

DYNAPRIME

P25106-DYNAPRIME-MAN_R00

INSTALLATION & OPERATION MANUAL

DYNAPRIME Mono 380mm configuration



For



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**CE – marked product described in this manual
complies with relevant standards listed in CE
Directives**



Directive - Machinery	2006/42/CE
Directive – Low voltage	2014/35/EU
Directive – Electromagnetic Compatibility	2004/30/CE

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1. SAFETY AND ENVIRONMENTAL ADVICE



To avoid any accidents, always use the equipment with caution.

Carefully read these safety instructions before using the system described below.

All operators, regardless of their experience, must carefully read the equipment manual. The equipment owner is responsible for providing the necessary training to all operators to ensure the safe use of the equipment.

Wear appropriate clothing during operations of the equipment:



And all other specific safety PPE (Personal Protective Equipment) required at customer plant.

1.1 BEFORE USING THE EQUIPMENT

Familiarize yourself with the equipment, its functions, and its limitations. Read this installation and operation manual thoroughly before operating the equipment.

- 1- **Pay close attention to hazard, warning, and caution labels** affixed to the equipment and its accessories.
- 2- **Do not operate or use equipment if its safety is compromised.** Before use, ensure all safety devices (guards, machine protections, seals, etc.) are properly installed and in good working condition. Consult the manufacturer regarding any operational anomalies affecting components or subcomponents.
- 3- **Never modify the structural components of the equipment** (e.g., by welding, drilling, bending, grinding, or cutting), as this may weaken the structure and compromise safety. Replace damaged parts rather than attempting repairs.
- 4- **Do not install additional equipment, accessories, or tanks** that increase the machine's weight beyond the limit specified on its nameplate.

- 5- Never operate the machine when fatigued or under the influence of alcohol or other substances.
- 6- **Inspect the equipment and its components daily** to identify and address any damage that could impact proper operation.
- 7- Only operate the equipment after receiving proper training.
- 8- Do not perform manual operations while the equipment is in motion.
- 9- **Ensure all safety features are active** before performing manual operations.
- 10- **Always apply a zero-energy lockout** before performing maintenance.
- 11- **Only qualified maintenance personnel are authorized** to service the equipment
- 12- Operating the machine in maintenance mode is strictly prohibited.



Consult Dynamic Concept before attempt to modify the equipment

1.2 RISK IDENTIFICATION



HAZARD SYMBOL

This symbol, used in the industry to indicate a danger, draws your attention to elements or operations which could be dangerous for yourself or other users of this machine. Therefore, carefully read the instructions marked with this symbol. It is also essential to carefully read all instructions and safety regulations before attempting to assemble or use this machine.



ELECTRICITY

Indicates potential risks associated with electrical equipment or installations that could result in shock, burns, or other injuries.



WARNING:

Indicates that a highly dangerous situation, serious injuries or even death can occur if this situation is not prevented



HOT SURFACE:

Indicates the location of a potential hot surface.



SUDDEN LOUD NOISE:

Indicates that a noisy subsystem of the device may start without warning.



PINCH POINT

Indicates where two objects come together and a body part (commonly fingers or hand can get caught).

IMPORTANT :

If instructions are not followed, damage to equipment or property may occur.

NOTE :

Provides relevant information.

1.3 SOUND LEVEL

1.3.1 Burners sound level

# Pos.	Measurement position description	Average value (dBA)	Peak (dB(C))
1	Horizontally 1m from the burner muffler, vertically at 1.6m (at the average ear level of the operators), behind the DYNAPRIME (See position No. 1, figure 1).	TBD	TBD
2	Horizontally 1m from the burner muffler, vertically at 1.6m (at the average ear level of the operators), on the side of the DYNAPRIME (See position No. 2, figure 1).	TBD	TBD
3	Horizontally 1m from the burner muffler, vertically at 1.6m (at the average ear level of the operators) at the front of the DYNAPRIME (See position No. 3, figure 1).	TBD	TBD

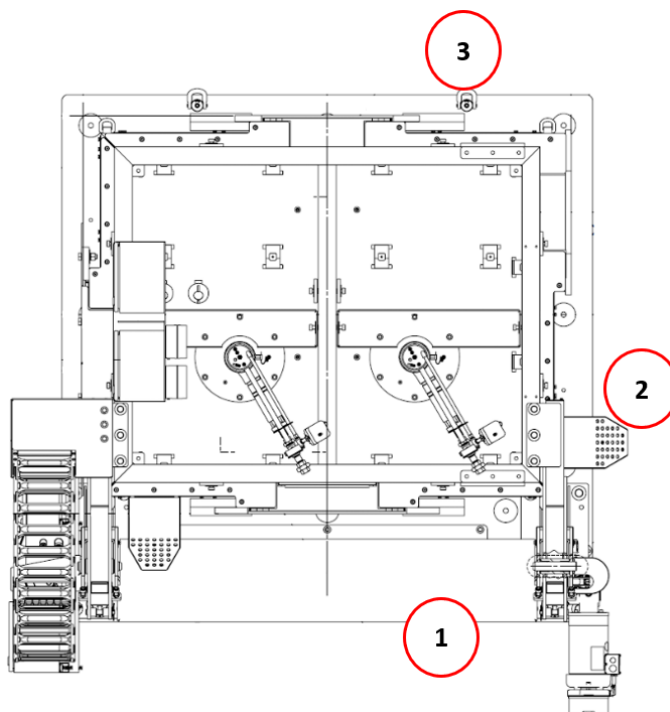


Figure 1 : Identification of noise measurement zones on the DYNAPRIME

1.3.2 Vibrators sound level

	Measurement position	Average value (dBA)	Peak (dB(C))
1	Horizontally 1m from the vibrator, vertically at vibrator level	TBD	TBD
2	Horizontally 1m from the vibrator, vertically at 1.6m (at the average ear level of the operators)	TBD	TBD

Note:

These values are obtained exclusively during the molten aluminum priming process within the DYNAPRIME. The priming duration must not exceed 70 seconds. It is the customer's responsibility to calculate the exposure rate per work shift for their employees, in consultation with an industrial hygienist.

2. MACHINE DESCRIPTION

The DYNAPRIME is a high-performance filtration system for molten aluminum in casting lines. With its patented priming technology and integrated preheating system, the DYNAPRIME is a fully integrated and automated filtration unit. Filtration is achieved using cartridge of ceramic foam filters (CFF). Thanks to its pneumatic vibration-based ignition system, the DYNAPRIME allows the use of filters with pore densities of up to 70 PPI. The preheating of the filter and the refractory bowl is ensured by one gas burner unit. The heating unit is integrated into the cover. To facilitate filter replacement and refractory bowl cleaning, the cover opens and closes using one electric actuator.

Identification:

Model: DYNAPRIME

Serial number: A00-24121-0000-001 and A00-24121-0001-001

Machinery type: Molten aluminium filtration system

3. PROPER USE and CONTRAINDICATIONS

3.1 PROPER USE OF THE MACHINE

The machine is designed for professional operation by trained and authorized personnel, as specified by the manufacturer. Operators must be thoroughly familiar with the safe handling of high-temperature equipment to ensure safe and efficient use.

Only individuals authorized by the employer are permitted to operate the machine.

The scope of "normal use" is strictly defined by the manufacturer and outlined in this instruction manual. Compliance with these guidelines is essential to ensure safety and proper functionality.

3.2 PROHIBITED USES

The machine must not be used under reasonably foreseeable adverse conditions.

The machine is not intended to be used:

- By untrained or unauthorized operators.
- For private, non-professional, or unintended applications.

Additionally, the following actions are strictly prohibited:

- Operating the machine without having read and understood this instruction manual.
- Modifying the machine without prior written approval from the manufacturer.
- Using or storing the machine outside of a covered and protected building.
- Operating the machine in confined or poorly ventilated spaces.

3.3 INSTRUCTIONS FOR OPERATOR TRAINING

IMPORTANT: In an automatic sequence, no one is allowed near the equipment during the movement.

See section 7.6 for the operation panel description.

- Ensure that no fault is active on HMI
- Select AUTO mode on HMI

3.3.1 Before preheating

Preliminary Step: The refractory bowl of the DYNAPRIME must be clean, without any aluminum residue from the previous pour. The bowl should be coated with a layer of boron nitride to prevent the molten aluminum from sticking to the walls. Boron nitride should not be applied to the filter seats. If the seat is covered with boron nitride, the filter gasket will not grip to the seat and the filter can float during the cast. The preheating lid must be fully open with the safety pin in place.

Filter Installation: The operator must install a ceramic filter on the seat provided inside the refractory bowl. A slight force should be applied to compress the filter's seal. If the seal is damaged, do not install the filter, as it could lead to potential leaks.

Visual Inspection: The operator must conduct a visual inspection of the lid seal to ensure there is no risk of hot air leakage during preheating. The cover gasket is made of flexible fabric with insulation wool inside. The operator can move the seal with his hand to ensure that the lid is sealed.

Safety Pin Removal: the safety pin is an automatic mechanism, when the closing lid sequence will activate, the pin will be removed automatically.

Install Plug: A plug must be installed on the inlet of the refractory bowl to prevent hot air from escaping the bowl. The hot air must escape from the outlet of the refractory bowl.

Close Preheating Lid: Using the HMI close the preheating lid. After the lid is in place, with insulating wool or seal, cover the gap between the lid and the dam. This gap is not an exit for the hot air.

3.3.2 Preheating

Select Recipe: Using the HMI, select the recipe based on the filter's density (expressed in PPI – Pores Per Inch). The START button can be pushed to preheat the DYNAPRIME.

When the preheating value is reached, the equipment switches to holding mode until the beginning of the cast.

Too long holding mode: The ceramic filter itself is durable and resistant to damage. However, the vermiculite gasket surrounding it can weaken over time. Prolonged holding periods expose the gasket to deterioration, which can compromise the seal's integrity. In such cases, the gasket may detach, causing the filter to lose its seal and potentially float on the surface of the molten metal.

3.3.3 Before casting

Prior sending metal in the troughs, the operator must do the following tasks.

Stop the preheating: Using the HMI, press the **STOP** button to interrupt the preheating process.

Remove the plug: Remove the plug from the inlet of the refractory bowl to allow the metal to flow through the equipment.

At this point, the equipment is ready for the filtration of aluminum. The priming sequence is fully automated. During the casting process, no human intervention is required.

3.3.4 Priming

The priming sequence should be initiated only when the metal in the filter bowl has reached a sufficient level over the filter tiles. This will avoid the filter media to get clogged by oxides and will help in avoiding the filter to “pop up” by keeping a static pressure.

If there is no direct measurement of the metal level in the filter bowl, as the reading is often located before the entry gate, the time of filling must be measured and validated so that this sufficient level is reached in the bowl.

The sufficient and appropriate level for initiating the priming is set at the lower edge of the entry underpour dam. For clarity, the priming should be initiated after the metal level has reached the underpour dam.

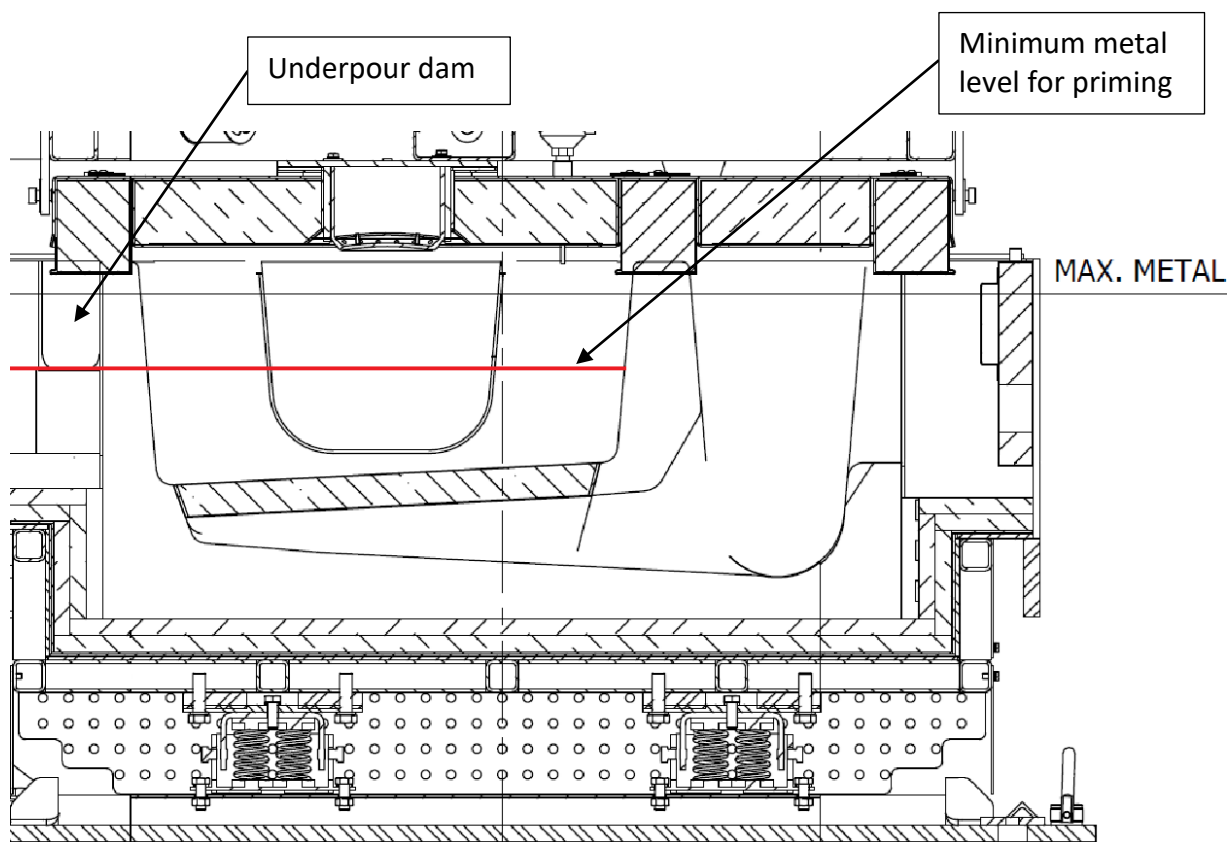


Figure 2 : View showing the minimum metal level to initiate priming

3.3.5 End of casting

Steps After Casting Completion:

Initiate the End-of-Casting Sequence: Before performing any tasks, start the end-of-casting sequence to open the lid automatically. The draining pin will open once the lid is confirmed as "open," and the locking mechanism is engaged.

Skimming: To facilitate equipment draining, manually skim the remaining metal using the supplied skimming tool.

Filter Breakup: Using the dedicated tool, pierce the filter before the metal trapped inside solidifies. Ensure the hole is small enough to allow lifting the filter with the same tool. The filter can remain inside the equipment for a certain period. The solidified aluminum will help maintain the filter's integrity when during removal from its seat.

Filter Removal: Attach the dedicated tool to the filter and connect it to a lifting crane for safe removal.

Equipment Cleaning and Inspection

Refractory Bowl Cleaning: Use scrapers to remove any remaining aluminum sheets inside the bowl. A simple aluminum shovel can be used to clear debris. Ensure the seats are not damaged during scraping.

Refractory Inspection: Inspect the cleaned bowl for any scratches or damage. If scratches are detected, contact the refractory team for necessary repairs.

Cleaning the Filtration Box Lid Area: Clean the seal area of the box flange and lid thoroughly. Ensure no debris is left behind, as it can reduce the lifespan of the cover seals.

4. SPECIFICATIONS

SPECIFICATIONS A0024121-GN-0000 and A0024121-GN-0001	
Overall weight	2400kg
Filtering box (A00-24121-MC-1000)	1200kg
Mounting Base (A00-24121-MC-2000)	800kg
lid weight (A00-24121-MC-3000)	275kg
Ceramic foam filter	
Dimension	380mm X 380mm
Maximum PPI	10 to 70
Preheating	
Set point temperature	700°C
Preheating time from ambient to set point	120 min
Electricity	
Power voltage	400V AC, 3PH, 50HZ, 40A
Control voltage	230 VAC
PLC I/O voltage	24VDC
Natural gas	
Inlet supply pressure	100 – 200 mbar
Maximum flow	140 000 BTU/h
Pneumatic	
Inlet supply pressure	5-6 bars
Maximum flow	450 Nm ³ /h
Compress air purity class	ISO 8573-1: 6-3-3

5. HANDLING AND STORAGE

5.1 STORAGE

The DYNAPRIME assemblies must be stored in a covered area.
The storage area temperature must be at minimum -20°C and maximum 60°C.

5.2 HANDLING

5.2.1 General assembly handling

The lifting of the DYNAPRIME general assembly must be done using the spreader beam provided by Dynamic Concept. The lifting instructions on the drawing A00-24121-EX-1000 must be followed.

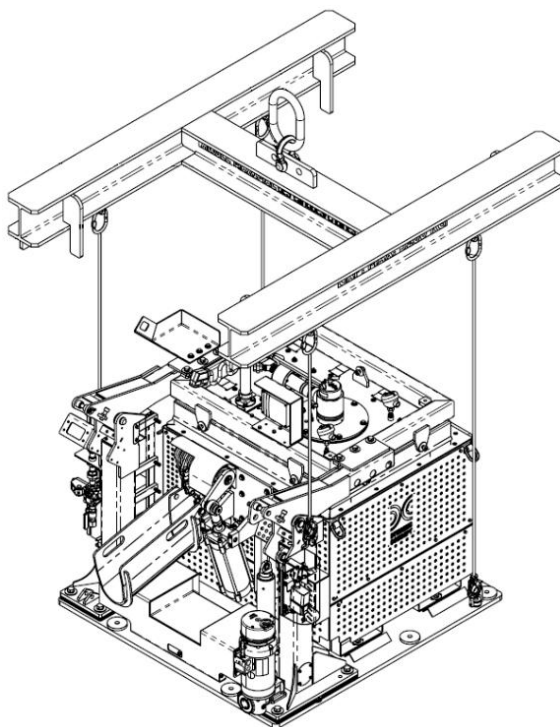


Figure 3 : Lifting assembly for the DYNAPRIME (see drawing A00-24121-EX-1000)

5.2.2 Filtering box handling

The lifting of the DYNAPRIME filtering box must be done using the spreader beam provided by Dynamic Concept. The lifting instructions on the drawing A00-24121-EX-2000 must be followed.

