>Tipo de unión:</b> Joint type	BW / FW Ramificaciones $\geq 60^\circ$
<b>Material base en WPQR:</b> Base material used in the WPQR	EN 10216-5: 2013 1.4307 (TP304L) Gr 8.1	<b>Espesor del material base:</b> Base metal thickness	3.00 – 11.08 mm
<b>Grupo(s) del material base cualificado:</b> Group(s) of base material qualified:	Grupo 8. Subgrupo 8.1 a Grupo 8 (Igual o inferior dentro del mismo grupo)	<b>Espesor depositado:</b> Deposited weld metal thickness	141: $s \leq 4.80$ mm 111: $s \leq 6.28$ mm
<b>Método de preparación y limpieza:</b> Cleaning and preparation method	Cepillado / Amolado	<b>Tamaño de garganta:</b> Fillet size	SIN RESTRICCIÓN
<b>Detalles del Respaldo:</b> Backing details	ss (mb, gb) / bs	<b>Diámetro exterior:</b> Outside diameter	$\varnothing \geq 1"$
<b>Fijación por:</b> Fixation made by:	Por puntos	<b>Posición(es) de soldeo:</b> Welding position(s)	TODAS (Excepto PG, PJ y J-L045)

Diseño de la unión (Joint desing)	Secuencia de soldeo (Welding sequence)
	

## Parámetros de soldeo (Welding Parameters) (\*) Función del tipo de unión y espesor a soldar / (\*\*) Según ISO/TR 17671-1

Pasada Layer (*)	Proceso Process	Metall de aporte Filler Metal (*) (mm)	Intensidad Current (A)	Voltaje Voltage (V)	Tipo de corriente y Polaridad Current type and Polarity	Velocidad de alimentación del alambre Wire feed speed (m/min)	Velocidad de avance Travel speed (cm/min)	Aporte Térmico Heat Input (KJ/cm) (**)
1ª Raíz	141	F Imput Termico	101 – 61	15 – 9	DCEN (-)	N/A	8.5 – 5.1	Sin Restricción
2ª Relleno	111	F Imput Termico	75 - 45	29 - 17	DCEP (+)	N/A	15 - 9	Sin Restricción
3ª Relleno	111	F Imput Termico	75 - 45	29 - 17	DCEP (+)	N/A	15 - 9	Sin Restricción
4ª Peinado	111	F Imput Termico	75 - 45	29 - 17	DCEP (+)	N/A	15 - 9	Sin Restricción

<b>Metall de aporte y flux:</b> Filler metal and flux	<b>Designación:</b> Designation	141: AWS-SFA 5.9-ER308L / ISO 14343-A-W 19 9 111: AWS A5.4: E308L-17 / EN ISO 3581-A: E 19 9 L R 3 2 ó equivalentes propiedades químicas, mecánicas y de recubrimiento.
	<b>Fabricante y marca:</b> Manufacturer and trademark	TODAS

<b>Requisitos especiales de secado:</b> Special requirements for drying	S/ Fabricante	<b>Oscilación:</b> Oscillation	141: S / INPUT 111: Máx 3 X Ø
<b>Gas/Fundente:</b> Gas/Flux	<b>Protección:</b> Shielding	<b>Detalles de soldeo pulsado:</b> Pulsed arc welding parameters	N/A
	<b>Respaldo:</b> Backing	<b>Diámetro de tobera y distancia a pieza:</b> Nozzle diameter / tube-work distance:	N/A
<b>Caudal de gas:</b> Gas flow rate	<b>Protección:</b> Shielding	<b>Parámetros para soldeo por plasma:</b> Plasma welding parameters	N/A
	<b>Respaldo:</b> Backing	<b>Ángulo de ataque:</b> Welding angle	N/A
<b>Electrodo de wolframio (tipo y Ø):</b> Tungsten electrode (type and Ø)	141: 2% To. Ø 2.4 mm	<b>Post-calentamiento:</b> Post-heating	CON / SIN
<b>Detalles del Resanado:</b> Back gouging details	N/A	<b>Tratamiento térmico post-soldadura:</b> Post weld heat treatment	N/A
<b>Temperatura de precalentamiento:</b> Preheating temperature	$\geq 5^\circ\text{C}$	<b>Veloc. de calentamiento y enfriamiento:</b> Heating and cooling speed	N/A
<b>Mantenimiento del precalentamiento:</b> Preheating maintenance	N/A	<b>Temperatura entre pasadas:</b> Interpass temperature	$\leq 220^\circ\text{C}$
<b>Precalentamiento antes del peinado:</b> Preheating before cap layer welding	N/A	<b>Número de electrodos:</b> Number of electrodes	N/A
<b>Modo de transferencia:</b> Transfer mode	N/A	<b>Metall de aporte suplementario:</b> Supplemental filler metal	N/A

**FABRICANTE:** INDUSTRIAL FURNACES  
INSERTEC, S.L.  
(Manufacturer)

**Nombre, fecha y firma**  
Name date and signature

**SERVICIOS DE CONTROL E INSPECCIÓN, SCI**

**Nombre, fecha y firma:** V. PEDROSA: 14/05/2021  
Name date and signature

47075873W

VICENTE PEDROSA

(C:A78024668)

Firmado digitalmente por  
47075873W VICENTE PEDROSA  
(C:A78024668)  
Fecha: 2021.05.14 17:29:51  
+02'00'

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T:+34 91 884 4393 F:+34 91 884 4324

## ESTIMATION OF WELDING CONSUMABLES AND DISCS FOR GRINDING

### **1- WELDING CONSUMABLES**

#### **1.1 Semiautomatic process (135):**

- Base material to be welded: Carbon Steel / Carbon Steel
- Type of wire: EN ISO 14341-A: G42 4 M 21 3Si1 / G38 3 C1 3Si1 (equivalent: AWS 5.18: ER70S6)
  - Diameter of wire: Ø1,2mm / Ø1mm
  - Estimation of kgs: 89 kgs approx /furnace x 11 furnaces = 979 Kgs
    - 80% of weight diameter 1,2mm
    - 20% of weight diameter 1 mm
  - Pieces to be welded:
    - To weld 5 main parts which conforms the furnace “box”. **It can also be welded with an electrode.** However, it is initially designated for semi-automatic welding because it is a faster process and produces good quality if there is no wind or humidity.
    - Chimney with embedded plates
    - Tilt and turn support with embedded plates

#### **1.2 Electrode process (111):**

- Base material to be welded: Carbon Steel / Carbon Steel
- Type electrode: EN ISO 2560-A: E 42 4 B 32 H5 (equivalent: AWS 5.1 : E7018)
- Diameters: Ø2,5mm / Ø3,2 mm / Ø4mm

## ESTIMATION OF WELDING CONSUMABLES AND DISCS FOR GRINDING

- Estimation of kgs: 60 kgs approx. /furnace x 11 furnaces = 660 Kgs
  - 35 kgs: Diameter 2,5mm
  - 450 Kgs: Diameter 3,2mm
  - 175 Kgs: Diameter 4mm
- Pieces to be welded:
  - Plates supports for structure or piping
  - Welding for lifting lugs
  - Tack weldings
  - Others...

### **1.3 TIG Process (141):**

- Base material to be welded: Stainless Steel / Stainless Steel
- Type wire: ISO 14343-A-W 19 9 (equivalent AWS-SFA 5.9-ER308L)
- Diameters: 2,4mm
- Estimation of kgs: 14,7 Kgs/furnace x 11 furnaces = 161,7 Kgs
- Pieces to be welded:
  - Root penetration on stainless steel pipes
    - Oxygen
    - Gas
    - Exhaust ducts for melter
    - Others

## ESTIMATION OF WELDING CONSUMABLES AND DISCS FOR GRINDING

### **1.4 Electrode Process (111):**

- Base material to be welded: Stainless Steel / Stainless Steel
- Type electrode: EN ISO 3581-A: E 19 9 L R 3 2 (Equivalent AWS SFA 5.4: E308L-17)
- Diameters: Ø3,2mm
- Estimation of kgs: 34,3 Kgs/furnace x 11 furnaces = 377,3 Kgs
- Pieces to be welded:
  - Filler pass weldings on stainless steel pipes.
    - Oxygen
    - Gas
    - Exhaust ducts for melter
    - Others

### **1.5 Electrode Process (111):**

- Base material to be welded: Stainless Steel / Carbon steel
- Type electrode: EN ISO 3581-A E 23 12 L R 3 2 (equivalent AWS A5.4 E309L-17)
- Diameter: Ø 3,2mm
- Estimation of kgs: 90 Kgs



## ESTIMATION OF WELDING CONSUMABLES AND DISCS FOR GRINDING

### **2- GRINDING DISCS**

#### **2.1 Carbon Steel grinding discs:**

- 1200 units discs Ø125 mm, 1 mm thickness
- 500-units discs Ø125mm 3mm thickness
- 300-units discs Ø125mm 6mm thickness
- 150-units Abrasive Flap Disc Ø 125mm Abrasive Flap Disc
- 40-units discs Ø 230mm

#### **2.2 Stainless steel grinding discs:**

- 200 unit disc Ø 125 mm, 1 mm thickness
- 60-unit disc Ø 125mm 3mm thickness
- 50-unit disc Ø 125mm 6mm thickness
- 30-unit Abrasive Flap Disc Ø 125mm Abrasive Flap Disc
- 20-unit disc Ø 230mm

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## **ANNEX 10 – PIPING LINES**

## FORGING PIPE LINES

Furnace Type	Furnace Number	Section	Item	Quantity	Diameter	Material	Lenght (mm)	Scope
TMT35	1	Combustion Air	Fan Admision	1	14"	316L	2700	AIB
TMT35	1	Combustion Air	Combustion Route	1	14"	316L	12500	AIB
TMT35	1	Auxiliary Fan	Fan Admision	1	8"	316L	7900	AIB
TMT35	1	Auxiliary Fan	Combustion Route 1	1	8"	316L	9800	AIB
TMT35	1	Auxiliary Fan	Combustion Route 2	1	8"	316L	7700	AIB
TMT35	2	Combustion Air	Fan Admision	1	14"	316L	2900	AIB
TMT35	2	Combustion Air	Combustion Route	1	14"	316L	22400	AIB
TMT35	2	Auxiliary Fan	Fan Admision	1	8"	316L	9300	AIB
TMT35	2	Auxiliary Fan	Combustion Route	1	8"	316L	12800	AIB
TMT35	2	Auxiliary Fan	Combustion Route	1	8"	316L	14000	AIB
TMT35	1	Exhaust Route	Route	1	8"	316L	14200	AIB
TMT35	1	Exhaust Route	Outlet	1	8"	316L	4400	AIB
TMT35	2	Exhaust Route	Route	1	8"	316L	22700	AIB
TMT35	2	Exhaust Route	Outlet	1	8"	316L	2900	AIB
TMT35	1	Hydraulic	Route	2	1 1/4"	316L	19500	AIB
TMT35	1	Hydraulic	Route	1	1"	316L	19700	AIB
TMT35	1	Hydraulic	Route	1	1/4"	316L	20400	AIB
TMT35	2	Hydraulic	Route	2	1 1/4"	316L	30400	AIB
TMT35	2	Hydraulic	Route	1	1"	316L	30700	AIB
TMT35	2	Hydraulic	Route	1	1/4"	316L	31400	AIB
THD35	1	Hydraulic	Route	2	1 1/4"	316L	37100	AIB
THD35	1	Hydraulic	Route	1	1"	316L	37500	AIB
THD35	1	Hydraulic	Route	1	1/4"	316L	38400	AIB
TMT35	1	Natural Gas	Route	1	4"	Carbon Steel	7700	AIB
TMT35	2	Natural Gas	Route	1	4"	Carbon Steel	26400	AIB
TMT35	1	Oxygen	ROUTE 1	1	3"	316L	8300	AIB
TMT35	2	Oxygen	ROUTE 1	1	3"	316L	26800	AIB

## CASTING PIPE LINES

Furnace Type	Furnace Number	Section	Item	Quantity	Diameter	Material	Lenght (mm)	Scope
TMT 25	1	Combustion Air	Fan Admision	1	14"	316L	1600	AIB
TMT 25	1	Combustion Air	Combustion Route	1	14"	316L	2400	AIB
TMT 25	1	Auxiliary Fan	Fan Admision	1	8"	316L	2400	AIB
TMT 25	1	Auxiliary Fan	Combustion Route	1	8"	316L	4200	AIB
TMT 25	1	First Stage Air	SPOOL #1	1	6"	316L	1178	IFI
TMT 25	1	First Stage Air	SPOOL #2	1	6"	316L	2576	IFI
TMT 25	1	First Stage Air	SPOOL #3	1	6"	316L	1447	IFI
TMT 25	1	First Stage Air	SPOOL #4	1	6"	316L	894	IFI
TMT 25	1	First Stage Air	SPOOL #5	1	6"	316L	1617	IFI
TMT 25	1	First Stage Air	SPOOL #6	1	6"	316L	284	IFI
TMT 25	1	First Stage Air	SPOOL #7	1	6"	316L	2586	IFI
TMT 25	1	First Stage Air	SPOOL #8	1	6"	316L	1160	IFI
TMT 25	1	First Stage Air	SPOOL #9	1	6"	316L	287	IFI
TMT 25	1	Second Stage Air	SPOOL #1	1	14"	316L	3079	IFI
TMT 25	1	Second Stage Air	SPOOL #2	1	14"	316L	4505	IFI
TMT 25	1	Second Stage Air	SPOOL #3	2	14"	316L	508	IFI
TMT 25	1	Second Stage Air	SPOOL #4	1	14"	316L	1543	IFI
TMT 25	1	Second Stage Air	SPOOL #5	1	14"	316L	1543	IFI
TMT 25	1	Pilot and Cooling Air	SPOOL #1	1	4"	316L	3767	IFI
TMT 25	1	Pilot and Cooling Air	SPOOL #2	1	4"	316L	3048	IFI
TMT 25	1	Pilot and Cooling Air	SPOOL #3	1	4"	316L	3757	IFI
TMT 25	1	Pilot and Cooling Air	SPOOL #4	1	2"	316L	1568	IFI
TMT 25	1	Pilot and Cooling Air	SPOOL #5	1	2"	316L	1568	IFI
TMT 25	1	Pilot and Cooling Air	SPOOL #6	1	1"	316L	1562	IFI
TMT 25	1	Pilot and Cooling Air	SPOOL #7	1	1"	316L	180	IFI
TMT 25	1	Pilot and Cooling Air	SPOOL #8	1	0,5"	316L	2262	IFI
TMT 25	1	Pilot and Cooling Air	SPOOL #9	1	1"	316L	1562	IFI
TMT 25	1	Pilot and Cooling Air	SPOOL #10	1	1"	316L	180	IFI
TMT 25	1	Pilot and Cooling Air	SPOOL #11	1	0,5"	316L	2112	IFI
TMT 25	1	Pilot and Cooling Air	SPOOL #12	1	0,5"	316L	2199	IFI
TMT 25	1	Pilot and Cooling Air	SPOOL #13	1	0,5"	316L	2112	IFI
TMT 25	2	Combustion Air	Fan Admision	1	14"	316L	1600	AIB
TMT 25	2	Combustion Air	Combustion Route	1	14"	316L	2400	AIB
TMT 25	2	Auxiliary Fan	Fan Admision	1	14"	316L	2400	AIB
TMT 25	2	Auxiliary Fan	Combustion Route	1	8"	316L	4200	AIB
TMT 25	2	First Stage Air	SPOOL #1	1	6"	316L	1178	IFI
TMT 25	2	First Stage Air	SPOOL #2	1	6"	316L	2576	IFI
TMT 25	2	First Stage Air	SPOOL #3	1	6"	316L	1447	IFI
TMT 25	2	First Stage Air	SPOOL #4	1	6"	316L	894	IFI
TMT 25	2	First Stage Air	SPOOL #5	1	6"	316L	1617	IFI
TMT 25	2	First Stage Air	SPOOL #6	1	6"	316L	284	IFI
TMT 25	2	First Stage Air	SPOOL #7	1	6"	316L	2586	IFI



TMT 25	2	First Stage Air	SPOOL #8	1	6"	316L	1160	IFI
TMT 25	2	First Stage Air	SPOOL #9	1	6"	316L	287	IFI
TMT 25	2	Second Stage Air	SPOOL #1	1	14"	316L	3079	IFI
TMT 25	2	Second Stage Air	SPOOL #2	1	14"	316L	4505	IFI
TMT 25	2	Second Stage Air	SPOOL #3	2	14"	316L	508	IFI
TMT 25	2	Second Stage Air	SPOOL #4	1	14"	316L	1543	IFI
TMT 25	2	Second Stage Air	SPOOL #5	1	14"	316L	1543	IFI
TMT 25	2	Pilot and Cooling Air	SPOOL #1	1	4"	316L	3767	IFI
TMT 25	2	Pilot and Cooling Air	SPOOL #2	1	4"	316L	3048	IFI
TMT 25	2	Pilot and Cooling Air	SPOOL #3	1	4"	316L	3757	IFI
TMT 25	2	Pilot and Cooling Air	SPOOL #4	1	2"	316L	1568	IFI
TMT 25	2	Pilot and Cooling Air	SPOOL #5	1	2"	316L	1568	IFI
TMT 25	2	Pilot and Cooling Air	SPOOL #6	1	1"	316L	1562	IFI
TMT 25	2	Pilot and Cooling Air	SPOOL #7	1	1"	316L	180	IFI
TMT 25	2	Pilot and Cooling Air	SPOOL #8	1	0,5"	316L	2262	IFI
TMT 25	2	Pilot and Cooling Air	SPOOL #9	1	1"	316L	1562	IFI
TMT 25	2	Pilot and Cooling Air	SPOOL #10	1	1"	316L	180	IFI
TMT 25	2	Pilot and Cooling Air	SPOOL #11	1	0,5"	316L	2112	IFI
TMT 25	2	Pilot and Cooling Air	SPOOL #12	1	0,5"	316L	2199	IFI
TMT 25	2	Pilot and Cooling Air	SPOOL #13	1	0,5"	316L	2112	IFI
TMT 25	3	Combustion Air	Fan Admission	1	14"	316L	1700	AIB
TMT 25	3	Combustion Air	Combustion Route	1	14"	316L	2400	AIB
TMT 25	3	Auxiliary Fan	Fan Admission	1	8"	316L	2300	AIB
TMT 25	3	Auxiliary Fan	Combustion Route	1	8"	316L	4300	AIB
TMT 25	3	First Stage Air	SPOOL #1	1	6"	316L	1178	IFI
TMT 25	3	First Stage Air	SPOOL #2	1	6"	316L	2576	IFI
TMT 25	3	First Stage Air	SPOOL #3	1	6"	316L	1447	IFI
TMT 25	3	First Stage Air	SPOOL #4	1	6"	316L	894	IFI
TMT 25	3	First Stage Air	SPOOL #5	1	6"	316L	1617	IFI
TMT 25	3	First Stage Air	SPOOL #6	1	6"	316L	284	IFI
TMT 25	3	First Stage Air	SPOOL #7	1	6"	316L	2586	IFI
TMT 25	3	First Stage Air	SPOOL #8	1	6"	316L	1160	IFI
TMT 25	3	First Stage Air	SPOOL #9	1	6"	316L	287	IFI
TMT 25	3	Second Stage Air	SPOOL #1	1	14"	316L	3079	IFI
TMT 25	3	Second Stage Air	SPOOL #2	1	14"	316L	4505	IFI
TMT 25	3	Second Stage Air	SPOOL #3	2	14"	316L	508	IFI
TMT 25	3	Second Stage Air	SPOOL #4	1	14"	316L	1543	IFI
TMT 25	3	Second Stage Air	SPOOL #5	1	14"	316L	1543	IFI
TMT 25	3	Pilot and Cooling Air	SPOOL #1	1	4"	316L	3767	IFI
TMT 25	3	Pilot and Cooling Air	SPOOL #2	1	4"	316L	3048	IFI
TMT 25	3	Pilot and Cooling Air	SPOOL #3	1	4"	316L	3757	IFI
TMT 25	3	Pilot and Cooling Air	SPOOL #4	1	2"	316L	1568	IFI
TMT 25	3	Pilot and Cooling Air	SPOOL #5	1	2"	316L	1568	IFI
TMT 25	3	Pilot and Cooling Air	SPOOL #6	1	1"	316L	1562	IFI
TMT 25	3	Pilot and Cooling Air	SPOOL #7	1	1"	316L	180	IFI
TMT 25	3	Pilot and Cooling Air	SPOOL #8	1	0,5"	316L	2262	IFI
TMT 25	3	Pilot and Cooling Air	SPOOL #9	1	1"	316L	1562	IFI

TMT 25	3	Pilot and Cooling Air	SPOOL #10	1	1"	316L	180	IFI
TMT 25	3	Pilot and Cooling Air	SPOOL #11	1	0,5"	316L	2112	IFI
TMT 25	3	Pilot and Cooling Air	SPOOL #12	1	0,5"	316L	2199	IFI
TMT 25	3	Pilot and Cooling Air	SPOOL #13	1	0,5"	316L	2112	IFI
TMT 25	4	Combustion Air	Fan Admission	1	14"	316L	3200	AIB
TMT 25	4	Combustion Air	Combustion Route	1	14"	316L	2300	AIB
TMT 25	4	Auxiliary Fan	Fan Admission	1	8"	316L	2400	AIB
TMT 25	4	Auxiliary Fan	Combustion Route	1	8"	316L	4400	AIB
TMT 25	4	First Stage Air	SPOOL #1	1	6"	316L	1178	IFI
TMT 25	4	First Stage Air	SPOOL #2	1	6"	316L	2576	IFI
TMT 25	4	First Stage Air	SPOOL #3	1	6"	316L	1447	IFI
TMT 25	4	First Stage Air	SPOOL #4	1	6"	316L	894	IFI
TMT 25	4	First Stage Air	SPOOL #5	1	6"	316L	1617	IFI
TMT 25	4	First Stage Air	SPOOL #6	1	6"	316L	284	IFI
TMT 25	4	First Stage Air	SPOOL #7	1	6"	316L	2586	IFI
TMT 25	4	First Stage Air	SPOOL #8	1	6"	316L	1160	IFI
TMT 25	4	First Stage Air	SPOOL #9	1	6"	316L	287	IFI
TMT 25	4	Second Stage Air	SPOOL #1	1	14"	316L	3079	IFI
TMT 25	4	Second Stage Air	SPOOL #2	1	14"	316L	4505	IFI
TMT 25	4	Second Stage Air	SPOOL #3	2	14"	316L	508	IFI
TMT 25	4	Second Stage Air	SPOOL #4	1	14"	316L	1543	IFI
TMT 25	4	Second Stage Air	SPOOL #5	1	14"	316L	1543	IFI
TMT 25	4	Pilot and Cooling Air	SPOOL #1	1	4"	316L	3767	IFI
TMT 25	4	Pilot and Cooling Air	SPOOL #2	1	4"	316L	3048	IFI
TMT 25	4	Pilot and Cooling Air	SPOOL #3	1	4"	316L	3757	IFI
TMT 25	4	Pilot and Cooling Air	SPOOL #4	1	2"	316L	1568	IFI
TMT 25	4	Pilot and Cooling Air	SPOOL #5	1	2"	316L	1568	IFI
TMT 25	4	Pilot and Cooling Air	SPOOL #6	1	1"	316L	1562	IFI
TMT 25	4	Pilot and Cooling Air	SPOOL #7	1	1"	316L	180	IFI
TMT 25	4	Pilot and Cooling Air	SPOOL #8	1	0,5"	316L	2262	IFI
TMT 25	4	Pilot and Cooling Air	SPOOL #9	1	1"	316L	1562	IFI
TMT 25	4	Pilot and Cooling Air	SPOOL #10	1	1"	316L	180	IFI
TMT 25	4	Pilot and Cooling Air	SPOOL #11	1	0,5"	316L	2112	IFI
TMT 25	4	Pilot and Cooling Air	SPOOL #12	1	0,5"	316L	2199	IFI
TMT 25	4	Pilot and Cooling Air	SPOOL #13	1	0,5"	316L	2112	IFI
TMT 25	1	Exhaust	Route 1	1	10"	316L	6100	AIB
TMT 25	1	Exhaust	Route 2	1	14"	316L	1000	AIB
TMT 25	1	Exhaust	Route 3	1	14"	316L	1600	AIB
TMT 25	1	Exhaust	Route 4	1	14"	316L	2100	AIB
TMT 25	1	Exhaust	Route 5	1	14"	316L	400	AIB
TMT 25	1	Exhaust	SPOOL #1	1	14"	316L	3079	IFI
TMT 25	1	Exhaust	SPOOL #2	1	14"	316L	2481	IFI
TMT 25	1	Exhaust	SPOOL #3	2	14"	316L	508	IFI
TMT 25	2	Exhaust	Route 1	1	10"	316L	4900	AIB
TMT 25	2	Exhaust	Route 2	1	14"	316L	6100	AIB
TMT 25	2	Exhaust	SPOOL #1	1	14"	316L	3079	IFI
TMT 25	2	Exhaust	SPOOL #2	1	14"	316L	2481	IFI

TMT 25	2	Exhaust	SPOOL #3	2	14"	316L	508	IFI
TMT 25	3	Exhaust	Route 1	1	10"	316L	4900	AIB
TMT 25	3	Exhaust	Route 2	1	14"	316L	6000	AIB
TMT 25	3	Exhaust	SPOOL #1	1	14"	316L	3079	IFI
TMT 25	3	Exhaust	SPOOL #2	1	14"	316L	2481	IFI
TMT 25	3	Exhaust	SPOOL #3	2	14"	316L	508	IFI
TMT 25	4	Exhaust	Route 1	1	10"	316L	3500	AIB
TMT 25	4	Exhaust	Route 2	1	14"	316L	6100	AIB
TMT 25	4	Exhaust	SPOOL #1	1	14"	316L	3079	IFI
TMT 25	4	Exhaust	SPOOL #2	1	14"	316L	2481	IFI
TMT 25	4	Exhaust	SPOOL #3	2	14"	316L	508	IFI
TMT 25	1	Hydraulic	Route	1	1 1/4"	316L	6100	AIB
TMT 25	1	Hydraulic	Route	1	1"	316L	6000	AIB
TMT 25	1	Hydraulic	Route	1	1/4"	316L	6200	AIB
TMT 25	1	Hydraulic	SPOOL #1	1	1,5"	316L	4185	IFI
TMT 25	1	Hydraulic	SPOOL #2	1	1,5"	316L	1943	IFI
TMT 25	1	Hydraulic	SPOOL #3	1	1,5"	316L	2763	IFI
TMT 25	1	Hydraulic	SPOOL #4	1	1,5"	316L	4078	IFI
TMT 25	1	Hydraulic	SPOOL #5	1	1,5"	316L	4330	IFI
TMT 25	1	Hydraulic	SPOOL #1	1	1"	316L	4185	IFI
TMT 25	1	Hydraulic	SPOOL #2	1	1"	316L	1943	IFI
TMT 25	1	Hydraulic	SPOOL #3	1	1"	316L	2763	IFI
TMT 25	1	Hydraulic	SPOOL #4	1	1"	316L	4078	IFI
TMT 25	1	Hydraulic	SPOOL #5	1	1"	316L	4330	IFI
THD25	1	Hydraulic	Route	1	1/4"	316L	15600	AIB
THD25	1	Hydraulic	Route	1	1"	316L	15100	AIB
THD25	1	Hydraulic	Route	1	1 1/4"	316L	14900	AIB
THD25	1	Hydraulic	On Board	1	20	316L	2020	IFI
THD25	1	Hydraulic	On Board	1	20	316L	1768	IFI
THD25	1	Hydraulic	On Board	1	20	316L	2647	IFI
THD25	1	Hydraulic	On Board	1	20	316L	1536	IFI
THD25	1	Hydraulic	On Board	1	20	316L	3653	IFI
THD25	1	Hydraulic	On Board	1	20	316L	2547	IFI
THD25	1	Hydraulic	On Board	1	20	316L	5000	IFI
THD25	1	Hydraulic	On Board	1	20	316L	1820	IFI
THD25	1	Hydraulic	On Board	1	20	316L	1755	IFI
THD25	1	Hydraulic	On Board	1	30	316L	1850	IFI
THD25	1	Hydraulic	On Board	1	20	316L	433	IFI
THD25	1	Hydraulic	On Board	1	20	316L	1536	IFI
THD25	1	Hydraulic	On Board	1	20	316L	3056	IFI
THD25	1	Hydraulic	On Board	1	20	316L	1400	IFI
THD25	1	Hydraulic	On Board	1	20	316L	1768	IFI
THD25	1	Hydraulic	On Board	1	20	316L	3058	IFI
THD25	1	Hydraulic	On Board	1	20	316L	5900	IFI
THD25	1	Hydraulic	On Board	1	20	316L	2894	IFI
THD25	1	Hydraulic	On Board	1	20	316L	4968	IFI
THD25	1	Hydraulic	On Board	1	20	316L	3000	IFI


THD25	1	Hydraulic	On Board	1	20	316L	1671	IFI
THD25	1	Hydraulic	On Board	1	20	316L	3922	IFI
TMT 25	2	Hydraulic	Route	1	1 1/4"	316L	6100	AIB
TMT 25	2	Hydraulic	Route	1	1"	316L	6200	AIB
TMT 25	2	Hydraulic	Route	1	1/4"	316L	2600	AIB
TMT 25	2	Hydraulic	SPOOL #1	1	1,5"	316L	4185	IFI
TMT 25	2	Hydraulic	SPOOL #2	1	1,5"	316L	1943	IFI
TMT 25	2	Hydraulic	SPOOL #3	1	1,5"	316L	2763	IFI
TMT 25	2	Hydraulic	SPOOL #4	1	1,5"	316L	4078	IFI
TMT 25	2	Hydraulic	SPOOL #5	1	1,5"	316L	4330	IFI
TMT 25	2	Hydraulic	SPOOL #1	1	1"	316L	4185	IFI
TMT 25	2	Hydraulic	SPOOL #2	1	1"	316L	1943	IFI
TMT 25	2	Hydraulic	SPOOL #3	1	1"	316L	2763	IFI
TMT 25	2	Hydraulic	SPOOL #4	1	1"	316L	4078	IFI
TMT 25	2	Hydraulic	SPOOL #5	1	1"	316L	4330	IFI
THD25	2	Hydraulic	Route	1	1/4"	316L	15200	AIB
THD25	2	Hydraulic	Route	1	1"	316L	14800	AIB
THD25	2	Hydraulic	Route	1	1 1/4"	316L	12000	AIB
THD25	2	Hydraulic	On Board	1	20	316L	2020	IFI
THD25	2	Hydraulic	On Board	1	20	316L	1768	IFI
THD25	2	Hydraulic	On Board	1	20	316L	2647	IFI
THD25	2	Hydraulic	On Board	1	20	316L	1536	IFI
THD25	2	Hydraulic	On Board	1	20	316L	3653	IFI
THD25	2	Hydraulic	On Board	1	20	316L	2547	IFI
THD25	2	Hydraulic	On Board	1	20	316L	5000	IFI
THD25	2	Hydraulic	On Board	1	20	316L	1820	IFI
THD25	2	Hydraulic	On Board	1	20	316L	1755	IFI
THD25	2	Hydraulic	On Board	1	30	316L	1850	IFI
THD25	2	Hydraulic	On Board	1	20	316L	433	IFI
THD25	2	Hydraulic	On Board	1	20	316L	1536	IFI
THD25	2	Hydraulic	On Board	1	20	316L	3056	IFI
THD25	2	Hydraulic	On Board	1	20	316L	1400	IFI
THD25	2	Hydraulic	On Board	1	20	316L	1768	IFI
THD25	2	Hydraulic	On Board	1	20	316L	3058	IFI
THD25	2	Hydraulic	On Board	1	20	316L	5900	IFI
THD25	2	Hydraulic	On Board	1	20	316L	2894	IFI
THD25	2	Hydraulic	On Board	1	20	316L	4968	IFI
THD25	2	Hydraulic	On Board	1	20	316L	3000	IFI
THD25	2	Hydraulic	On Board	1	20	316L	1671	IFI
THD25	2	Hydraulic	On Board	1	20	316L	3922	IFI
TMT 25	3	Hydraulic	Route	1	1 1/4"	316L	6100	AIB
TMT 25	3	Hydraulic	Route	1	1"	316L	6200	AIB
TMT 25	3	Hydraulic	Route	1	1/4"	316L	6400	AIB
TMT 25	3	Hydraulic	SPOOL #1	1	1,5"	316L	4185	IFI
TMT 25	3	Hydraulic	SPOOL #2	1	1,5"	316L	1943	IFI
TMT 25	3	Hydraulic	SPOOL #3	1	1,5"	316L	2763	IFI
TMT 25	3	Hydraulic	SPOOL #4	1	1,5"	316L	4078	IFI
TMT 25	3	Hydraulic	SPOOL #5	1	1,5"	316L	4330	IFI



TMT 25	3	Hydraulic	SPOOL #1	1	1"	316L	4185	IFI
TMT 25	3	Hydraulic	SPOOL #2	1	1"	316L	1943	IFI
TMT 25	3	Hydraulic	SPOOL #3	1	1"	316L	2763	IFI
TMT 25	3	Hydraulic	SPOOL #4	1	1"	316L	4078	IFI
TMT 25	3	Hydraulic	SPOOL #5	1	1"	316L	4330	IFI
THD25	3	Hydraulic	Route	1	1/4"	316L	6400	AIB
THD25	3	Hydraulic	Route	1	1"	316L	14900	AIB
THD25	3	Hydraulic	Route	1	1 1/4"	316L	14600	AIB
THD25	3	Hydraulic	On Board	1	20	316L	2020	IFI
THD25	3	Hydraulic	On Board	1	20	316L	1768	IFI
THD25	3	Hydraulic	On Board	1	20	316L	2647	IFI
THD25	3	Hydraulic	On Board	1	20	316L	1536	IFI
THD25	3	Hydraulic	On Board	1	20	316L	3653	IFI
THD25	3	Hydraulic	On Board	1	20	316L	2547	IFI
THD25	3	Hydraulic	On Board	1	20	316L	5000	IFI
THD25	3	Hydraulic	On Board	1	20	316L	1820	IFI
THD25	3	Hydraulic	On Board	1	20	316L	1755	IFI
THD25	3	Hydraulic	On Board	1	30	316L	1850	IFI
THD25	3	Hydraulic	On Board	1	20	316L	433	IFI
THD25	3	Hydraulic	On Board	1	20	316L	1536	IFI
THD25	3	Hydraulic	On Board	1	20	316L	3056	IFI
THD25	3	Hydraulic	On Board	1	20	316L	1400	IFI
THD25	3	Hydraulic	On Board	1	20	316L	1768	IFI
THD25	3	Hydraulic	On Board	1	20	316L	3058	IFI
THD25	3	Hydraulic	On Board	1	20	316L	5900	IFI
THD25	3	Hydraulic	On Board	1	20	316L	2894	IFI
THD25	3	Hydraulic	On Board	1	20	316L	4968	IFI
THD25	3	Hydraulic	On Board	1	20	316L	3000	IFI
THD25	3	Hydraulic	On Board	1	20	316L	1671	IFI
THD25	3	Hydraulic	On Board	1	20	316L	3922	IFI
TMT 25	4	Hydraulic	Route	1	1 1/4"	316L	7000	AIB
TMT 25	4	Hydraulic	Route	1	1"	316L	7000	AIB
TMT 25	4	Hydraulic	Route	1	1/4"	316L	7100	AIB
TMT 25	4	Hydraulic	SPOOL #1	1	1,5"	316L	4185	IFI
TMT 25	4	Hydraulic	SPOOL #2	1	1,5"	316L	1943	IFI
TMT 25	4	Hydraulic	SPOOL #3	1	1,5"	316L	2763	IFI
TMT 25	4	Hydraulic	SPOOL #4	1	1,5"	316L	4078	IFI
TMT 25	4	Hydraulic	SPOOL #5	1	1,5"	316L	4330	IFI
TMT 25	4	Hydraulic	SPOOL #1	1	1"	316L	4185	IFI
TMT 25	4	Hydraulic	SPOOL #2	1	1"	316L	1943	IFI
TMT 25	4	Hydraulic	SPOOL #3	1	1"	316L	2763	IFI
TMT 25	4	Hydraulic	SPOOL #4	1	1"	316L	4078	IFI
TMT 25	4	Hydraulic	SPOOL #5	1	1"	316L	4330	IFI
THD25	4	Hydraulic	Route	1	1/4"	316L	16600	AIB
THD25	4	Hydraulic	Route	1	1"	316L	16000	AIB
THD25	4	Hydraulic	Route	1	1 1/4"	316L	15800	AIB
THD25	4	Hydraulic	On Board	1	20	316L	2020	IFI
THD25	4	Hydraulic	On Board	1	20	316L	1768	IFI

THD25	4	Hydraulic	On Board	1	20	316L	2647	IFI
THD25	4	Hydraulic	On Board	1	20	316L	1536	IFI
THD25	4	Hydraulic	On Board	1	20	316L	3653	IFI
THD25	4	Hydraulic	On Board	1	20	316L	2547	IFI
THD25	4	Hydraulic	On Board	1	20	316L	5000	IFI
THD25	4	Hydraulic	On Board	1	20	316L	1820	IFI
THD25	4	Hydraulic	On Board	1	20	316L	1755	IFI
THD25	4	Hydraulic	On Board	1	30	316L	1850	IFI
THD25	4	Hydraulic	On Board	1	20	316L	433	IFI
THD25	4	Hydraulic	On Board	1	20	316L	1536	IFI
THD25	4	Hydraulic	On Board	1	20	316L	3056	IFI
THD25	4	Hydraulic	On Board	1	20	316L	1400	IFI
THD25	4	Hydraulic	On Board	1	20	316L	1768	IFI
THD25	4	Hydraulic	On Board	1	20	316L	3058	IFI
THD25	4	Hydraulic	On Board	1	20	316L	5900	IFI
THD25	4	Hydraulic	On Board	1	20	316L	2894	IFI
THD25	4	Hydraulic	On Board	1	20	316L	4968	IFI
THD25	4	Hydraulic	On Board	1	20	316L	3000	IFI
THD25	4	Hydraulic	On Board	1	20	316L	1671	IFI
THD25	4	Hydraulic	On Board	1	20	316L	3922	IFI
TMT 25	1	Main Gas	ROUTE 1	1	4"	P235TR1	12300	AIB
TMT 25	1	Main Gas	SPOOL #1	1	4"	P235TR1	639	IFI
TMT 25	1	Main Gas	SPOOL #2	1	4"	P235TR1	567	IFI
TMT 25	1	Main Gas	SPOOL #3	1	4"	P235TR1	2527	IFI
TMT 25	1	Main Gas	SPOOL #4	1	4"	P235TR1	1423	IFI
TMT 25	1	Main Gas	SPOOL #5	2	4"	P235TR1	354	IFI
TMT 25	1	Main Gas	SPOOL #6	1	4"	P235TR1	389	IFI
TMT 25	1	Main Gas	SPOOL #7	1	4"	P235TR1	217	IFI
TMT 25	1	Main Gas	SPOOL #8	1	4"	P235TR1	1749	IFI
TMT 25	1	Main Gas	SPOOL #9	1	4"	P235TR1	354	IFI
TMT 25	1	Main Gas	SPOOL #10	1	4"	P235TR1	387	IFI
TMT 25	1	Main Gas	SPOOL #11	1	4"	P235TR1	217	IFI
TMT 25	1	Pilot Gas	SPOOL #1	1	1/2"	P235TR1	3950	IFI
TMT 25	1	Pilot Gas	SPOOL #2	1	1/2"	P235TR1	1098	IFI
TMT 25	1	Pilot Gas	SPOOL #3	1	1/2"	P235TR1	421	IFI
TMT 25	1	Pilot Gas	SPOOL #4	1	1/2"	P235TR1	451	IFI
TMT 25	2	Main Gas	ROUTE 1	1	4"	P235TR1	6300	AIB
TMT 25	2	Main Gas	SPOOL #1	1	4"	P235TR1	639	IFI
TMT 25	2	Main Gas	SPOOL #2	1	4"	P235TR1	567	IFI
TMT 25	2	Main Gas	SPOOL #3	1	4"	P235TR1	2527	IFI
TMT 25	2	Main Gas	SPOOL #4	1	4"	P235TR1	1423	IFI
TMT 25	2	Main Gas	SPOOL #5	2	4"	P235TR1	354	IFI
TMT 25	2	Main Gas	SPOOL #6	1	4"	P235TR1	389	IFI
TMT 25	2	Main Gas	SPOOL #7	1	4"	P235TR1	217	IFI
TMT 25	2	Main Gas	SPOOL #8	1	4"	P235TR1	1749	IFI
TMT 25	2	Main Gas	SPOOL #9	1	4"	P235TR1	354	IFI
TMT 25	2	Main Gas	SPOOL #10	1	4"	P235TR1	387	IFI
TMT 25	2	Main Gas	SPOOL #11	1	4"	P235TR1	217	IFI

TMT 25	2	Pilot Gas	SPOOL #1	1	1/2"	P235TR1	3950	IFI
TMT 25	2	Pilot Gas	SPOOL #2	1	1/2"	P235TR1	1098	IFI
TMT 25	2	Pilot Gas	SPOOL #3	1	1/2"	P235TR1	421	IFI
TMT 25	2	Pilot Gas	SPOOL #4	1	1/2"	P235TR1	451	IFI
TMT 25	3	Main Gas	ROUTE 1	1	4"	P235TR1	6400	AIB
TMT 25	3	Main Gas	SPOOL #1	1	4"	P235TR1	639	IFI
TMT 25	3	Main Gas	SPOOL #2	1	4"	P235TR1	567	IFI
TMT 25	3	Main Gas	SPOOL #3	1	4"	P235TR1	2527	IFI
TMT 25	3	Main Gas	SPOOL #4	1	4"	P235TR1	1423	IFI
TMT 25	3	Main Gas	SPOOL #5	2	4"	P235TR1	354	IFI
TMT 25	3	Main Gas	SPOOL #6	1	4"	P235TR1	389	IFI
TMT 25	3	Main Gas	SPOOL #7	1	4"	P235TR1	217	IFI
TMT 25	3	Main Gas	SPOOL #8	1	4"	P235TR1	1749	IFI
TMT 25	3	Main Gas	SPOOL #9	1	4"	P235TR1	354	IFI
TMT 25	3	Main Gas	SPOOL #10	1	4"	P235TR1	387	IFI
TMT 25	3	Main Gas	SPOOL #11	1	4"	P235TR1	217	IFI
TMT 25	3	Pilot Gas	SPOOL #1	1	1/2"	P235TR1	3950	IFI
TMT 25	3	Pilot Gas	SPOOL #2	1	1/2"	P235TR1	1098	IFI
TMT 25	3	Pilot Gas	SPOOL #3	1	1/2"	P235TR1	421	IFI
TMT 25	3	Pilot Gas	SPOOL #4	1	1/2"	P235TR1	451	IFI
TMT 25	4	Main Gas	ROUTE 1	1	4"	P235TR1	6300	AIB
TMT 25	4	Main Gas	SPOOL #1	1	4"	P235TR1	639	IFI
TMT 25	4	Main Gas	SPOOL #2	1	4"	P235TR1	567	IFI
TMT 25	4	Main Gas	SPOOL #3	1	4"	P235TR1	2527	IFI
TMT 25	4	Main Gas	SPOOL #4	1	4"	P235TR1	1423	IFI
TMT 25	4	Main Gas	SPOOL #5	2	4"	P235TR1	354	IFI
TMT 25	4	Main Gas	SPOOL #6	1	4"	P235TR1	389	IFI
TMT 25	4	Main Gas	SPOOL #7	1	4"	P235TR1	217	IFI
TMT 25	4	Main Gas	SPOOL #8	1	4"	P235TR1	1749	IFI
TMT 25	4	Main Gas	SPOOL #9	1	4"	P235TR1	354	IFI
TMT 25	4	Main Gas	SPOOL #10	1	4"	P235TR1	387	IFI
TMT 25	4	Main Gas	SPOOL #11	1	4"	P235TR1	217	IFI
TMT 25	4	Pilot Gas	SPOOL #1	1	1/2"	P235TR1	3950	IFI
TMT 25	4	Pilot Gas	SPOOL #2	1	1/2"	P235TR1	1098	IFI
TMT 25	4	Pilot Gas	SPOOL #3	1	1/2"	P235TR1	421	IFI
TMT 25	4	Pilot Gas	SPOOL #4	1	1/2"	P235TR1	451	IFI
TMT 25	1	Oxygen	ROUTE 1	1	3"	316L	12700	AIB
TMT 25	1	Oxygen	SPOOLS	1	2"	316L	17300	IFI
TMT 25	2	Oxygen	ROUTE 1	1	3"	316L	6800	AIB
TMT 25	2	Oxygen	SPOOLS	1	2"	316L	17300	IFI
TMT 25	3	Oxygen	ROUTE 1	1	3"	316L	6800	AIB
TMT 25	3	Oxygen	SPOOLS	1	2"	316L	17300	IFI
TMT 25	4	Oxygen	ROUTE 1	1	3"	316L	6800	AIB
TMT 25	4	Oxygen	SPOOLS	1	2"	316L	17300	IFI

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

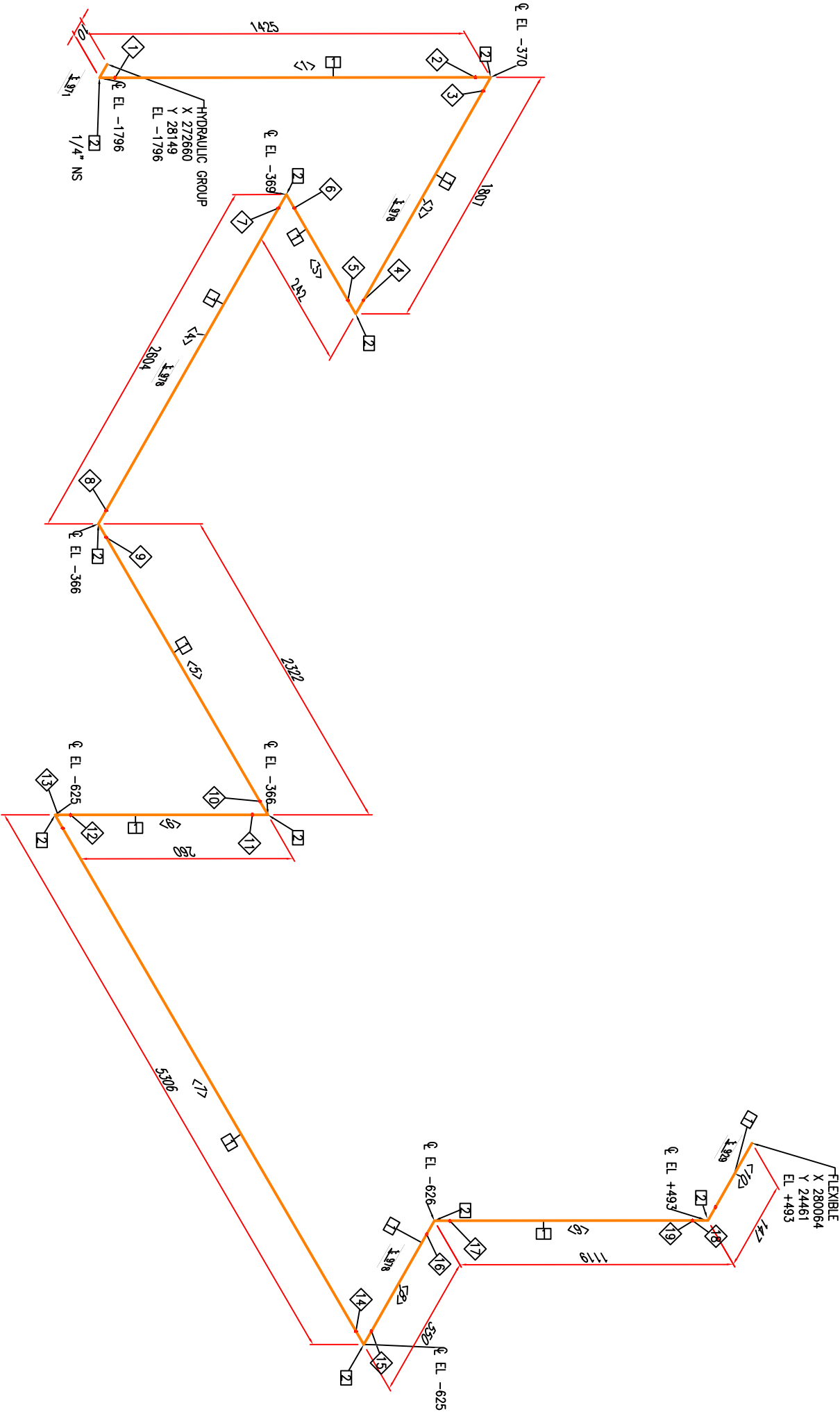
#### HOLDER 25 – HYDRAULIC AIB SCOPE

- Line 1
- Line 2
- Line 3
- Line 4





WELDING LIST		
ID	DN "	TYPE
1	1/4"	BUTTWELD
2	1/4"	BUTTWELD
3	1/4"	BUTTWELD
4	1/4"	BUTTWELD
5	1/4"	BUTTWELD
6	1/4"	BUTTWELD
7	1/4"	BUTTWELD
8	1/4"	BUTTWELD
9	1/4"	BUTTWELD
10	1/4"	BUTTWELD
11	1/4"	BUTTWELD
12	1/4"	BUTTWELD
13	1/4"	BUTTWELD
14	1/4"	BUTTWELD
15	1/4"	BUTTWELD
16	1/4"	BUTTWELD
17	1/4"	BUTTWELD
18	1/4"	BUTTWELD
19	1/4"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
PIPING		
1	15.6M	1/4"
PIPE CS, EN 10217-1		
316L		
FITTINGS		
2	10	1/4"
ELBOW 90° CS RL – BW, EN 10253-1		
316L		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1/4"	1406MM
2	1/4"	1788MM
3	1/4"	222MM
4	1/4"	2584MM
5	1/4"	2303MM
6	1/4"	240MM
7	1/4"	5287MM
8	1/4"	530MM
9	1/4"	1099MM
10	1/4"	137MM

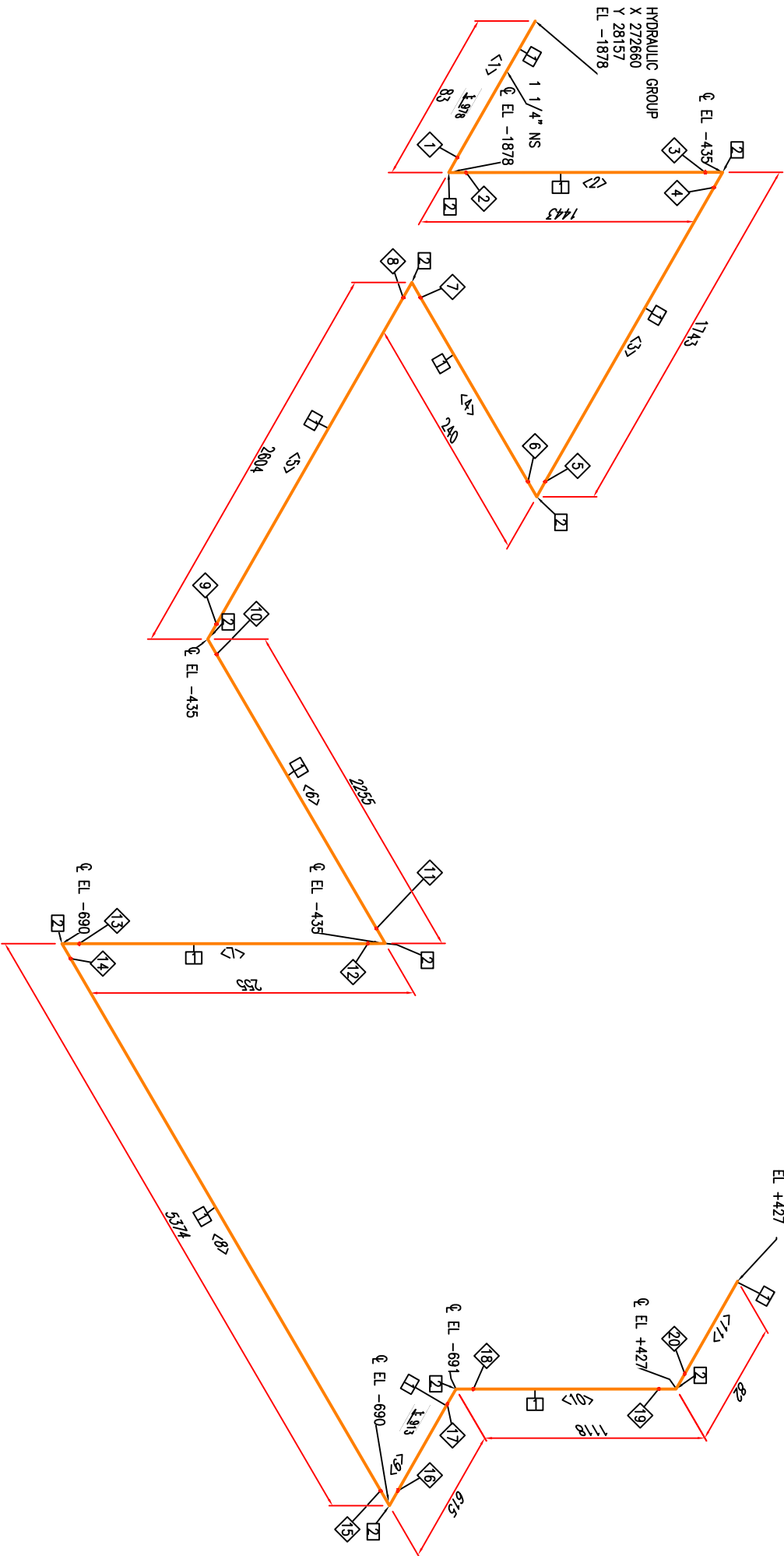
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Rev.		Modification						None	Date
</									





WELDING LIST		
ID	DN "	TYPE
1	1/4"	BUTTWELD
2	1/4"	BUTTWELD
3	1/4"	BUTTWELD
4	1/4"	BUTTWELD
5	1/4"	BUTTWELD
6	1/4"	BUTTWELD
7	1/4"	BUTTWELD
8	1/4"	BUTTWELD
9	1/4"	BUTTWELD
10	1/4"	BUTTWELD
11	1/4"	BUTTWELD
12	1/4"	BUTTWELD
13	1/4"	BUTTWELD
14	1/4"	BUTTWELD
15	1/4"	BUTTWELD
16	1/4"	BUTTWELD
17	1/4"	BUTTWELD
18	1/4"	BUTTWELD
19	1/4"	BUTTWELD
20	1/4"	BUTTWELD



MATERIAL LIST			
ID	QTY	DN "	MATERIAL
PIPING			
1	14.9M	1 1/4"	PIPE CS, EN 10217-1
FITTINGS			
2	10	1 1/4"	ELBOW 90° CS RL - BW, EN 10253-1
			316L

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1 1/4"	35MM
2	1 1/4"	1348MM
3	1 1/4"	1648MM
4	1 1/4"	144MM
5	1 1/4"	2508MM
6	1 1/4"	2159MM
7	1 1/4"	160MM
8	1 1/4"	5278MM
9	1 1/4"	519MM
10	1 1/4"	1022MM
11	1 1/4"	35MM

Rev.	Modification								None	Date
Nothing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.										
Tolerance for dimensions without tool according to ISO 2768-mK										Material
More than	0.5	3	6	30	120	400	1000	2000	Drawing	None
Less	3	6	30	120	400	1000	2000	4000	Checked	
Machining Tool	±1	±1	±2	±3	±5	±8	±12	±20	Verified	
Handmade	±1	±1	±2	±3	±5	±8	±12	±20	Verified	
										Weight (kg)
										316L

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# insertec

Furnaces & Refractories



2558-3321-THD-M-ESR41-3

Customer Number

1

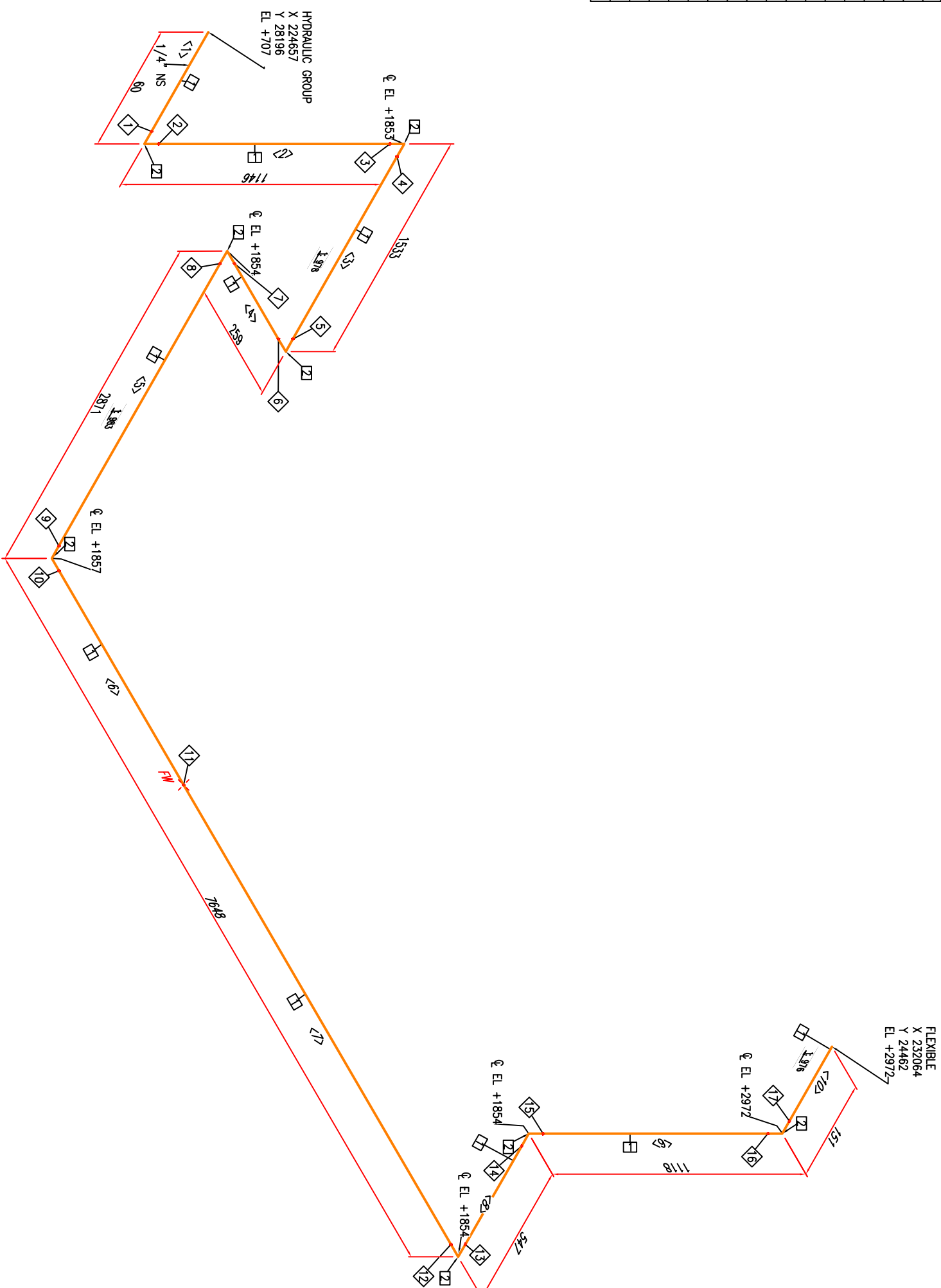
6/6



WELDING LIST		
ID	DN "	TYPE
1	1/4"	BUTTWELD
2	1/4"	BUTTWELD
3	1/4"	BUTTWELD
4	1/4"	BUTTWELD
5	1/4"	BUTTWELD
6	1/4"	BUTTWELD
7	1/4"	BUTTWELD
8	1/4"	BUTTWELD
9	1/4"	BUTTWELD
10	1/4"	BUTTWELD
11	1/4"	FIELDWELD
12	1/4"	BUTTWELD
13	1/4"	BUTTWELD
14	1/4"	BUTTWELD
15	1/4"	BUTTWELD
16	1/4"	BUTTWELD
17	1/4"	BUTTWELD

MATERIAL LIST			
ID	QTY	DN "	DESCRIPTION MATERIAL
PIPING			
1	15.2M	1/4"	PIPE CS, EN 10217-1 316L
FITTINGS			
2	8	1/4"	ELBOW 90° CS RL - BW, EN 10253-1 316L

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1/4"	50MM
2	1/4"	1126MM
3	1/4"	1514MM
4	1/4"	239MM
5	1/4"	2851MM
6	1/4"	1629MM
7	1/4"	6001MM
8	1/4"	527MM
9	1/4"	1099MM
10	1/4"	141MM



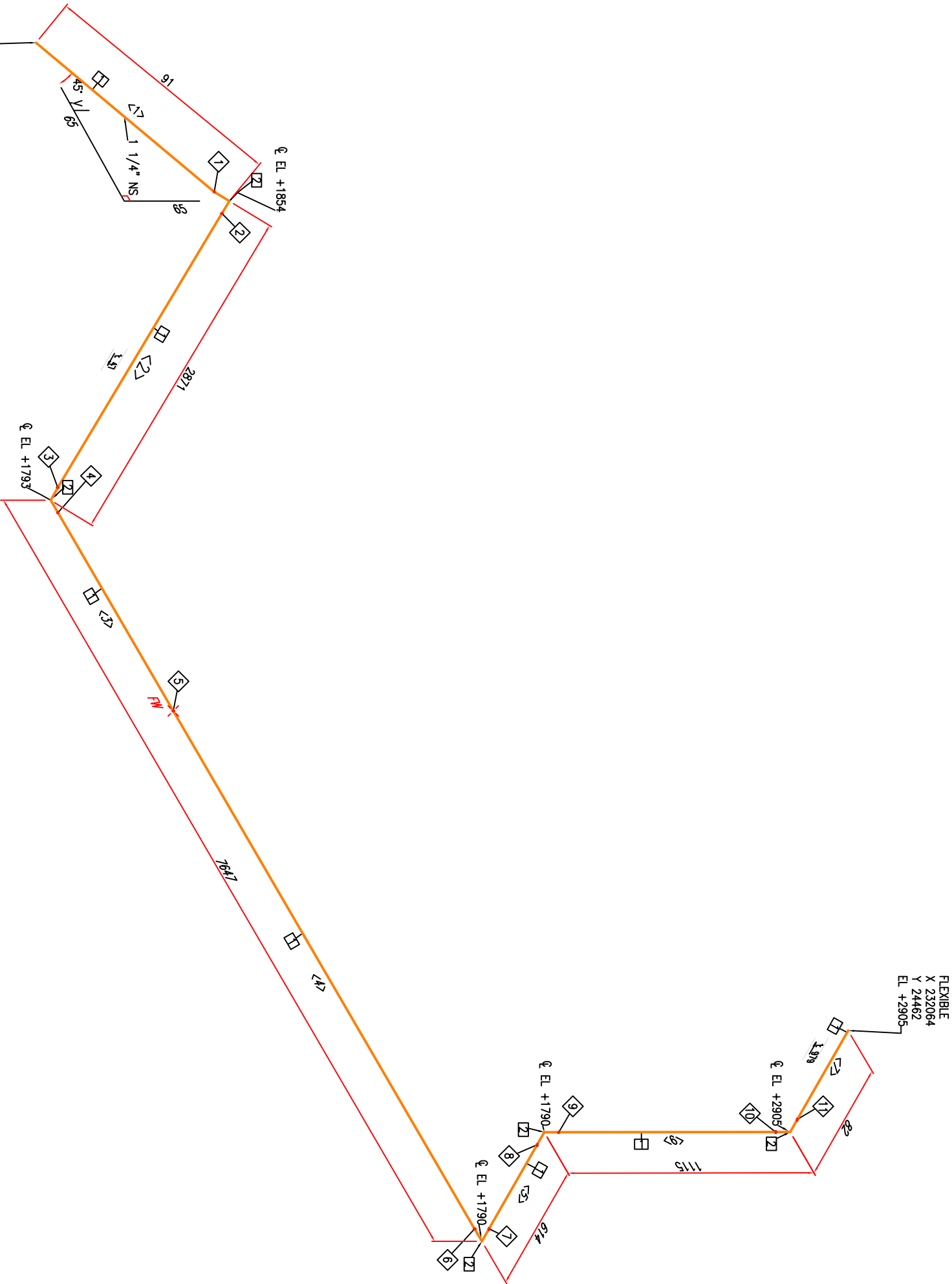
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Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization															
Tolerance for dimensions without tol according to ISO 2768-mK										Name		Date		Material	
More than		0.5	3	6	30	120	400	1000	2000	Drawing		18/09/2025	316L		
Less		3	6	30	120	400	1000	2000	4000	Checked		18/09/2025	Weight (kg)		
Machining Tool		±	±	±	±	±	±	±	±	Verified		19/09/2025			
Welded		0.1	0.1	0.2	0.3	0.5	0.8	1.2	2						
Customer:		0.5	1	1.5	2	3	Project: 6								
ALINVEST										A2					
Scale:										1:1.5					
										Part Number		Revision			
										2558-3322-THD-M-ESR41-1		A			
Furnaces & Refractories										Customer Number		Sheet			
										-		I/6			







WELDING LIST		
ID	DN "	TYPE
1	1 1/4"	BUTTWELD
2	1 1/4"	BUTTWELD
3	1 1/4"	BUTTWELD
4	1 1/4"	BUTTWELD
5	1 1/4"	FIELDWELD
6	1 1/4"	BUTTWELD
7	1 1/4"	BUTTWELD
8	1 1/4"	BUTTWELD
9	1 1/4"	BUTTWELD
10	1 1/4"	BUTTWELD
11	1 1/4"	BUTTWELD



MATERIAL LIST		
ID	QTY	DESCRIPTION
PPING		
1	12.0M	1 1/4" PIPE CS, EN 10217-1
FITTINGS		
2	5	1 1/4" ELBOW 90° CS RL – BW, EN 10253-1

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1 1/4"	44MM
2	1 1/4"	2775MM
3	1 1/4"	1552MM
4	1 1/4"	6001MM
5	1 1/4"	518MM
6	1 1/4"	1019MM
7	1 1/4"	35MM

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Rev.	Modification	None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK			
More than	0.5	3	6
Less	3	6	30
Machine Tool	±	±	±
Welded	±	±	±
Customer:	0.5	1	1.5

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Furnaces & Refractories

Project

Methods

Port Number

Customer Number

2558-3322-THD-M-ESR41-3

-

Revision

A

Sheet

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ALINVEST

Scale: 1:15

TM1 (FVRB-2,5-25)  
HYDRAULIC ROUTE

ALINVEST

TM1 (FVRB-2,5-25)  
HYDRAULIC ROUTE

Date

18/09/2023

Weight (kg)

316L

19/09/2023

Verified

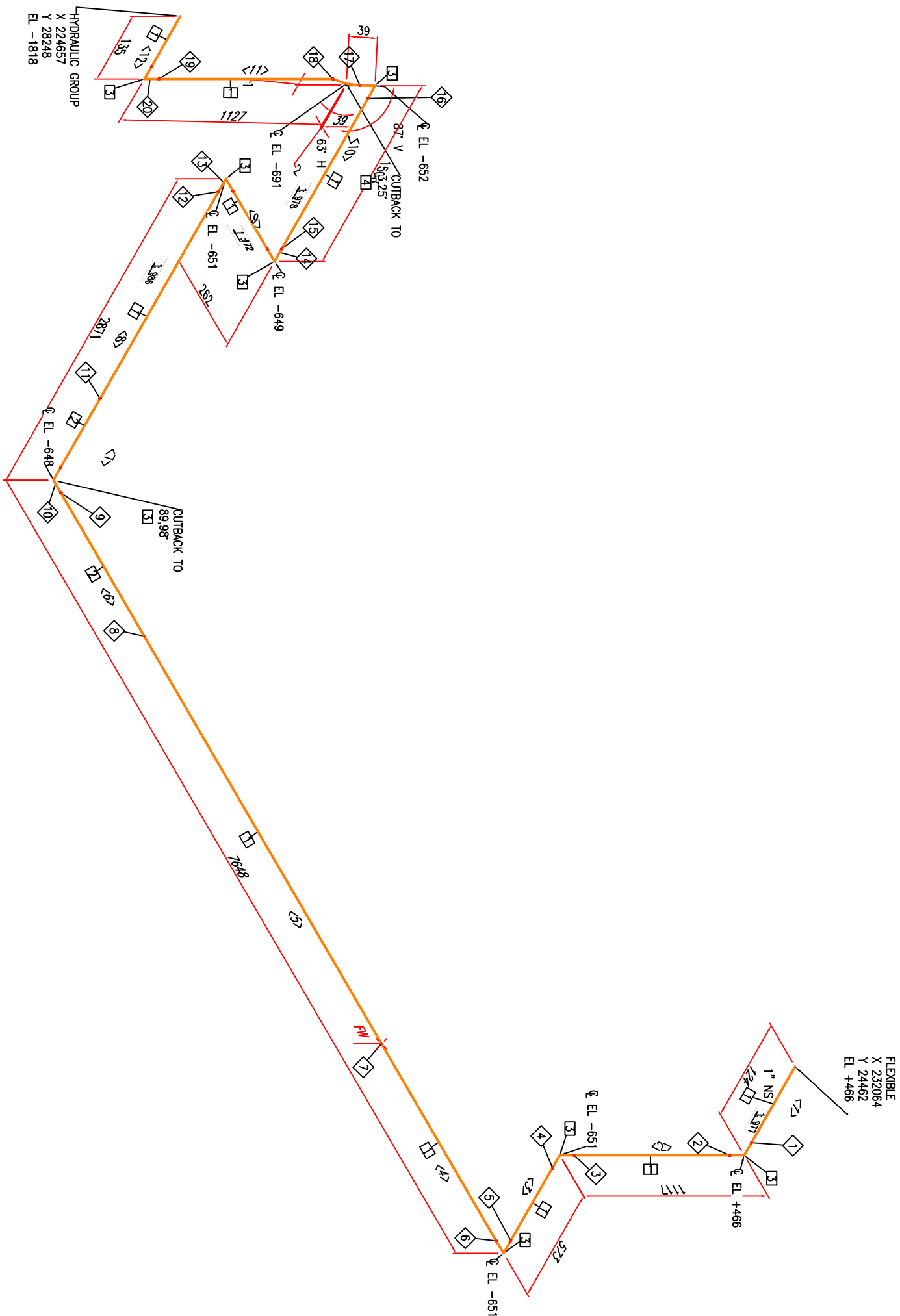




WELDING LIST		
ID	DN "	TYPE
1	1"	BUTTWELD
2	1"	BUTTWELD
3	1"	BUTTWELD
4	1"	BUTTWELD
5	1"	BUTTWELD
6	1"	BUTTWELD
7	1"	FIELDWELD
8	1"	WELD
9	1"	BUTTWELD
10	1"	BUTTWELD
11	1"	WELD
12	1"	BUTTWELD
13	1"	BUTTWELD
14	1"	BUTTWELD
15	1"	BUTTWELD
16	1"	BUTTWELD
17	1"	BUTTWELD
18	1"	BUTTWELD
19	1"	BUTTWELD
20	1"	BUTTWELD

MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PINGING				
1	14.7M	1"	PIPE CS, EN 10217-1	316L
2	0.2M	1"	PIPE CS, EN 10217-1	316L
FITTINGS				
3	8	1"	ELBOW 90° CS RL – BW, EN 10253-1	316L
4	1	1"	ELBO 45° RL – BW, EN 10253-1	316L

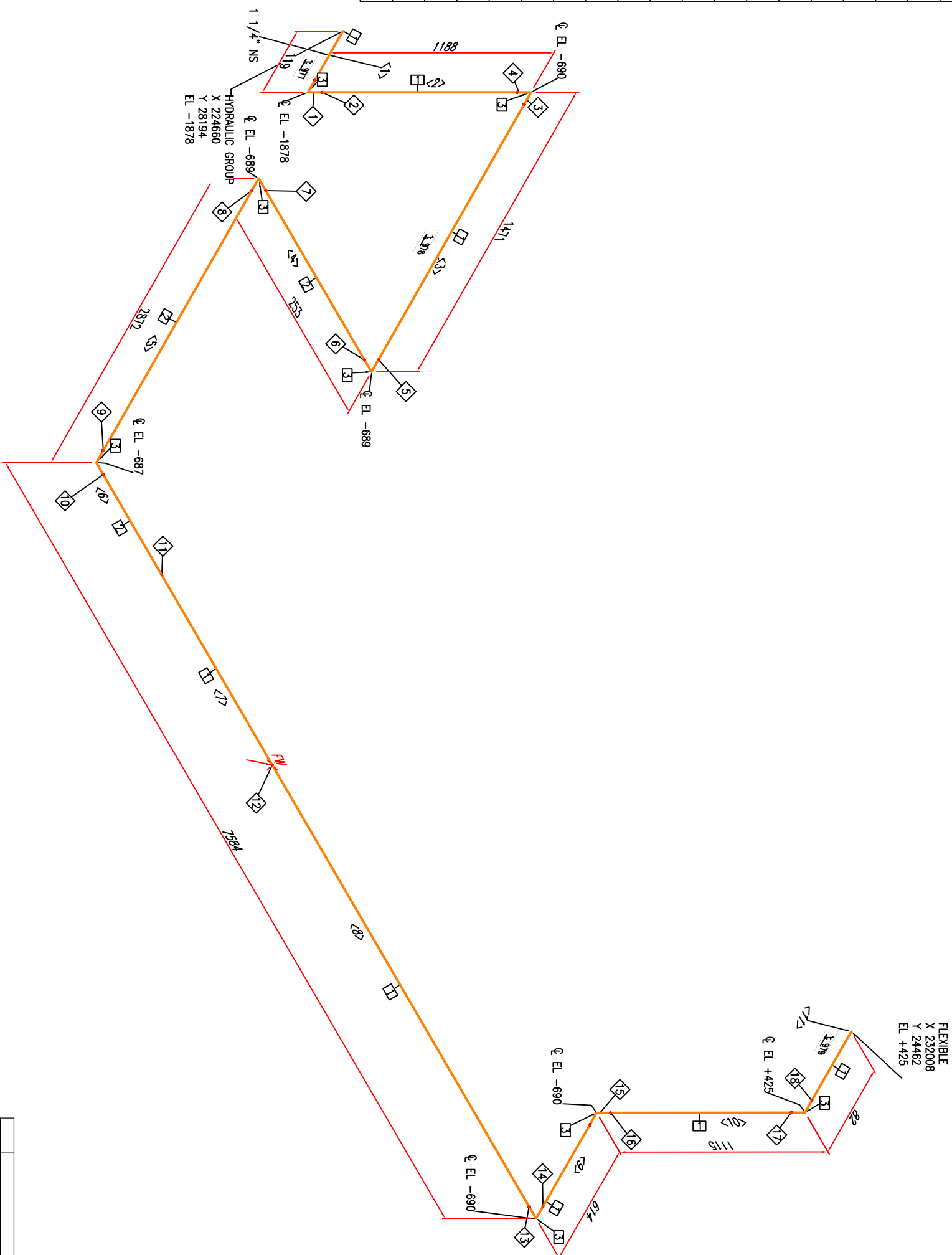
PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1"	86MM
2	1"	1041MM
3	1"	498MM
4	1"	1494MM
5	1"	6000MM
6	1"	89MM
7	1"	82MM
8	1"	2714MM
9	1"	186MM
10	1"	1433MM
11	1"	1088MM
12	1"	98MM



Rev#	Modification				Name	Date
<p><b>Noting is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.</b></p>						
Tolerance for dimensions without tol. according to ISO 2768-mK		Material		36L		
More than	0.5	3	6	30	120	400
Less	3	6	30	120	400	1000
Machine Tool	±	±	±	±	±	±
Welded	0.1	0.1	0.2	0.3	0.5	0.8
Customer:	0.5	1	15	2	3	
ALINVEST		Project: 6		ALINVEST		
Scale		A2		TMT (FVRB-2.5-25)		
1:15				HYDRAULIC ROUTE		
Project Method:	Part Number		Date		Revision	
	2558-3323-THD-M-ESR41-2		18/09/2025		A	
Customer Number	-		18/09/2025		Sheet	
				Weight (kg)		2/6



WELDING LIST		
ID	DN "	TYPE
1	1/4"	BUTTWELD
2	1/4"	BUTTWELD
3	1/4"	BUTTWELD
4	1/4"	BUTTWELD
5	1/4"	BUTTWELD
6	1/4"	BUTTWELD
7	1/4"	BUTTWELD
8	1/4"	BUTTWELD
9	1/4"	BUTTWELD
10	1/4"	BUTTWELD
11	1/4"	WELD
12	1/4"	FIELDWELD
13	1/4"	BUTTWELD
14	1/4"	BUTTWELD
15	1/4"	BUTTWELD
16	1/4"	BUTTWELD
17	1/4"	BUTTWELD
18	1/4"	BUTTWELD



MATERIAL LIST			
ID	QTY	DN "	MATERIAL
PIPING			
1	11.6M	1 1/4"	PIPE CS, EN 10217-1
2	3.0M	1 1/4"	PIPE CS, EN 10217-1
FITTINGS			
3	8	1 1/4"	ELBOW 90° CS RL - BW, EN 10253-1

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1 1/4"	71MM
2	1 1/4"	1093MM
3	1 1/4"	1375MM
4	1 1/4"	157MM
5	1 1/4"	277MM
6	1 1/4"	57MM
7	1 1/4"	1432MM
8	1 1/4"	6001MM
9	1 1/4"	518MM
10	1 1/4"	1019MM
11	1 1/4"	35MM

Rev.	Modification										Name	Date
Drawing is property of INSERTC. Must not be copied or transferred to third parties in any way without written authorization.												
Tolerance for dimensions without tol. according to ISO 2768-MK												
More than	0.5	3	6	30	120	400	1000	2000		None		Date
Less	3	6	30	120	400	1000	2000	4000		Draw		18/09/2025
Machine Tool	±	±	±	±	±	±	±	±		Checked		18/09/2025
Verified	0.1	0.1	0.2	0.3	0.5	0.5	1	1		Verified		19/09/2025
											Material	36L

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Furnaces & Refractories



2558-3323-THD-M-ESR41-3

Customer Number

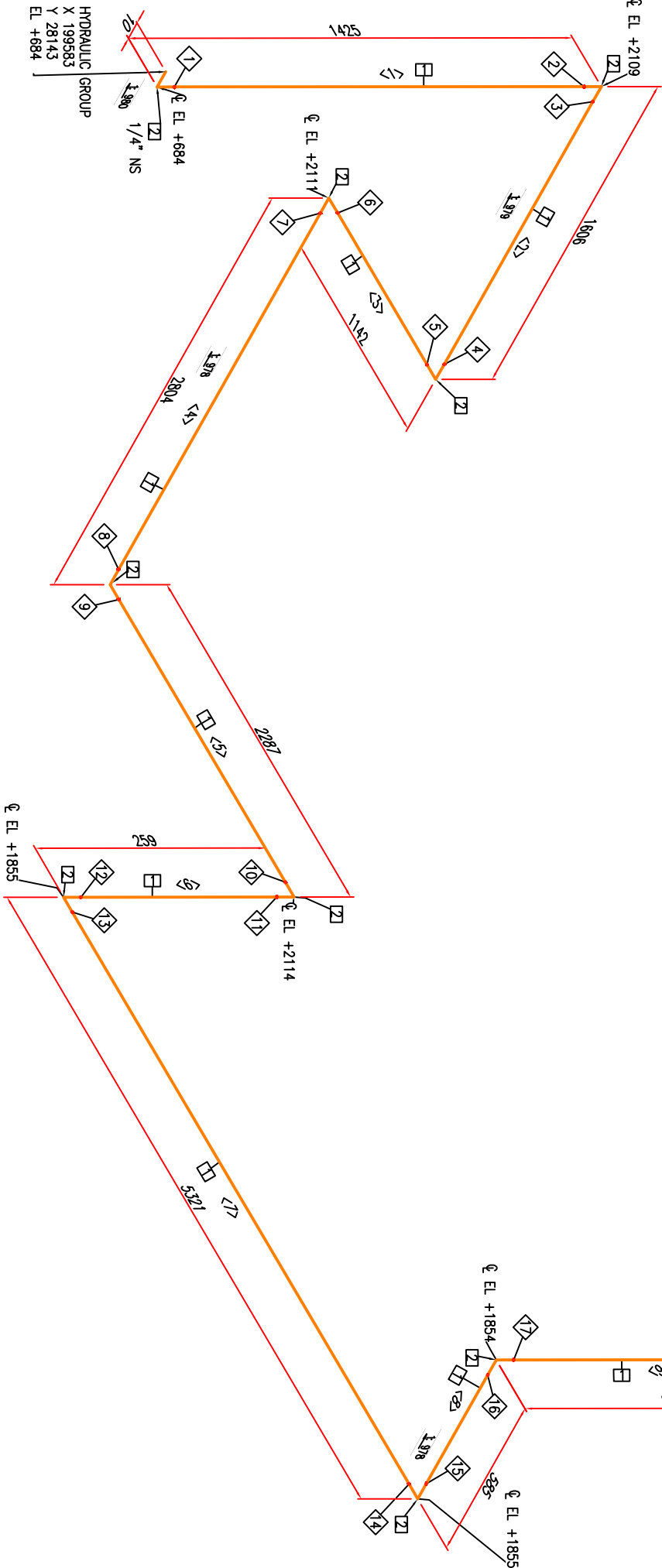
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3/6





WELDING LIST		
ID	DN "	TYPE
1	1/4"	BUTTWELD
2	1/4"	BUTTWELD
3	1/4"	BUTTWELD
4	1/4"	BUTTWELD
5	1/4"	BUTTWELD
6	1/4"	BUTTWELD
7	1/4"	BUTTWELD
8	1/4"	BUTTWELD
9	1/4"	BUTTWELD
10	1/4"	BUTTWELD
11	1/4"	BUTTWELD
12	1/4"	BUTTWELD
13	1/4"	BUTTWELD
14	1/4"	BUTTWELD
15	1/4"	BUTTWELD
16	1/4"	BUTTWELD
17	1/4"	BUTTWELD
18	1/4"	BUTTWELD
19	1/4"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
PPING		
1	16.6M	1/4"
PIPE CS, EN 10217-1		
316L		
FITTINGS		
2	10	1/4"
ELBOW 90° CS RL – BW, EN 10253-1		
316L		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1/4"	1406MM
2	1/4"	1566MM
3	1/4"	1122MM
4	1/4"	2784MM
5	1/4"	2267MM
6	1/4"	239MM
7	1/4"	5301MM
8	1/4"	565MM
9	1/4"	1098MM
10	1/4"	139MM

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Rev.		Modification							None	Date
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.										
Tolerance for dimensions without tol. according to ISO 2768-MK										
More than	0.5	3	6	30	120	400	1000	2000	Draw	None
Less	3	6	30	120	400	1000	2000	4000	Checked	
Machine Tool	±	±	±	±	±	±	±	±	Verified	
Welded	±	±	±	±	±	±	±	±	Verified	
										Date
										18/09/2025
										18/09/2025
										19/09/2025
										Weight (kg)
										316L

insertec

Furnaces & Refractories

Project

Methods

Port Number

Customer Number

2558-3324-THD-M-ESR41-1

-

Revision

Sheet

A

4/6

ALINVEST

ALINVEST

TM1 (FVRB-2,5-25)

HYDRAULIC ROUTE

1:15

Scale:

18/09/2023

18/09/2023

19/09/2023

316L

Weight (kg)

316L

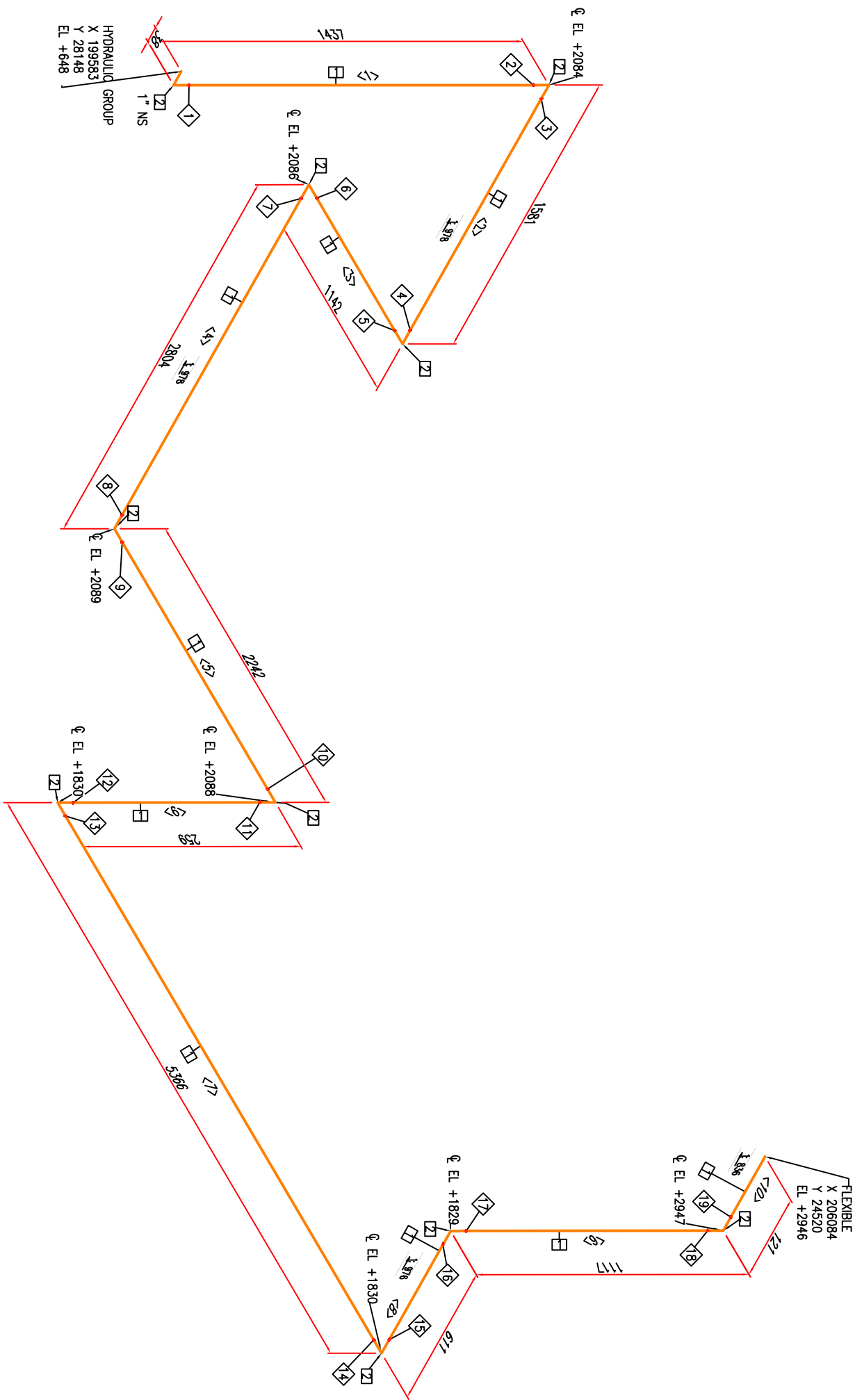
Weight (kg)




WELDING LIST		
ID	DN "	TYPE
1	1"	BUTWELD
2	1"	BUTWELD
3	1"	BUTWELD
4	1"	BUTWELD
5	1"	BUTWELD
6	1"	BUTWELD
7	1"	BUTWELD
8	1"	BUTWELD
9	1"	BUTWELD
10	1"	BUTWELD
11	1"	BUTWELD
12	1"	BUTWELD
13	1"	BUTWELD
14	1"	BUTWELD
15	1"	BUTWELD
16	1"	BUTWELD
17	1"	BUTWELD
18	1"	BUTWELD
19	1"	BUTWELD

MATERIAL LIST			
ID	QTY	DN "	DESCRIPTION MATERIAL
PIPING			
1	16.0M	1"	PIPE CS, EN 10217-1 316L
FITTINGS			
2	10	1"	ELBOW 90° CS RL - BW, EN 10253-1 316L

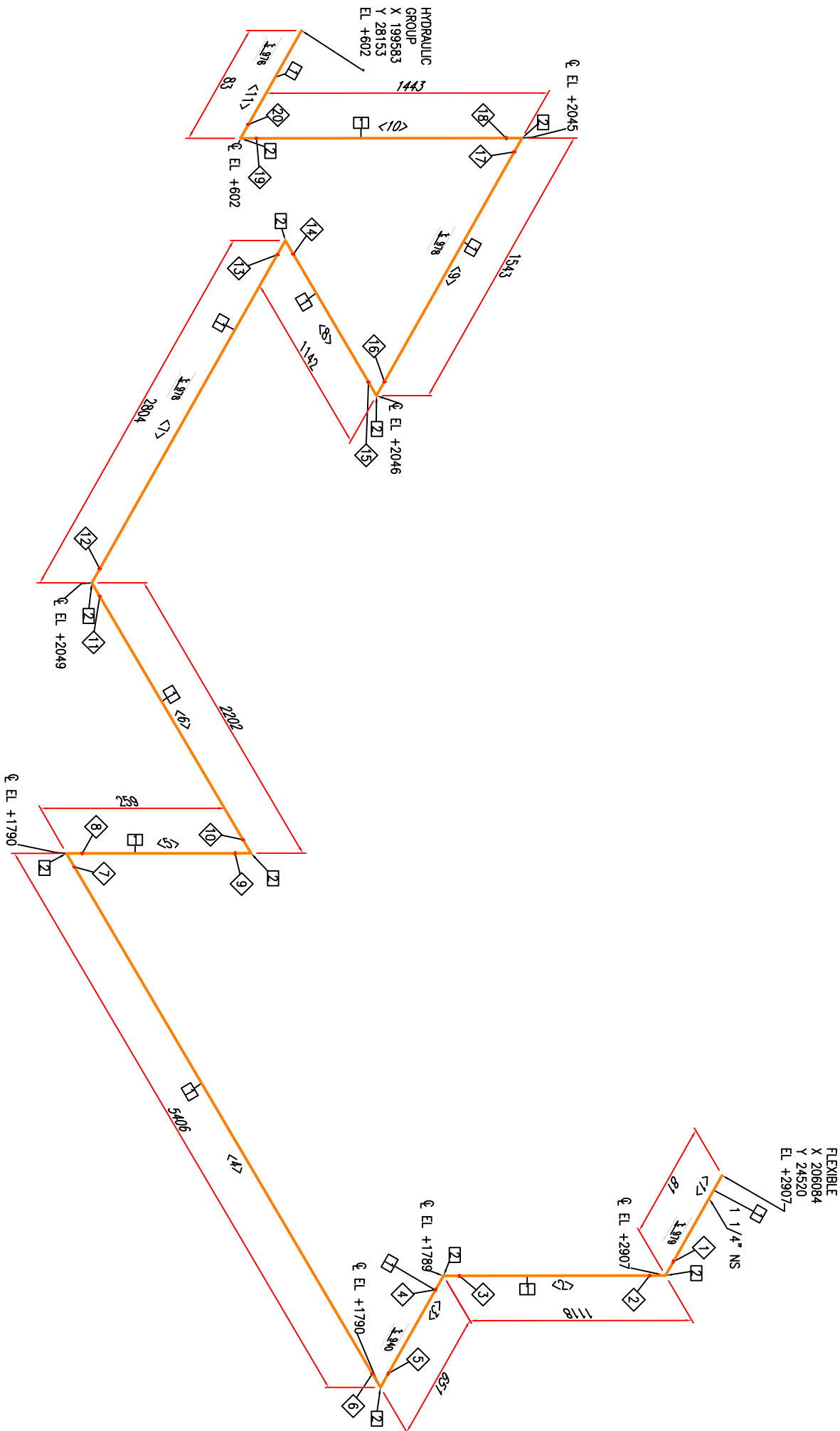
PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1"	1361MM
2	1"	1505MM
3	1"	1066MM
4	1"	2728MM
5	1"	2167MM
6	1"	183MM
7	1"	5290MM
8	1"	535MM
9	1"	1042MM
10	1"	84MM



Rev.	Modification										Name	Date
<p><b>Warning is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization</b></p>												
<p><b>Tolerance for dimensions without tol. according to ISO 2768-mK</b></p>												
More than	0.5	3	5	30	120	400	1000	2000	Draw	Name	Date	Material
Less	3	6	30	120	400	1000	2000	4000	Checked		18/09/2025	316L
Machine Tool	±	±	±	±	±	±	±	±	Checked		18/09/2025	Weight (kg)
Welded	0.1	0.1	0.2	0.3	0.5	0.8	1.2	2	Verified		19/09/2025	
Customer:	0.5	1	1.5	2	3	5	6	10	Title	<p>ALINVEST</p> <p>TMT (FVBR-2.5-25)</p> <p>HYDRAULIC ROUTE</p>		
<p>ALINVEST</p>									Scale:	<p>A2</p> <p>1:1.5</p>		
<p>Project</p> <p>Me thread</p>									<p>Port Number</p>		<p>Revision</p>	
									<p>2558-3324-THD-M-ESP41-2</p>		<p>A</p>	
<p>Furnaces &amp; Refractories</p>									<p>Customer Number</p> <p>-</p>		<p>Sheet</p> <p>5/6</p>	



WELDING LIST		
ID	DN "	TYPE
1	1/4"	BUTTWELD
2	1/4"	BUTTWELD
3	1/4"	BUTTWELD
4	1/4"	BUTTWELD
5	1/4"	BUTTWELD
6	1/4"	BUTTWELD
7	1/4"	BUTTWELD
8	1/4"	BUTTWELD
9	1/4"	BUTTWELD
10	1/4"	BUTTWELD
11	1/4"	BUTTWELD
12	1/4"	BUTTWELD
13	1/4"	BUTTWELD
14	1/4"	BUTTWELD
15	1/4"	BUTTWELD
16	1/4"	BUTTWELD
17	1/4"	BUTTWELD
18	1/4"	BUTTWELD
19	1/4"	BUTTWELD
20	1/4"	BUTTWELD



MATERIAL LIST			
ID	QTY	DN "	DESCRIPTION MATERIAL
PIPING			
1	15.8M	1 1/4"	PIPE CS, EN 10217-1 316L
FITTINGS			
2	10	1 1/4"	ELBOW 90° CS RL - BW, EN 10253-1 316L

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1 1/4"	34MM
2	1 1/4"	1022MM
3	1 1/4"	555MM
4	1 1/4"	5310MM
5	1 1/4"	164MM
6	1 1/4"	2107MM
7	1 1/4"	2708MM
8	1 1/4"	1045MM
9	1 1/4"	1445MM
10	1 1/4"	1345MM
11	1 1/4"	35MM

[illegible]

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# insertec



2558-3324-THD-M-ESR41-

Customer Number

1

Shee

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## **HOLDER 25 – HYDRAULIC INSERTEC SCOPE**



Balloon
Pos.
Qtd.