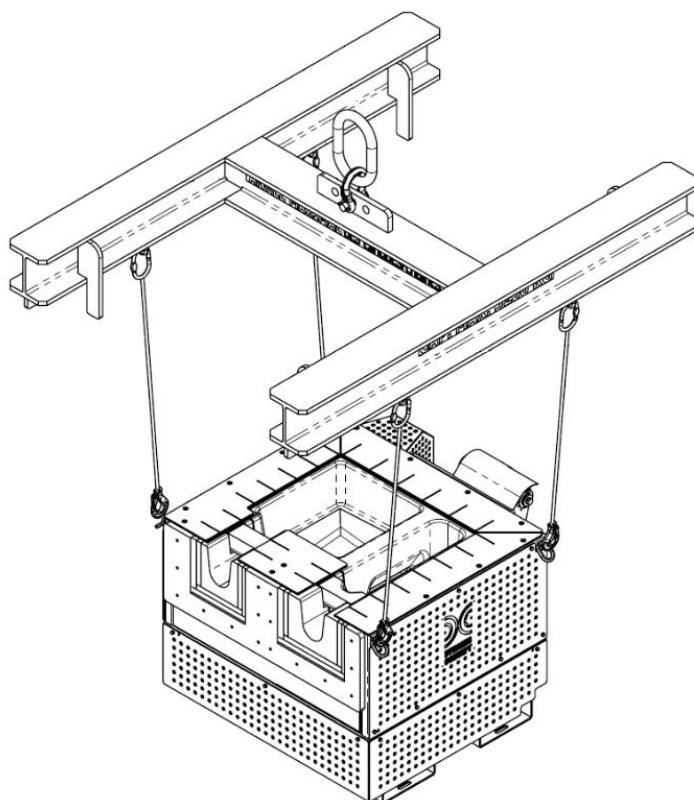


Figure 4 : Lifting assembly for the filtering box (see drawing A00-24121-EX-2000)

Before lifting the filtering box, you must follow the steps below:

1. Remove the vibrator cover then remove the vibrator from the filtering box. To remove the vibrator, simply unbolt it from the filtering box.

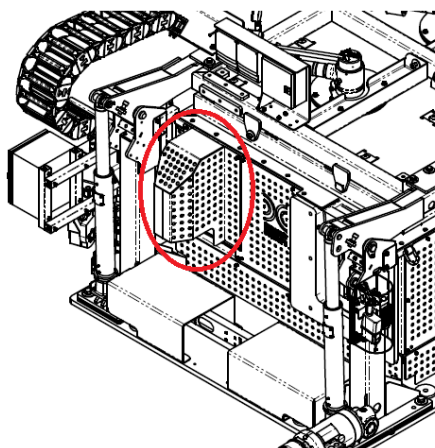


Figure 5 : View showing the cover to be removed for lifting the filtering box

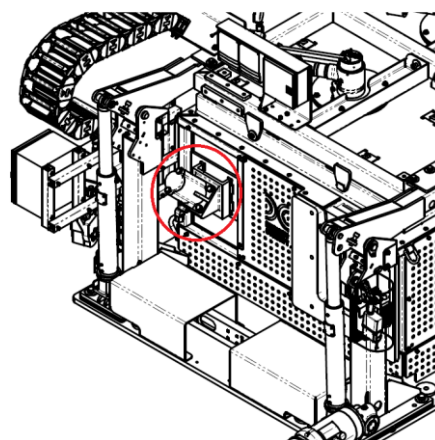


Figure 6 : View showing the cover removed for lifting the filtering box

2. Remove the draining pin mechanism. To remove the draining pin mechanism, simply unbolt it from the filtering box. The draining pin mechanism must be in the open position before being removed.
3. Remove the filtering box draining spout from the filtering box.



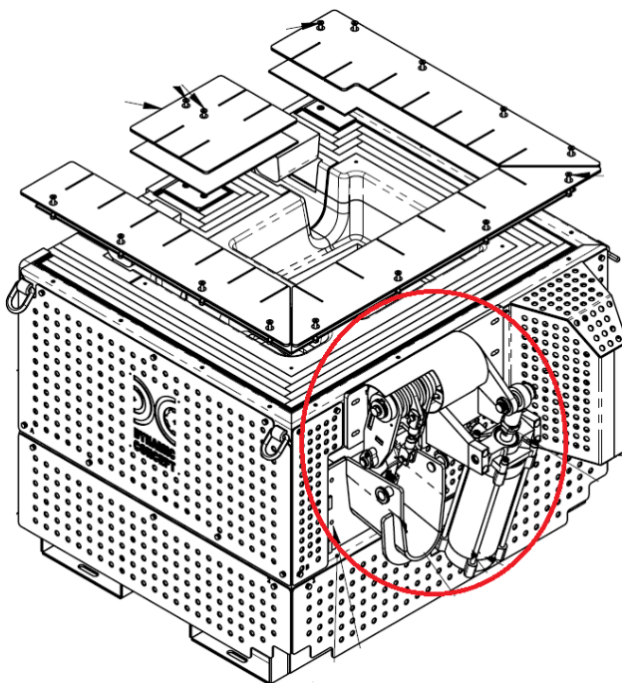


Figure 7 : View showing the draining pin mechanism and the filtering box spout to be removed

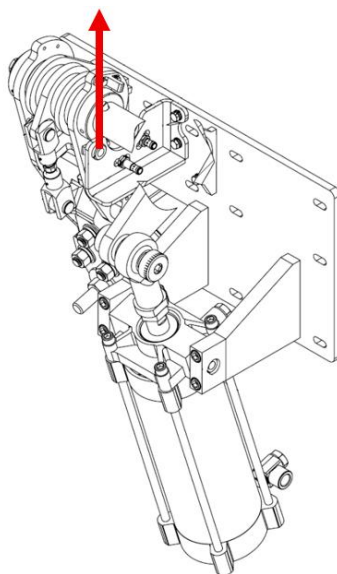


Figure 8 : View showing the lifting point on the draining pin mechanism

4. Detach the filtering box from the spouts
5. Remove the immersion heater on the lid to free up space during lifting
6. Place the lid in the open position. Make sure the lid is locked by the locking pin
7. Unbolt the cross members 1050694 to free the enclosure from the floor

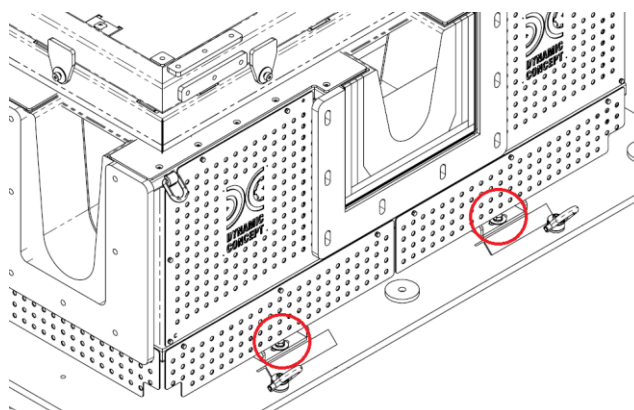


Figure 9 : View showing the cross members to unbolt

8. Attach the lifting rings to the locations indicated on drawing A00-24121-MC-1000

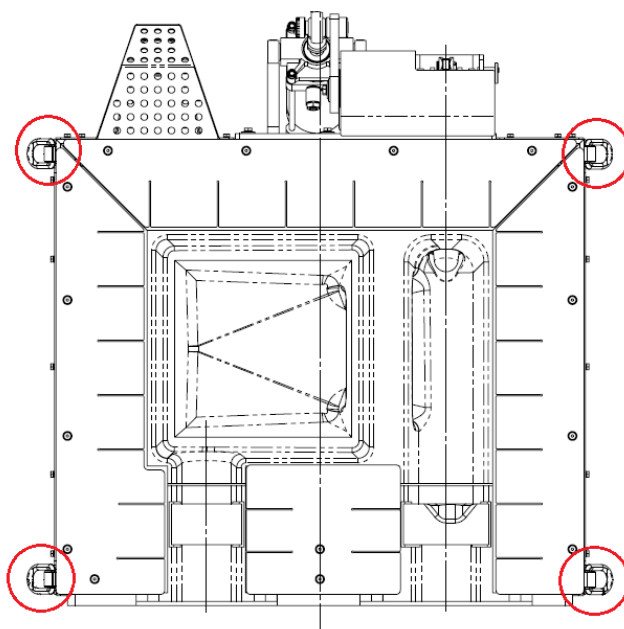


Figure 10 : View showing the lifting point on the filtering box

9. Using compliant lifting equipment, carefully lift the filtering box

5.2.3 Lid handling

Before handling the DYNAPRIME lid:

1. Place the lid in the closed position
2. Disconnect every electrical, pneumatical et gas connection.
3. Detach the 2 electrical actuators from the lid.

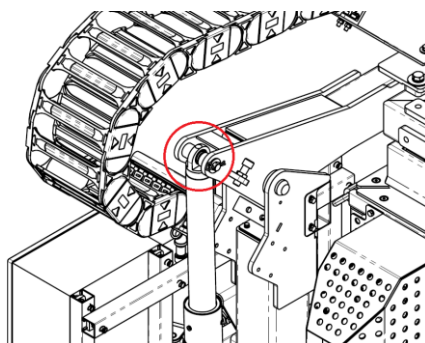


Figure 11 : View showing the point where the actuator must be detached

4. Remove the 2 pins that attach the lid to the brackets

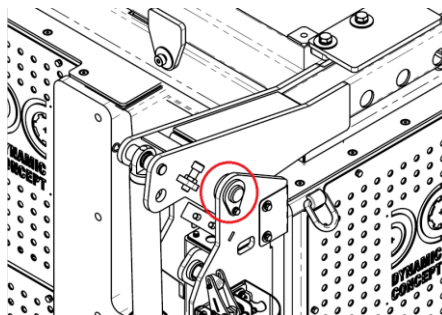


Figure 12 : View showing the pins to remove

Use the lifting points as shown below to fix 4 lifting eyes of adequate capacity

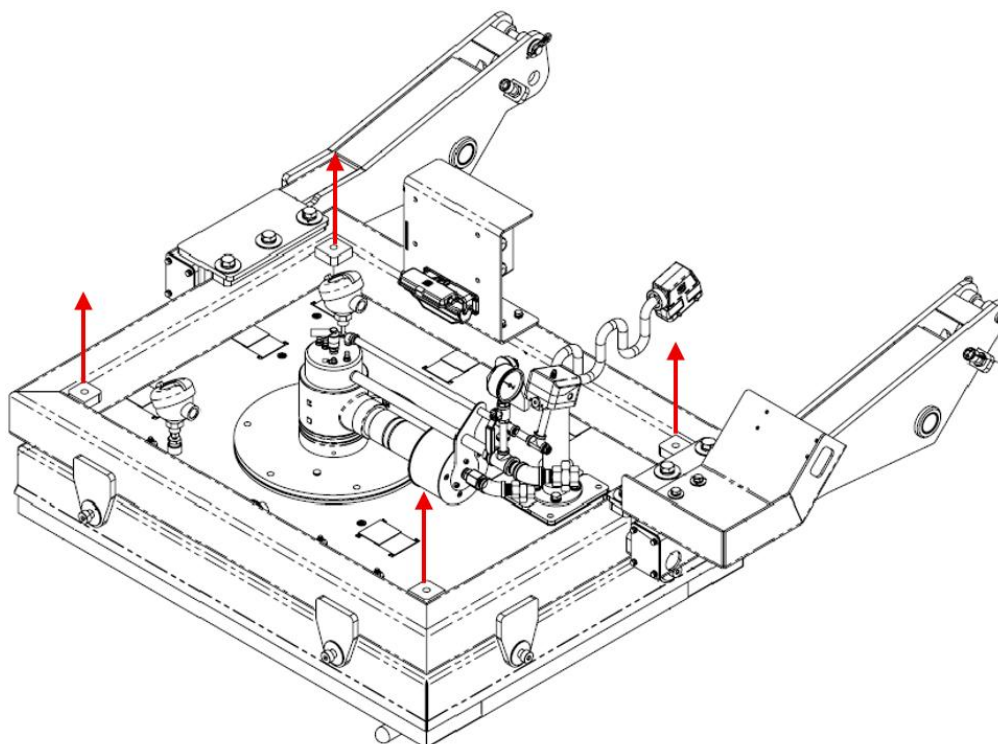


Figure 13 : Identification of the lifting points on the lid assembly

Ref drawing: A00-24121-MC-3000

5.2.4 Power and control panel handling

The cabinet weighs about 500kg

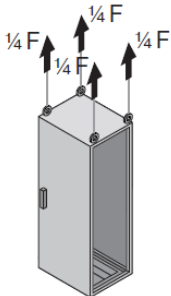
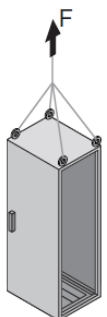
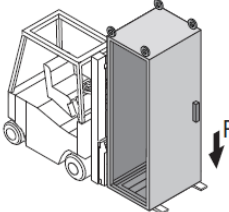

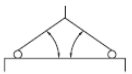
			
			
	90°	45°	60°
F	13.600 N	4.800 N	6.400 N
			Max. 14.000 N

Figure 14 : Cabinet lifting instructions

To lift the cabinet, use the 4 lifting eyes circled in the image below:



Figure 15 : Identification of the lifting points on the power and control panel

6. INTRODUCTION OF THE DYNAPRIME

6.1 MANUAL OVERVIEW

This manual contains information and procedures for the operation and maintenance of this equipment.

This manual is intended for all participants who will work directly or indirectly with the DYNAPRIME.

This manual describes the characteristics and operation of the machine. Only information on the most commonly used applications is included here. If application-specific information is required, please contact Dynamic Concept for assistance.

6.2 PROJECT CONTEXT SETTING

In the context of the project covered by this manual, Dynamic Concept is providing two DYNAPRIMES that will be installed on the same casting trough line. The two units have a mirrored configuration relative to each other.

7. EQUIPMENT DESCRIPTION

7.1 GENERAL COMPONENTS DESCRIPTION

The two supplied DYNAPRIMES have a mono 380mm x 380mm (15inch x 15 inch) filter configuration. Each DYNAPRIME includes one pneumatic vibrator that facilitate priming. The preheating of the refractory bowl is accomplished by one 'flat flame' type gas burner, which is lid mounted. The lid is opened by an electric actuator. The DYNAPRIME housing is mounted on vibration dampers, which minimize vibration transmission to the floor and enhance vibration transfer to the filters.

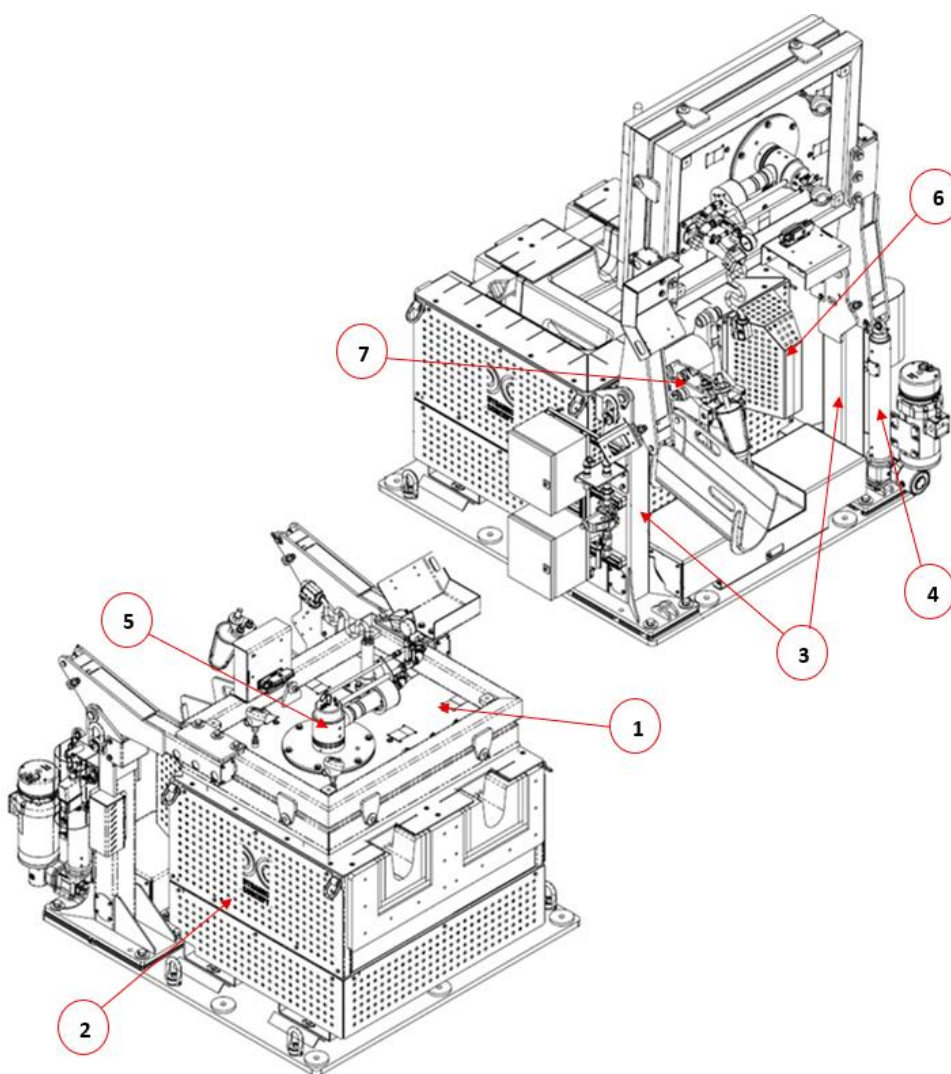


Figure 16 : General components identification

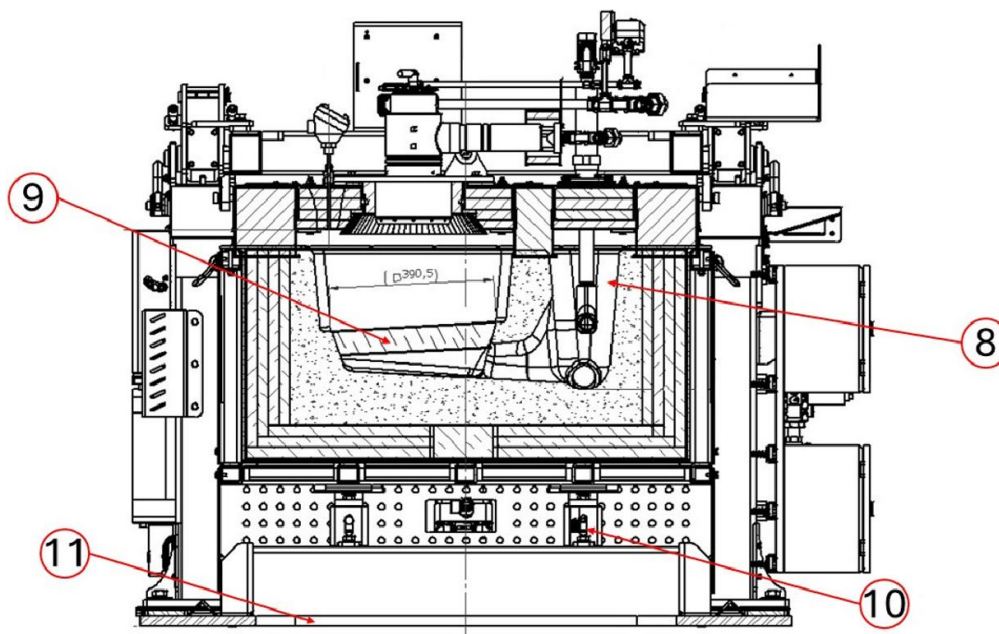


Figure 17 : General components identification

	Part description	Drawing/Part number	Note
1	Lid assembly	A00-24121-MC-3000	
2	Filtering box	A00-24121-MC-1000	
3	Lid brackets	A00-24121-MC-2100	
4	Electric actuator	P24121-36496-02-00	
5	Burner assembly	A00-24121-MC-3110	
6	Priming mechanism cover	1060115	
7	Draining mechanism	A00-24121-MC-1300	
8	Refractory bowl	1058956	
9	CFF 381 X 381mm		Supplied by customer
10	Shock absorber	2-AMC-610	
11	Base plate	1059852	

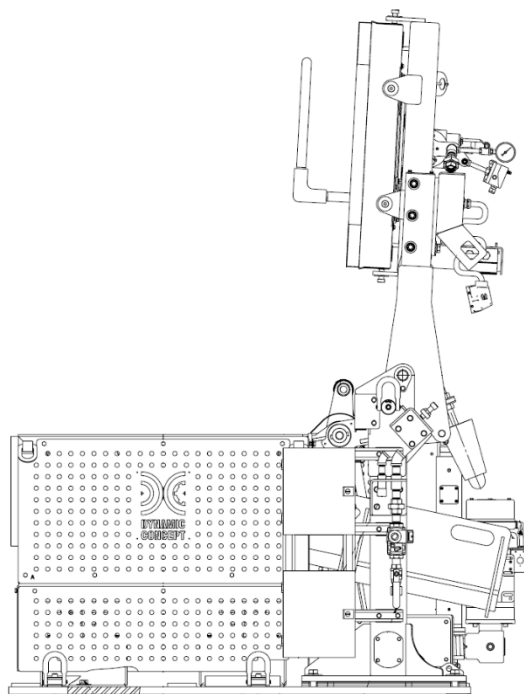


Figure 18 : View of the DYNAPRIME with the lid in the open position

7.2 LID ASSEMBLY DESCRIPTION

The lid assembly have the following functions:

- Provide thermal insulation and seals the refractory bowl chamber
- Contain the burner assemblies and the thermocouples

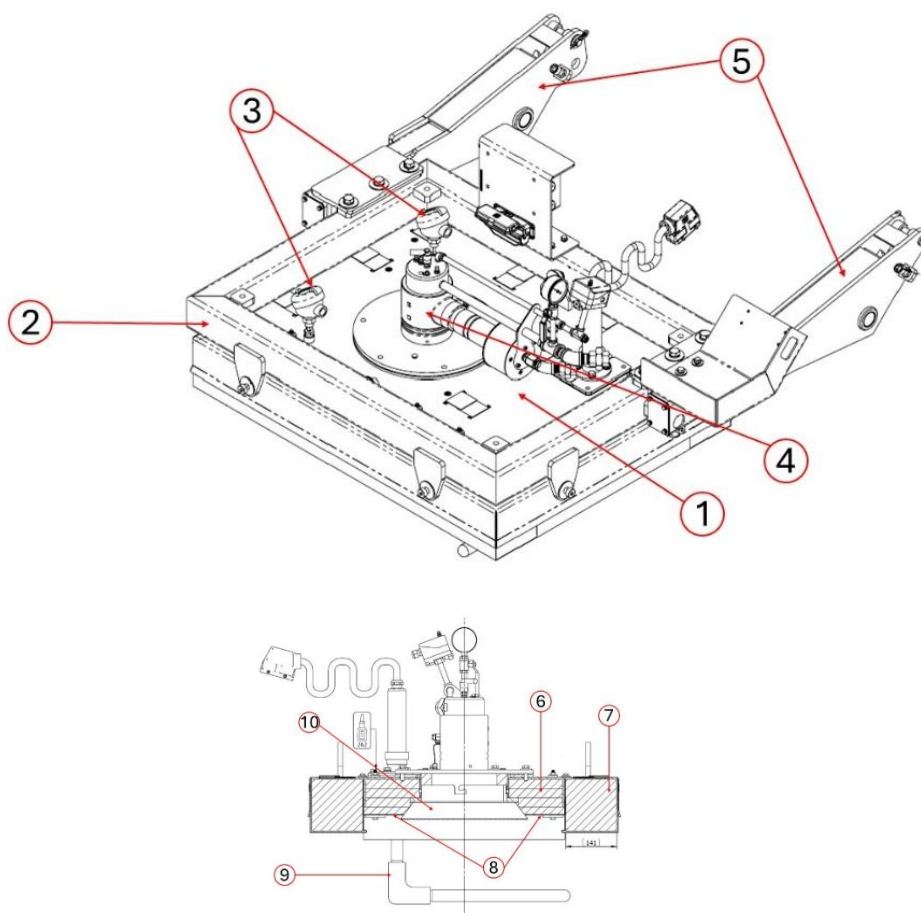


Figure 19 : Lid components identification

	Part description	Drawing/Part number	Note
1	Flotting lid assembly	A00-24121-MC-3100	
2	Main structure of the cover	1059857	
3	Control and High limit thermocouples	22-133-1-61-1.5-7.000-0-000	
4	Burner assembly	A00-24121-MC-3110	
5	Pivot attachment structure	1059875 and 1051863	
6	Lid insulation	A00-24121-MC-3100	
7	Sealing pads	1059778, 1059779 and 1060108	
8	Insulation protection plate	1060589 and 1060602	
9	Immersion heater assembly	A00-24121-MC-3120	
10	Burner nozzle	1063353	

7.3 FILTERING BOX DESCRIPTION

The filtering box has the following functions:

- Contains and thermally insulates the refractory bowl
- Support the priming mechanisms and transmit vibrations to the CFF
- Isolates the ground from the vibrations

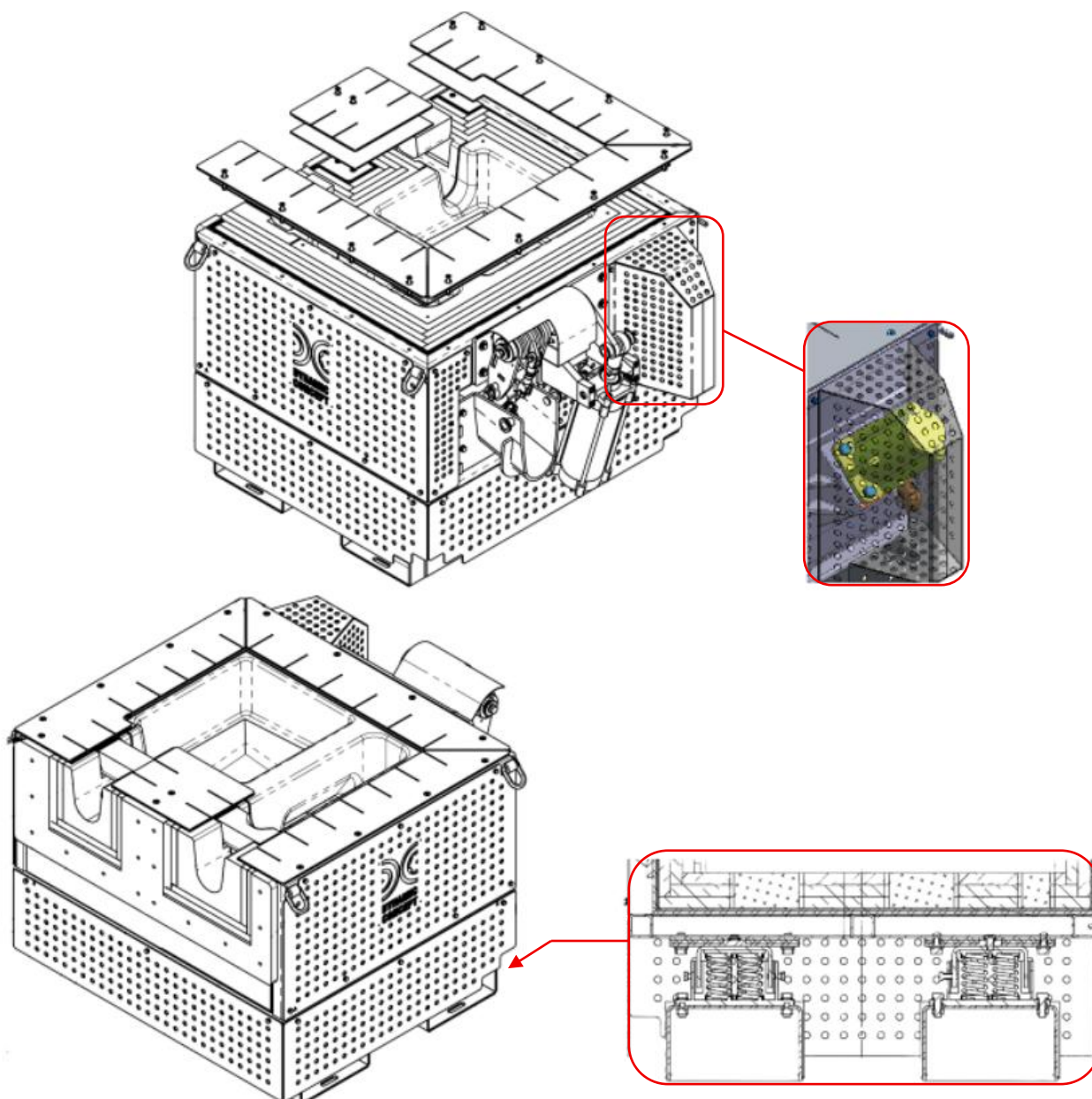


Figure 20 : Filtering box components identification

	Part description	Drawing/Part number	Note
1	Refractory bowl	1050310	
2	Priming mechanism assembly	A00-24121-MC-1100	
3	Shock absorber	1050779	
4	Filtering box insulation	A00-24121-MC-1000	

7.4 LID BRACKETS DESCRIPTION

The lid brackets have the following functions:

- Open and close the lid
- Structurally support the lid
- Lock the lid in the open position
- Attach some of the burners equipment's

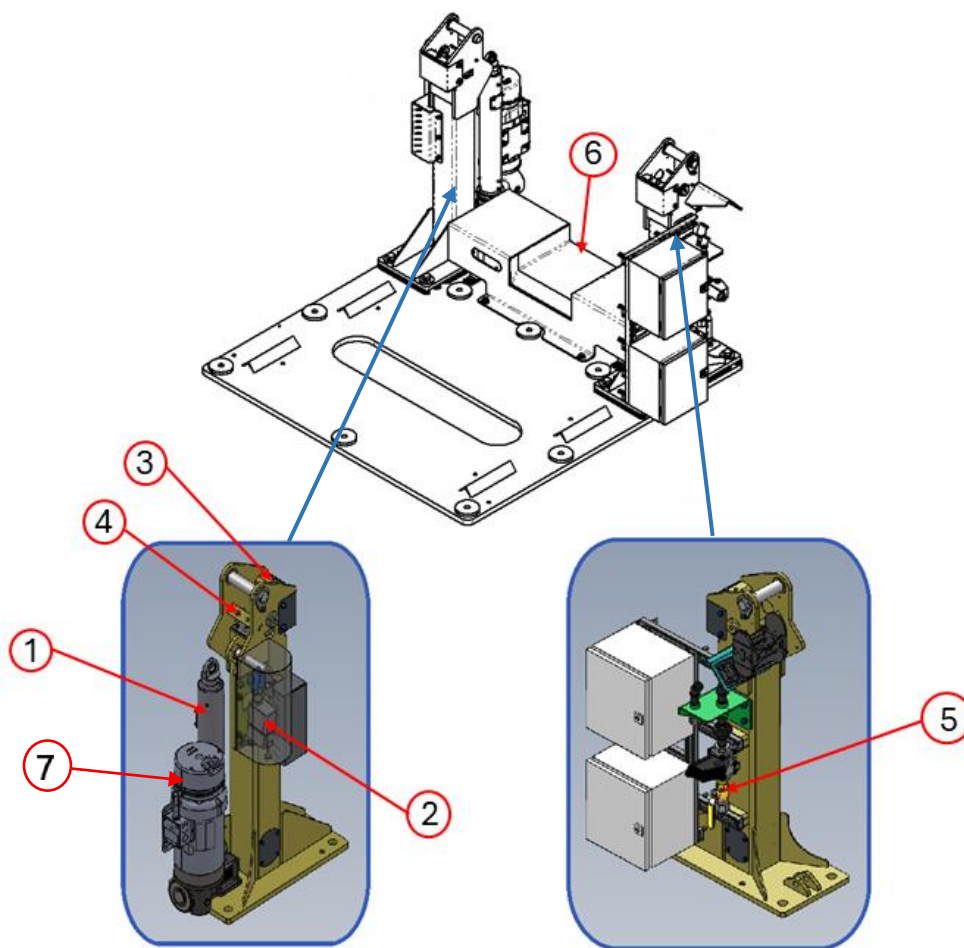


Figure 21 : Lid brackets components identification

	Part description	Drawing/Part number	Note
1	Electric actuator	ECAH62.53R-14.25-P1CC-XXXX-M1S	
2	Locking mechanism	A00-24121-MC-2110	
3	Inductive sensor	ISF244	Lid closed position
4	Safety inductive sensors	GF854S	Lid open position
5	Burner gas circuit	A00-24121-PG02-0000-MC-2200	
6	Cables cover	1062104	
7	Electric motor	P24121-BA80NEMA56C-DM	

7.5 DRAINING MECHANISM DESCRIPTION

The draining mechanism serves to open and close the drain plug. When closed, it continuously applies pressure to the plug to ensure a hermetic seal and prevent any molten metal leakage.

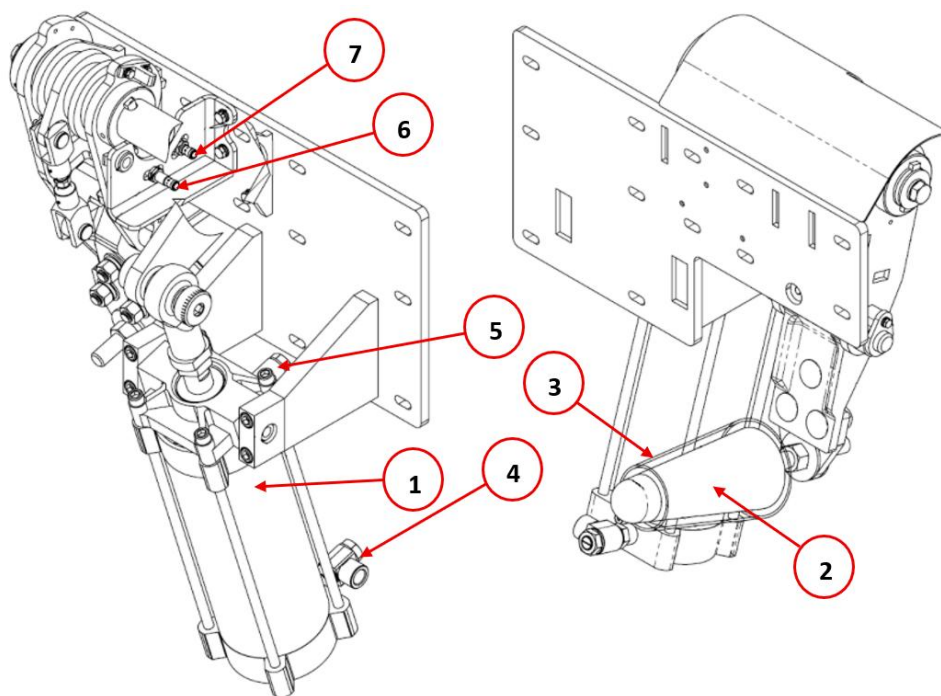


Figure 22 : Draining mechanism components identification

	Part description	Drawing/Part number	Note
1	Pneumatic cylinder assembly	A00-24121-PN-1310	
2	Refractory conical plug	A113396	
3	Compressed fiber cone for plug	A112920	
4	Unidirectional flow limiter connection	GRLA-1_2-B	Connection for opening the draining plug
5	Unidirectional flow limiter connection	GRLA-1_2-B	Connection for closing the draining plug
6	inductive sensor	ISF244	Open position
7	Safety inductive sensor	IME2S12.04N40C0	Closed position

7.6 POWER AND CONTROL PANEL DESCRIPTION

The power panel R43.52-PP-01 (on the right side as shown in the picture *Figure 23 : Control and power panel*) supplies 400 V AC power to equipment such as actuators, brake motors, immersion heaters, and the power panel air conditioner. The main 400V AC electrical power is supplied to the power panel by the facility's electrical distribution system.

The control panel R43.52-CP-01 (on the left side as shown in the picture *Figure 23 : Control and power panel*), contains the control equipment, including the programmable logic controller (PLC), burner control unit (BCU), safety relay, and ethernet switch. 230V AC electrical power is supplied to the control panel by the facility's electrical distribution system.

Opening the panels requires the use of a double bits 5 mm key. The facility's lockout/tagout procedure shall be followed in accordance with applicable safety requirements.

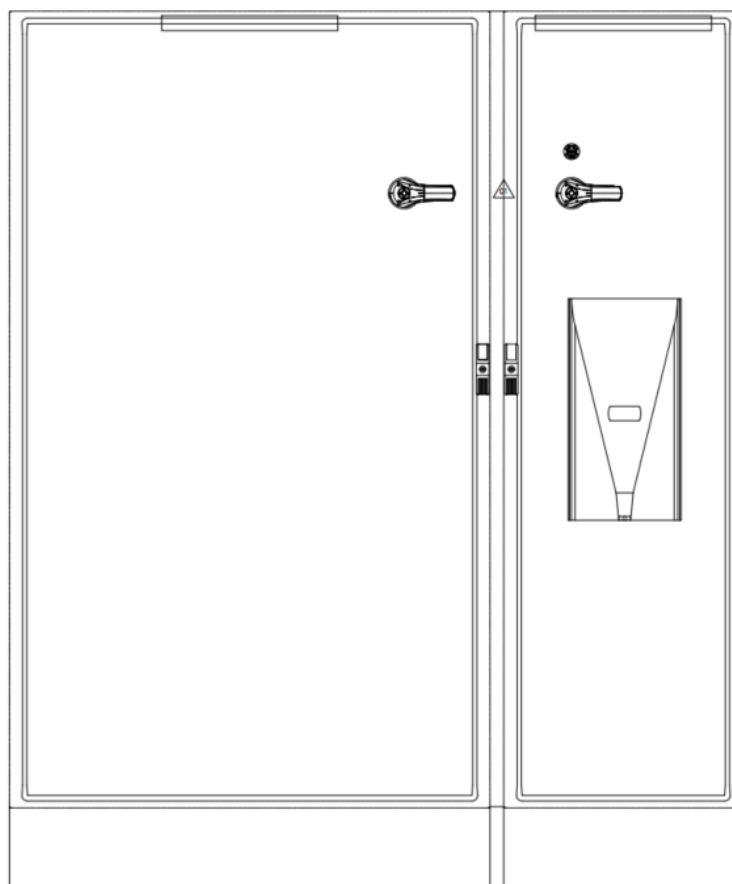


Figure 23 : Control and power panel

Disconnect switches

The upstream disconnect switches R43.52-JS-01 and R43.52-JS-02 serve as the means of energy isolation and can be padlocked to ensure safe maintenance operations. The facility's lockout/tagout procedure shall be followed in accordance with applicable safety requirements.



Caution: Refer to the current lockout procedure (see factory health and safety department).