A

B

C

D

E

F

G

H

I

J

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drawing must be reviewed by the  
Industrial Design and must  
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This drawing belongs  
to Insertec S.A. and  
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without authorization.

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14

A

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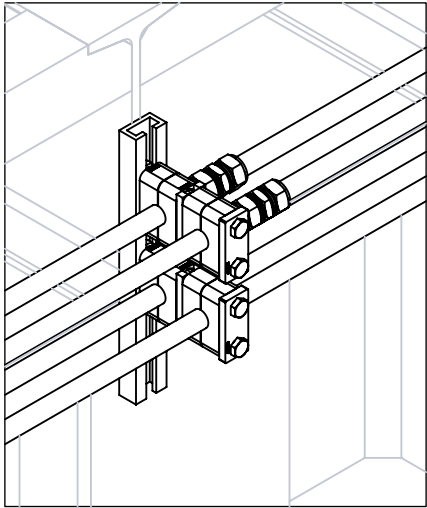
G

H

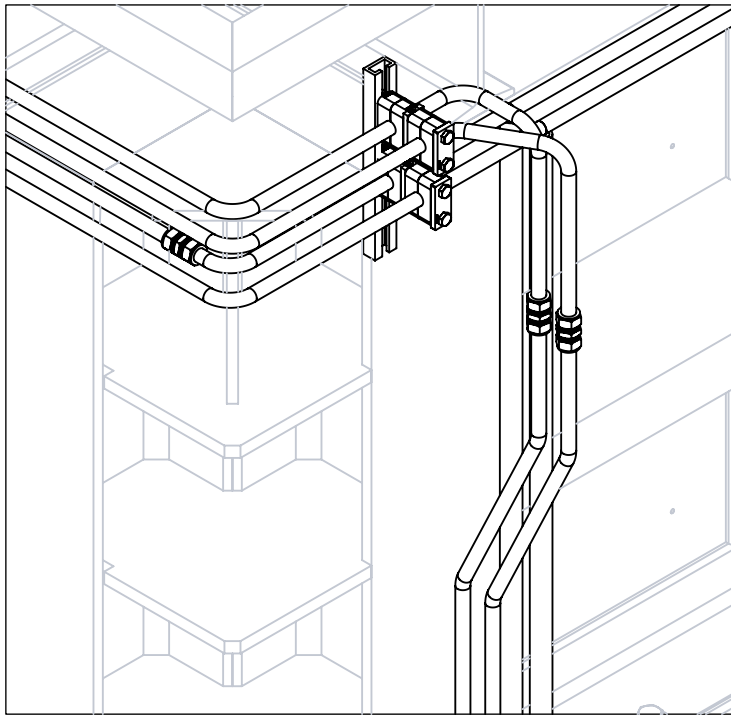
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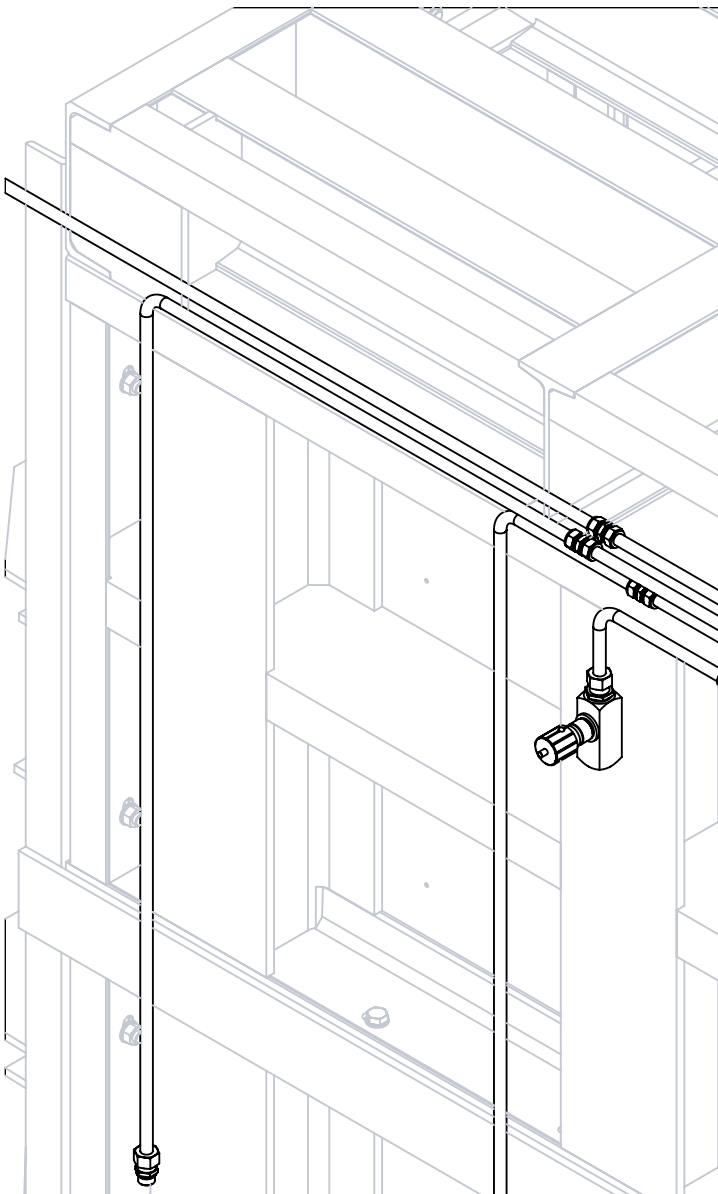
K





DETAIL D  
SCALE 1 : 7



DETAIL E  
SCALE 1 : 10



DETAIL C  
SCALE 1 : 12

Non-individual tolerances according to DIN 7168.								Drawn 3D: Ricardo D.		 Furnaces & Refractories	
Angular Tolerance	Nominal dimension	0-10	10-50	50-120	120-400	>400		Drawn 2D: Augusto F.	 ISO 5456-2		
	Angular Tolerance	±1°	±0,5°	±0,33°	±0,16°	±0,083°					
Linear Tolerance	Nominal dimension	0-6	6-30	30-120	120-315	315-1000	>1000	Date:	1st Dihedral		
	Linear Tolerance	±0,1	±0,2	±0,3	±0,5	±0,8	±1,2	03/10/2025			
Designation:							Qty of Parts  <b>1</b>	N° Drawing:  <b>2558-3311-THD-M-120</b>			
Piping Hydraulic								Scale			
Equipment:								Weight (kg)			
Electric Holder								Sheet			
							1:30				
							87.27				
							Sheet				
							1 of 2				
							Format				
							A1				



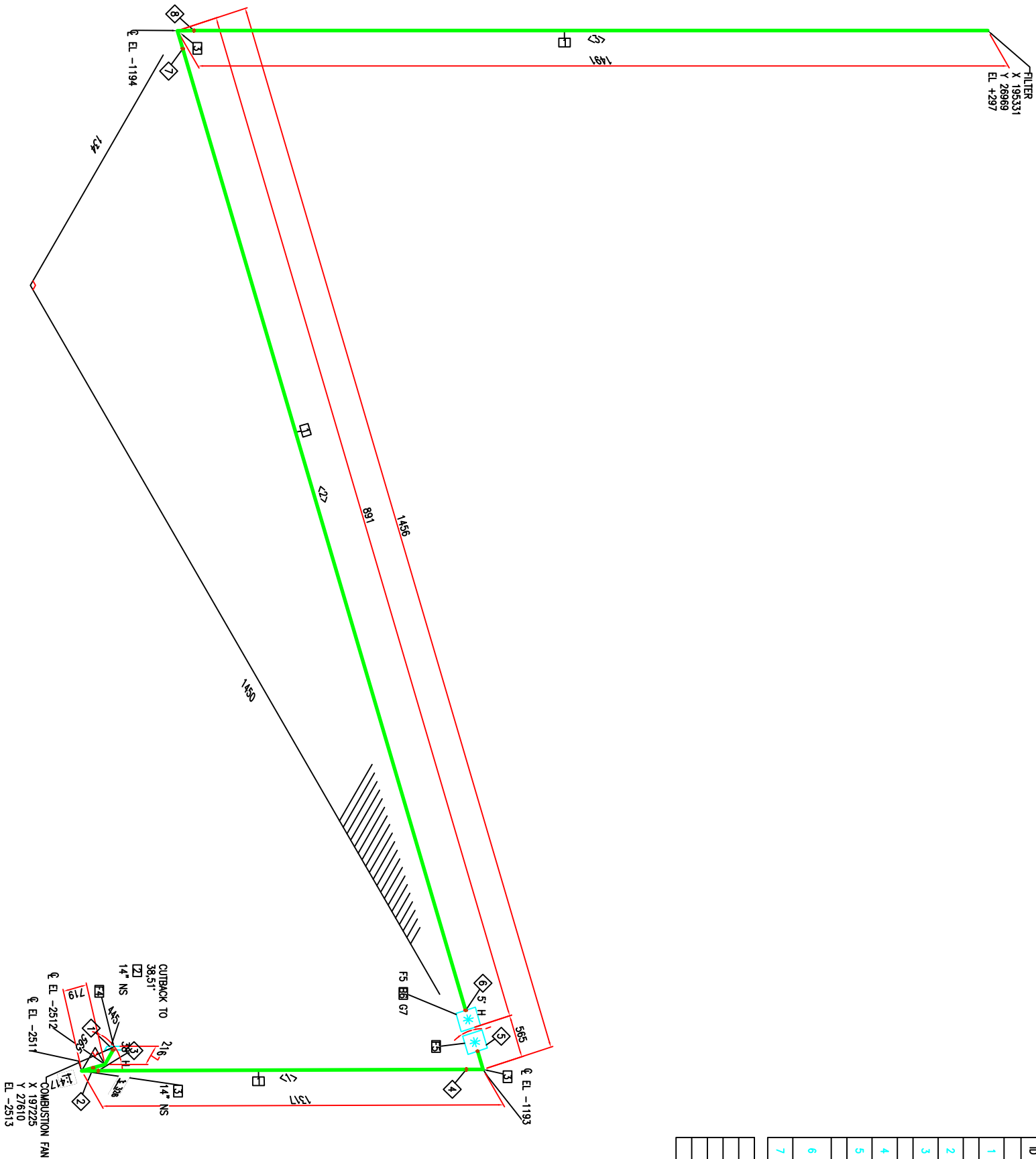


 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## **MELTER 25 – COMBUSTION AIRE AIB SCOPE**



ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	BUTTWELD
3	14"	BUTTWELD
4	14"	BUTTWELD
5	14"	BUTTWELD
6	14"	BUTTWELD
7	14"	BUTTWELD
8	14"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	1.6M	14"
PIPE , EN 10217-7 STAINLESS 316L STAINLESS		
FITTINGS		
2	1	14"
ELBOW 45° RL - BW, EN 10253-1, 316L STAINLESS		
3	3	14"
ELBOW 90° RL - BW, EN 10253-1, 316L STAINLESS		
FLANGES		
4	1	14"
BRIDA PLANA AC. BV EN 1092-1 DIN ACERO AL 2502		
5	2	14"
SLIP-ON FLANGE, EN 1092-1, 316L DIN2633 STAINLESS		
BOLTS, GASKETS		
6	16	1
3/4"x2 STUD BOLT, 80		
7	1	14"
GASKET		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	252MM
2	14"	328MM
3	14"	959MM

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Rev.	Modification	Name	Date																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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Tolerance for dimensions without tol. according to ISO 2768-MK		Name	Date																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
More than	0.5	3	6	30	120	400	1000	2000	Draw																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

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Furnaces & Refractories

Project

Method

Port Number

Customer Number

2558-3321-TMT-M-ESR15-1

-

Revision

Sheet

A

1/4

ALINVEST

Scale: 1:15

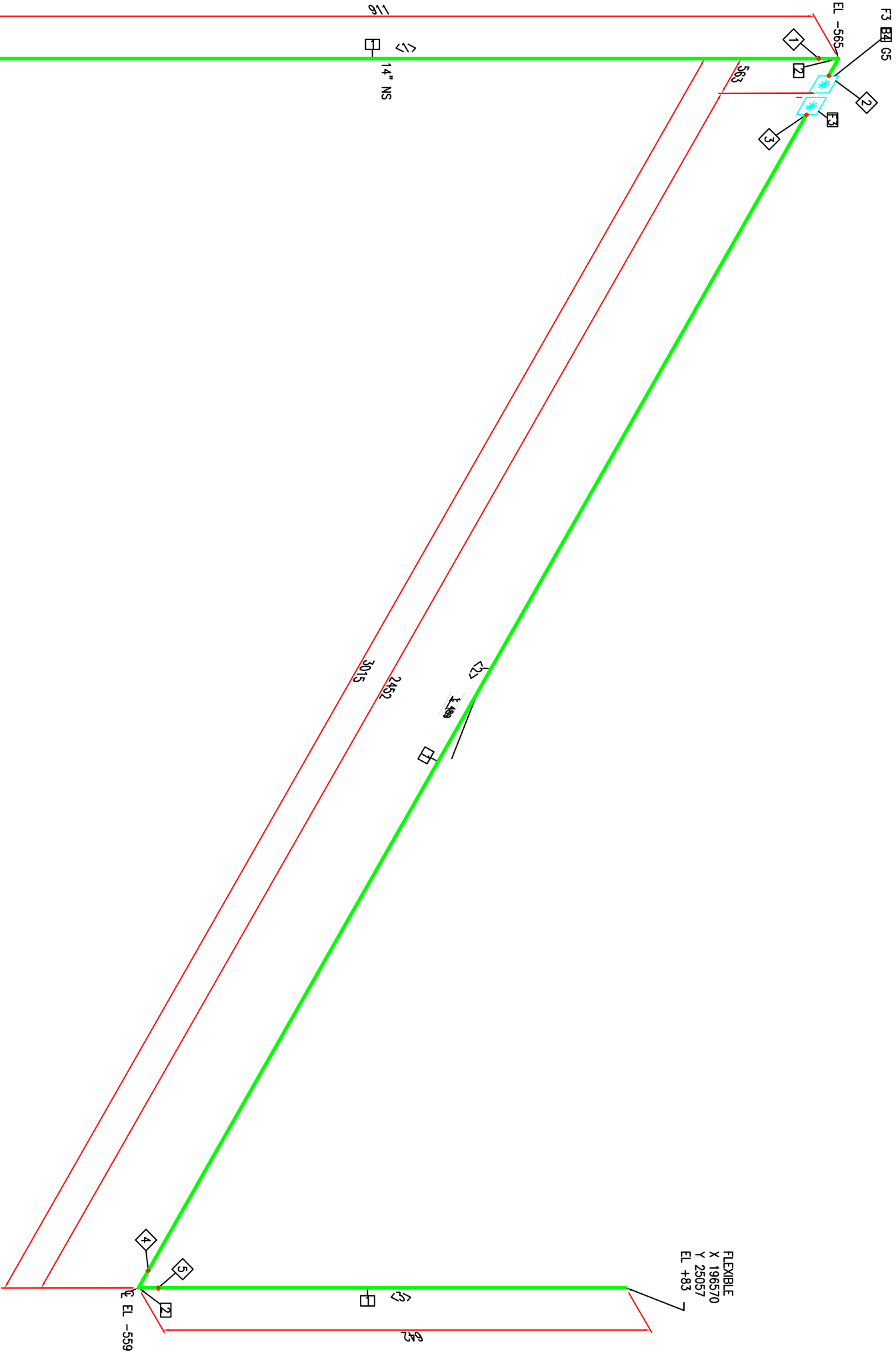
ALINVEST

TMT (FVRB-2,5-25)

COMBUSTION AIR ROUTE



LISTADO SOLDADURAS		
ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	BUTTWELD
3	14"	BUTTWELD
4	14"	BUTTWELD
5	14"	BUTTWELD




MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	2.4M	14"
PIPE , EN 10217-7 STAINLESS 316L STAINLESS		
FITTINGS		
2	2	14"
ELBOW 90° RL - BW, EN 10253-1, 316L STAINLESS		
FLANGES		
3	2	14"
SLIP-ON FLANGE, EN 1092-1, 316L STAINLESS		
BOLTS, GASKETS		
4	16	3/4"x2 80
STUD BOLT,		
5	1	14"
GASKET		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	3.79MM
2	14"	1888MM
3	14"	110MM

COMBUSTION FAN  
X 196556  
Y 28070  
EL -1477

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Rev.		Modification						None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK									
More than		0.5	3	6	30	120	400	1000	2000
Less		3	6	30	120	400	1000	2000	4000
Machine Tool		±	±	±	±	±	±	±	±
Welded		0.1	0.1	0.2	0.3	0.5	0.8	1.2	2
							Verified		
Material									
36L									



Furnaces & Refractories

Project Method

2558-3321-TMT-M-ESR15-2

Customer Number

-

Port Number

2558-3321-TMT-M-ESR15-2

Revision

A

Scale

1:15

Title

TMT (FVRB-2,5-25)  
COMBUSTION AIR ROUTE



LISTADO SOLDADURAS		
ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	BUTTWELD

FILTER  
X 195347  
Y 27867  
EL +337

14" NS  
X 195347  
Y 27867  
EL +337

AUXILIARY FAN  
X 195344  
Y 28428  
EL -2515

14" NS  
X 195344  
Y 28428  
EL -2513

MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	2.4M	14"	PIPE , EN 10217-7 STAINLESS 316L	316L STAINLESS
FITTINGS				
2	1	14"	ELBOW 90° RL – BW, EN 10253-1, 316L STAINLESS	316L STAINLESS
FLANGES				
3	1	14"	BRIDA PLANA AC, BV EN 1092-1 DIN 2502	ACERO AL CARBONO

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	2317MM

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Rev.	Modification		None	Date								
Tolerance for dimensions without tol. according to ISO 2768-MK												
More than	0.5	3	6	30	120	400	1000	2000	Draw	Name	Date	Material
Less	3	6	30	120	400	1000	2000	4000	Checked		18/09/2023	316L
Machine Tool	+	+	+	+	+	+	+	+	Verified		19/09/2023	Weight (kg)
Welded	0.1	0.1	0.2	0.3	0.5	0.8	1.2	2	3			
Customer:	0.5	1	1.5	2	3							
Customer: ALINVEST												
Scale: A2												
Project: 1:15												
Port Number: 2558-3321-TMT-M-ESR15-3												
Customer Number: -												
Revision: A												
Sheet: 3/4												



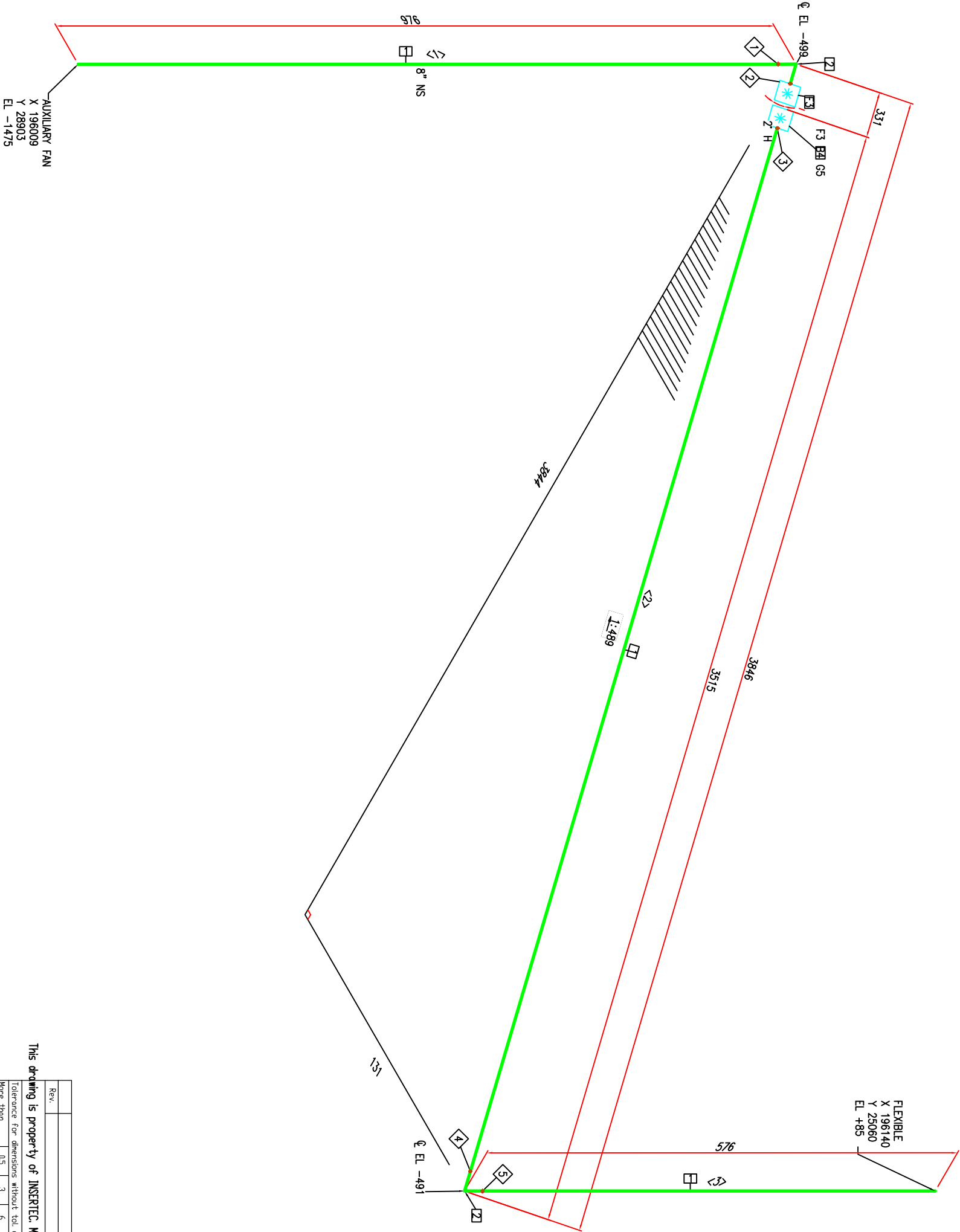
2558-3321-TMT-M-ESR15-3

A





LISTADO SOLDADURAS		
ID	DN "	TYPE
1	8"	BUTTWELD
2	8"	BUTTWELD
3	8"	BUTTWELD
4	8"	BUTTWELD
5	8"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	4.2M	8"
PIPE , EN 10217-7 STAINLESS 316L		
STAINLESS		
FITTINGS		
2	2	8"
ELBOW 90° RL - BW, EN 10253-1,		
316L STAINLESS		
STAINLESS		
FLANGES		
3	2	8"
SLIP-ON FLANGE, EN 1092-1,		
DIN2633		
316L		
STAINLESS		
BOLTS, GASKETS		
4	12	1/4"x1
40		
STUD BOLT,		
5	1	8"
GASKET		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	8"	672MM
2	8"	3187MM
3	8"	272MM

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Rev.	Modification	None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK			
More than	0.5	3	6
Less	3	6	30
Machine Tool	+	+	+
Welded	0.1	0.1	0.1
Customer:	0.5	1	1.5
Title			
ALINVEST			
ALINVEST			
TMT (FVRB-2,5-25)			
AUXILIARY AIR ROUTE			
Scale:			
1:15			
Project			
Methods:			
Port Number			
2558-3321-TMT-M-ESR15-4			
Revision			
A			
Customer Number			
-			
Sheet			
4/4			

AUXILIARY FAN  
X 196009  
Y 28903  
EL -1475

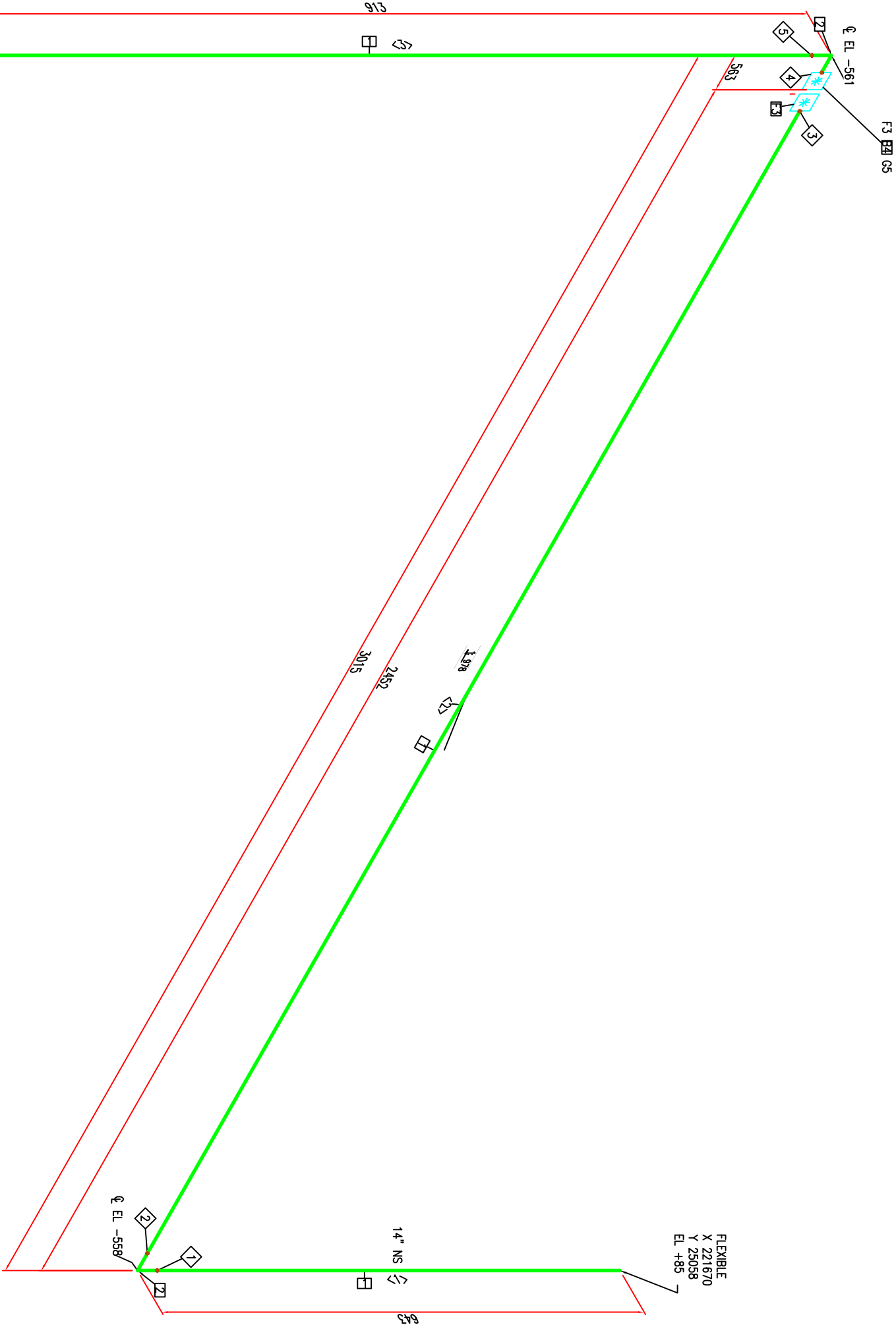
FLEXIBLE  
X 196140  
Y 25060  
EL +85







LISTADO SOLDADURAS		
ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	BUTTWELD
3	14"	BUTTWELD
4	14"	BUTTWELD
5	14"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	2.4M	14"
PIPE , EN 10217-7 STAINLESS 316L		
316L STAINLESS		
FITTINGS		
2	2	14"
ELBOW 90° RL - BW, EN 10253-1, 316L STAINLESS		
316L STAINLESS		
FLANGES		
3	2	14"
SLIP-ON FLANGE, EN 1092-1, DIN2633		
316L STAINLESS		
BOLTS, GASKETS		
4	16	1
3/4"x2 STUD BOLT, 80		
5	1	14"
GASKET		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	110MM
2	14"	188MM
3	14"	381MM

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Rev.										Modification										None		Date			
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.																									
Tolerance for dimensions without tol. according to ISO 2768-MK																									
More than										0.5	3	6	30	120	400	1000	2000	Draw		None		Date		Material	
Less										3	6	30	120	400	1000	2000	Checked				18/09/2025		36L		
Machine Tool										±	±	±	±	±	±	±	±				18/09/2025		Weight (kg)		
Welded										0.1	0.1	0.2	0.3	0.5	0.8	1.2	1.2				19/09/2025				

ALINVEST		ALINVEST	
Scale:		Title	
1:15		TMT (FVRB-2,5-25)	
Project		COMBUSTION AIR ROUTE	
Method:		Revision	
Port Number		A	
Customer Number		Sheet	
2558-3322-TMT-M-ESR15-2		2/4	

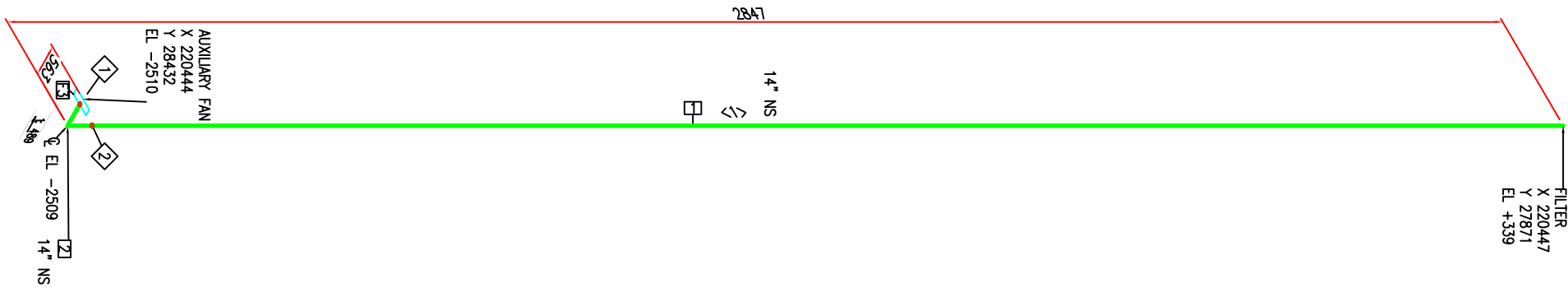




LISTADO SOLDADURAS		
ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	BUTTWELD

MATERIAL LIST			
ID	QTY	DN "	MATERIAL
PIPING			
1	2.4M	14"	PIPE , EN 10217-7 STAINLESS 316L 316L STAINLESS
FITTINGS			
2	1	14"	ELBOW 90° RL - BW, EN 10253-1, 316L STAINLESS 316L STAINLESS
FLANGES			
3	1	14"	BRIDA PLANA AC, BV EN 1092-1 DIN 2502 ACERO AL CARBONO

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	2315MM





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Modification		Nome	Date
Rev.			
Tolerance for dimensions without tol according to ISO 2768-mK		Nome	Date

04/21

Tolerance for dimensions without according to ISO 2768-mK										Material		
										None	Date	
More than	0.5	3	6	30	120	400	1000	2000		Draw	18/09/2025	316L
less	3	6	30	120	400	1000	2000	4000			18/09/2025	
Machine Tool	±	±	±	±	±	±	±	±		Checked		
	0.1	0.1	0.2	0.3	0.5	0.8	1.2	2		Verified	19/09/2025	
Welded	0.5	1	1.5	3	6	10	20	40				



Customer	ALINVEST	Formate	ALINVEST
		A2	TMI (FYRB-2,5-25)
	Scale	1:15	AUXILIARY AIR ROUTE

 <b>insertec</b> Furnaces & Refractories		Project Weirhofer	Part Number 2558-3322-TM-M-ESR15-3	Revision A
	Customer Number -	Sheet 3/4		



**insetec**  
Furnaces & Refractories

**insertec**  
Furnaces & Refractories

 <b>insertec</b> Furnaces & Refractories		2558-3322-TMT-M-ESR15-3	A
		Customer Number -	Sheet 3/4

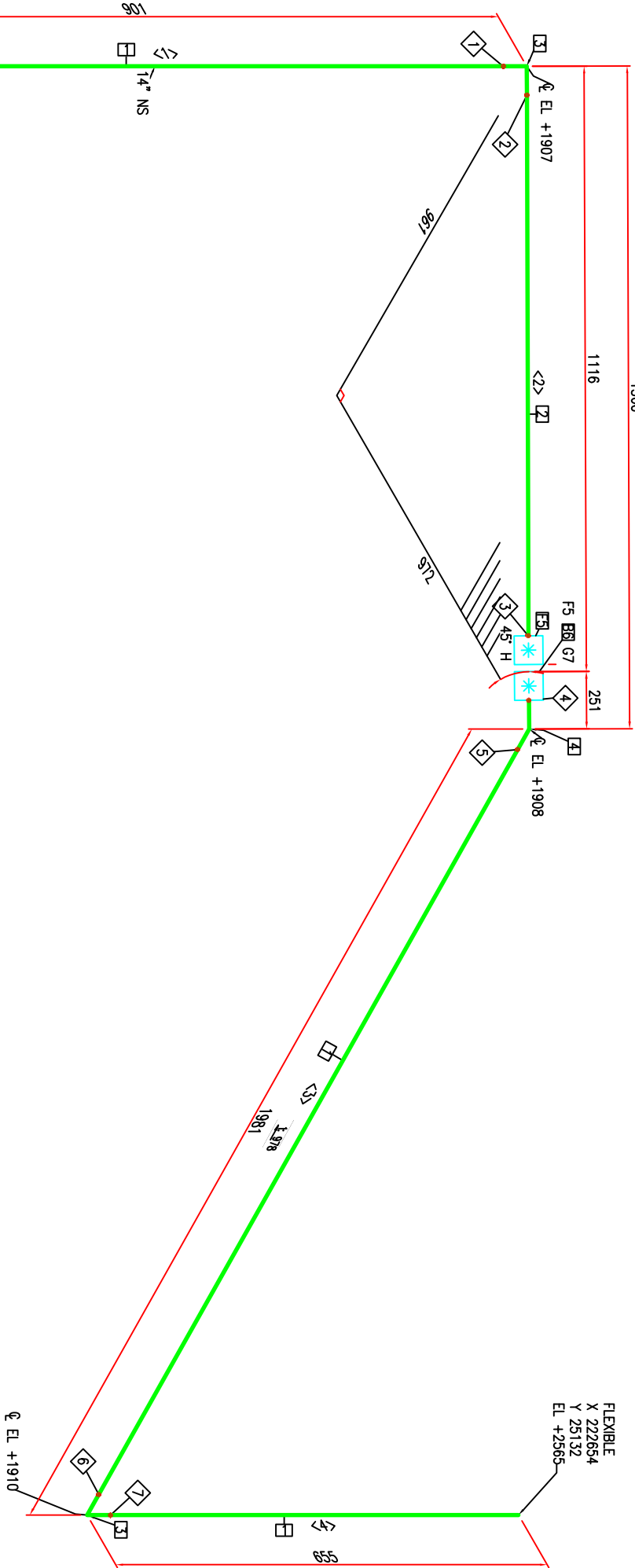








LISTADO SOLDADURAS		
ID	DN "	TIPO
1	14"	BUTTWELD
2	14"	BUTTWELD
3	14"	BUTTWELD
4	14"	BUTTWELD
5	14"	BUTTWELD
6	14"	BUTTWELD
7	14"	BUTTWELD



LISTADO DE MATERIALES			
ID	CANTIDAD	DN "	MATERIAL
TUBERIA			
1	1.8M	14"	PIPE , EN 10217-7 STAINLESS 316L
2	0.6M	14"	PIPE , EN 10217-7 STAINLESS 316L
ACCESORIOS			
3	2	14"	ELBOW 90° RL - BW, EN 10253-1,
4	1	14"	ELBOW 45° RL - BW, EN 10253-1,
BRIDAS			
5	2	14"	SLIP-ON FLANGE, EN 1092-1,
TORNILLOS, JUNTAS			
6	16	3/4"x2 80	STUD BOLT,
7	1	14"	GASKET

LISTADO DESPIECE TUBERIAS		
ID	DN "	LONGITUD
1	14"	369MM
2	14"	551MM
3	14"	1228MM
4	14"	123MM

COMBUSTION FAN  
X 221656  
Y 28072  
EL +1006

FLEXIBLE  
X 222654  
Y 25132  
EL +2565

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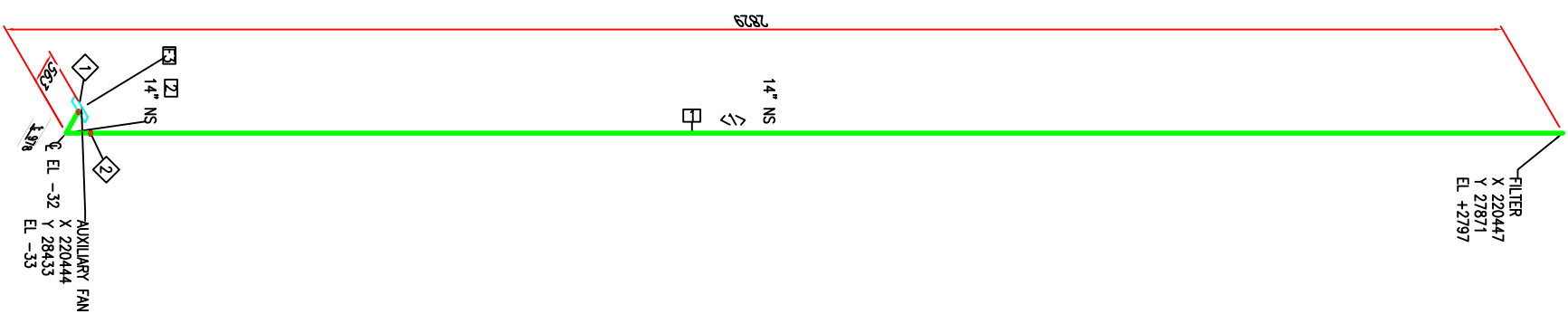
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization									
Rev.		Modification						None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK									
More than		0.5	3	6	30	120	400	1000	2000
Less		3	6	30	120	400	1000	2000	4000
Machine Tool		±	±	±	±	±	±	±	±
Welded		0.1	0.1	0.2	0.3	0.5	0.8	1.2	2
		Verified							Verified
Material									
36L									

Project		Port Number		Revision	
Methods		2558-3323-TMT-M-ESR15-2		A	
Customer Number		-		Sheet 2/4	
Title		TMT (FVRB-2,5-25)			
Scale		1:15			
Material		316L			
Date		18/09/2025			
Weight (kg)		19/09/2025			
Verified					





LISTADO SOLDADURAS		
ID	DN "	TIPO
1	14"	BUTTWELD
2	14"	BUTTWELD



LISTADO DE MATERIALES			
ID	CANTIDAD	DN "	DESCRIPCION MATERIAL
TUBERIA			
1	2.3M	14"	PIPE , EN 10217-7 STAINLESS 316L 316L STAINLESS
ACCESORIOS			
2	1	14"	CODO 90° RL - BW, EN 10253-1 P235TH1 ACERO AL CARBONO
BRIDAS			
3	1	14"	BRIDA PLANA AC, BV EN 1092-1 DIN 2502 ACERO AL CARBONO

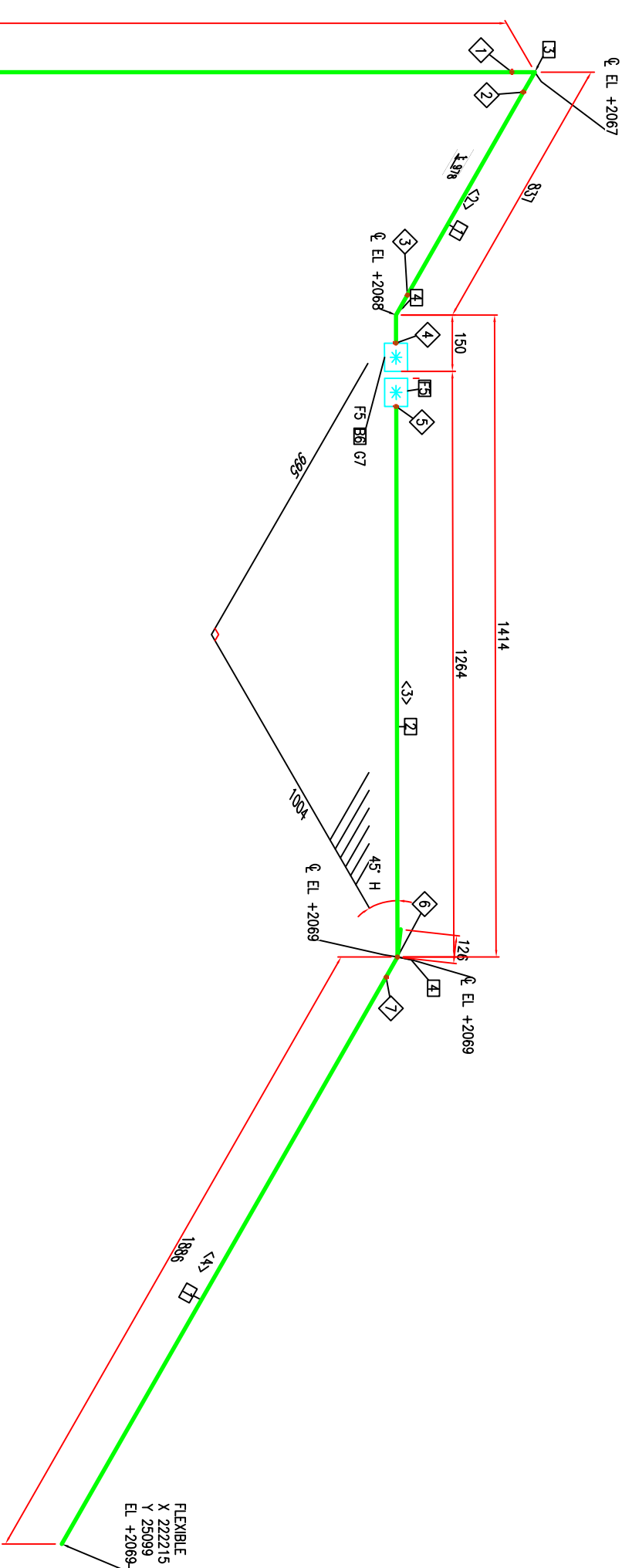
LISTADO DESPIECE TUBERÍAS		
ID	DN "	LONGITUD
1	14"	2297MM

[illegible]

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LISTADO SOLDADURAS		
ID	DN "	TIPO
1	8"	BUTTWELD
2	8"	BUTTWELD
3	8"	BUTTWELD
4	8"	BUTTWELD
5	8"	BUTTWELD
6	8"	TAPWELD
7	8"	BUTTWELD



LISTADO DE MATERIALES			
ID	CANTIDAD	DN "	MATERIAL
TUBERIA			
1	3.0M	8"	PIPE , EN 10217-7 STAINLESS 316L 316L STAINLESS
2	1.3M	8"	PIPE , EN 10217-7 STAINLESS 316L 316L STAINLESS
ACCESORIOS			
3	1	8"	ELBOW 90° RL - BW, EN 10253-1, 316L STAINLESS 316L STAINLESS
4	2	8"	ELBOW 45° RL - BW, EN 10253-1, 316L STAINLESS 316L STAINLESS
BRIDAS			
5	2	8"	SLIP-ON FLANGE, EN 1092-1, DIN2653 316L STAINLESS
TORNILLOS, JUNTAS			
6	12 40	1/4"x1 40	STUD BOLT,
7	1	8"	GASKET

LISTADO DESPESCE TUBERÍAS		
ID	DN "	LONGITUD
1	8"	757MM
2	8"	406MM
3	8"	1236MM
4	8"	1760MM

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Rev.	Modification							Name	Date
Tolerance for dimensions without tol according to ISO 2768-MK									
More than	0.5	3	6	30	120	400	1000	2000	
Less	3	6	30	120	400	1000	2000	4000	
Machine Tool	±	±	±	±	±	±	±	±	
Verified	0.1	0.2	0.3	0.5	0.8	1.2	1.6	2	Verified
								Name	Date
								18/09/2025	
								18/09/2025	
								19/09/2025	
								Material	316L
								Weight (kg)	

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**insetec**  
Furnaces & Refractories



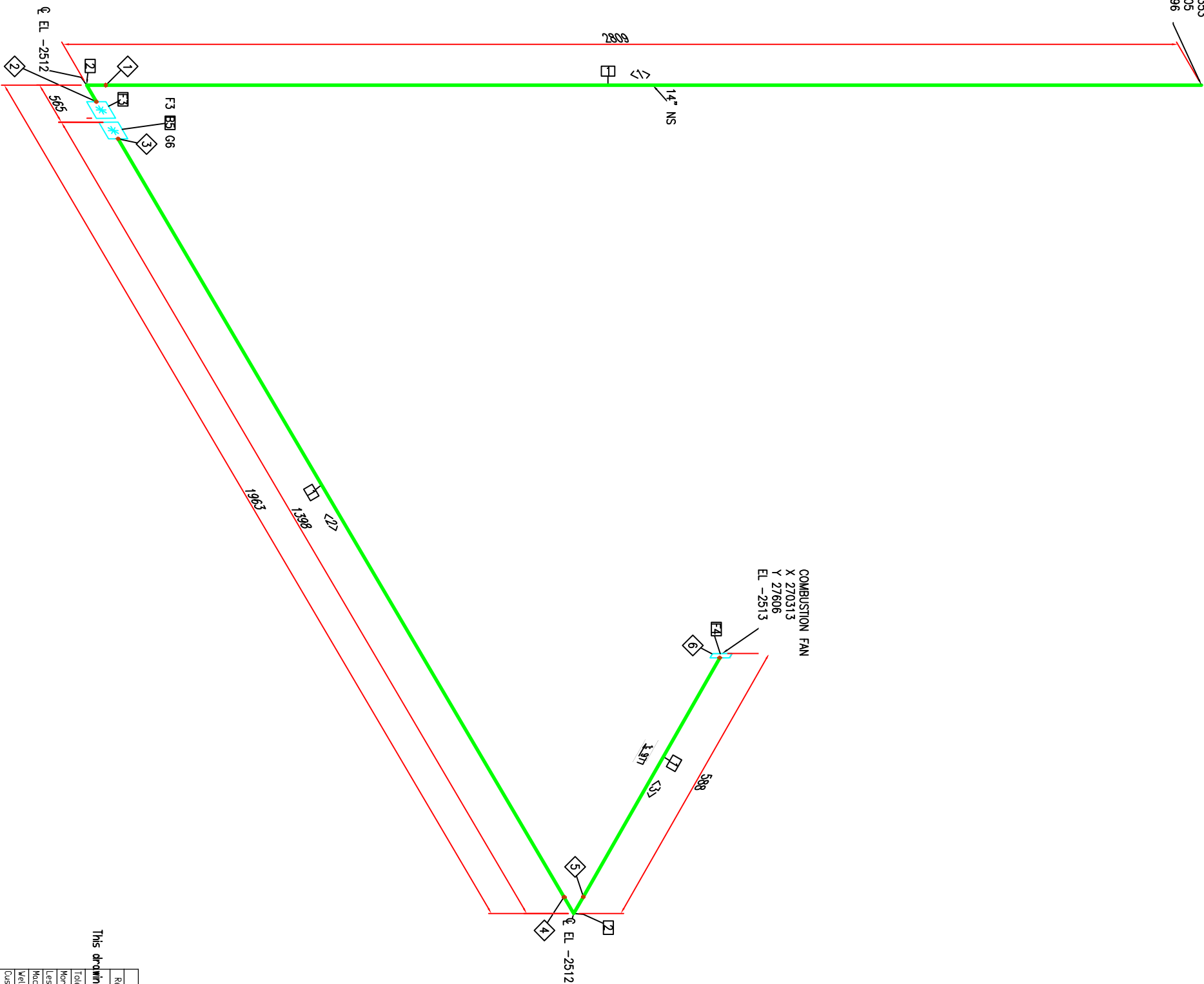
2558-3323-TMT-M-ESR15-2

A  
Sheet



LISTADO SOLDADURAS		
ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	BUTTWELD
3	14"	BUTTWELD
4	14"	BUTTWELD
5	14"	BUTTWELD
6	14"	BUTTWELD

**FILTER**  
X 268353  
Y 27005  
EL +296



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PPING				
1	3,2M	14"	PIPE , EN 10217-7 STAINLESS 316L	316L STAINLESS
FITTINGS				
2	2	14"	ELBOW 90° RL -- BW, EN 10253-1, 316L STAINLESS	316L STAINLESS
FLANGES				
3	2	14"	SLIP-ON FLANGE, EN 1092-1, DN26533	316L STAINLESS
4	1	14"	SLIP-ON FLANGE 316L, BV EN 1092-1 DIN 2502	316L STAINLESS
BOLTS, GASKETS				
5	16	1	3/4"x2 STUD BOLT, 80	
6	1	14"	GASKET	

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	2276MM
2	14"	835MM
3	14"	25MM

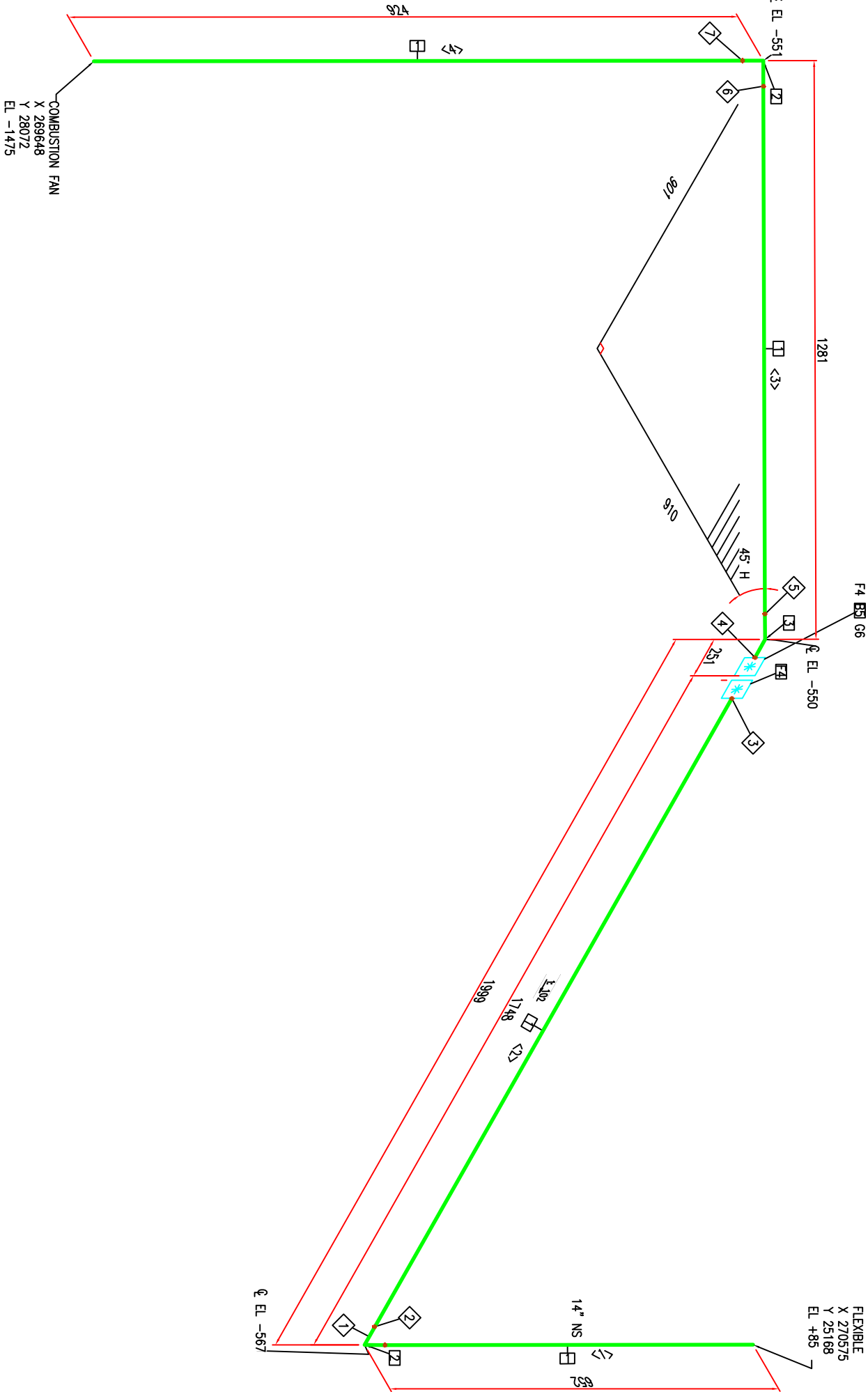
Rev.	Modification										Name	Date
<p>THIS DOCUMENT IS THE PROPERTY OF INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.</p>												
<p>Tolerance for dimensions without tol. according to ISO 2768-MK</p>												
More than	0.5	3	6	30	120	400	1000	2000		None	Date	Material
Less	3	6	30	120	400	1000	2000	4000	Drawing		18/09/2025	316L
Machine Tool	±	±	±	±	±	±	±	±	Checked		18/09/2025	Weight (kg)
Welded	0.1	0.1	0.2	0.3	0.5	0.8	1.2	2	Verified		18/09/2025	
Customer:	0.3	1	1.3	2	3		Edm	6				
<p>INVEST</p>												

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LISTADO SOLDADURAS		
ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	BUTTWELD
3	14"	BUTTWELD
4	14"	BUTTWELD
5	14"	BUTTWELD
6	14"	BUTTWELD
7	14"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	2.3M	14"
PIPE , EN 10217-7 STAINLESS 316L		
STAINLESS		
FITTINGS		
2	2	14"
ELBOW 90° RL - BW, EN 10253-1,		
316L STAINLESS		
3	1	14"
ELBOW 45° RL - BW, EN 10253-1,		
316L STAINLESS		
FLANGES		
4	2	14"
SLIP-ON FLANGE, EN 1092-1,		
DIN2633		
BOLTS, GASKETS		
5	16	3/4"x2
80 STUD BOLT,		
6	1	14"
GASKET		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	120MM
2	14"	1184MM
3	14"	527MM
4	14"	391MM

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Rev.										Modification				None		Date	
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization																	
Tolerance for dimensions without tol. according to ISO 2768-MK																	
More than		0.5	3	6	30	120	400	1000	2000	Draw		None		Date			
Less		3	6	30	120	400	1000	2000	4000	Checked				18/09/2005		18/09/2005	
Machine Tool		±	0.1	±	0.2	±	0.3	±	0.5	Verified				19/09/2005		19/09/2005	
Welded		0.1	0.1	0.2	0.3	0.5	0.5	1	2	Verified							
Material																	
Weight (kg)														36L			

ALINVEST		ALINVEST	
Scale:		TMT (FVRB-2,5-25)	
1:15		COMBUSTION AIR ROUTE	
Project		Revision	
Methods:		A	
Port Number		Sheet	
2558-3324-TMT-M-ESR15-2		2/4	
Customer Number			
-			





LISTADO SOLDADURAS		
ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	BUTTWELD

FILTER  
X 268439  
Y 27875  
EL +330

14" NS  
27875

AUXILIARY FAN  
X 268436  
Y 28437  
EL -2513

14" NS  
EL -2512  
1398

MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	2.4M	14"	PIPE , EN 10217-7 STAINLESS 316L	316L STAINLESS
FITTINGS				
2	1	14"	ELBOW 90° RL – BW, EN 10253-1, 316L STAINLESS	316L STAINLESS
FLANGES				
3	1	14"	SLIP-ON FLANGE 316L, BV EN 1092-1 DIN 2502	316L STAINLESS

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	2310MM

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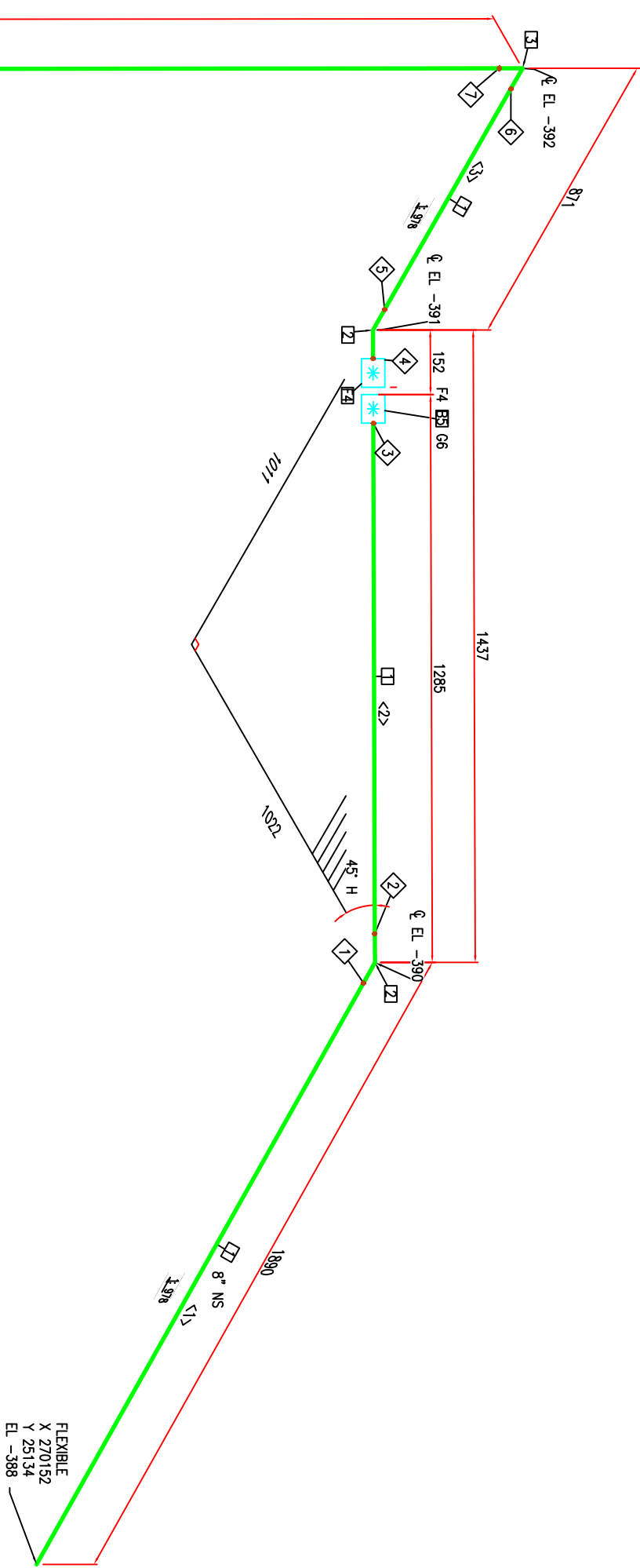
Rev.										Modification		None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK													
More than	0.5	3	6	30	120	400	1000	2000	Draw	None		Date	
Less	3	6	30	120	400	1000	2000	4000	Checked			18/09/2025	
Machine Tool	±	±	±	±	±	±	±	±	±	±		18/09/2025	
Welded	0.1	0.1	0.2	0.3	0.5	0.8	1.2	2	Verified			19/09/2025	
										Material		316L	Weight (kg)

ALINVEST		ALINVEST	
Scale:		Scale:	
1:15		1:15	
Project		Project	
Method:		Method:	
Port Number		Port Number	
2558-3324-TMT-M-ESR15-3		2558-3324-TMT-M-ESR15-3	
Customer Number		Customer Number	
-		-	
Revision		Revision	
A		A	





LISTADO SOLDADURAS		
ID	DN "	TYPE
1	8"	BUTTWELD
2	8"	BUTTWELD
3	8"	BUTTWELD
4	8"	BUTTWELD
5	8"	BUTTWELD
6	8"	BUTTWELD
7	8"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	4.4M	8"
PIPE , EN 10217-7 STAINLESS 316L		
STAINLESS		
FITTINGS		
2	2	8"
ELBOW 45° RL - BW, EN 10253-1,		
316L STAINLESS		
3	1	8"
ELBOW 90° RL - BW, EN 10253-1,		
316L STAINLESS		
STAINLESS		
FLANGES		
4	2	8"
SLIP-ON FLANGE, EN 1092-1,		
DIN2633		
BOLTS, GASKETS		
5	12	1/4\"/>
STUD BOLT,		
40		
6	1	8"
GASKET		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	8"	1765MM
2	8"	1135MM
3	8"	440MM
4	8"	992MM



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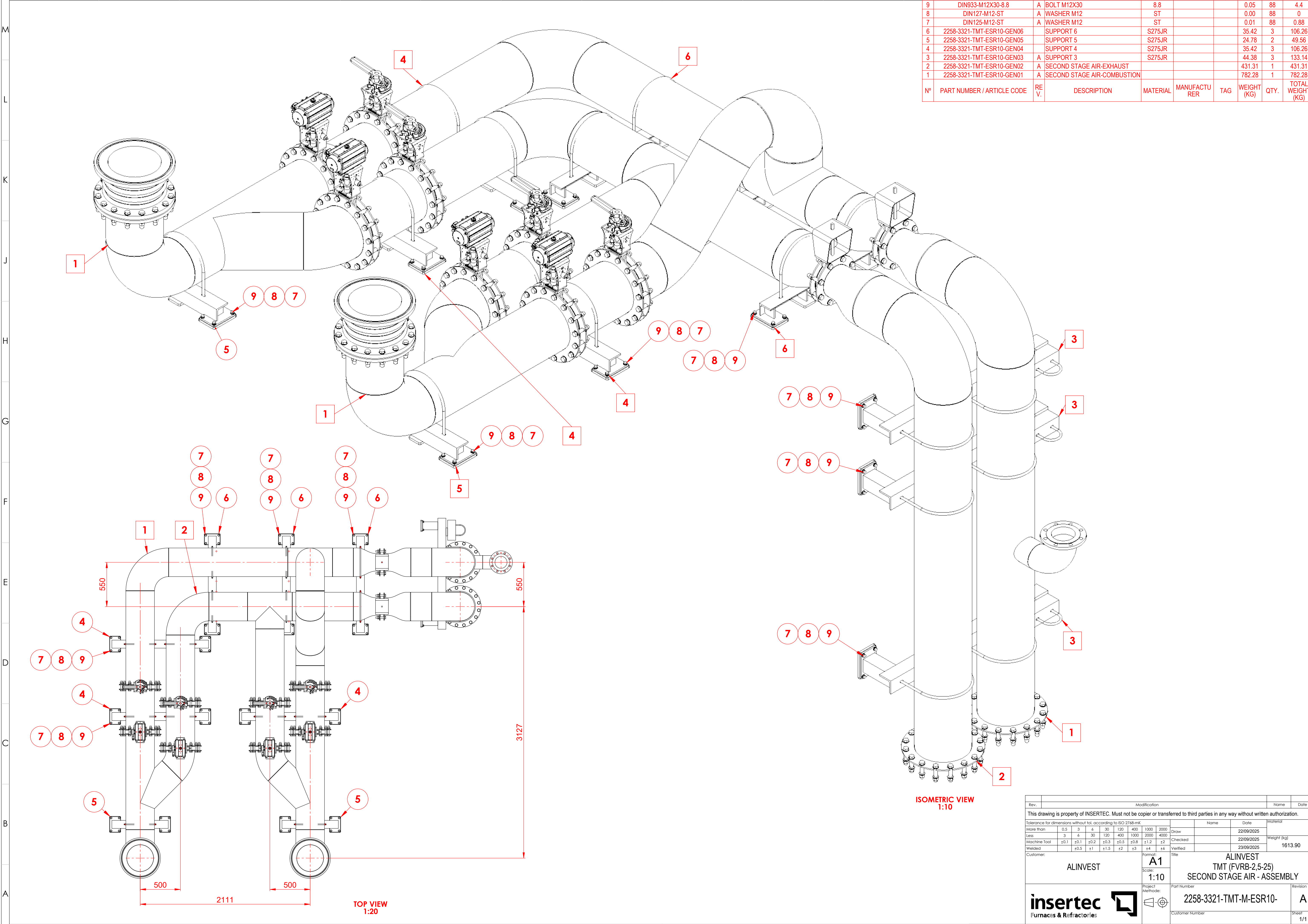
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization									
Rev.		Modification						None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK									
More than	0.5	3	6	30	120	400	1000	2000	
Less	3	6	30	120	400	1000	2000	4000	Draw
Machine Tool	±	±	±	±	±	±	±	±	Checked
Welded	±	±	±	±	±	±	±	±	Verified
Customer:	0.5	1	15	2	3	Format: 6			
		Material							
		36L							
		Weight (kg)							

ALINVEST		ALINVEST	
Scale:		Title	
1:15		TMT (FVRB-2,5-25)	
Project		AUXILIARY AIR ROUTE	



insertec		Furnaces & Refractories	
Project		Port Number	
Methods:		2558-3324-TMT-M-ESR15-4	
Customer Number		-	
Revision		A	
Sheet		4/4	

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

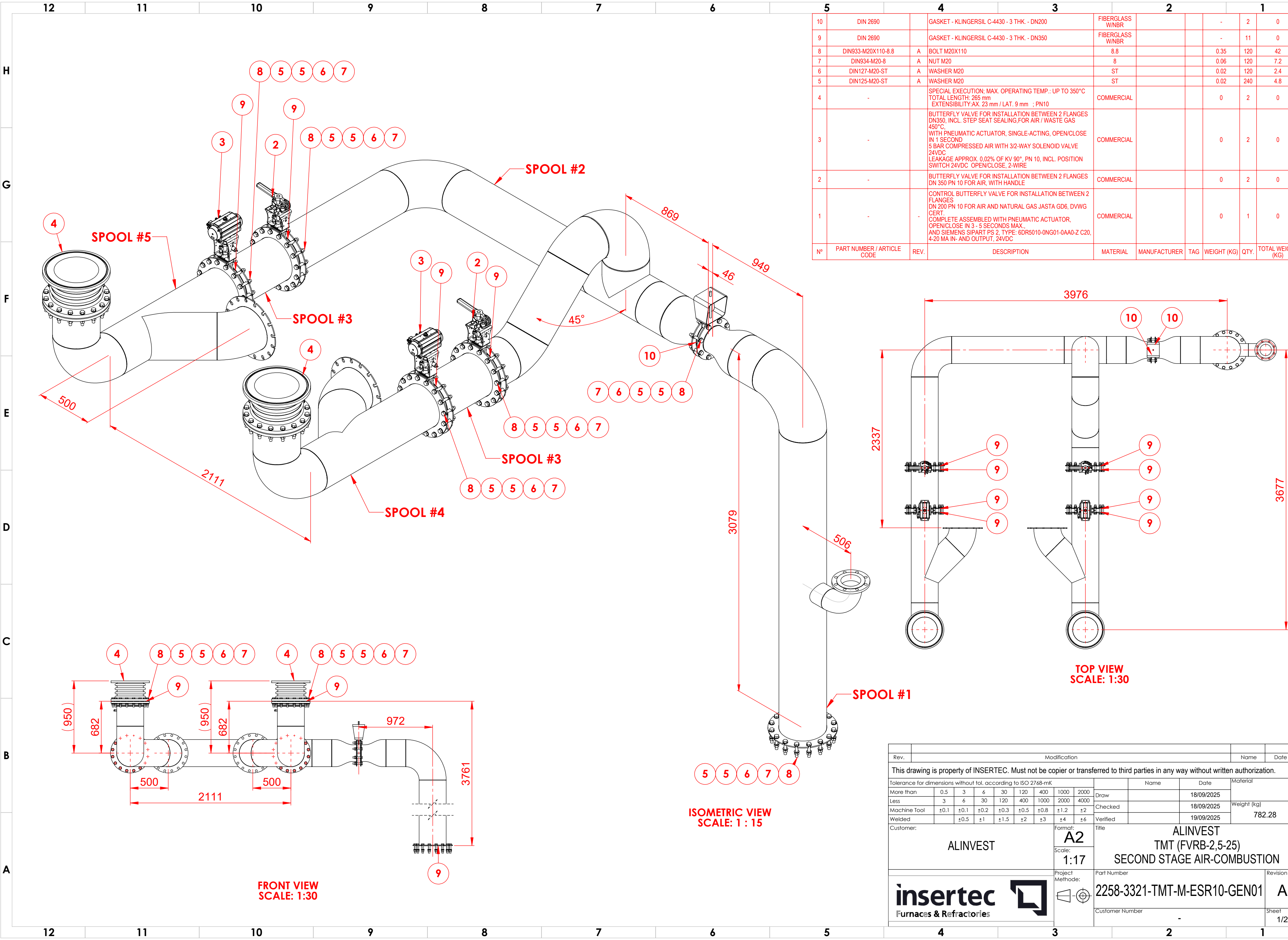
## **MELTER 25 – COMBUSTION AIR INSERTEC SCOPE**



9	DIN933-M12X30-8.8	A	BOLT M12X30	8.8			0.05	88	4.4
8	DIN127-M12-ST	A	WASHER M12	ST			0.00	88	0
7	DIN125-M12-ST	A	WASHER M12	ST			0.01	88	0.88
6	2258-3321-TMT-ESR10-GEN06		SUPPORT 6	S275JR			35.42	3	106.26
5	2258-3321-TMT-ESR10-GEN05		SUPPORT 5	S275JR			24.78	2	49.56
4	2258-3321-TMT-ESR10-GEN04		SUPPORT 4	S275JR			35.42	3	106.26
3	2258-3321-TMT-ESR10-GEN03	A	SUPPORT 3	S275JR			44.38	3	133.14
2	2258-3321-TMT-ESR10-GEN02	A	SECOND STAGE AIR-EXHAUST				431.31	1	431.31
1	2258-3321-TMT-ESR10-GEN01	A	SECOND STAGE AIR-COMBUSTION				782.28	1	782.28
N°	PART NUMBER / ARTICLE CODE	RE V.	DESCRIPTION	MATERIAL	MANUFACTU RER	TAG	WEIGHT (KG)	QTY.	TOTAL WEIGHT (KG)

Rev.	Modification										Name	Date
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.												
Tolerance for dimensions without tol. according to ISO 2768-mK												
More than	0.5	3	6	30	120	400	1000	2000	Draw	22/09/2025	Material	Weight (kg)
Less	3	6	30	120	400	1000	2000	4000	Checked	22/09/2025		
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	23/09/2025		
Welded	±0.5	±1	±1.5	±2	±3	±4	±6					1613.90
Customer:					Format:		A1		Title			
ALINVEST					Scale:		1:10		ALINVEST TMT (FVRB-2,5-25) SECOND STAGE AIR - ASSEMBLY			
 					Project Method:		Part Number		Revision			
							2258-3321-TMT-M-ESR10-		A			
							Customer Number		Sheet			
									1/1			