7.7 CONTROL INTERFACE DESCRIPTION

7.7.1 Operator room

The main control location for the two DYNAPRIME is in the casting line control station. This location is not covered in this manual, as it falls under the customer's responsibility.

7.7.2 Control junction box description

Each DYNAPRIME unit has its own control junction box situated on the lid fixed frame: R43.52-CBJ-01 for the left unit and R43.52-CBJ-02 for the right. Both junction boxes serve the same function. To perform this function, several illuminated push buttons are provided. The lights provide a visual indication of the button function's availability.

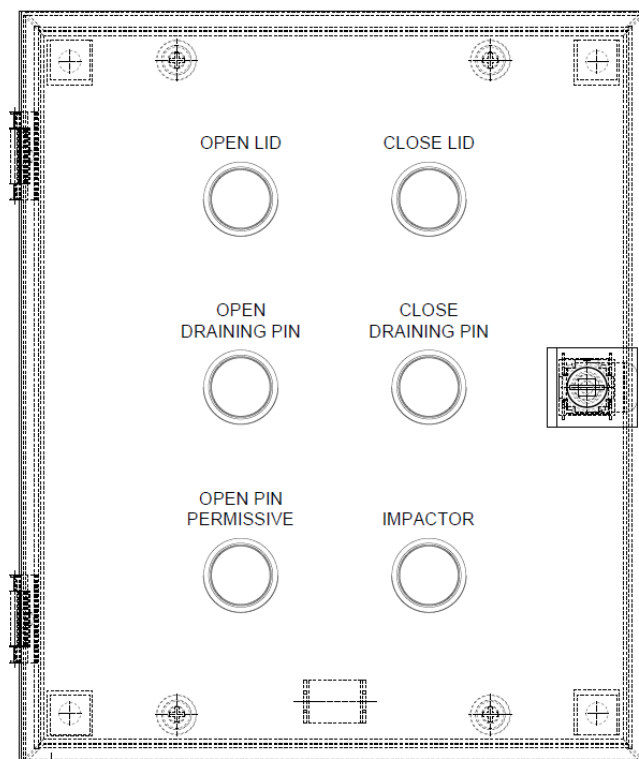


Figure 24 : Control junction box

	Push button description	Light color
1	Open lid	White
2	Close lid	White
3	Open draining pin	White
4	Close draining pin	White
5	Open pin permissive	-
6	Impactor jog	White

7.8 PNEUMATIC PANEL AND NATURAL GAS COMPONENTS DESCRIPTION

7.8.1 The natural gas components

The system includes valves, regulators, and control instruments designed to manage both the *high fire* and *low fire* preheating phases. These components are mounted on a shared platform and are powered by the pneumatic control panel. The valves, regulators, and instruments ensure precise adjustment of the air-to-gas ratio for optimal combustion.

Certain elements of the gas system are installed directly on the DYNAPRIME unit—on the lid support leg and on the burner itself. Each piping line is equipped with ball valves for isolation and maintenance purposes.

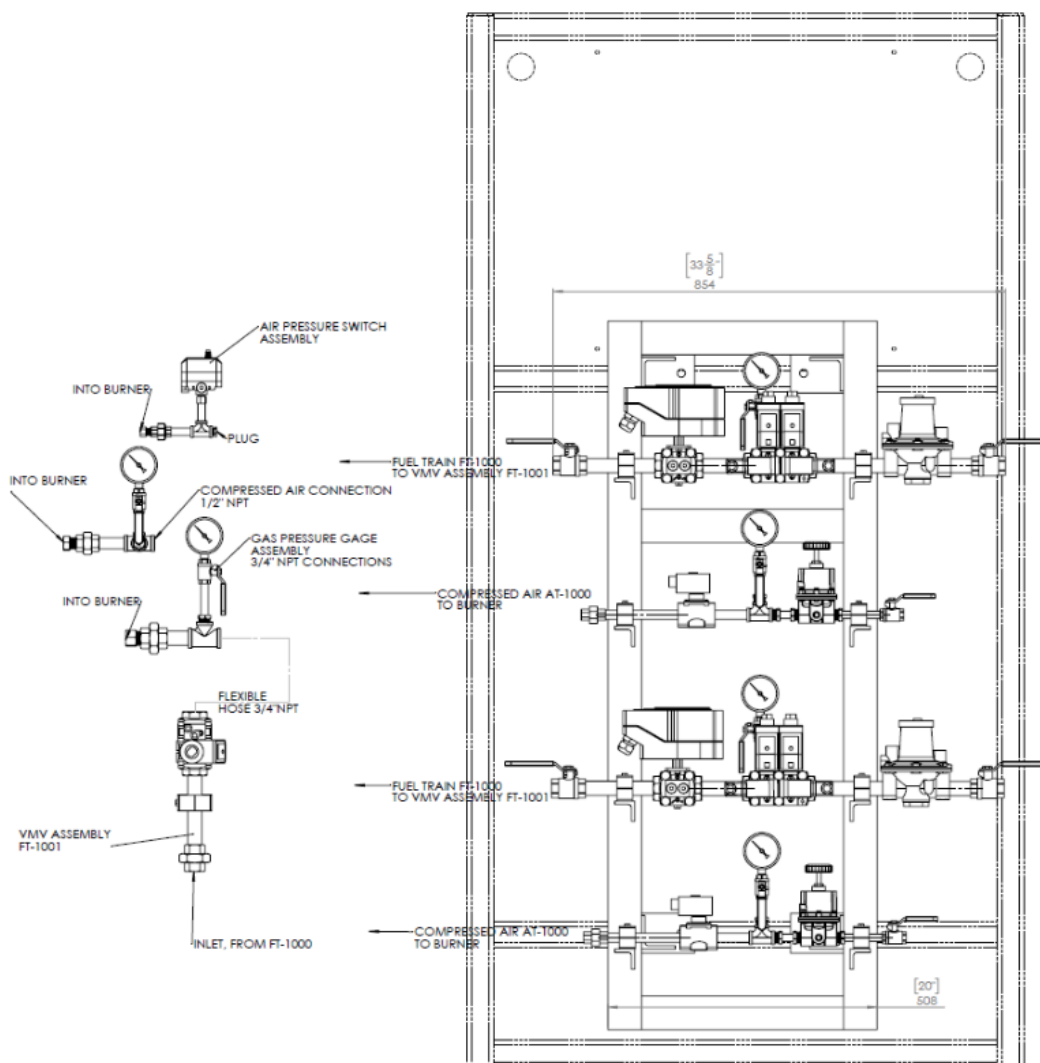


Figure 25 : Natural gas components

Prior to reaching the main components, the natural gas pressure must be reduced. To achieve this, a pressure reduction station (bumpdown station) has been installed upstream of the gas rack. This station lowers the plant's natural gas supply pressure from 100 kPa to a working pressure of approximately 15–20 kPa.

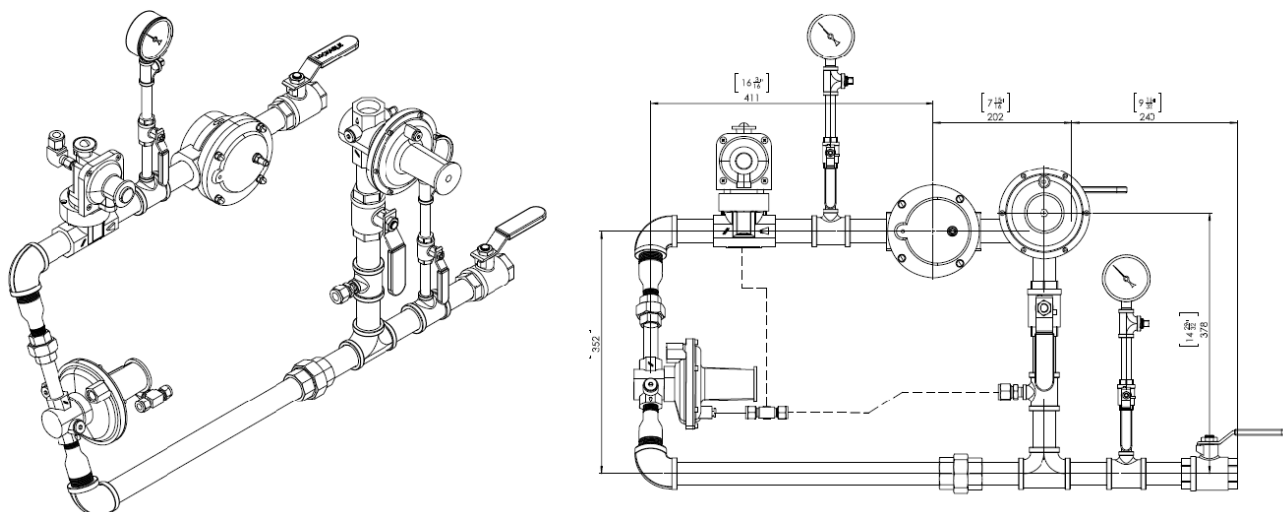


Figure 26 : Bumpdown station

A gas meter has been installed between the bumpdown station and the main components of the gas rack. The gas meter is used to monitor and record the natural gas consumption.



Figure 27 : Gas meter – Elster BK-G6/U10 IN Z61

7.8.2 The pneumatic panel

The pneumatic panel supplies compressed air to the DYNAPRIME priming equipment and the natural gas system. It contains the valves and controllers required for the equipment operation. At the panel entry, a main shut-off valve is provided for maintenance purposes. This valve allows the complete purge of compressed air from the pipeline.

Each priming unit is equipped with its own pressure control system. Pressure is automatically regulated using a proportional regulator.

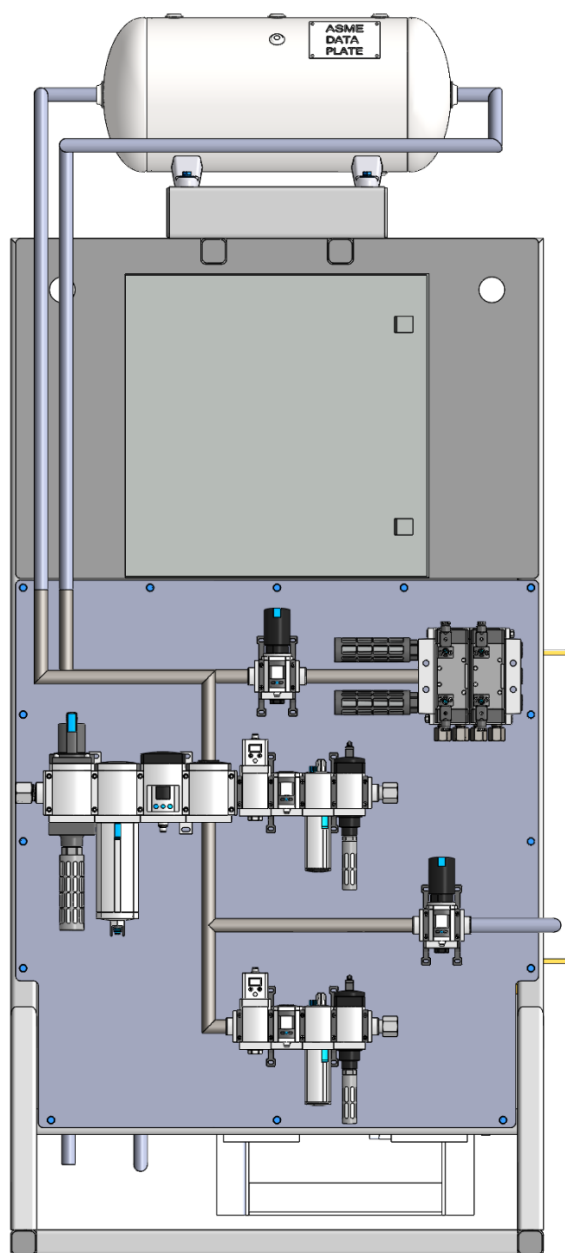


Figure 28 : Pneumatic (compressed air) racking

7.8.3 Key Components

1. Gas Regulators

This device regulates the pressure of incoming gas from supply cylinders or pipelines to the required operating level. It features adjustable knobs that allow precise fine-tuning and ensure pressure stability.

2. Pressure Gauges

Display real-time pressure readings for both gas and pneumatic systems. Separate gauges are provided for monitoring inlet and outlet pressures.

3. Valves

Includes both manual and solenoid-operated valves for controlling the flow of gases and compressed air. Safety shut-off valves are included for emergency scenarios.

4. Pneumatic Lines

High-pressure lines for delivering compressed air to connected tools or machinery. Designed for minimal leakage and high durability.

5. Connection Ports

Standardized connectors for attaching gas cylinders, air compressors, or distribution lines. Include quick-release mechanisms for ease of use.

6. Safety Systems

Integrated relief valves and alarms to prevent overpressure situations.

7. Electrical terminal blocks

The electrical terminal blocks serve as the primary interface for connecting power and control wiring to the pneumatic and natural gas components. They act as a centralized distribution point, ensuring safe, reliable, and organized routing of electrical power and control signals throughout the control panel.

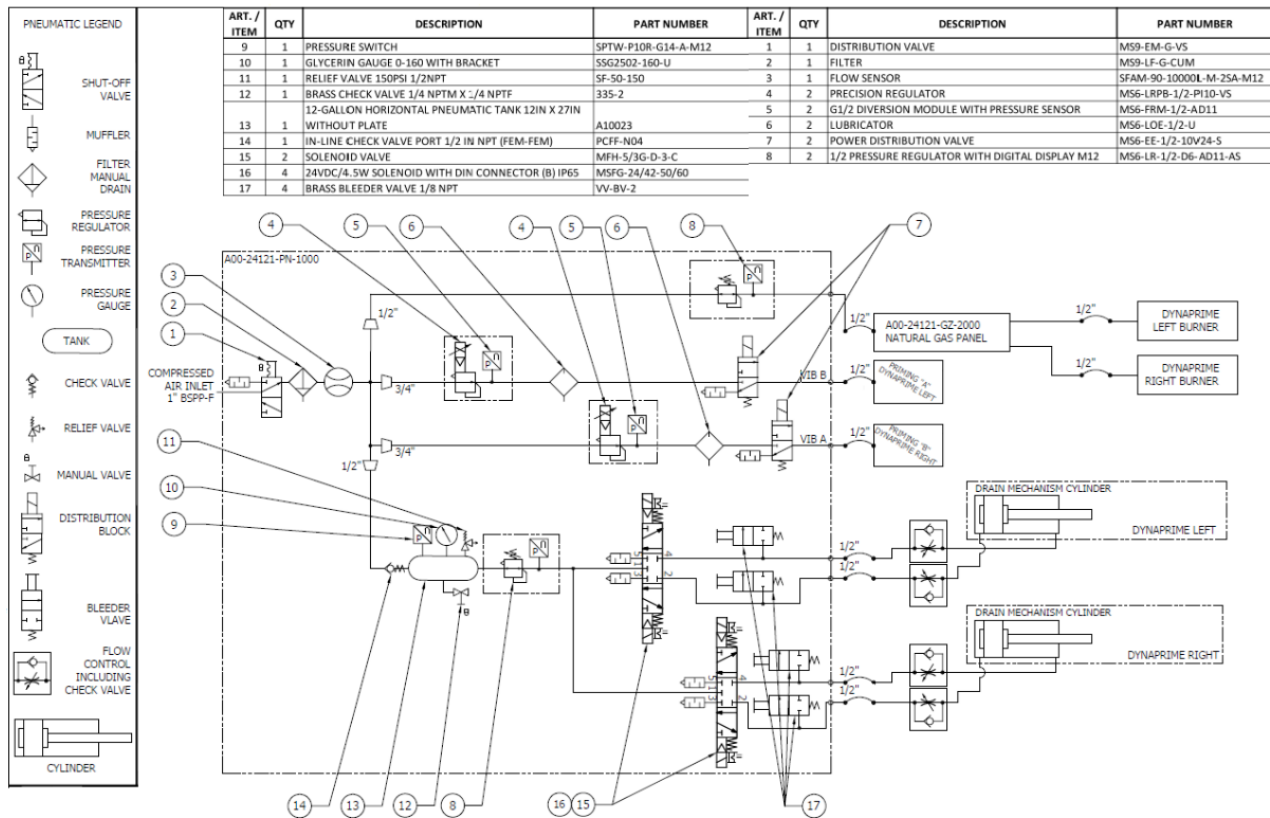


Figure 29 : Pneumatic (compressed air) diagram

8. INSTALLATION INSTRUCTIONS

Equipment is partially dismantled for shipment. Customer must plan installation of some components. Use the dedicated spreader beam when lifting (see section 5).

8.1 DYNAPRIME ASSEMBLY INSTALLATION

1. Adjust the height of the DYNAPRIME: the DYNAPRIME assembly is mounted on a steel frame (example shown in the picture below). The height of the DYNAPRIME relative to the trough line is adjusted with shims on the steel frame. Jack screws are integrated on the steel flange feet to help with the leveling and adjustment.

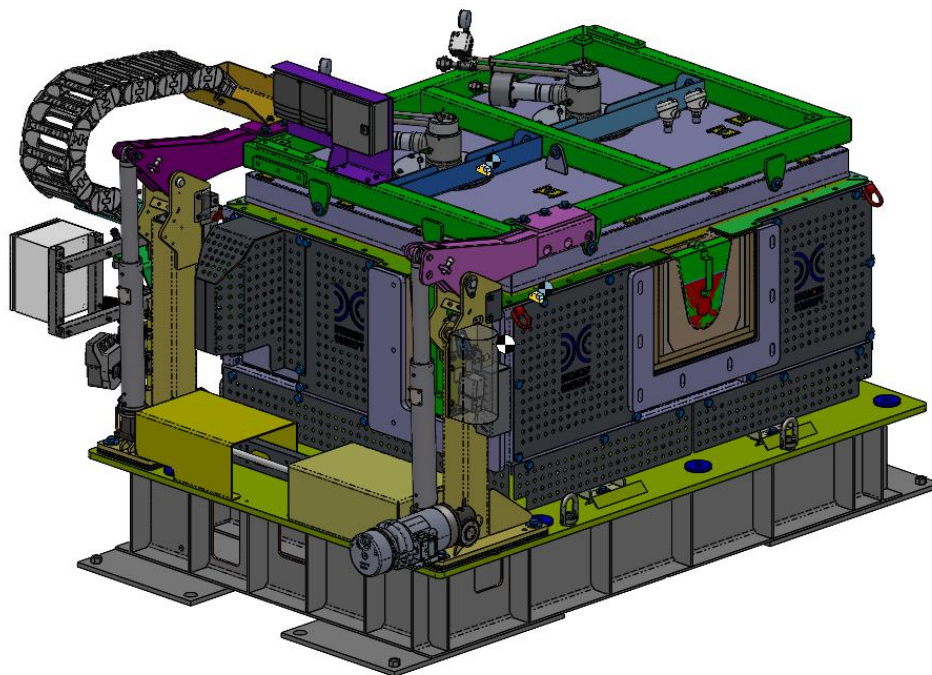


Figure 30 : Example of a DYNAPRIME with steel frame

2. Align and connect the DYNAPRIME with the trough:
 - a. Be sure to install a gasket between the flanges.
3. Anchor the DYNAPRIME to the steel frame:
 - a. Use the supplied blue fender washer on DYNAPRIME base when fixing to the steel frame.
 - b. Use M20 bolts to anchor the DYNAPRIME to the steel frame.

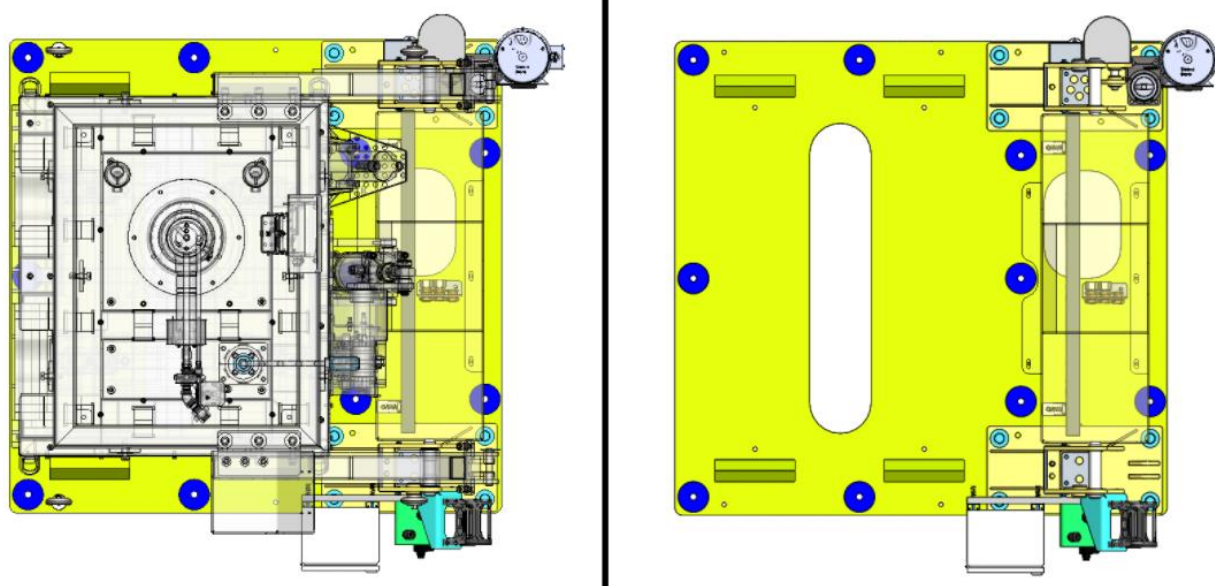


Figure 31 : Location of the anchor holes on the base plate represented by the blue washers (left image with DYNAPRIME, right image without DYNAPRIME).

4. Drill holes on concrete floor:
 - a. Follow the manufacturer's instructions for chemical anchors.
 - b. Grouting must be dry before final torque of the chemical anchors.

8.2 POWER AND CONTROL PANEL INSTALLATION

The layout of the power and control cabinet in relation to the DYNAPRIME area must be as shown in drawing **24121-970-500**. The exact location will be determined on site.

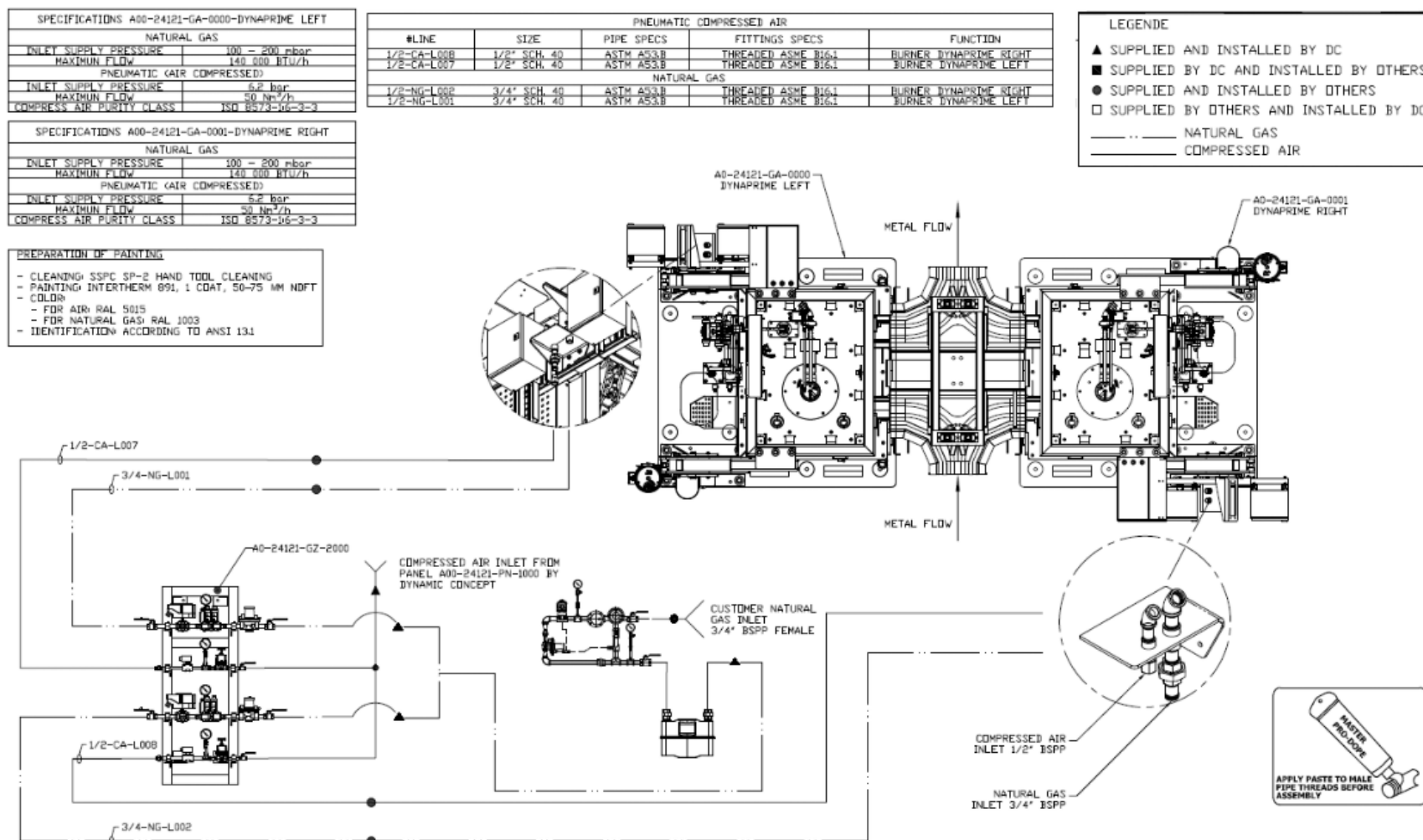
- Respect the load capacities.
- When installing the enclosures, the mounting surfaces must be sufficiently smooth.
- Respect all specified torque values.
- Failure to apply the specified torque values—whether over- or under-tightening—can result in equipment damage, serious injury, or even death.
- Avoid any unnecessary openings on the enclosure. All cable entry openings must be properly sealed to maintain the enclosure's protection rating and ensure the integrity of the panel.

8.2.1 Electrical connection

A 200 mm base is provided to allow electrical connections from below. Each wire must be terminated on the designated terminal block. For detailed wiring information, refer to drawings 24121-930-400 through 24121-930-407.

8.3 PNEUMATIC PANEL AND GAS RACK INSTALLATION

1. Connect main compressed air to the pneumatic panel.
2. Connect compressed air to the vibrators (line ½-CA-L001 and ½-CA-L004).
3. Connect compressed air to the draining pin cylinder: line ½-CA-L002 for the close draining pin DYNAPRIME Left, line ½-CA-L002 for the close draining pin DYNAPRIME Left, line ½-CA-L005 for the close draining pin DYNAPRIME Right, line ½-CA-L006 for the close draining pin DYNAPRIME Right.
4. Connect compressed air to the natural gas rack.
5. Connect compressed air to the DYNAPRIMES foot mount (line ½-CA-L007 and ½-CA-L008).
6. Connect main natural gas to the natural gas rack.
7. Connect main natural gas to the DYNAPRIME foot mount (line ½-NG-L001 and ½-NG-L002).





PNEUMATIC COMPRESSED AIR				
#LINE	SIZE	PIPE SPECS	FITTINGS SPECS	FUNCTION
1/2-CA-L001	1/2" SCH. 40	ASTM A53.B	THREADED ASME B16.1	PRIMING DYNAPRIME LEFT
1/2-CA-L002	1/2" SCH. 40	ASTM A53.B	THREADED ASME B16.1	CLOSE DRAINING DYNAPRIME LEFT
1/2-CA-L003	1/2" SCH. 40	ASTM A53.B	THREADED ASME B16.1	OPEN DYNAPRIME LEFT
1/2-CA-L004	1/2" SCH. 40	ASTM A53.B	THREADED ASME B16.1	PRIMING DYNAPRIME RIGHT
1/2-CA-L005	1/2" SCH. 40	ASTM A53.B	THREADED ASME B16.1	CLOSE DRAINING DYNAPRIME RIGHT
1/2-CA-L006	1/2" SCH. 40	ASTM A53.B	THREADED ASME B16.1	OPEN DRAINING DYNAPRIME RIGHT

SPECIFICATIONS A00-24121-GA-0000-DYNAPRIME LEFT	
PNEUMATIC (AIR COMPRESSED)	
INLET SUPPLY PRESSURE	6.2 bar
MAXIMUM FLOW	450 Nm ³ /h
COMPRESS AIR PURITY CLASS	ISO 8573-1:6-3-3

SPECIFICATIONS A00-24121-GA-0001-DYNAPRIME RIGHT	
PNEUMATIC (AIR COMPRESSED)	
INLET SUPPLY PRESSURE	6.2 bar
MAXIMUM FLOW	450 Nm ³ /h
COMPRESS AIR PURITY CLASS	ISO 8573-1:6-3-3

PREPARATION OF PAINTING

- CLEANING: SSPC SP-2 HAND TOOL CLEANING
- PAINTING: INTERTHERM 891, 1 COAT, 50-75 MM NDFT
- COLOR:
 - FOR AIR: RAL 5015
 - FOR NATURAL GAS: RAL 1003
- IDENTIFICATION: ACCORDING TO ANSI 13.1

LEGENDE

- ▲ SUPPLIED AND INSTALLED BY DC
- SUPPLIED BY DC AND INSTALLED BY OTHERS
- SUPPLIED AND INSTALLED BY OTHERS
- SUPPLIED BY OTHERS AND INSTALLED BY DC

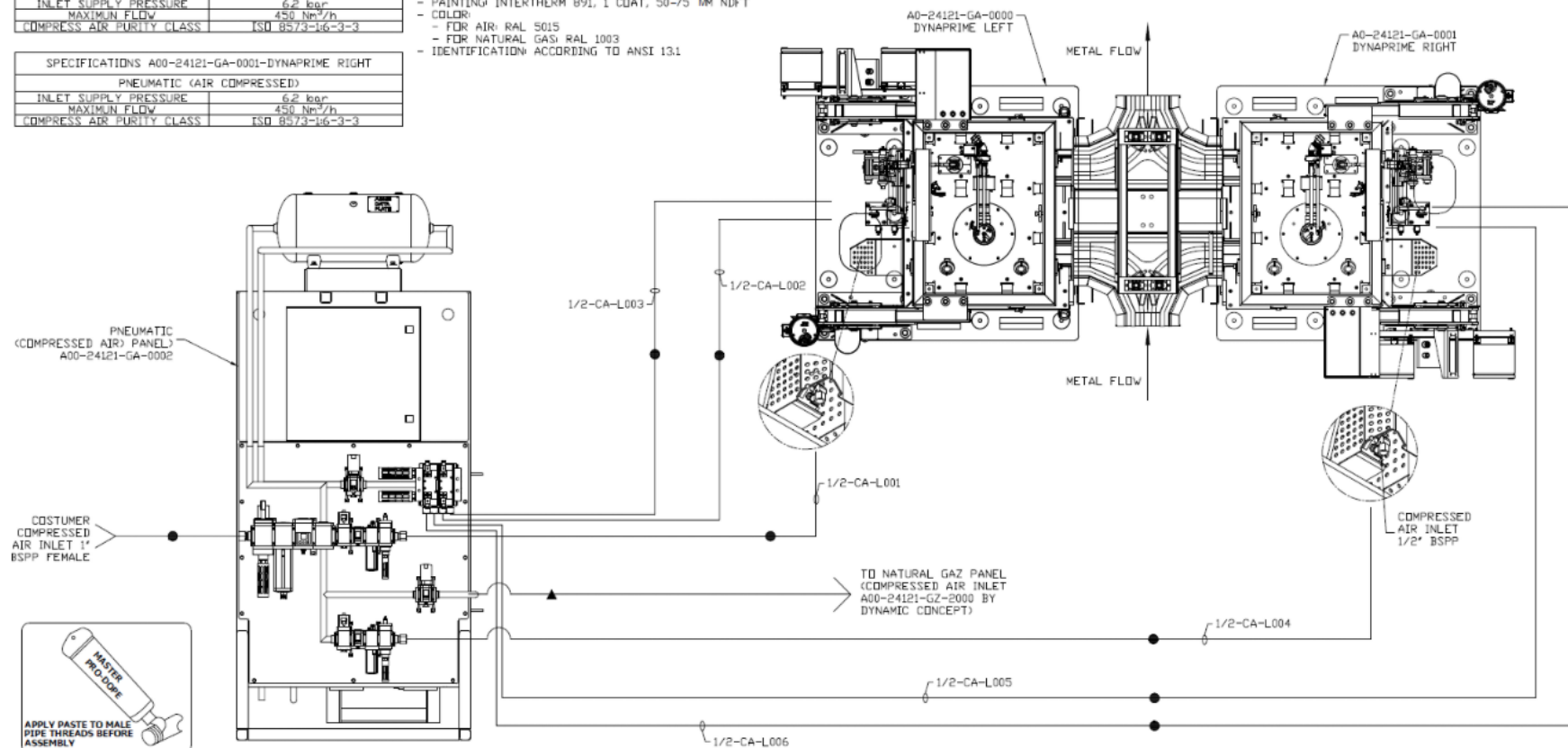


Figure 33 : Schematic diagram of the DYNAPRIME pneumatic service connections (Ref : drawing A00-24121-SP-1100)

9. HMI PAGES FOR OPERATOR STATION

The HMI pages allow operators to visualize and interact with the DYNAPRIME process.

It alerts operators to any faults, errors, or abnormal conditions through visual interface. Detailed alarm messages help in diagnosing and resolving issues efficiently.

The HMI pages provide access to diagnostic tools that help identify the root causes of malfunctions and inefficiencies.

The following information is provided as an example and is not in its final form. Please consider pages 51 to 56 as examples. Colors codes will be adjusted to client's specifications.



Unauthorized operation, unapproved system modifications, or improper use of the HMI can result in serious safety hazards, equipment damage, or production downtime. The HMI is designed to be operated exclusively by skilled personnel who have received proper training and authorization.

Important:

Only qualified staff should make system changes or adjust operational parameters.



- Ensure operators are familiar with this manual and the safety protocols outlined herein before using the HMI.
- Never bypass safety features or alarms without consulting the appropriate technical support or management.

Failure to adhere to these guidelines may compromise operator safety, machine integrity, and overall system performance.

Operator's permissions

Passwords can be added on different pages to allow different level of user access.

9.1 SYMBOL LEGENDS

	- One or more interlock conditions are not OK. Not ready to run or energize.
	- All interlock conditions are OK. Ready to run or energize.

9.2 HOME

The Home page of the HMI serves as the central interface.

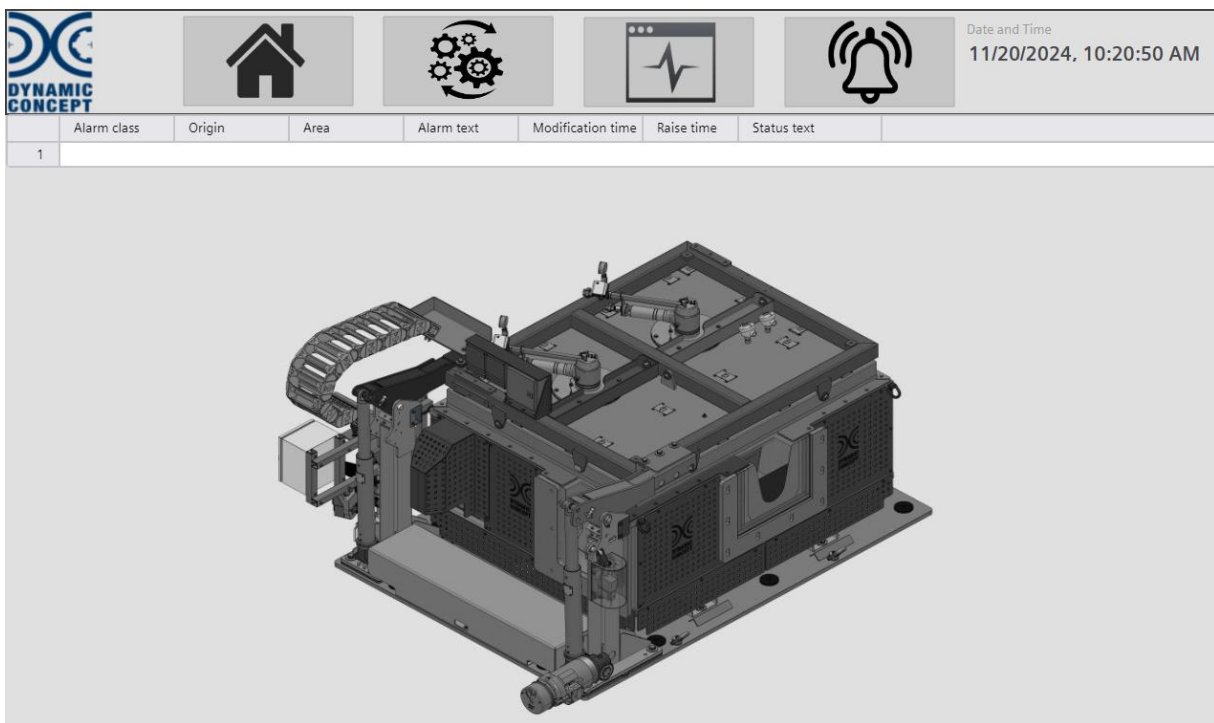






Figure 34 : HMI - Home screen

From any page, manually tap the following images to navigate through the different pages:

	Home <ul style="list-style-type: none"> - Visual representation of the machine
	System overview <ul style="list-style-type: none"> - Current operational status - Setting options (filter)
	Diagnostic <ul style="list-style-type: none"> - Diagnostic - Manual operation options
	Alarms <ul style="list-style-type: none"> - View active alarms

9.3 SYSTEM OVERVIEW

The *System overview* page of the HMI serves as the primary interface for operators to monitor and control the DYNAPRIME.