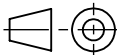


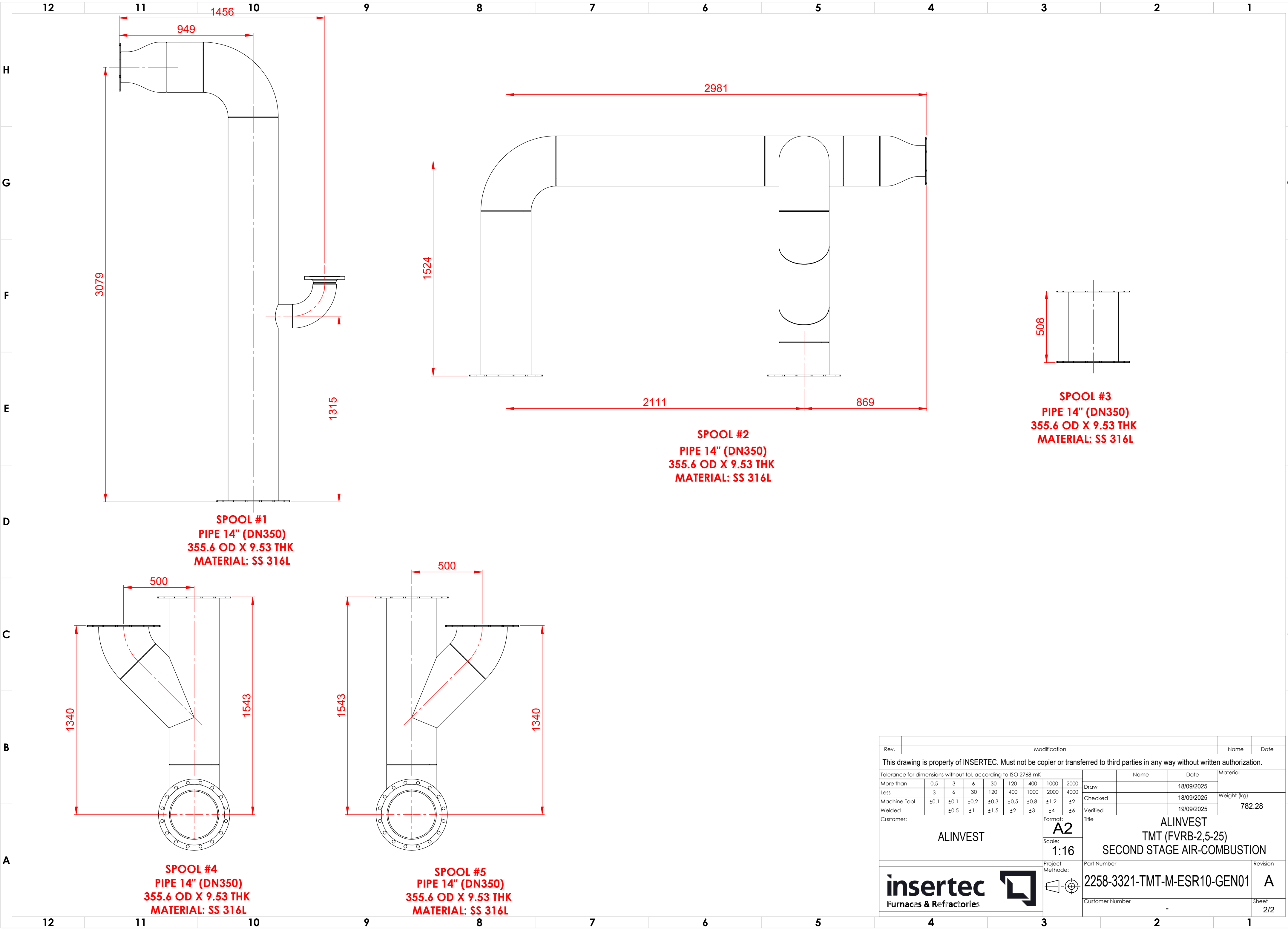



ISOMETRIC VIEW  
SCALE: 1 : 15

FRONT VIEW  
SCALE: 1:30

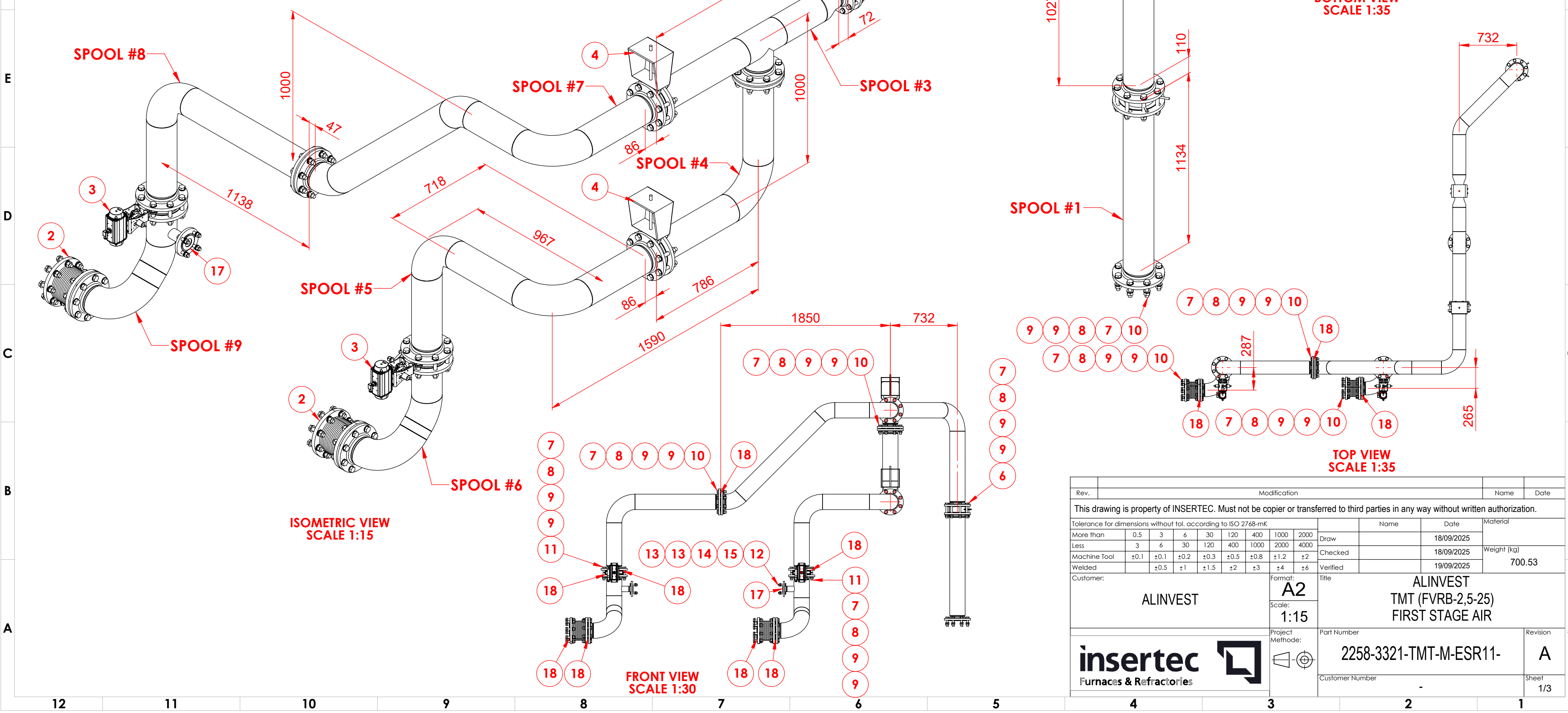
TOP VIEW  
SCALE: 1:30

Rev.		Modification								Name		Date											
This drawing is property of INSERTEC. Must not be copier or transferred to third parties in any way without written authorization.																							
Tolerance for dimensions without tol. according to ISO 2768-mK											Name		Date		Material								
More than		0.5		3		6		30		120		400		1000		2000		Draw		18/09/2025			
Less		3		6		30		120		400		1000		2000		4000		Checked		18/09/2025		Weight (kg)	
Machine Tool		±0.1		±0.1		±0.2		±0.3		±0.5		±0.8		±1.2		±2		Verified		19/09/2025		782.28	
Welded				±0.5		±1		±1.5		±2		±3		±4		±6							
Customer:									Format:		ALINVEST TMT (FVRB-2,5-25) SECOND STAGE AIR-COMBUSTION												
ALINVEST									A2														
									Scale:														
									1:17		Title												
									Project Methode:		Part Number						Revision						
											2258-3321-TMT-M-ESR10-GEN01						A						
											Customer Number						Sheet						
											-						1/2						



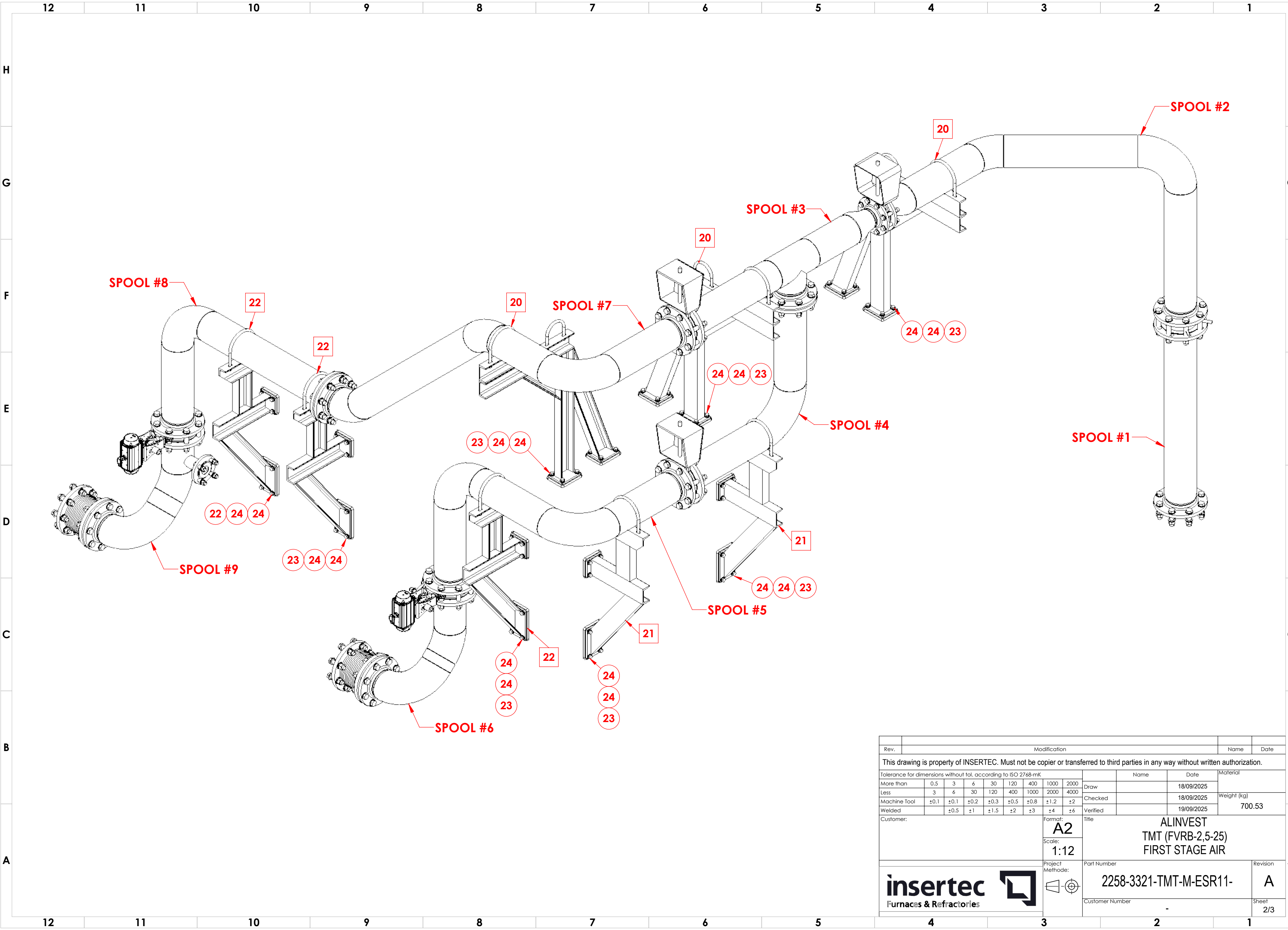
Rev.		Modification							Name		Date	
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Tolerance for dimensions without tol. according to ISO 2768-mK										Name	Date	Material
More than	0.5	3	6	30	120	400	1000	2000	Draw	18/09/2025		
Less	3	6	30	120	400	1000	2000	4000	Checked	18/09/2025	Weight (kg)	
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	19/09/2025		
Welded		±0.5	±1	±1.5	±2	±3	±4	±6			782.28	
ALINVEST				Format:		Title						
				A2		ALINVEST						
				Scale:		TMT (FVRB-2,5-25)						
		1:16		SECOND STAGE AIR-COMBUSTION								
				Project Methode:		Part Number					Revision	
						2258-3321-TMT-M-ESR10-GEN01					A	
						Customer Number					Sheet	
				-					2/2			


	12		11		10		9		8		7		6		5		4		3		2		1
24	DIN933-M12X30-8.8	A	BOLT M12X30				8.8		0.05	64		3.2											
24	DIN127-M12-ST	A	WASHER M12				ST		0.00	64		0											
23	DIN125-M12-ST	A	WASHER M12				ST		0.01	64		0.64											
22	2258-3321-TMT-ESR11-GEN03	A	SUPPORT 3				S275JR		22.11	3		66.33											
21	2258-3321-TMT-ESR11-GEN02	A	SUPPORT 2				S275JR		22.11	2		44.22											
20	2258-3321-TMT-ESR11-GEN01	A	SUPPORT 1				S275JR		36.21	3		108.63											
19	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN100				FIBERGLASS W/NBR		-	2		0											
18	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN150				FIBERGLASS W/NBR		-	17		0											
17	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN50				FIBERGLASS W/NBR		-	2		0											
16	DIN933-M16X110-8.8	A	BOLT M16X110				8.8		0.21	8		1.68											
15	DIN934-M16-8	A	NUT M16				8		0.03	16		0.48											
14	DIN127-M16-ST	A	WASHER M16				ST		0.01	16		0.16											
13	DIN125-M16-ST	A	WASHER M16				ST		0.01	32		0.32											
12	DIN933-M16X70-8.8	A	BOLT M16X70				8.8		0.15	8		1.2											
11	DIN933-M20X130-8.8	A	BOLT M20X130				8.8		0.4	32		12.8											
10	DIN933-M20X90-8.8	A	BOLT M20X90				8.8		0.3	56		16.8											
9	DIN125-M20-ST	A	WASHER M20				ST		0.02	192		3.84											
8	DIN127-M20-ST	A	WASHER M20				ST		0.02	96		1.92											
7	DIN934-M20-8	A	NUT M20				8		0.06	96		5.76											
6	DIN933-M20X150-8.8	A	BOLT M20X150				8.8		0.45	8		3.6											
5	-	-	MEASURING ORIFICE FOR AIR, INSTALLATION BETWEEN FLANGES DN150, V= 844 NM3/H, PE= 90 MBAR, DIFFERENTIAL PRESSURE : 15 MBAR				COMMERCIAL		-	1		0											
4	-	-	BUTTERFLY VALVE FOR INSTALLATION BETWEEN 2 FLANGES DN 150 PN 10 FOR AIR, WITH HANDLE				COMMERCIAL		7.63	2		15.26											
3	-	-	BUTTERFLY VALVE FOR INSTALLATION BETWEEN 2 FLANGES DN150, INCL. STEP SEAT SEALING FOR AIR, WITH PNEUMATIC ACTUATOR, SINGLE-ACTING, OPEN/CLOSE IN 1 SECOND				COMMERCIAL		14.79	2		0											
2	-	-	5 BAR COMPRESSED AIR WITH 3/2-WAY SOLENOID VALVE 24VDC LEAKAGE APPROX. 0.02% OF KV 90°, PN 10, INCL. POSITION SWITCH 24VDC OPEN/CLOSE, 2-WIRE				COMMERCIAL		34.50	2		0											
1	-	-	LOOSE FLANGE; OPERATING TEMP.: -20°C TO +250°C; TOTAL LENGTH: 175 mm; EXTENSIBILITY: AX. 22mm / LAT. 4.1mm, PN10				COMMERCIAL		6.89	1		0											
	-	-	CONTROL BUTTERFLY VALVE FOR INSTALLATION BETWEEN 2 FLANGES DN 100 PN 10 FOR AIR JASTA GD6, COMPLETE ASSEMBLED WITH PNEUMATIC ACTUATOR, OPEN/CLOSE IN 3 - 5 SECONDS MAX.				COMMERCIAL																
	-	-	AND SIEMENS SIPART PS 2, TYPE: 6DR5010-0NG01-0AA0-Z C20, 4-20 MA IN- AND OUTPUT, 24VDC				COMMERCIAL																
Nº	PART NUMBER / ARTICLE CODE	REV.	DESCRIPTION	MATERIAL	MANUFACTURER	TAG	WEIGHT (KG)	QTY.	TOTAL WEIGHT (KG)														



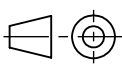
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More than		0.5	3	6	30	120	400	1000	2000	Draw		18/09/2025		Weight (kg)		700.53	
Less		3	6	30	120	400	1000	2000	4000	Checked		18/09/2025					
Machine Tool		±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified		19/09/2025					
Welded			±0.5	±1	±1.5	±2	±3	±4	±6								
Customer:										Format:		Title					
ALINVEST										A2		ALINVEST					
										Scale:		TMT (FVRB-2,5-25)					
										1:15		FIRST STAGE AIR					





Rev.		Modification								Name		Date		
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Tolerance for dimensions without tol. according to ISO 2768-mK										Name	Date	Material		
More than	0.5	3	6	30	120	400	1000	2000	Draw	18/09/2025				
Less	3	6	30	120	400	1000	2000	4000	Checked	18/09/2025	Weight (kg)			
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	19/09/2025	700.53			
Welded		±0.5	±1	±1.5	±2	±3	±4	±6	ALINVEST TMT (FVRB-2,5-25) FIRST STAGE AIR					
Customer:													Format:	
													A2	
													Scale:	
									1:12					
									Project Methode:		Part Number		Revision	
											2258-3321-TMT-M-ESR11-		A	
											Customer Number		Sheet	
											-		2/3	

**insertec**  
Furnaces & Refractories



ALINVEST  
TMT (FVRB-2,5-25)  
FIRST STAGE AIR

Part Number

2258-3321-TMT-M-ESR11-

Customer Number

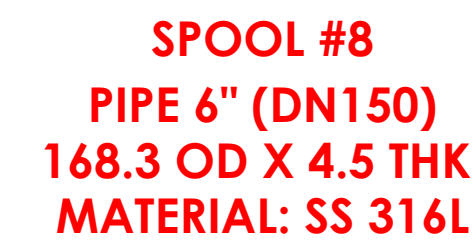
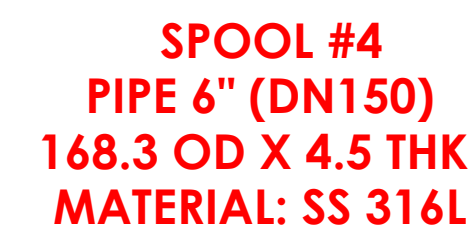
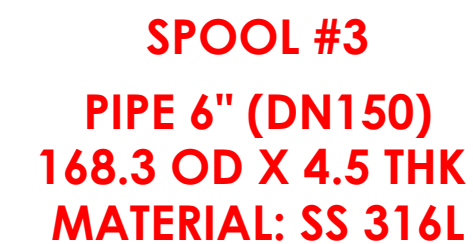
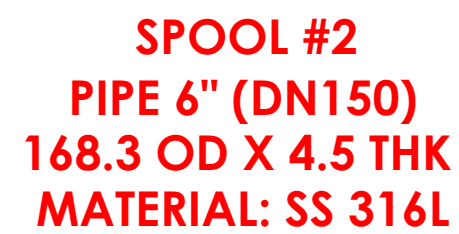
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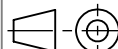
Revision

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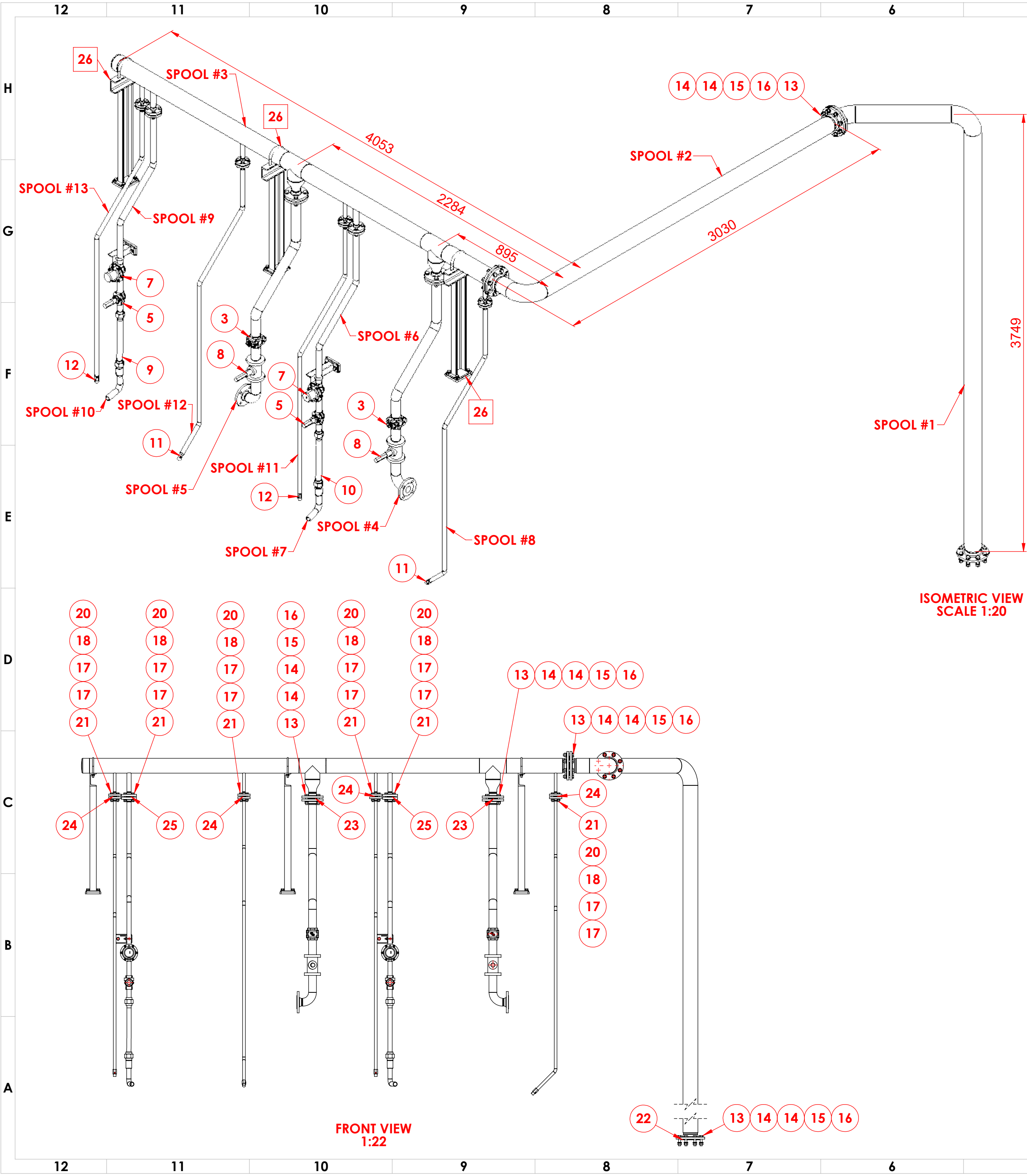
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2/3



Rev.	Modification										Name		Date	
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.														
Tolerance for dimensions without tol. according to ISO 2768-mK														
More than	0.5	3	6	30	120	400	1000	2000	Draw	Name	Date	Material		
Less	3	6	30	120	400	1000	2000	4000	Checked		18/09/2025	Weight (kg)  700.53		
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified		19/09/2025			
Welded	±0.5	±1	±1.5	±2	±3	±4	±6							
Customer:  <div>ALINVEST</div>									Format: <div>A2</div>		Title <div>ALINVEST TMT (FVRB-2,5-25) FIRST STAGE AIR</div>			
									Scale: <div>1:12</div>					
<div><div>insertec</div><div>Furnaces &amp; Refractories</div></div> <div></div> <div></div>									Project Methode:		Part Number			Revision
											2258-3321-TMT-M-ESR11-			A
											Customer Number			-
								3/3						





28	2258-3321-TMT-ESR12-GEN03	A	SUPPORT 3	S275JR		2.47	1	2.47
27	2258-3321-TMT-ESR12-GEN02	A	SUPPORT 2	S275JR		2.28	1	2.28
26	2258-3321-TMT-ESR12-GEN01	A	SUPPORT 1	S275JR		14.53	3	43.59
25	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN25	FIBERGLASS W/NBR		-	2	0
24	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN15	FIBERGLASS W/NBR		-	4	0
23	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN50	FIBERGLASS W/NBR		-	2	0
22	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN100	FIBERGLASS W/NBR		-	3	0
21	DIN933-M12X60-8.8	A	BOLT M12X60	8.8		0.07	24	1.68
20	NUT DIN 934 M12-A2	A	NUT M12	A2		0.02	24	0.48
19	DIN933-M12X30-8.8	A	BOLT M12X30	8.8		0.05	16	0.8
18	DIN127-M12-ST	A	WASHER M12	ST		0.00	40	0
17	DIN125-M12-ST	A	WASHER M12	ST		0.01	64	0.64
16	DIN934-M16-8	A	NUT M16	8		0.03	32	0.96
15	DIN127-M16-ST	A	WASHER M16	ST		0.01	32	0.32
14	DIN125-M16-ST	A	WASHER M16	ST		0.01	64	0.64
13	DIN933-M16X70-8.8	A	BOLT M16X70	8.8		0.15	32	4.8
12	-		ADJUSTING COCK 1/2" THREAD DESIGN; ADJUSTMENT WITH TOOLS MAX OPERATION PRESSURE GAS 1 BAR ; MAX. OPERATION PRESSURE AIR 4 BAR	COMMERCIAL		-	2	0
11	-		ADJUSTING COCK 1/2" THREAD DESIGN; ADJUSTMENT WITH TOOLS MAX OPERATION PRESSURE GAS 1 BAR ; MAX. OPERATION PRESSURE AIR 4 BAR	COMMERCIAL		-	2	0
10	-		FLEXIBLE HOSE 1" LENGTH 500 mm CONNECTION ONE SIDE MALE THREAD ONE SIDE THREADED JOINT DVGW CERTIFICATE	COMMERCIAL		-	1	0
9	-		FLEXIBLE HOSE 1" LENGTH 500 mm CONNECTION ONE SIDE MALE THREAD ONE SIDE THREADED JOINT DVGW CERTIFICATE	COMMERCIAL		-	1	0
8	-	-	FLOW-CONTROL-VALVE THREAD DESIGN ; MAX OPERATION PRESSURE 10 BAR	COMMERCIAL		0	1	0
7	-		PRESSURE REGULATOR OUTLET PRESSURE : 25 - 75 MBAR SPRING REACTING; FOR CONSTANT PRESSURE FOR GAS; MEASURING CONTROL NOZZLE IN THE INLET EG CERTIFICATE PE MAX 400 MBAR	COMMERCIAL		0	1	0
6	-		PRESSURE REGULATOR OUTLET PRESSURE : 25 - 75 MBAR SPRING REACTING; FOR CONSTANT PRESSURE FOR GAS; MEASURING CONTROL NOZZLE IN THE INLET EG CERTIFICATE PE MAX 400 MBAR	COMMERCIAL		0	1	0
5	-	-	ADJUSTMENT VALVE 1" THREAD DESIGN ; MAX OPERATION PRESSURE 10 BAR. FOR AIR AND GAS WITH TEMP. -20°C UP TO +60°C	COMMERCIAL		0	1	0
4	-	-	ADJUSTMENT VALVE 1" THREAD DESIGN ; MAX OPERATION PRESSURE 10 BAR. FOR AIR AND GAS WITH TEMP. -20°C UP TO +60°C	COMMERCIAL		0	1	0
3	-		ORIFICE PLATE ASSEMBLY INCL. TAPS; COMPLETELY ASSEMBLED THREADED CONNECTION	COMMERCIAL		0	1	0
2	-	-	FLOW-CONTROL-VALVE THREAD DESIGN ; MAX OPERATION PRESSURE 10 BAR	COMMERCIAL		0	1	0
1	-		ORIFICE PLATE ASSEMBLY INCL. TAPS; COMPLETELY ASSEMBLED THREADED CONNECTION	COMMERCIAL		0	1	0
N° PART NUMBER / ARTICLE CODE / REV.			DESCRIPTION	MATERIAL	MANUFACTURER TAG	WEIGHT (KG)	QTY.	TOTAL WEIGHT (KG)

Rev.

Modification

Name

Date

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Tolerance for dimensions without tol. according to ISO 2768-mK

More than	0.5	3	6	30	120	400	1000	2000
Less	3	6	30	120	400	1000	2000	4000

Machine Tool

±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2
------	------	------	------	------	------	------	----

Welded

±0.5	±1	±1.5	±2	±3	±4	±6
------	----	------	----	----	----	----

Customer:

ALINVEST

Format: A2

Scale: 1:18

Project Methode:

inserterc Furnaces & Refractories

Name

Date

Material

Weight (kg)

212.23

ALINVEST TMT (FVRB-2,5-25) PILOT AND COOLING AIR

Part Number

2258-3321-TMT-M-ESR12-

Revision

A

Customer Number

-

Sheet

1/2

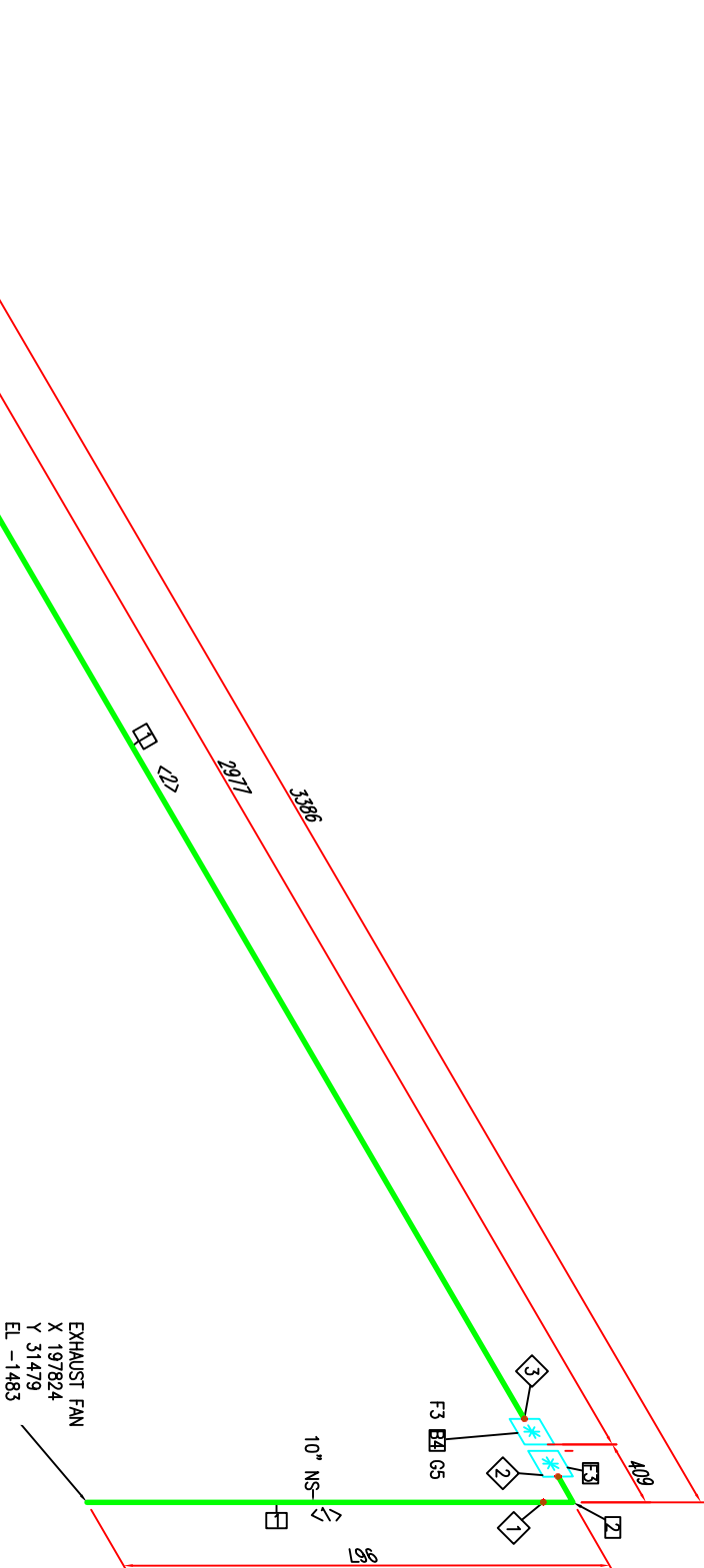


 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

#### MELTER 25 – EXHAUST AIRE AIB SCOPE

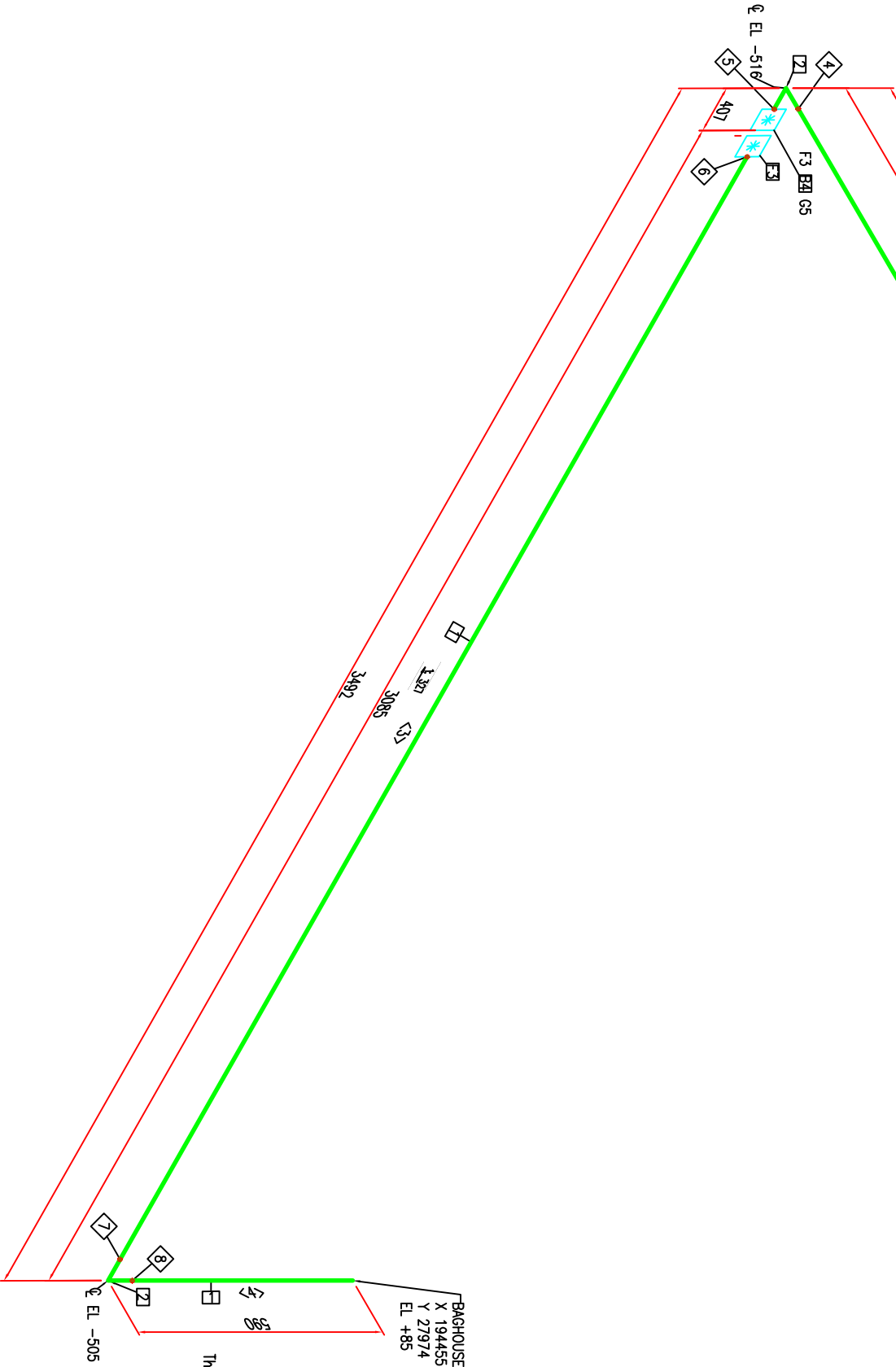
- LINE 1
- LINE 2
- LINE 3
- LINE 4

LISTADO SOLDADURAS		
ID	DN "	TYPE
1	10"	BUTTWELD
2	10"	BUTTWELD
3	10"	BUTTWELD
4	10"	BUTTWELD
5	10"	BUTTWELD
6	10"	BUTTWELD
7	10"	BUTTWELD
8	10"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	6.1M	10"
PIPE , EN 10217-7 STAINLESS 316L STAINLESS		
FITTINGS		
2	3	10"
ELBOW 90° RL - BW, EN 10253-1, 316L STAINLESS		
FLANGES		
3	4	10"
SLIP-ON FLANGE, EN 1092-1, 316L DIN2633 STAINLESS		
BOLTS, GASKETS		
4	24	3/8"x1 60
STUD BOLT,		
5	2	10"
GASKET		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	10"	587MM
2	10"	2570MM
3	10"	2676MM
4	10"	209MM



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Rev.										Modification		None	Date
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization													
Tolerance for dimensions without tol. according to ISO 2768-MK													
More than	0.5	3	6	30	120	400	1000	2000		Draw			Date
Less	3	6	30	120	400	1000	2000	4000		Checked			18/09/2025
Machine Tool													18/09/2025
Welded	0.1	0.1	0.2	0.3	0.5	0.8	1.2	2		Verified			19/09/2025
Material										316L			
Weight (kg)													

ALINVEST		ALINVEST	
A2		TMT (FVRB-2,5-25)	
1:15		EXHAUST ROUTE	

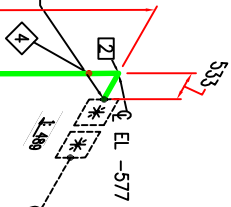
Project		Port Number	Revision
Methods		2558-3321-TMT-M-ESR16-1	A
Customer Number		-	Sheet 1/2





LISTADO SOLDADURAS		
ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	BUTTWELD
3	14"	BUTTWELD
4	14"	BUTTWELD

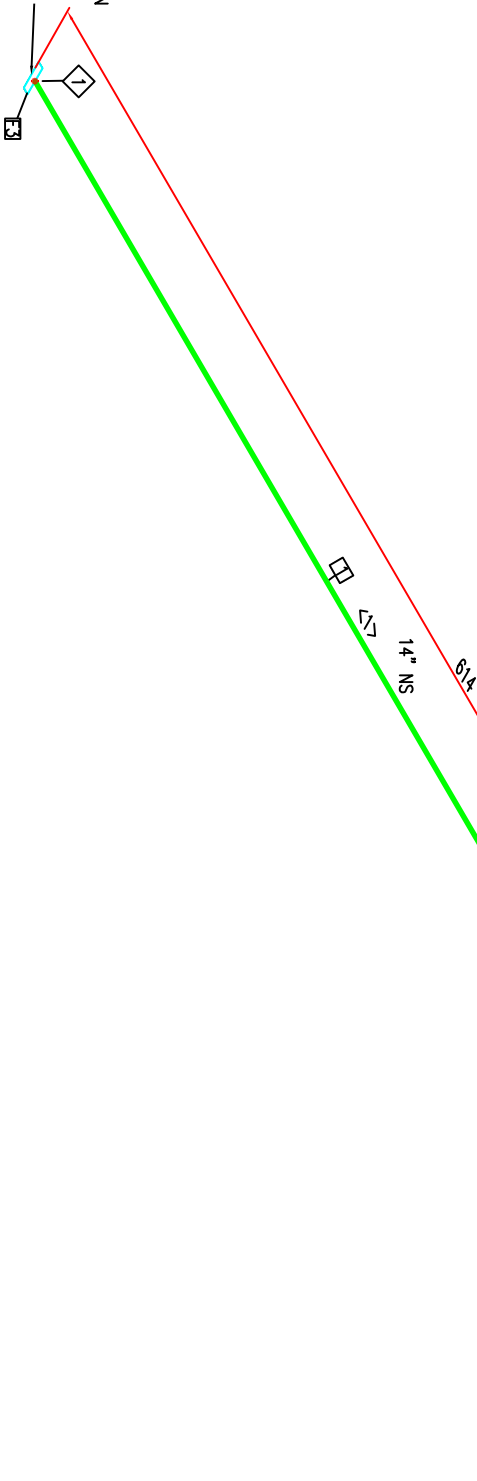
2558-3321-TMT-ESR16-22  
X 198905  
Y 30286  
EL -576



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	1.0M	14"	PIPE , EN 10217-7 STAINLESS 316L	316L STAINLESS
FITTINGS				
2	2	14"	ELBOW 90° RL – BW, EN 10253-1, 316L STAINLESS	316L STAINLESS
FLANGES				
3	1	14"	BRIDA PLANA AC, BV EN 1092-1 DIN 2502	ACERO AL CARBONO

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	51MM
2	14"	870MM

EXHAUST FAN  
X 198289  
Y 30812  
EL -2513



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Rev.		Modification		None	Date					
Tolerance for dimensions without tol. according to ISO 2768-MK										
More than	0.5	3	6	30	120	400	1000	2000	316L	
Less	3	6	30	120	400	1000	2000	4000		
Machine Tool	±	±	±	±	±	±	±	±		
Welded	0.1	0.1	0.2	0.3	0.5	1	1.5	2	19/09/2023	
Customer:	0.5	1	1.5	2	3					

ALINVEST		ALINVEST	
Scale:		Title	
1:15		TMT (FVRB-2,5-25)	
		EXHAUST ROUTE	

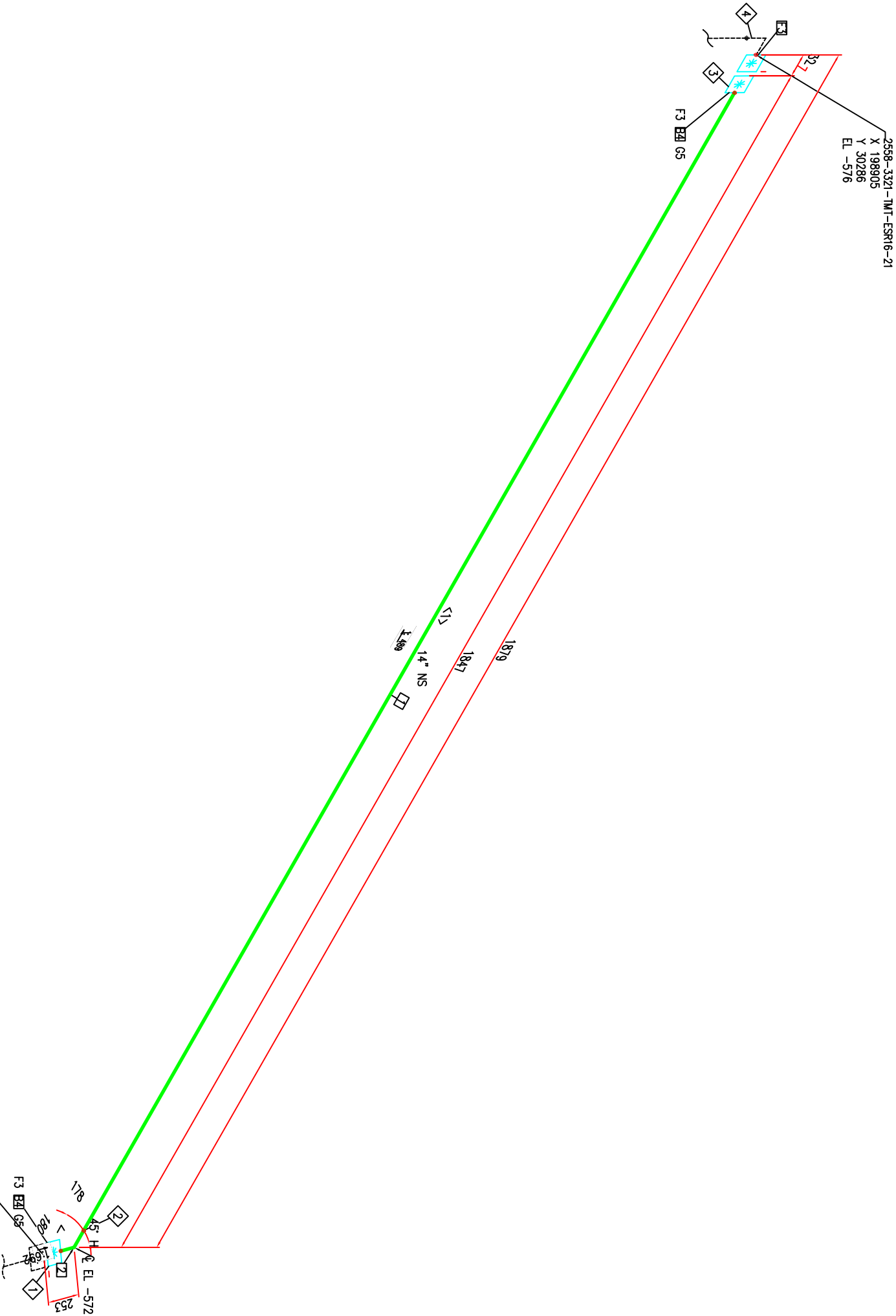
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Methods:		2558-3321-TMT-M-ESR16-21	A
		Customer Number	Sheet
		-	24/2







LISTADO SOLDADURAS		
ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	BUTTWELD
3	14"	BUTTWELD
4	14"	BUTTWELD



2558-3321-TMT-ESR16-23  
X 198736  
Y 28227  
EL -572

MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	1.6M	14"
PIPE , EN 10217-7 STAINLESS 316L		
STAINLESS		
FITTINGS		
2	1	14"
ELBOW 45° RL - BW, EN 10253-1,		
316L STAINLESS		
STAINLESS		
FLANGES		
3	3	14"
SLIP-ON FLANGE, EN 1092-1,		
DIN2633		
BOLTS, GASKETS		
4	32	3/4"x2
STUD BOLT,		
80		
5	2	14"
GASKET		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	1597MM

Rev.	Modification	None	Date
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Tolerance for dimensions without tol. according to ISO 2768-MK		More than	0.5	3	6	30	120	400	1000	2000	Draw	Name	Date	Material
Less		3	6	30	120	400	1000	2000	4000		Draw		18/09/2023	316L
Machine Tool		+	+	+	+	+	+	+	+	+	Checked		18/09/2023	Weight (kg)
Welded		U1	U1	U2	U2	U3	U3	U3	U3	U3	Verified		19/09/2023	
Customer:		U5	1	15	2	3								

ALINVEST		ALINVEST	ALINVEST
Scale:		1:15	1:15
Project		Port Number	Revision
Method:		2558-3321-TMT-M-ESR16-22	A
Customer Number		-	28/2

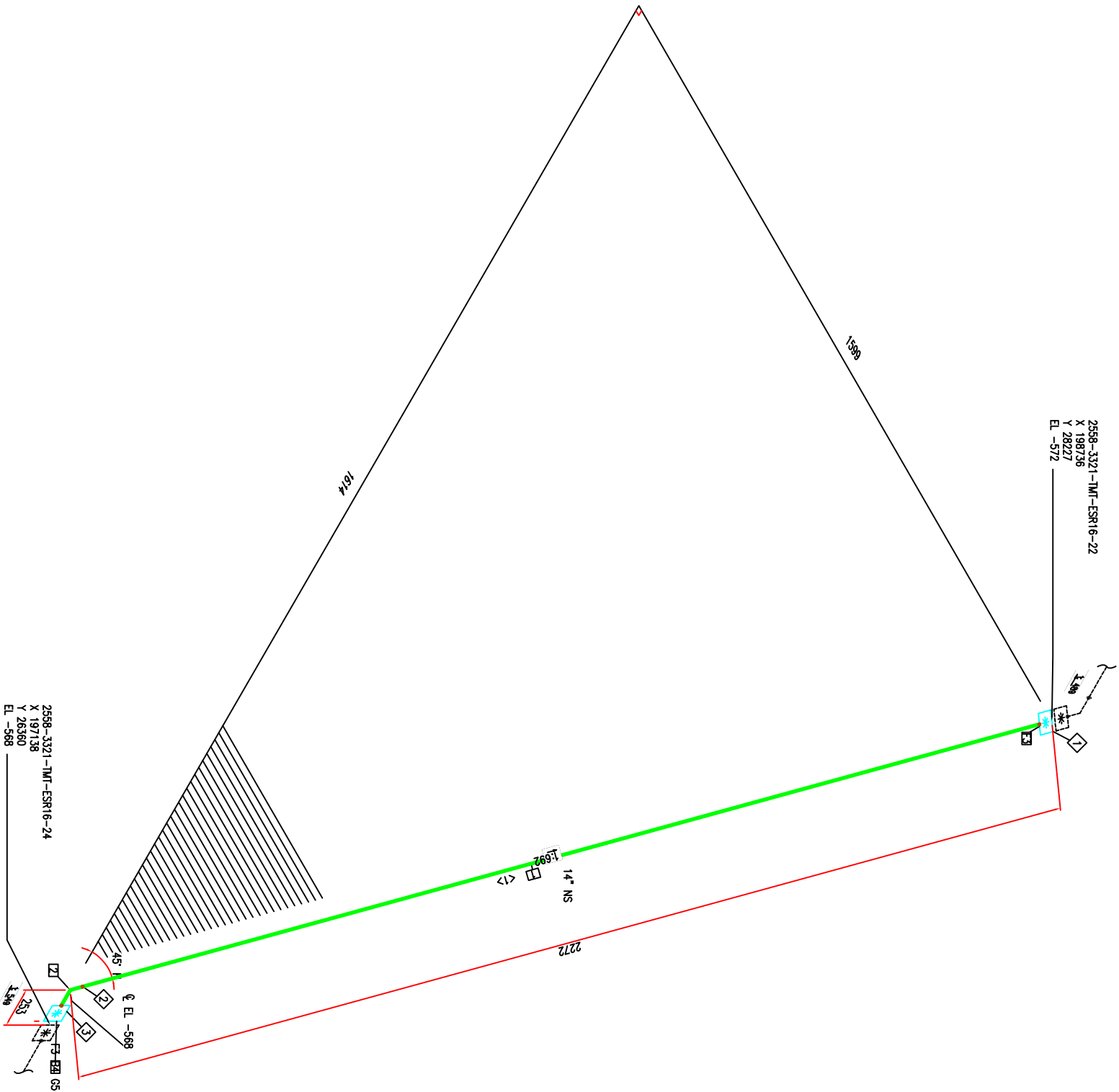


2558-3321-TMT-M-ESR16-22

A



ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	BUTTWELD
3	14"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	2.1M	14"
PIPE , EN 10217-7 STAINLESS 316L		
STAINLESS		
FITTINGS		
2	1	14"
ELBOW 45° RL - BW, EN 10253-1,		
316L STAINLESS		
FLANGES		
3	2	14"
SLIP-ON FLANGE, EN 1092-1,		
DN2653		
316L		
STAINLESS		
BOLTS, GASKETS		
4	16	1/4"x2
STUD BOLT,		
80		
5	1	14"
GASKET		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	2022MM

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Rev.	Modification										None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK												
More than	0.5	3	6	30	120	400	1000	2000				
Less	3	6	30	120	400	1000	2000	4000	Draw			
Machine Tool	+	+	+	+	+	+	+	+	Checked			
Welded	0.1	0.1	0.2	0.3	0.5	0.8	1.2	2				
Customer:	0.5	1	1.5	2	3	Format	b		Verified			
										None	Date	Material
												316L
												18/09/2025
												18/09/2025
												18/09/2025
												Weight (kg)

insertec

Furnaces & Refractories

Project Method

2558-3321-TMT-M-ESR16-23

Customer Number

-

Revision

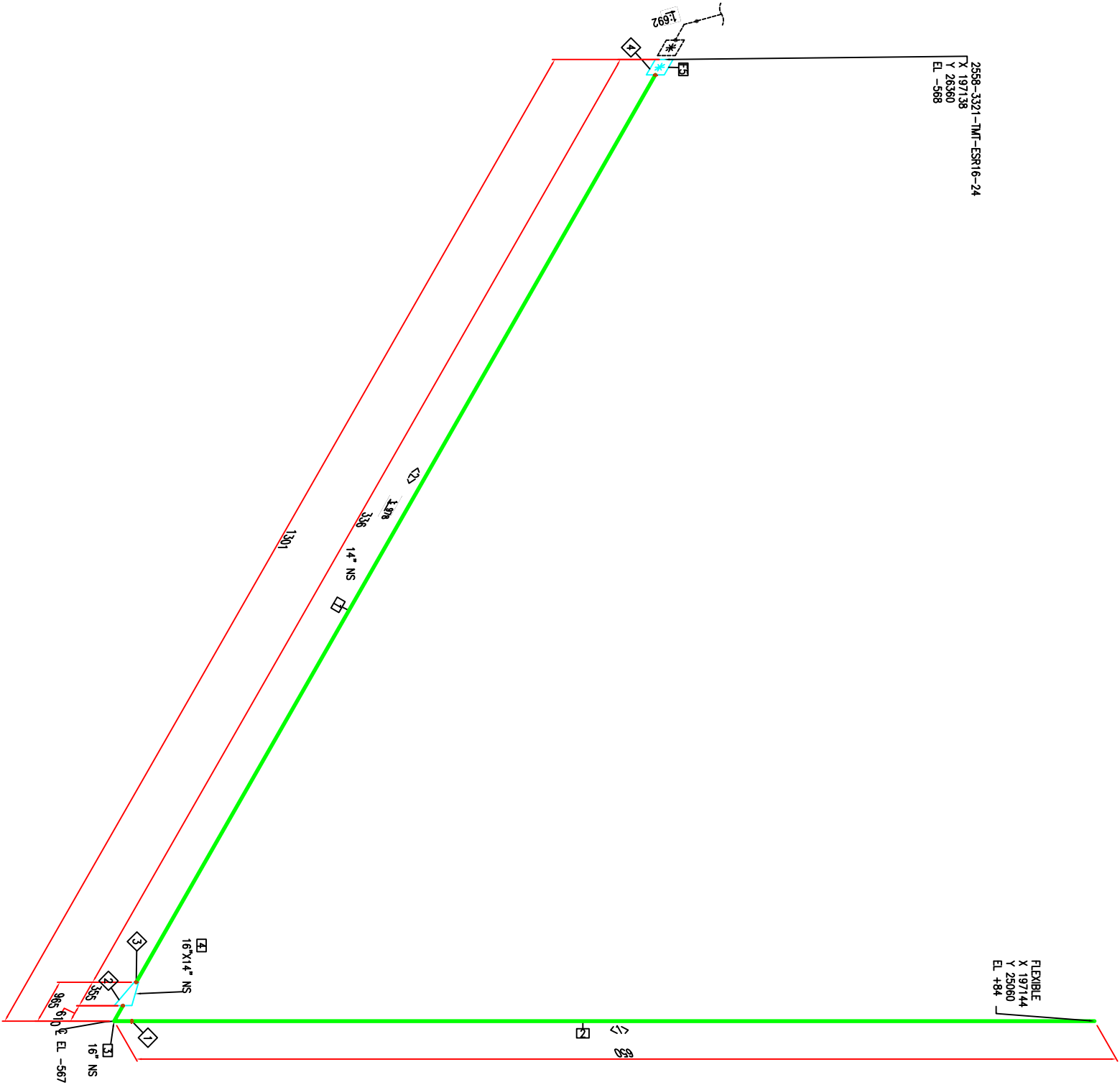
A

Sheet

20/2



LISTADO SOLDADURAS		
ID	DN "	TYPE
1	16"	BUTTWELD
2	16"	BUTTWELD
3	14"	BUTTWELD
4	14"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	0.4M	14"
PIPE , EN 10217-7 STAINLESS 316L		
2	0.1M	16"
PIPE , EN 10217-7 STAINLESS 316L		
FITTINGS		
3	1	16"
ELBOW 90° RL - BW, EN 10253-1, STAINLESS		
4	1	16"x14
REDUCCION CONCENTRICA AC, EN CARBONO		
FLANGES		
5	1	14"
SLIP-ON FLANGE, EN 1092-1, STAINLESS		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	16"	41MM
2	14"	307MM

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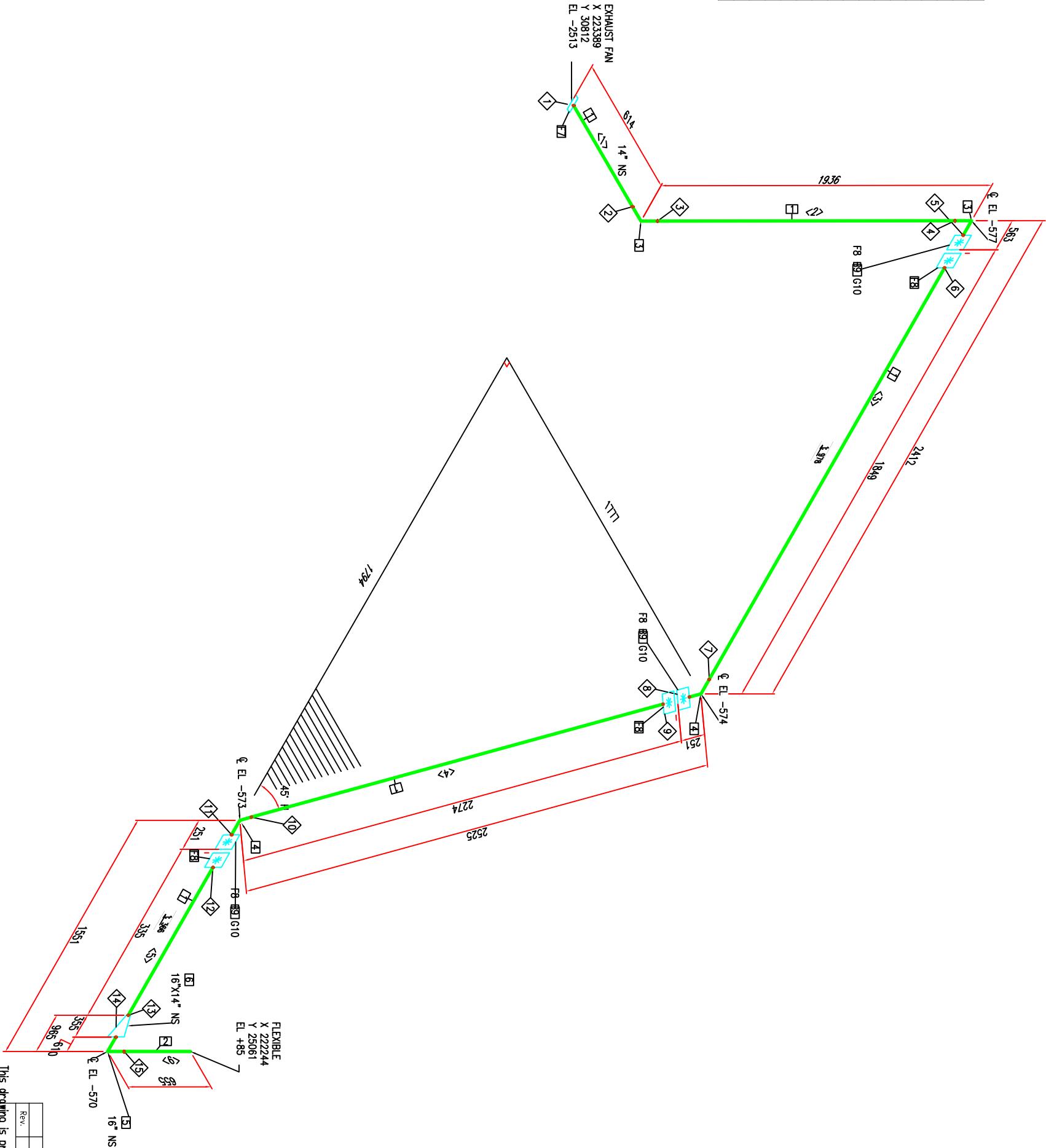
Rev.										Modification		None		Date	
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization															
Tolerance for dimensions without tol. according to ISO 2768-MK															
More than		0.5	3	6	30	120	400	1000	2000	Draw	None			Date	
Less		3	6	30	120	400	1000	2000	4000	Checked				18/09/2005	
Machine Tool		±	0.1	0.2	0.3	0.5	0.8	1	1.5	Verified				18/09/2005	
Welded		0.1	0.1	0.2	0.3	0.5	0.8	1	1.5	Verified				19/09/2005	
										Material		316L			
										Weight (kg)					

ALINVEST		ALINVEST	
Scale:		Scale:	
1:1.5		1:1.5	
Project		Project	
Method:		Method:	
2558-3321-TMT-M-ESR16-24		2558-3321-TMT-M-ESR16-24	
Customer Number		Customer Number	
-		-	
Revision		Revision	
A		A	

insertec		insertec	
Furnaces & Refractories		Furnaces & Refractories	
Project		Project	
Method:		Method:	
2558-3321-TMT-M-ESR16-24		2558-3321-TMT-M-ESR16-24	
Customer Number		Customer Number	
-		-	
Revision		Revision	
A		A	



LISTADO SOLDADURAS		
ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	BUTTWELD
3	14"	BUTTWELD
4	14"	BUTTWELD
5	14"	BUTTWELD
6	14"	BUTTWELD
7	14"	BUTTWELD
8	14"	BUTTWELD
9	14"	BUTTWELD
10	14"	BUTTWELD
11	14"	BUTTWELD
12	14"	BUTTWELD
13	14"	BUTTWELD
14	16"	BUTTWELD
15	16"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	4.9M	14"
PIPE , EN 10217-7 STAINLESS 316L		
2	0.1M	16"
PIPE , EN 10217-7 STAINLESS 316L		
FITTINGS		
3	2	14"
ELBOW 90° RL - BW, EN 10253-1,		
316L STAINLESS		
4	2	14"
ELBOW 45° RL - BW, EN 10253-1,		
316L STAINLESS		
5	1	16"
ELBOW 90° RL - BW, EN 10253-1,		
316L STAINLESS		
6	1	16"x14
REDUCCION CONCENTRICA AC, EN		
10253-1		
CARBONO		
FLANGES		
7	1	14"
BRIDA PLANA AC, BV EN 1092-1 DIN		
2502		
ACERO AL		
8	6	14"
SLIP-ON FLANGE, EN 1092-1,		
DN2633		
316L		
STAINLESS		
BOLTS, GASKETS		
9	48	3/4"x2
STUD BOLT,		
10	3	14"
GASKET		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	51MM
2	14"	870MM
3	14"	1597MM
4	14"	2022MM
5	14"	304MM
6	16"	46MM

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Rev	Modification	None	Date

Tolerance for dimensions without tol. according to ISO 2768-MK										None		Date		Material	
More than	0.5	3	6	30	120	400	1000	2000			18/09/2025		316L		
Less		3	6	30	120	400	1000	2000	Draw		18/09/2025				
Machine Tool	±								Checked		18/09/2025		Weight (kg)		
Welded	0.1	0.1	0.2	0.3	0.5	0.5	1.2	2	Verified		19/09/2025				
Customer:	0.5	1	15	2	3	Finish: 6				AI INVEST					

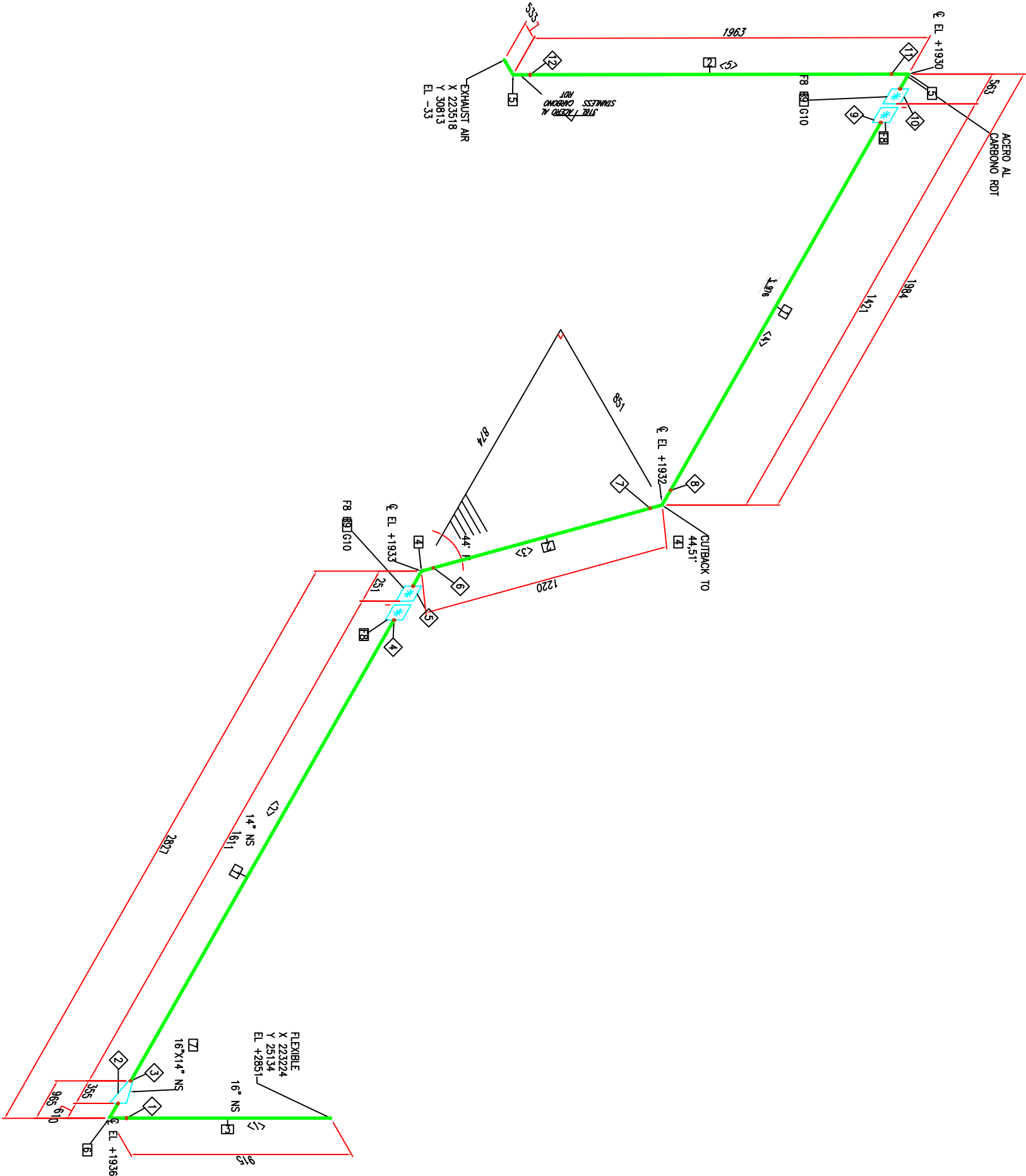
ALINVEST		ALINVEST		Title	
Scale:		1:15		TM1 (FVRB-2,5-25)	
				EXHAUST ROUTE	

Project		Port Number		Revision	
Methods:		2558-3322-TM1-M-ESR16-1		A	
Customer Number		-		Sheet	
				1/2	





LISTADO SOLDADURAS		
ID	DN "	TIPO
1	16"	BUTTWELD
2	16"	BUTTWELD
3	14"	BUTTWELD
4	14"	BUTTWELD
5	14"	BUTTWELD
6	14"	BUTTWELD
7	14"	BUTTWELD
8	14"	BUTTWELD
9	14"	BUTTWELD
10	14"	BUTTWELD
11	14"	BUTTWELD
12	14"	BUTTWELD



LISTADO DE MATERIALES		
ID	CANTIDAD	DN "
DESCRIPCION		
MATERIAL		
TUBERIA		
1	2.8M	14"
2	1.7M	14"
3	0.4M	16"
ACCESORIOS		
4	2	14"
5	2	14"
6	1	16"
7	1	16"
BRIDAS		
8	4	14"
9	32	3/4"x2 80
10	2	14"

LISTADO DESPIECE TUBERIAS		
ID	DN "	LONGITUD
1	16"	305MM
2	14"	1580MM
3	14"	782MM
4	14"	1171MM
5	14"	897MM

Rev.	Modification	None	Date

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Tolerance for dimensions without tol. according to ISO 2768-MK			
More than	0.5	3	6
Less	3	6	30
Machine Tool	±	±	±
Welded	±	±	±
Customer:	0.5	1	1.5

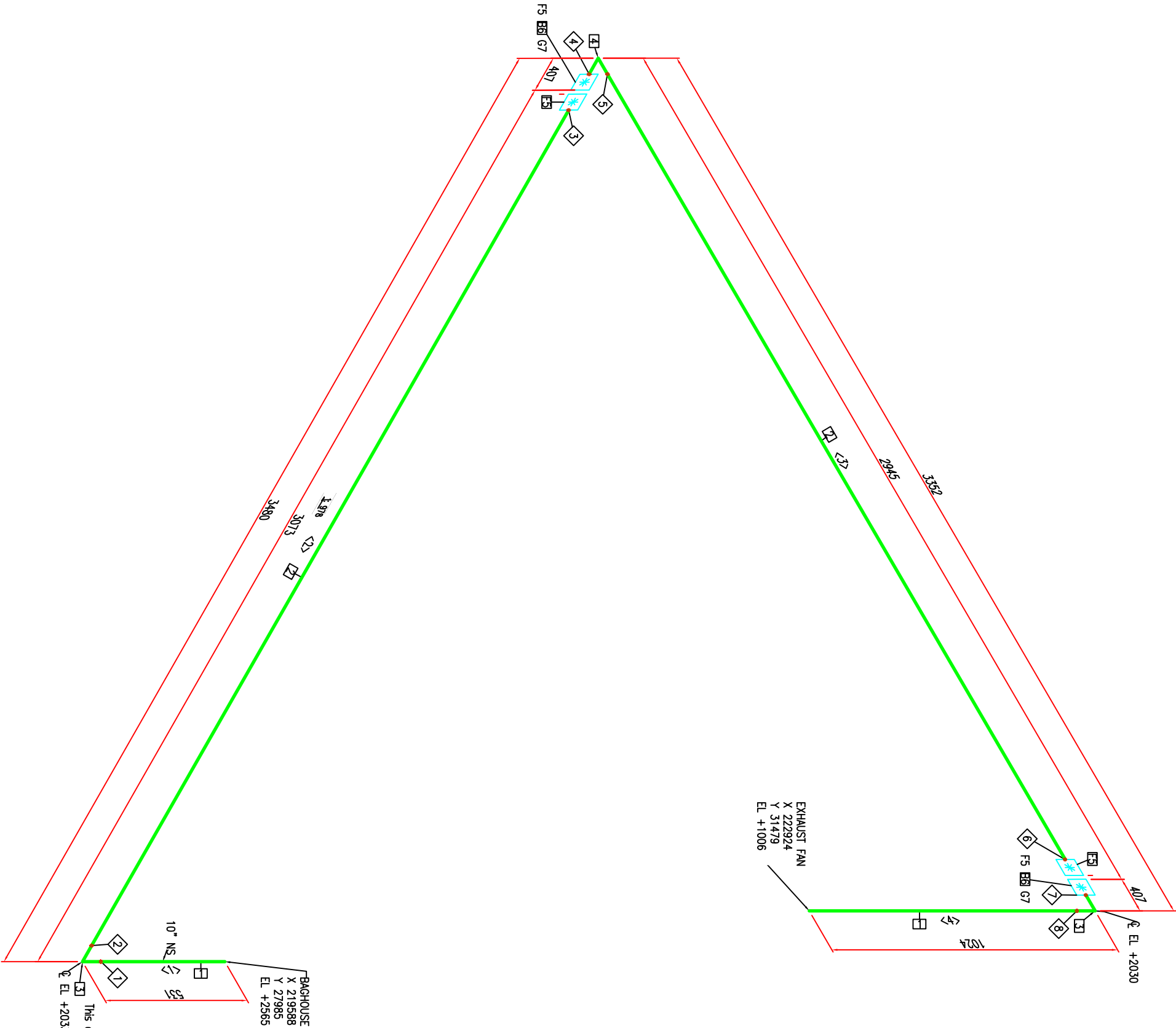
ALINVEST		ALINVEST	
A2		TMT (FVRB-2,5-25)	
1:15		EXHAUST ROUTE	

Project		Port Number	
Methods		2558-3323-TMT-M-ESR16-1	
Customer:		Customer Number	
insertec		-	
Furnaces & Refractories		Sheet	
1/2		Revision	
A		A	





LISTADO SOLDADURAS		
ID	DN "	TIPO
1	10"	BUTTWELD
2	10"	BUTTWELD
3	10"	BUTTWELD
4	10"	BUTTWELD
5	10"	BUTTWELD
6	10"	BUTTWELD
7	10"	BUTTWELD
8	10"	BUTTWELD



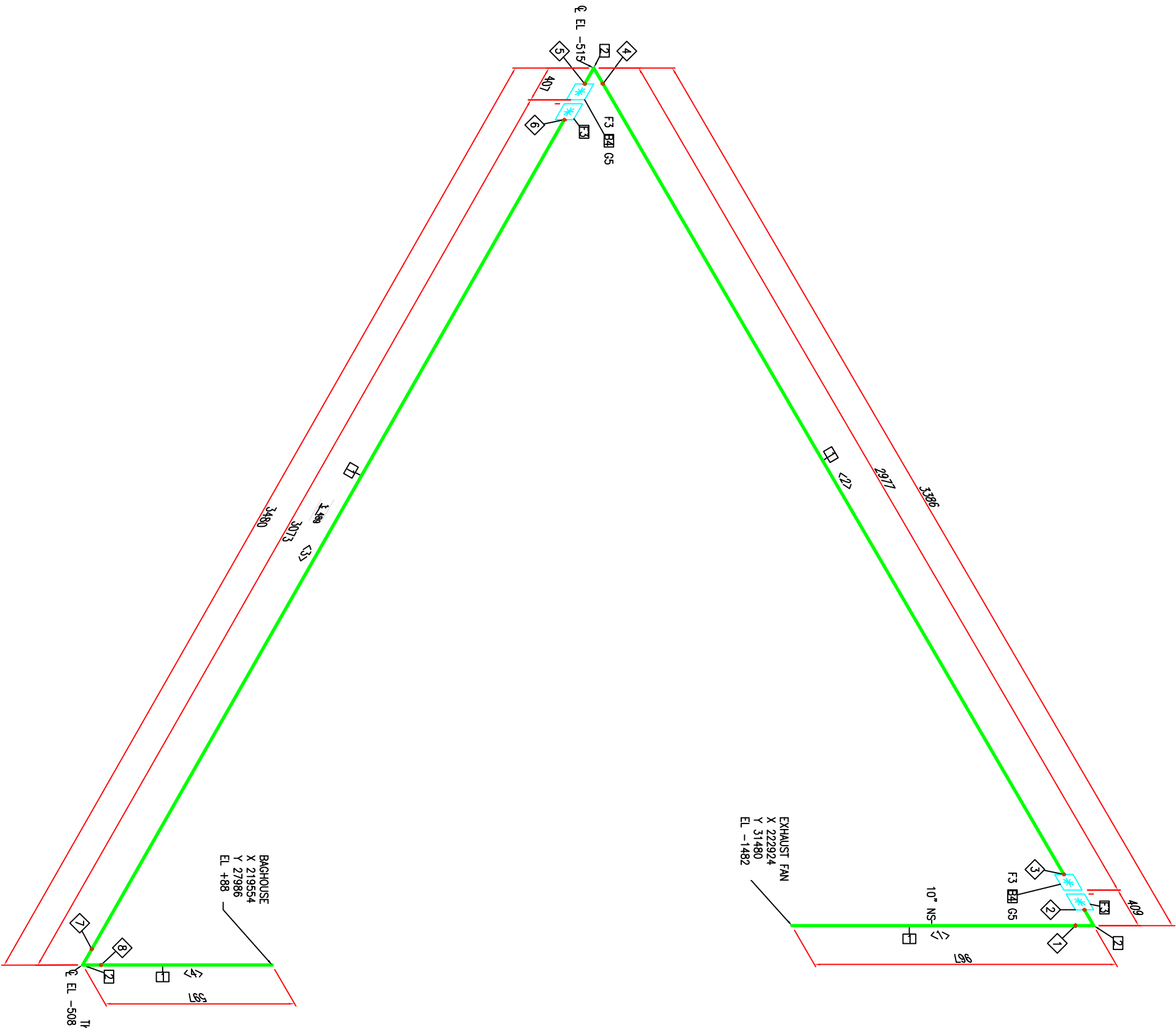
LISTADO DE MATERIALES		
ID	CANTIDAD	DN "
DESCRIPCION		
MATERIAL		
TUBERIA		
1	0.8M	10"
2	5.2M	10"
ACCESORIOS		
3	2	10"
4	1	10"
BRIDAS		
5	4	10"
6	24	3/8"x1 STUD BOLT, 60
7	2	10" GASKET

LISTADO DESPECE TUBERIAS		
ID	DN "	LONGITUD
1	10"	151MM
2	10"	2664MM
3	10"	2537MM
4	10"	644MM

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Rev.		Modification						None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK									
More than		0.5	3	6	30	120	400	1000	2000
Less		3	6	30	120	400	1000	2000	4000
Machine Tool		±							
Welded		U1	U2	U3	U5	U8	1F	±	Verified
Customer:		0.5	1	15	30	100	200	300	400
Title		Project							
Material		316L							
Weight (kg)		1.00							



WELDING LIST		
ID	DN "	TYPE
1	10"	BUTTWELD
2	10"	BUTTWELD
3	10"	BUTTWELD
4	10"	BUTTWELD
5	10"	BUTTWELD
6	10"	BUTTWELD
7	10"	BUTTWELD
8	10"	BUTTWELD



MATERIAL LIST			
ID	QTY	DN "	DESCRIPTION MATERIAL
PIPING			
1	6.1M	10"	PIPE , EN 10217-7 STAINLESS 316L STAINLESS
FITTINGS			
2	3	10"	ELBOW 90° RL - BW, EN 10253-1, 316L STAINLESS
3	4	10"	SLIP-ON FLANGE, EN 1092-1, 316L STAINLESS
BOLTS, GASKETS			
4	24	1 3/8"x1 60	STUD BOLT,
5	2	10"	GASKET

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	10"	586MM
2	10"	2570MM
3	10"	2664MM
4	10"	216MM

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Rev.		Modification							None	Date	
Tolerance for dimensions without tol. according to ISO 2768-MK											
More than		0.5	3	6	30	120	400	1000	2000		
less		3	6	30	120	400	1000	2000	4000	Draw	
Machine Tool		+	+	+	+	+	+	+	+	18/09/2025	
Welded		0.5	1	1.5	2	3				18/09/2025	
Customer:		Format b								Verified	
M/INVEST											
										Material	
										316L	
										Weight (kg)	

ALINVEST		ALINVEST	
Scale:		Scale:	
1:15		1:15	
Project		Project	
Methods		Methods	
Port Number		Port Number	
2558-3322-TMT-M-ESR16-2		2558-3322-TMT-M-ESR16-2	
Customer Number		Customer Number	
-		-	
Revision		Revision	
A		A	

insertec		insertec	
Furnaces & Refractories		Furnaces & Refractories	
Project		Project	
Methods		Methods	
Port Number		Port Number	
2558-3322-TMT-M-ESR16-2		2558-3322-TMT-M-ESR16-2	
Customer Number		Customer Number	
-		-	
Revision		Revision	
A		A	

Sheet		Sheet	
2/2		2/2	



MATERIAL LIST			
ID	QTY	DN "	MATERIAL
PING			
1	3.5M	14"	316L PIPE , EN 10217-7 STAINLESS 316L
2	1.2M	14"	316L PIPE , EN 10217-7 STAINLESS 316L
FITTINGS			
			316L ELBOW 90° 1/2" SCH 40 EN 10203-4

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	102MM
2	14"	676MM
3	14"	222MM
4	14"	1108MM
5	14"	898MM
6	14"	1571MM



Material	Date	Name
316L	18/09/2025	
		Dr-cw
		more than
		0.5
		3
		6
		30
		120
		400
		1000
		2000
		4000

Machine Tool	+	+	+	+	+	checked	10/09/2025
	0.1	0.1	0.2	0.3	0.5	1.2	
Storemen	0.5	1	1.5	2	3	6	11/09/2025
format: 6						title	

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2558-3324-TMT-M-ESR16-1

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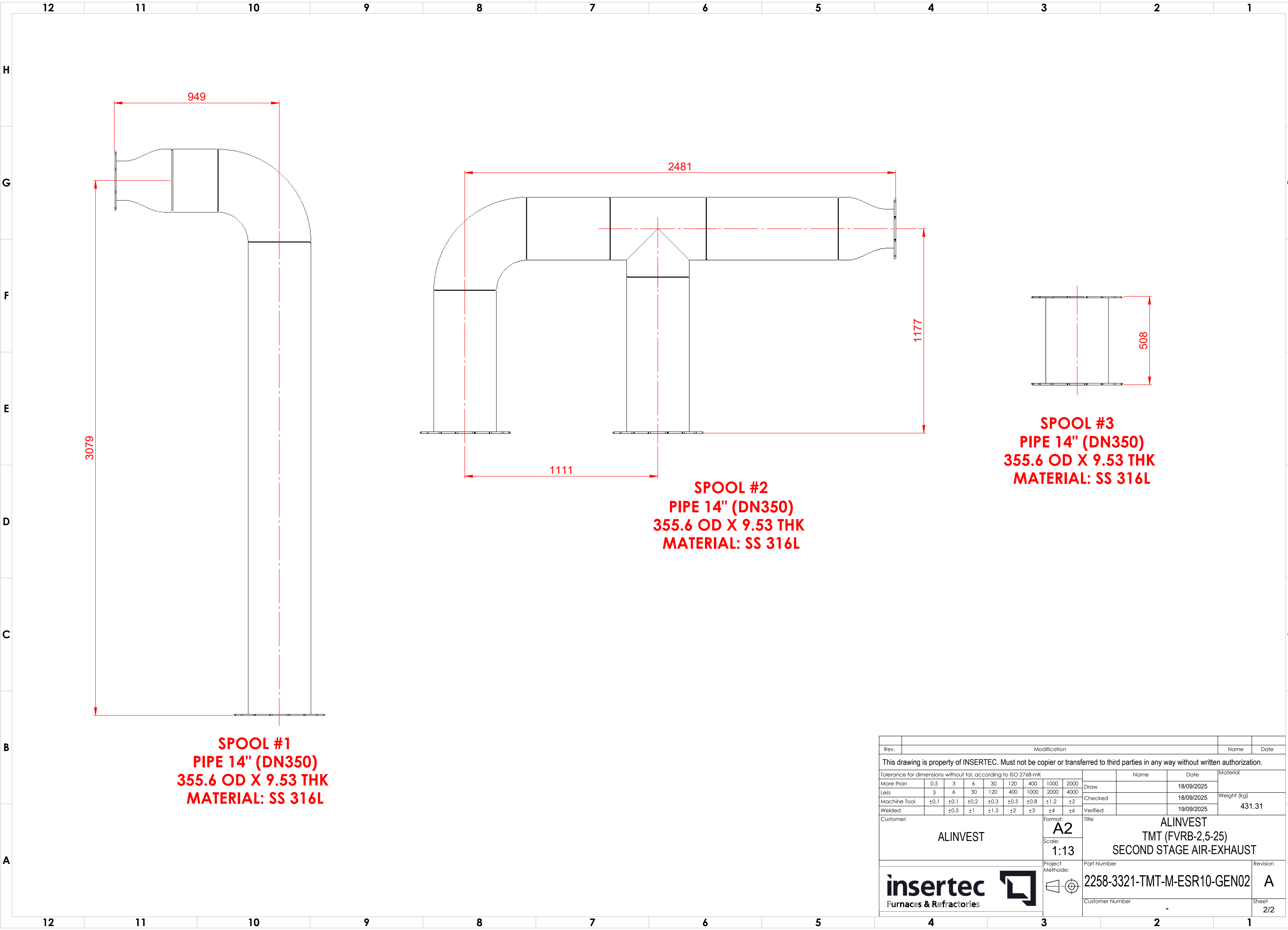


 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## MELTER 25 – EXHAUST AIR INSERTEC SCOPE







**SPOOL #1**  
**PIPE 14" (DN350)**  
**355.6 OD X 9.53 THK**  
**MATERIAL: SS 316L**

**SPOOL #2**  
**PIPE 14" (DN350)**  
**355.6 OD X 9.53 THK**  
**MATERIAL: SS 316L**

**SPOOL #3**  
**PIPE 14" (DN350)**  
**355.6 OD X 9.53 THK**  
**MATERIAL: SS 316L**

Rev.		Modification								Name		Date	
This drawing is property of INSERTEC. Must not be copier or transferred to third parties in any way without written authorization.													
Tolerance for dimensions without tol. according to ISO 2768-mK											Name	Date	Material
More than	0.5	3	6	30	120	400	1000	2000	Draw	18/09/2025		Weight (kg)  431.31	
Less	3	6	30	120	400	1000	2000	4000	Checked	18/09/2025			
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	19/09/2025			
Welded			±0.5	±1	±1.5	±2	±3	±4	±6				
Customer:				ALINVEST					Title				
				Format: <b>A2</b>					ALINVEST TMT (FVRB-2,5-25) SECOND STAGE AIR-EXHAUST				
				Scale: <b>1:13</b>									
				Project Methode:					Part Number		Revision		
				Project Methode:					2258-3321-TMT-M-ESR10-GEN02		A		
				Project Methode:					Customer Number		Sheet		
				Project Methode:					-		2/2		

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

### MELTER 25 – HYDRAULIC AIB SCOPE

- LINE 1
- LINE 2
- LINE 3
- LINE 4

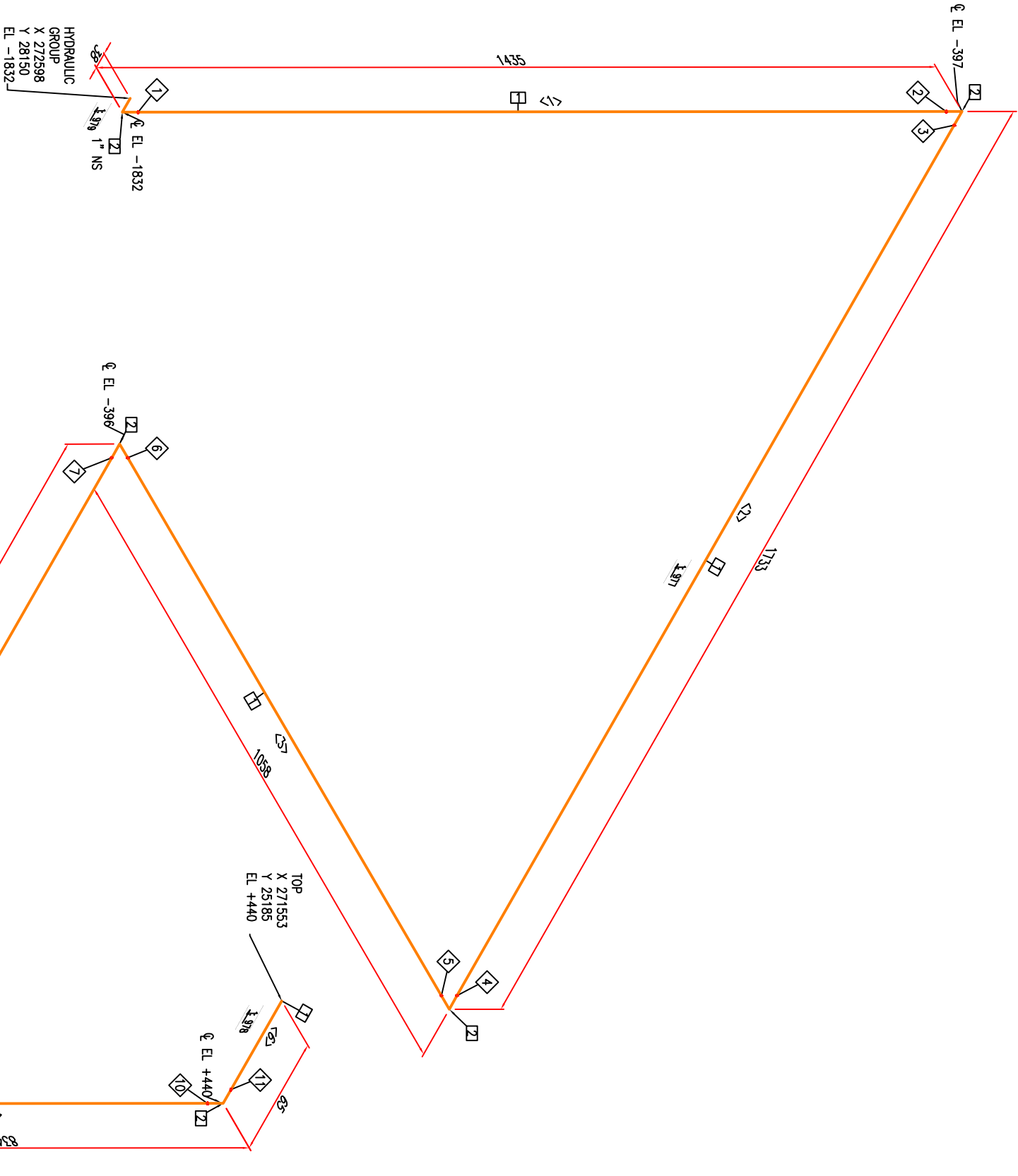




WELDING LIST		
ID	DN "	TYPE
1	1"	BUTTWELD
2	1"	BUTTWELD
3	1"	BUTTWELD
4	1"	BUTTWELD
5	1"	BUTTWELD
6	1"	BUTTWELD
7	1"	BUTTWELD
8	1"	BUTTWELD
9	1"	BUTTWELD
10	1"	BUTTWELD
11	1"	BUTTWELD

MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	6.0M	1"
PIPE CS, EN 10217-1		316L
FITTINGS		
2	6	1"
ELBOW 90° CS RL – BW, EN 10253-1		316L

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1"	1359MM
2	1"	1658MM
3	1"	983MM
4	1"	1181MM
5	1"	759MM
6	1"	28MM



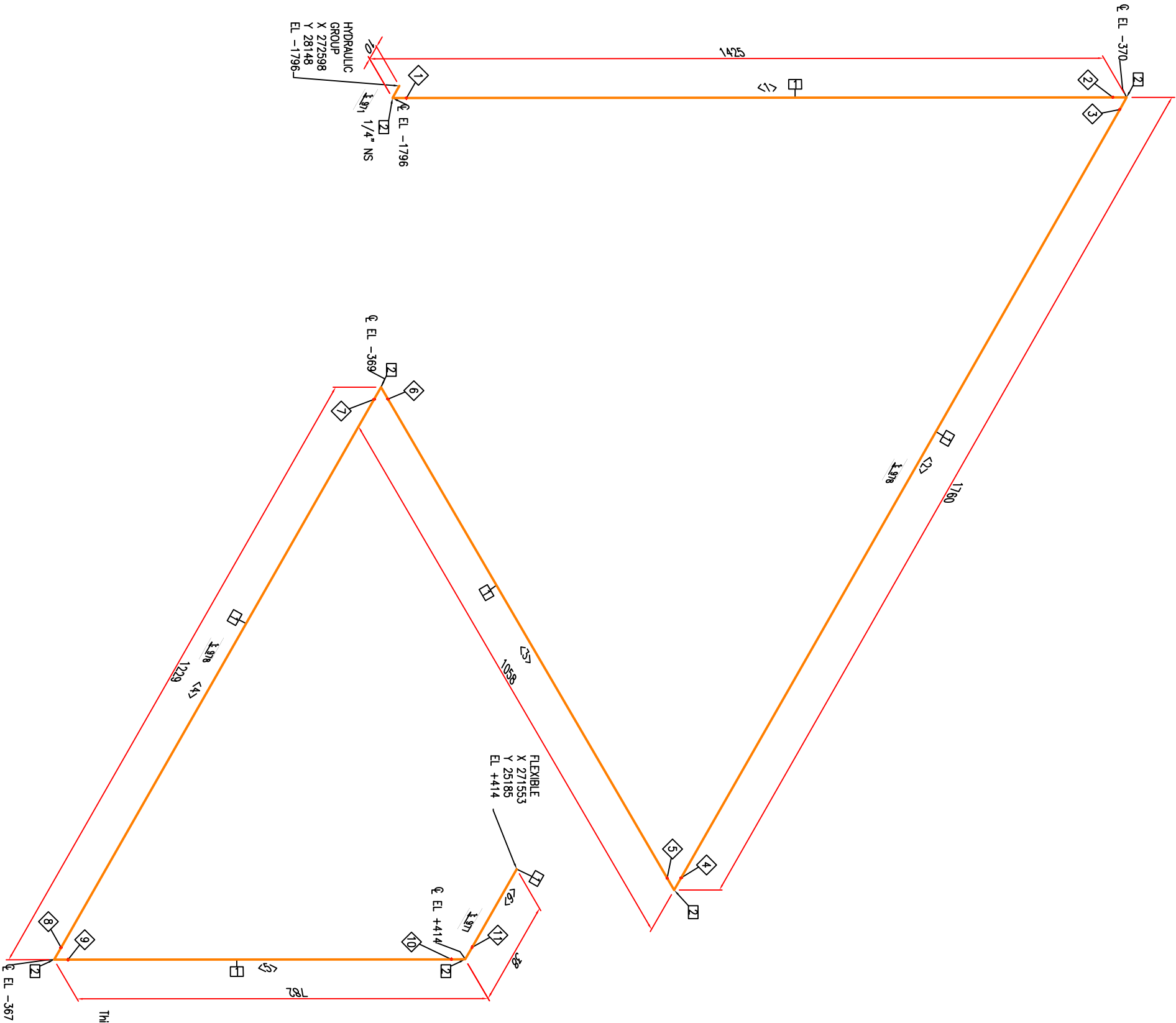
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Rev.										Modification		None		Date	





WELDING LIST		
ID	DN "	TYPE
1	1/4"	BUTTWELD
2	1/4"	BUTTWELD
3	1/4"	BUTTWELD
4	1/4"	BUTTWELD
5	1/4"	BUTTWELD
6	1/4"	BUTTWELD
7	1/4"	BUTTWELD
8	1/4"	BUTTWELD
9	1/4"	BUTTWELD
10	1/4"	BUTTWELD
11	1/4"	BUTTWELD



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	6.2M	1/4"	PIPE CS, EN 10217-1	316L
FITTINGS				
2	6	1/4"	ELBOW 90° CS RL – BW, EN 10253-1	316L

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1/4"	1406MM
2	1/4"	1740MM
3	1/4"	1039MM
4	1/4"	1210MM
5	1/4"	762MM
6	1/4"	28MM

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Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization													
Rev.		Modification										None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK													
More than		0.5	3	6	30	120	400	1000	2000				
Less		3	6	30	120	400	1000	2000	4000				
Machine Tool		+	+	+	+	+	+	+	+				
Welded		0.1	0.1	0.2	0.3	0.5	0.5	1	1.5				
Customer:		0.5	1	1.5	2	3							
		</											

ALINVEST		ALINVEST	
Scale:		Scale:	
1:15		1:15	
Project		Project	
Methods:		Methods:	
Port Number		Port Number	
2558-3321-TMT-M-ESR41-3		2558-3321-TMT-M-ESR41-3	
Customer Number		Customer Number	
-		-	
Revision		Revision	
A		A	

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Furnaces & Refractories

Customer Number

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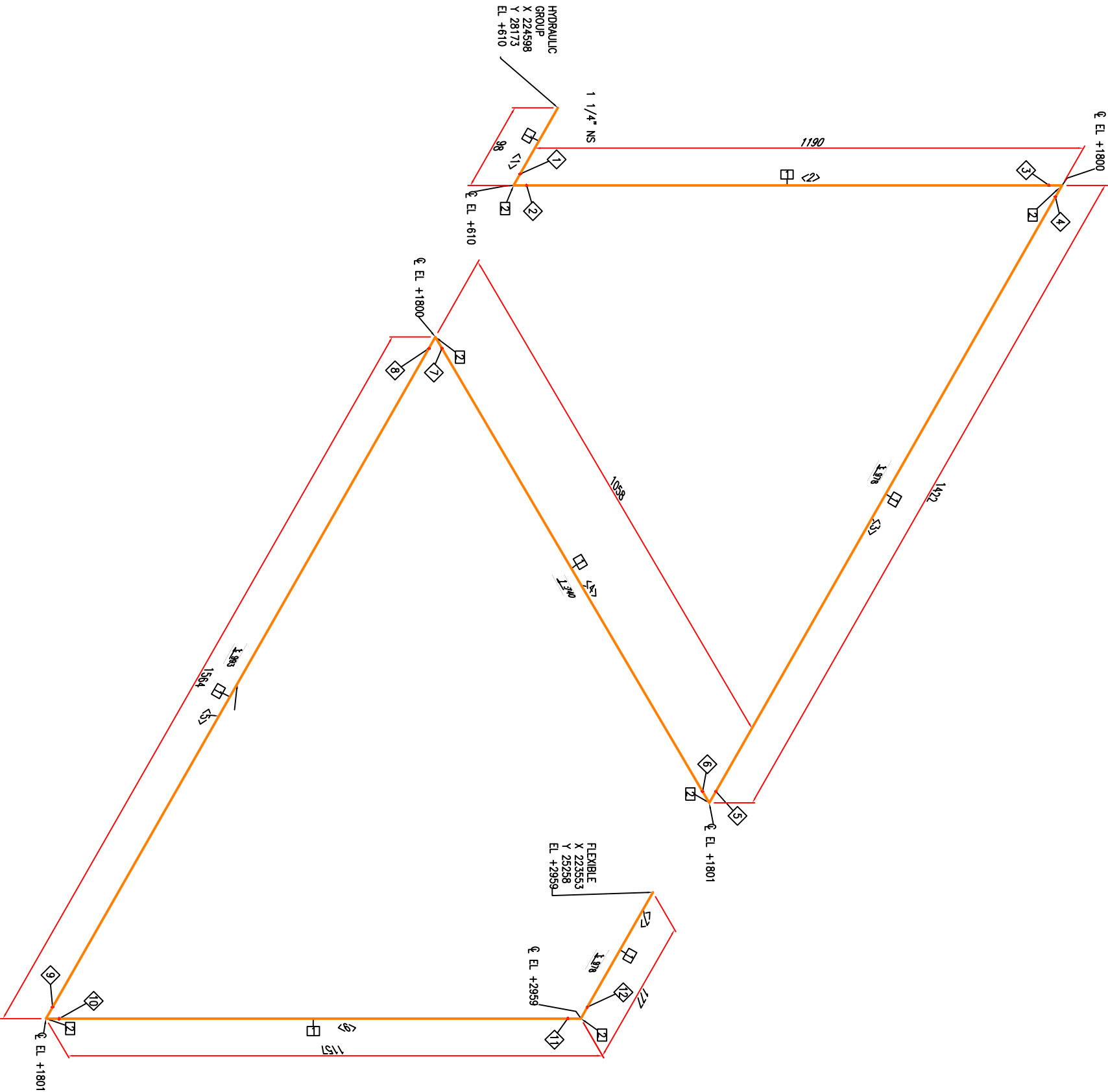
2558-3321-TMT-M-ESR41-3

Revision

A



WELDING LIST		
ID	DN "	TYPE
1	1 1/4"	BUTTWELD
2	1 1/4"	BUTTWELD
3	1 1/4"	BUTTWELD
4	1 1/4"	BUTTWELD
5	1 1/4"	BUTTWELD
6	1 1/4"	BUTTWELD
7	1 1/4"	BUTTWELD
8	1 1/4"	BUTTWELD
9	1 1/4"	BUTTWELD
10	1 1/4"	BUTTWELD
11	1 1/4"	BUTTWELD
12	1 1/4"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
PIPING		
1	6.1M	1 1/4" PIPE CS, EN 10217-1
FITTINGS		
2	6	1 1/4" ELBOW 90° CS RL - BW, EN 10253-1

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1 1/4"	5.1MM
2	1 1/4"	1094MM
3	1 1/4"	1328MM
4	1 1/4"	963MM
5	1 1/4"	1469MM
6	1 1/4"	1062MM
7	1 1/4"	129MM

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Rev.										Modification		None	Date
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization													
Tolerance for dimensions without tol. according to ISO 2768-MK										Draw	None		Material
More than	0.5	3	6	30	120	400	1000	2000					
Less	3	6	30	120	400	1000	2000	4000					
Machine Tool	±	±	±	±	±	±	±	±					
Welded	±0.1	±0.2	±0.3	±0.5	±0.8	±1	±1	±1					
Customer:	0.5	1	1.5	2	3								

ALINVEST		ALINVEST	
Scale:		Scale:	
1:15		1:15	
Project		Project	
Method:		Method:	
Port Number		Port Number	
2558-3322-TMT-M-ESR41-1		2558-3322-TMT-M-ESR41-1	
Customer Number		Customer Number	
-		-	
Revision		Revision	
A		A	

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Furnaces & Refractories

Project

Method:

Port Number

Customer Number

Revision

2558-3322-TMT-M-ESR41-1

-

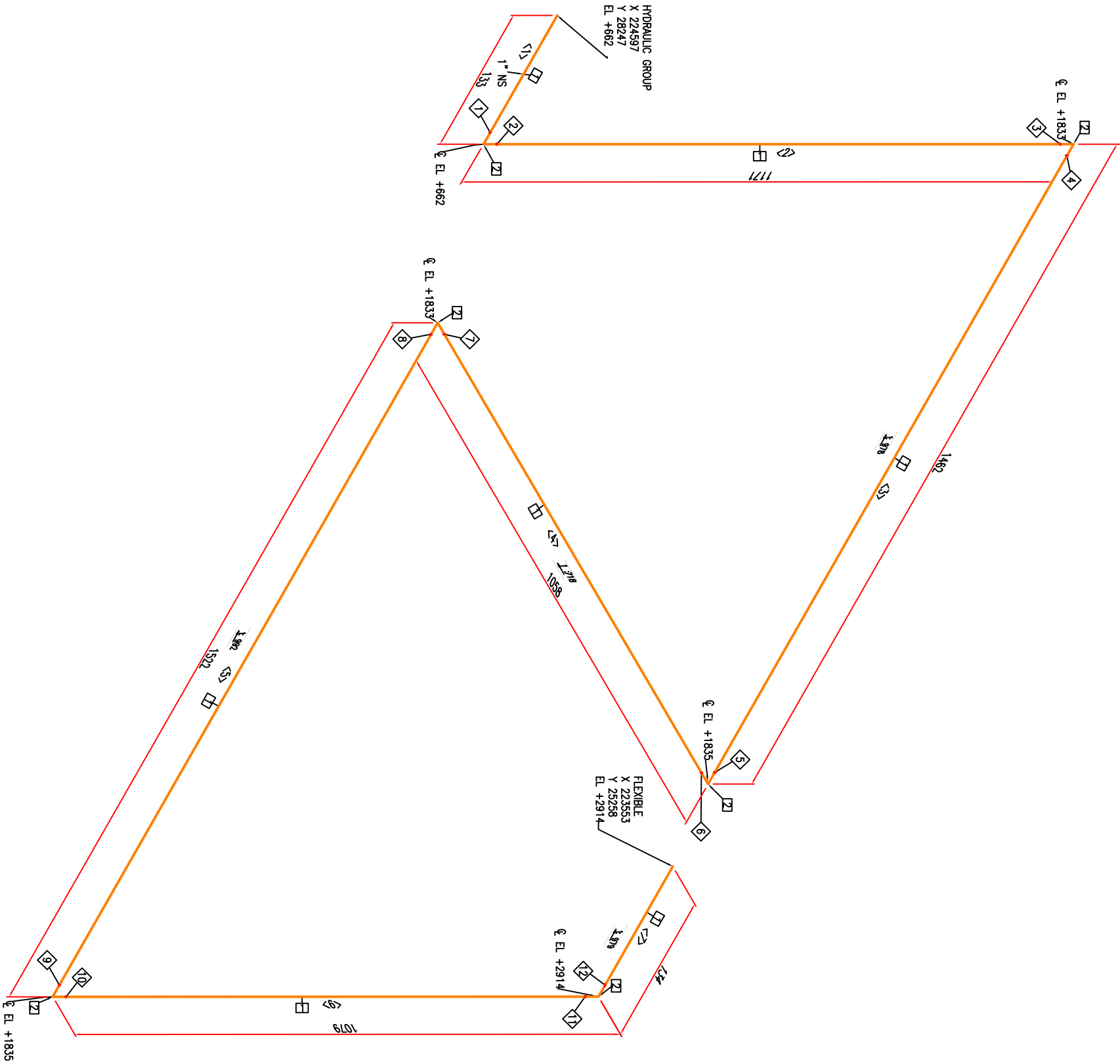
A

Sheet

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WELDING LIST		
ID	DN "	TYPE
1	1"	BUTTWELD
2	1"	BUTTWELD
3	1"	BUTTWELD
4	1"	BUTTWELD
5	1"	BUTTWELD
6	1"	BUTTWELD
7	1"	BUTTWELD
8	1"	BUTTWELD
9	1"	BUTTWELD
10	1"	BUTTWELD
11	1"	BUTTWELD
12	1"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
PIPING		
1	6.2M	1"
PIPE CS, EN 10217-1		
316L		
FITTINGS		
2	6	1"
ELBOW 90° CS RL - BW, EN 10253-1		
316L		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1"	96MM
2	1"	1095MM
3	1"	1387MM
4	1"	982MM
5	1"	1447MM
6	1"	1004MM
7	1"	97MM

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Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization									
Rev.		Modification						None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK									
More than		0.5	3	6	30	120	400	1000	2000
Less		3	6	30	120	400	1000	2000	4000
Machine Tool		±	0.1	0.2	±	0.3	±	0.5	±
Welded		0.1	0.1	0.2	0.3	0.5	0.8	1.2	1.6
		0.5	1	1.5	2	3	4	5	6
Customer:									
Weight (kg)									
316L									

ALINVEST		ALINVEST	
Scale: 1:15		TMT (FVVB-2,5-25)	
		HYDRAULIC ROUTE	

Project Method:		Port Number	Revision
Customer Number		2558-3322-TMT-M-ESR41-2	A
Furnaces & Refractories		Customer Number	Sheet 5/6



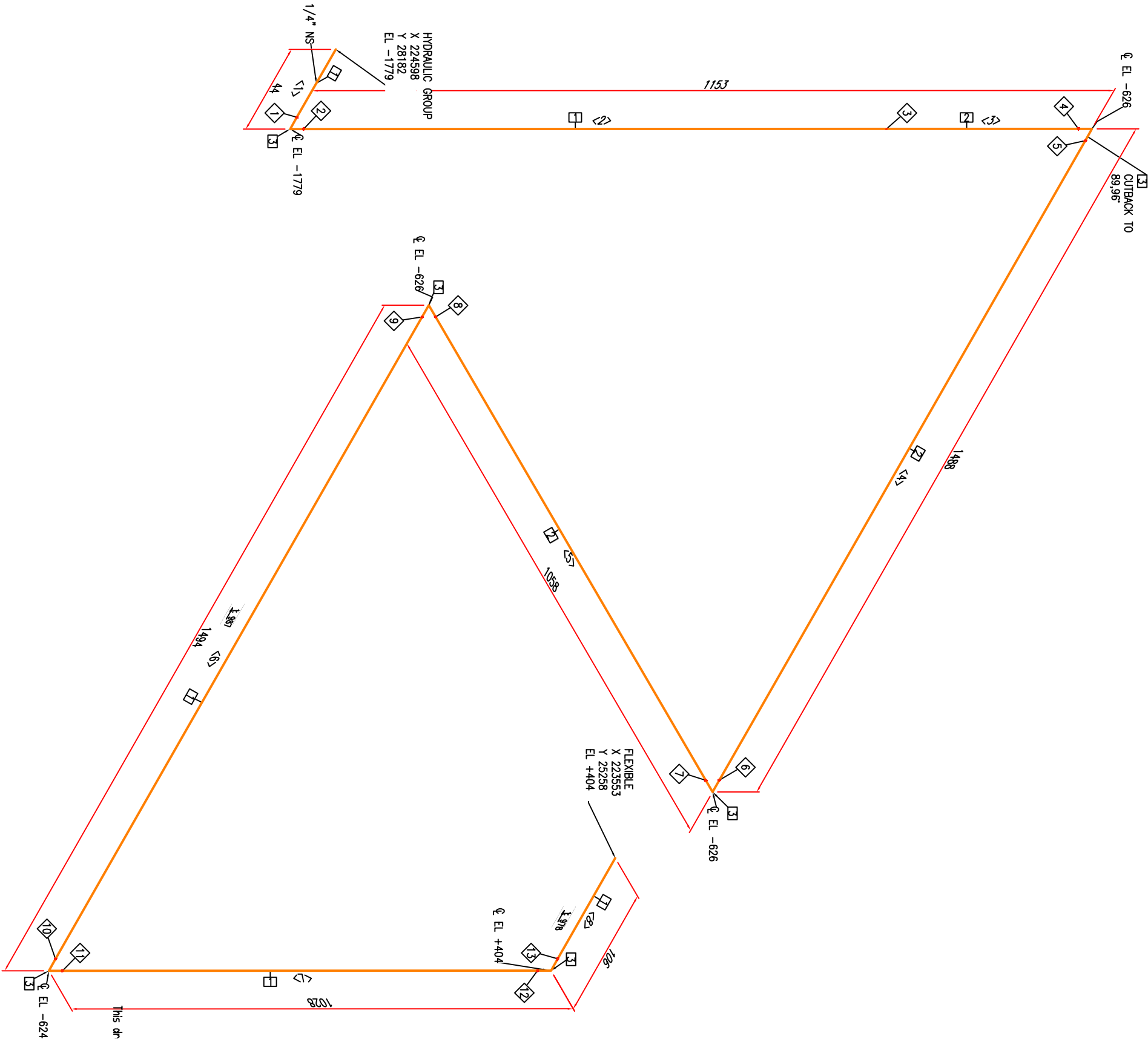








WELDING LIST		
ID	DN "	TYPE
1	1/4"	BUTTWELD
2	1/4"	BUTTWELD
3	1/4"	WELD
4	1/4"	BUTTWELD
5	1/4"	BUTTWELD
6	1/4"	BUTTWELD
7	1/4"	BUTTWELD
8	1/4"	BUTTWELD
9	1/4"	BUTTWELD
10	1/4"	BUTTWELD
11	1/4"	BUTTWELD
12	1/4"	BUTTWELD
13	1/4"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
PIPING		
1	3.8M	1/4"
2	2.6M	1/4"
FITTINGS		
3	6	1/4"

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1/4"	34MM
2	1/4"	1094MM
3	1/4"	40MM
4	1/4"	1469MM
5	1/4"	1038MM
6	1/4"	1474MM
7	1/4"	1009MM
8	1/4"	96MM

Rev.	Modification	None	Date

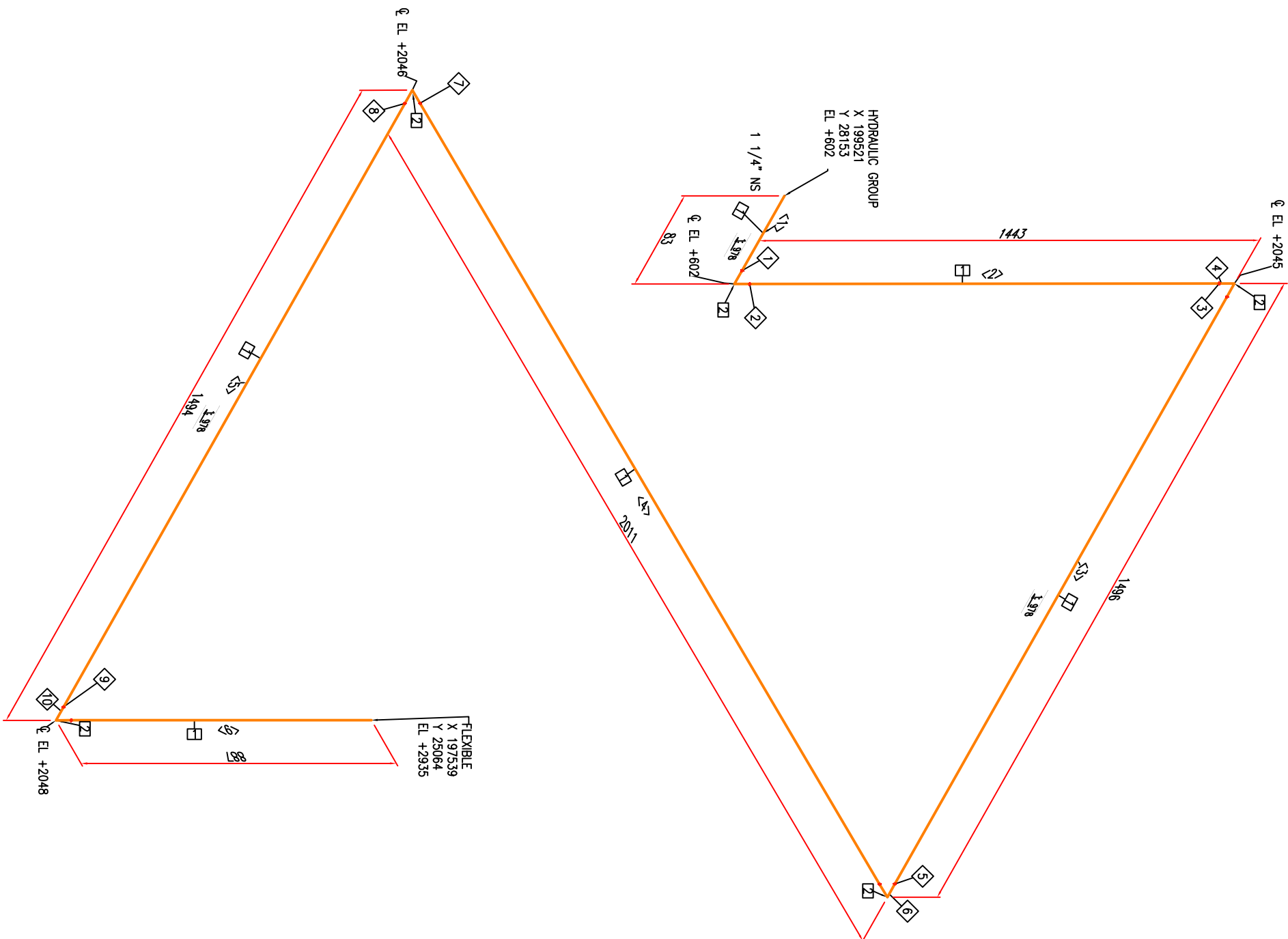
Tolerance for dimensions without tol. according to ISO 2768-MK			
More than	0.5	3	6
Less	3	6	30
Machine Tool	+	+	+
Welded	0.1	0.1	0.2
Customer:	0.5	1	1.5

ALINVEST		ALINVEST	
Scale: 1:15		TMT (FVRB-2,5-25)	
Project: Methods		HYDRAULIC ROUTE	

insertec		Furnaces & Refractories	
2558-3323-TMT-M-ESR41-3		Revision A	
Customer Number		Sheet 6/6	



WELDING LIST		
ID	DN "	TYPE
1	1/4"	BUTTWELD
2	1/4"	BUTTWELD
3	1/4"	BUTTWELD
4	1/4"	BUTTWELD
5	1/4"	BUTTWELD
6	1/4"	BUTTWELD
7	1/4"	BUTTWELD
8	1/4"	BUTTWELD
9	1/4"	BUTTWELD
10	1/4"	BUTTWELD



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	7.00M	1 1/4"	PIPE CS, EN 10217-1	316L
FITTINGS				
2	5	1 1/4"	ELBOW 90° CS RL – BW, EN 10253-1	316L

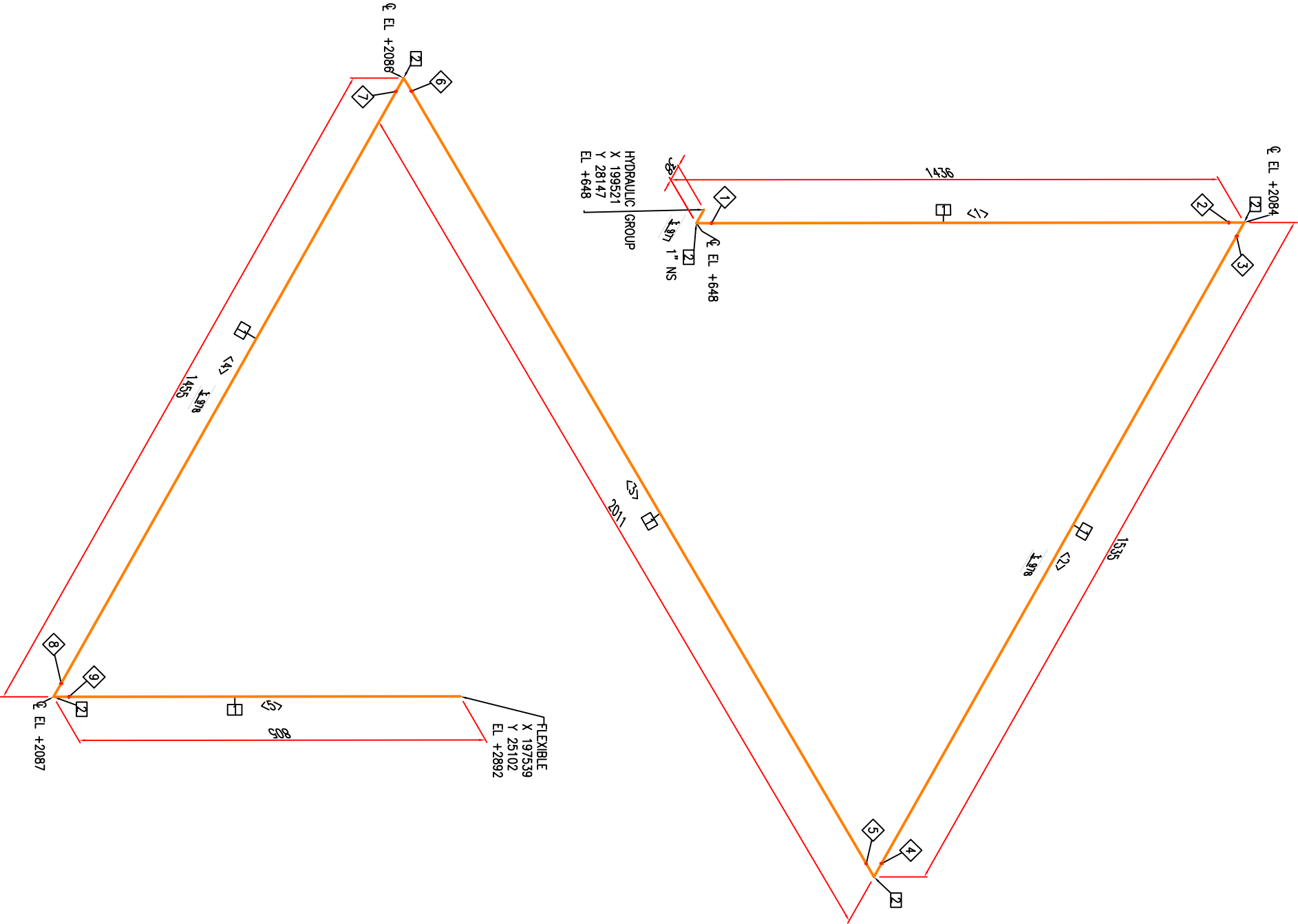
PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1 1/4"	35MM
2	1 1/4"	1348MM
3	1 1/4"	1401MM
4	1 1/4"	1915MM
5	1 1/4"	1398MM
6	1 1/4"	840MM

Rev.	Modification								Name	Date
<b>warning is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization</b>										
Tolerance for dimensions without tol according to ISO 2768-MK	More than	0.5	3	6	30	120	400	1000	2000	
Less		3	6	30	120	400	1000	2000	4000	Drawing
Machine Tool		±	±	±	±	±	±	±	±	Checked
Validated		0.1	0.1	0.2	0.3	0.5	0.8	1.2	2	19/09/2025
Customer:	0.3	1	1.3	2	3		Fd format	6		Verified
										A INVEST
										Metal
										Weight (kg)
										316L

This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.



WELDING LIST		
ID	DN "	TYPE
1	1"	BUTTWELD
2	1"	BUTTWELD
3	1"	BUTTWELD
4	1"	BUTTWELD
5	1"	BUTTWELD
6	1"	BUTTWELD
7	1"	BUTTWELD
8	1"	BUTTWELD
9	1"	BUTTWELD



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	7.0M	1"	PIPE CS, EN 10217-1	316L
FITTINGS				
2	5	1"	ELBOW 90° CS RL – BW, EN 10253-1	316L

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1"	1361MM
2	1"	1459MM
3	1"	1935MM
4	1"	1380MM
5	1"	767MM

This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.

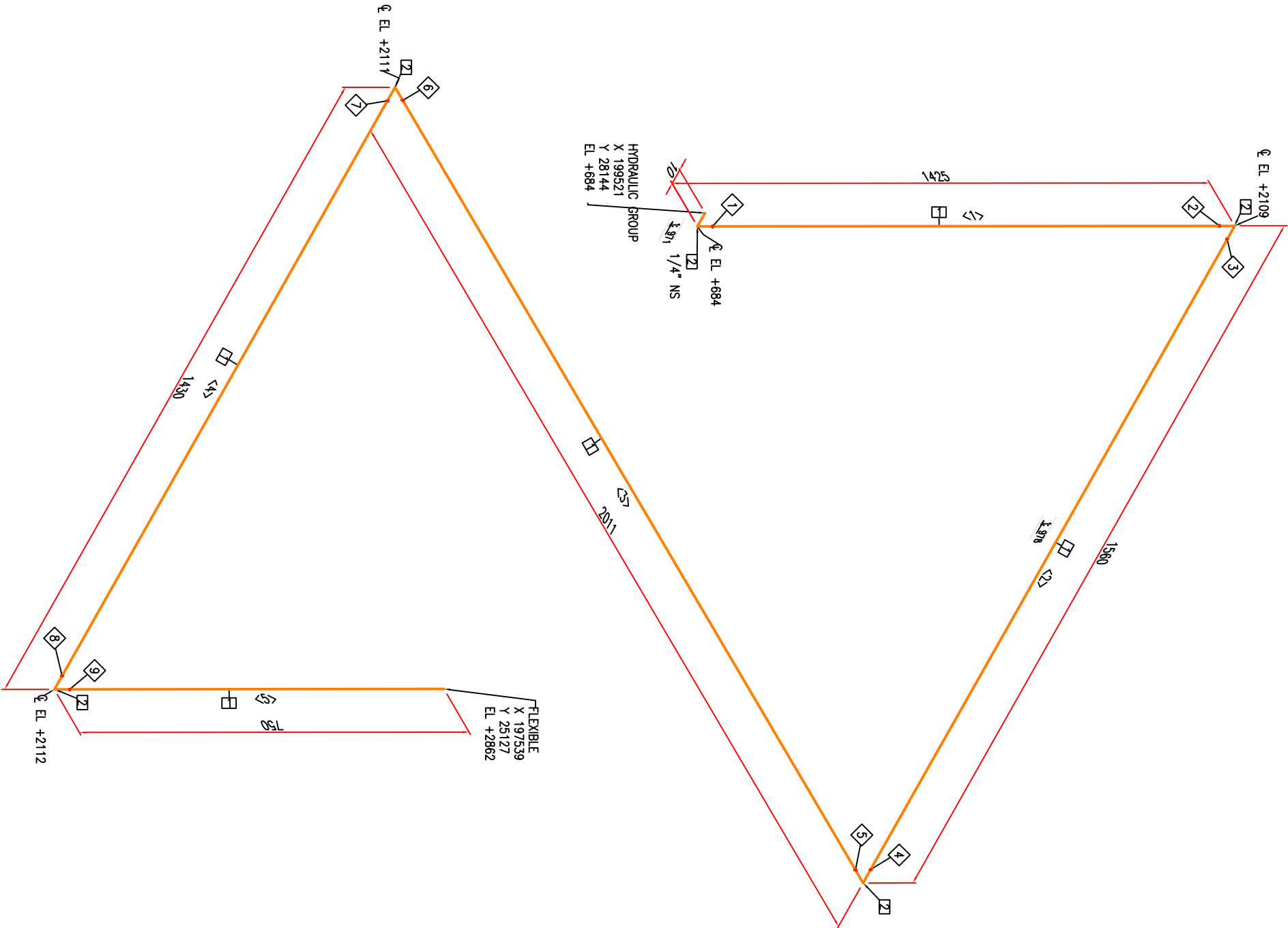
Rev.										Modification		None	Date
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization													
Tolerance for dimensions without tol. according to ISO 2768-MK													
More than	0.5	3	6	30	120	400	1000	2000	Draw			Date	
Less	3	6	30	120	400	1000	2000	4000	Checked			18/09/2005	
Machine Tool	±	±	±	±	±	±	±	±	±			18/09/2005	
Welded	±	±	±	±	±	±	±	±	±	Verified		19/09/2005	
Material										316L			
Weight (kg)													

ALINVEST		ALINVEST	
Scale:		Scale:	
1:15		1:15	
Project		Project	
Methods:		Methods:	
Port Number		Port Number	
2558-3324-TMT-M-ESR41-2		2558-3324-TMT-M-ESR41-2	
Customer Number		Customer Number	
-		-	
Revision		Revision	
A		A	





WELDING LIST		
ID	DN "	TYPE
1	1/4"	BUTTWELD
2	1/4"	BUTTWELD
3	1/4"	BUTTWELD
4	1/4"	BUTTWELD
5	1/4"	BUTTWELD
6	1/4"	BUTTWELD
7	1/4"	BUTTWELD
8	1/4"	BUTTWELD
9	1/4"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		MATERIAL
PPING		
1	7.1M	1/4"
PIPE CS, EN 10217-1		316L
FITTINGS		
2	5	1/4"
ELBOW 90° CS RL – BW, EN 10253-1		316L

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1/4"	1408MM
2	1/4"	1540MM
3	1/4"	1991MM
4	1/4"	1411MM
5	1/4"	740MM

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Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization									
Rev.		Modification						None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK									
More than		0.5	3	6	30	120	400	1000	2000
Less		3	6	30	120	400	1000	2000	4000
Machine Tool		±	±	±	±	±	±	±	±
Welded		±	±	±	±	±	±	±	±
Customer:		0.5	1	15	2	3			
Material									
		316L							
		Weight (kg)							

ALINVEST		ALINVEST		TMT (FVVB-2,5-25)	
A2		A2		HYDRAULIC ROUTE	
1:15		Scale:			

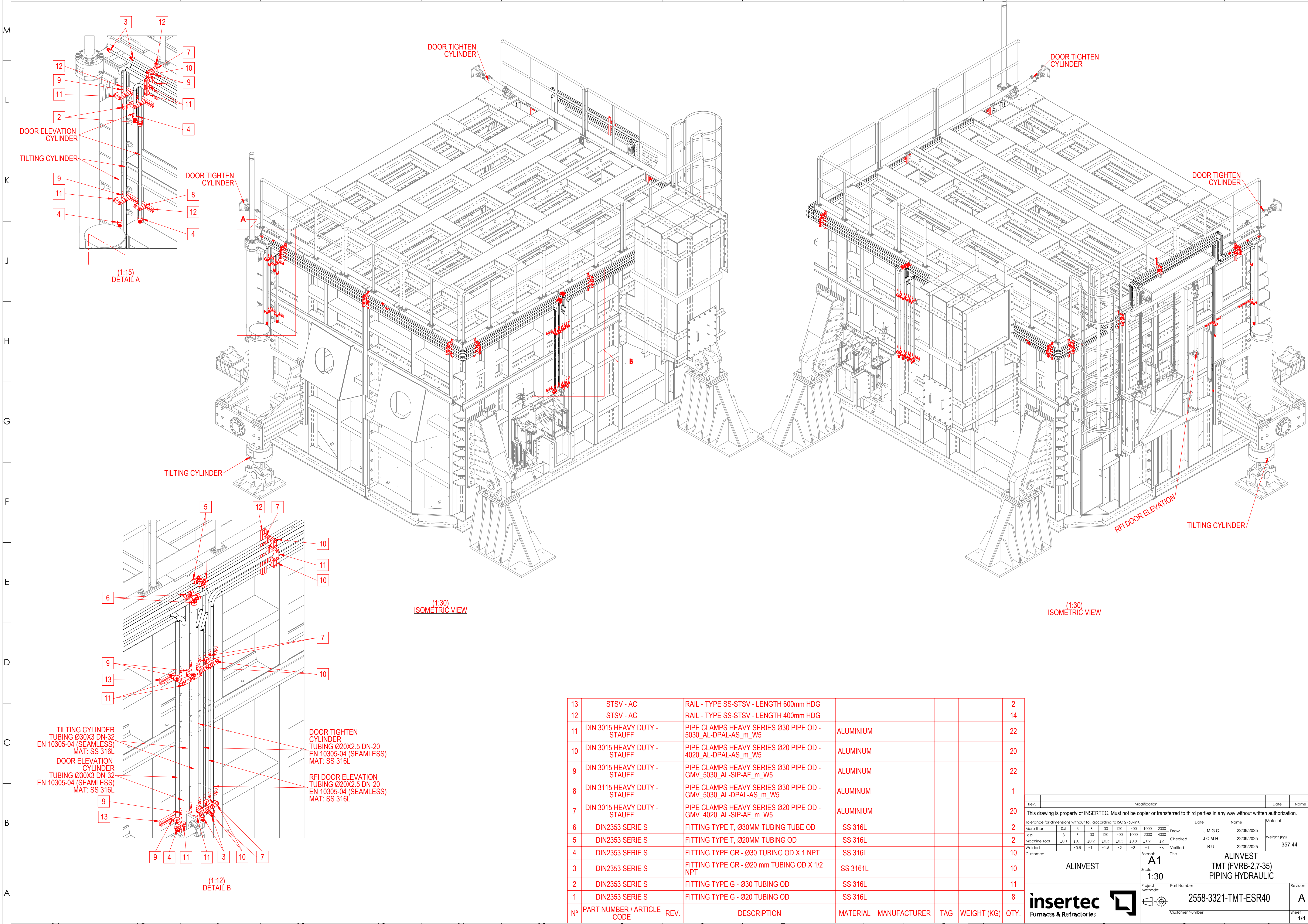
Project		Port Number		Revision	
Methods:		2558-3324-TMT-M-ESR41-3		A	
Customer Number		-		Sheet	
insertec		Furnaces & Refractories		3/6	



 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## **MELTER 25 – HYDRAULIC INSERTEC SCOPE**

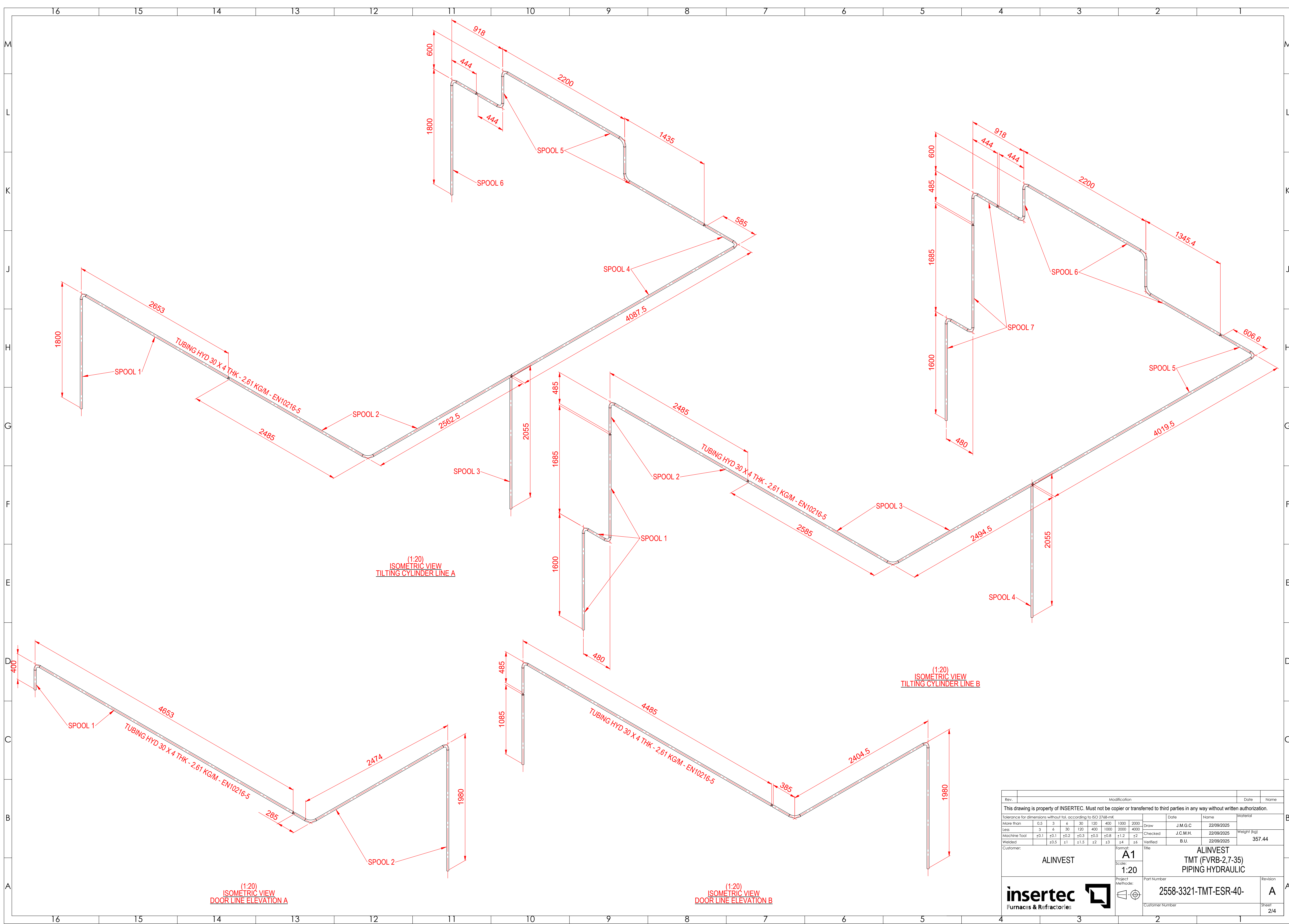


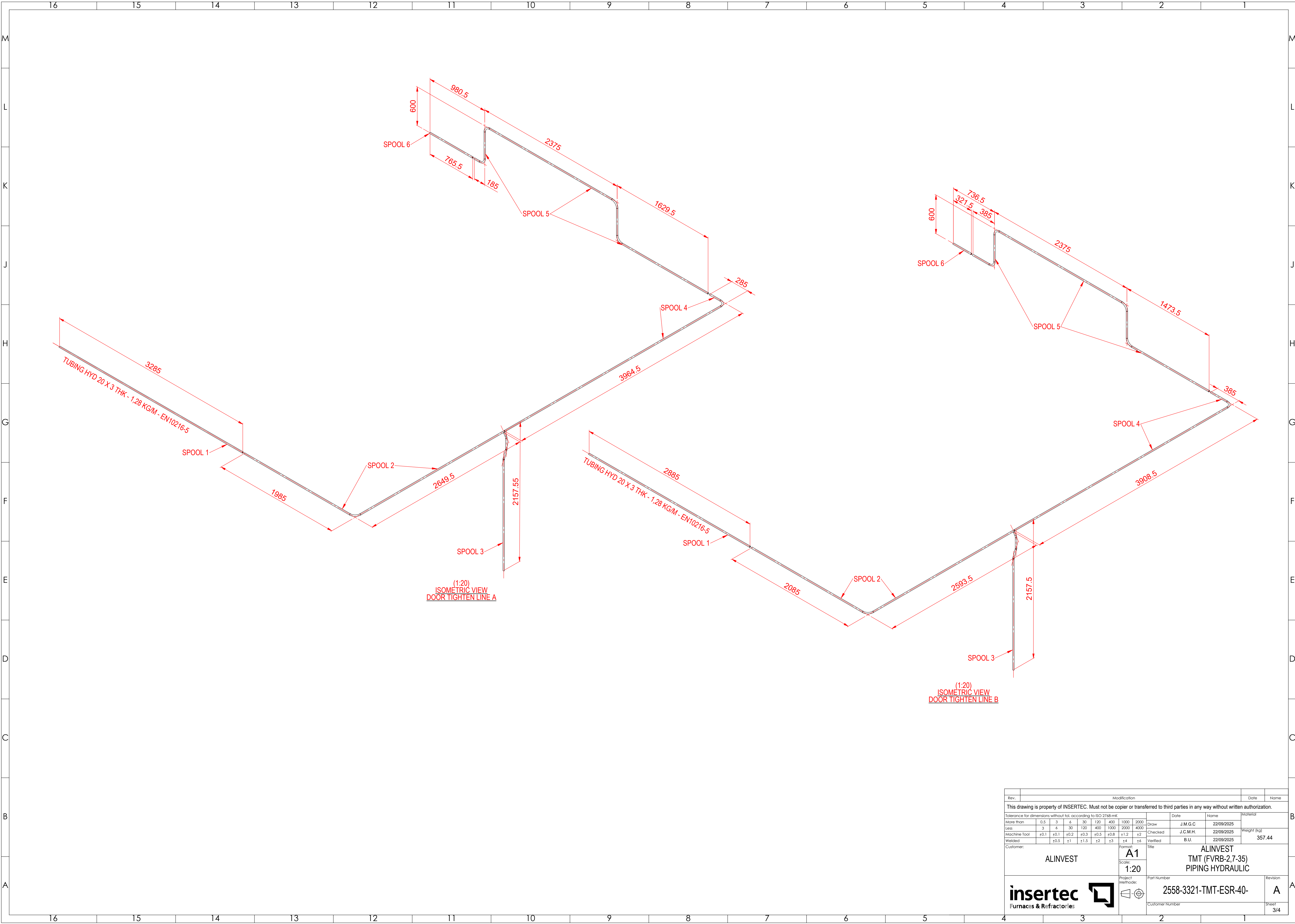




13	STSV - AC		RAIL - TYPE SS-STSV - LENGTH 600mm HDG					2
12	STSV - AC		RAIL - TYPE SS-STSV - LENGTH 400mm HDG					14
11	DIN 3015 HEAVY DUTY - STAUFF		PIPE CLAMPS HEAVY SERIES Ø30 PIPE OD - 5030_AL-DPAL-AS_m_W5	ALUMINIUM				22
10	DIN 3015 HEAVY DUTY - STAUFF		PIPE CLAMPS HEAVY SERIES Ø20 PIPE OD - 4020_AL-DPAL-AS_m_W5	ALUMINUM				20
9	DIN 3015 HEAVY DUTY - STAUFF		PIPE CLAMPS HEAVY SERIES Ø30 PIPE OD - GMV_5030_AL-SIP-AF_m_W5	ALUMINUM				22
8	DIN 3115 HEAVY DUTY - STAUFF		PIPE CLAMPS HEAVY SERIES Ø30 PIPE OD - GMV_5030_AL-DPAL-AS_m_W5	ALUMINUM				1
7	DIN 3015 HEAVY DUTY - STAUFF		PIPE CLAMPS HEAVY SERIES Ø20 PIPE OD - GMV_4020_AL-SIP-AF_m_W5	ALUMINIUM				20
6	DIN2353 SERIE S		FITTING TYPE T, Ø30MM TUBING TUBE OD	SS 316L				2
5	DIN2353 SERIE S		FITTING TYPE T, Ø20MM TUBING OD	SS 316L				2
4	DIN2353 SERIE S		FITTING TYPE GR - Ø30 TUBING OD X 1 NPT	SS 316L				10
3	DIN2353 SERIE S		FITTING TYPE GR - Ø20 mm TUBING OD X 1/2 NPT	SS 3161L				10
2	DIN2353 SERIE S		FITTING TYPE G - Ø30 TUBING OD	SS 316L				11
1	DIN2353 SERIE S		FITTING TYPE G - Ø20 TUBING OD	SS 316L				8
Nº	PART NUMBER / ARTICLE CODE	REV.	DESCRIPTION	MATERIAL	MANUFACTURER	TAG	WEIGHT (KG)	QTY.

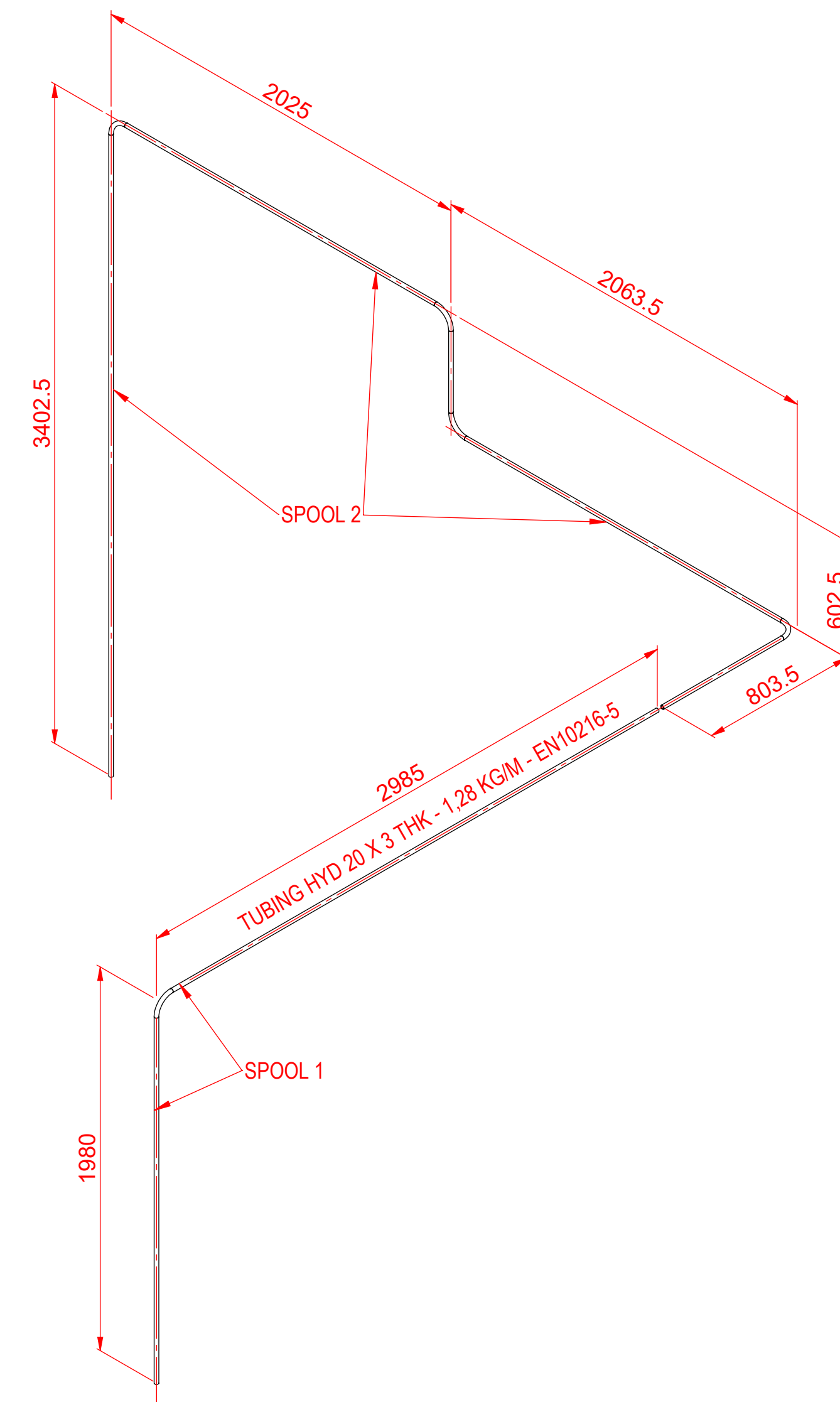
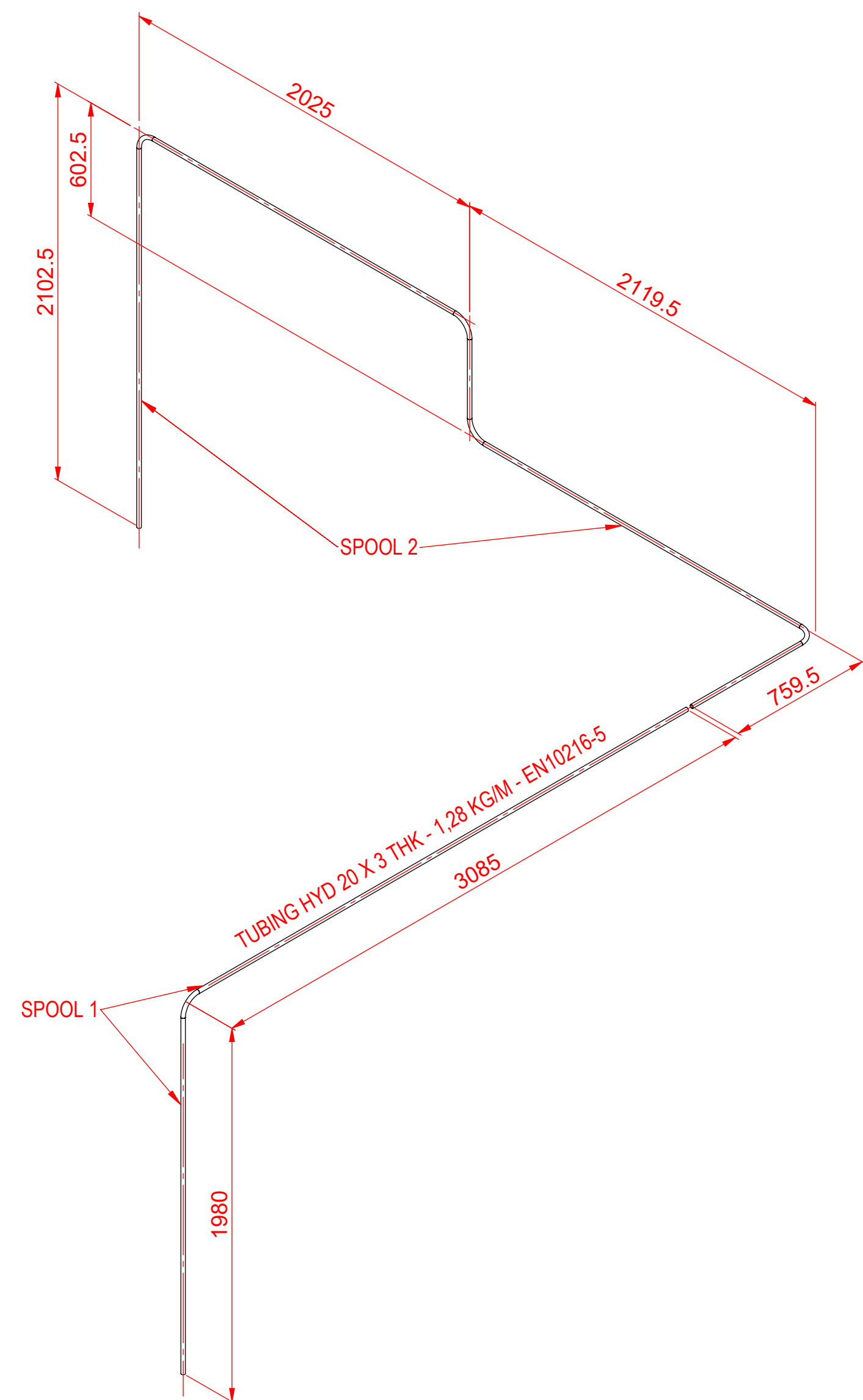
Rev.	Modification		Date	Name								
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.												
Tolerance for dimensions without tol. according to ISO 2768-mK		Date	Name	Material								
More than	0.5	3	6	30	120	400	1000	2000	Draw	J.M.G.C	22/09/2025	
Less	3	6	30	120	400	1000	2000	4000	Checked	J.C.M.H.	22/09/2025	Weight (kg)
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	B.U.	22/09/2025	357.44
Welded	±0.5	±1	±1.5	±2	±3	±4	±6					
Customer:												
ALINVEST										Format: A1		
Scale: 1:30										Project Methode:		
Part Number										Revision		
2558-3321-TMT-ESR40										A		
Customer Number										Sheet		
										1/4		









Rev.	Modification										Date	Name	
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.													
Tolerance for dimensions without tol. according to ISO 2768-mK										Date	Name	Material	
More than	0.5	3	6	30	120	400	1000	2000	Draw	J.M.G.C	22/09/2025	Weight (kg)  <b>357.44</b>	
Less	3	6	30	120	400	1000	2000	4000	Checked	J.C.M.H.	22/09/2025		
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	B.U.	22/09/2025		
Welded	±0.5	±1	±1.5	±2	±3	±4	±6						
Customer:										Format:	Title		
ALINVEST										A1	ALINVEST TMT (FVRB-2,7-35) PIPING HYDRAULIC		
										Scale: 1:20			
 										Project Method:	Part Number		Revision
												2558-3321-TMT-ESR-40-	
										Customer Number		Sheet	
												3/4	



Rev.	Modification										Date	Name
This drawing is property of INSERTEC. Not to be copied or transferred to third parties in any way without written authorization.												
Tolerance for dimensions without tol. according to ISO 2768-mK												
More than	0.5	3	4	30	120	400	1000	2000	Draw J.M.G.C 22/09/2025 Checked J.C.M.H. 22/09/2025 Verified B.U. 22/09/2025	Material Weight (kg) 357.44		
Less	3	4	30	120	400	1000	2000					
Machine Tool	+0.1	+0.1	+0.2	+0.3	+0.5	+0.8	+1.2	+2				
Welded	+0.5	+1	+1.5	+2	+3	+4	+6					
Customer:	ALINVEST						Format: A1 Scale: 1:20		Title ALINVEST TMT (FVRB-2,7-35) PIPING HYDRAULIC			
insertec Furnaces & Refractories						Part Number 2558-3321-TMT-ESR-40-			Revision A			
Customer Number						Sheet 4/4						

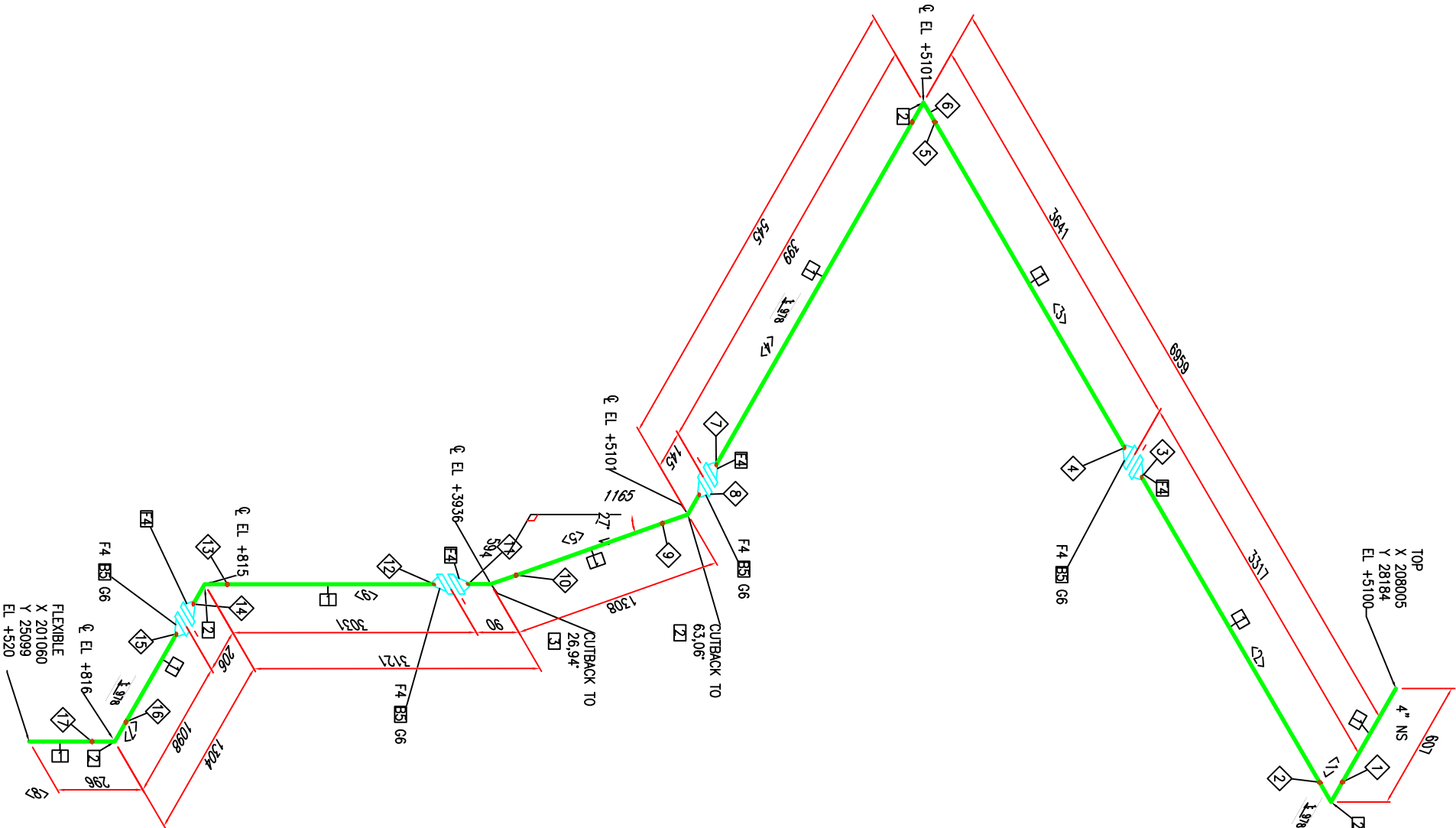


 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## **MELTER 25 – NATURAL GAS AIB SCOPE**



LISTADO SOLDADURAS		
ID	DN "	TYPE
1	4"	BUTTWELD
2	4"	BUTTWELD
3	4"	WELD
4	4"	WELD
5	4"	BUTTWELD
6	4"	BUTTWELD
7	4"	WELD
8	4"	BUTTWELD
9	4"	BUTTWELD
10	4"	BUTTWELD
11	4"	BUTTWELD
12	4"	WELD
13	4"	BUTTWELD
14	4"	BUTTWELD
15	4"	WELD
16	4"	BUTTWELD
17	4"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PPING		
1	12.3M	4"
PIPE CS, EN 10217-1 P235TR1		
CARBON STEEL		
FITTINGS		
2	5	4"
ELBOW 90° CS RL - BW, EN 10253-1, P235TR1		
CARBON STEEL		
3	1	4"
ELBO 45° RL - BW, EN 10253-1,P235TR1		
CARBON STEEL		
FLANGES		
4	8	4"
FLANGE WN CS, EN 1092-1, DIN2633		
CARBON STEEL		
BOLTS, GASKETS		
5	32	1"x120
STUD BOLT,		
6	4	4"
GASKET		



PIPE CUTTING LIST		
ID	DN "	LENGTH
1	4"	456MM
2	4"	3112MM
3	4"	3438MM
4	4"	194MM
5	4"	1179MM
6	4"	2827MM
7	4"	894MM
8	4"	145MM

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Rev.	Modification	None	Date

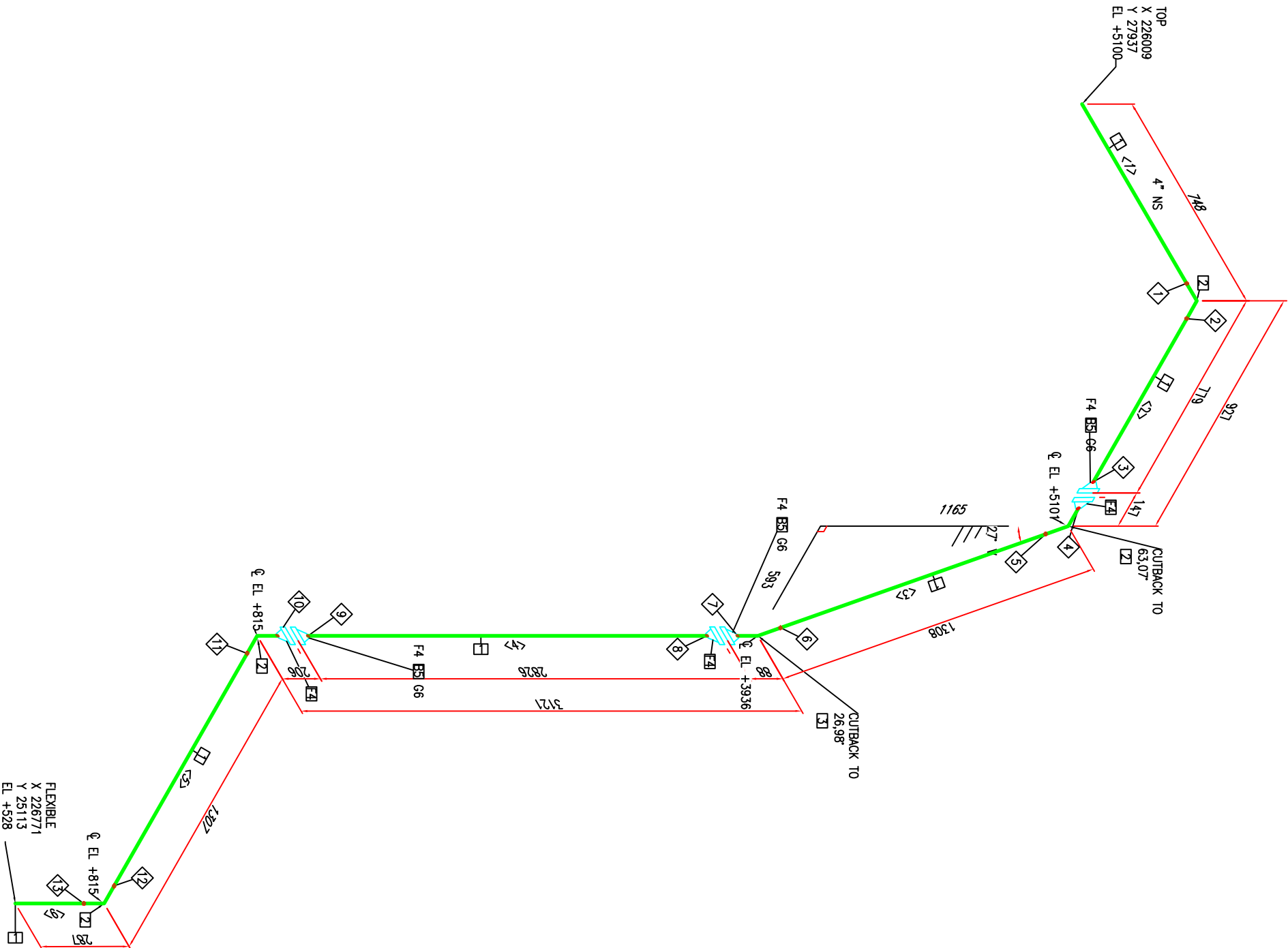
Tolerance for dimensions without tol. according to ISO 2768-MK		Draw	Date	Material						
More than	0.5	3	6	30	120	400	1000	2000	18/09/2025	P235TR1
Less	3	6	30	120	400	1000	2000	4000	18/09/2025	
Machine Tool	+	+	+	+	+	+	+	+	18/09/2025	Weight (kg)
Welded	0.1	0.1	0.2	0.3	0.5	0.8	1.2	1.6	19/09/2025	
Customer:	0.5	1	1.5	2	3					

Customer:	ALINVEST	ALINVEST	TMT (FVRB-2,5-25)	NATURAL GAS ROUTE
Scale:	A2	1:15		
Project	Port Number	2558-3321-TMT-M-ESR25	Revision	A
Methods	Customer Number	-	Sheet	1/1





LISTADO SOLDADURAS		
ID	DN "	TYPE
1	4"	BUTTWELD
2	4"	BUTTWELD
3	4"	WELD
4	4"	BUTTWELD
5	4"	BUTTWELD
6	4"	BUTTWELD
7	4"	BUTTWELD
8	4"	WELD
9	4"	WELD
10	4"	BUTTWELD
11	4"	BUTTWELD
12	4"	BUTTWELD
13	4"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	6.3M	4"
PIPE CS, EN 10217-1 P235TR1		
CARBON STEEL		
FITTINGS		
2	4	4"
ELBOW 90° CS RL - BW, EN 10253-1, P235TR1		
CARBON STEEL		
3	1	4"
ELBO 45° RL - BW, EN 10253-1, P235TR1		
CARBON STEEL		
FLANGES		
4	6	4"
FLANGE WN CS, EN 1092-1, DIN2633		
CARBON STEEL		
BOLTS, GASKETS		
5	24	1"x120
STUD BOLT,		
6	3	4"
GASKET		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	4"	596MM
2	4"	576MM
3	4"	1178MM
4	4"	2721MM
5	4"	1003MM
6	4"	136MM

This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.