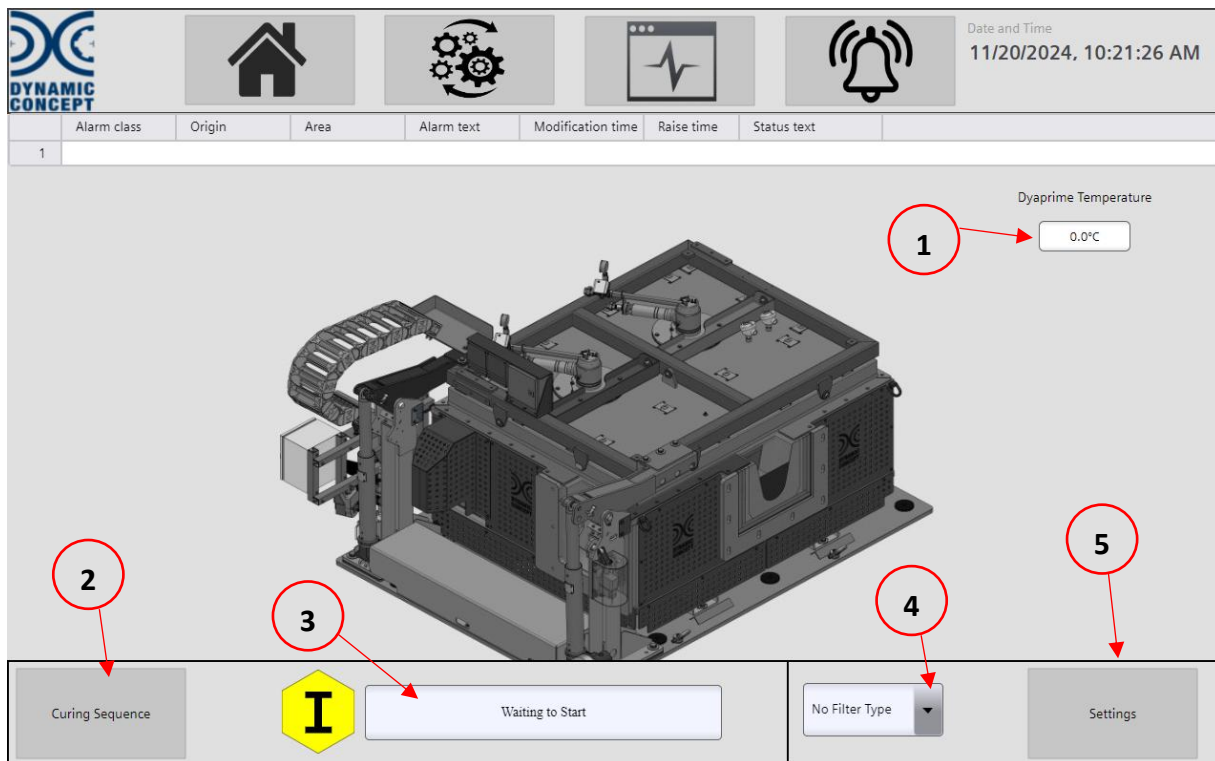


Figure 35: HMI – Overview

①	Temperature measured by the control thermocouple
②	Curing sequence must be executed after each refractory bowl replacement. This sequence will preheat the DYNAPRIME with the curing programmed in the PLC
③	DYNAPRIME Sequence display
④	Filter selection. To start the DYNAPRIME, the filter type must be selected.
⑤	Tap to choose settings

9.4 SYSTEM DIAGNOSTIC

The *System Diagnostics* page allows operators and maintenance personnel to monitor the status of the DYNAPRIME. This page displays real-time feedback from sensors (e.g., pressure, temperature, or position of the lid).

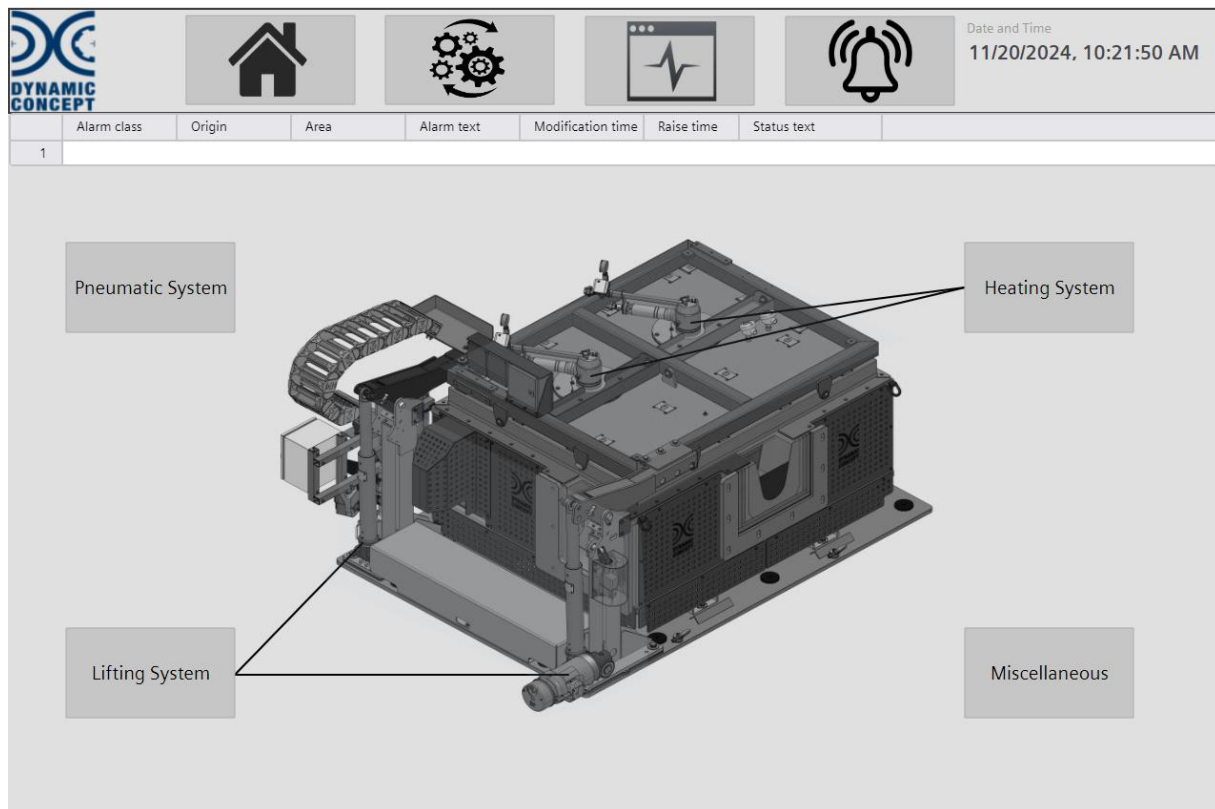


Figure 36 : HMI – System Diagnostic

9.4.1 System Diagnostic – Heating system

The *Heating system Diagnostic* page is designed to streamline troubleshooting and support efficient operation of the heating system. This page provides real-time insights into key performance parameters, including the Burner Control Unit (BCU) status, burner gas pressure, and temperature.

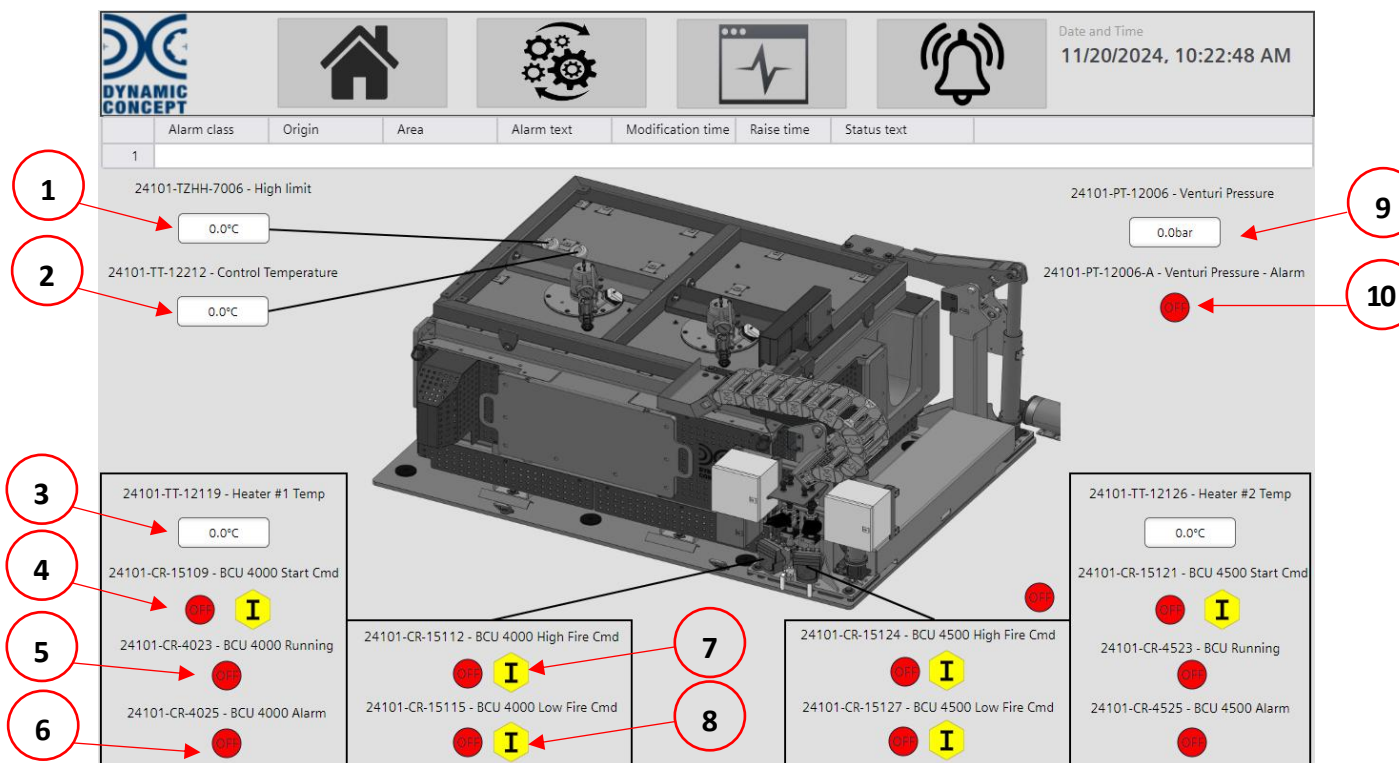


Figure 37 : Heating system

①	Temperature measured by the "Temperature High limit" thermocouple.
②	Temperature measured by the "Temperature Control" thermocouple.
③	Temperature measured by the "Burner #1" thermocouple. Same for the Burner #2.
④	Indicate when the BCU 4000 (Burner #1) "Start command" is activated. Without this command, BCU is OFF. Same for the BCU 4500 (Burner #2). RED = Command OFF GREEN = Command ON
⑤	Indicate when the BCU 4000 (Burner #1) is running. Same for the BCU 4500 (Burner #2). RED = BCU not running GREEN = BCU running
⑥	Indicate when the BCU 4000 (Burner #1) is in alarm. Same for the BCU 4500 (Burner #2). RED = NO Alarm GREEN = Alarm



⑦	Indicate when the BCU 4000 (Burner #1) "High Fire" is activated. Same for the BCU 4500 (Burner #2). RED = Command to BCU "High Fire" GREEN = No command to BCU "High Fire"
⑧	Indicate when the BCU 4000 (Burner #1) "Low Fire" is activated. Same for the BCU 4500 (Burner #2). RED = Command to BCU "Low Fire" GREEN = No command to BCU "Low Fire"
⑨	Gas pressure measured by the pressure transmitter located in the gas panel.
⑩	Indicate when the gas pressure measured by the pressure transmitter located in the gas panel is out of set point. RED = NO Alarm GREEN = Alarm

9.4.2 System Diagnostic – Lid opener

The *Lifting system Diagnostic* page is designed to streamline troubleshooting and ensure the efficient operation of the lifting system. This page provides real-time insights into the machine's performance parameters, including the cover jack, cover status and safety relay status.

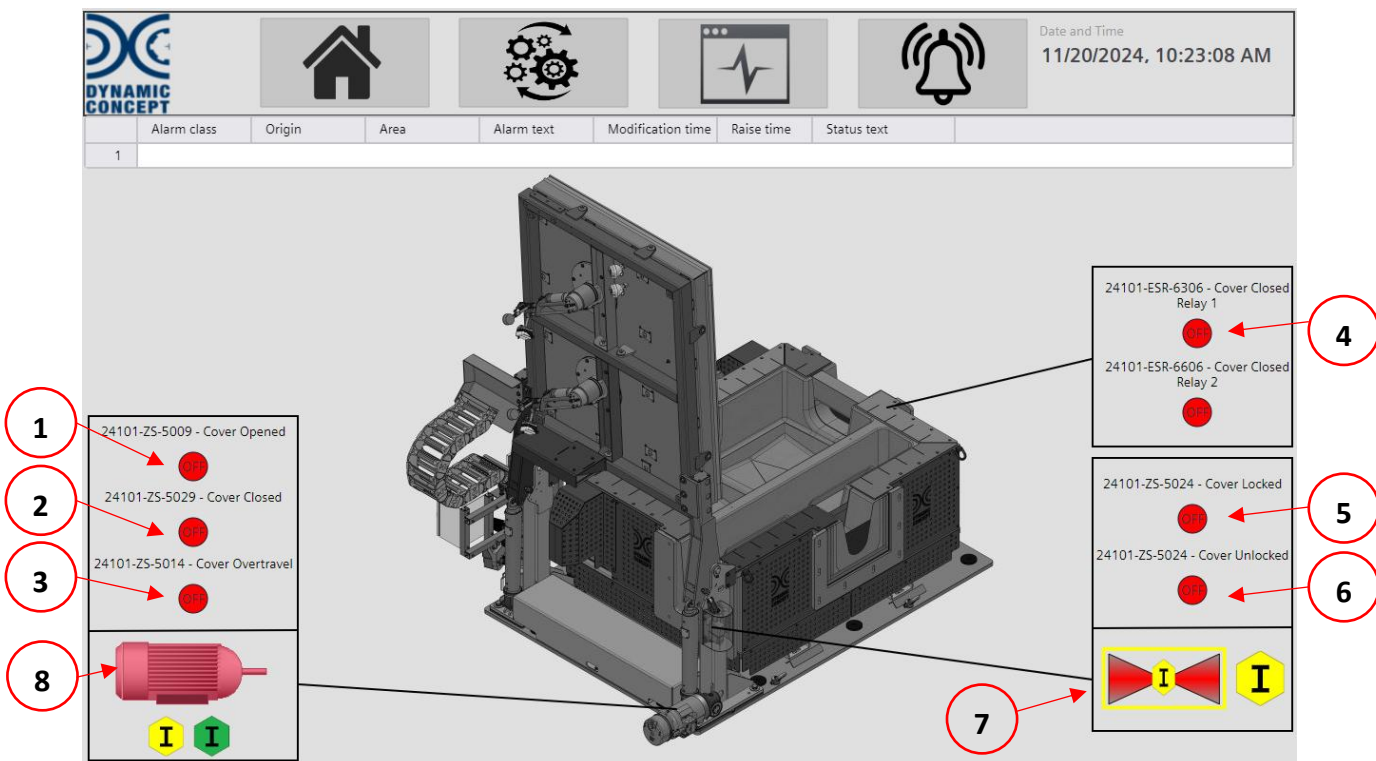
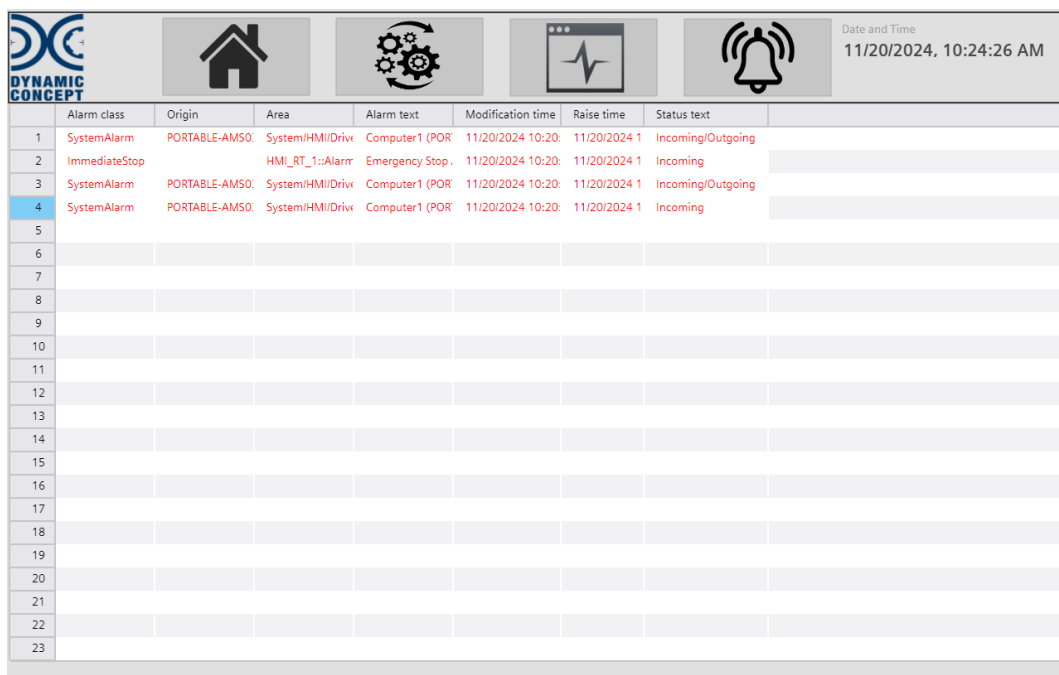


Figure 38: Lifting system

①	Indicate when the proximity switch "Cover Opened" have been reached. RED = Cover NOT OPEN GREEN = Cover OPEN
②	Indicate when the proximity switch "Cover closed" have been reached. RED = Cover NOT CLOSED GREEN = Cover CLOSED
③	Indicate when the proximity switch "Overtravel" (open position) have been reached. RED = Cover NOT OVERTRAVEL GREEN = Cover OVERTRAVEL
④	Indicate when the safety relay "Cover Closed relay #1" is activated. It means that safety proximity switch "Cover closed" have been reached. Same for Safety relay #2. RED = Safety relay NOT ACTIVATED GREEN = Safety relay ACTIVATED
⑤	Indicate when the proximity switch "LOCK POSITION" of the safety pin have been reached. RED = Safety pin NOT LOCKED position GREEN = Safety pin LOCKED position
⑥	Indicate when the proximity switch "UNLOCK POSITION" of the safety pin have been reached. RED = Safety pin NOT UNLOCKED position GREEN = Safety pin UNLOCKED position

9.5 ALARMS

The Alarms page allows operators and maintenance personnel to monitor the status of the alarms. This page displays all current alarms.