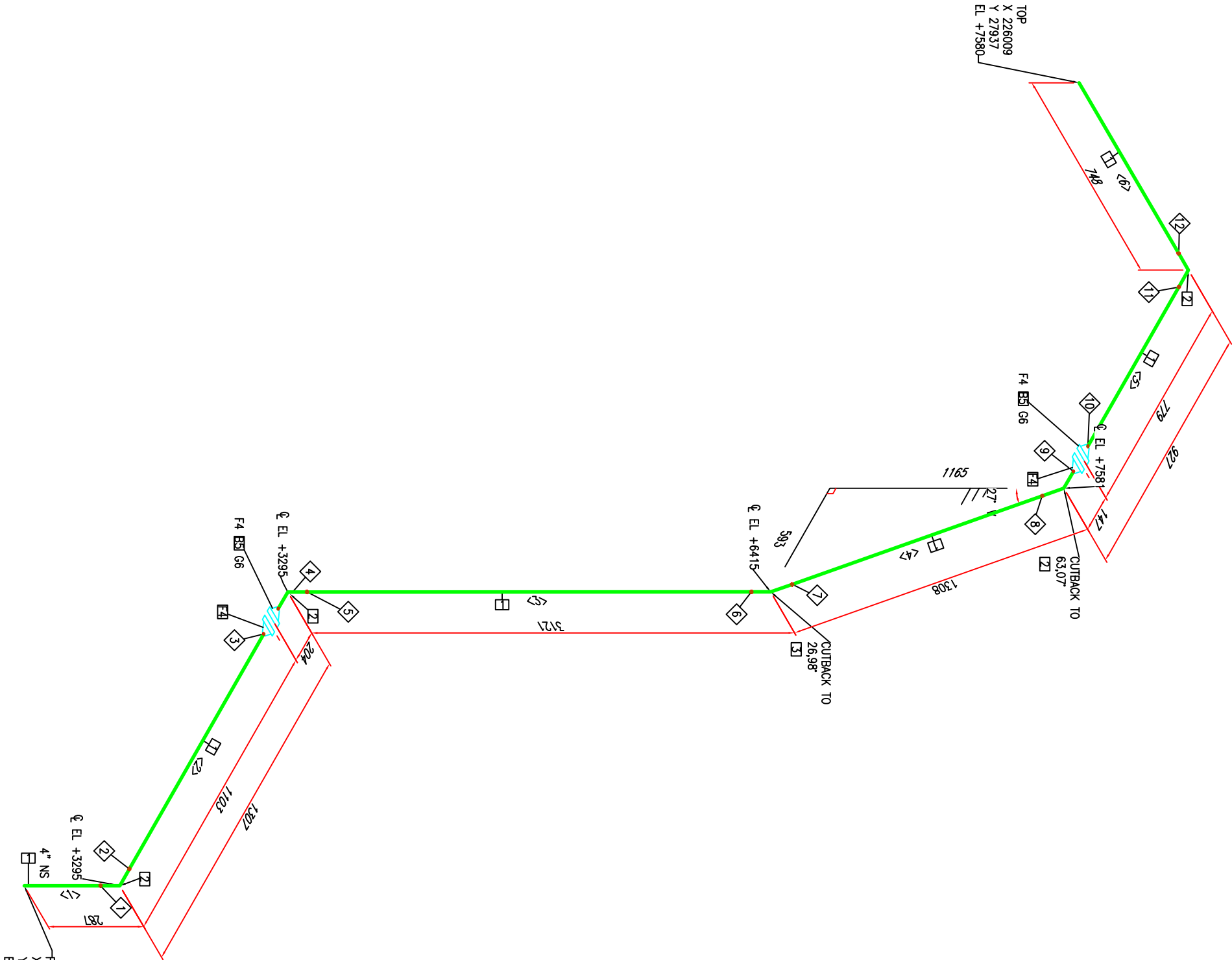
Rev.		Modification							None	Date
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.										
Tolerance for dimensions without tol. according to ISO 2768-MK								Material		
More than	0.5	3	6	30	120	400	1000	2000	Draw	None
Less	3	6	30	120	400	1000	2000	4000	Checked	
Machine Tool	±	±	±	±	±	±	±	±	Verified	
Welded	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	Verified	

ALINVEST		ALINVEST	
Scale:		Title	
1:15		TMT (FVRB-2,5-25)	
Project		NATURAL GAS ROUTE	

insertec		Furnaces & Refractories	
Project		Port Number	
Methods		2558-3322-TMT-M-ESR25	
Customer Number		Revision	
-		A	
Sheet		1/1	



LISTADO SOLDADURAS		
ID	DN "	TYPE
1	4"	BUTTWELD
2	4"	BUTTWELD
3	4"	BUTTWELD
4	4"	BUTTWELD
5	4"	BUTTWELD
6	4"	BUTTWELD
7	4"	BUTTWELD
8	4"	BUTTWELD
9	4"	BUTTWELD
10	4"	WELD
11	4"	BUTTWELD
12	4"	BUTTWELD



FLEXIBLE  
X 226771  
Y 25113  
EL + 3008

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Drawing is property of INTERTEC. Must not be copied or transferred to third parties in any way without written authorization											
Rev.		Modification						None		Date	
Tolerance for dimensions without tol. according to ISO 2768-MK											
More than	0.5	3	6	30	120	400	1000	2000		None	Date
Less	3	6	30	120	400	1000	2000	4000	Drawing		18/09/2025
Machine Tool	±	±	±	±	±	±	±	±	Checked		19/09/2025
Welded	±	±	±	±	±	±	±	±	18/09/2025		19/09/2025
Customer:	0.5	1	15	2	3		Edm	5	Verified		
A INVEST											
										Material	
										P235TR1	
										Weight (kg)	

MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	6.4M	4"
PIPE CS, EN 10217-1 P235TR1		
CARBON STEEL		
FITTINGS		
2	4	4"
ELBOW 90° CS RL - BW, EN 10253-1, P235TR1		
CARBON STEEL		
3	1	4"
ELBO 45° RL - BW, EN 10253-1,P235TR1		
CARBON STEEL		
FLANGES		
4	4	4"
FLANGE WN CS, EN 1092-1, DIN2633		
CARBON STEEL		
BOLTS, GASKETS		
5	16	1"x120
STUD BOLT,		
6	2	4"
GASKET		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	4"	136MM
2	4"	897MM
3	4"	2933MM
4	4"	1178MM
5	4"	576MM
6	4"	569MM

insertec

Furnaces & Refractories

Project

Methods

Port Number

Customer Number

2558-3323-TMT-M-ESR25

-

Revision

Sheet

A

1/1

Modification

None

Date

Scale

1:15

ALINVEST

ALINVEST

TMT (FVRB-2,5-25)

NATURAL GAS ROUTE

Tolerance for dimensions without tol. according to ISO 2768-MK

More than

0.5

3

6

30

120

400

1000

2000

4000

Less

3

6

30

120

400

1000

2000

4000

Machine Tool

±

±

±

±

±

±

±

±

Welded

±

±

±

±

±

±

±

Customer:

0.5

1

15

2

3

Date

18/09/2025

18/09/2025

19/09/2025

Material

P235TR1

Weight (kg)

Draw

Draw

Checked

Verified

None

Title

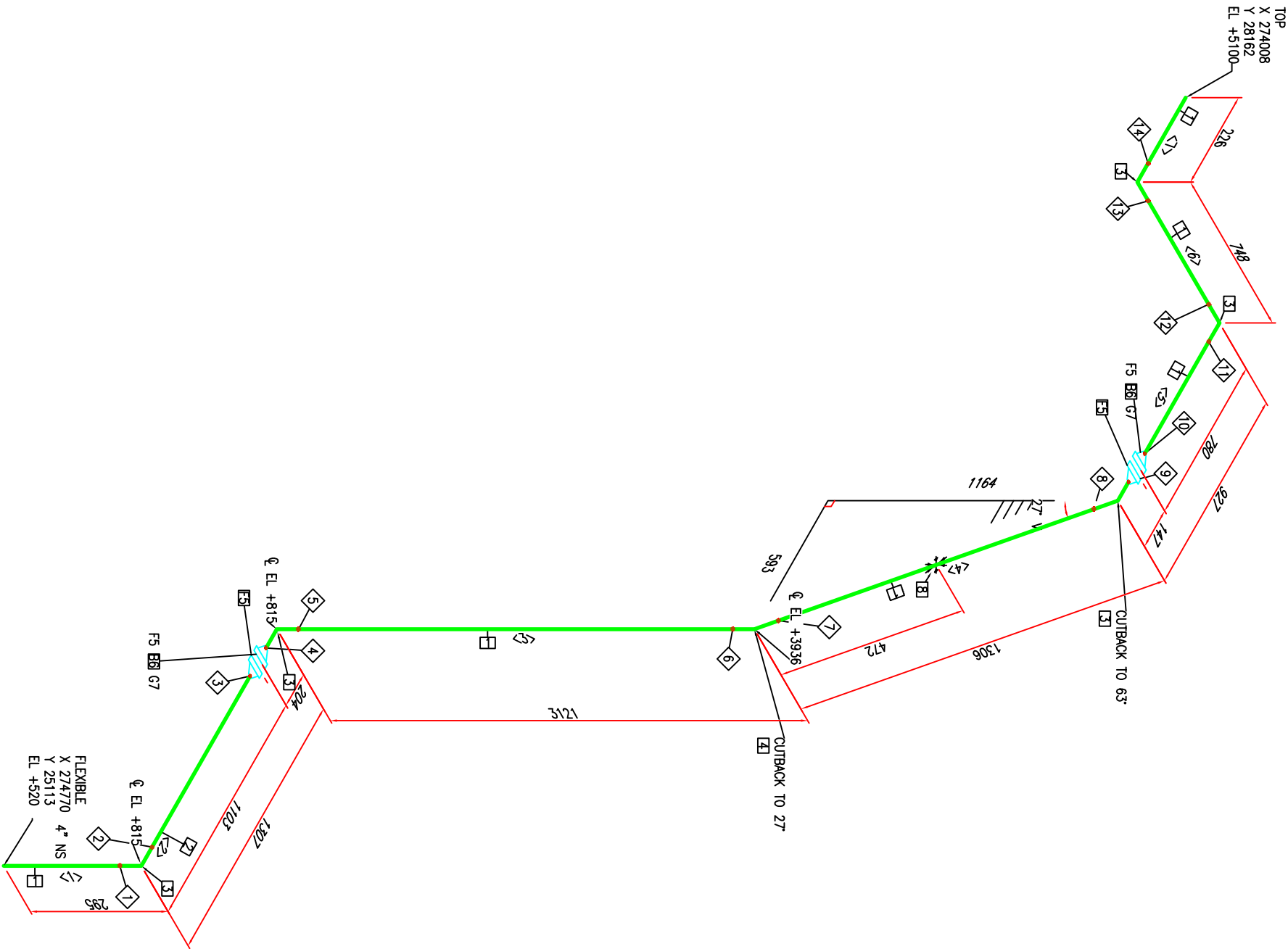
ALINVEST

TMT (FVRB-2,5-25)

NATURAL GAS ROUTE



LISTADO SOLDADURAS		
ID	DN "	TYPE
1	4"	BUTTWELD
2	4"	BUTTWELD
3	4"	WELD
4	4"	BUTTWELD
5	4"	BUTTWELD
6	4"	BUTTWELD
7	4"	BUTTWELD
8	4"	BUTTWELD
9	4"	BUTTWELD
10	4"	WELD
11	4"	BUTTWELD
12	4"	BUTTWELD
13	4"	BUTTWELD
14	4"	BUTTWELD



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	5.4M	4"	PIPE CS, EN 10217-1 P235TR1	CARBON STEEL
2	0.9M	4"	PIPE CS, EN 10217-1 P235TR1	CARBON STEEL
FITTINGS				
3	5	4"	ELBOW 90° CS RL – BW, EN 10253-1, P235TR1	CARBON STEEL
4	1	4"	ELBO 45° RL – BW, EN 10253-1,P235TR1	CARBON STEEL
FLANGES				
5	4	4"	FLANGE WN CS, EN 1092-1, DIN2633	CARBON STEEL
BOLTS, GASKETS				
6	16	1"x120	STUD BOLT,	
7	2	4"	GASKET	
PIPE SUPPORTS				
8	1	4"	CUSTOM CLAMP	

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	4"	144MM
2	4"	898MM
3	4"	2933MM
4	4"	1177MM
5	4"	576MM
6	4"	444MM
7	4"	74MM

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Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization									
Rev.		Modification						None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK								Draw	Date
More than		0.5	3	6	30	120	400	1000	2000
Less		3	6	30	120	400	1000	2000	4000
Machine Tool		±	±	±	±	±	±	±	±
Welded		±	±	±	±	±	±	±	±
Customer:		0.5	1	15	2	3			
Material								P23TR1	
Weight (kg)									

insertec

Furnaces & Refractories

Project Method

2558-3324-TM-M-ESR25

Port Number

-

Customer Number

-

Revision

A

Sheet

1/1

Scale

1:15

Title

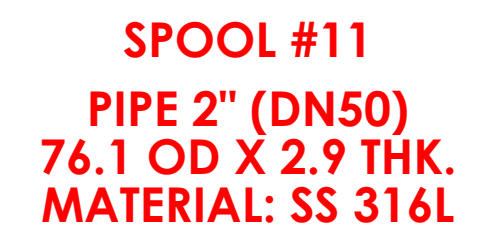
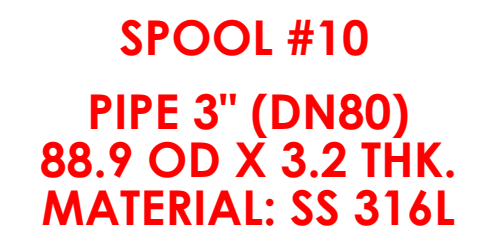
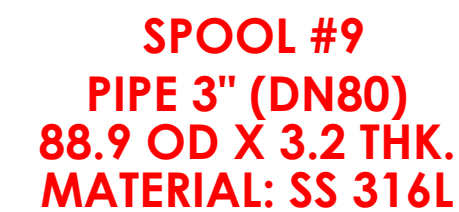
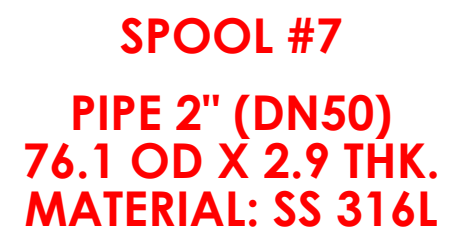
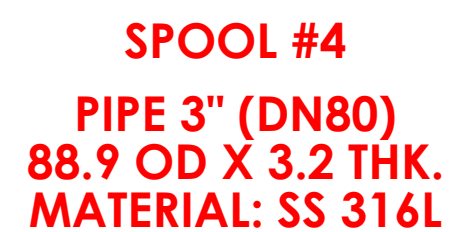
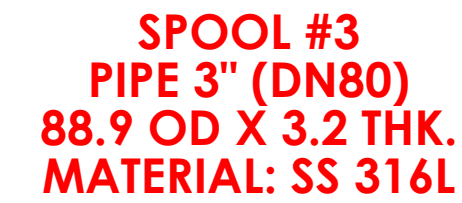
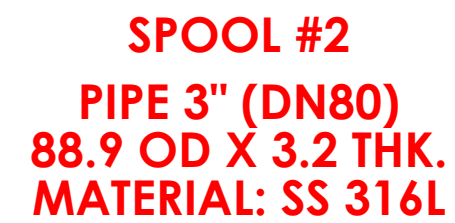
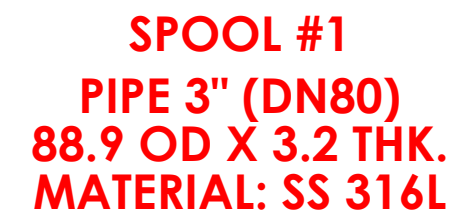
ALINVEST  
TM1 (FVRB-2,5-25)  
NATURAL GAS ROUTE





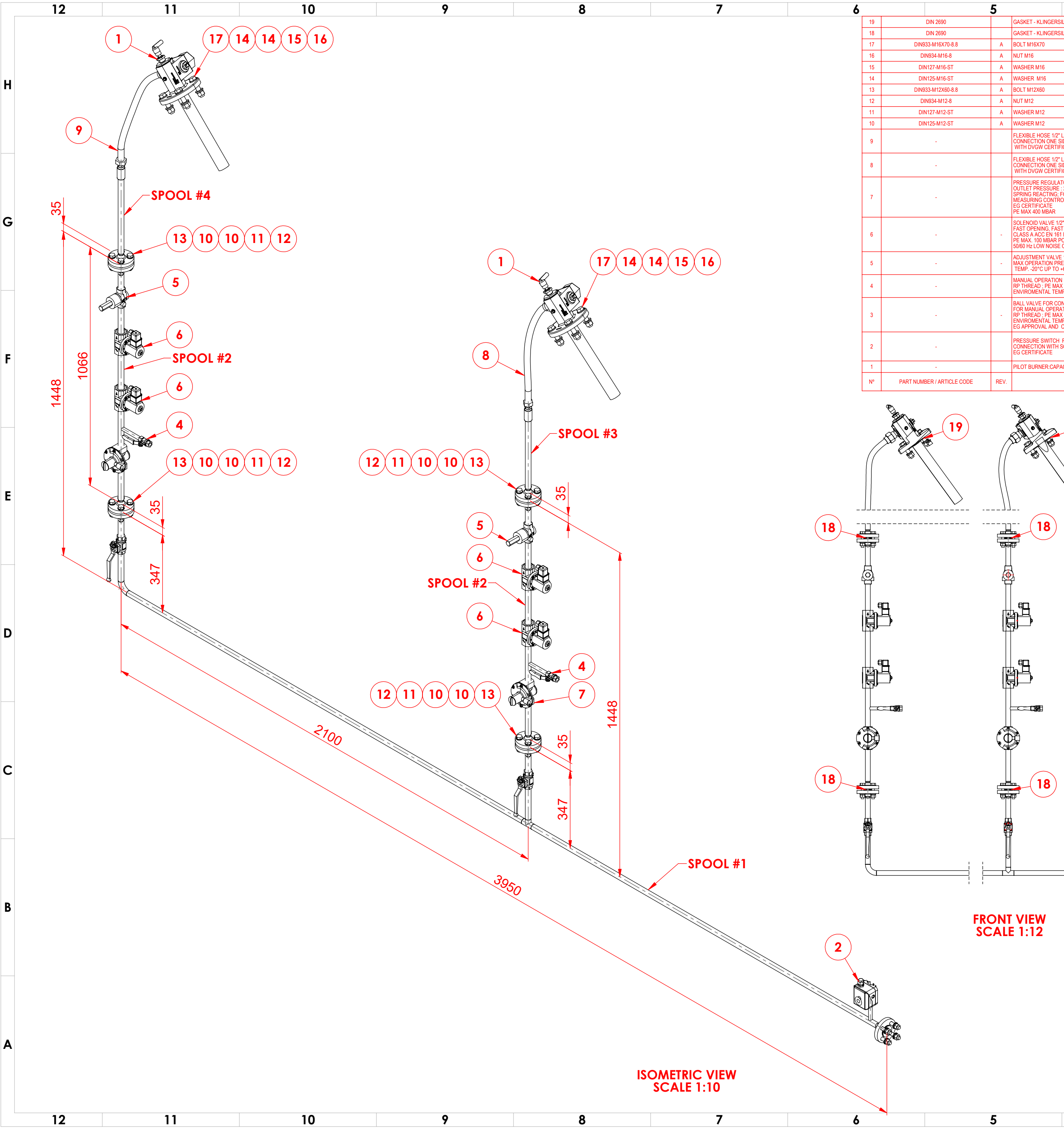
 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## **MELTER 25 – NATURAL GAS INSERTEC SCOPE**

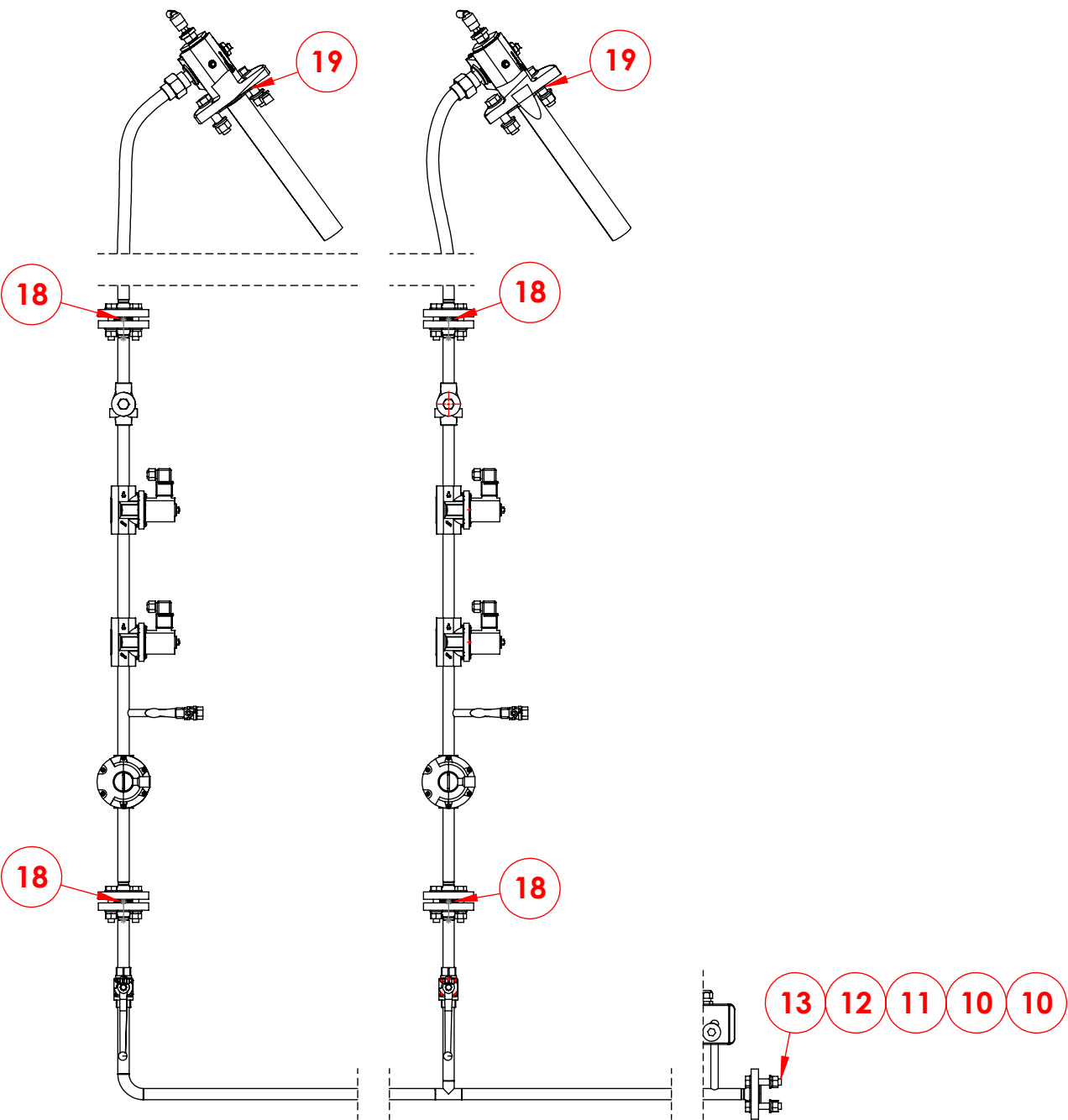



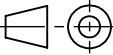


Rev.	Modification										Name	Date	
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.													
Tolerance for dimensions without tol. according to ISO 2768-mK										Name	Date	Material	
More than	0.5	3	6	30	120	400	1000	2000	Draw	23/09/2025			
Less	3	6	30	120	400	1000	2000	4000	Checked	23/09/2025	Weight (kg)		
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	24/09/2025	408.59		
Welded		±0.5	±1	±1.5	±2	±3	±4	±6					
Customer:								Format:	Title				
ALINVEST								A2	ALINVEST TMT (FVRB-2,5-25) MAIN GAS				
								Scale:					
								1:8					
 								Project	Part Number				Revision
								Methode:	2258-3321-TMT-M-ESR20-				A
								Customer Number				Sheet	
								-				2/2	

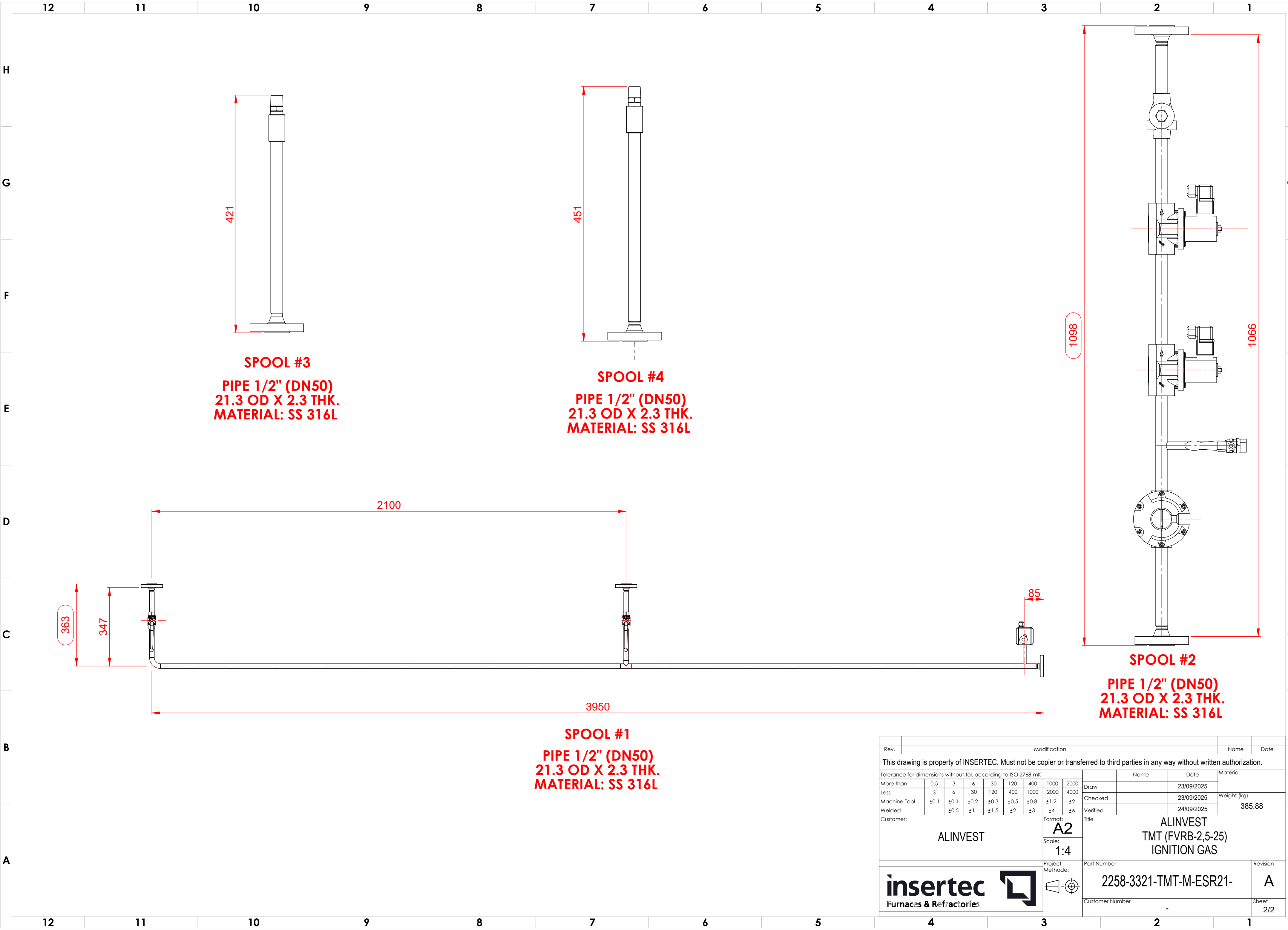



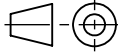
19	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN50	FIBERGLASS WNBR		-	2	0	
18	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN15	FIBERGLASS WNBR		-	9	0	
17	DIN933-M16X70-8.8	A	BOLT M16X70	8.8	0.15	8	1.2		
16	DIN934-M16-8	A	NUT M16	8	0.03	8	0.24		
15	DIN127-M16-ST	A	WASHER M16	ST	0.01	8	0.08		
14	DIN125-M16-ST	A	WASHER M16	ST	0.01	16	0.16		
13	DIN933-M12X60-8.8	A	BOLT M12X60	8.8	0.07	20	1.4		
12	DIN934-M12-8	A	NUT M12	8	0.02	20	0.4		
11	DIN127-M12-ST	A	WASHER M12	ST	0.00	20	0		
10	DIN125-M12-ST	A	WASHER M12	ST	0.01	40	0.4		
9	-		FLEXIBLE HOSE 1/2" LENGTH 500 mm CONNECTION ONE SIDE MALE THREAD ONE SIDE THREADED JOINT WITH DVGW CERTIFICATE	COMMERCIAL	0	1	0		
8	-		FLEXIBLE HOSE 1/2" LENGTH 500 mm CONNECTION ONE SIDE MALE THREAD ONE SIDE THREADED JOINT WITH DVGW CERTIFICATE	COMMERCIAL	0	1	0		
7	-		PRESSURE REGULATOR OUTLET PRESSURE: 25 - 75 MBAR SPRING REACTING, FOR CONSTANT PRESSURE FOR GAS; MEASURING CONTROL NOZZLE IN THE INLET EG CERTIFICATE PE MAX 400 MBAR	COMMERCIAL	0	2	0		
6	-	-	SOLENOID VALVE 1/2" POWERLESS CLOSED, FAST OPENING, FAST CLOSING, FOR NAT. GAS, TOWN GAS, LIQUID GAS AND AIR, CLASS A ACC EN 161 EG CERTIFICATE, THREAD CONNECTION PE MAX. 100 MBAR, POWER SUPPLY: 230 V~ 50/60 Hz, LOW NOISE OPERATION	COMMERCIAL	0	4	0		
5	-	-	ADJUSTMENT VALVE 1/2" FOR NATURAL GAS AND AIR, THREAD DESIGN MAX OPERATION PRESSURE: 10 BAR, FOR AIR AND GAS TEMP. -20°C UP TO +60°C	COMMERCIAL	0	2	0		
4	-		MANUAL OPERATION IN GAS, AIR, WATER AND OIL RP THREAD - PE MAX 5BAR ENVIRONMENTAL TEMP. -20°C TO +60°C	COMMERCIAL	0	2	0		
3	-	-	BALL VALVE FOR CONDENSATE FOR MANUAL OPERATION IN GAS, AIR, WATER AND OIL RP THREAD - PE MAX 16 BAR ENVIRONMENTAL TEMP. -20°C TO +60°C EG APPROVAL AND CERTIFICATE	COMMERCIAL	0	2	0		
2	-		PRESSURE SWITCH RANGE 30 - 150 MBAR, OVERPRESSURE, VACUUM AND DIFFERENTIAL PRESSURE EL. CONNECTION WITH SCREW TERMINAL, MANUAL ADJUSTMENT OF SET POINT EG CERTIFICATE EG CERTIFICATE	COMMERCIAL	0.31	1	0.31		
1	-		PILOT BURNER, CAPACITY: 26 KW, AIR: 26 NM³/H @ 20 MBAR, GAS: 2.6 NM³/H @ 20 MBAR	COMMERCIAL	0	2	0		
N°	PART NUMBER / ARTICLE CODE	REV.	DESCRIPTION	MATERIAL	MANUFACTURER	TAG	WEIGHT (KG)	QTY.	TOTAL WEIGHT (KG)



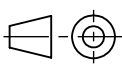
Rev.	Modification										Name		Date					
This drawing is property of INSERTEC. Must not be copier or transferred to third parties in any way without written authorization.																		
Tolerance for dimensions without tol. according to ISO 2768-mK											Name		Date		Material			
More than	0.5	3	6	30	120	400	1000	2000	Draw		23/09/2025		Weight (kg)  385.88					
Less	3	6	30	120	400	1000	2000	4000	Checked		23/09/2025							
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified		24/09/2025							
Welded		±0.5	±1	±1.5	±2	±3	±4	±6										
Customer:  <div>ALINVEST</div>									Format: <div>A2</div>		Title  <div>ALINVEST TMT (FVRB-2,5-25) IGNITION GAS</div>							
									Scale: <div>1:10</div>									
<div><div>insertec</div><div>Furnaces &amp; Refractories</div></div> <div></div>									Project Methode:		Part Number  <div>2258-3321-TMT-M-ESR21-</div>						Revision  <div>A</div>	
									<div></div>								Customer Number  <div>-</div>	





Rev.		Modification								Name		Date		
This drawing is property of INSERTEC. Must not be copier or transferred to third parties in any way without written authorization.														
Tolerance for dimensions without tol. according to ISO 2768-mK										Name	Date	Material		
More than	0.5	3	6	30	120	400	1000	2000	Draw	23/09/2025				
Less	3	6	30	120	400	1000	2000	4000	Checked	23/09/2025	Weight (kg)			
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	24/09/2025				
Welded		±0.5	±1	±1.5	±2	±3	±4	±6	385.88					
<div>Customer:</div> <div>ALINVEST</div>									Format:			<div>Title</div> <div>ALINVEST</div> <div>TMT (FVRB-2,5-25)</div> <div>IGNITION GAS</div>		
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									Scale:					
									1:4					
<div><div>insertec</div><div>Furnaces &amp; Refractories</div></div> <div></div>									Project		<div>Part Number</div> <div>2258-3321-TMT-M-ESR21-</div>		<div>Revision</div> <div>A</div>	
									Method:					
														
									Customer Number		Sheet			
									-		2/2			

**insertec**  
Furnaces & Refractories



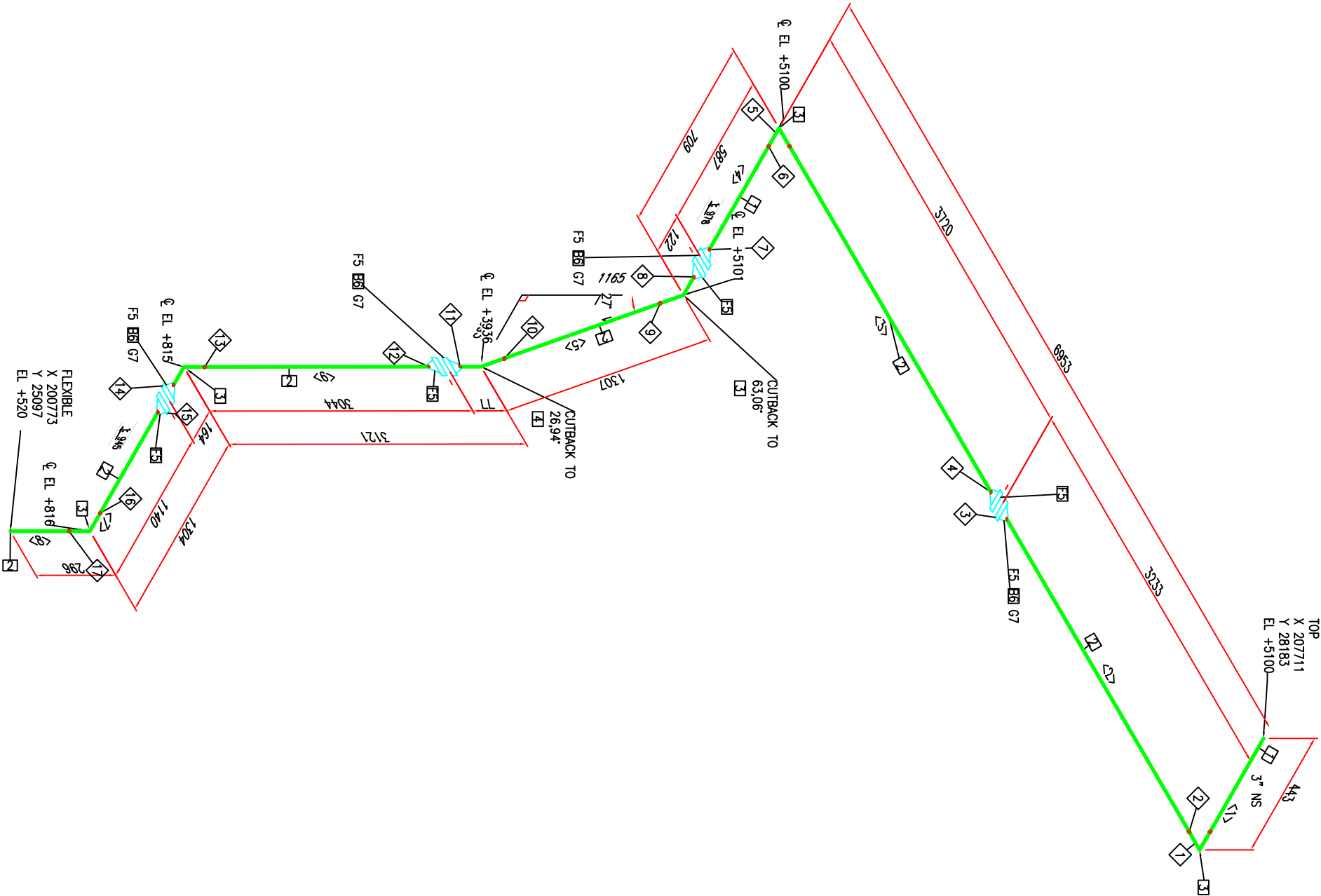


 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## **MELTER 25 – OXYGEN AIB SCOPE**



LISTADO SOLDADURAS		
ID	DN "	TYPE
1	3"	BUTTWELD
2	3"	BUTTWELD
3	3"	WELD
4	3"	WELD
5	3"	BUTTWELD
6	3"	BUTTWELD
7	3"	WELD
8	3"	BUTTWELD
9	3"	BUTTWELD
10	3"	BUTTWELD
11	3"	BUTTWELD
12	3"	WELD
13	3"	BUTTWELD
14	3"	BUTTWELD
15	3"	WELD
16	3"	BUTTWELD
17	3"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		MATERIAL

PPING

1	0.8M	3"	PIPE CS, EN 10217-1	316L
2	11.9M	3"	PIPE CS, EN 10217-1	316L
FITTINGS				
3	5	3"	ELBOW 90° CS RL – BW, EN 10253-1	316L
4	1	3"	ELBO 45° RL – BW, EN 10253-1	316L

FLANGES

5	8	3"	FLANGE WN CS, EN 1092-1, DIN2633	316L
BOLTS, GASKETS				

6	32	7/8"x1 10	STUD BOLT,	
7	4	3"	GASKET	

PIPE CUTTING LIST

ID	DN "	LENGTH
1	3"	329MM
2	3"	3069MM
3	3"	3555MM
4	3"	424MM
5	3"	1210MM
6	3"	2878MM
7	3"	974MM
8	3"	183MM

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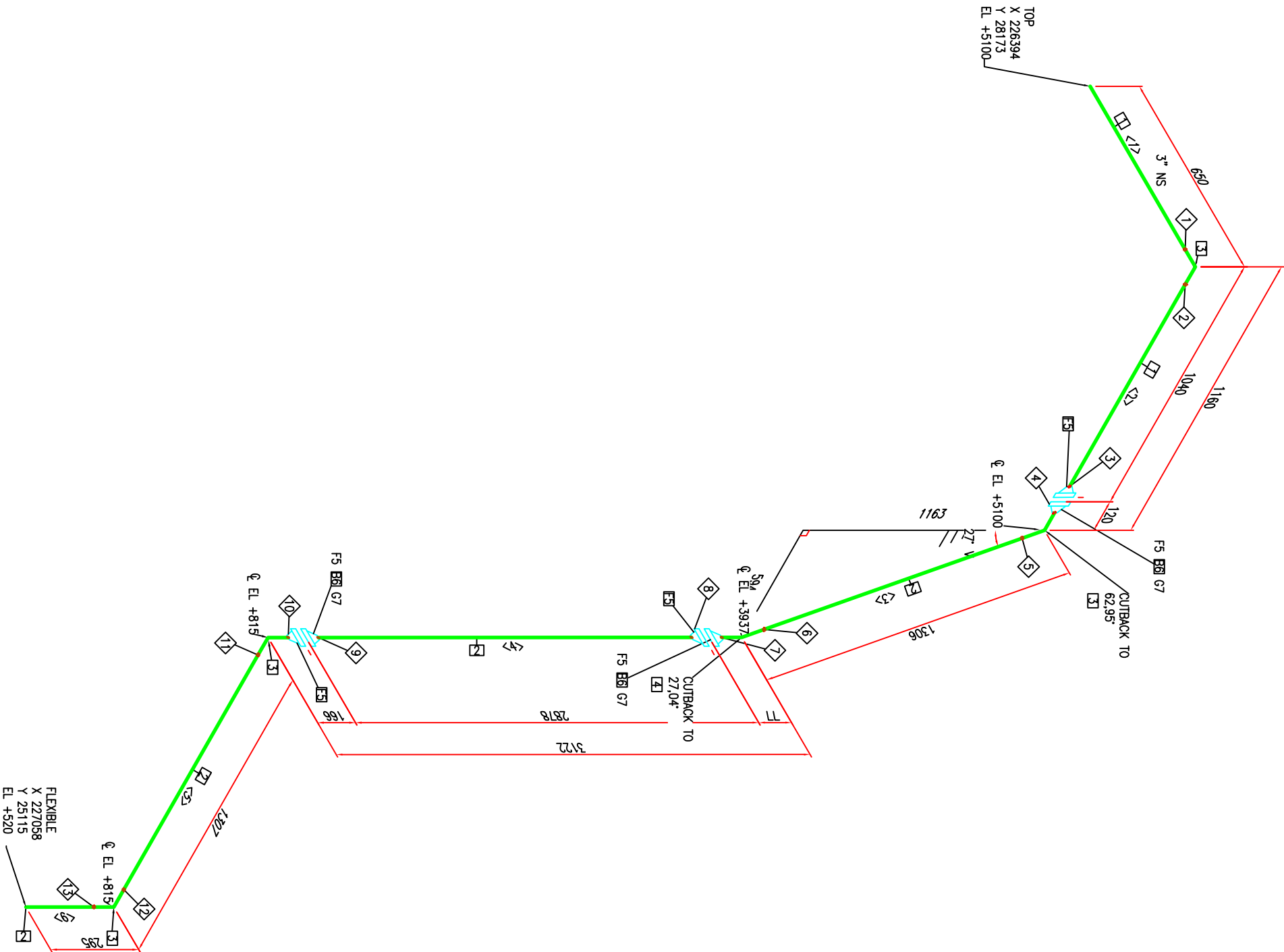
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization											
Rev.		Modification					None		Date		
Tolerance for dimensions without tol. according to ISO 2768-MK											
More than	0.5	3	6	30	120	400	1000	2000	None		
Less	3	6	30	120	400	1000	2000	4000	None		
Machine Tool	+	+	+	+	+	+	+	+	None		
Welded	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	None		
Customer:	0.5	1	15	2	3	3	6	6	None		
AI INVE/ST											
316L										Material	
Weight (kg)										18/09/2023	
										19/09/2023	
										18/09/2023	

ALINVEST		ALINVEST	
Scale: 1:15		TMT (FVRB-2,5-25)	
Project Name		OXYGEN ROUTE	

insertec		Furnaces & Refractories	
Project Number		2558-3321-TMT-M-ESR31	
Customer Number		-	
Revision		A	
Sheet		1/1	



LISTADO SOLDADURAS		
ID	DN "	TYPE
1	3"	BUTTWELD
2	3"	BUTTWELD
3	3"	WELD
4	3"	BUTTWELD
5	3"	BUTTWELD
6	3"	BUTTWELD
7	3"	BUTTWELD
8	3"	WELD
9	3"	WELD
10	3"	BUTTWELD
11	3"	BUTTWELD
12	3"	BUTTWELD
13	3"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	1.5M	3"
PIPE, EN 10217-1		316L
2	5.3M	3"
PIPE, EN 10217-1		316L
FITTINGS		
3	4	3"
ELBOW 90° RL – BW, EN 10253-1		316L
4	1	3"
ELBO 45° RL – BW, EN 10253-1		316L
FLANGES		
5	6	3"
FLANGE WN CS, EN 1092-1,		316L
DIN2633		
BOLTS, GASKETS		
6	24	7/8"x1
STUD BOLT,		
7	3	3"
GASKET		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	3"	5.36MM
2	3"	8.75MM
3	3"	1210MM
4	3"	2777MM
5	3"	1079MM
6	3"	182MM

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Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization									
Rev.		Modification						None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK									
More than		0.5	3	6	30	120	400	1000	2000
Less		3	6	30	120	400	1000	2000	4000
Machine Tool		±							
Welded		±	±	±	±	±	±	±	±
Customer:		0.5	1	1.5	2	3	3	3	3
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		3	3	3	3	3	3	3	3
		3	3	3	3	3	3	3	3
		3	3	3	3	3	3	3	3
		3	3	3	3	3	3	3	3
		3	3	3	3	3	3	3	3
		3	3	3	3	3	3	3	3
		3	3	3	3	3	3	3	3
		3	3	3	3	3	3	3	3
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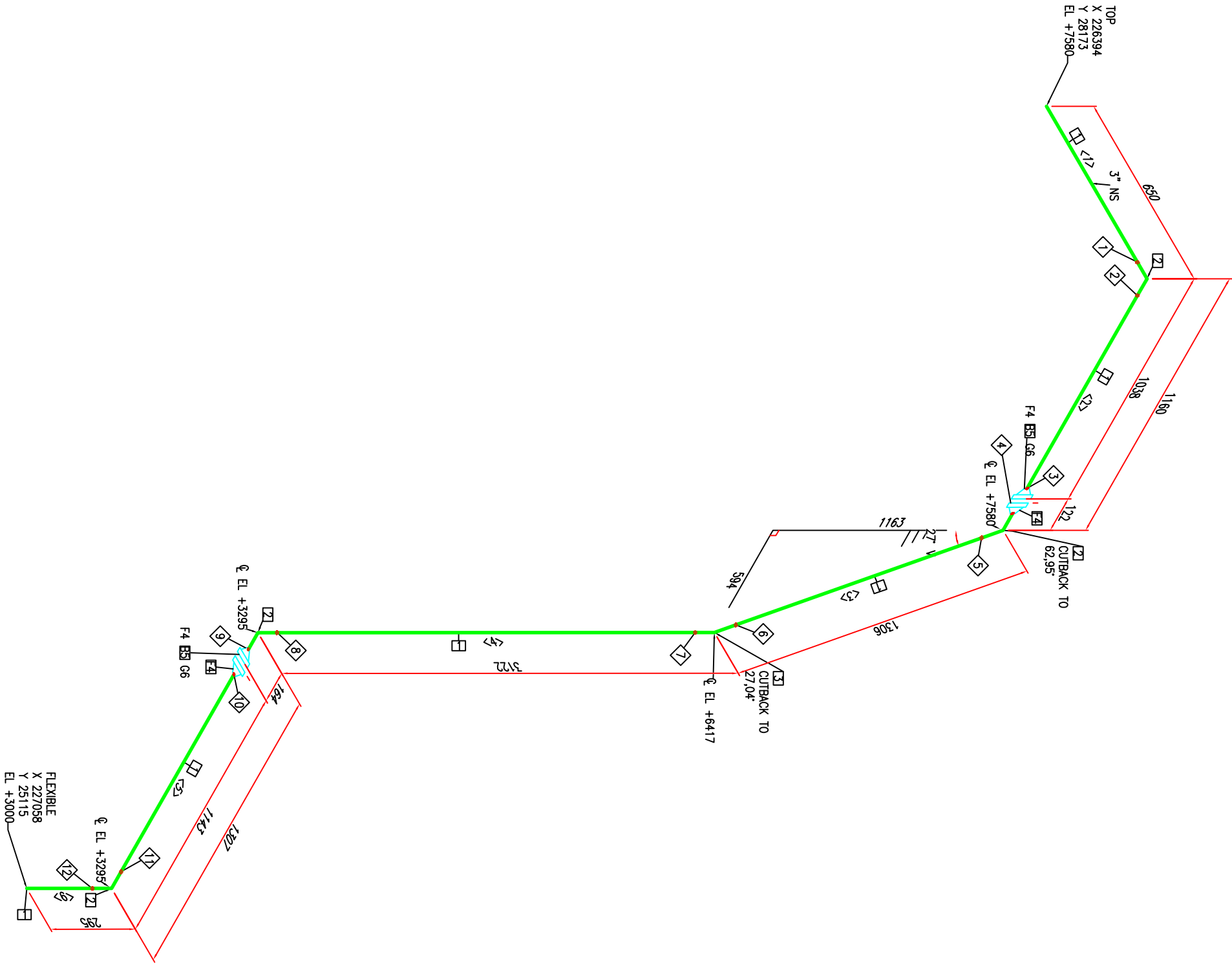
ALINVEST		ALINVEST	
Scale:		Title	
1:15		TMT (FVRR-2,5-25)	
		OXYGEN ROUTE	

Project		Port Number		Revision	
Methods:		2558-3322-TMT-M-ESR31		A	
Customer Number		-		Sheet	
				1/1	





LISTADO SOLDADURAS		
ID	DN "	TYPE
1	3"	BUTTWELD
2	3"	BUTTWELD
3	3"	WELD
4	3"	BUTTWELD
5	3"	BUTTWELD
6	3"	BUTTWELD
7	3"	BUTTWELD
8	3"	BUTTWELD
9	3"	BUTTWELD
10	3"	WELD
11	3"	BUTTWELD
12	3"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	6.8M	3"
PIPE, EN 10217-1		
316L		
FITTINGS		
2	4	3"
ELBOW 90° RL - BW, EN 10253-1		
316L		
3	1	3"
ELBO 45° RL - BW, EN 10253-1		
316L		
FLANGES		
4	4	3"
FLANGE WN, EN 1092-1, DN2633		
316L		
BOLTS, GASKETS		
5	16	7/8"x1
10 STUD BOLT,		
6	2	3"
GASKET		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	3"	536MM
2	3"	875MM
3	3"	1210MM
4	3"	2981MM
5	3"	977MM
6	3"	182MM

Modification		None	Date
Rev.			

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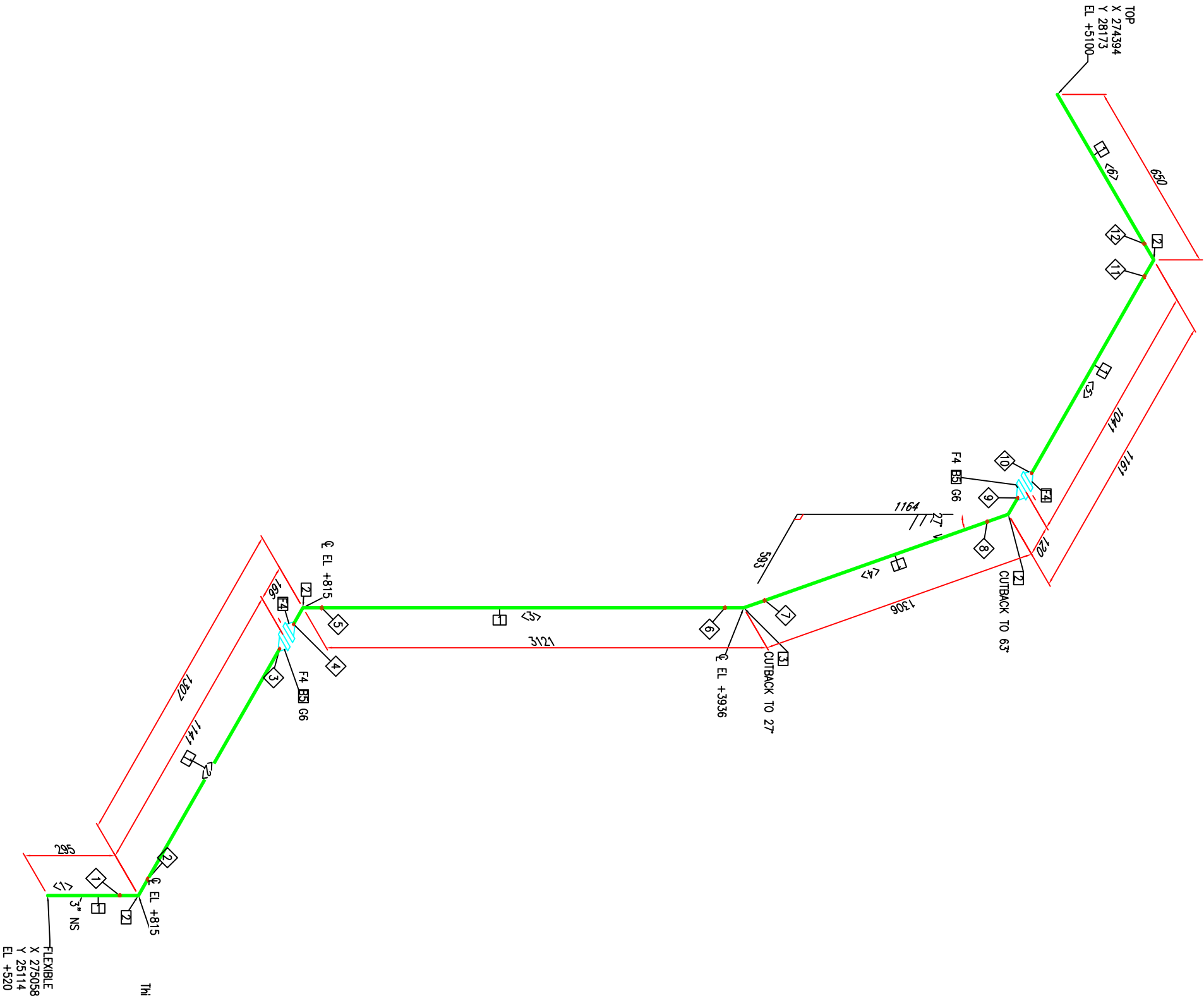
Tolerance for dimensions without tol. according to ISO 2768-MK		None	Date
More than	0.5	3	6
Less	3	6	30
Machine Tool	±	±	±
Welded	±	±	±
Customer:	0.5	1	1.5

ALINVEST		ALINVEST	ALINVEST
Scale:		1:15	1:15
Project		Port Number	Revision
Method:		2558-3323-TMT-M-ESR31	A
Customer Number		-	Sheet 1/1





LISTADO SOLDADURAS		
ID	DN "	TYPE
1	3"	BUTTWELD
2	3"	BUTTWELD
3	3"	WELD
4	3"	BUTTWELD
5	3"	BUTTWELD
6	3"	BUTTWELD
7	3"	BUTTWELD
8	3"	BUTTWELD
9	3"	BUTTWELD
10	3"	WELD
11	3"	BUTTWELD
12	3"	BUTTWELD



MATERIAL LIST			
ID	QTY	DN "	DESCRIPTION MATERIAL
PIPING			
1	6.8M	3"	PIPE, EN 10217-1 316L
FITTINGS			
2	4	3"	ELBOW 90° RL – BW, EN 10253-1 316L
3	1	3"	ELBO 45° RL – BW, EN 10253-1 316L
FLANGES			
4	4	3"	FLANGE WN, EN 1092-1, DN253 316L
BOLTS, GASKETS			
5	16	7/8"x1 10	STUD BOLT, 316L
6	2	3"	GASKET


PIPE CUTTING LIST		
ID	DN "	LENGTH
1	3"	182MM
2	3"	978MM
3	3"	2980MM
4	3"	1210MM
5	3"	876MM
6	3"	536MM

Rev.	Modification	None	Date

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Tolerance for dimensions without tol. according to ISO 2768-MK			
More than	0.5	3	30
Less	3	6	120
Machine Tool	±	±	±
Welded	±	±	±
Customer:	0.5	1	15

ALINVEST		ALINVEST	
Scale: 1:15		Title: TMT (FVVRB-2,5-25) OXYGEN ROUTE	

Project Method: 		Port Number: 2558-3324-TMT-M-ESR31	Revision: A
Customer Number: -		Sheet: 1/1	





 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## **HOLDER 35 – HYDRAULIC LINE**

Balloon
Pos.
Qtd.

A

B

C

D

E

F

G

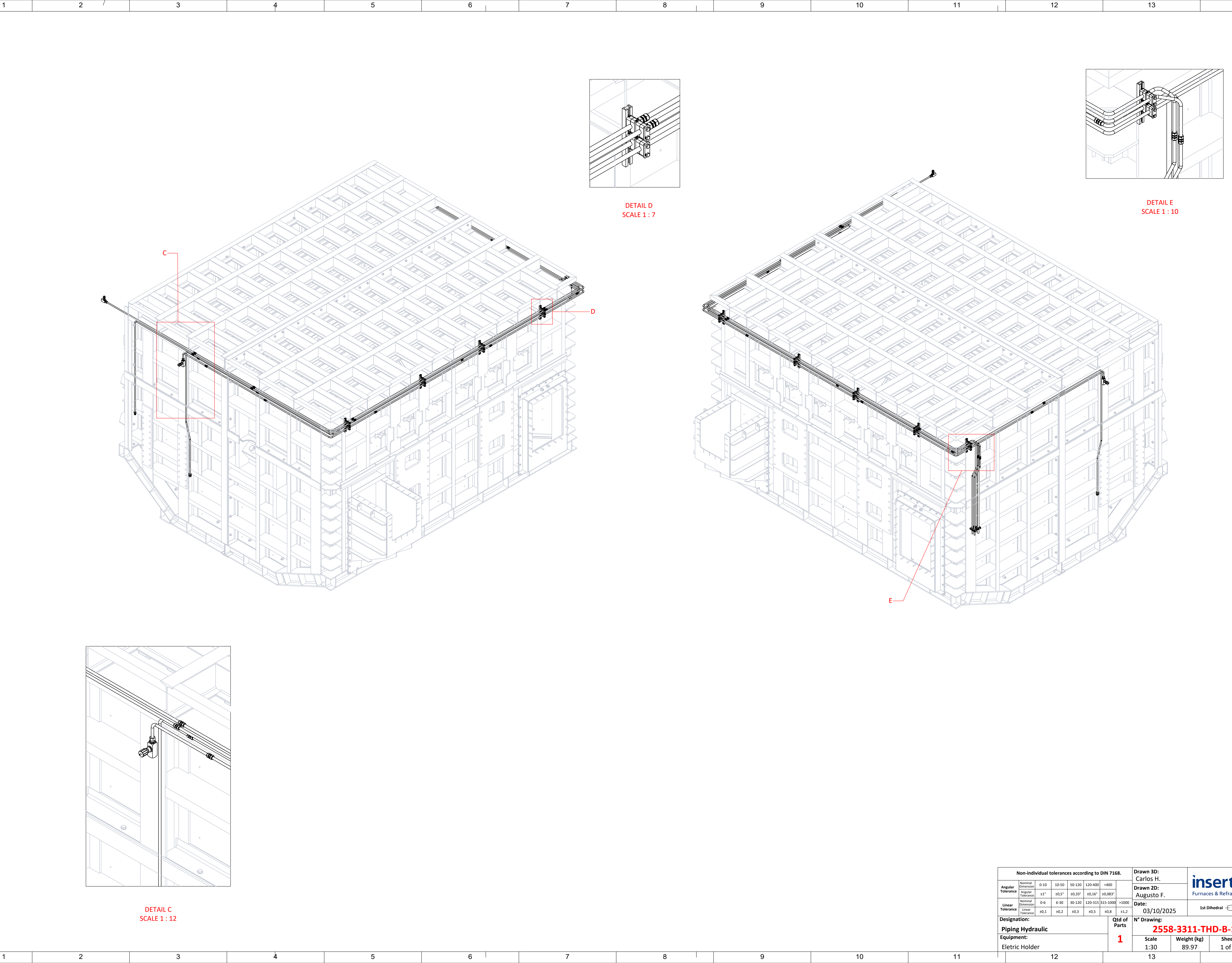
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Before manufacturing this  
drawing must be reviewed by the  
drawing and clarify  
all doubts.




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without authorization.



DETAIL C  
SCALE 1 : 12

DETAIL D  
SCALE 1 : 7

DETAIL E  
SCALE 1 : 10

Non-individual tolerances according to DIN 7168.										Drawn 3D: Carlos H.		 Furnaces & Refractories		
Angular Tolerance	Nominal Dimension	0-10	10-50	50-120	120-400	>400		Drawn 2D: Augusto F.						
	Angular Tolerance	±1°	±0,5°	±0,33°	±0,16°	±0,083°		Date: 03/10/2025						
Linear Tolerance	Nominal Dimension	0-6	6-30	30-120	120-315	315-1000		>1000		1st Dihedral   ISO 5456-2				
	Linear Tolerance	±0,1	±0,2	±0,3	±0,5	±0,8		±1,2						
Designation: Piping Hydraulic					Qtd of Parts  <b>1</b>		N° Drawing:  <b>2558-3311-THD-B-120</b>							
Equipment: Electric Holder							Scale 1:30		Weight (kg) 89.97		Sheet 1 of 2		Format A1	



Balloon
Pos.
Qtd.

A

B

C

D

E

F

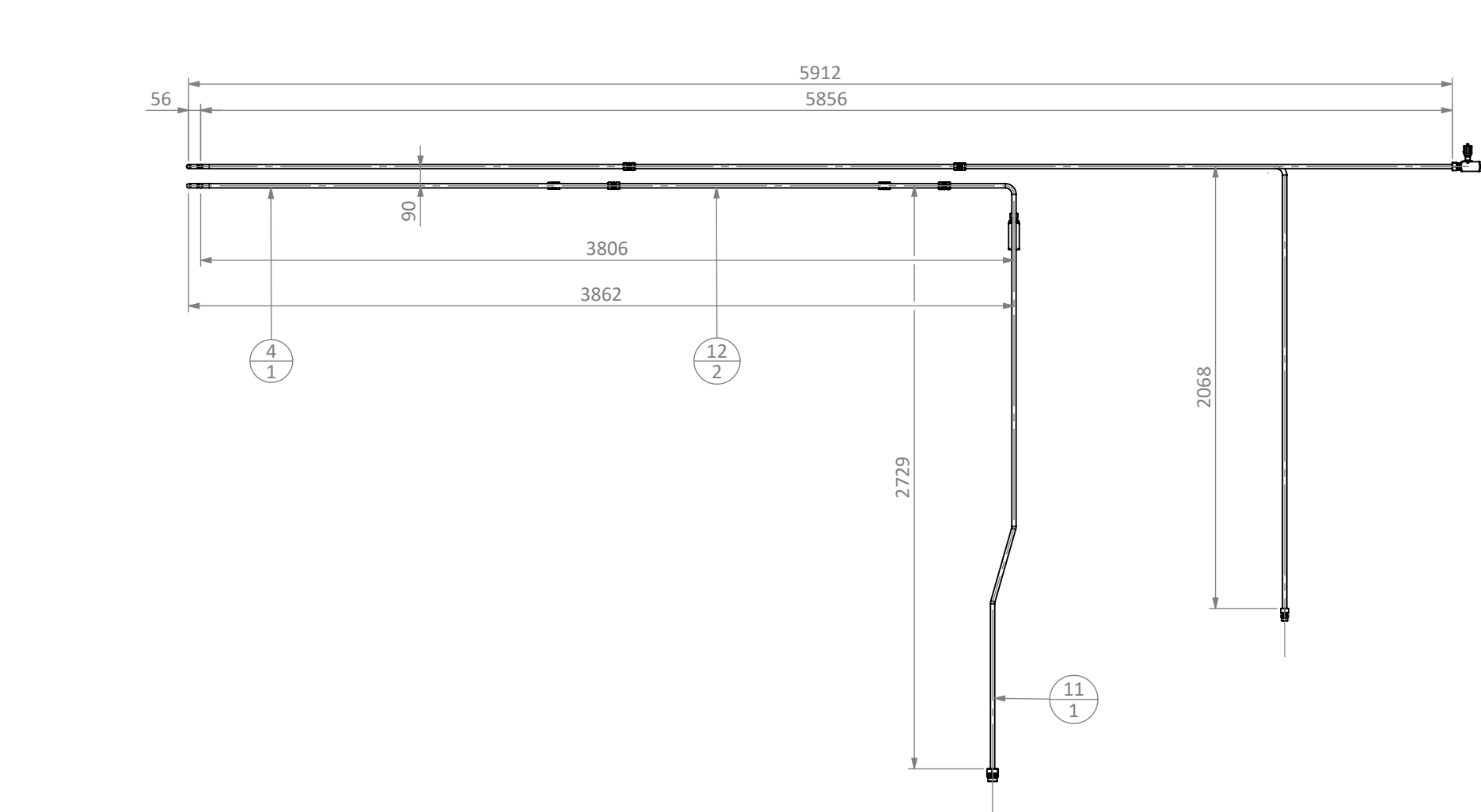
G

H

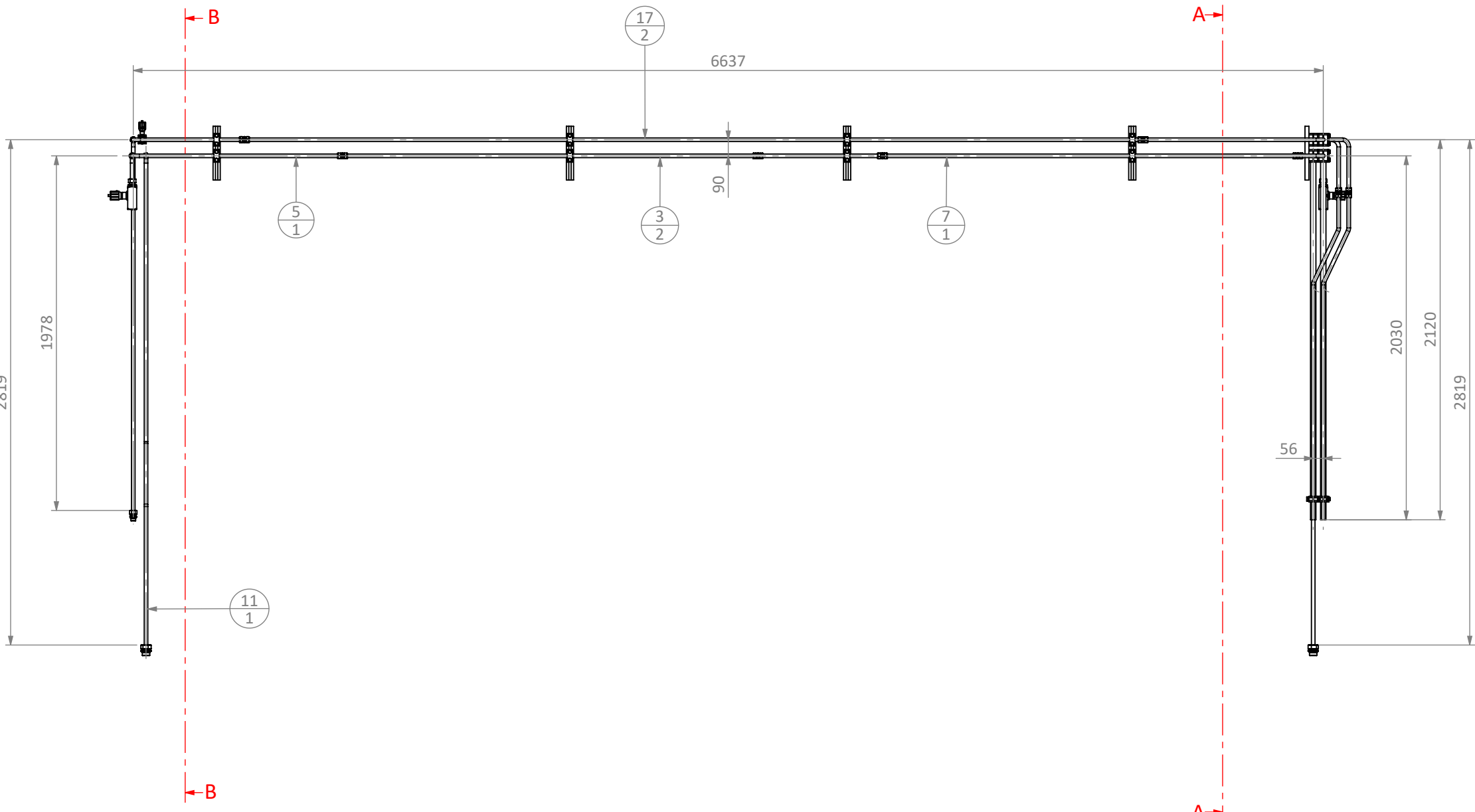
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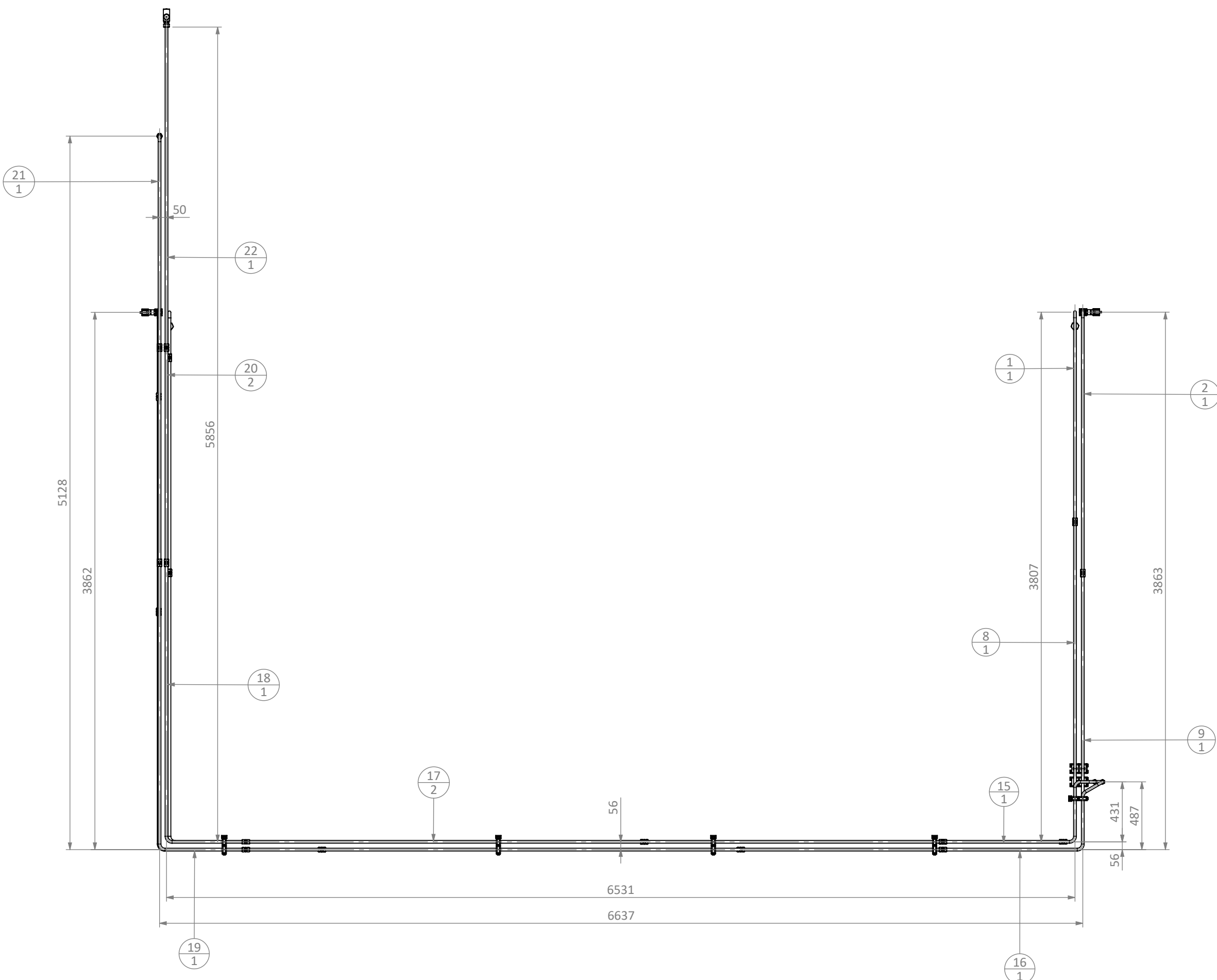
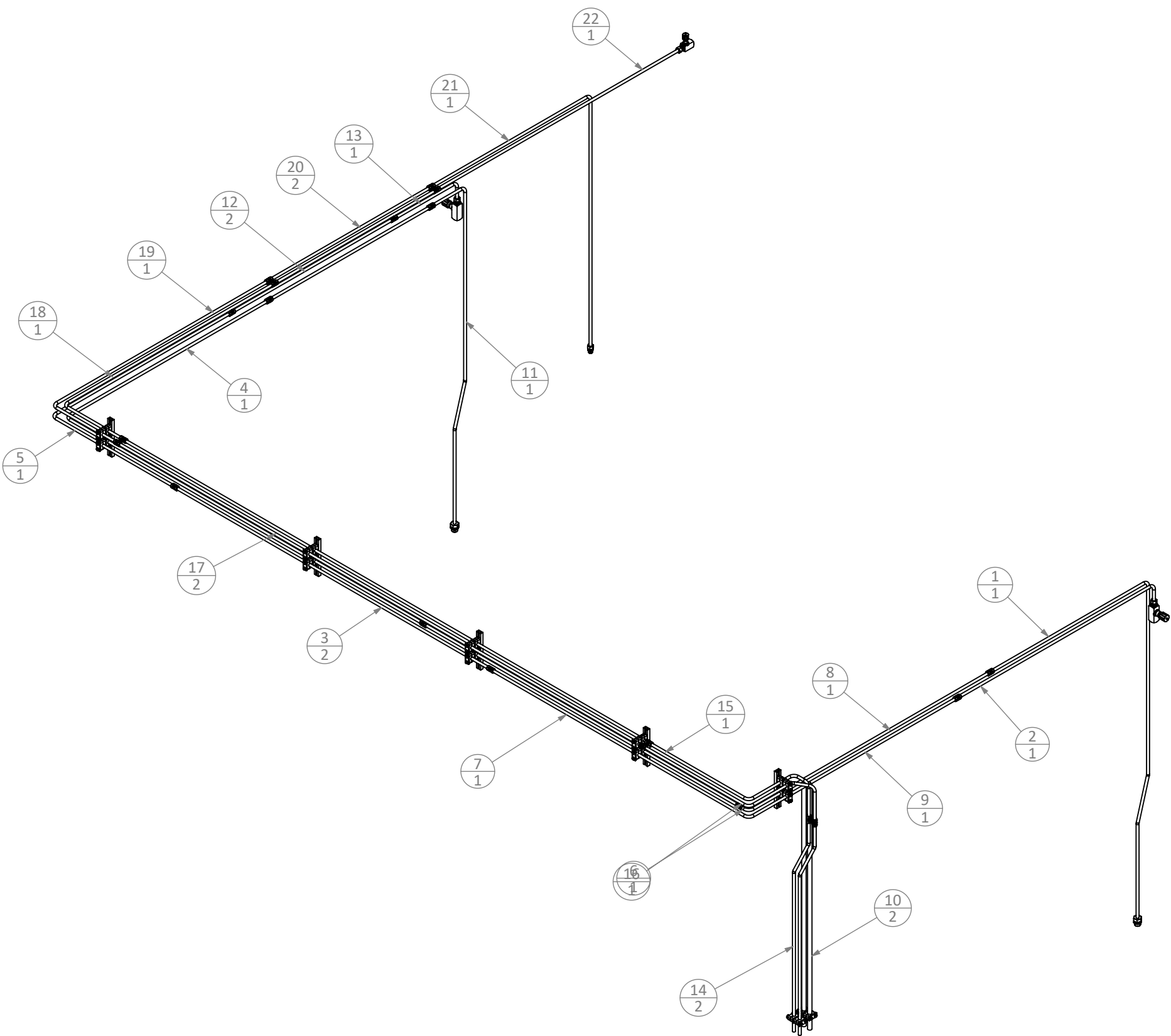
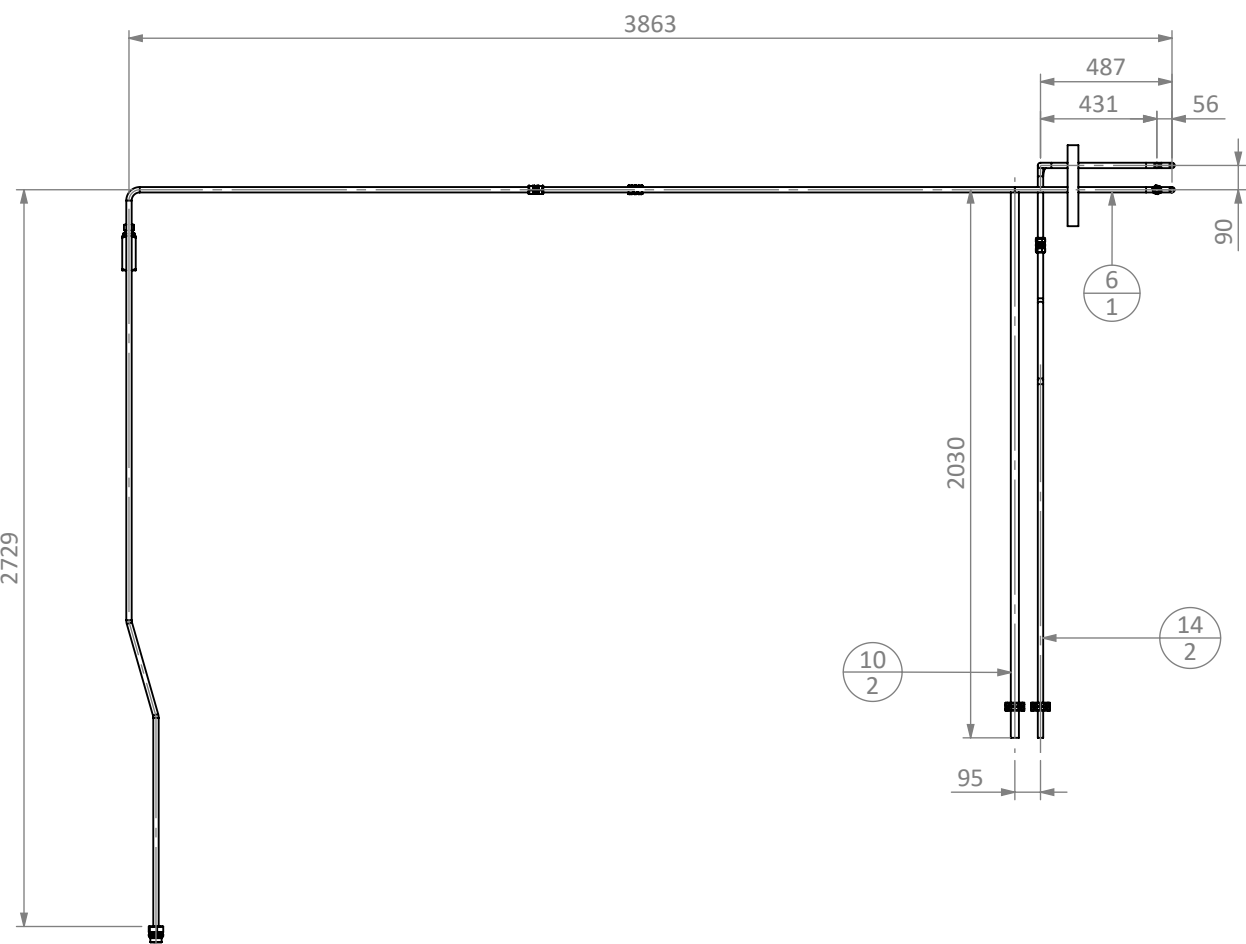
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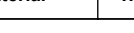
SECTION B-B



SECTION A-A



22	1	2558-3311-THD-B-120-0028	TUBING HYD 20 x 2.5 - EN10216-5	2320	AISI 316	2.58Kg
21	1	2558-3311-THD-B-120-0027	TUBING HYD 20 x 2.5 - EN10216-5	3587	AISI 316	3.94Kg
20	2	2558-3311-THD-B-120-0026	TUBING HYD 20 x 2.5 - EN10216-5	1536	AISI 316	3.38Kg
19	1	2558-3311-THD-B-120-0025	TUBING HYD 20 x 2.5 - EN10216-5	2653	AISI 316	2.93Kg
18	1	2558-3311-THD-B-120-0024	TUBING HYD 20 x 2.5 - EN10216-5	2547	AISI 316	2.8Kg
17	2	2558-3311-THD-B-120-0023	TUBING HYD 20 x 2.5 - EN10216-5	5000	AISI 316	11Kg
16	1	2558-3311-THD-B-120-0022	TUBING HYD 20 x 2.5 - EN10216-5	1820	AISI 316	2Kg
15	1	2558-3311-THD-B-120-0021	TUBING HYD 20 x 2.5 - EN10216-5	1755	AISI 316	1.93Kg
14	2	2558-3311-THD-B-120-0019	TUBING HYD 20 x 2.5 - EN10216-5	1850	AISI 316	4.06Kg
13	1	2558-3311-THD-B-120-0018	TUBING HYD 20 x 2.5 - EN10216-5	733	AISI 316	0.81Kg
12	2	2558-3311-THD-B-120-0017	TUBING HYD 20 x 2.5 - EN10216-5	1536	AISI 316	3.38Kg
11	1	2558-3311-THD-B-120-0015	TUBING HYD 20 x 2.5 - EN10216-5	3056	AISI 316	3.37Kg
10	2	2558-3311-THD-B-120-0014	TUBING HYD 30 x 2.5 - EN10216-5	2020	AISI 316	10.56Kg
9	1	2558-3311-THD-B-120-0013	TUBING HYD 20 x 2.5 - EN10216-5	1400	AISI 316	1.54Kg
8	1	2558-3311-THD-B-120-0012	TUBING HYD 20 x 2.5 - EN10216-5	1768	AISI 316	1.94Kg
7	1	2558-3311-THD-B-120-0011	TUBING HYD 20 x 2.5 - EN10216-5	3058	AISI 316	3.33Kg
6	1	2558-3311-THD-B-120-0009	TUBING HYD 20 x 2.5 - EN10216-5	588,832	AISI 316	0.68Kg
5	1	2558-3311-THD-B-120-0008	TUBING HYD 20 x 2.5 - EN10216-5	2894	AISI 316	3.14Kg
4	1	2558-3311-THD-B-120-0007	TUBING HYD 20 x 2.5 - EN10216-5	5318	AISI 316	5.88Kg
3	2	2558-3311-THD-B-120-0003	TUBING HYD 20 x 2.5 - EN10216-5	3000	AISI 316	6.6Kg
2	1	2558-3311-THD-B-120-0002	TUBING HYD 20 x 2.5 - EN10216-5	2003	AISI 316	2.2Kg
1	1	2558-3311-THD-B-120-0001	TUBING HYD 20 x 2.5 - EN10216-5	4254	AISI 316	4.67Kg

Pos.	Qty.	N° drawing					Description	Dimensions	Material	Weight
Non-individual tolerances according to DIN 7168.							Drawn 3D: Carlos H.	<div>insertec</div> <div>Furnaces &amp; Refractories</div> 		
							Drawn 2D: Augusto F.			
Angular Tolerance	Normal Dimension	0-10	10-50	50-120	120-400	>400				
Angular Tolerance	Normal Dimension	+11°	+0,5°	+0,33°	+0,16°	+0,083°				
Linear Tolerance	Normal Dimension	0-6	6-30	30-120	120-315	315-1000	>1000			
Linear Tolerance	Normal Dimension	+0,1	+0,2	+0,3	+0,5	+0,8	+1,2			
Designation: Piping Hydraulic							Qtd of Parts	N° Drawing: <b>2558-3311-THD-B-120</b>		
Equipment: Electric Holder							1			
							Scale	Weight (kg)	Sheet	Format
							1:28	89.97	2 of 2	A1

A

B

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F

G

H

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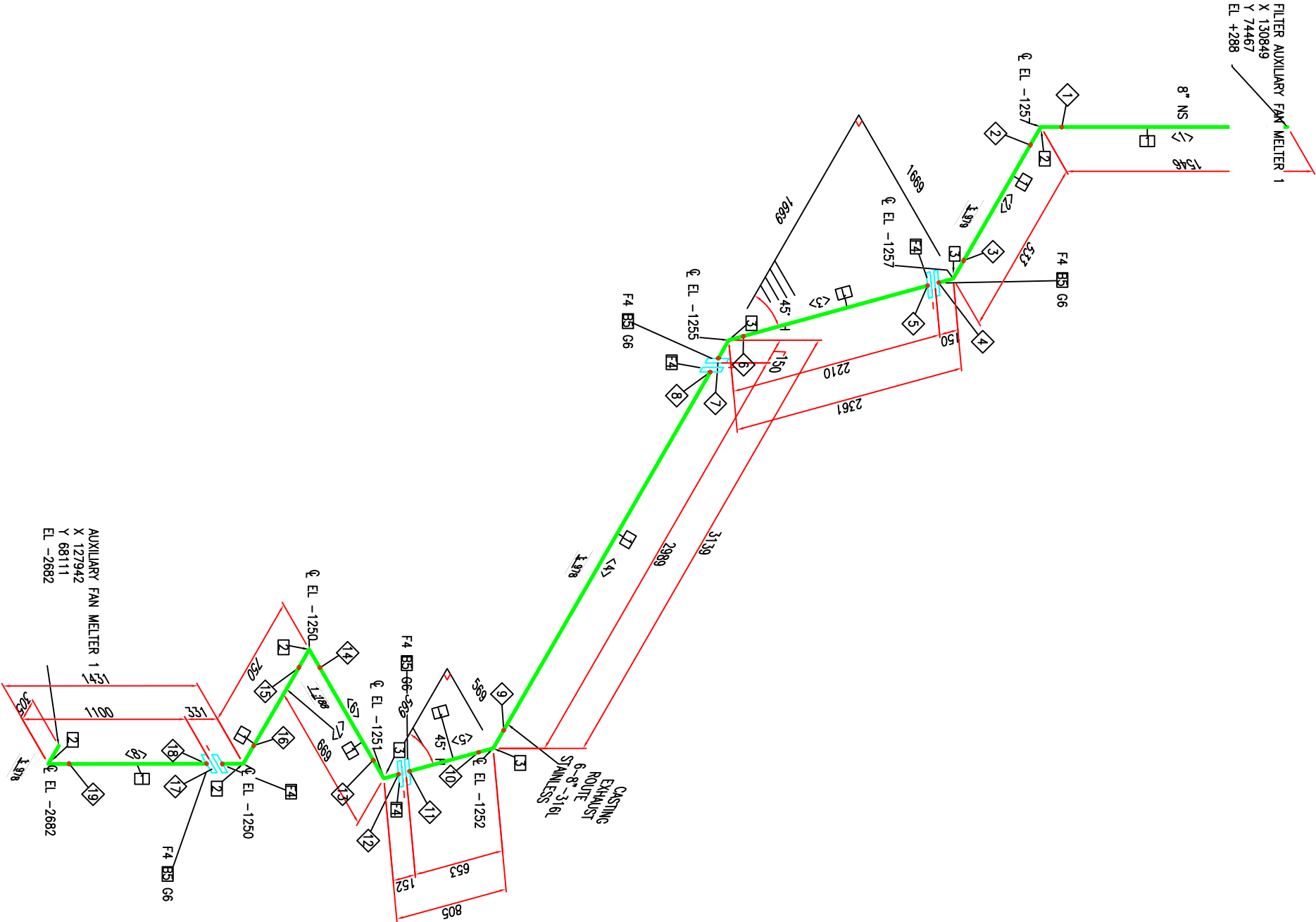
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 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## **MELTER 35 – COMBUSTION AIRE AIB SCOPE**



WELDING LIST		
ID	DN "	TYPE
1	8"	BUTTWELD
2	8"	BUTTWELD
3	8"	BUTTWELD
4	8"	BUTTWELD
5	8"	BUTTWELD
6	8"	BUTTWELD
7	8"	BUTTWELD
8	8"	BUTTWELD
9	8"	BUTTWELD
10	8"	BUTTWELD
11	8"	BUTTWELD
12	8"	BUTTWELD
13	8"	BUTTWELD
14	8"	BUTTWELD
15	8"	BUTTWELD
16	8"	BUTTWELD
17	8"	BUTTWELD
18	8"	BUTTWELD
19	8"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN " DESCRIPTION MATERIAL
PIPING		
1	7.9M	8" PIPE , EN 10217-7 STAINLESS 316L STAINLESS
FITTINGS		
2	4	8" ELBOW 90° RL - BW, EN 10253-1, STAINLESS 316L
3	4	8" ELBOW 45° RL - BW, EN 10253-1, 316L STAINLESS 316L STAINLESS
FLANGES		
4	8	8" SLIP-ON FLANGE, EN 1092-1, DIN2633 316L STAINLESS
BOLTS, GASKETS		
5	48	1/4"x1 40 STUD BOLT,
6	4	8" GASKET

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	8"	1241MM
2	8"	102MM
3	8"	2058MM
4	8"	2837MM
5	8"	503MM
6	8"	238MM
7	8"	140MM
8	8"	772MM

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Rev.		Modification						None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK									
More than	0.5	3	6	30	120	400	1000	2000	Draw
Less	3	6	30	120	400	1000	2000	4000	
Machine Tool	+	+	+	+	+	+	+	+	Checked
	U1	U1	U2	U3	U3	U3	U3	U3	Verified
Welded									
Customer:	U5	1	15	2	3				
							Format	6	Title
INVEST									
316L									
Weight (kg)									



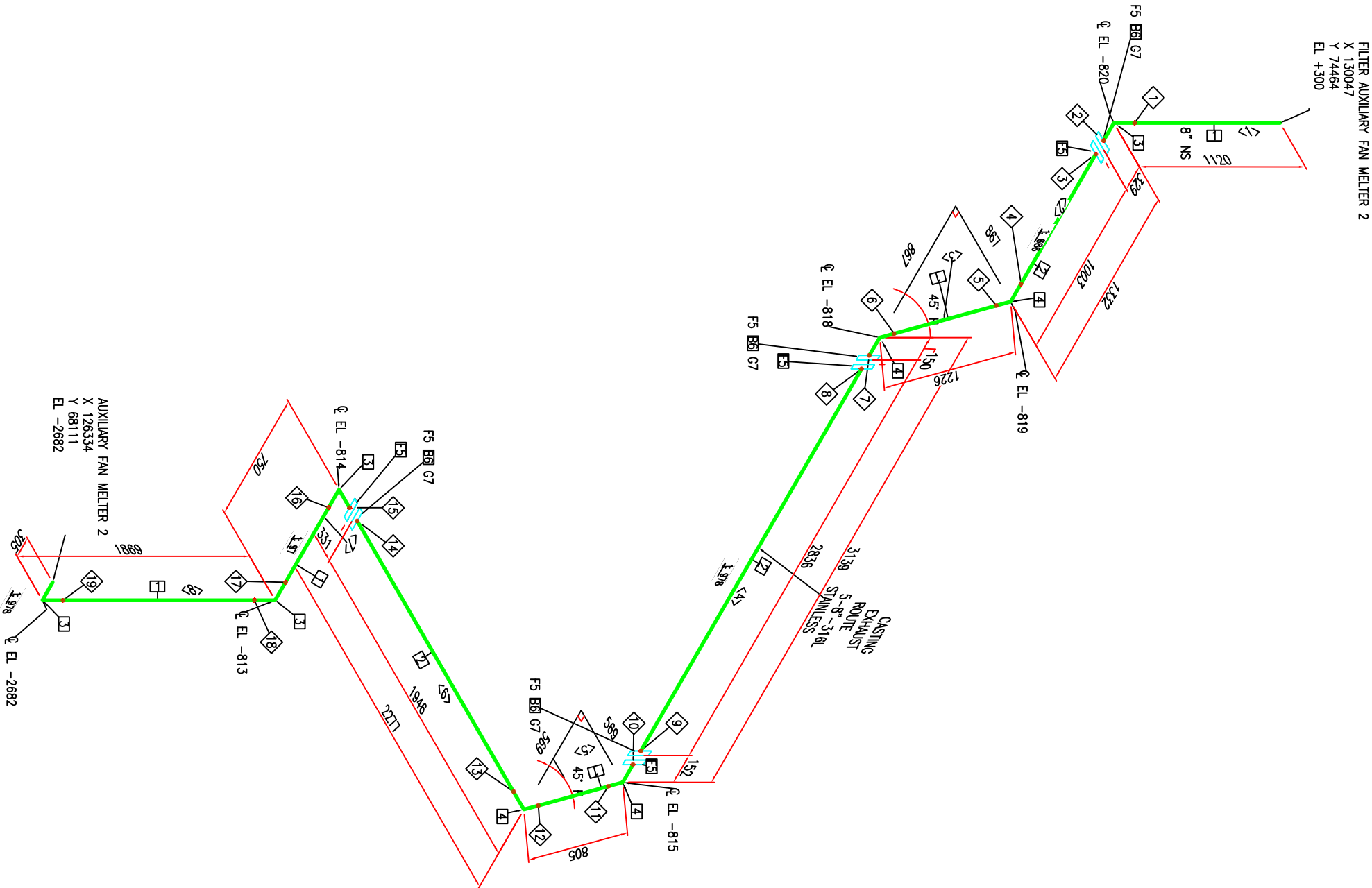
2558-3311-TMT-M-ESR15-5

A





WELDING LIST		
ID	DN "	TYPE
1	8"	BUTTWELD
2	8"	BUTTWELD
3	8"	BUTTWELD
4	8"	BUTTWELD
5	8"	BUTTWELD
6	8"	BUTTWELD
7	8"	BUTTWELD
8	8"	BUTTWELD
9	8"	BUTTWELD
10	8"	BUTTWELD
11	8"	BUTTWELD
12	8"	BUTTWELD
13	8"	BUTTWELD
14	8"	BUTTWELD
15	8"	BUTTWELD
16	8"	BUTTWELD
17	8"	BUTTWELD
18	8"	BUTTWELD
19	8"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		
PIPING		
1	3.8M	8"
PIPE , EN 10217-7 STAINLESS 316L		316L STAINLESS
2	5.5M	8"
PIPE , EN 10217-7 STAINLESS 316L		316L STAINLESS
FITTINGS		
3	4	8"
ELBOW 90° RL - BW, EN 10253-1,		316L STAINLESS
4	4	8"
ELBOW 45° RL - BW, EN 10253-1,		316L STAINLESS
FLANGES		
5	8	8"
SLIP-ON FLANGE, EN 1092-1,		316L STAINLESS
BOLTS, GASKETS		
6	48	1/4"x1 40
STUD BOLT,		
7	4	8"
GASKET		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	8"	816MM
2	8"	851MM
3	8"	974MM
4	8"	2787MM
5	8"	553MM
6	8"	1796MM
7	8"	141MM
8	8"	1259MM