	Alarm class	Origin	Area	Alarm text	Modification time	Raise time	Status text
1	SystemAlarm	PORTABLE-AMSO	System/HMI/Drive	Computer1 (POR	11/20/2024 10:20	11/20/2024 1	Incoming/Outgoing
2	ImmediateStop	HMI_RT_1:Alarm	Emergency Stop	11/20/2024 10:20	11/20/2024 1	Incoming	
3	SystemAlarm	PORTABLE-AMSO	System/HMI/Drive	Computer1 (POR	11/20/2024 10:20	11/20/2024 1	Incoming/Outgoing
4	SystemAlarm	PORTABLE-AMSO	System/HMI/Drive	Computer1 (POR	11/20/2024 10:20	11/20/2024 1	Incoming
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							

Figure 39 : Alarms

10. OPERATIONS AND OPERATING INSTRUCTIONS

10.1 AUTOMATIC MODE OPERATION

These steps ensure the system operates normally in Automatic Mode. During normal operation, this sequence remains active continuously to support system functionality.

10.1.1 Starting sequence:

Once all the prerequisites have been confirmed, the operator can start the sequence to prepare the system for heating.

- 1- Operator or higher-level system request "START" the sequence:
 - Lid lock actuator moves in « unlock position. » Detection of the lid lock actuator "UNLOCK"
 - a) Sound signal "ON"
 - Time delay 3 seconds after the detection of the lid lock actuator "UNLOCK" position
 - b) The lid «closed position»
 - Sound signal "ON" until lid "closed position"
- 1- When the lid is closed, the operator is responsible to install entrance preheating plug. After that the operator can start the heating sequence.
- 2- Press « Start Burner» button on HMI (located in the control room)
 - a. Burner purge
 - Factory set time
 - b. Burner ignition
 - Burner flame detection
 - c. Burner High Fire mode
 - Waiting for temperature rise set point
 - d. Burner Low Fire
 - Waiting for operator to stop the burner
- 3- The operators press the « Stop Burner» button on HMI (located in the control room)
 - a. Stop burners
- 4- The operator needs to remove entrance preheating plug and press «plug Removed» on the HMI (located in the control room).

10.1.2 Running the sequence

- 5- From the plant PLC, melted aluminum level is ready
 - a. Vibrators ON
 - Time delay (from PPI settings)
 - b. White states Lights – ON
 - c. Filter process. Waiting to stop

10.1.3 Stopping the Sequence:




At the end of the cast, the operator must stop the sequence to conclude the process.

- 1- Press « STOP» button on HMI (located in the control room)
 - a. Sound signal «ON»
 - 3 seconds
- 2- The operator must open the drainage plug
 - The operator must confirm the drainage's completion
- 3- The operator can open the lid
 - a. Lid opens
 - b. Sound signal «ON»
 - c. Detection of lid « opened position »
 - d. Lid lock
 - Lid lock «locked position»

Important Notes:

The operator must monitor the system during operation and be prepared to address alarms or interruptions if they occur.

11. MAINTENANCE

	WARNING:	Put equipment to zero-energy before maintenance.
	WARNING:	All equipment surfaces may be hot
	WARNING:	Always wear the required PPE

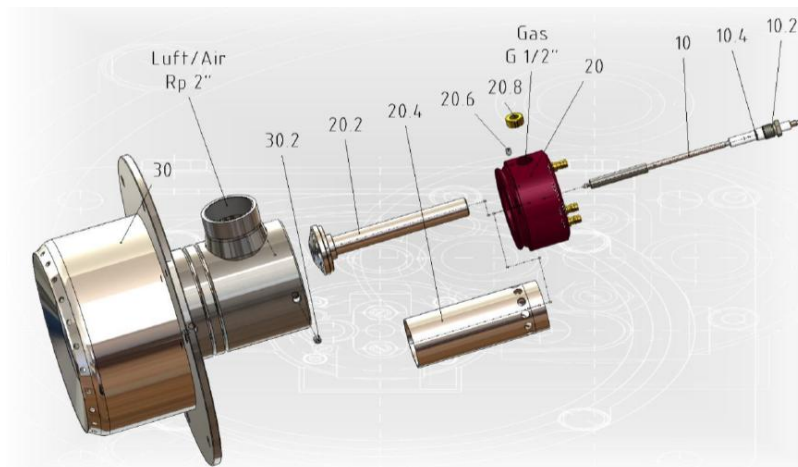
Maintenance mode is for trained and authorized maintenance personnel only.

11.1 PREVENTIVE MAINTENANCE

Component	Description	Frequency
Electrical actuators (nut)	Check the wear of the actuator nut (see procedure 11.2.2). Replace if needed	1 month
Electrical actuators, connecting shaft and motor	Inspect	1 month
Lid sealing pads	Check condition, check for leaks when the lid is in the closed position	1 month
Lid insulation protection plate	Check condition	1 month
Lid frame	Inspect	3 months
Lid insulation	Check condition	6 months
Lid brackets	Inspect	3 months
DYNAPRIME frame	Inspect	6 months
DYNAPRIME bolt torque	Inspect	1 month
Shock absorbers	Inspect	6 months
Vibrator steel frame weld	Inspect	6 months
Pneumatic and gas piping	Check condition and perform a leak test	6 months
Light indicator	Function test	1 month
Draining mechanism	Inspect	3 months
Physical condition of the electrical panel	Check condition	6 months
Physical condition the wire and conduits	Check condition	1 month

11.1.1 Burner's preventive maintenance

For the burner maintenance, refer to the manual: RL-DSB60_EN-NOXMAT - Technical Datasheet - Special Swirl-Type Gas Burner RL-DSB60, size 40-100



Maintenance intervals

Item	Designation	Maintenance interval
Item 10 (Fig. 1+2)	Ignition and monitoring electrode	half-yearly, visual inspection
Item 20.2 (Fig. 1+2)	Mixing nozzle	half-yearly, visual inspection
Item 20.4 (Fig. 1+2)	Burner tube	half-yearly, visual inspection
Item 30 (Fig. 1)	Combustion chamber with secondary air distribution	half-yearly, visual inspection
Item 30 (Fig. 1) Item 20.2 (Fig. 1)	Combustion chamber with secondary air distribution and mixing nozzle – check for metal deposits	regularly, visual inspection
	Tightness of gas and air connections	half yearly or acc. to user specs.
	Tightness of gas and air hoses / pipes	quarterly or acc. to manufacturer / user specifications
Items A, B, and C (Fig. 2)	Gas and air pressures	quarterly or acc. to user specs.
	Residual oxygen	quarterly or acc. to user specs.; check at 100 % burner output and rated temperature.
	Emission values	quarterly or acc. to user specs.; check at 100 % burner output and rated temperature.
	Automatic burner control unit	Regularly or acc. to maker's specs.

11.2 LUBRICATION INSTRUCTIONS

11.2.1 General assembly lubrication instructions

Apply **MOBIL UNIREX EP2** grease every 3 months at the points shown below:

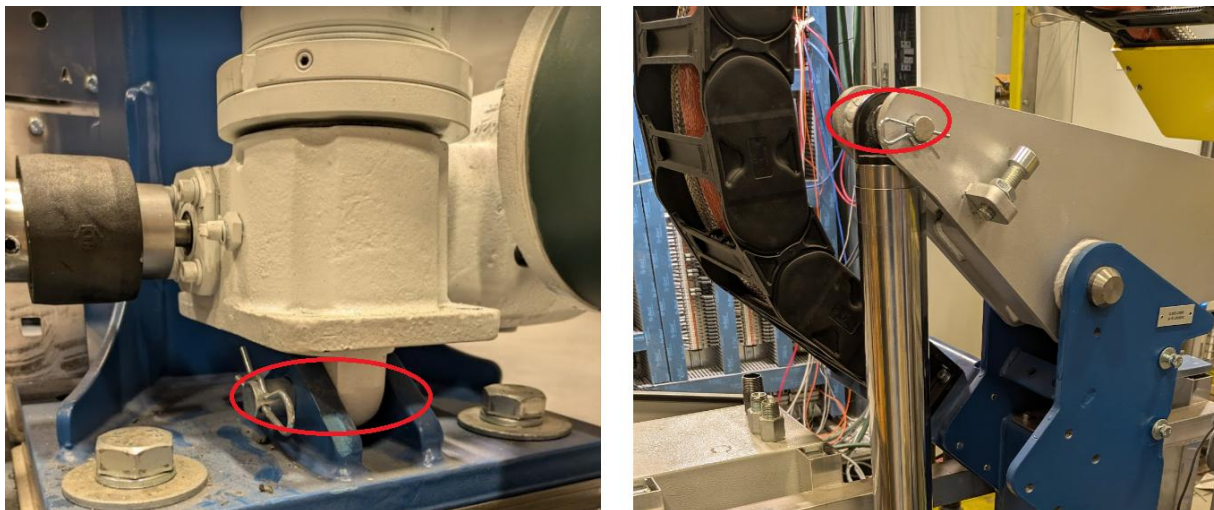


Figure 40 : Greasing points on the actuators

11.2.2 Electric actuators lubrication instructions

For the complete lubrication instructions, refer to the manual: *Operation and Maintenance Manual – FB0197*

Here is a summary of the lubrications instructions provided by the manual:

Electric Cylinder:

1. Electric Cylinders are lubricated before leaving the factory.
2. Do not operate Electric Cylinders without lubrication.
3. For normal operation, Electric Cylinders should be greased at least once per month. Under extended use, grease twice monthly or as conditions dictate. Grease with Mobil XHP 461 through the fittings on the Housing (1) and on the protection tube (20). This is a No. 1 Consistency Grease. It is the responsibility of the user to maintain sufficient lubrication to the electric Cylinder.
4. The products listed below are recommended by the lubricant manufacturers to meet the requirements for normal operation. The listing of brand names is solely for the convenience of users of Joyce equipment and their lubricant suppliers; it does not constitute any endorsement. Joyce/Dayton assumes no responsibilities for the quality, performance or availability of any listed products

Company	Brand Name	Electric Cylinder Component
Exxon Mobil	Mobilgrease XHP 461	Housing
Exxon Mobil	Mobilith SHC PM 460	Housing
Exxon Mobil	Mobilith SHC 221	Housing
Exxon Mobil	Mobilgrease XHP 461	Lifting screw and Tube

Gear Reducer (Option):

1. Standard ComDRIVE Electric Cylinder Gear Reducers are lubricated with AGMA 7 compounded oil (ISO Grade 460) before leaving the factory.

2. The products listed are recommended by the lubricant manufacturers to meet the requirements for normal operation. The listing of brand names is solely for the convenience of users of Joyce/Dayton equipment and their lubricant suppliers; it does not constitute any endorsement. Joyce/Dayton assumes no responsibilities for the quality, performance or availability of any listed products.

Company	Brand Name	ComDRIVE Electric Cylinder component
Mobil Oil	Mobil 600W Cylinder Oil	Gear reducer
Mobil Oil	Mobil 85W100	Gear Reducer
Mobil Oil	Mobil SHC 634 (synthetic)	Gear Reducer

3. Synthetic Lubricants are recommended for severe service applications. These lubricants offer more stable viscosity and temperature properties. They have a longer service life and may require less frequent lubrication changes. They also decrease friction and wear on the gear reducer and may increase the life of the gear reducer.

4. This synthetic lubrication is also compatible with nitrile seal material as well as with alloy bronze gear material.

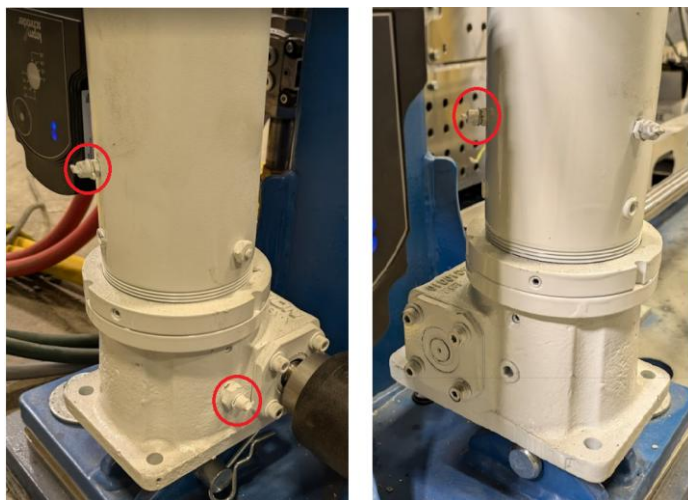


Figure 41 : Electric actuator grease fitting locations

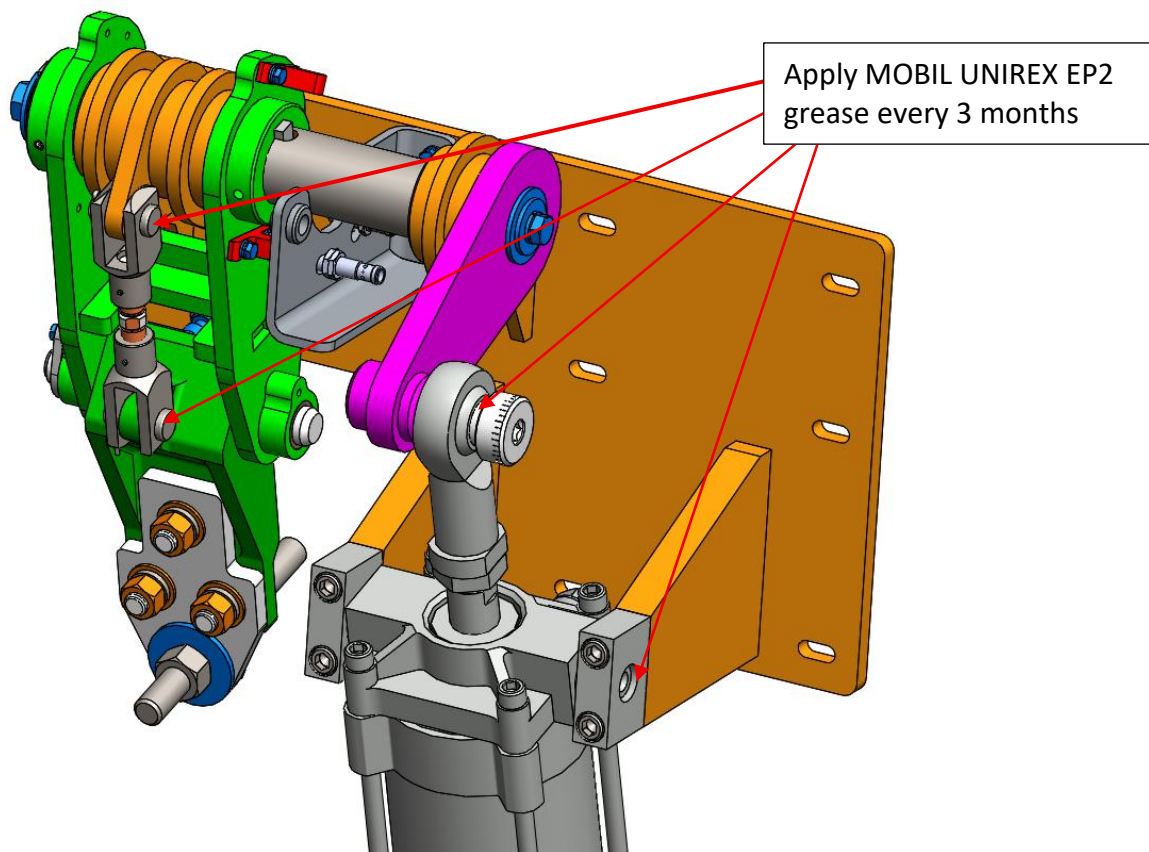
11.2.3 Locking mechanism lubrication instructions



Apply MOBIL UNIREX EP2
grease every 3 months

Figure 42 : Greasing points on the locking mechanism

11.2.4 Draining mechanism lubrication instructions



11.2.5 Pneumatic panel lubrication instructions

At the pneumatic panel, for each vibrator, a lubricator needs to be filled with any pneumatic oil type that complies with the viscosity range according to ISO 3448, VG32 class: 32 mm²/s (= cSt) at 40°C.15

- ARAL Vitam GF 32
- BP Energol HLP 32
- Esso Nuto H 32
- Mobil DTE 24
- Shell Tellus Oil DO 32

The filling frequency must be determined by the customer. Inspect the sight glass monthly to monitor the level and adjust the filling schedule accordingly.

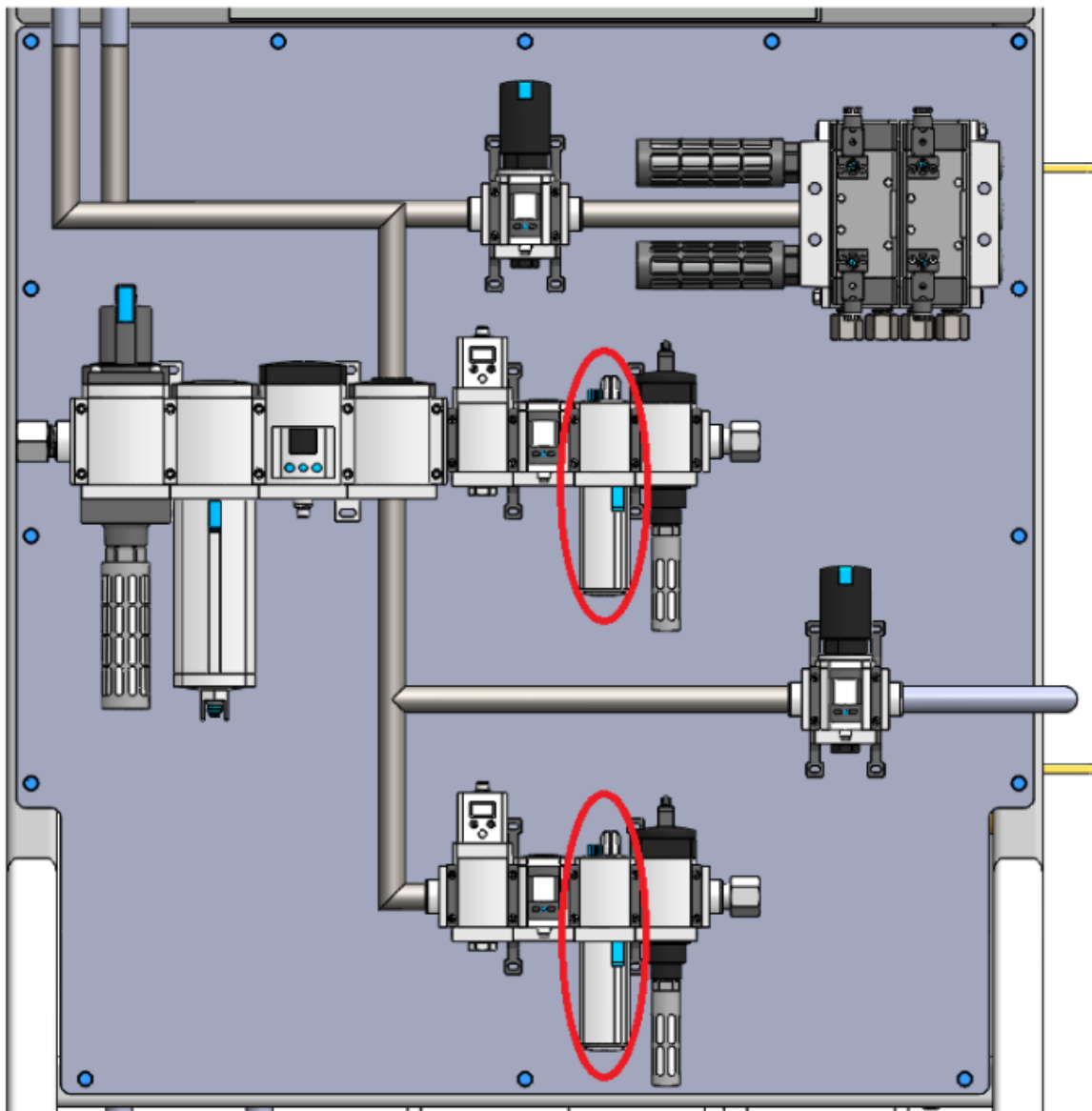


Figure 43: Lubricator location on pneumatic racking

11.3 REFRACTORY MAINTENANCE

Post-Cleanup Inspection

After each cleanup, a visual inspection is strongly recommended:

1. **Check for cracks:** Carefully inspect the bowl surface for any cracks or visible damage.
2. **Inspect tile-to-tile seals:** Ensure the seals between tiles are in good condition and fully intact.