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Rev.	Modification	None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK			
More than	0.5	3	6
Less	3	6	30
Machine Tool	±	±	±
Welded	±	±	±
Customer:	0.5	1	1.5

Material	316L
Drawn	18/09/2025
Checked	18/09/2025
Verified	19/09/2025

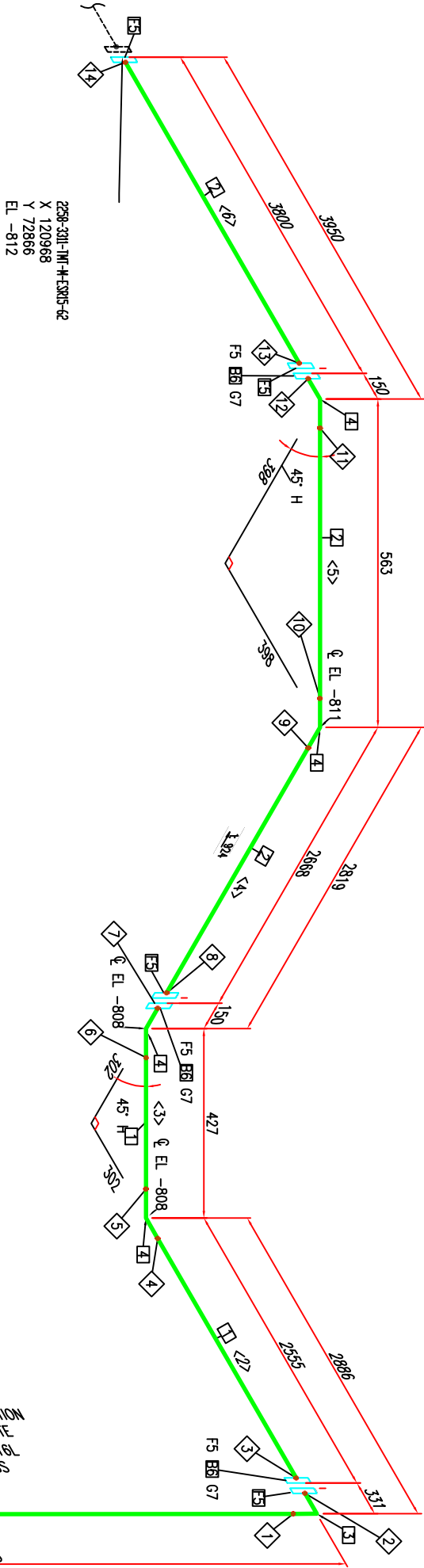
ALINVEST	ALINVEST
Scale: 1:15	Scale: 1:15
Port Number	Port Number
Customer Number	Customer Number

Project Method	Project Method
2558-331-TMT-M-ESR15-7	2558-331-TMT-M-ESR15-7
Customer Number	Customer Number
-	-
Revision	Revision
A	A
Sheet	Sheet
4/6	4/6





WELDING LIST		
ID	DN "	TYPE
1	8"	BUTTWELD
2	8"	BUTTWELD
3	8"	BUTTWELD
4	8"	BUTTWELD
5	8"	BUTTWELD
6	8"	BUTTWELD
7	8"	BUTTWELD
8	8"	BUTTWELD
9	8"	BUTTWELD
10	8"	BUTTWELD
11	8"	BUTTWELD
12	8"	BUTTWELD
13	8"	BUTTWELD
14	8"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		

PIPING		
1	3.2M	8"
2	6.6M	8"
3	1	8"
4	4	8"
5	7	8"
6	36	1/4"x4
7	3	8"

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	8"	608MM
2	8"	2405MM
3	8"	175MM
4	8"	2517MM
5	8"	311MM
6	8"	3750MM

AUXILIARY FAN 1

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Rev.		Modification		None		Date	
1		A		1		1	
2		B		2		2	
3		C		3		3	
4		D		4		4	
5		E		5		5	
6		F		6		6	
7		G		7		7	
8		H		8		8	
9		I		9		9	
10		J		10		10	
11		K		11		11	
12		L		12		12	

insertec

Furnaces & Refractories

Project

2558-3311-TMT-M-ESR15-61

Port Number

AUXILIARY FAN

Customer Number

-

Revision

A

Sheet

2/6

Scale

1:15

Material

316L

Weight (kg)

1909283

Customer

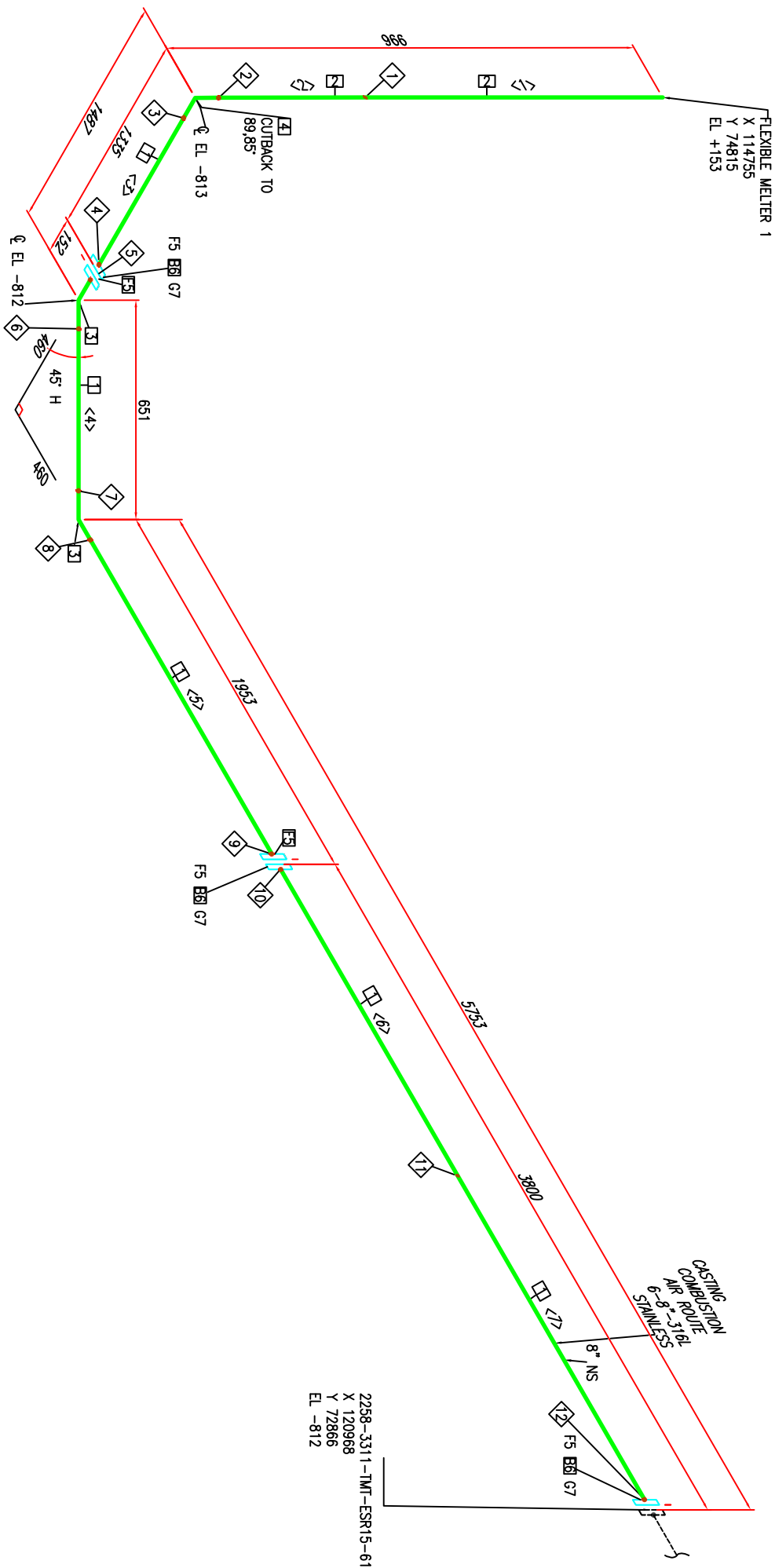
ALINVEST

Title

TMT (FVRB-2,7-35) AUXILIARY FAN




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ID	DN "	TYPE
1	8"	WELD
2	8"	PUTTWELD
3	8"	PUTTWELD
4	8"	PUTTWELD
5	8"	PUTTWELD
6	8"	PUTTWELD
7	8"	PUTTWELD
8	8"	PUTTWELD
9	8"	PUTTWELD
10	8"	PUTTWELD
11	8"	WELD
12	8"	PUTTWELD



MATERIAL LIST			
ID	QTY	DN "	MATERIAL
PIPING			
1	7.0M	8"	PIPE , EN 10217-7 STAINLESS 316L 316L STAINLESS
2	0.7M	8"	PIPE , EN 10217-7 STAINLESS 316L 316L STAINLESS
FITTINGS			
3	2	8"	ELBOW 45° RL – BW, EN 10253-1, 316L STAINLESS
4	1	8"	ELBOW 90° RL – BW, EN 10253-1, 316L STAINLESS
FLANGES			
5	5	8"	SLIP-ON FLANGE, EN 1092-1, DIN2653
BOLTS, GASKETS			
6	36	1 1/4"x1 40	STUD BOLT, 316L STAINLESS
7	3	8"	GASKET

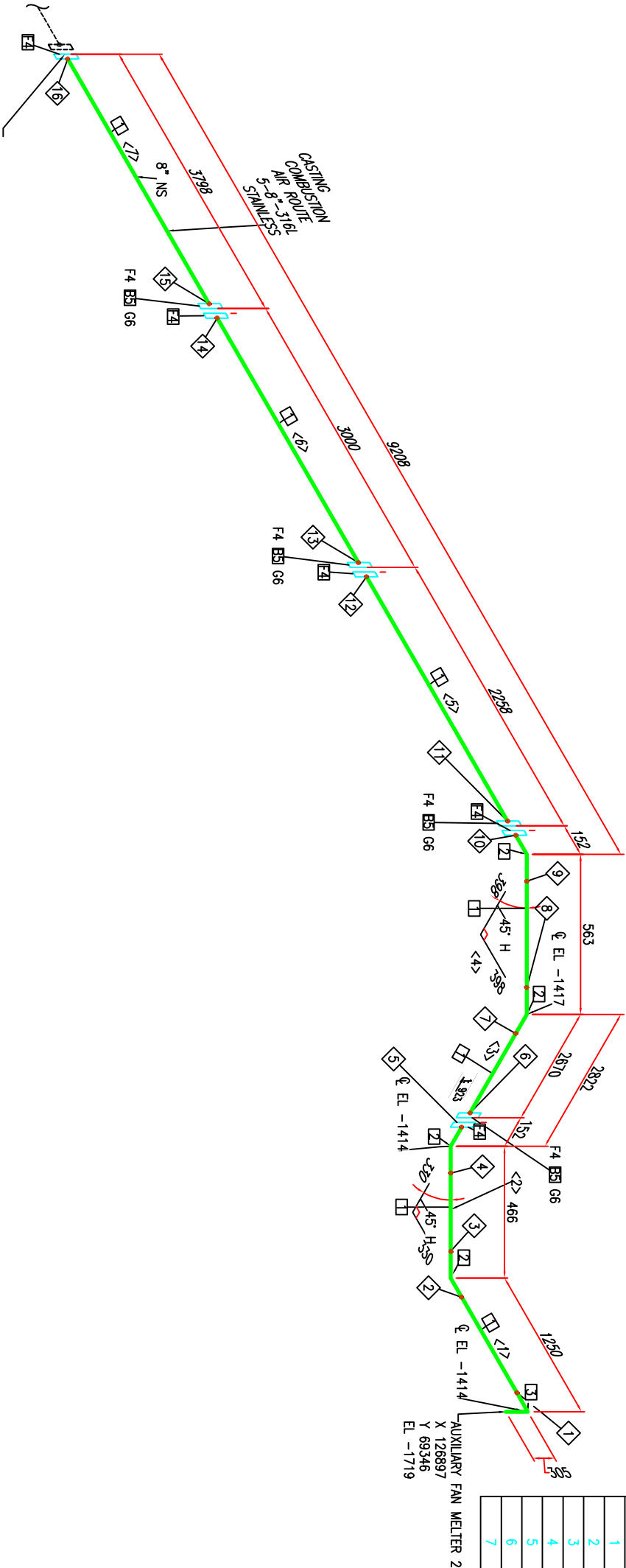
PIPE CUTTING LIST		
ID	DN "	LENGTH
1	8"	39.5MM
2	8"	268MM
3	8"	1007MM
4	8"	399MM
5	8"	1801MM
6	8"	1476MM
7	8"	2275MM

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Rev.	Modification										Name	Date
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.												
Tolerance for dimensions without tol. according to ISO 2768-mK												
More than	0.5	3	6	30	120	400	1000	2000		Name	Date	Material
Less									Dr-aw			316L
Machine Tool	±	±	±	±	±	±	±	±	Checked			18/09/2023
Verified	0.1	0.1	0.2	0.3	0.5	0.8	1.2	±	Verified			19/09/2023
Customer:	Drawing to								Title			
ALINVEST									ALINVEST			
Scale									A2			
Project									1:15			
By trade:												
												
Part Number									2558-3311-TMT-M-ESR15-62			
Customer Number									-			
Revision									A			
Sheet									3/6			



WELDING LIST		
ID	DN "	TYPE
1	8"	BUTTWELD
2	8"	BUTTWELD
3	8"	BUTTWELD
4	8"	BUTTWELD
5	8"	BUTTWELD
6	8"	BUTTWELD
7	8"	BUTTWELD
8	8"	BUTTWELD
9	8"	BUTTWELD
10	8"	BUTTWELD
11	8"	BUTTWELD
12	8"	BUTTWELD
13	8"	BUTTWELD
14	8"	BUTTWELD
15	8"	BUTTWELD
16	8"	BUTTWELD



MATERIAL LIST			
ID	QTY	DN "	MATERIAL
PIPING			
1	12.8M	8"	PIPE , EN 10217-7 STAINLESS 316L
FITTINGS			
2	4	8"	ELBOW 45° RL – BW, EN 10253-1, 316L STAINLESS
3	1	8"	ELBOW 90° RL – BW, EN 10253-1, 316L STAINLESS
FLANGES			
4	9	8"	SLIP-ON FLANGE, EN 1092-1, DIN2633
BOLTS, GASKETS			
5	48	1" 1/4x1 40	STUD BOLT,
6	4	8"	GASKET
PIPE CUTTING LIST			
ID	DN "	LENGTH	
1	8"	820MM	
2	8"	214MM	
3	8"	2520MM	
4	8"	311MM	
5	8"	2208MM	
6	8"	2950MM	
7	8"	3750MM	

2558-3311-TMT-ESR15-82  
X 115711  
Y 72896  
EL -1417

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Rev.										Modification		None	Date
ing is property of INSERTC. Must not be copier or transferred to third parties in any way without written authorization													
Tolerance for dimensions without tol. according to ISO 2768-MK													
More than	0.5	3	6	30	120	400	1000	2000	Draw			Date	Material
Less	3	6	30	120	400	1000	2000	4000	Checked			18/09/2025	316L
Machine Tool	U1	U1	U2	U2	U2	U2	U2	U2	U2	U2	U2	U2	U2
Welded	U1	U1	U2	U2	U2	U2	U2	U2	U2	U2	U2	U2	U2
				</									

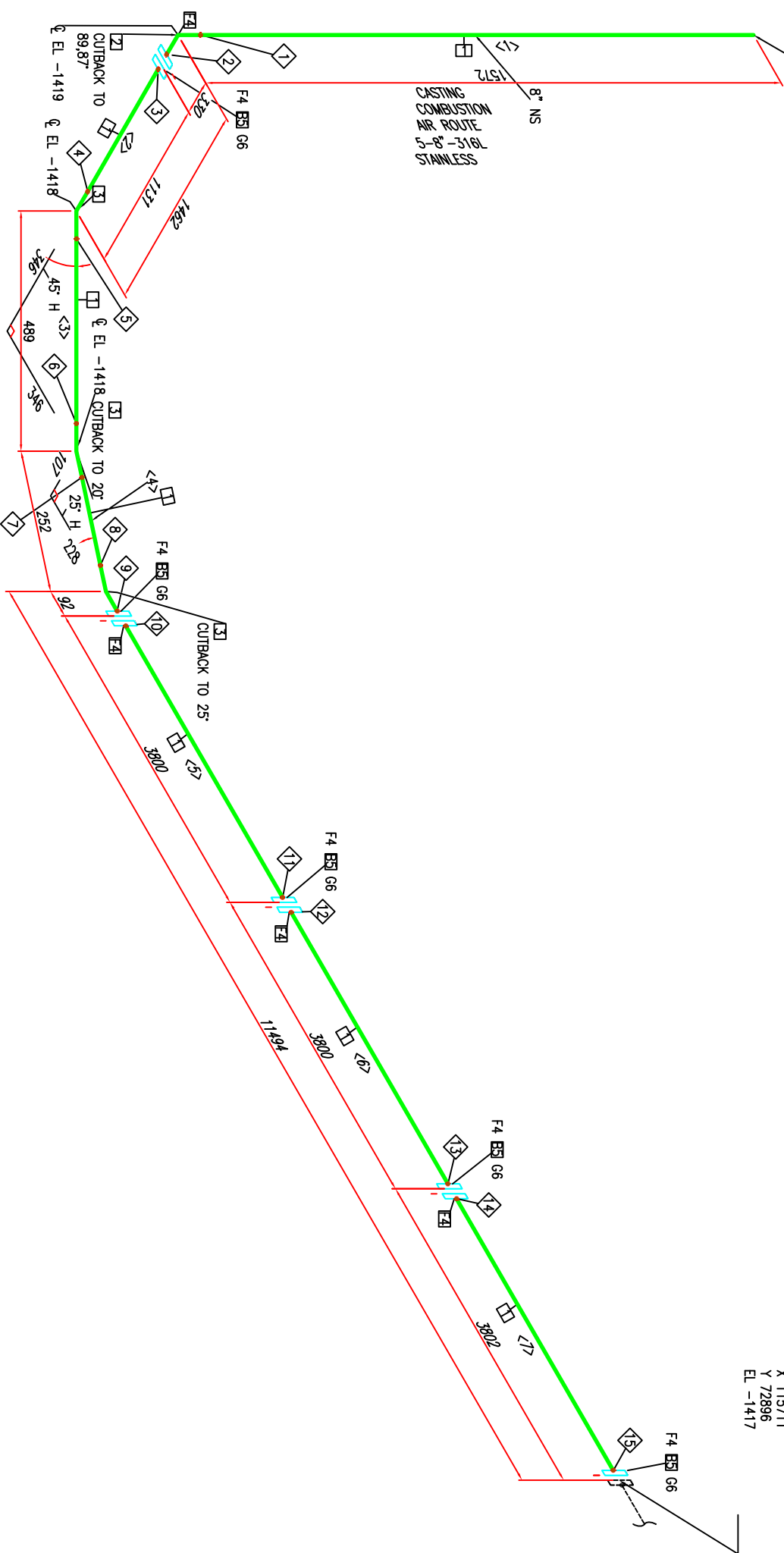
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Methods		2558-3311-TMT-M-ESR15-81		A	
Customer Number		-		Sheet 5/6	
Scale:		1:15		Title	
A2		ALINVEST		ALINVEST	
ALINVEST		TMT (FVRB-2,7-35)		AUXILIARY AIR ROUTE	





WELDING LIST		
ID	DN "	TYPE
1	8"	BUTTWELD
2	8"	BUTTWELD
3	8"	BUTTWELD
4	8"	BUTTWELD
5	8"	BUTTWELD
6	8"	BUTTWELD
7	8"	BUTTWELD
8	8"	BUTTWELD
9	8"	BUTTWELD
10	8"	BUTTWELD
11	8"	BUTTWELD
12	8"	BUTTWELD
13	8"	BUTTWELD
14	8"	BUTTWELD
15	8"	BUTTWELD

FLEXIBLE MELTER 2  
X 103643  
Y 74810  
EL +153



MATERIAL LIST		
ID	QTY	DESCRIPTION
PIPING		
1	14.0M	PIPE , EN 10217-7 STAINLESS 316L
FITTINGS		
2	1	ELBOW 90° RL - BW, EN 10253-1, STAINLESS
3	3	ELBOW 45° RL - BW, EN 10253-1, STAINLESS
FLANGES		
4	9	SLIP-ON FLANGE, EN 1092-1, STAINLESS
BOLTS, GASKETS		
5	60	1/4"x1 40 STUD BOLT,
6	5	8" GASKET

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	8"	1268MM
2	8"	982MM
3	8"	309MM
4	8"	131MM
5	8"	3750MM
6	8"	3750MM
7	8"	3750MM

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Rev.										Modification										None		Date			
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.																									
Tolerance for dimensions without tol. according to ISO 2768-MK																									
More than		0.5		3		6		30		120		400		1000		2000		Draw		None		Date		Material	
Less		3		6		30		120		400		1000		2000		4000		Checked						Weight (kg)	
Machine Tool		+		+		+		+		+		+		+		+									
Welded		0.1		0.1		0.2		0.3		0.5		0.8		1.0		2.0		Verified						19/09/2005	
																								36L	

Project		Port Number		Revision	
Methods		2558-3311-TMT-M-ESR15-82		A	
Customer Number		-		Sheet 6/6	
Scale		1:15			
Title		ALINVEST			
Material		316L			
Date		18/09/2023			
Draw		18/09/2023			
Checked		19/09/2023			
Verified					
Weight (kg)					
Customer		ALINVEST			
Title		TMT (FVRB-2,7-35)			
Scale		1:15			
Customer		AUXILIARY FAN ROUTE			



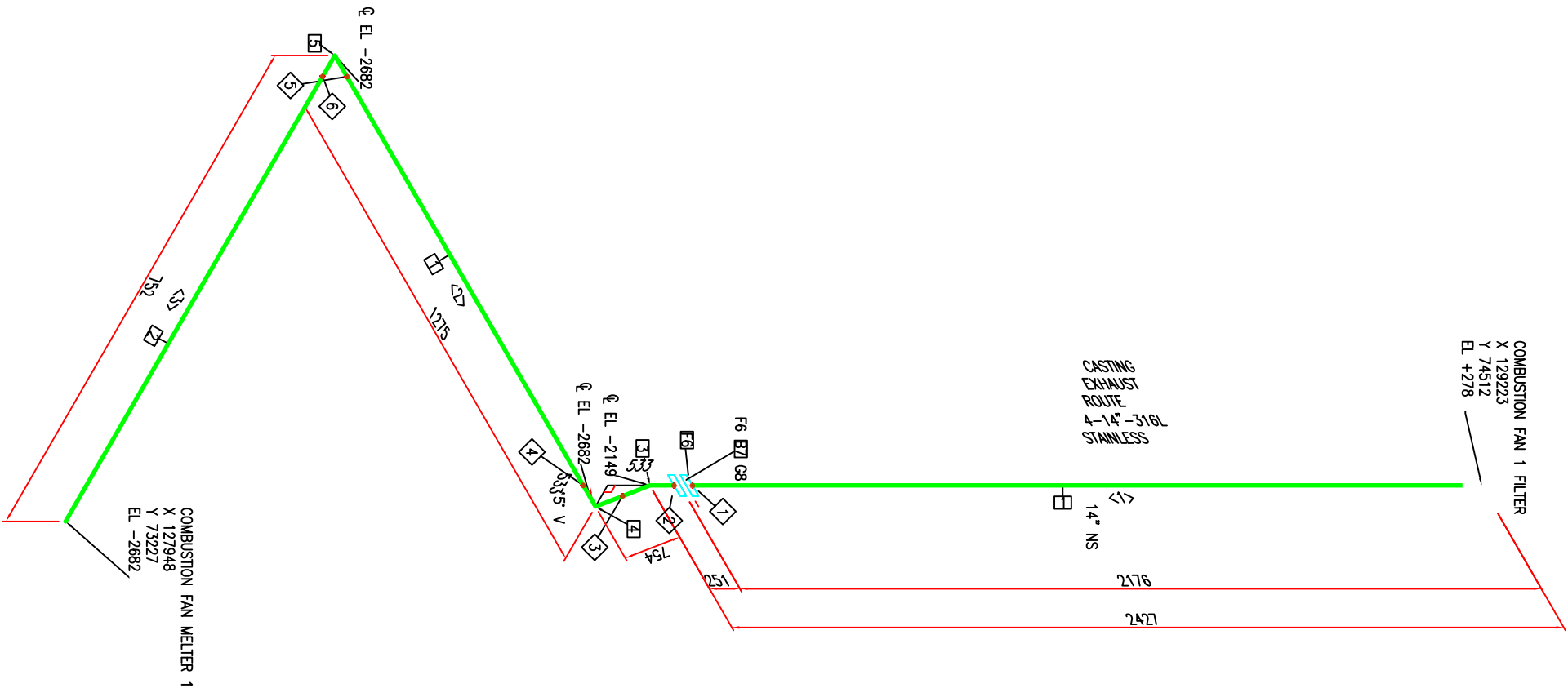
2558-3311-TMT-M-ESR15-82

A





WELDING LIST		
ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	BUTTWELD
3	14"	BUTTWELD
4	14"	BUTTWELD
5	14"	BUTTWELD
6	14"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		

PPING		
1	2.4M	14"
2	0.3M	14"
FITTINGS		
3	1	14"
4	1	14"
5	1	14"
FLANGES		
6	2	14"
BOLTS, GASKETS		
7	16	1
8	1	14"

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	21.45MM
2	14"	21.0MM
3	14"	21.9MM

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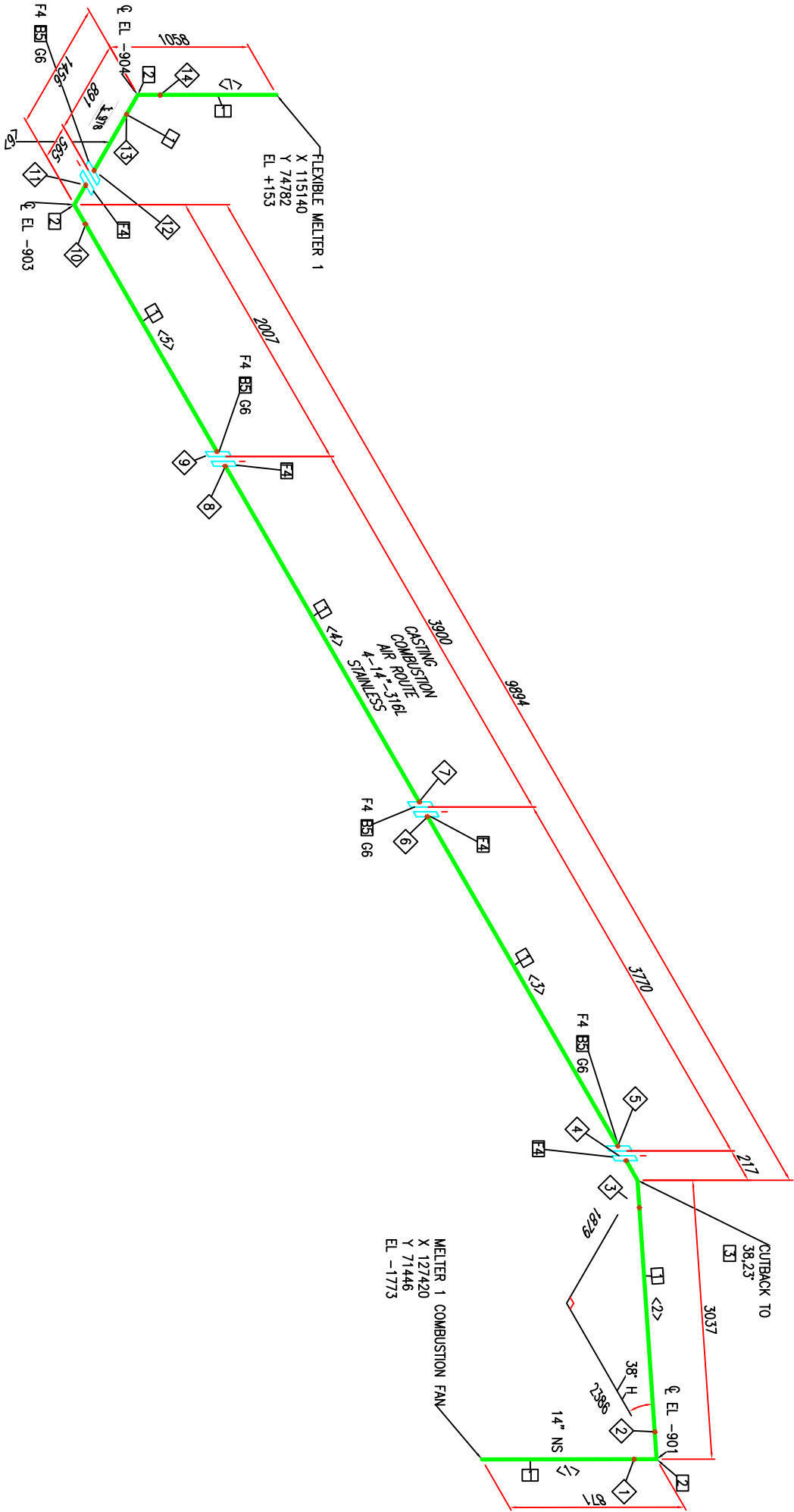
Rev.	Modification		None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK				
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Less	3	6	30	120
Machine Tool	±	0.1	±	0.2
Welded	0.1	0.1	0.2	0.2
Customer:	0.5	1	1.5	2

ALINVEST		ALINVEST	
A2		A2	
1:15		1:15	
Project		Project	
Methods		Methods	
Port Number		Port Number	
2258-331-TMT-M-ESR15-1		2258-331-TMT-M-ESR15-1	
Customer Number		Customer Number	
-		-	
Revision		Revision	
A		A	





WELDING LIST		
ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	BUTTWELD
3	14"	BUTTWELD
4	14"	BUTTWELD
5	14"	BUTTWELD
6	14"	BUTTWELD
7	14"	BUTTWELD
8	14"	BUTTWELD
9	14"	BUTTWELD
10	14"	BUTTWELD
11	14"	BUTTWELD
12	14"	BUTTWELD
13	14"	BUTTWELD
14	14"	BUTTWELD



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	12.5M	14"	PIPE , EN 10217-7 STAINLESS 316L	316L STAINLESS
FITTINGS				
2	3	14"	ELBOW 90° RL – BW, EN 10253-1, 316L STAINLESS	316L STAINLESS
3	1	14"	ELBOW 45° RL – BW, EN 10253-1, 316L STAINLESS	316L STAINLESS
FLANGES				
4	8	14"	SLIP-ON FLANGE, EN 1092-1, DIN2633	316L STAINLESS
BOLTS, GASKETS				
5	64	1"	3/4"x2 STUD BOLT, 80	
6	4	14"	GASKET	

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	339MM
2	14"	2320MM
3	14"	3709MM
4	14"	3839MM
5	14"	1445MM
6	14"	328MM
7	14"	525MM

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Rev.										Modification										None		Date					
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.																											
Tolerance for dimensions without tol. according to ISO 2768-MK																				Draw		None		Date		Material	
More than		0.5		3		6		30		120		400		1000		2000		Draw		None				18/09/2025		316L	
Less		3		6		30		120		400		1000		2000		4000		Checked						18/09/2025		Weight (kg)	
Machine Tool		±		±		±		±		±		±		±		±		±						19/09/2025			
Welded		U1		U1		U2		U3		U5		U2		U3		1F		±		Verified							

insertec

Furnaces & Refractories

Project

Methods

Port Number

Customer Number

2258-331-TMT-M-ESR15-2

-

Revision

Sheet

A

2/4

ALINVEST

ALINVEST

TMT (FVRB-2,7-35)

COMBUSTION AIR ROUTE

1:15

Scale:

18/09/2025

18/09/2025

19/09/2025

Draw

Checked

Verified

18/09/2025

18/09/2025

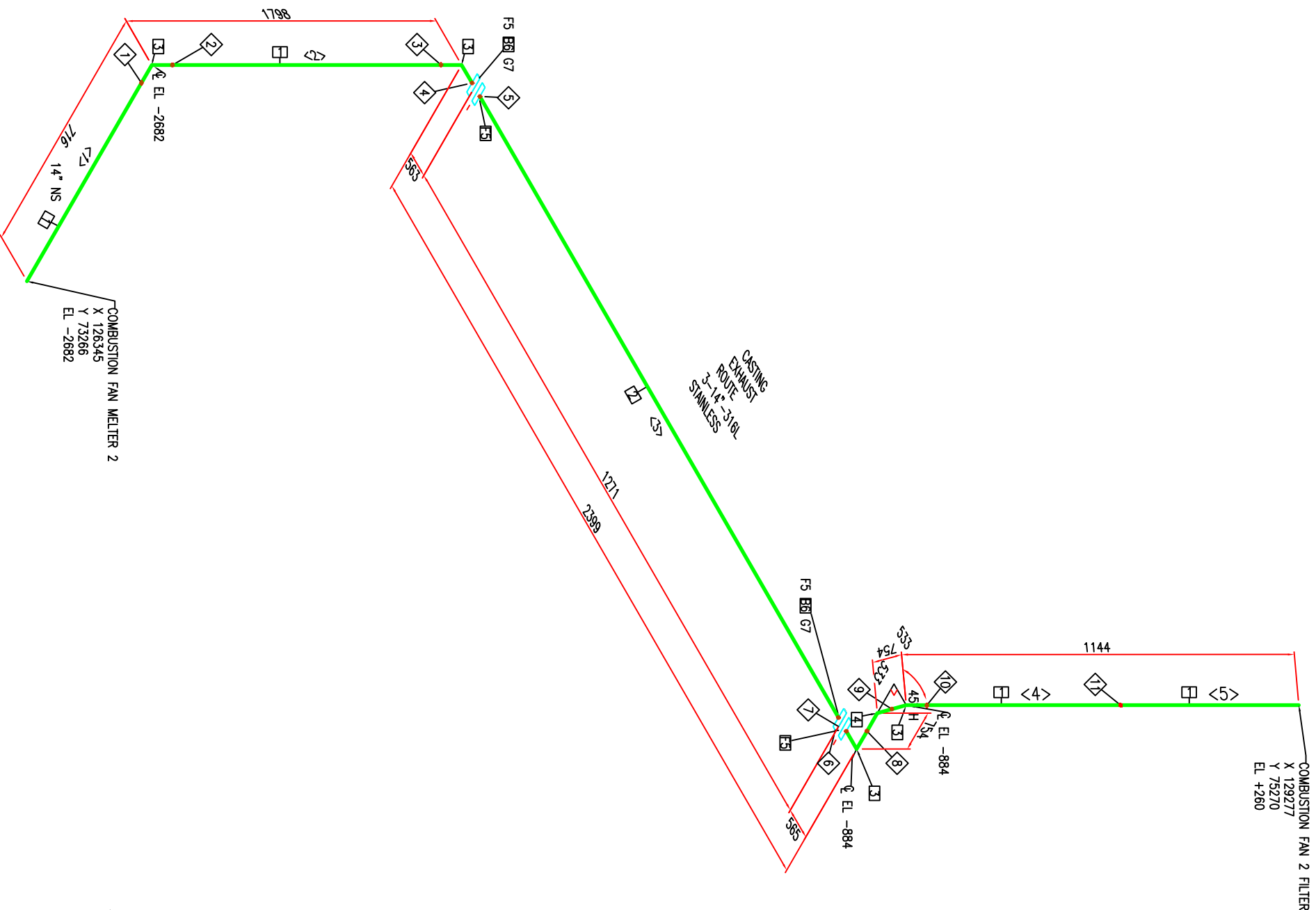
19/09/2025

Weight (kg)

316L



WELDING LIST		
ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	BUTTWELD
3	14"	BUTTWELD
4	14"	BUTTWELD
5	14"	BUTTWELD
6	14"	BUTTWELD
7	14"	BUTTWELD
8	14"	BUTTWELD
9	14"	BUTTWELD
10	14"	BUTTWELD
11	14"	WELD



MATERIAL LIST			
ID	QTY	DN "	MATERIAL
PIPING			
1	1.6M	14"	PIPE , EN 10217-7 STAINLESS 316L
2	1.3M	14"	PIPE , EN 10217-7 STAINLESS 316L
FITTINGS			
3	4	14"	ELBOW 90° RL - BW, EN 10253-1, 316L STAINLESS
4	1	14"	ELBOW 45° RL - BW, EN 10253-1, 316L STAINLESS
FLANGES			
5	4	14"	SLIP-ON FLANGE, EN 1092-1, DIN2633
BOLTS, GASKETS			
6	32	1 3/4"x2 80	STUD BOLT,
7	2	14"	GASKET

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	183MM
2	14"	733MM
3	14"	1210MM
4	14"	323MM
5	14"	289MM

[illegible]

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2258-331-TMT-M-ESR15-3

Customer Number

Sheet

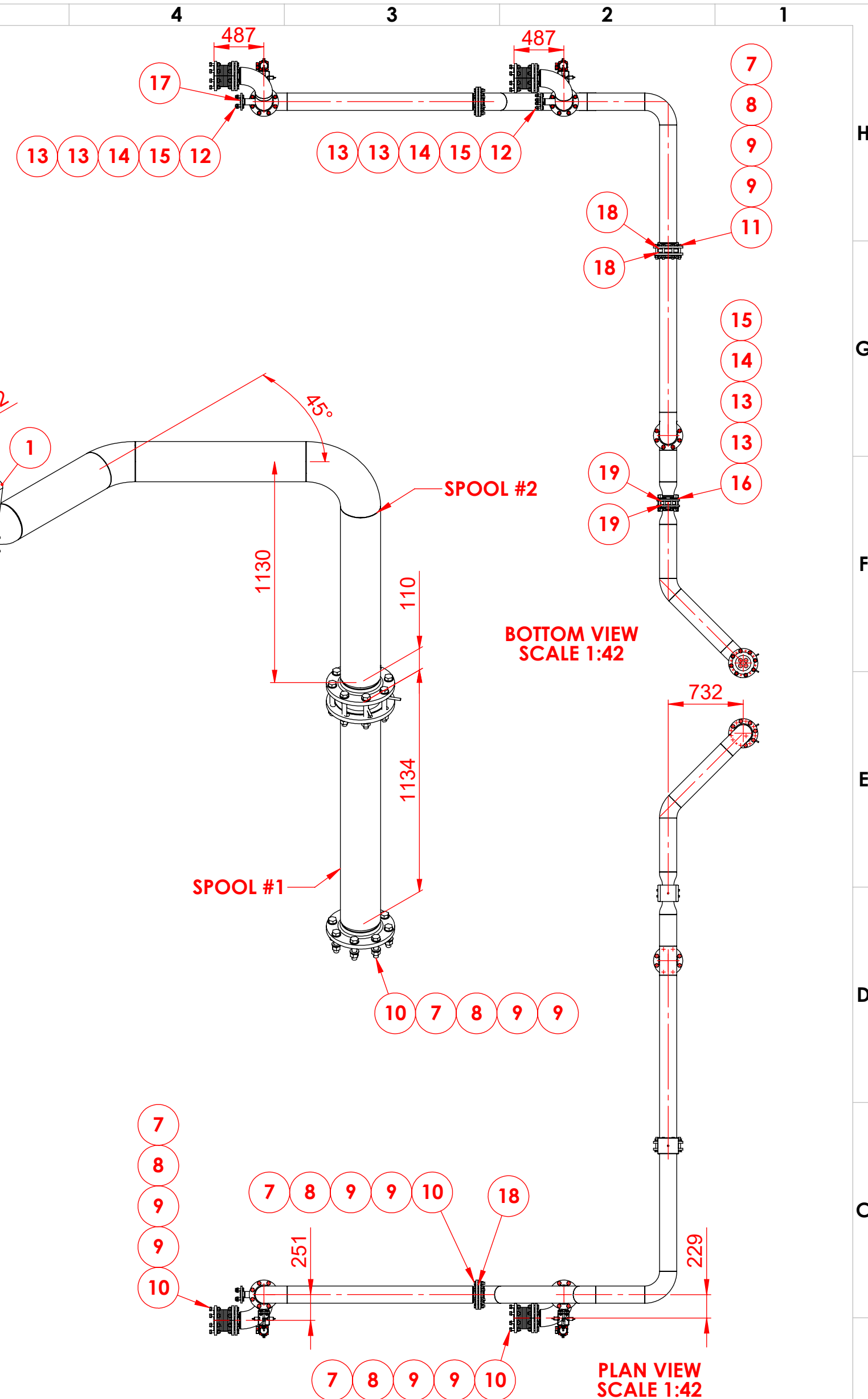
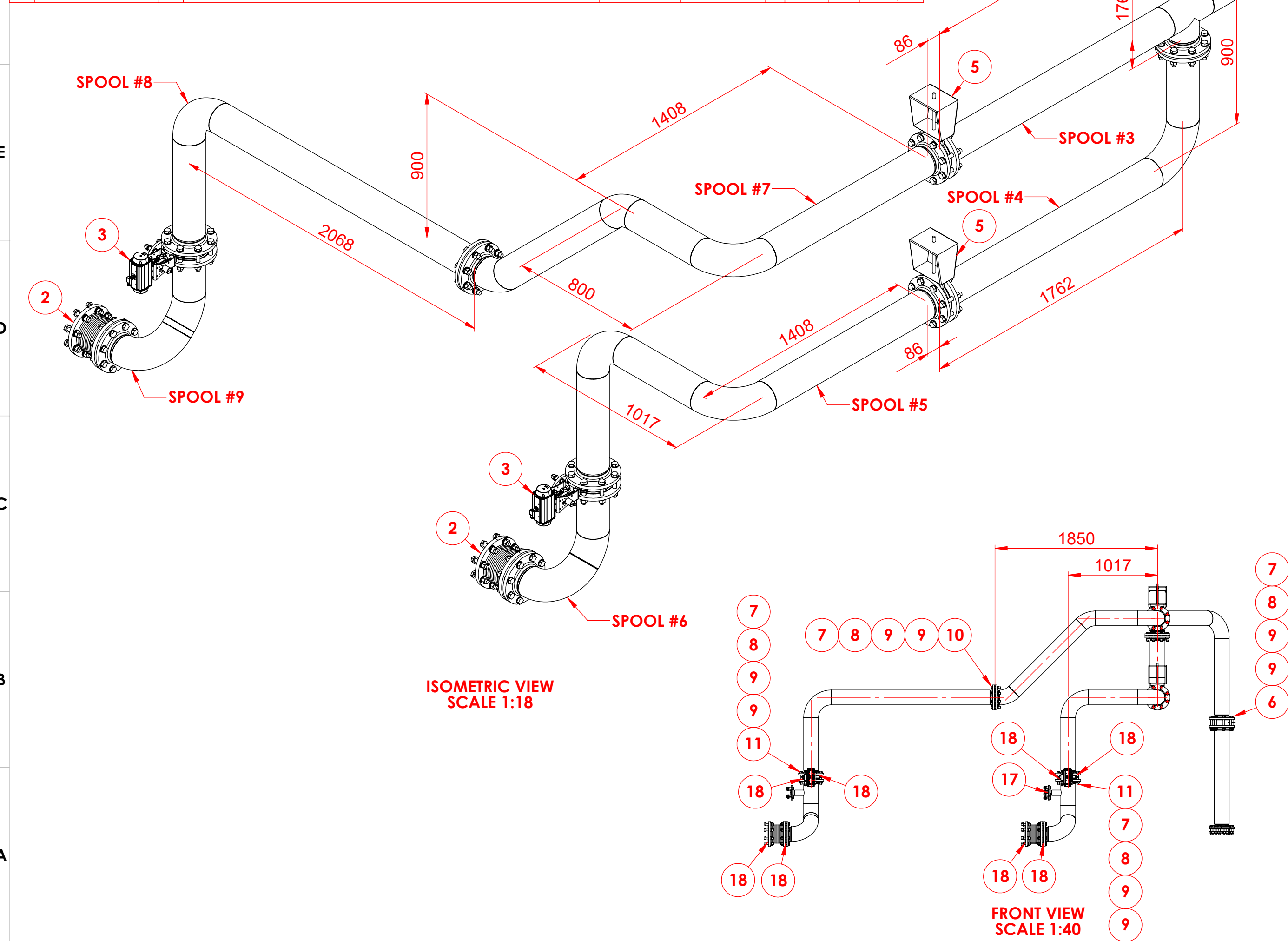



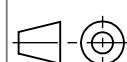
 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

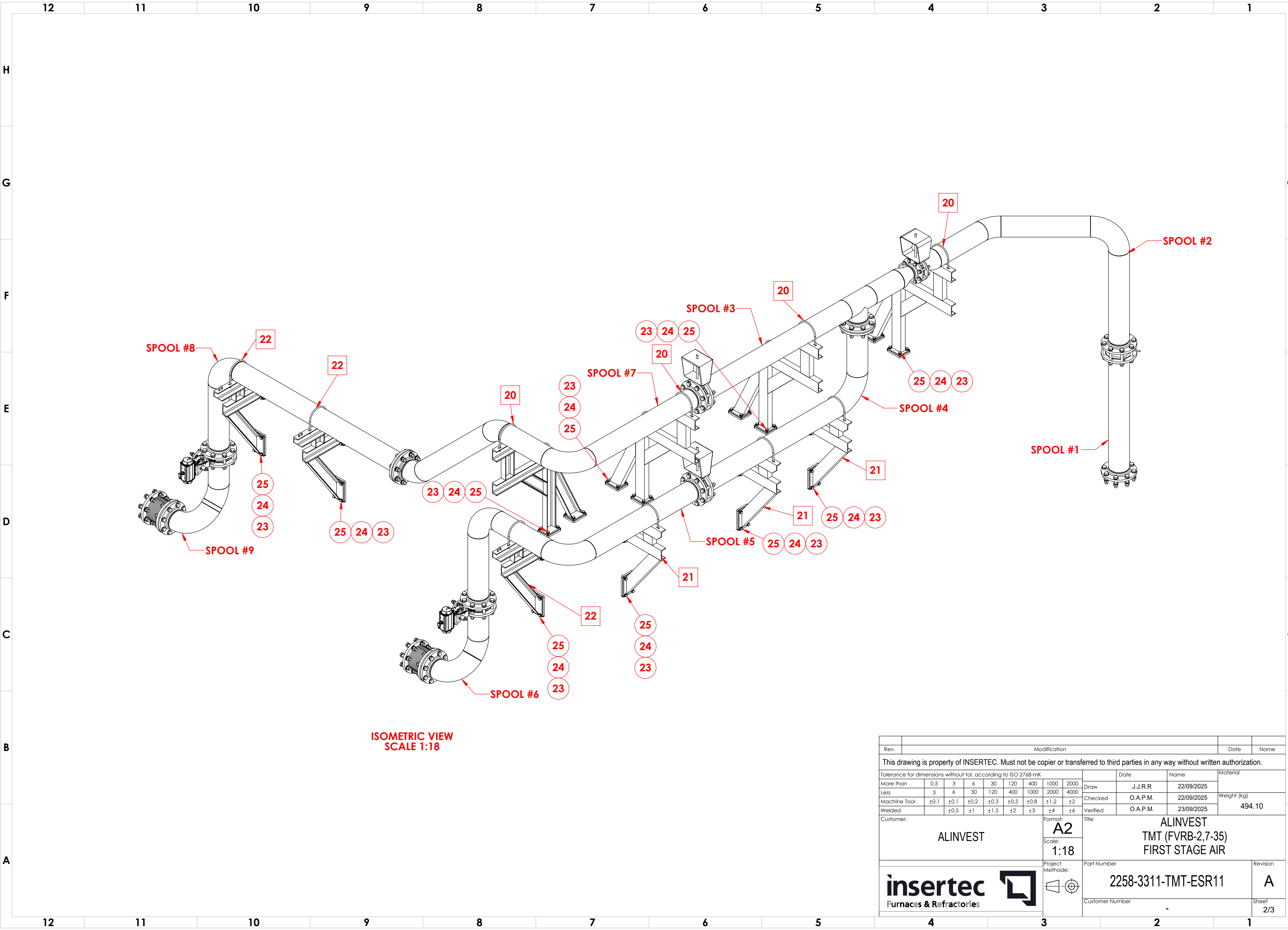
## **MELTER 35 – COMBUSTION AIR INSERTEC SCOPE**




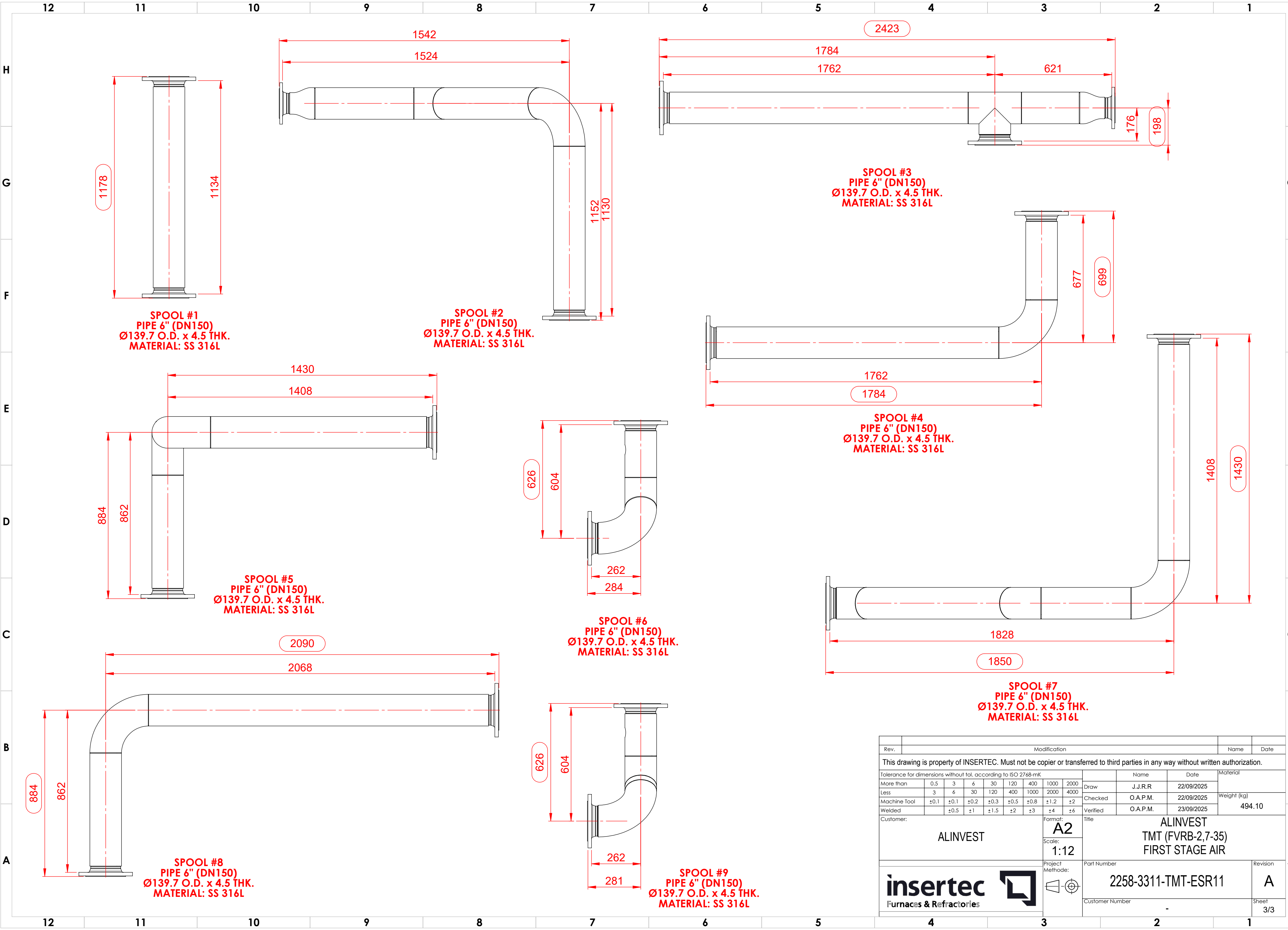
12		11		10		9		8		7	
25	DIN933-M12X30-8.8	A	BOLT M12X30			8.8			0.05	80	4
24	DIN127-M12-ST	A	WASHER M12			ST			0	80	0
23	DIN125-M12-ST	A	WASHER M12			ST			0.01	80	0.8
22	2258-3311-TMT-ESR11-GEN03	A	SUPPORT 3			S275JR			21.71	3	65.13
21	2258-3311-TMT-ESR11-GEN02	A	SUPPORT 2			S275JR			20.53	3	61.59
20	2258-3311-TMT-ESR11-GEN01	A	SUPPORT 1			S275JR			35.46	4	141.84
19	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN100			FIBERGLASS W/NBR			-	2	0
18	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN150			FIBERGLASS W/NBR			-	17	0
17	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN50			FIBERGLASS W/NBR			-	2	0
16	DIN933-M16X110-8.8	A	BOLT M16X110			8.8			0.21	8	1.68
15	DIN934-M16-8	A	NUT M16			8			0.03	16	0.48
14	DIN127-M16-ST	A	WASHER M16			ST			0.01	16	0.16
13	DIN125-M16-ST	A	WASHER M16			ST			0.01	32	0.32
12	DIN933-M16X70-8.8	A	BOLT M16X70			8.8			0.15	8	1.2
11	DIN933-M20X130-8.8	A	BOLT M20X130			8.8			0.4	32	12.8
10	DIN933-M20X90-8.8	A	BOLT M20X90			8.8			0.3	56	16.8
9	DIN125-M20-ST	A	WASHER M20			ST			0.02	192	3.84
8	DIN127-M20-ST	A	WASHER M20			ST			0.02	96	1.92
7	DIN934-M20-8	A	NUT M20			8			0.06	96	5.76
6	DIN933-M20X150-8.8	A	BOLT M20X150			8.8			0.45	8	3.6
5			BUTTERFLY VALVE FOR INSTALLATION BETWEEN 2 FLANGES DN 150 PN 10 FOR AIR, WITH HANDLE			COMMERCIAL			-	2	0
4	-	-	MEASURING ORIFICE FOR AIR, INSTALLATION BETWEEN FLANGES DN150, V= 844 NM3/H, PE= 90 MBAR, DIFFERENTIAL PRESSURE : 15 MBAR			COMMERCIAL			-	1	0
3	-		BUTTERFLY VALVE FOR INSTALLATION BETWEEN 2 FLANGES DN150, INCL. STEP SEAT SEALING,FOR AIR, WITH PNEUMATIC ACTUATOR, SINGLE-ACTING, OPEN/CLOSE IN 1 SECOND 5 BAR COMPRESSED AIR WITH 3/2-WAY SOLENOID VALVE 24VDC LEAKAGE APPROX. 0.02% OF KV 90°, PN 10, INCL. POSITION SWITCH 24VDC OPEN/CLOSE, 2-WIRE			COMMERCIAL			-	2	0
2	-		LOOSE FLANGE: OPERATING TEMP.: -20°C TO +250°C ; TOTAL LENGTH: 175 mm ; EXTENSIBILITY: AX. 22mm / LAT. 4,1mm, PN10			COMMERCIAL			-	2	0
1	-	-	CONTROL BUTTERFLY VALVE FOR INSTALLATION BETWEEN 2 FLANGES DN 100 PN 10 FOR AIR JASTA GD6, COMPLETE ASSEMBLED WITH PNEUMATIC ACTUATOR, OPEN/CLOSE IN 3 - 5 SECONDS MAX., AND SIEMENS SIPART PS 2, TYPE: 6DR5010-0NG01-0AA0-Z C20, 4-20 MA IN- AND OUTPUT, 24VDC			COMMERCIAL			-	1	0
Nº	PART NUMBER / ARTICLE CODE	REV.	DESCRIPTION			MATERIAL	MANUFACTURER	TAG	WEIGHT (KG)	QTY.	TOTAL WEIGHT (KG)


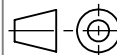


Rev.		Modification										Name		Date				
This drawing is property of INSERTEC. Must not be copier or transferred to third parties in any way without written authorization.																		
Tolerance for dimensions without tol. according to ISO 2768-mK											Name		Date		Material			
More than		0.5	3	6	30	120	400	1000	2000	Draw	J.J.R.R		22/09/2025		Weight (kg)  494.10			
Less		3	6	30	120	400	1000	2000	4000									
Machine Tool		±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Checked	O.A.P.M.		22/09/2025					
Welded			±0.5	±1	±1.5	±2	±3	±4	±6	Verified	O.A.P.M.		23/09/2025					
Customer:									Format:		Title		ALINVEST TMT (FVRB-2,7-35) FIRST STAGE AIR					
ALINVEST									A2									
									Scale:									
									1:18									
									Project Methode:		Part Number  2258-3311-TMT-ESR11						Revision	
																	A	
																		Customer Number



Rev.									Modification									Date		Name						
This drawing is property of INSERTEC. Must not be copier or transferred to third parties in any way without written authorization.																										
Tolerance for dimensions without tol. according to ISO 2768-mK											Date		Name		Material											
More than		0.5		3		6		30		120		400		1000		2000		Draw		J.J.R.R.		22/09/2025		Weight (kg)  494.10		
Less		3		6		30		120		400		1000		2000		4000		Checked		O.A.P.M.		22/09/2025				
Machine Tool		±0.1		±0.1		±0.2		±0.3		±0.5		±0.8		±1.2		±2		Verified		O.A.P.M.		23/09/2025				
Welded				±0.5		±1		±1.5		±2		±3		±4		±6										
Customer:									Format: <b>A2</b>			Title  ALINVEST TMT (FVRB-2,7-35) FIRST STAGE AIR														
<b>ALINVEST</b>									Scale: <b>1:18</b>																	
									Project			Part Number									Revision					
									Method:			2258-3311-TMT-ESR11									A					
												Customer Number									Sheet					
												-									2/3					



Rev.									Modification									Name		Date					
This drawing is property of INSERTEC. Must not be copier or transferred to third parties in any way without written authorization.																									
Tolerance for dimensions without tol. according to ISO 2768-mK												Name		Date		Material									
More than		0.5		3		6		30		120		400		1000					2000		Draw		J.J.R.R.		22/09/2025
Less		3		6		30		120		400		1000		2000		4000		Checked		O.A.P.M.		22/09/2025		Weight (kg)  494.10	
Machine Tool		±0.1		±0.1		±0.2		±0.3		±0.5		±0.8		±1.2		±2		Verified		O.A.P.M.		23/09/2025			
Welded				±0.5		±1		±1.5		±2		±3		±4		±6									
Customer:										Format:		Title		ALINVEST TMT (FVRB-2,7-35) FIRST STAGE AIR											
ALINVEST										A2															
										Scale:		1:12													
										Project Methode:		Part Number										Revision			
												2258-3311-TMT-ESR11										A			
												Customer Number										Sheet			
												-										3/3			



M  
L  
K  
J  
H  
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D  
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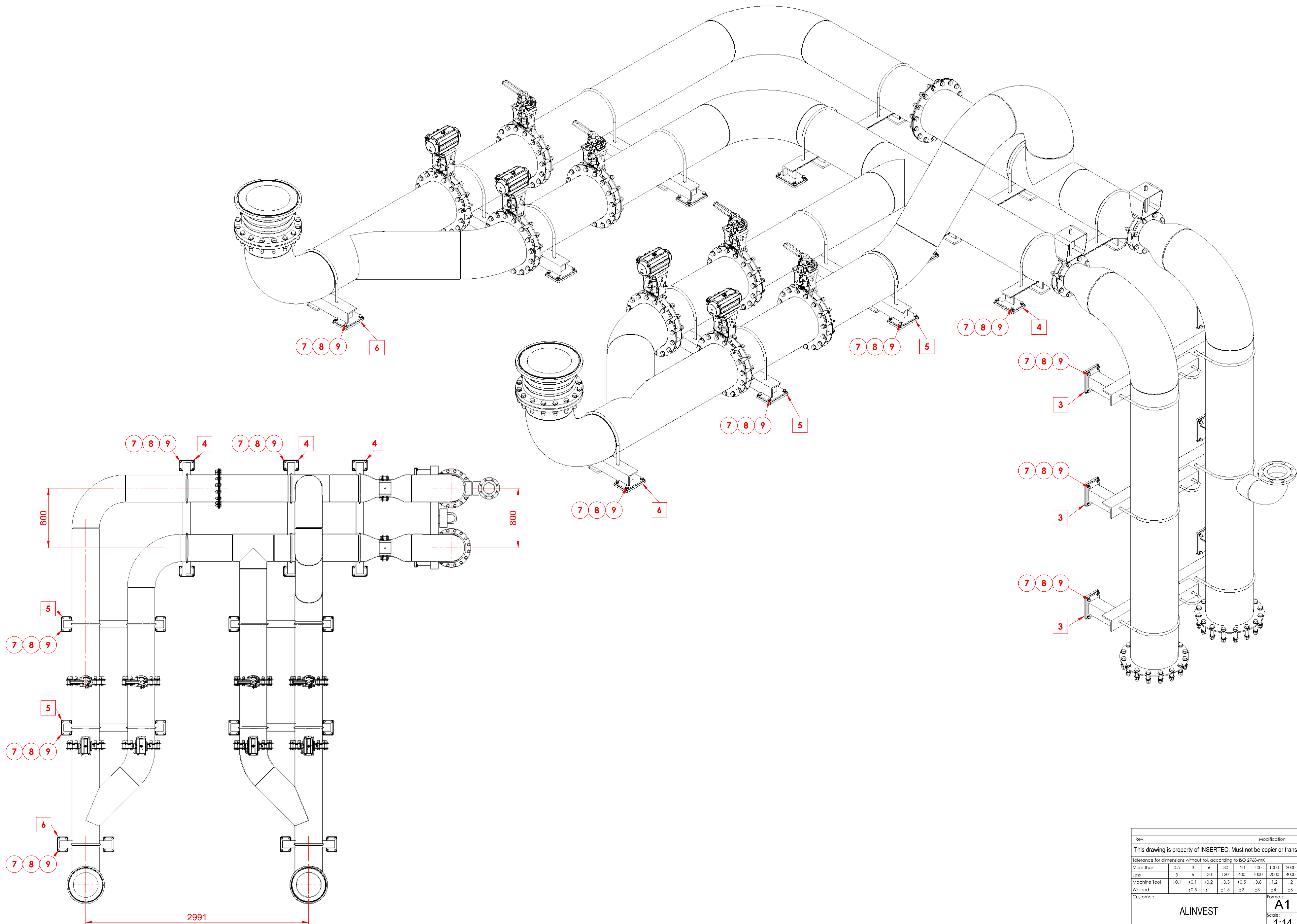
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2

1

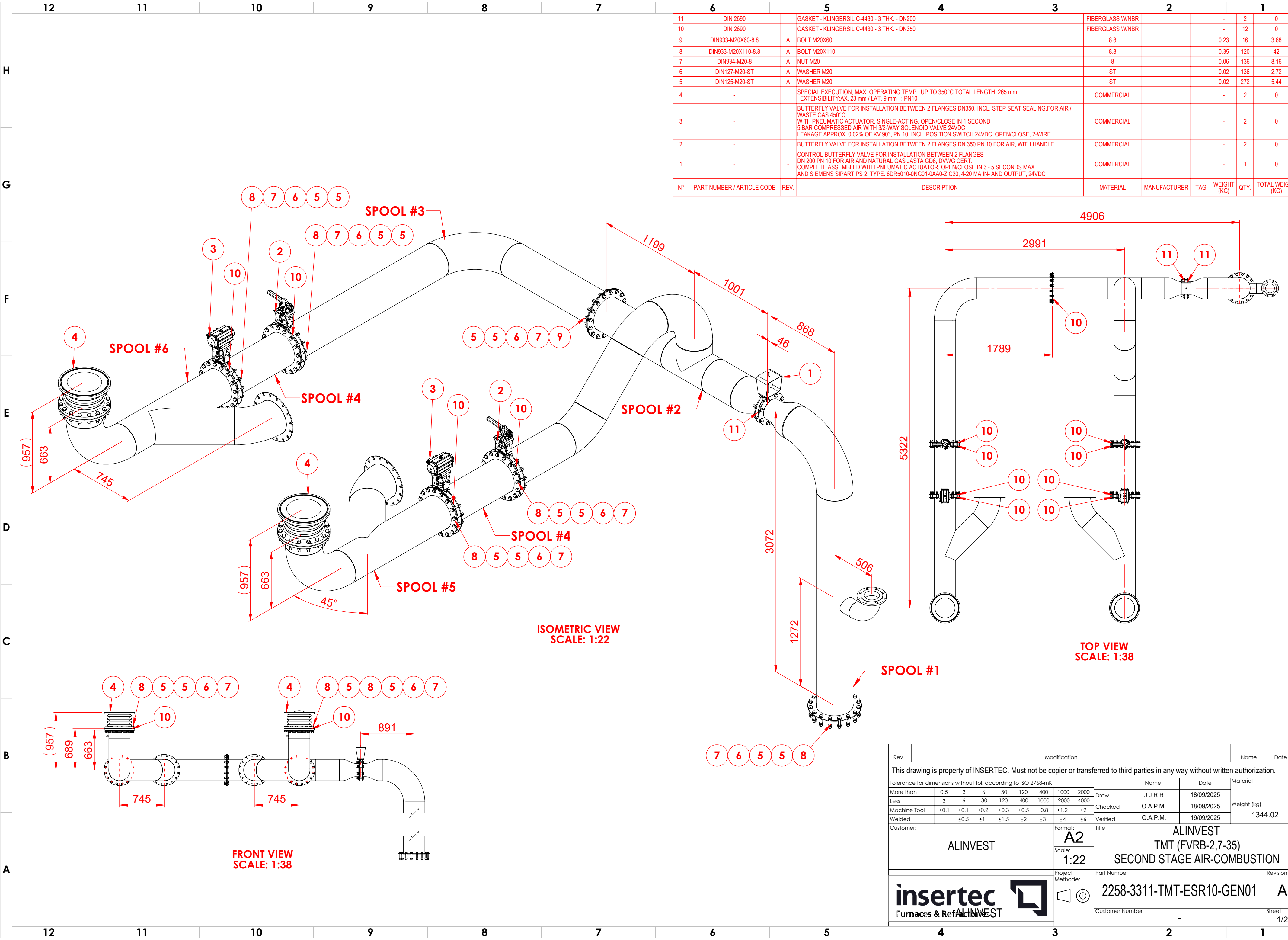
9	DIN933-M12X30-8.8	A	BOLT M12X30	8.8			0.05	96	4.8
8	DIN127-M12-ST	A	WASHER M12	ST			0	96	0
7	DIN125-M12-ST	A	WASHER M12	ST			0.01	96	0.96
6	2258-3311-TMT-ESR10-GEN06	A	SUPPORT 4	S275JR			24.74	2	49.48
5	2258-3311-TMT-ESR10-GEN05	A	SUPPORT 3	S275JR			37.59	4	150.36
4	2258-3311-TMT-ESR10-GEN04	A	SUPPORT 2	S275JR			39.91	3	119.73
3	2258-3311-TMT-ESR10-GEN03	A	SUPPORT 1	S275JR			44.36	3	133.14
2	2258-3311-TMT-ESR10-GEN02	A	SECOND STAGE AIR-EXHAUST				596.32	1	596.32
1	2258-3311-TMT-ESR10-GEN01	A	SECOND STAGE AIR-COMBUSTION				1344.02	1	1344.02
N°	PART NUMBER / ARTICLE CODE	REV.	DESCRIPTION	MATERIAL	MANUFACTURER	TAG	WEIGHT (KG)	QTY.	TOTAL WEIGHT (KG)

M  
L  
K  
J  
H  
G  
F  
E  
D  
C  
B  
A


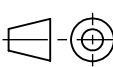


PLAN VIEW  
1:25

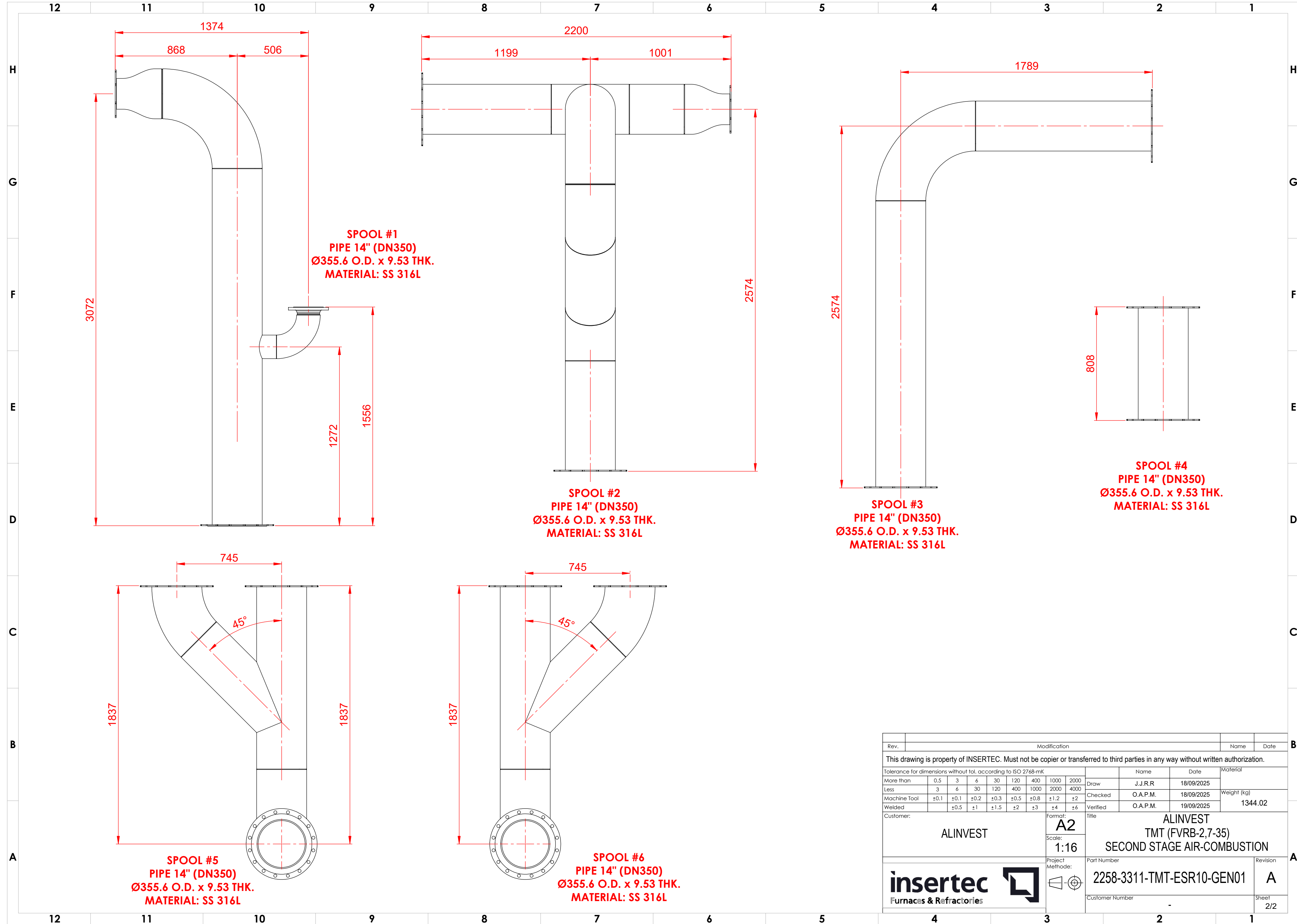
Rev.		Modification		Name		Date	
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.							
Tolerance for dimensions without tol. according to ISO 2768-mK				Name		Date	
More than				J.J.R.R.		22/09/2025	
Less				O.A.P.M.		22/09/2025	
Machine Tool				O.A.P.M.		23/09/2025	
Welded				O.A.P.M.		23/09/2025	
Customer:				Format: A1		Title	
ALINVEST				Scale: 1:14		ALINVEST TMT (FVRB-2,7-35) SECOND STAGE AIR-ASSEMBLY	
insertec Furnaces & Refractories				Project Method:		Part Number	
				2258-3311-TMT-ESR10		Revision	
						A	
				Customer Number		Sheet	
						1/1	

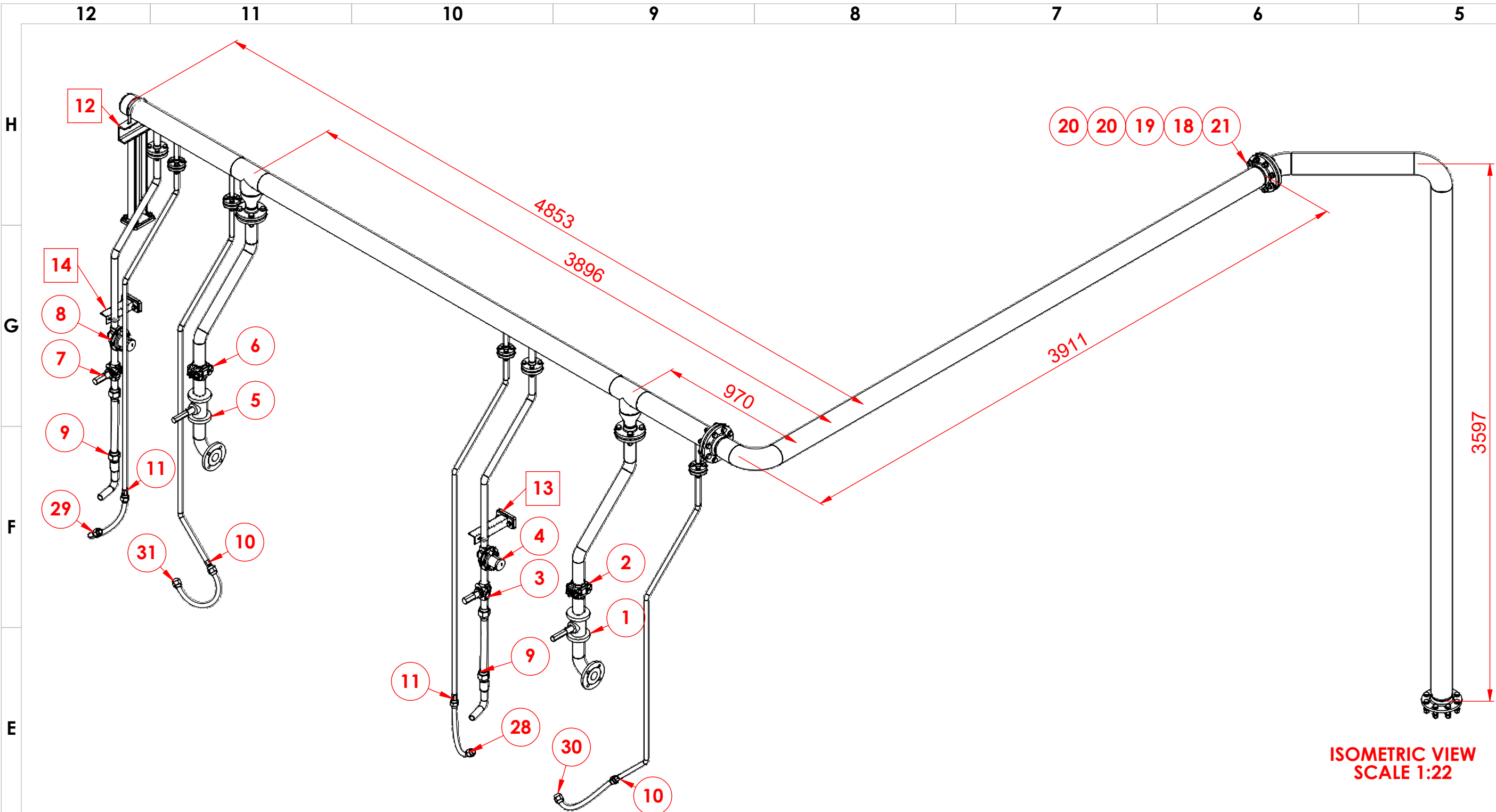


11	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN200	FIBERGLASS W/NBR			-	2	0
10	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN350	FIBERGLASS W/NBR			-	12	0
9	DIN933-M20X60-8.8	A	BOLT M20X60	8.8			0.23	16	3.68
8	DIN933-M20X110-8.8	A	BOLT M20X110	8.8			0.35	120	42
7	DIN934-M20-8	A	NUT M20	8			0.06	136	8.16
6	DIN127-M20-ST	A	WASHER M20	ST			0.02	136	2.72
5	DIN125-M20-ST	A	WASHER M20	ST			0.02	272	5.44
4	-		SPECIAL EXECUTION: MAX. OPERATING TEMP.: UP TO 350°C TOTAL LENGTH: 265 mm EXTENSIBILITY: AX. 23 mm / LAT. 9 mm ; PN10	COMMERCIAL			-	2	0
3	-		BUTTERFLY VALVE FOR INSTALLATION BETWEEN 2 FLANGES DN350, INCL. STEP SEAT SEALING, FOR AIR / WASTE GAS 450°C, WITH PNEUMATIC ACTUATOR, SINGLE-ACTING, OPEN/CLOSE IN 1 SECOND 5 BAR COMPRESSED AIR WITH 3/2-WAY SOLENOID VALVE 24VDC LEAKAGE APPROX. 0.02% OF KV 90°. PN 10, INCL. POSITION SWITCH 24VDC OPEN/CLOSE, 2-WIRE	COMMERCIAL			-	2	0
2	-		BUTTERFLY VALVE FOR INSTALLATION BETWEEN 2 FLANGES DN 350 PN 10 FOR AIR, WITH HANDLE	COMMERCIAL			-	2	0
1	-		CONTROL BUTTERFLY VALVE FOR INSTALLATION BETWEEN 2 FLANGES DN 200 PN 10 FOR AIR AND NATURAL GAS JASTA GD6, DWVG CERT. COMPLETE ASSEMBLED WITH PNEUMATIC ACTUATOR, OPEN/CLOSE IN 3 - 5 SECONDS MAX., AND SIEMENS SIPART PS 2, TYPE: 6DRS010-0NG01-0AA0-Z C20, 4-20 MA IN- AND OUTPUT, 24VDC	COMMERCIAL			-	1	0
Nº	PART NUMBER / ARTICLE CODE	REV.	DESCRIPTION	MATERIAL	MANUFACTURER	TAG	WEIGHT (KG)	QTY.	TOTAL WEIGHT (KG)

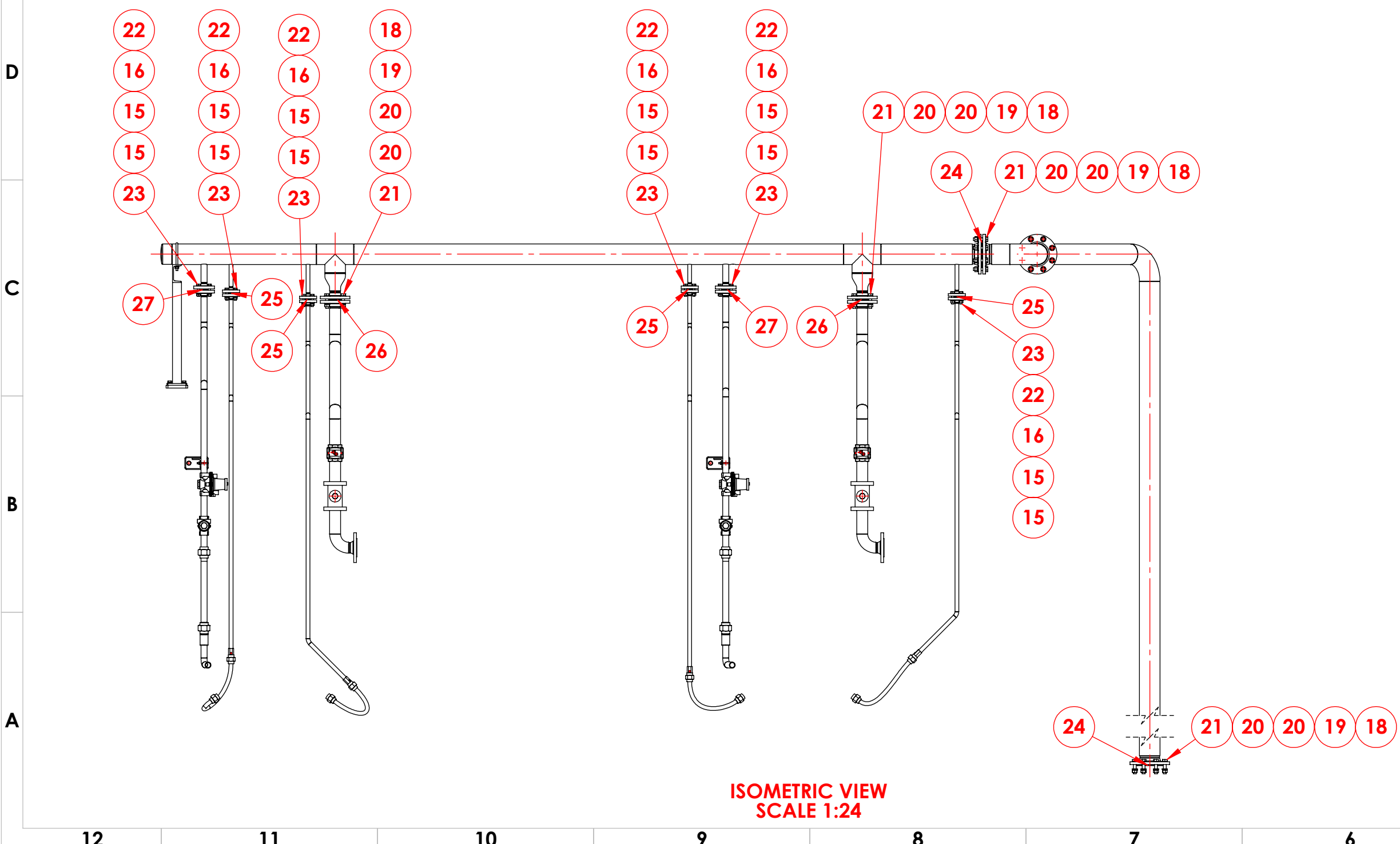
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This drawing is property of INSERTEC. Must not be copier or transferred to third parties in any way without written authorization.																									
Tolerance for dimensions without tol. according to ISO 2768-mK												Name		Date		Material									
More than		0.5		3		6		30		120		400		1000		2000		Draw		J.J.R.R		18/09/2025			
Less		3		6		30		120		400		1000		2000		4000									
Machine Tool		±0.1		±0.1		±0.2		±0.3		±0.5		±0.8		±1.2		±2		Checked		O.A.P.M.		18/09/2025		Weight (kg)	
Welded				±0.5		±1		±1.5		±2		±3		±4		±6		Verified		O.A.P.M.		19/09/2025		1344.02	
Customer:										Format:		ALINVEST TMT (FVRB-2,7-35) SECOND STAGE AIR-COMBUSTION													
ALINVEST										A2															
										Scale:															
										1:22															
 Furnaces & Refractories										Project Method:		Part Number										Revision			
												2258-3311-TMT-ESR10-GEN01										A			
												Customer Number										Sheet			
												-										1/2			







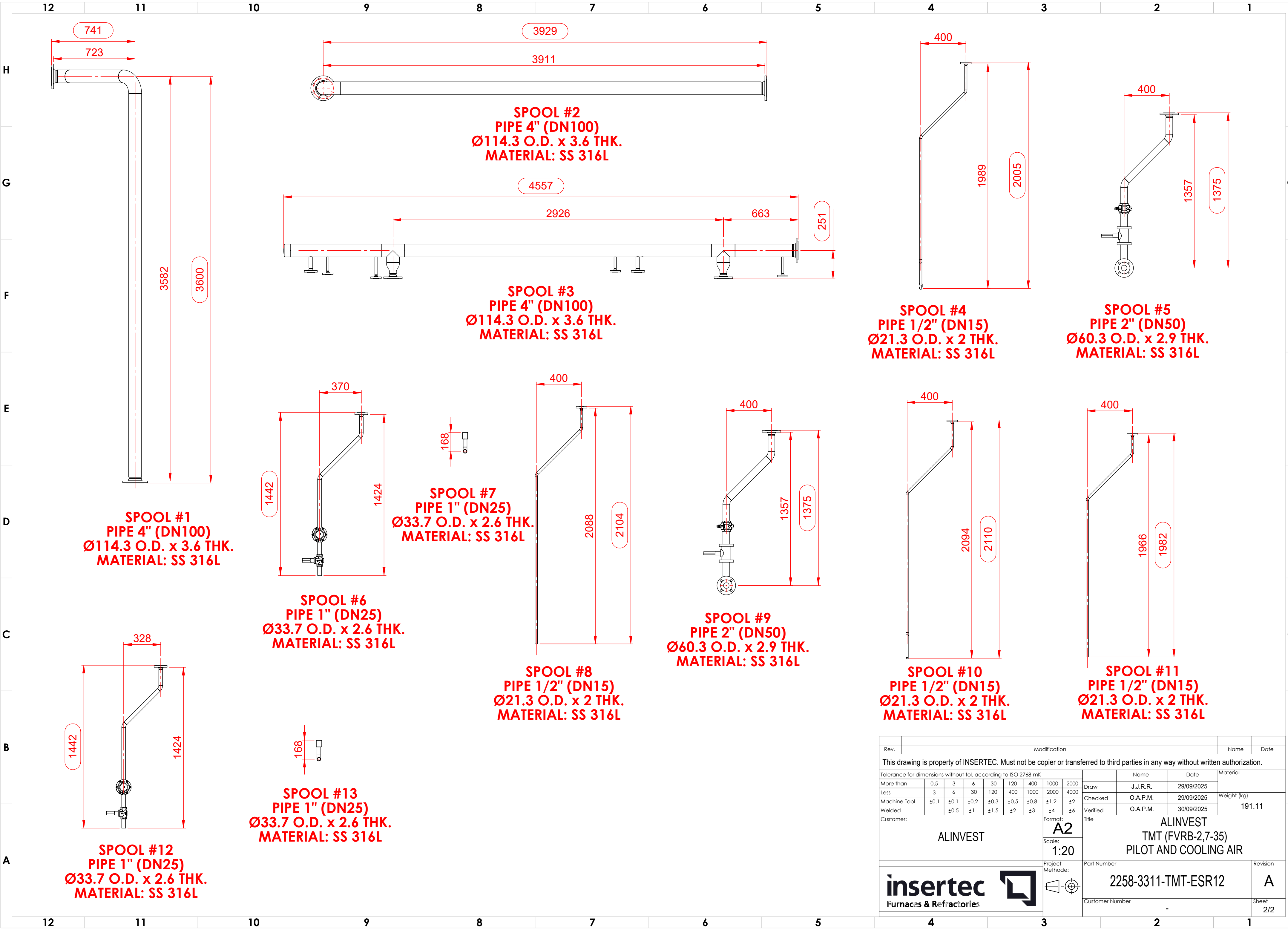
ISOMETRIC VIEW  
SCALE 1:22


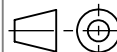


ISOMETRIC VIEW  
SCALE 1:24

N° PART NUMBER / ARTICLE CODE		REV.	DESCRIPTION	MATERIAL	MANUFACTURER	TAG	WEIGHT (KG)	QTY.	TOTAL WEIGHT (KG)
31			FLEXIBLE HOSE 1/2" LENGTH 500 MM CONNECTION ONE SIDE MALE THREAD ONE SIDE THREADED JOINT DVGW CERTIFICATE	COMMERCIAL			-	1	0
30			FLEXIBLE HOSE 1/2" LENGTH 500 MM CONNECTION ONE SIDE MALE THREAD ONE SIDE THREADED JOINT DVGW CERTIFICATE	COMMERCIAL			-	1	0
29			FLEXIBLE HOSE 1/2" LENGTH 500 MM CONNECTION ONE SIDE MALE THREAD ONE SIDE THREADED JOINT DVGW CERTIFICATE	COMMERCIAL			-	1	0
28			FLEXIBLE HOSE 1/2" LENGTH 500 MM CONNECTION ONE SIDE MALE THREAD ONE SIDE THREADED JOINT DVGW CERTIFICATE	COMMERCIAL			-	1	0
27	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN25	FIBERGLASS W/NBR			-	2	0
26	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN50	FIBERGLASS W/NBR			-	2	0
25	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN15	FIBERGLASS W/NBR			-	4	0
24	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN100	FIBERGLASS W/NBR			-	3	0
23	DIN933-M12X60-8.8	A	BOLT M12X60	8.8			0.07	24	1.68
22	NUT DIN 934 M12-A2	A	NUT M12	A2			0.02	24	0.48
21	DIN933-M16X70-8.8	A	BOLT M16X70	8.8			0.15	32	4.8
20	DIN125-M16-ST	A	WASHER M16	ST			0.01	64	0.64
19	DIN127-M16-ST	A	WASHER M16	ST			0.01	32	0.32
18	DIN934-M16-8	A	NUT M16	8			0.03	32	0.96
17	DIN933-M12X30-8.8	A	BOLT M12X30	8.8			0.05	8	0.4
16	DIN127-M12-ST	A	WASHER M12	ST			0	32	0
15	DIN125-M12-ST	A	WASHER M12	ST			0.01	56	0.56
14	2258-3311-TMT-ESR12-GEN03	A	SUPPORT 3	S275JR			2.38	1	2.38
13	2258-3311-TMT-ESR12-GEN02	A	SUPPORT 2	S275JR			2.57	1	2.57
12	2258-3311-TMT-ESR12-GEN01	A	SUPPORT 1	S275JR			11.95	1	11.95
11	-		ADJUSTING COCK 1/2" THREAD DESIGN; ADJUSTMENT WITH TOOLS MAX OPERATION PRESSURE GAS 1 BAR ; MAX. OPERATION PRESSURE AIR 4 BAR	COMMERCIAL			-	2	0
10	-		ADJUSTING COCK 1/2" THREAD DESIGN; ADJUSTMENT WITH TOOLS MAX OPERATION PRESSURE GAS 1 BAR ; MAX. OPERATION PRESSURE AIR 4 BAR	COMMERCIAL			-	2	0
9	-		FLEXIBLE HOSE 1" LENGTH 500 mm CONNECTION ONE SIDE MALE THREAD ONE SIDE THREADED JOINT DVGW CERTIFICATE	COMMERCIAL			-	2	0
8	-		PRESSURE REGULATOR OUTLET PRESSURE : 25 - 75 MBAR SPRING REACTING; FOR CONSTANT PRESSURE FOR GAS; MEASURING CONTROL NOZZLE IN THE INLET EG CERTIFICATE PE MAX 400 MBAR	COMMERCIAL			-	1	0
7	-	-	ADJUSTMENT VALVE 1" THREAD DESIGN ; MAX OPERATION PRESSURE 10 BAR. FOR AIR AND GAS WITH TEMP. -20°C UP TO +60°C	COMMERCIAL			-	1	0
6	-	-	ORIFICE PLATE ASSEMBLY INCL. TAPS, COMPLETELY ASSEMBLED THREADED CONNECTION	COMMERCIAL			-	1	0
5	-	-	FLOW-CONTROL-VALVE THREAD DESIGN ; MAX OPERATION PRESSURE 10 BAR	COMMERCIAL			-	1	0
4	-		PRESSURE REGULATOR OUTLET PRESSURE : 25 - 75 MBAR SPRING REACTING; FOR CONSTANT PRESSURE FOR GAS; MEASURING CONTROL NOZZLE IN THE INLET EG CERTIFICATE PE MAX 400 MBAR	COMMERCIAL			-	1	0
3	-	-	ADJUSTMENT VALVE 1" THREAD DESIGN ; MAX OPERATION PRESSURE 10 BAR. FOR AIR AND GAS WITH TEMP. -20°C UP TO +60°C	COMMERCIAL			-	1	0
2	-	-	ORIFICE PLATE ASSEMBLY INCL. TAPS, COMPLETELY ASSEMBLED THREADED CONNECTION	COMMERCIAL			-	1	0
1	-	-	FLOW-CONTROL-VALVE THREAD DESIGN ; MAX OPERATION PRESSURE 10 BAR	COMMERCIAL			-	1	0

Rev.	Modification				Name	Date
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.						
Tolerance for dimensions without tol. according to ISO 2768-mK				Draw	Name	Date
More than	0.5	3	6	30	120	400
Less	3	6	30	120	400	1000
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8
Welded		±0.5	±1	±1.5	±2	±3
Customer:	ALINVEST				Format:	A2
				Scale:	1:22	
				Project	ALINVEST	
				Method:	TMT (FVRB-2,7-35)	
				Pilot and cooling air		
				Part Number	2258-3311-TMT-ESR12	
				Customer Number	-	
				Revision	A	
				Sheet	1/2	



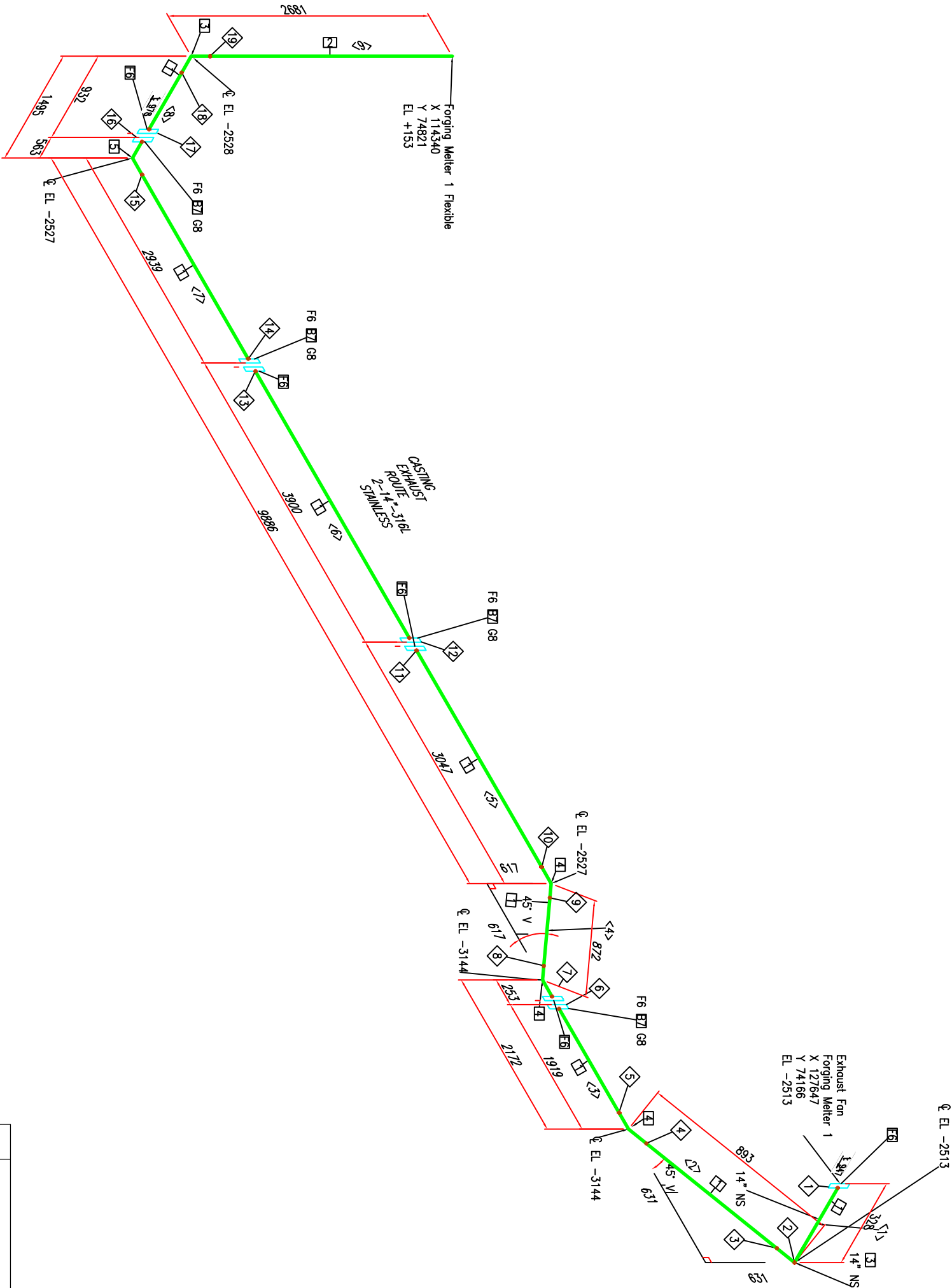
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This drawing is property of INSERTEC. Must not be copier or transferred to third parties in any way without written authorization.																									
Tolerance for dimensions without tol. according to ISO 2768-mK												Name		Date		Material									
More than		0.5		3		6		30		120		400		1000						2000		Draw		J.J.R.R.	
Less		3		6		30		120		400		1000		2000		4000		Checked		O.A.P.M.		29/09/2025		Weight (kg)  191.11	
Machine Tool		±0.1		±0.1		±0.2		±0.3		±0.5		±0.8		±1.2		±2		Verified		O.A.P.M.		30/09/2025			
Welded				±0.5		±1		±1.5		±2		±3		±4		±6									
Customer:										Format:		ALINVEST TMT (FVRB-2,7-35) PILOT AND COOLING AIR													
ALINVEST										A2															
										Scale:												1:20			
										Project		Part Number  2258-3311-TMT-ESR12										Revision			
										Method:												A			
																						Customer Number  -			

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## **MELTER 35 – EXHAUST AIRE AIB SCOPE**



WELDING LIST		
ID	DN "	TYPE
1	14"	BUTTWELD
2	14"	TAPWELD
3	14"	BUTTWELD
4	14"	BUTTWELD
5	14"	BUTTWELD
6	14"	BUTTWELD
7	14"	BUTTWELD
8	14"	BUTTWELD
9	14"	BUTTWELD
10	14"	BUTTWELD
11	14"	BUTTWELD
12	14"	BUTTWELD
13	14"	BUTTWELD
14	14"	BUTTWELD
15	14"	BUTTWELD
16	14"	BUTTWELD
17	14"	BUTTWELD
18	14"	BUTTWELD
19	14"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		

PIPING		
1	12.0M	14"
2	2.2M	14"
3	2	14"
4	3	14"
5	1	14"
6	9	14"
7	64	3/4"x2 80
8	4	14"

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	298MM
2	14"	140MM
3	14"	1669MM
4	14"	431MM
5	14"	2795MM
6	14"	3839MM
7	14"	2376MM
8	14"	368MM
9	14"	2148MM

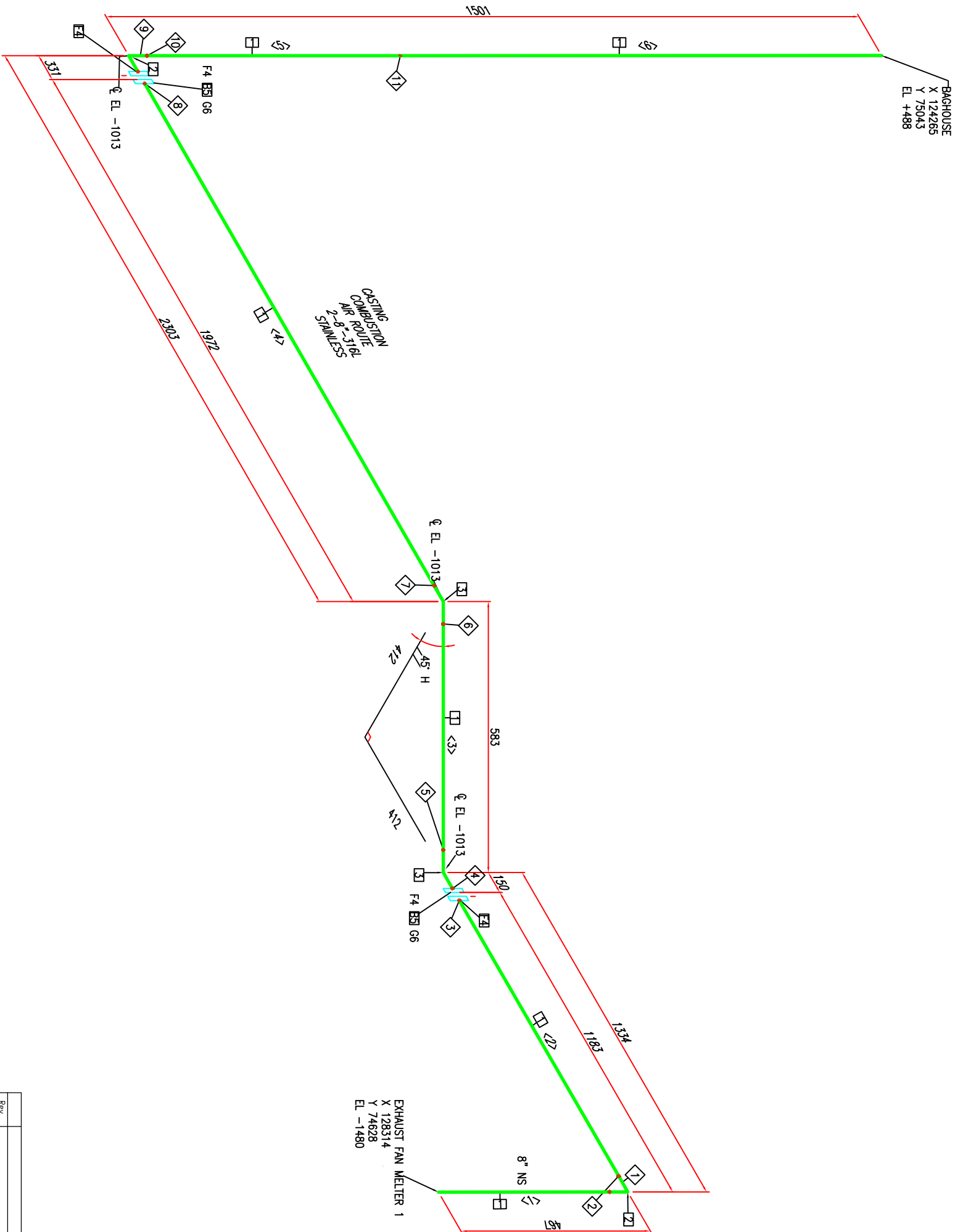
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Rev.		Modification						None	Date	
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WELDING LIST		
ID	DN "	TYPE
1	8"	BUTTWELD
2	8"	BUTTWELD
3	8"	BUTTWELD
4	8"	BUTTWELD
5	8"	BUTTWELD
6	8"	BUTTWELD
7	8"	BUTTWELD
8	8"	BUTTWELD
9	8"	BUTTWELD
10	8"	BUTTWELD
11	8"	WELD



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	4.4M	8"	PIPE , EN 10217-7 STAINLESS 316L	316L STAINLESS
FITTINGS				
2	2	8"	ELBOW 90° RL - BW, EN 10253-1, 316L STAINLESS	316L STAINLESS
3	2	8"	ELBOW 45° RL - BW, EN 10253-1, 316L STAINLESS	316L STAINLESS
FLANGES				
4	4	8"	SUP--ON FLANGE, EN 1092-1, DIN2633	316L STAINLESS
BOLTS, GASKETS				
5	24	1 40	1/4"x1 STUD BOLT,	
6	2	8"	GASKET	

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	8"	162MM
2	8"	853MM
3	8"	330MM
4	8"	1822MM
5	8"	306MM
6	8"	869MM

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Rev.	Modification						Name	Date																																																													
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Tolerance for dimensions without tol. according to ISO 2768-mK																																																																					
More than	0.5	3	6	30	120	400	1000	2000																																																													
Less	3	6	30	120	400	1000	2000	4000	Drew																																																												
Machine Tool	+	+	+	+	+	+	+	+	Checked																																																												
Welded	0.1	0.2	0.4	0.3	0.5	0.8	1.2	2	Verified																																																												
Customer:	0.5	1	1.5	2	3	4	6	10	Title																																																												
<p>INVEST</p>																																																																					
							Weight (kg)	316L																																																													
							18/09/2025	19/09/2025																																																													

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Furnaces & Refractories

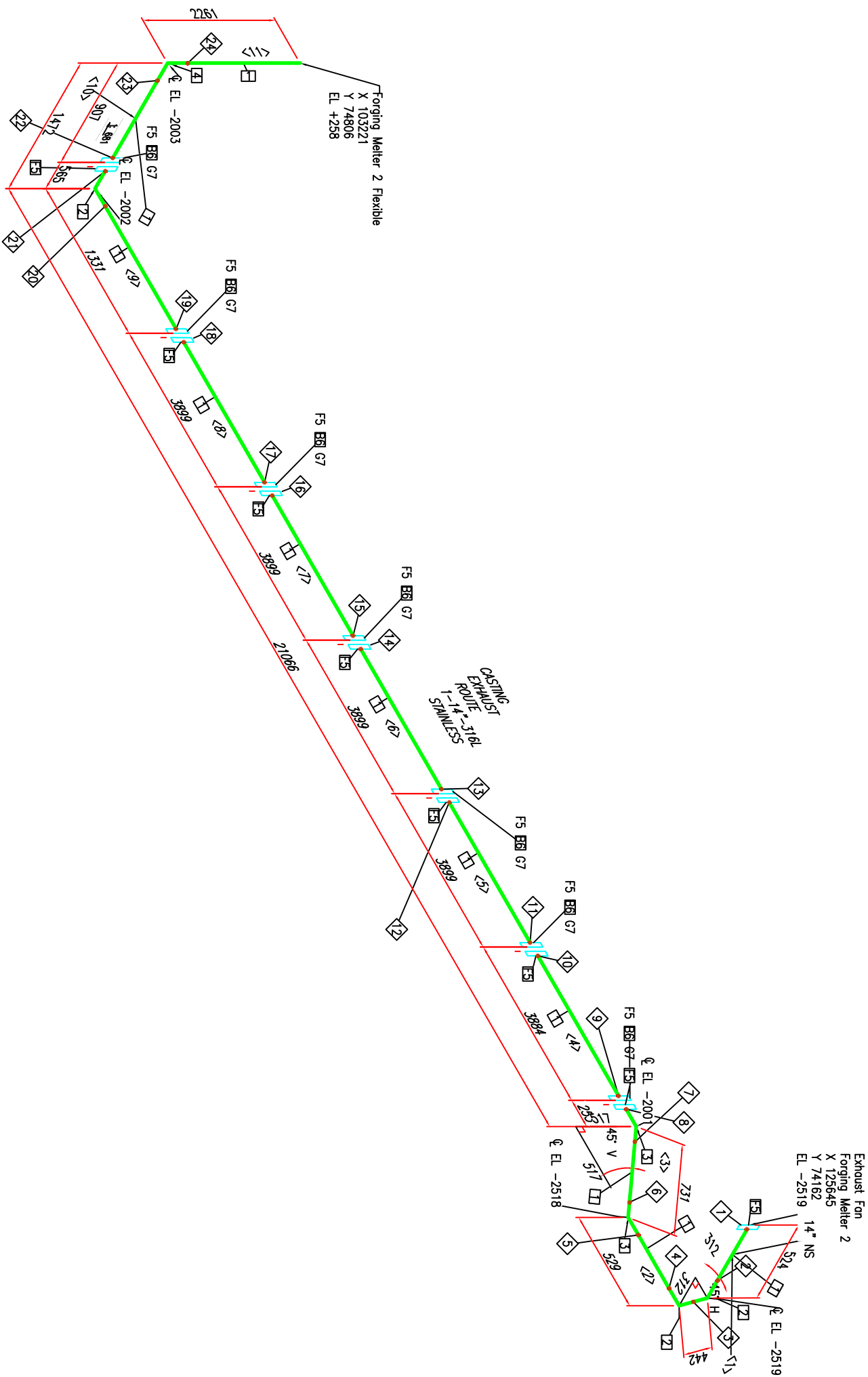
2258-3311-TMT-M-ESR16-2

Customer Number

Sheet  
2/2



WELDING LIST		
ID	DN "	TYPE
1	1 1/2"	BUTTWELD
2	1 1/2"	BUTTWELD
3	1 1/2"	BUTTWELD
4	1 1/2"	BUTTWELD
5	1 1/2"	BUTTWELD
6	1 1/2"	BUTTWELD
7	1 1/2"	BUTTWELD
8	1 1/2"	BUTTWELD
9	1 1/2"	BUTTWELD
10	1 1/2"	BUTTWELD
11	1 1/2"	BUTTWELD
12	1 1/2"	BUTTWELD
13	1 1/2"	BUTTWELD
14	1 1/2"	BUTTWELD
15	1 1/2"	BUTTWELD
16	1 1/2"	BUTTWELD
17	1 1/2"	BUTTWELD
18	1 1/2"	BUTTWELD
19	1 1/2"	BUTTWELD
20	1 1/2"	BUTTWELD
21	1 1/2"	BUTTWELD
22	1 1/2"	BUTTWELD
23	1 1/2"	BUTTWELD
24	1 1/2"	BUTTWELD



MATERIAL LIST			
ID	QTY	DN "	MATERIAL
PIPING			
1	22.7M	14"	PIPE , EN 10217-7 STAINLESS 316L STAINLESS
FITTINGS			
2	3	14"	ELBOW 45° RL – BW, EN 10253-1, 316L STAINLESS 316L STAINLESS
3	2	14"	ELBOW 45° RL – BW, EN 10253-1, 316L STAINLESS 316L STAINLESS
4	1	14"	ELBOW 90° RL – BW, EN 10253-1, 316L STAINLESS 316L STAINLESS
FLANGES			
5	15	14"	SLIP-ON FLANGE, EN 1092-1, DIN2633 316L STAINLESS
BOLTS, GASKETS			
6	112	3/4"x2 80	STUD BOLT, 1
7	7	14"	GASKET

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	14"	27.4MM
2	14"	88MM
3	14"	290MM
4	14"	3823MM
5	14"	3838MM
6	14"	3838MM
7	14"	3838MM
8	14"	3838MM
9	14"	769MM
10	14"	344MM
11	14"	1728MM

Rev.	Modification										Name	Date
Drawing is property of INSERTC. Must not be copied or transferred to third parties in any way without written authorization.												
Tolerance for dimensions without tol. according to ISO 2768-MK												
More than	0.5	3	6	30	120	400	1000	2000		None		Date
Less	3	6	30	120	400	1000	2000	4000		Draw		18/09/2025
Machine Tool	±	±	±	±	±	±	±	±	±	Checked		18/09/2025
Verified	tol	tol	tol	tol	tol	tol	tol	tol	tol	Verified		19/09/2025
											Material	
											36L	

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Furnaces & Refractories

2558-311-TMT-M-ESR16-3

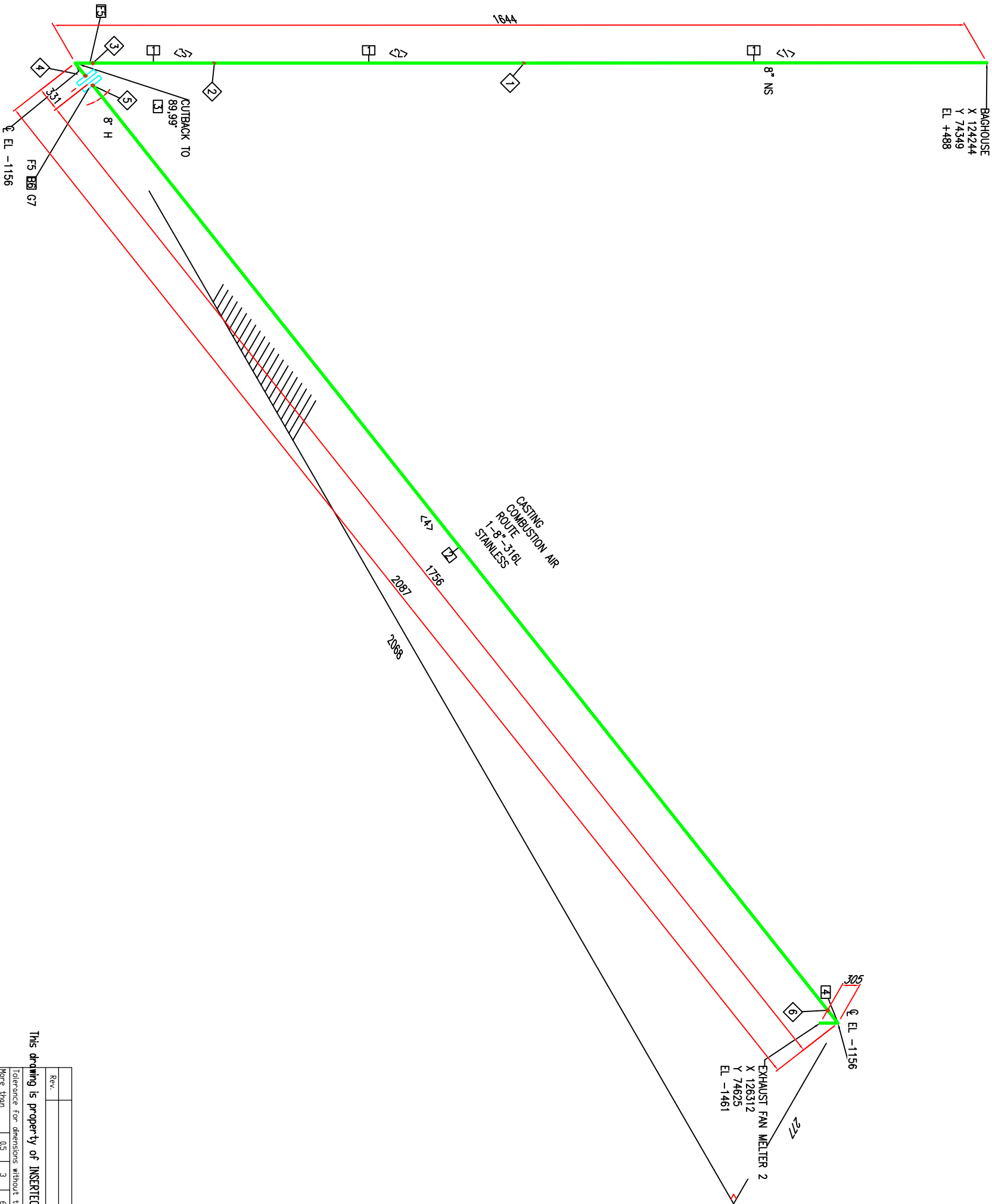
Customer Number

11

1/2



WELDING LIST		
ID	DN "	TYPE
1	8"	WELD
2	8"	WELD
3	8"	BUTTWELD
4	8"	BUTTWELD
5	8"	BUTTWELD
6	8"	BUTTWELD



MATERIAL LIST		
ID	QTY	DN "
DESCRIPTION		
MATERIAL		

PIPING		
1	1.4M	8"
2	1.5M	8"
FITTINGS		
3	1	8"
4	1	8"
FLANGES		
5	2	8"
BOLTS, GASKETS		
6	12	1/4"x4
7	1	8"

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	8"	864MM
2	8"	397MM
3	8"	80MM
4	8"	1427MM

This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.

Rev.	Modification	None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK			
More than	0.5	3	6
Less	3	6	30
Machine Tool	±	0.1	0.2
Welded	±	0.1	0.2
Customer:	0.5	1	1.5

insertec

Furnaces & Refractories

Project

2558-331-TMT-M-ESR16-4

Port Number

-

Customer Number

-

Revision

A

Sheet

2/2

Scale

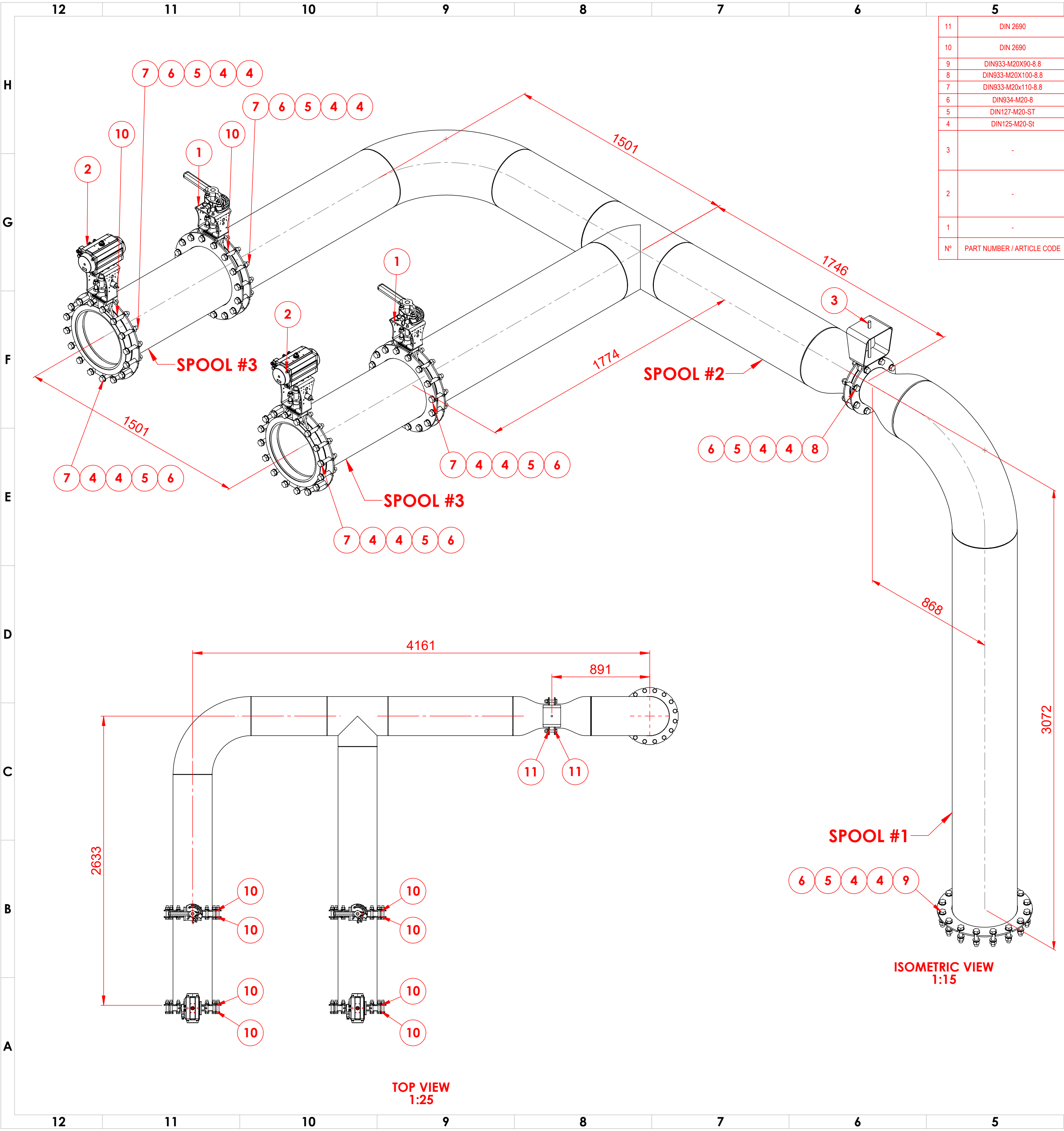
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Title

ALINVEST  
TMT (FVRB-2,7-35)  
EXHAUST RDUTE


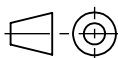
 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## MELTER 35 – EXHAUST AIR INSERTEC SCOPE

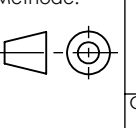


11	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN200	FIBERGLASS W/NBR		-	2	0	
10	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN350	FIBERGLASS W/NBR		-	9	0	
9	DIN933-M20X90-8.8	A	BOLT M20X90	8.8		0.3	16	4.8	
8	DIN933-M20X100-8.8	A	BOLT M20X100	8.8		0.33	8	2.64	
7	DIN933-M20x110-8.8	A	BOLT M20x110	8.8		0.35	64	22.4	
6	DIN934-M20-8	A	NUT M20	8		0.06	88	5.28	
5	DIN127-M20-ST	A	WASHER M20	ST		0.02	88	1.76	
4	DIN125-M20-St	A	WASHER M20	St		0.02	176	3.52	
3	-	-	CONTROL BUTTERFLY VALVE FOR INSTALLATION BETWEEN 2 FLANGES DN 200 PN 10 FOR AIR AND GAS JASTA GD6 450°C. COMPLETE ASSEMBLED WITH PNEUMATIC ACTUATOR. OPEN/CLOSE IN 3 - 5 SECONDS MAX., AND SIEMENS SIPART PS 2, TYPE: 6DR5010-0NG01-0AA0-Z C20, 4-20 MA IN- AND OUTPUT, 24VDC	COMMERCIAL		-	1	0	
2	-		BUTTERFLY VALVE FOR INSTALLATION BETWEEN 2 FLANGES DN350, INCL. STEP SEAT SEALING. FOR AIR / WASTE GAS 450°C. WITH PNEUMATIC ACTUATOR. SINGLE-ACTING. OPEN/CLOSE IN 1 SECOND 5 BAR COMPRESSED AIR WITH 3/2-WAY SOLENOID VALVE 24VDC LEAKAGE APPROX. 0.02% OF KV 90°, PN 10, INCL. POSITION SWITCH 24VDC OPEN/CLOSE, 2-WIRE	COMMERCIAL		-	2	0	
1	-		BUTTERFLY VALVE FOR INSTALLATION BETWEEN 2 FLANGES DN 350 PN 10 FOR AIR, WITH HANDLE	COMMERCIAL		-	2	0	
Nº	PART NUMBER / ARTICLE CODE	REV.	DESCRIPTION	MATERIAL	MANUFACTURER	TAG	WEIGHT (KG)	QTY.	TOTAL WEIGHT (KG)




Rev.		Modification										Name		Date											
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.																									
Tolerance for dimensions without tol. according to ISO 2768-mK											Name		Date		Material										
More than		0.5		3		6		30		120		400		1000		2000		Draw		J.J.R.R		22/09/2025			
Less		3		6		30		120		400		1000		2000		4000									
Machine Tool		±0.1		±0.1		±0.2		±0.3		±0.5		±0.8		±1.2		±2		Checked		O.A.P.M.		22/09/2025		Weight (kg)	
Welded				±0.5		±1		±1.5		±2		±3		±4		±6		Verified		O.A.P.M.		23/09/2025		596.32	
Customer:									Format:			Title													
ALINVEST									A2			ALINVEST TMT (FVRB-2,7-35) SECOND STAGE AIR-EXHAUST													
									Scale:																
									1:15																
 Furnaces & Refractories												Project		Part Number							Revision				
												Methode:		2258-3311-TMT-ESR10-GEN02							A				
												Customer Number							Sheet						
												-							1/2						

insertec  
Furnaces & Refractories







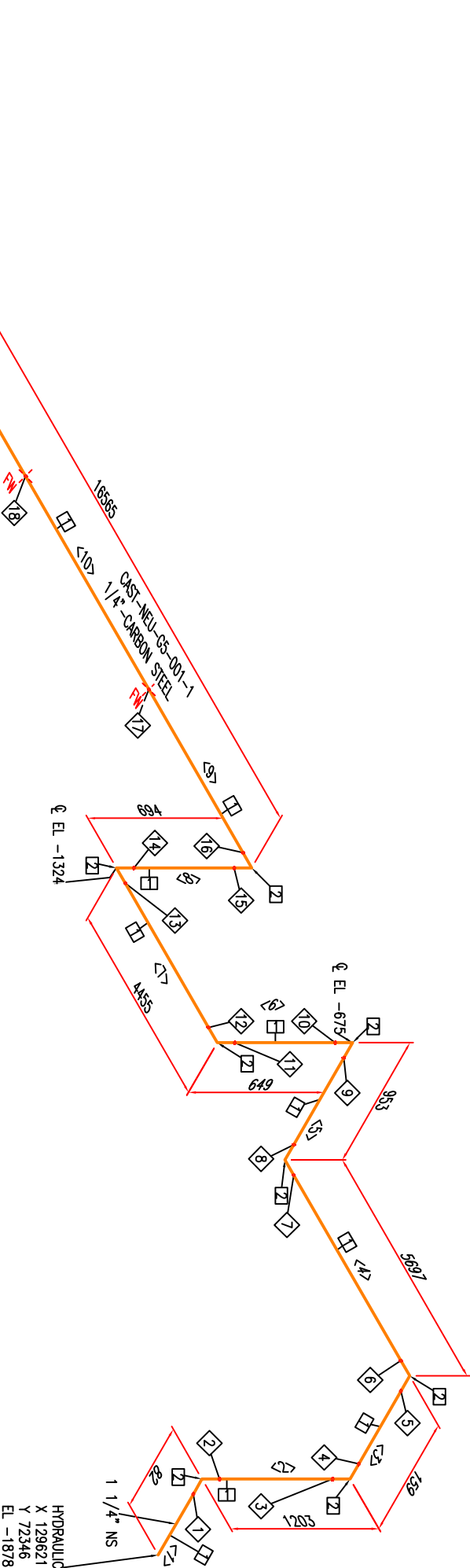
Rev.		Modification										Name		Date			
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.																	
Tolerance for dimensions without tol. according to ISO 2768-mK												Name		Date		Material	
More than		0.5	3	6	30	120	400	1000	2000	Draw		J.J.R.R		22/09/2025			
Less		3	6	30	120	400	1000	2000	4000	Checked		O.A.P.M.		22/09/2025		Weight (kg)	
Machine Tool		±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified		O.A.P.M.		23/09/2025		596.32	
Welded			±0.5	±1	±1.5	±2	±3	±4	±6								
Customer:										Format:		Title		ALINVEST TMT (FVRB-2,7-35) SECOND STAGE AIR-EXHAUST			
ALINVEST										A2							
										Scale:		1:12					
										Project		Part Number		Revision			
										Method:		2258-3311-TMT-ESR10-GEN02		A			
										Customer Number		Sheet					
										-		2/2					

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## **MELTER 35 – HYDRAULIC AIB SCOPE**

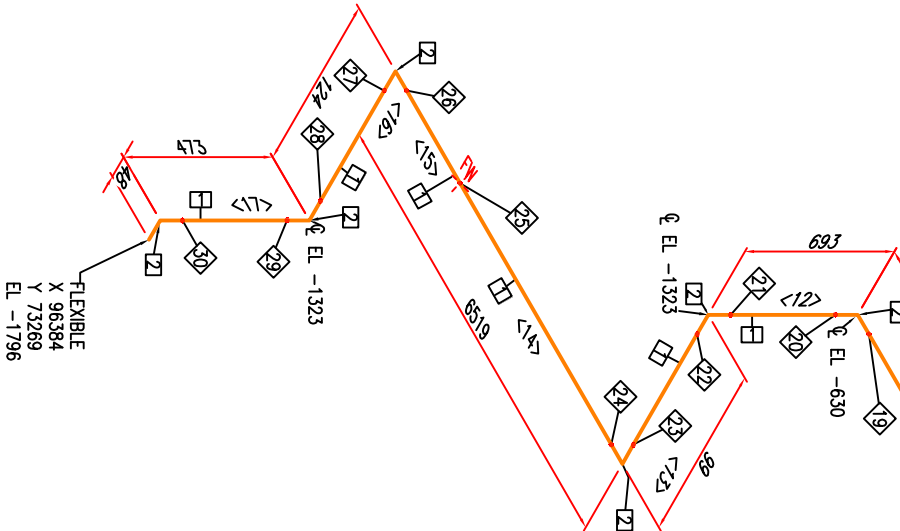


WELDING LIST		
ID	DN "	TYPE
1	1 1/4"	BUTTWELD
2	1 1/4"	BUTTWELD
3	1 1/4"	BUTTWELD
4	1 1/4"	BUTTWELD
5	1 1/4"	BUTTWELD
6	1 1/4"	BUTTWELD
7	1 1/4"	BUTTWELD
8	1 1/4"	BUTTWELD
9	1 1/4"	BUTTWELD
10	1 1/4"	BUTTWELD
11	1 1/4"	BUTTWELD
12	1 1/4"	BUTTWELD
13	1 1/4"	BUTTWELD
14	1 1/4"	BUTTWELD
15	1 1/4"	BUTTWELD
16	1 1/4"	BUTTWELD
17	1 1/4"	FIELDWELD
18	1 1/4"	FIELDWELD
19	1 1/4"	BUTTWELD
20	1 1/4"	BUTTWELD
21	1 1/4"	BUTTWELD
22	1 1/4"	BUTTWELD
23	1 1/4"	BUTTWELD
24	1 1/4"	BUTTWELD
25	1 1/4"	FIELDWELD
26	1 1/4"	BUTTWELD
27	1 1/4"	BUTTWELD
28	1 1/4"	BUTTWELD
29	1 1/4"	BUTTWELD
30	1 1/4"	BUTTWELD



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	37.1M	1 1/4"	PIPE CS, EN 10217-1 P235TR1	CARBON STEEL
FITTINGS				
2	14	1 1/4"	ELBOW 90° CS RL - BW, EN 10253-1, P235TR1	CARBON STEEL

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1 1/4"	35MM
2	1 1/4"	1108MM
3	1 1/4"	63MM
4	1 1/4"	5602MM
5	1 1/4"	857MM
6	1 1/4"	554MM
7	1 1/4"	4360MM
8	1 1/4"	598MM
9	1 1/4"	4470MM
10	1 1/4"	6000MM
11	1 1/4"	6000MM
12	1 1/4"	597MM
13	1 1/4"	4MM
14	1 1/4"	6000MM
15	1 1/4"	423MM
16	1 1/4"	28MM
17	1 1/4"	377MM



FILEXIBLE  
X 96384  
Y 73269  
EL -1796

Rev.	Modification		Name	Date
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.				
Tolerances for dimensions without tol. according to ISO 2768-mK				
More than 0.5 3 6 30 120 400 1000 2000				
Less 3 6 30 120 400 1000 2000 4000				
Machine Tool ± 0.1 ± 0.2 ± 0.3 ± 0.5 ± 1 ± 2 ± 3				
Welded ± 0.1 ± 0.2 ± 0.3 ± 0.5 ± 1 ± 2 ± 3				
Customer: 6				
Format: 6				
Title				
A2				
Scale: 1:15				
Project Method: 2558-3111-TMT-M-ESR40-1				
Part Number				
Customer Number				
Revision				
A				
Sheet 1/9				

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Furnaces & Refractories

2558-3111-TMT-M-ESR40-1

-

Revision

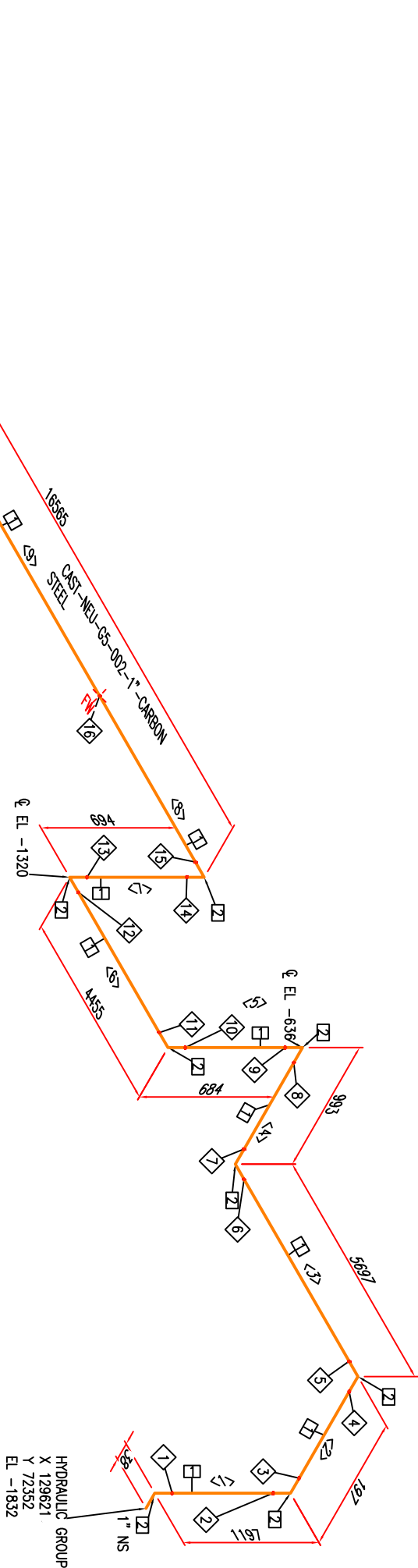
A

Sheet

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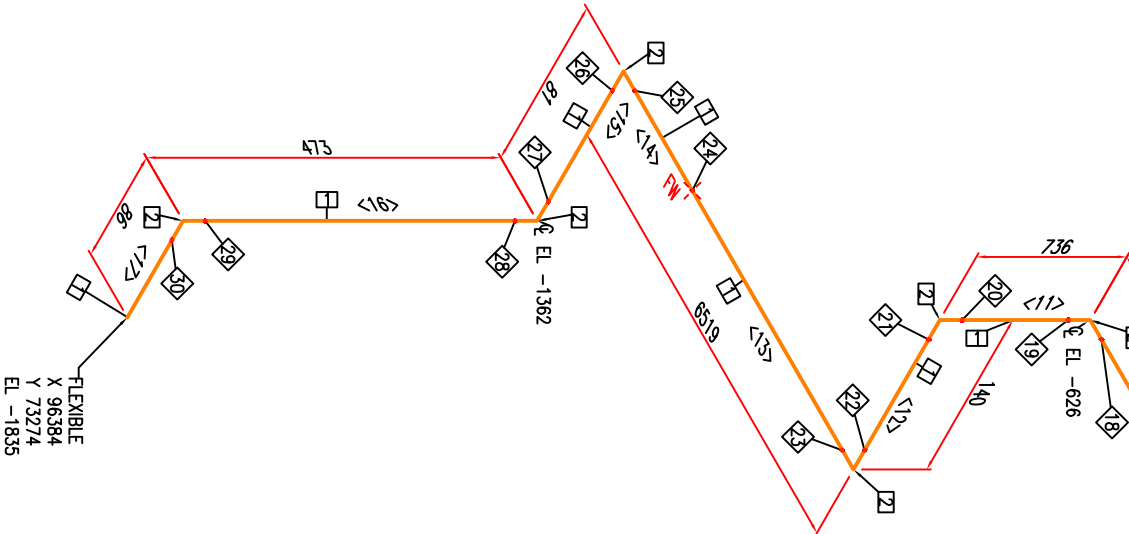


WELDING LIST		
ID	DN "	TYPE
1	1"	BUTTWELD
2	1"	BUTTWELD
3	1"	BUTTWELD
4	1"	BUTTWELD
5	1"	BUTTWELD
6	1"	BUTTWELD
7	1"	BUTTWELD
8	1"	BUTTWELD
9	1"	BUTTWELD
10	1"	BUTTWELD
11	1"	BUTTWELD
12	1"	BUTTWELD
13	1"	BUTTWELD
14	1"	BUTTWELD
15	1"	BUTTWELD
16	1"	FIELDWELD
17	1"	FIELDWELD
18	1"	BUTTWELD
19	1"	BUTTWELD
20	1"	BUTTWELD
21	1"	BUTTWELD
22	1"	BUTTWELD
23	1"	BUTTWELD
24	1"	FIELDWELD
25	1"	FIELDWELD
26	1"	BUTTWELD
27	1"	BUTTWELD
28	1"	BUTTWELD
29	1"	BUTTWELD
30	1"	BUTTWELD



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	37.5M	1"	PIPE CS, EN 10217-1 P235TR1	CARBON STEEL
FITTINGS				
2	14	1"	ELBOW 90° CS RL - BW, EN 10253-1, P235TR1	CARBON STEEL

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1"	1121MM
2	1"	122MM
3	1"	5622MM
4	1"	918MM
5	1"	609MM
6	1"	4380MM
7	1"	618MM
8	1"	4490MM
9	1"	6001MM
10	1"	6001MM
11	1"	660MM
12	1"	64MM
13	1"	6001MM
14	1"	443MM
15	1"	6MM
16	1"	397MM
17	1"	49MM



Rev.	Modification	Name	Date

This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.

Tolerances for dimensions without tol. according to ISO 2768-mK

More than	0.5	3	6	30	120	400	1000	2000
Less	3	6	30	120	400	1000	2000	4000

Machine Tool

±	±	±	±	±	±	±	±	±
0.1	0.1	0.2	0.3	0.5	1	2	3	5

Welded

±	±	±	±	±	±	±	±	±
0.1	0.1	0.2	0.3	0.5	1	2	3	5

Customer:

ALINVEST

Scale: 1:15

Project Method:

ALINVEST

TMT (FVRB-2,7-35)

HYDRAULIC ROUTE

Part Number 2558-3111-TMT-M-ESR40-2

Customer Number

Material 316L

Date 18/09/2025

Weight (kg)  

Checked  

Verified  

18/09/2025

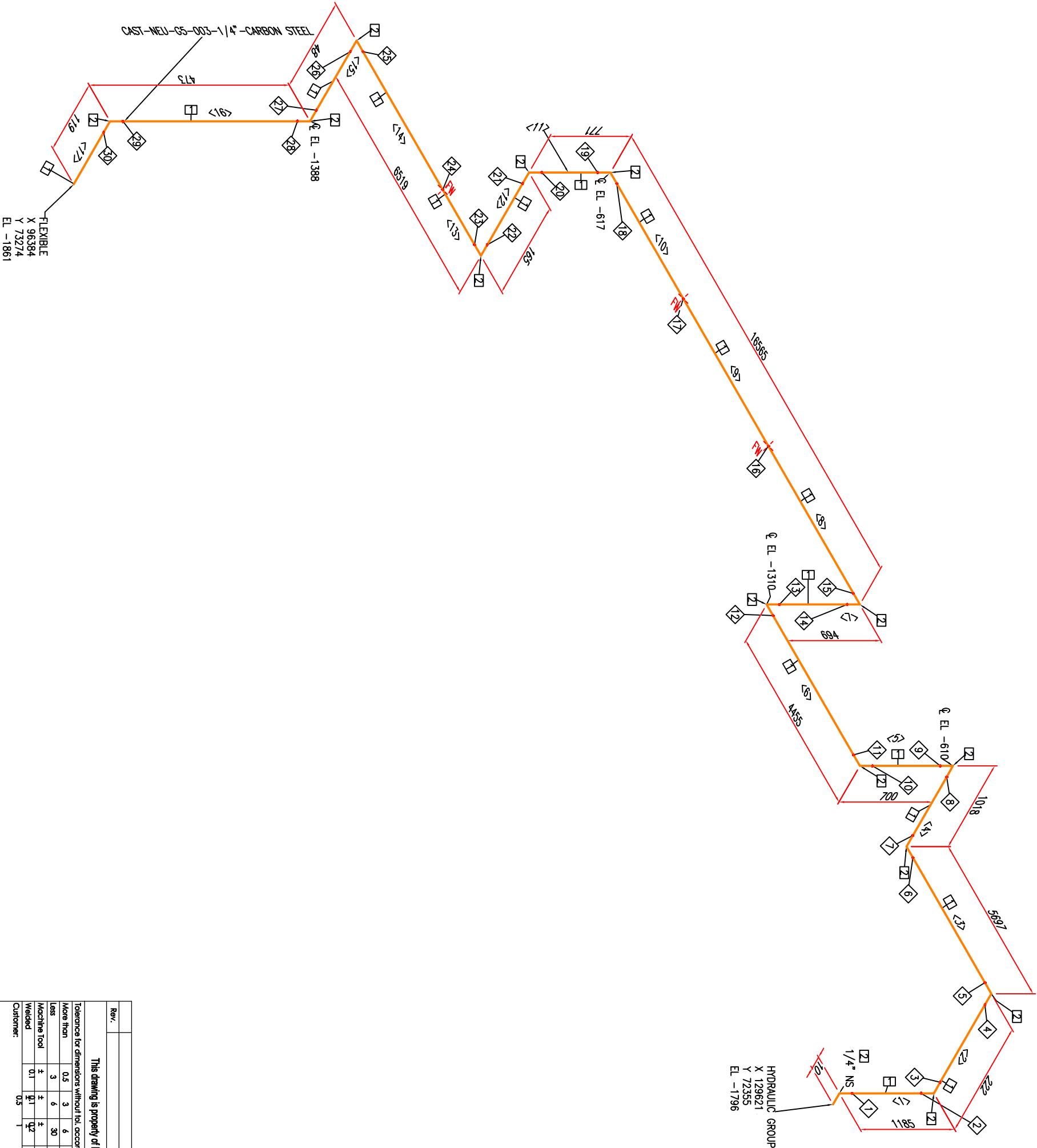
19/09/2025

Revision A

Sheet 2/9



WELDING LIST		
ID	DN "	TYPE
1	1/4"	BUTTWELD
2	1/4"	BUTTWELD
3	1/4"	BUTTWELD
4	1/4"	BUTTWELD
5	1/4"	BUTTWELD
6	1/4"	BUTTWELD
7	1/4"	BUTTWELD
8	1/4"	BUTTWELD
9	1/4"	BUTTWELD
10	1/4"	BUTTWELD
11	1/4"	BUTTWELD
12	1/4"	BUTTWELD
13	1/4"	BUTTWELD
14	1/4"	BUTTWELD
15	1/4"	BUTTWELD
16	1/4"	FIELDWELD
17	1/4"	FIELDWELD
18	1/4"	BUTTWELD
19	1/4"	BUTTWELD
20	1/4"	BUTTWELD
21	1/4"	BUTTWELD
22	1/4"	BUTTWELD
23	1/4"	BUTTWELD
24	1/4"	FIELDWELD
25	1/4"	BUTTWELD
26	1/4"	BUTTWELD
27	1/4"	BUTTWELD
28	1/4"	BUTTWELD
29	1/4"	BUTTWELD
30	1/4"	BUTTWELD



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	38.4M	1/4"	PIPE CS, EN 10217-1 P235TR1	CARBON STEEL
FITTINGS				
2	14	1/4"	ELBOW 90° CS RL - BW, EN 10253-1, P235TR1	CARBON STEEL

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1/4"	1168MM
2	1/4"	203MM
3	1/4"	5678MM
4	1/4"	999MM
5	1/4"	681MM
6	1/4"	4436MM
7	1/4"	674MM
8	1/4"	6001MM
9	1/4"	6001MM
10	1/4"	4546MM
11	1/4"	751MM
12	1/4"	145MM
13	1/4"	499MM
14	1/4"	6001MM
15	1/4"	29MM
16	1/4"	454MM
17	1/4"	109MM

Rev.	Modification										Name	Date
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.												
Tolerance for dimensions without tol. according to ISO 2768-mK										Name	Date	Material
More than	0.5	3	6	30	120	400	1000	2000		Drew	18/09/2025	316L
less	3	6	30	120	400	1000	2000	4000			18/09/2025	Weight (kg)
Machine Tool	±	±	±	±	±	±	±	±		Checked		
Welded	0.1	0.1	0.2	0.3	0.5	0.5	1.2	2		Verified		
Customer:	0.5	1	1.5	2	3					Format: 6		
A2										ALINVEST		

ALINVEST		ALINVEST	
Scale:		Scale:	
1:15		1:15	
Project Method:		Project Method:	
2558-3111-TMT-M-ESR40-3		2558-3111-TMT-M-ESR40-3	
Customer Number		Customer Number	
-		-	
Revision		Revision	
A		A	
Sheet		Sheet	
39		39	

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Furnaces & Refractories

2558-3111-TMT-M-ESR40-3

Customer Number

-

Revision

A

Sheet

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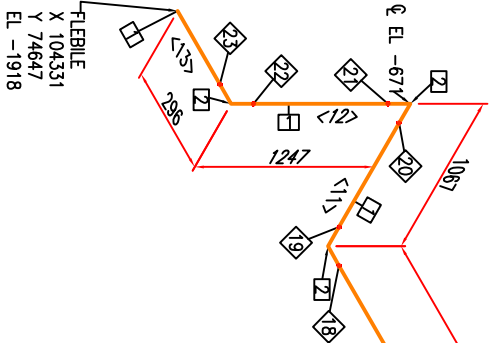
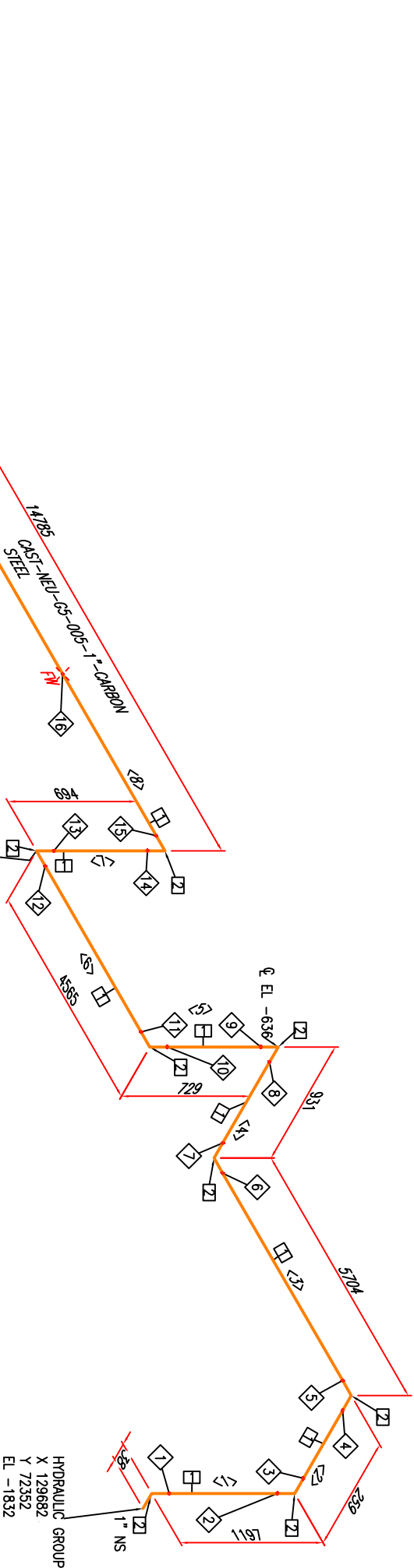




WELDING LIST		
ID	DN "	TYPE
1	1"	BUTTWELD
2	1"	BUTTWELD
3	1"	BUTTWELD
4	1"	BUTTWELD
5	1"	BUTTWELD
6	1"	BUTTWELD
7	1"	BUTTWELD
8	1"	BUTTWELD
9	1"	BUTTWELD
10	1"	BUTTWELD
11	1"	BUTTWELD
12	1"	BUTTWELD
13	1"	BUTTWELD
14	1"	BUTTWELD
15	1"	BUTTWELD
16	1"	FIELDWELD
17	1"	FIELDWELD
18	1"	BUTTWELD
19	1"	BUTTWELD
20	1"	BUTTWELD
21	1"	BUTTWELD
22	1"	BUTTWELD
23	1"	BUTTWELD

MATERIAL LIST		
ID	QTY	DESCRIPTION
PIPING		
1	30.7M	PIPE CS, EN 10217-1 P235TR1
FITTINGS		
2	11	ELBOW 90° CS RL - BW, EN 10253-1, P235TR1
CARBON STEEL		

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1"	1121MM
2	1"	184MM
3	1"	5629MM
4	1"	856MM
5	1"	654MM
6	1"	4490MM
7	1"	618MM
8	1"	2710MM
9	1"	6000MM
10	1"	6001MM
11	1"	992MM
12	1"	1172MM
13	1"	259MM



Rev.	Modification							Name	Date
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.									
Tolerances for dimensions without tol. according to ISO 2768-mK									
	More than	0.5	3	6	30	120	400	1000	2000
	Less	3	6	30	120	400	1000	2000	4000
Machine Tool		±0.1	±0.2	±0.3	±0.5	±0.8	±1	±2	±3
Welded		±0.1	±0.2	±0.3	±0.5	±0.8	±1	±2	±3
								Verified	
									</

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Furnaces & Refractories

2558-3111-TMT-M-ESR40-5

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Sheet

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Project

Method:

2558-3111-TMT-M-ESR40-5

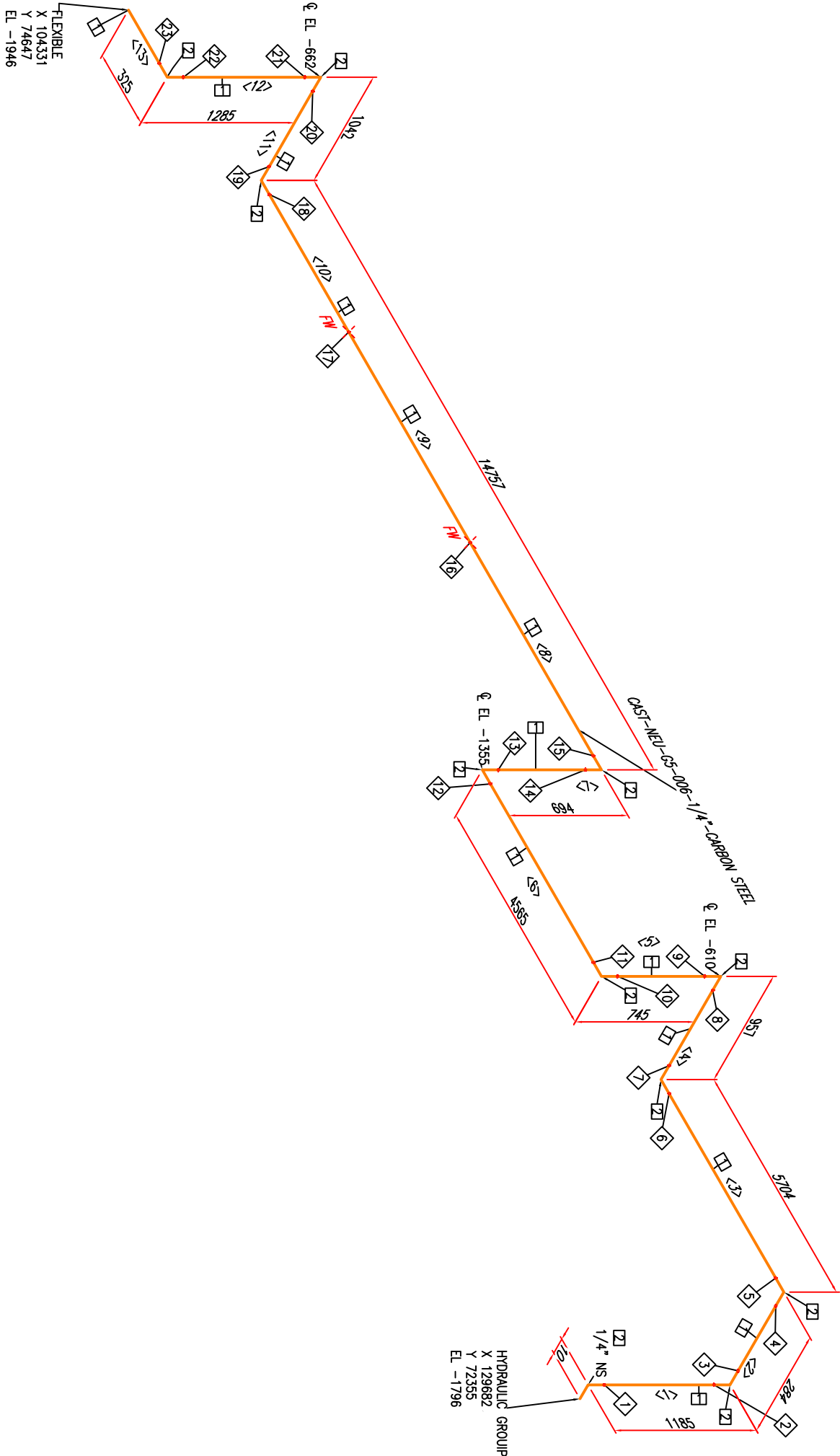
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Revision

A



WELDING LIST		
ID	DN "	TYPE
1	1/4"	BUTTWELD
2	1/4"	BUTTWELD
3	1/4"	BUTTWELD
4	1/4"	BUTTWELD
5	1/4"	BUTTWELD
6	1/4"	BUTTWELD
7	1/4"	BUTTWELD
8	1/4"	BUTTWELD
9	1/4"	BUTTWELD
10	1/4"	BUTTWELD
11	1/4"	BUTTWELD
12	1/4"	BUTTWELD
13	1/4"	BUTTWELD
14	1/4"	BUTTWELD
15	1/4"	BUTTWELD
16	1/4"	FIELDWELD
17	1/4"	FIELDWELD
18	1/4"	BUTTWELD
19	1/4"	BUTTWELD
20	1/4"	BUTTWELD
21	1/4"	BUTTWELD
22	1/4"	BUTTWELD
23	1/4"	BUTTWELD



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	31.4M	1/4"	PIPE CS, EN 10217-1 P235TR1	CARBON STEEL
FITTINGS				
2	11	1/4"	ELBOW 90° CS RL - BW, EN 10253-1, P235TR1	CARBON STEEL

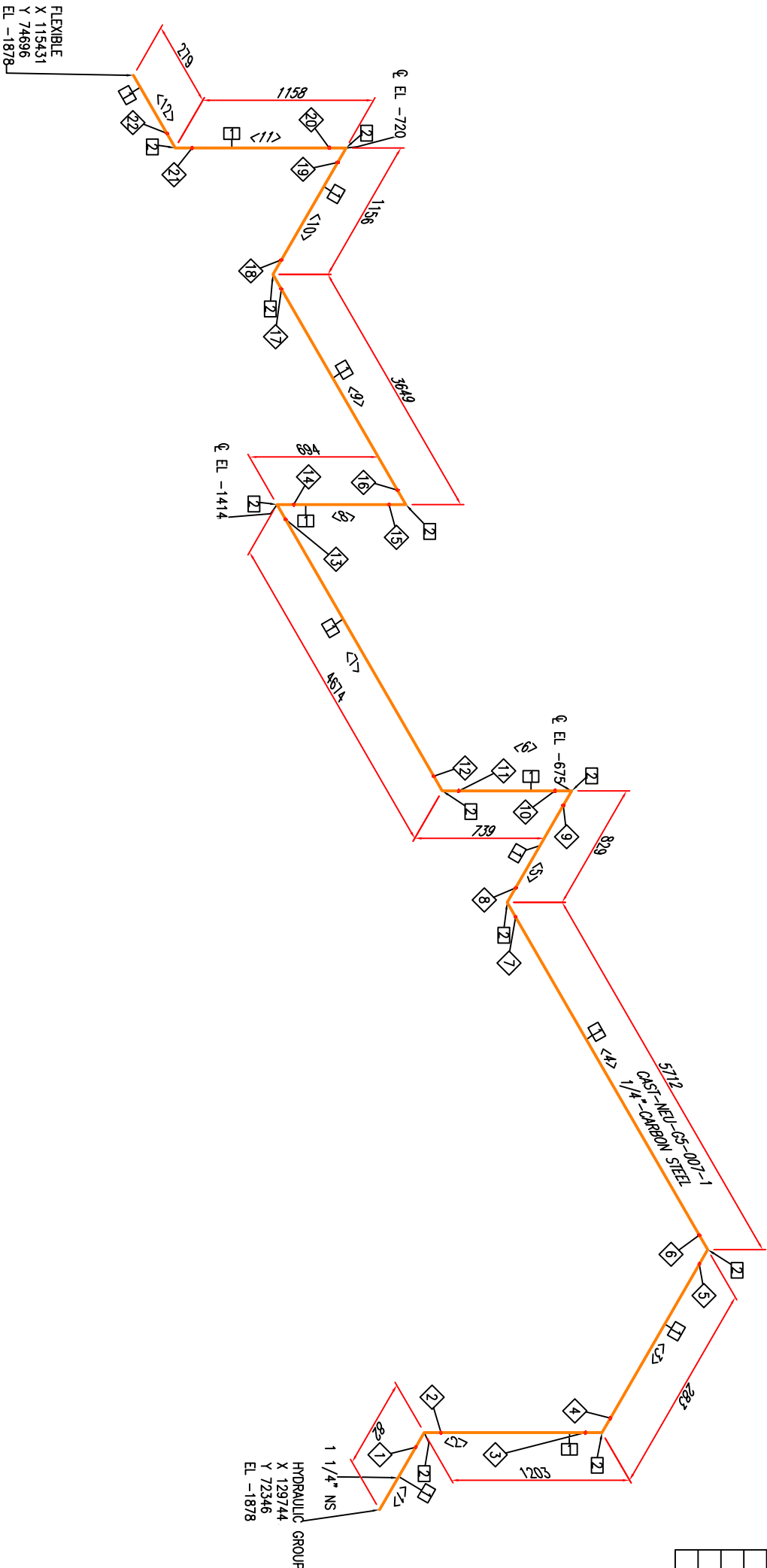
PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1/4"	1168MM
2	1/4"	265MM
3	1/4"	5685MM
4	1/4"	937MM
5	1/4"	725MM
6	1/4"	4546MM
7	1/4"	674MM
8	1/4"	6000MM
9	1/4"	6000MM
10	1/4"	2737MM
11	1/4"	1023MM
12	1/4"	1265MM
13	1/4"	316MM

Rev.		Modification										Name		Date			
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.																	
Tolerances for dimensions without tol. according to ISO 2768-mK												Name		Date		Material	
More than		0.5	3	6	30	120	400	1000	2000	Drew		18/09/2025		316L			
Less		3	6	30	120	400	1000	2000	4000	Checked		18/09/2025		Weight (kg)			
Machine Tool		±	±	±	±	±	±	±	±	18/09/2025							
Welded		0.1	±	±	±	±	±	±	±	Verified							
Customer:		0.5	1	1.5	2	3	Format: 6			Title		ALINVEST					

Scale:		1:15		ALINVEST		ALINVEST		TMT (FVRB-2,7-35)		HYDRAULIC ROUTE	
Project		Method:		Part Number		Revision		Customer Number		Sheet	
insertec		Furnaces & Refractories		2558-3111-TMT-M-ESR40-6		A		-		69	



WELDING LIST		
ID	DN "	TYPE
1	1 1/4"	BUTTWELD
2	1 1/4"	BUTTWELD
3	1 1/4"	BUTTWELD
4	1 1/4"	BUTTWELD
5	1 1/4"	BUTTWELD
6	1 1/4"	BUTTWELD
7	1 1/4"	BUTTWELD
8	1 1/4"	BUTTWELD
9	1 1/4"	BUTTWELD
10	1 1/4"	BUTTWELD
11	1 1/4"	BUTTWELD
12	1 1/4"	BUTTWELD
13	1 1/4"	BUTTWELD
14	1 1/4"	BUTTWELD
15	1 1/4"	BUTTWELD
16	1 1/4"	BUTTWELD
17	1 1/4"	BUTTWELD
18	1 1/4"	BUTTWELD
19	1 1/4"	BUTTWELD
20	1 1/4"	BUTTWELD
21	1 1/4"	BUTTWELD
22	1 1/4"	BUTTWELD



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	19.5M	1 1/4"	PIPE CS, EN 10217-1 P235TR1	CARBON STEEL
FITTINGS				
2	11	1 1/4"	ELBOW 90° CS RL - BW, EN 10253-1, P235TR1	CARBON STEEL

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1 1/4"	35MM
2	1 1/4"	1108MM
3	1 1/4"	187MM
4	1 1/4"	5616MM
5	1 1/4"	733MM
6	1 1/4"	644MM
7	1 1/4"	4579MM
8	1 1/4"	598MM
9	1 1/4"	3553MM
10	1 1/4"	1061MM
11	1 1/4"	1062MM
12	1 1/4"	231MM

Rev.		Modification										Name		Date			
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.																	
Tolerances for dimensions without tol. according to ISO 2768-mK												Name		Date		Material	
More than		0.5	3	6	30	120	400	1000	2000			18/09/2025		316L			
Less		3	6	30	120	400	1000	2000	4000	Draw		18/09/2025		Weight (kg)			
Machine Tool		±	±	±	±	±	±	±	±	Checked		18/09/2025					
Welded		0.1	±	±	±	±	±	±	±	Verified		19/09/2025					
Customer:		0.5	±	±	±	±	±	±	±	Format: 6		Title		AI INVEST			

ALINVEST

Scale: 1:15

Project Method:

2558-3111-TMT-M-ESR40-7

Customer Number

-

ALINVEST

Scale: 1:15

Project Method:

2558-3111-TMT-M-ESR40-7

Customer Number

-

insertec

Furnaces & Refractories

316L

Weight (kg)

19/09/2025

3

2

1

Rev.

Modification

Nome

Date

This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.

Tolerances for dimensions without tol. according to ISO 2768-mK

More than

Less

Machine Tool

Welded

Customer:

0.5

3

6

30

120

400

1000

2000

4000

±

±

±

±

±

±

±

±

0.1

±

±

±

±

±

±

±

0.5

±

±

±

±

±

±

±

Format: 6

Title

ALINVEST

Scale: 1:15

Project Method:

2558-3111-TMT-M-ESR40-7

Customer Number

-

insertec

Furnaces & Refractories

316L

Weight (kg)

19/09/2025

3

2

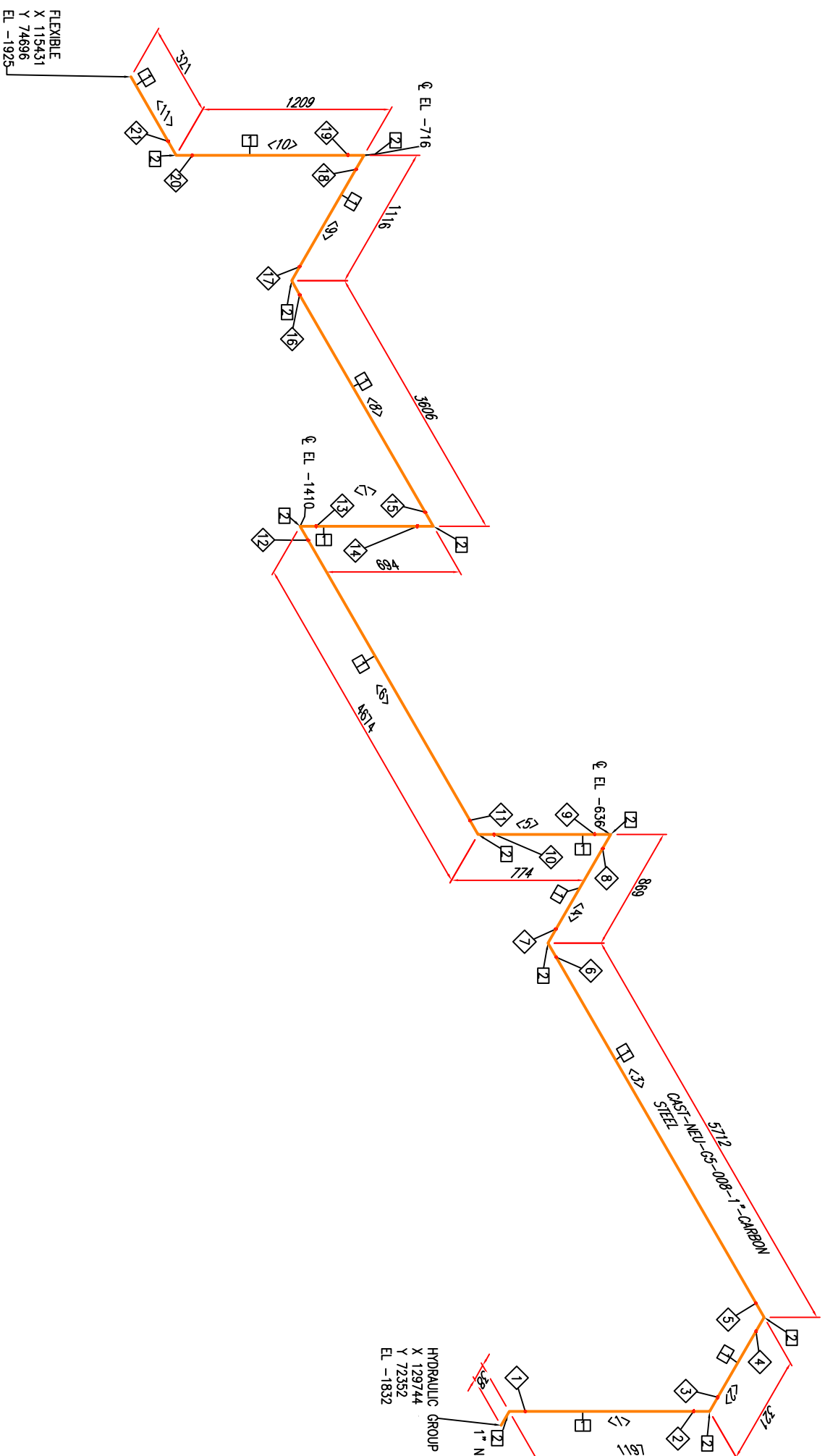
1




WELDING LIST		
ID	DN "	TYPE
1	1"	BUTWELD
2	1"	BUTWELD
3	1"	BUTWELD
4	1"	BUTWELD
5	1"	BUTWELD
6	1"	BUTWELD
7	1"	BUTWELD
8	1"	BUTWELD
9	1"	BUTWELD
10	1"	BUTWELD
11	1"	BUTWELD
12	1"	BUTWELD
13	1"	BUTWELD
14	1"	BUTWELD
15	1"	BUTWELD
16	1"	BUTWELD
17	1"	BUTWELD
18	1"	BUTWELD
19	1"	BUTWELD
20	1"	BUTWELD
21	1"	BUTWELD

MATERIAL LIST			
ID	QTY	DN "	MATERIAL
PING			
1	19.7M	1"	PIPE CS, EN 10217-1 P235TR1
FITTINGS			
2	11	1"	ELBOW 90° CS RL - BW, EN 10253-1, P235TR1
			CARBON STEEL

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	1"	1121MM
2	1"	246MM
3	1"	5636MM
4	1"	794MM
5	1"	699MM
6	1"	4569MM
7	1"	618MM
8	1"	3531MM
9	1"	1040MM
10	1"	1133MM
11	1"	284MM



Rev.		Modification	Name	Date
<p>This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.</p>				
Tolerance for dimensions without tol. according to ISO 2768-mK:				
More than	0,5	3	6	30
Less	3	6	30	120
Machine Tool	±	±	±	±
Welded	0,1	0,1	0,3	0,5
Customer:	0,5	1	1,5	2
ALINVEST				
Project Method: 				
Scale: 1:15				
Fchm: A2				
Title				
Part Number		Name		
2558-3111-TMT-M-ESR40-8		Date		
Customer Number		Material		
-		18/09/2025		
		18/09/2025		
		Weight [kg]		
		19/08/2025		
Revision		316L		
A				
Sheet				
89				

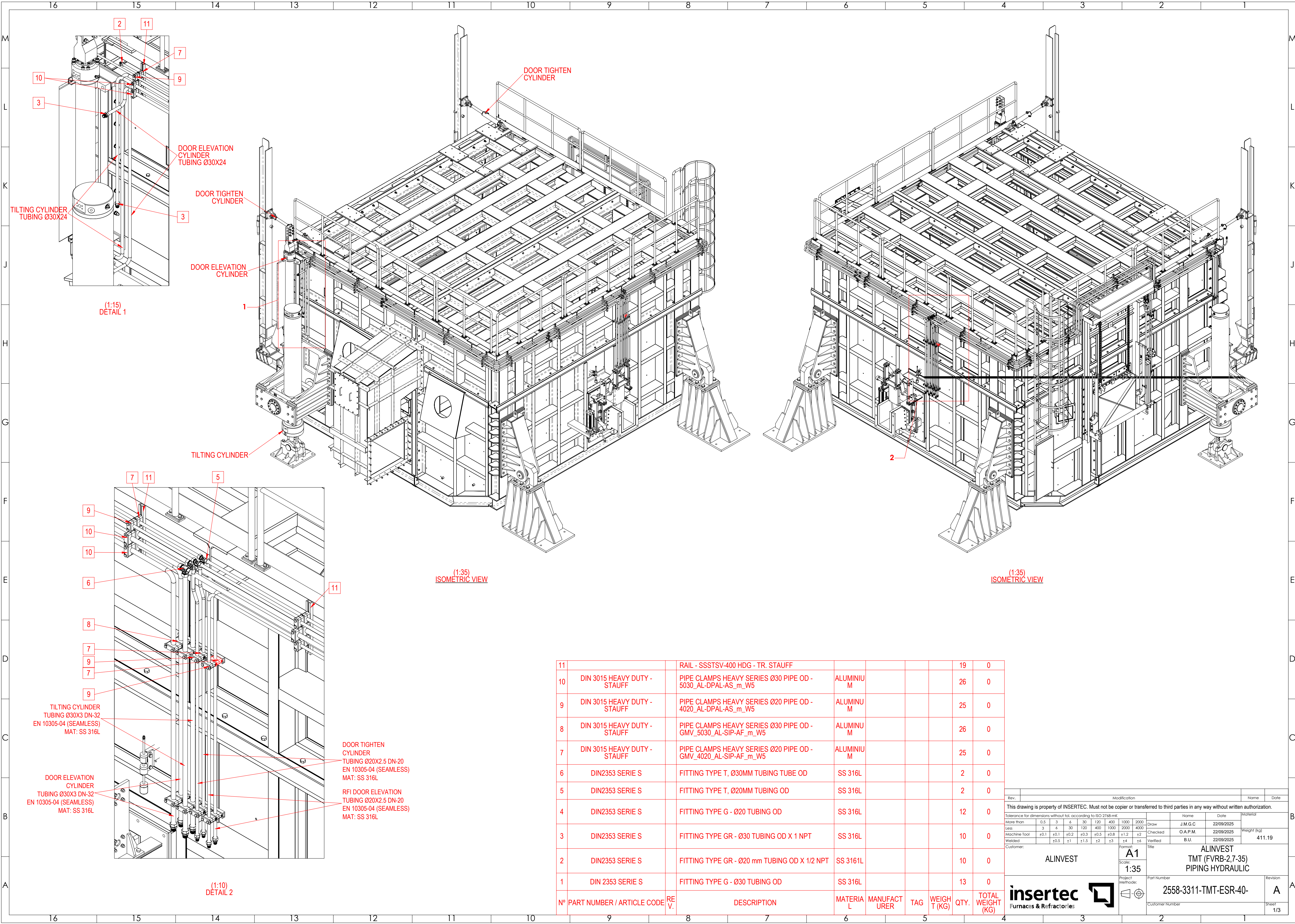




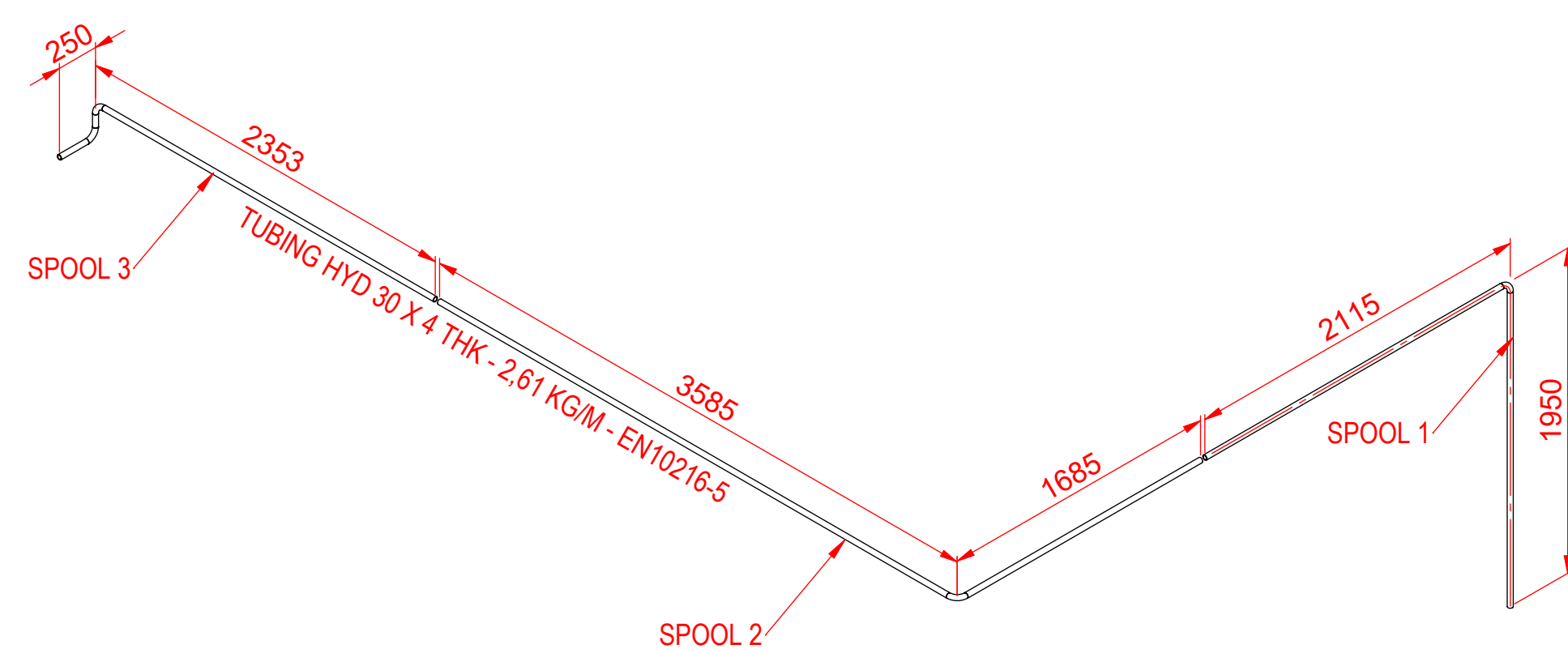
 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## **MELTER 35 – HYDRAULIC INSERTEC SCOPE**

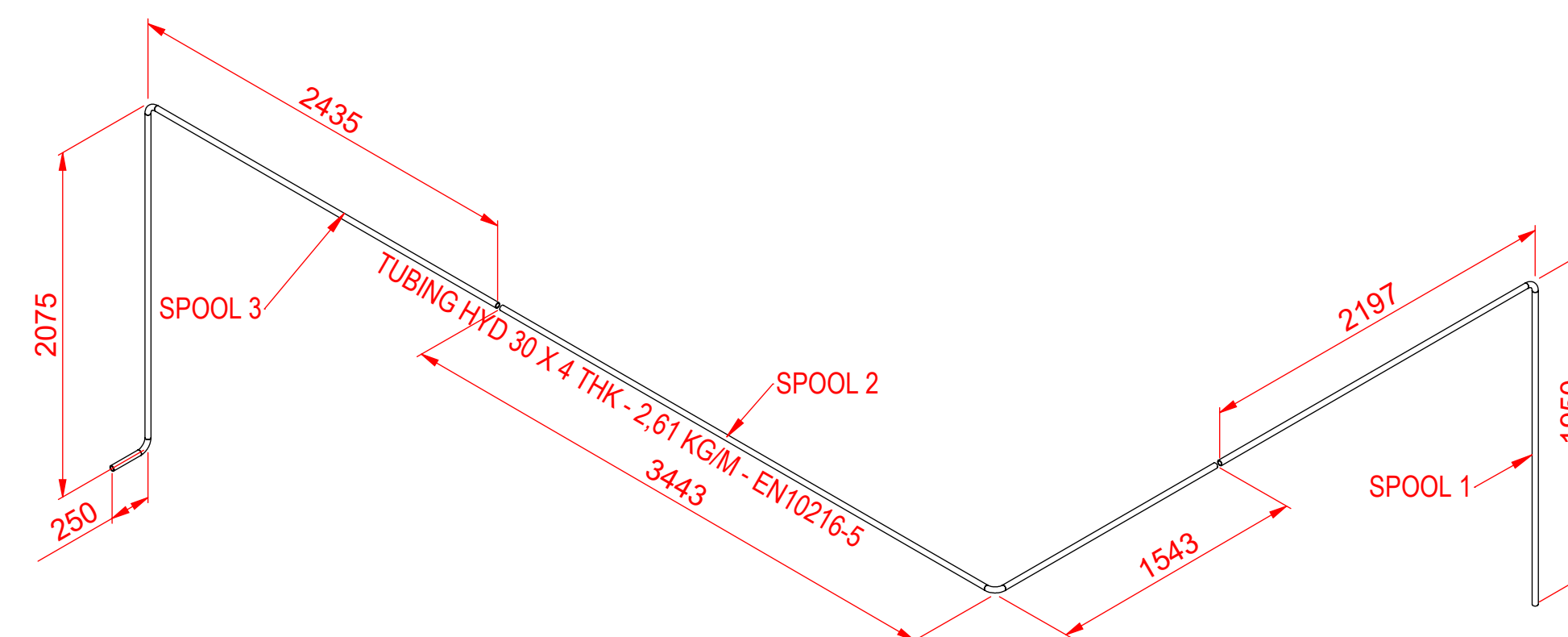




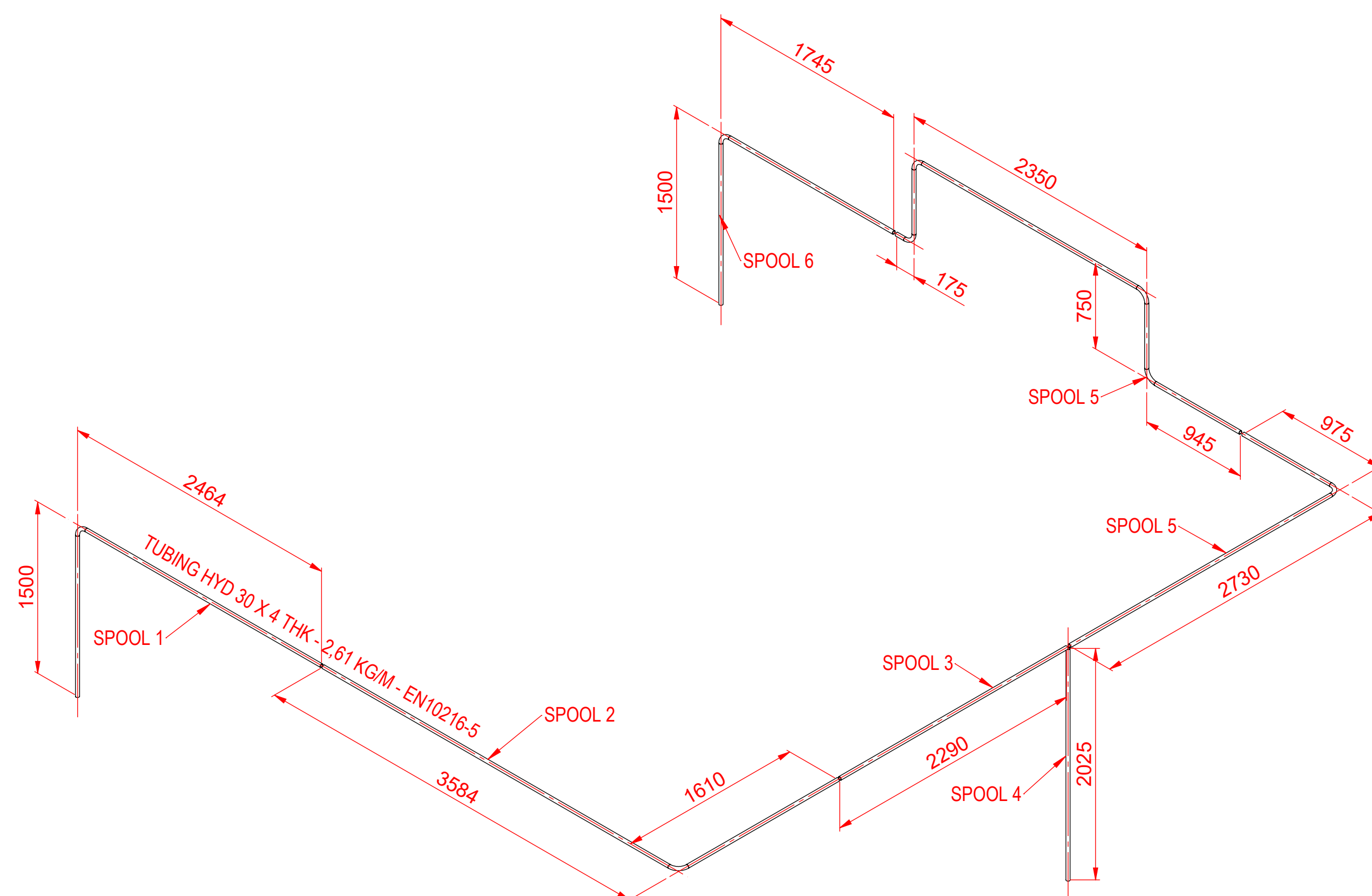




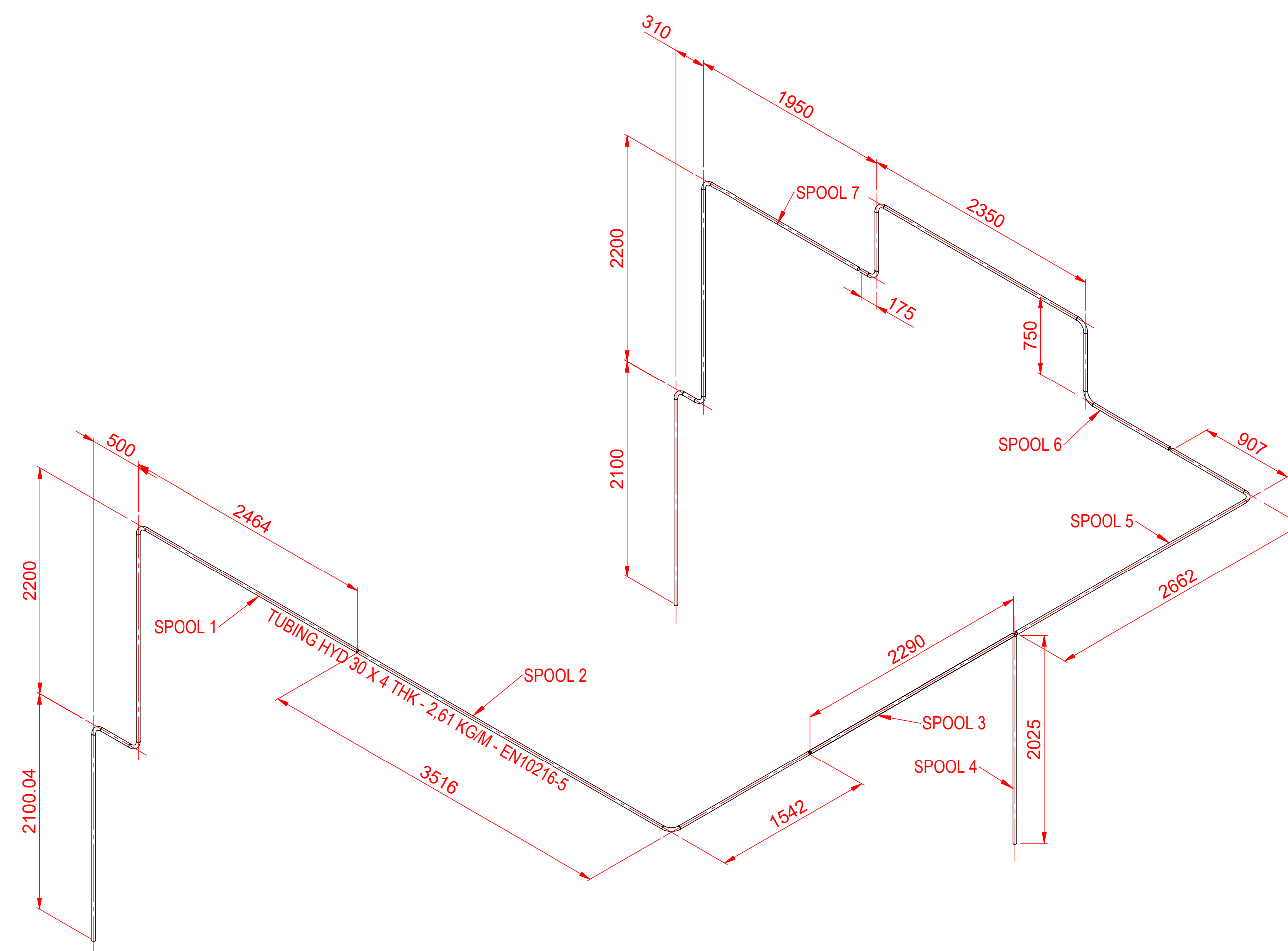
(1:30)  
ISOMETRIC VIEW  
DOOR LINE ELEVATION A




(1:30)  
ISOMETRIC VIEW  
SPOOL DOOR LINE ELEVATION B

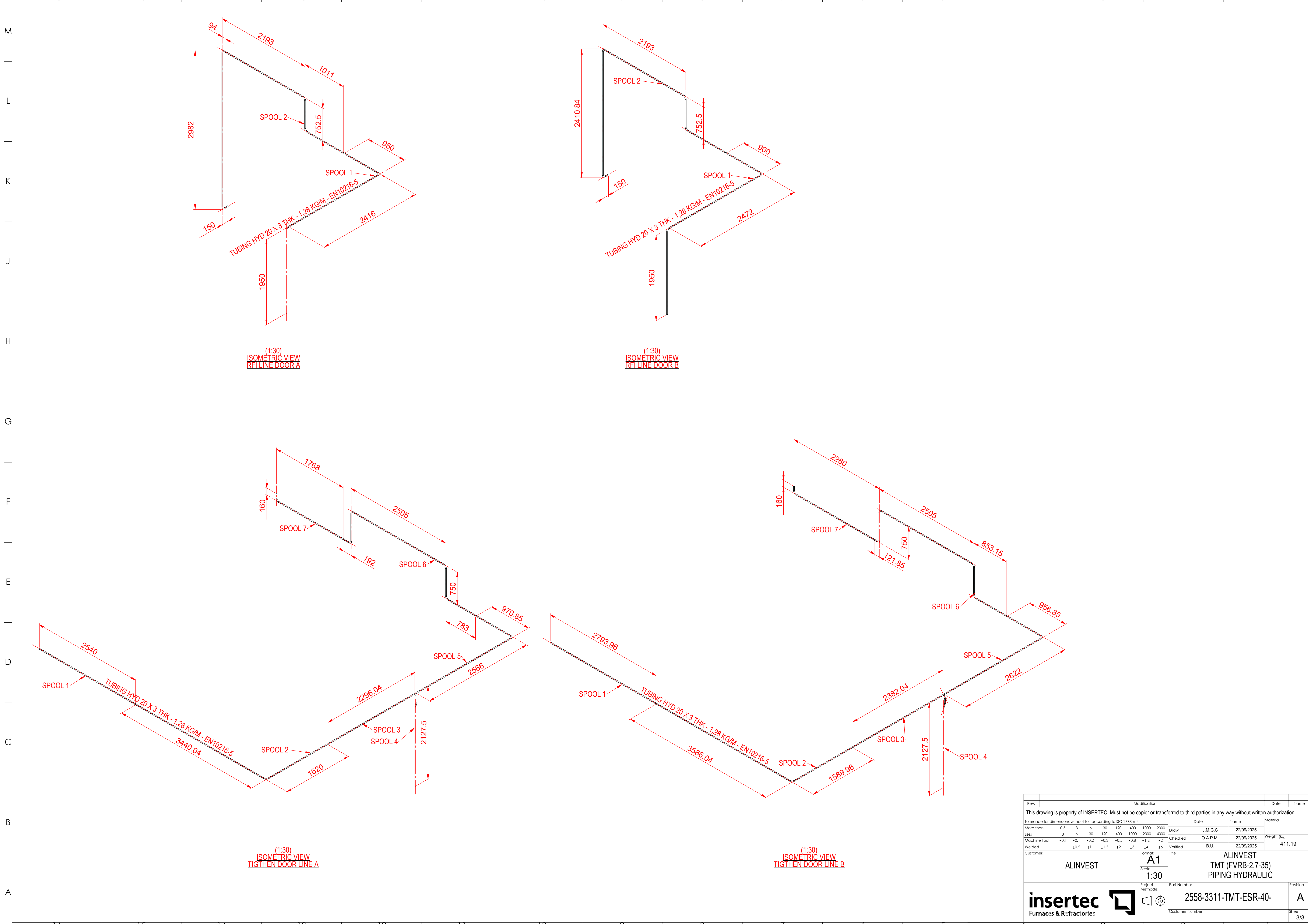



(1:30)  
ISOMETRIC VIEW  
TILTING LINE A



(1:30)  
ISOMETRIC VIEW  
TILTING LINE B

Rev.	Modification										Date	Name
This drawing is property of INTERTEC. Must not be copied or transferred to third parties in any way without written authorization.												
Tolerance for dimensions without tol. according to ISO 2768-mK:									Date	Name	Material	
More than	0.5	3	6	30	120	400	1000	2000	Draw	J.M.G.C	22/09/2025	Weight (kg)
Less	3	6	30	120	400	1000	2000	4000		Checked	O.A.P.M.	
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Checked	O.A.P.M.	22/09/2025	411.19
Welded	±0.5	±1	±1.5	±2	±3	±4	±6	±6	Verified	B.U.	22/09/2025	
Customer:				Format:		Title						
ALINVEST				A1		ALINVEST TMT (FVRB-2-7-35) PIPING HYDRAULIC						
				Scale: 1:30								
				Project Method:		Part Number		Revision				
						2558-3311-TMT-ESR-40-		A				
				Customer Number				Sheet 2/3				



Rev.	Modification										Date	Name		
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.														
Tolerance for dimensions without tol. according to ISO 2768-mK										Date	Name	Material		
More than	0.5	3	6	30	120	400	1000	2000	Draw	J.M.G.C	22/09/2025	Weight (kg)  <b>411.19</b>		
Less	3	6	30	120	400	1000	2000	4000	Checked	O.A.P.M.	22/09/2025			
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	B.U.	22/09/2025			
Welded	±0.5	±1	±1.5	±2	±3	±4	±6							
Customer:										Format: <b>A1</b> Scale: <b>1:30</b>			Title  <b>ALINVEST TMT (FVRB-2,7-35) PIPING HYDRAULIC</b>	
<b>insertec</b> Furnaces & Refractories										Project Method:		Part Number	Revision	
												<b>2558-3311-TMT-ESR-40-</b>	<b>A</b>	
												Customer Number	Sheet	
													<b>3/3</b>	

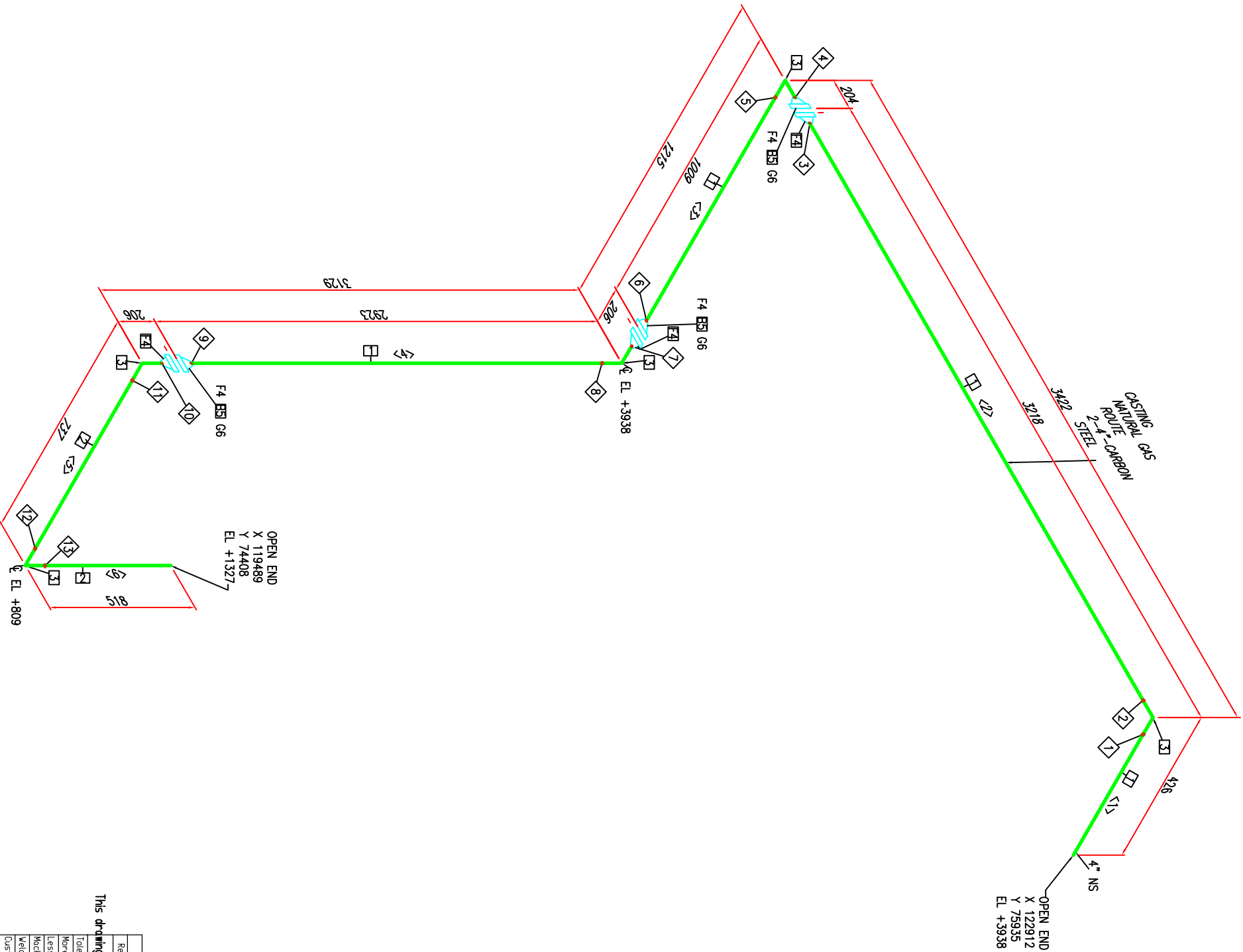


 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## **MELTER 35 – NATURAL GAS AIB SCOPE**



WELDING LIST		
ID	DN "	TYPE
1	4"	BUTTWELD
2	4"	BUTTWELD
3	4"	WELD
4	4"	BUTTWELD
5	4"	BUTTWELD
6	4"	WELD
7	4"	BUTTWELD
8	4"	BUTTWELD
9	4"	WELD
10	4"	BUTTWELD
11	4"	BUTTWELD
12	4"	BUTTWELD
13	4"	BUTTWELD



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	6.9M	4"	PIPE CS, EN 10217-1 P235TR1	CARBON STEEL
2	0.8M	4"	PIPE CS, EN 10217-1 P235TR1	CARBON STEEL
FITTINGS				
3	5	4"	ELBOW 90° CS RL - BW, EN 10253-1, P235TR1	CARBON STEEL
FLANGES				
4	6	4"	FLANGE WN CS, EN 1092-1, DIN2633	CARBON STEEL
BOLTS, GASKETS				
5	24	1"x120	STUD BOLT,	
6	3	4"	GASKET	

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	4"	27.4MM
2	4"	301.3MM
3	4"	808MM
4	4"	2719MM
5	4"	433MM
6	4"	368MM

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Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.													
Rev.		Modification										None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK													
More than		0.5	3	6	30	120	400	1000	2000	4000	Draw	None	Date
Less		3	6	30	120	400	1000	2000	4000	Checked			18/09/2005
Machine Tool		0.1	0.125	0.25	0.5	1	2	4	8	16	32	64	128
Welded		0.1	0.125	0.25	0.5	1	2	4	8	16	32	64	128
Customer		0.1	0.125	0.25	0.5	1	2	4	8	16	32	64	128
Material													
PE35TR1													
Weight (kg)													

insertec

Furnaces & Refractories

Project

Methods

Port Number

Customer Number

2258-331-TMT-M-ESR25-1

-

Revision

A

Sheet

2/2

ALINVEST

ALINVEST

TMT (FVRB-2,7-35)

NATURAL GAS ROUTE

Scale:

1:15

Date

18/09/2025

18/09/2025

19/09/2025

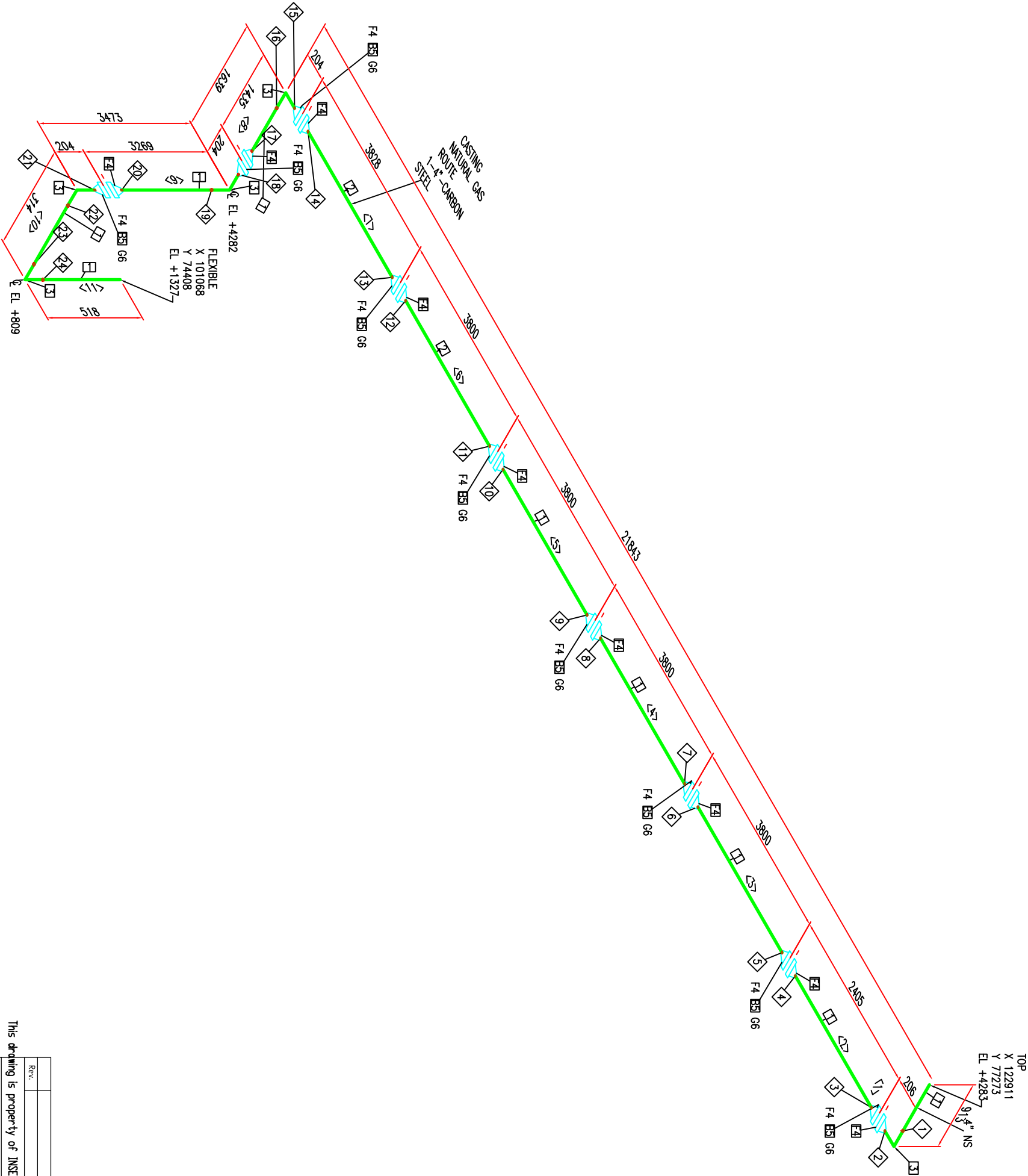
Material

P235TR1

Weight (kg)



WELDING LIST		
ID	DN "	TYPE
1	4"	BUTTWELD
2	4"	BUTTWELD
3	4"	WELD
4	4"	WELD
5	4"	WELD
6	4"	WELD
7	4"	WELD
8	4"	WELD
9	4"	WELD
10	4"	WELD
11	4"	WELD
12	4"	WELD
13	4"	WELD
14	4"	WELD
15	4"	BUTTWELD
16	4"	BUTTWELD
17	4"	WELD
18	4"	BUTTWELD
19	4"	BUTTWELD
20	4"	WELD
21	4"	BUTTWELD
22	4"	BUTTWELD
23	4"	BUTTWELD
24	4"	BUTTWELD




MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	18.9M	4"	PIPE CS, EN 10217-1 P235TR1	CARBON STEEL
2	7.5M	4"	PIPE CS, EN 10217-1 P235TR1	CARBON STEEL
FITTINGS				
3	5	4"	ELBOW 90° CS RL - BW, EN 10253-1, P235TR1	CARBON STEEL
FLANGES				
4	18	4"	FLANGE WN CS, EN 1092-1, DN2633	CARBON STEEL
BOLTS, GASKETS				
5	72	1"x120	STUD BOLT,	
6	9	4"	GASKET	

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	4"	761MM
2	4"	2300MM
3	4"	3694MM
4	4"	3694MM
5	4"	3694MM
6	4"	3694MM
7	4"	3722MM
8	4"	1229MM
9	4"	3064MM
10	4"	11MM
11	4"	366MM

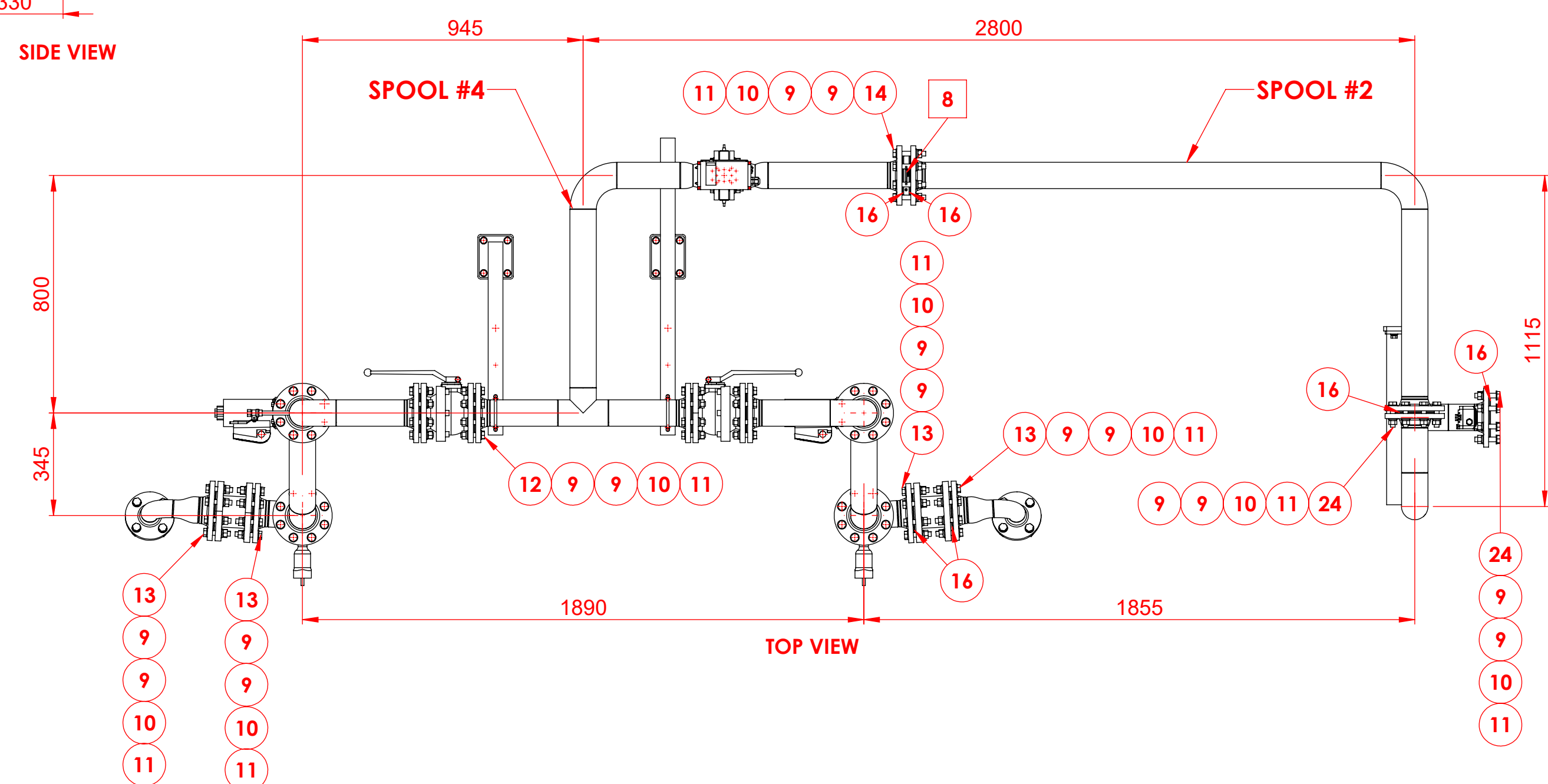
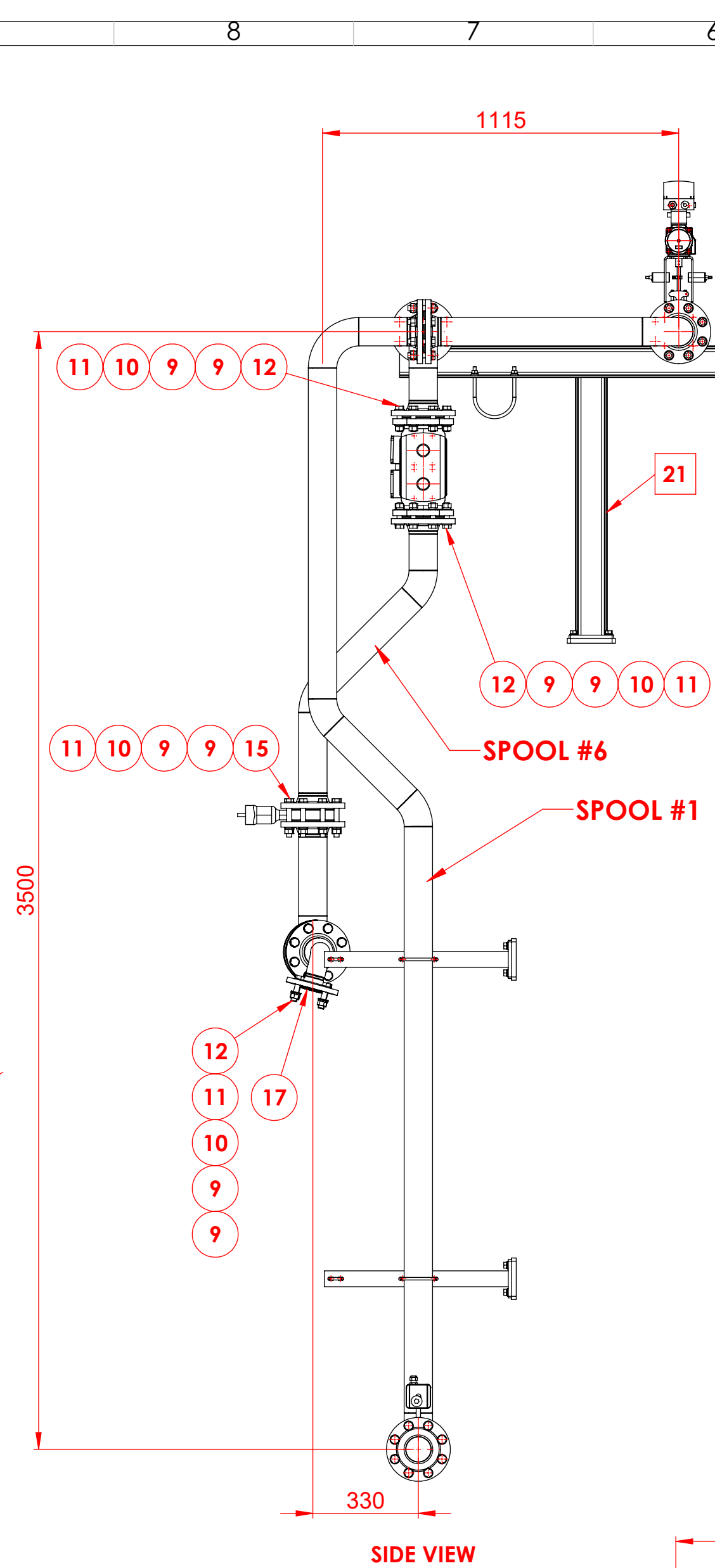
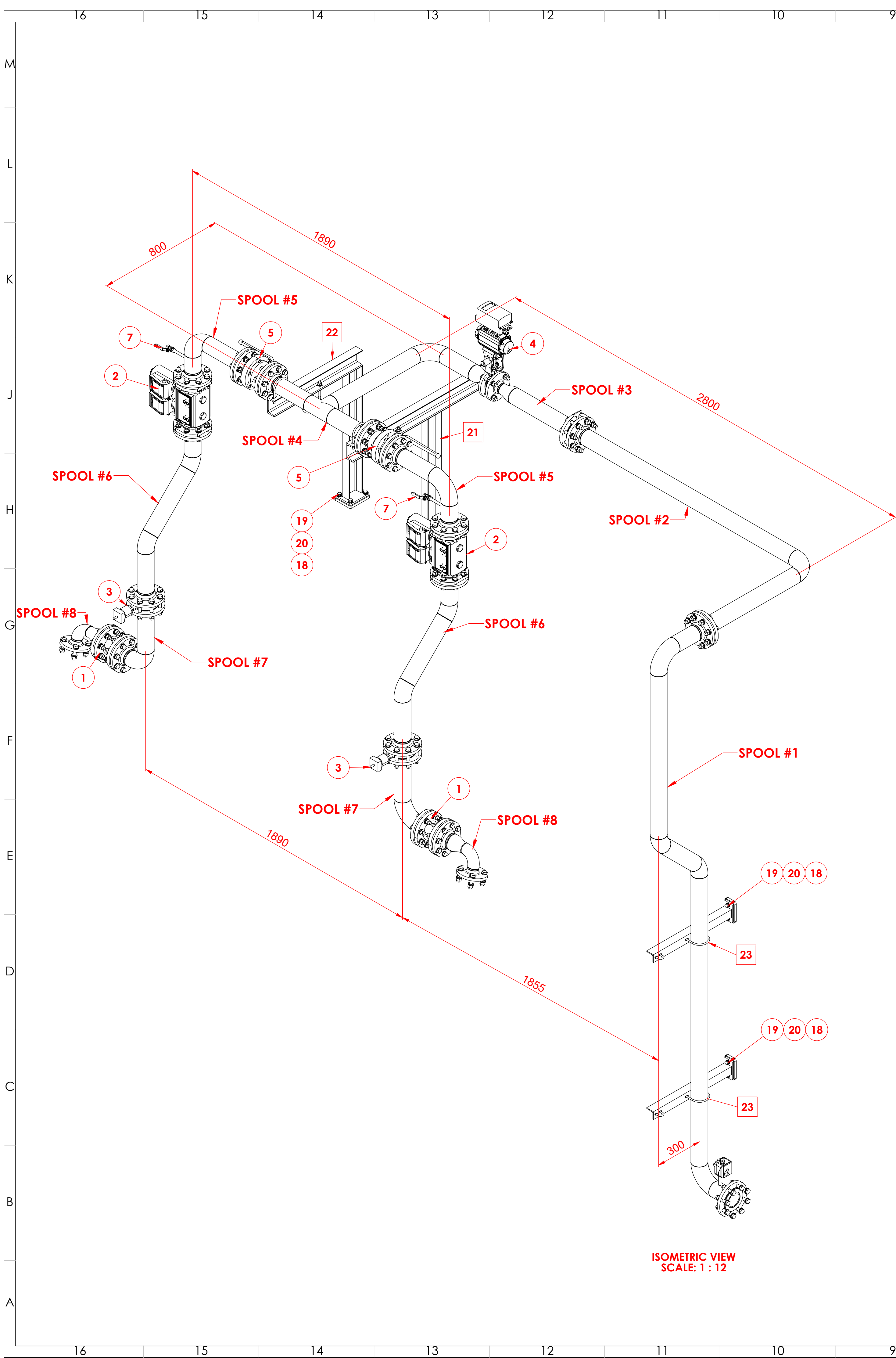
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Rev.		Modification	None	Date								
Tolerance for dimensions without tol. according to ISO 2768-MK												
More than	0.5	3	6	30	120	400	1000	2000		Name	Date	Material
Less	3	6	30	120	400	1000	2000	4000		Draw	18/09/2025	P235TR1
Machine Tool	+	+	+	+	+	+	+	+		Checked	18/09/2025	Weight (kg)
Welded	U1	U1	U2	U2	U2	U2	U2	U2		Verified	19/09/2025	
Customer:	U5	1	15	2	3					Project	6	Title
ALINVEST												
Scale: A2												
1:15												
ALINVEST												
TMT (FVRB-2,7-35)												
NATURAL GAS ROUTE												
Project												
Methods												
Port Number												
2558-3312-TMT-M-ESR25-1												
Customer Number												
-												
Revision												
A												
Sheet												
1/2												






 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

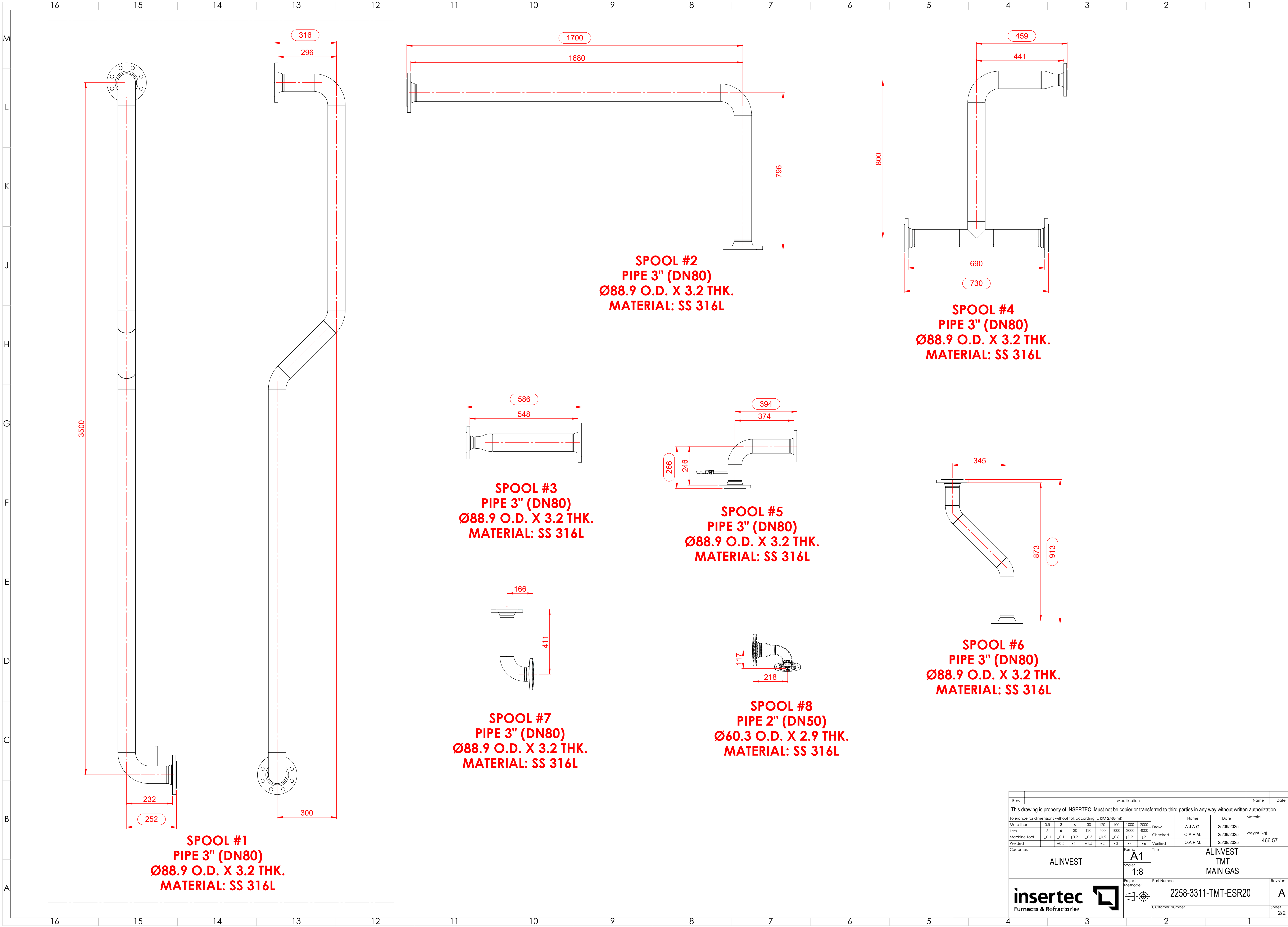
## **MELTER 35 – NATURAL GAS INSERTEC SCOPE**



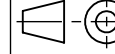


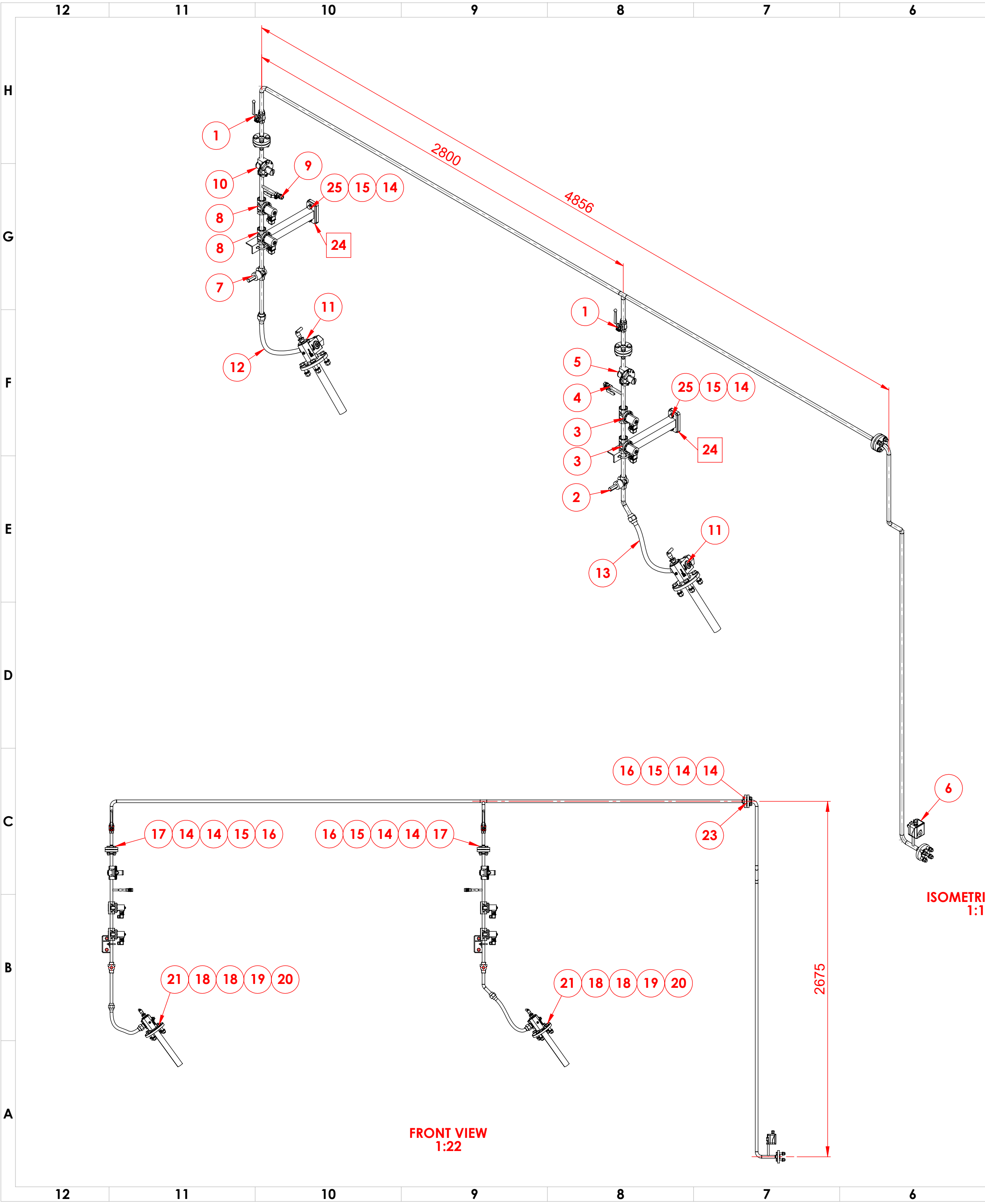
24	DIN933-M16X7.5-8.8	A	BOLT M16X7.5	8.8			0.16	16	2.56
23	2258-3311-TMT-ESR20-GEN03		SUPPORT 3	S275JR			3.89	2	7.78
22	2258-3311-TMT-ESR20-GEN02		SUPPORT 2	S275JR			18.91	1	18.91
21	2258-3311-TMT-ESR20-GEN01		SUPPORT 1	S275JR			22.58	1	22.58
20	DIN127-M12-ST	A	WASHER M12	ST			0	12	0
19	DIN933-M12X30-8.8	A	BOLT M12X30	8.8			0.05	12	0.6
18	DIN125-M12-ST	A	WASHER M12	ST			0.01	12	0.12
17	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN50	FIBERGLASS W/NBR			-	4	0
16	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN80	FIBERGLASS W/NBR			-	20	0
15	DIN933-M16X110-8.8	A	BOLT M16X110	8.8			0.21	16	3.36
14	DIN933-M16X100-8.8	A	BOLT M16X100	8.8			0.2	12	2.4
13	DIN933-M16X80-8.8	A	BOLT M16X80	8.8			0.17	32	5.44
12	DIN933-M16X70-8.8	A	BOLT M16X70	8.8			0.15	72	10.8
11	DIN934-M16-8	A	NUT M16	8			0.03	148	4.44
10	DIN127-M16-ST	A	WASHER M16	ST			0.01	148	1.48
9	DIN125-M16-ST	A	WASHER M16	ST			0.01	296	2.96
8	-	-	ANNUAL CHAMBER ORIFICE ASSEMBLY; FOR INSTALLATION BETWEEN 2 FLANGES DIFFERENTIAL PRESSURE: 15 MBAR, DN80, 4 CONNECTIONS 1/4" VGS=401 NM3/H, PE=230 MBAR	COMMERCIAL			-	1	0
7	-	-	MANUAL OPERATION IN GAS, AIR, WATER AND OIL RP THREAD - PE MAX 5BAR ENVIRONMENTAL TEMP. -20°C TO +60°C	COMMERCIAL			-	2	0
6	-	-	PRESSURE SWITCH RANGE 30 - 150 MBAR, OVERPRESSURE, VACUUM AND DIFFERENTIAL PRESSURE EL CONNECTION WITH SCREW TERMINAL MANUAL ADJUSTMENT OF SET POINT EG CERTIFICATE	COMMERCIAL			-	1	0
5	-	-	BALL VALVE FOR MANUAL OPERATION IN GAS, AIR, WATER AND OIL RP THREAD - PE MAX 16 BAR TEMP. -20°C TO +40°C EG APPROVAL AND CERTIFICATE	COMMERCIAL			-	2	0
4	-	-	CONTROL BUTTERFLY VALVE FOR INSTALLATION BETWEEN 2 FLANGES DN 50 PN 10 FOR NATURAL GAS JASTA GDS, DWVG CERT. COMPLETE ASSEMBLED WITH PNEUMATIC ACTUATOR; OPEN/CLOSE 3 - 5 SECONDS MAX. AND SIEMENS SIPART PS 2, TYPE: 6DRS010-0NG01-0AA0-Z C20, 4-20 MA IN- AND OUTPUT, 24VDC	COMMERCIAL			-	1	0
3	-	-	CONTROL VALVE, MANUAL ADJUSTMENT REGULATING RATIO 10:1 EG TYPE EXAMINATION CERTIFICATE FOR MEDIUM TEMPERATURE RANGE -20°C BIS +60°C INTERMEDIATE FLANGE FLAP	COMMERCIAL			-	2	0
2	-	-	DOUBLE SHUT OFF VALVE 230 VAC , AS GAS SAFETY SHUT OFF VALVE ACC EN161 CLASS A 1ST VALVE FAST OPEN / FAST CLOSE, 2ND VALVE SLOW OPEN / FAST CLOSE FLOW ADJUSTABLE SOLENOID ACTUATOR 230 VAC, 50/60 Hz, 24 VDC LIMIT SWITCH ELECTRICAL CONNECTION M20 MAX OPERATION PRESSURE 500 MBAR IP 65 EG CERTIFICATE	COMMERCIAL			-	2	0
1	-	-	COMPENSATOR DN 80 FOR GAS, AIR AND WATER, PE MAX. 10 BAR EXECUTION WITH LOOSE FLANGES DRILLED ACCORDING TO DIN 2501 PN 10 DIN-DVGW TESTED AND REGISTERED OPERATING TEMPERATURE - FOR AIR: -20°C BIS +500°C - FOR GAS: -20 BIS + 150°C - FOR WATER: 0° BIS + 100°C	COMMERCIAL			-	2	0
Nº	PART NUMBER / ARTICLE CODE	REV.	DESCRIPTION	MATERIAL	MANUFACTURER	TAG	WEIGHT (KG)	QTY.	TOTAL WEIGHT (KG)

Rev.											Name		Date									
Modification																						
This drawing is property of INSERTEC. ISO must be copied or transferred to third parties in any way without written authorization.																						
Tolerance for dimensions without call, according to ISO 2768-mK																						
More than	0,5	3	6	30	120	400	1000	2000	<table><tr><td>Draw</td><td>Name</td><td>Date</td><td rowspan="4">Material</td></tr><tr><td>Checked</td><td>A.J.A.G.</td><td>25/09/2025</td></tr><tr><td>Verified</td><td>O.A.P.M.</td><td>25/09/2025</td></tr><tr><td>Weight [kg]</td><td colspan="2">466.57</td></tr></table>	Draw	Name	Date	Material	Checked	A.J.A.G.	25/09/2025	Verified	O.A.P.M.	25/09/2025	Weight [kg]	466.57	
Draw	Name	Date	Material																			
Checked	A.J.A.G.	25/09/2025																				
Verified	O.A.P.M.	25/09/2025																				
Weight [kg]	466.57																					
Less	3	6	30	120	400	1000	2000	4000														
Machine Tool	+0.1	+0.1	+0.2	+0.3	+0.5	+0.8	+1.2	+2														
Welded		+0.5	±1	±1.5	±2	±3	±4	±6														
Customer:					Format:		Title															
ALINVEST					A1		ALINVEST TMT (FVRB-2.7-35) MAIN GAS															
					Scale:																	
					1:15																	
 Furnaces & Refractories					Project Method:		Part Number					Revision										
					 		2258-3311-TMT-ESR20					A										
							Customer Number					Sheet 1/2										




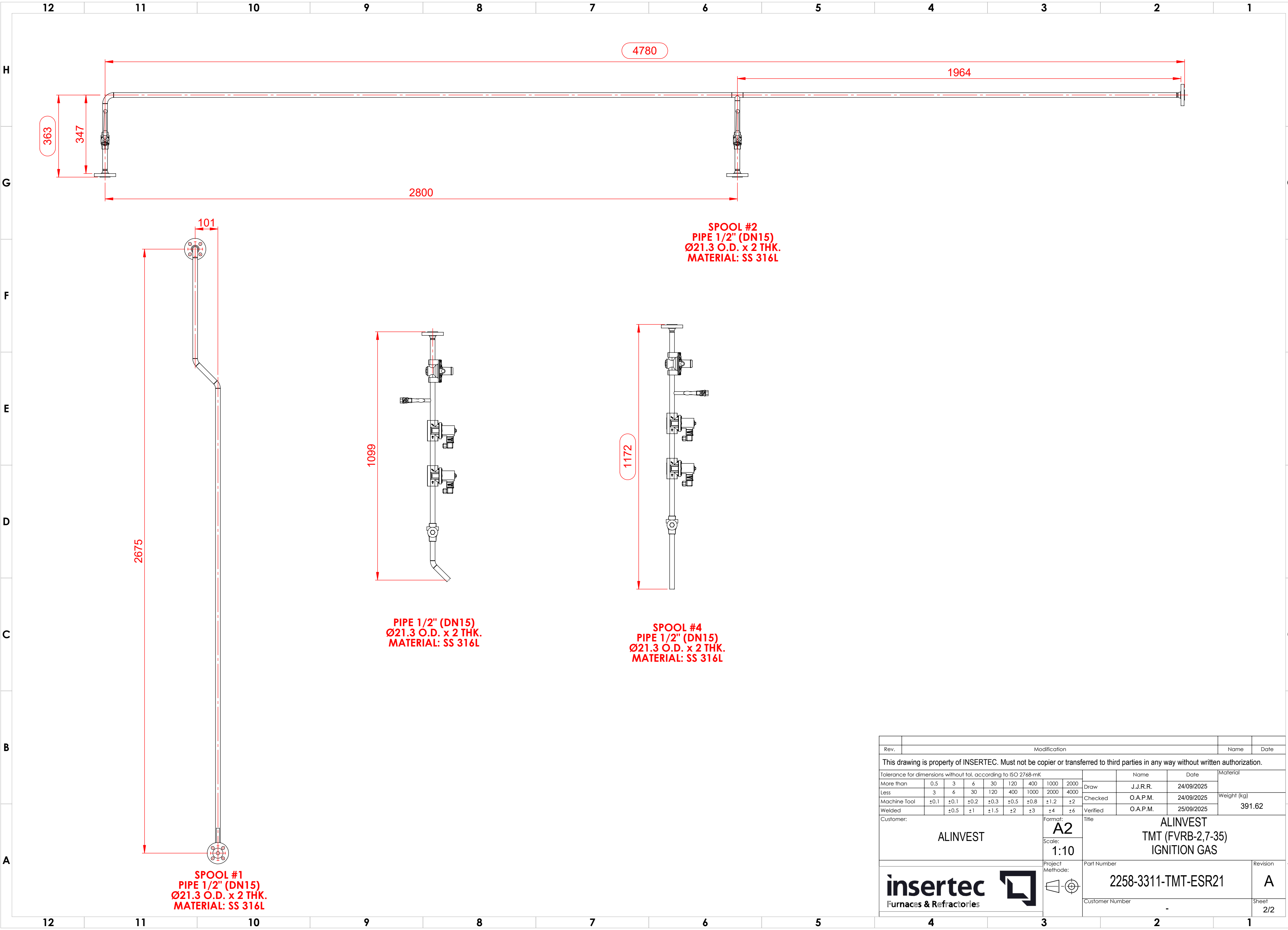




Rev.	Modification										Name		Date												
This drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization.																									
Tolerance for dimensions without tol. according to ISO 2768-mK																									
Name										Date		Material													
More than										0.5		3		6		30		120		400		1000		2000	
Less										3		6		30		120		400		1000		2000		4000	
Machine Tool										±0.1		±0.1		±0.2		±0.3		±0.5		±0.8		±1.2		±2	
Welded										±0.5		±1		±1.5		±2		±3		±4		±6			
Customer:										Format: A1				Title				ALINVEST TMT MAIN GAS							
										Scale: 1:8															
  										Project Method:				Part Number				Revision							
														2258-3311-TMT-ESR20				A							
Customer Number														Sheet 2/2											




5		4		3		2		1	
25	DIN933-M12X30-8.8	A	BOLT M12X30		8.8		0.05	4	0.2
24	2258-3311-TMT-ESR21-GEN01	A	SUPPORT 1		S275JR		3.41	2	6.82
23	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN15		FIBERGLASS W/NBR		-	4	0
22	DIN 2690		GASKET - KLINGERSIL C-4430 - 3 THK. - DN50		FIBERGLASS W/NBR		-	2	0
21	DIN933-M16X70-8.8	A	BOLT M16X70		8.8		0.15	8	1.2
20	DIN934-M16-8	A	NUT M16		8		0.03	8	0.24
19	DIN127-M16-ST	A	WASHER M16		ST		0.01	8	0.08
18	DIN125-M16-ST	A	WASHER M16		ST		0.01	16	0.16
17	DIN933-M12X60-8.8	A	BOLT M12X60		8.8		0.07	16	1.12
16	DIN934-M12-8	A	NUT M12		8		0.02	16	0.32
15	DIN127-M12-ST	A	WASHER M12		ST		0	20	0
14	DIN125-M12-ST	A	WASHER M12		ST		0.01	36	0.36
13	-		FLEXIBLE HOSE 1/2" LENGTH 500 mm CONNECTION ONE SIDE MALE THREAD ONE SIDE THREADED JOINT WITH DVGW CERTIFICATE		CARBON STEEL		-	1	0
12	-		FLEXIBLE HOSE 1/2" LENGTH 500 mm CONNECTION ONE SIDE MALE THREAD ONE SIDE THREADED JOINT WITH DVGW CERTIFICATE		CARBON STEEL		-	1	0
11	-		PILOT BURNER,CAPACITY: 26 KW, AIR: 26 NM³/H @ 20 MBAR, GAS: 2,6 NM³/H @ 20 MBAR		COMMERCIAL		-	2	0
10	-		PRESSURE REGULATOR OUTLET PRESSURE : 25 - 75 MBAR SPRING REACTING: FOR CONSTANT PRESSURE FOR GAS; MEASURING CONTROL NOZZLE IN THE INLET EG CERTIFICATE PE MAX 400 MBAR		COMMERCIAL		-	1	0
9	-		MANUAL OPERATION IN GAS, AIR , WATER AND OIL RP THREAD ; PE MAX 5BAR ENVIROMENTAL TEMP. -20°C TO +60°C		COMMERCIAL		-	1	0
8	-	-	SOLENOID VALVE 1/2" POWERLESS CLOSED, FAST OPENING, FAST CLOSING, FOR NAT. GAS, TOWN GAS, LIQUID GAS AND AIR, CLASS A ACC EN 161 EG CERTIFICATE THREAD CONNECTION PE MAX. 100 MBAR POWER SUPPLY: 230 V~ 50/60 Hz LOW NOISE OPERATION		COMMERCIAL		-	2	0
7	-	-	ADJUSTMENT VALVE 1/2" FOR NATURAL GAS AND AIR. THREAD DESIGN MAX OPERATION PRESSURE 10 BAR. FOR AIR AND GAS TEMP. -20°C UP TO +60°C		COMMERCIAL		-	1	0
6	-	-	PRESSURE SWITCH FOR UNDER PRESSURE (GAS/AIR) RANGE: 2.5 BIS 50 MBAR TENSION: 12-250 V GOLDEN CONTACTS , EL. CONNECTION WITH SCREW TERMINAL MANUAL ADJUSTMENT OF SET POINT EG CERTIFICATE		COMMERCIAL		-	1	0
5	-	-	PRESSURE REGULATOR OUTLET PRESSURE : 25 - 75 MBAR SPRING REACTING: FOR CONSTANT PRESSURE FOR GAS; MEASURING CONTROL NOZZLE IN THE INLET EG CERTIFICATE PE MAX 400 MBAR		COMMERCIAL		-	1	0
4	-	-	MANUAL OPERATION IN GAS, AIR , WATER AND OIL RP THREAD ; PE MAX 5BAR ENVIROMENTAL TEMP. -20°C TO +60°C		COMMERCIAL		-	1	0
3	-	-	SOLENOID VALVE 1/2" POWERLESS CLOSED, FAST OPENING, FAST CLOSING, FOR NAT. GAS, TOWN GAS, LIQUID GAS AND AIR, CLASS A ACC EN 161 EG CERTIFICATE THREAD CONNECTION PE MAX. 100 MBAR POWER SUPPLY: 230 V~ 50/60 Hz LOW NOISE OPERATION		COMMERCIAL		-	2	0
2	-	-	ADJUSTMENT VALVE 1/2" FOR NATURAL GAS AND AIR. THREAD DESIGN MAX OPERATION PRESSURE 10 BAR. FOR AIR AND GAS TEMP. -20°C UP TO +60°C		COMMERCIAL		-	1	0
1	-	-	BALL VALVE FOR CONDENSATE FOR MANUAL OPERATION IN GAS, AIR , WATER AND OIL RP THREAD ; PE MAX 16 BAR ENVIROMENTAL TEMP. -20°C TO +60°C EG APPROVAL AND CERTIFICATE		COMMERCIAL		-	2	0
N°	PART NUMBER / ARTICLE CODE	REV.	DESCRIPTION	MATERIAL	MANUFACTURER	TAG	WEIGHT (KG)	QTY.	TOTAL WEIGHT (KG)

Rev.		Modification							Name		Date	
This drawing is property of INSERTEC. Must not be copier or transferred to third parties in any way without written authorization.												
Tolerance for dimensions without tol. according to ISO 2768-mK											Name	Date
More than	0.5	3	6	30	120	400	1000	2000	Draw	J.J.R.R.	24/09/2025	Material  Weight (kg)  391.62
Less	3	6	30	120	400	1000	2000	4000	Checked	O.A.P.M.	24/09/2025	
Machine Tool	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	Verified	O.A.P.M.	25/09/2025	
Welded		±0.5	±1	±1.5	±2	±3	±4	±6				
Customer:									Title			
ALINVEST									ALINVEST			
									TMT (FVRB-2,7-35)			
									IGNITION GAS			
Format: <b>A2</b>												
Scale: <b>1:16</b>												
Project Methode:									Part Number		Revision	
									2258-3311-TMT-ESR21		A	
									Customer Number			
									-			



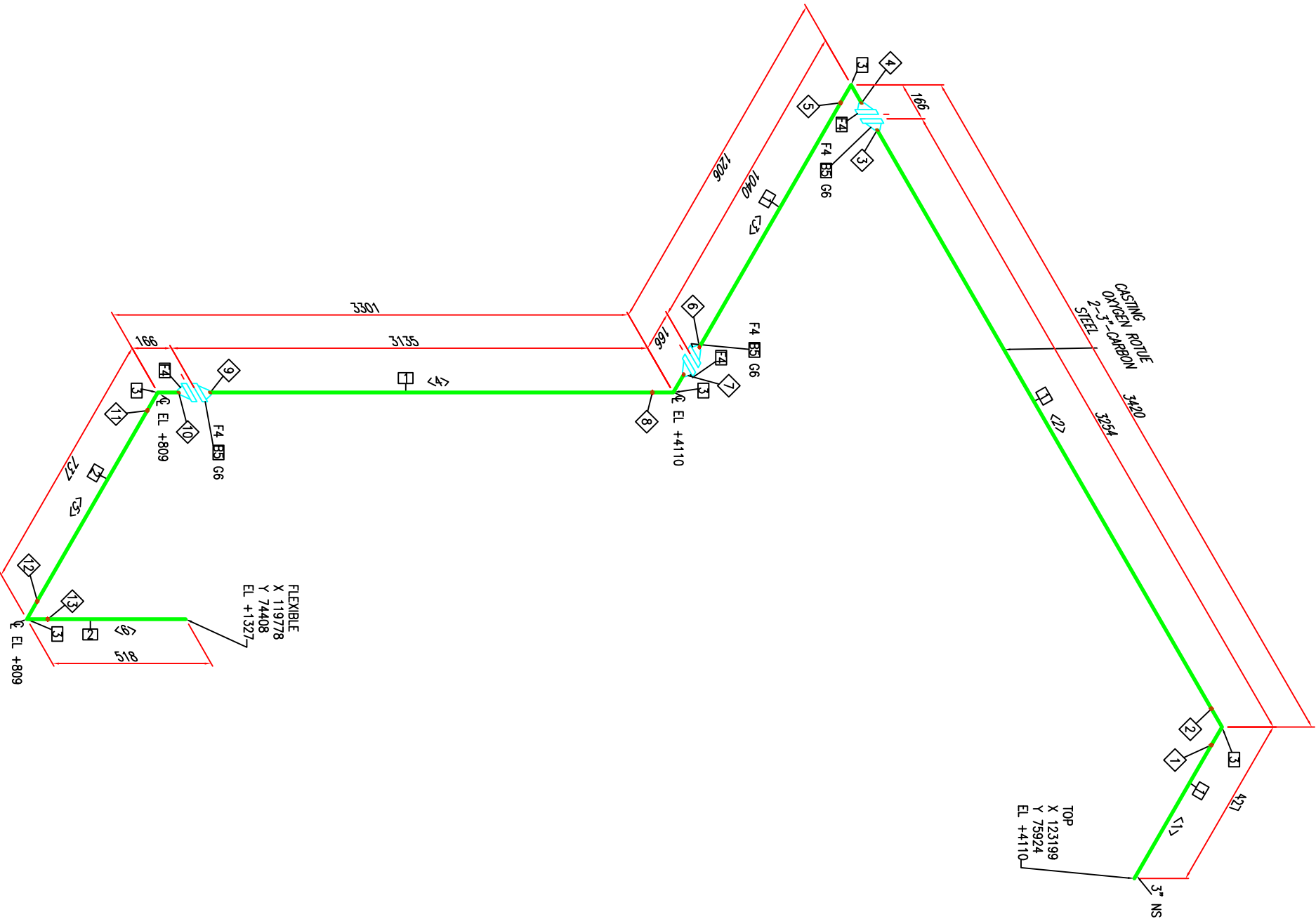
Rev.		Modification										Name		Date													
This drawing is property of INSERTEC. Must not be copier or transferred to third parties in any way without written authorization.																											
Tolerance for dimensions without tol. according to ISO 2768-mK												Name		Date		Material											
More than		0.5		3		6		30		120		400		1000				2000		Draw		J.J.R.R.		24/09/2025			
Less		3		6		30		120		400		1000		2000		4000				Checked		O.A.P.M.		24/09/2025		Weight (kg)  391.62	
Machine Tool		±0.1		±0.1		±0.2		±0.3		±0.5		±0.8		±1.2		±2				Verified		O.A.P.M.		25/09/2025			
Welded				±0.5		±1		±1.5		±2		±3		±4		±6											
Customer:										Format: <b>A2</b>		Scale: <b>1:10</b>		Title  <b>ALINVEST TMT (FVRB-2,7-35) IGNITION GAS</b>													
<div></div>										Project Method:		Part Number  <b>2258-3311-TMT-ESR21</b>										Revision  <b>A</b>					
										Customer Number		-										Sheet 2/2					

 Furnaces & Refractories	<b>METHOD STATEMENT AT SITE</b> <b>CONSTRUCTION &amp; COMMISSIONING</b> <b>DEPARTMENT, INSERTEC</b>	<b>ALINVEST</b> Member of <b>MTX</b> GROUP	
<b>E2558 Alinvest – Czech Republic</b>		<b>2558-IH-PUE-01</b>	<b>E2558</b>

## **MELTER 35 – OXYGEN AIB SCOPE**



WELDING LIST		
ID	DN "	TYPE
1	3"	BUTTWELD
2	3"	BUTTWELD
3	3"	WELD
4	3"	BUTTWELD
5	3"	BUTTWELD
6	3"	WELD
7	3"	BUTTWELD
8	3"	BUTTWELD
9	3"	WELD
10	3"	BUTTWELD
11	3"	BUTTWELD
12	3"	BUTTWELD
13	3"	BUTTWELD



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	7.3M	3"	PIPE CS, EN 10217-1 P235TR1	CARBON STEEL
2	1.0M	3"	PIPE CS, EN 10217-1 P235TR1	CARBON STEEL
FITTINGS				
3	5	3"	ELBOW 90° CS RL – BW, EN 10253-1, P235TR1	CARBON STEEL
FLANGES				
4	6	3"	FLANGE WN CS, EN 1092-1, DIN2633	CARBON STEEL
BOLTS, GASKETS				
5	24	7/8"x1 10	STUD BOLT,	
6	3	3"	GASKET	

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	3"	314MM
2	3"	3091MM
3	3"	877MM
4	3"	2971MM
5	3"	509MM
6	3"	404MM

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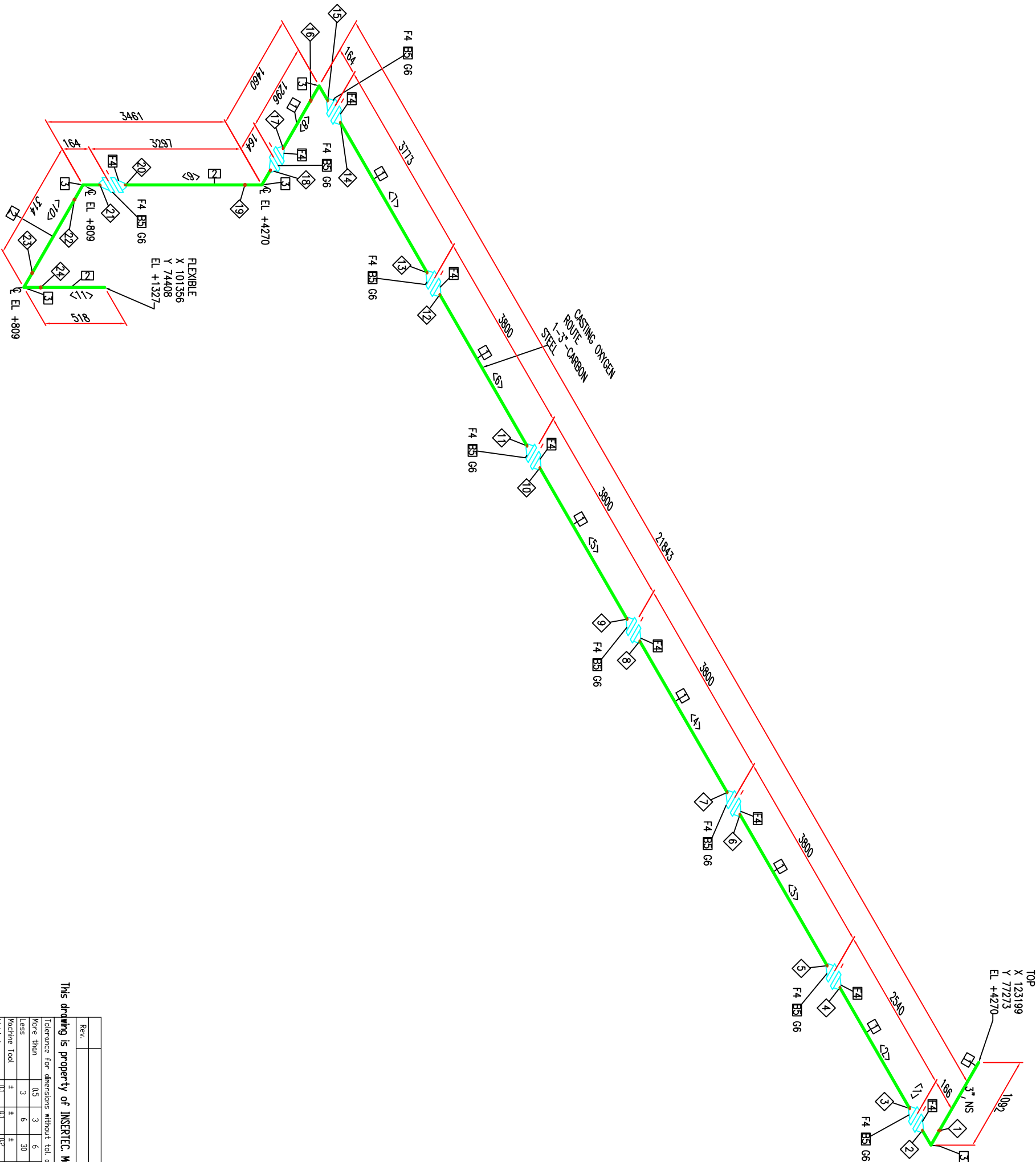
Drawing is property of INSERTEC. Must not be copied or transferred to third parties in any way without written authorization												
Rev.		Modification						None	Date			
Tolerance for dimensions without tol. according to ISO 2768-MK												
More than		0.5	3	6	30	120	400	1000	2000	Draw	Date	Material  <b>316L</b>
Less		3	6	30	120	400	1000	2000	4000	Checked		
Machine Tool		±	±	±	±	±	±	±	±	Verified		
Welded		±	±	±	±	±	±	±	±	Verified		
		±	±	±	±	±	±	±	±	Verified		

ALINVEST		ALINVEST		TMT (FVRB-2,7-35)	
Scale:		1:15		OXYGEN ROUTE	
Project		Port Number		Revision	
Methods:		2558-331-TMT-M-ESR31-1		A	
Customer Number		-		Sheet	
insertec		Furnaces & Refractories		2/2	





WELDING LIST		
ID	DN "	TYPE
1	3"	BUTTWELD
2	3"	BUTTWELD
3	3"	WELD
4	3"	WELD
5	3"	WELD
6	3"	WELD
7	3"	WELD
8	3"	WELD
9	3"	WELD
10	3"	WELD
11	3"	WELD
12	3"	WELD
13	3"	WELD
14	3"	WELD
15	3"	BUTTWELD
16	3"	BUTTWELD
17	3"	WELD
18	3"	BUTTWELD
19	3"	BUTTWELD
20	3"	WELD
21	3"	BUTTWELD
22	3"	BUTTWELD
23	3"	BUTTWELD
24	3"	BUTTWELD



MATERIAL LIST				
ID	QTY	DN "	DESCRIPTION	MATERIAL
PIPING				
1	23.1M	3"	PIPE CS, EN 10217-1 P235TR1	CARBON STEEL
2	3.7M	3"	PIPE CS, EN 10217-1 P235TR1	CARBON STEEL
FITTINGS				
3	5	3"	ELBOW 90° CS RL - BW, EN 10253-1, P235TR1	CARBON STEEL
FLANGES				
4	18	3"	FLANGE WN CS, EN 1092-1, DIN2633	CARBON STEEL
BOLTS, GASKETS				
5	72	7/8"x1 10	STUD BOLT,	
6	9	3"	GASKET	

PIPE CUTTING LIST		
ID	DN "	LENGTH
1	3"	9.78MM
2	3"	24.38MM
3	3"	36.98MM
4	3"	36.98MM
5	3"	36.98MM
6	3"	36.98MM
7	3"	36.71MM
8	3"	11.30MM
9	3"	31.31MM
10	3"	86MM
11	3"	404MM

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Drawing is property of INSETEC. Must not be copied or transferred to third parties in any way without written authorization										
Rev.		Modification							None	Date
Tolerance for dimensions without tol. according to ISO 2768-MK										Material
More than		0.5	3	6	30	120	400	1000	2000	316L
Less		3	6	30	120	400	1000	2000	4000	Weight (kg)
Machine Tool		+	+	+	+	+	+	+	+	
Welded		U1	U1	U2	U3	U3	U3	U4	U4	19/09/2023
Customer:		U5	1	15	2	3	Title			
		Format: 6							AI INVE/ST	

ALINVEST		ALINVEST	
Scale:		Scale:	
1:15		1:15	
Project		Project	
Methods:		Methods:	
Port Number		Port Number	
2558-3312-TMT-M-ESR31-2		2558-3312-TMT-M-ESR31-2	
Customer Number		Customer Number	
-		-	
Revision		Revision	
A		A	