Note: Over time, it is expected that the refractory bowl will crack. Monitor the metal/air line closely during casting. The crack should be repaired.

If the visual inspection reveals a potential issue:

1. **Evaluate the crack:** If a crack extends below the molten metal/air line, contact the refractory team immediately.
2. **Assessment by specialists:** The refractory team will determine if major refractory maintenance is necessary.

Weakly maintenance

The refractory team should inspect and apply boron nitride inside the DYNAPRIME refractory bowl. Dynamic Concept recommend using the blue version of boron nitride, as its color provides better visibility against the white refractory surface. This makes it easier to determine when a new coat needs to be applied. You can apply a coat using either a brush or a spray gun.

Ensure that no boron nitride is applied to the filter seal during the coating process. See picture below.

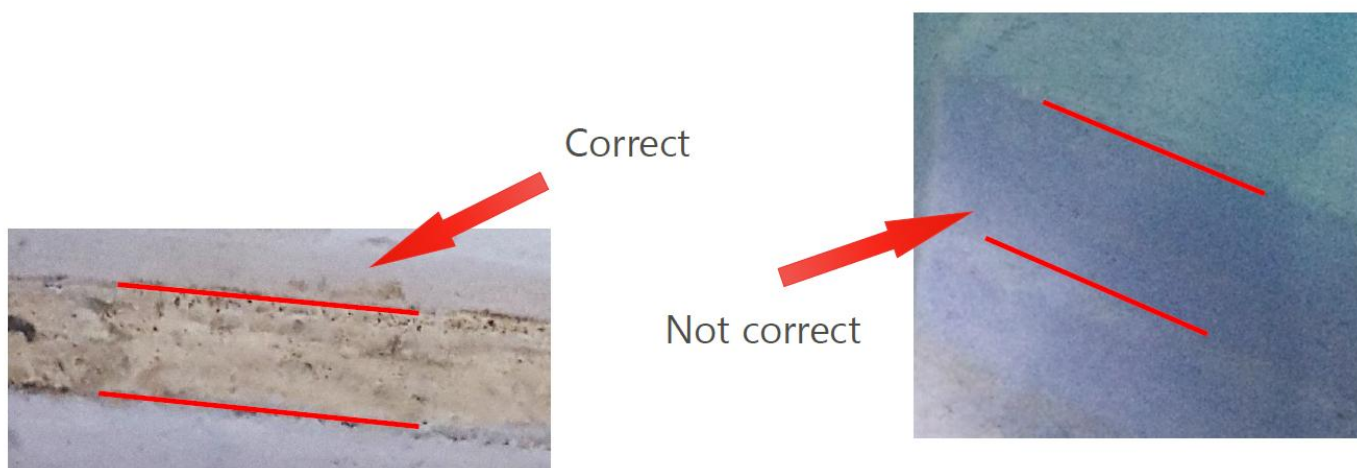


Figure 44: Filter seal special care – reference Pyrotek documentation

The filter seats facing the two tunnels must also undergo special maintenance. The corner should be radius-free to prevent air from being trapped during the metal filling. To carry out the repair, use refractory mortar such as *PYROFORM E-Z Fill* or *PYROTEK Mastic 85*.

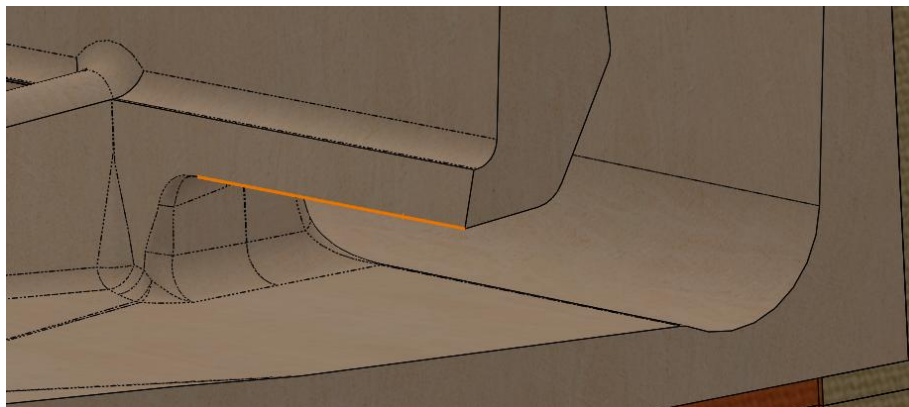


Figure 45: Edge to be with no radius

The seal between tiles must be regularly inspected and repaired as necessary to ensure optimal performance. Cracks will be the first points of friction targeted by the metal. Each customer may utilize a proprietary 'in-house' formulation for this type of seal. Dynamic Concept provides DYNAPRIME, which is manufactured using the following formula:

- 1- **Fill the gap** between the bottom of the tile and up to 10 mm from the top with wool.
- 2- **Apply mortar** such as *PYROFORM E-Z Fill* or *PYROTEK Mastic 85*, filling the remaining space from the wool up to the top of the refractory

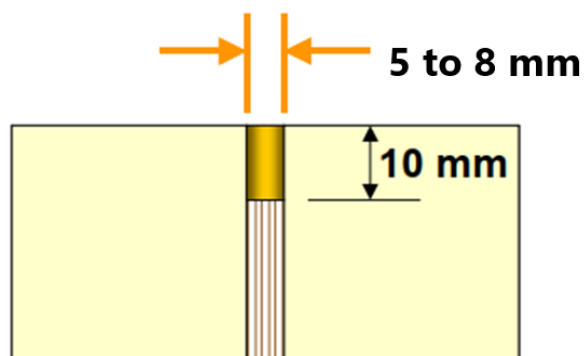


Figure 46: Seal construction detail

Refractory repairs

To extend the live of the refractory bowl, periodic repairs will be required. The primary failure mode that typically leads to a bowl change is the degradation of the filter seal seats. The following procedures are provided for guidance purposes only. Each customer may utilize a proprietary 'in-house' formulation for this type of repairs.

Small crack

Crack smaller than 3mm can be filled with wollastonite or a liquid suspension material such as *Releasecoat™ Blue* or *Holcote 110* or any refractory protective coating, applied using a brush or a sponge.

Crack and damage surface

It is possible to repair wide cracks [greater than 3 mm (1/8 inch) but less than 12 mm (1/2 inch) in width] or damaged surfaces by removing the oxide skins. The cracks in the damaged areas should not be deeper than half the thickness of the refractory. Various materials can be used such as *Thermbond* Patch Material or *PYROTEK Mastic 85*.

In all cases, thoroughly clean the surfaces to be repaired. Ensure that no coating material remains and that the surfaces are mechanically sound.

Regarding the "*Thermbond* Patch Material," it is similar to "*Thermbrake 402*." It is a dry powder combined with a phosphoric acid solution. In the case of the material being patched, the consistency is adjusted by adding more or less phosphoric acid solution, depending on the type of repair and the location.

IMPORTANT: After each refractory maintenance, a preheating sequence must be done with the DYNAPRIME itself.

11.4 LID INSULATION REPLACEMENT INSTRUCTIONS

For more information see the drawing A00-24121-MC-3100

1. Remove the following pieces from the lid: the burner assembly, the two (2) thermocouples, the retaining washers (1060591), the burner nozzle (1063353), the immersion heater assembly (A00-24121-MC-3120) and the two (2) insulation closing plates (1060589 and 1060602).
2. Place a 3mm ceramic paper at the bottom of the steel shell.
3. Cut the microporous panels.
4. Place the 3 layers of 25mm microporous panels over the ceramic paper.
5. Place the 1 layer of 25mm *Superwool 607 HT*.
6. Cut the hole for the burner assembly and the burner nozzle as shown in figure 43.
7. Cut the hole for the immersion heater assembly as shown in figure 43.
 - a. Apply a coat of refractory mortar around the hole for the burners to block the microporous powder to fall.

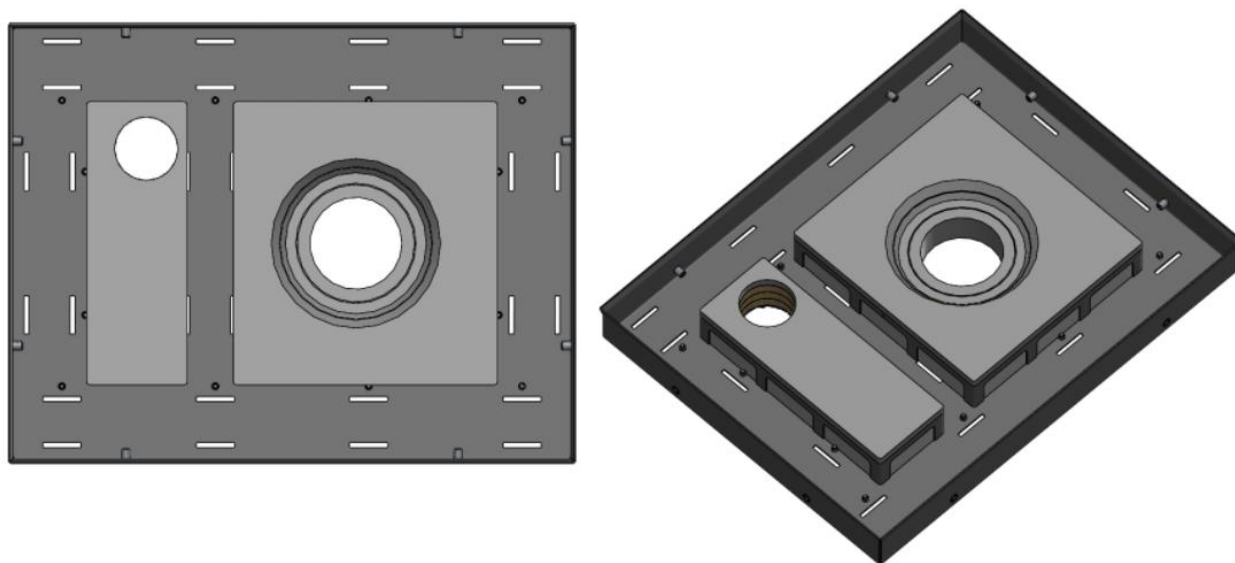


Figure 47 : holes for the burner and immersion heater on the lid insulation

8. Insert the burner nozzle mounting bracket (1059808).
9. Fix the two (2) insulation closing plates (1060589 and 1060602).
10. Fix the burner assembly (A00-24121-MC-3110) to the lid.

11. Wrap superwool between burner nozzle mounting bracket (1059808) and the burner to fill the air gap, as shown in figure *Figure 48*.

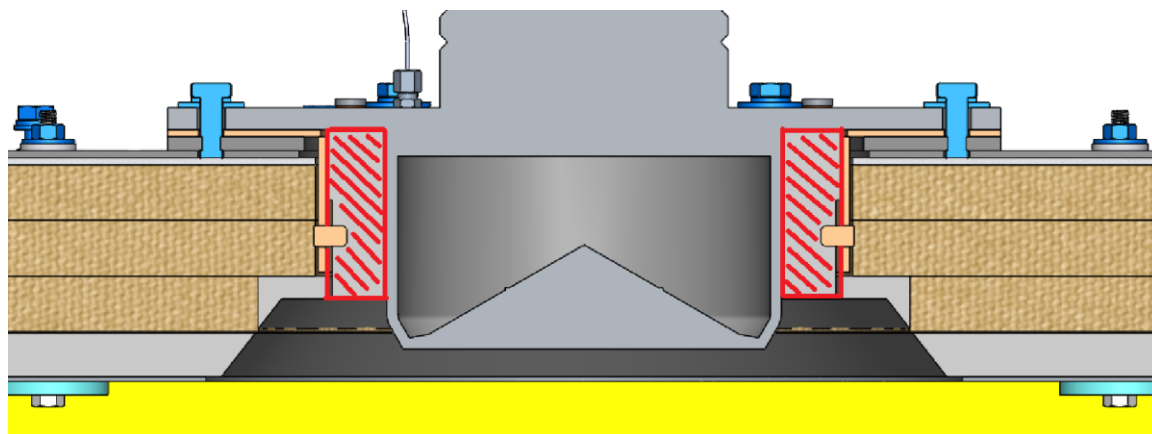


Figure 48 : Superwool (represented in red) between the burner nozzle mounting bracket and the burner

12. Insert the burner nozzle (1063353) on the lid.
13. Reassemble the rest of the lid.

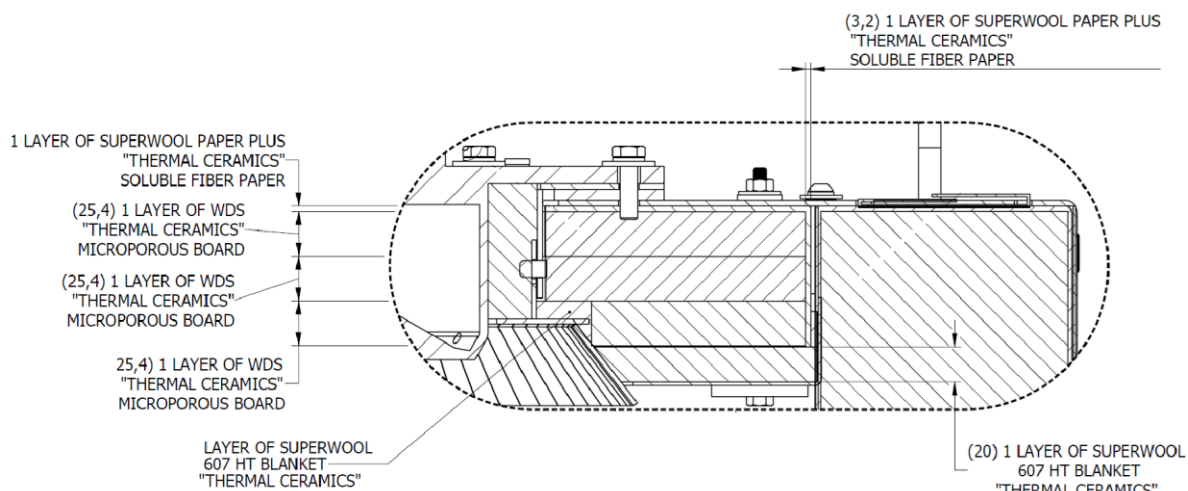


Figure 49 : Lid insulation layers (see drawing A00-24121-MC-3100)

11.5 LID SEALING PADS REPLACEMENT INSTRUCTIONS

It is possible to assemble/disassemble the sealing pads with the floating lid (painted in grey) still attached to the main lid frame (painted in yellow). However, it is easier to insert the strap of the sealing pads with the floating lid detached from the main frame.

The drawing A00-24121-MC-3100 must be followed.

1. Detach all the straps and remove the old sealing pads from the lid.

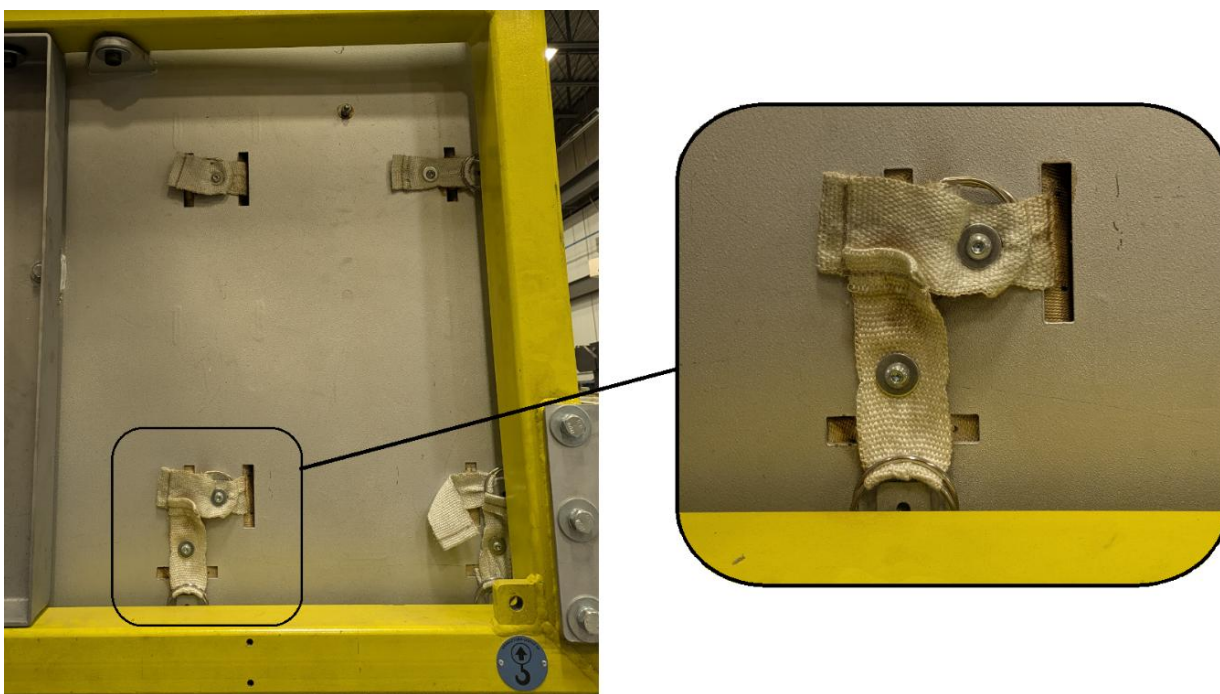


Figure 50 : Straps fixation arrangement on the lid

2. Insert the new sealing pads in the floating lid. Don't push the pads all the way into the lid to make it easier to reach the straps.
3. Pass the straps into the lid slots
4. Push the pads completely into the lid
5. Tight the straps and make a double D loop
6. Fix the straps to the lid by screwing them to the lids

11.6 REFRACTORY BOWL REPLACEMENT INSTRUCTIONS

Before proceeding with the replacement of the refractory bowl, Dynamic Concept recommends removing the filtering box from the assembly and moving it to a maintenance-dedicated area.

1. Remove the stop beads and the ceramic paper over de refractory bowl

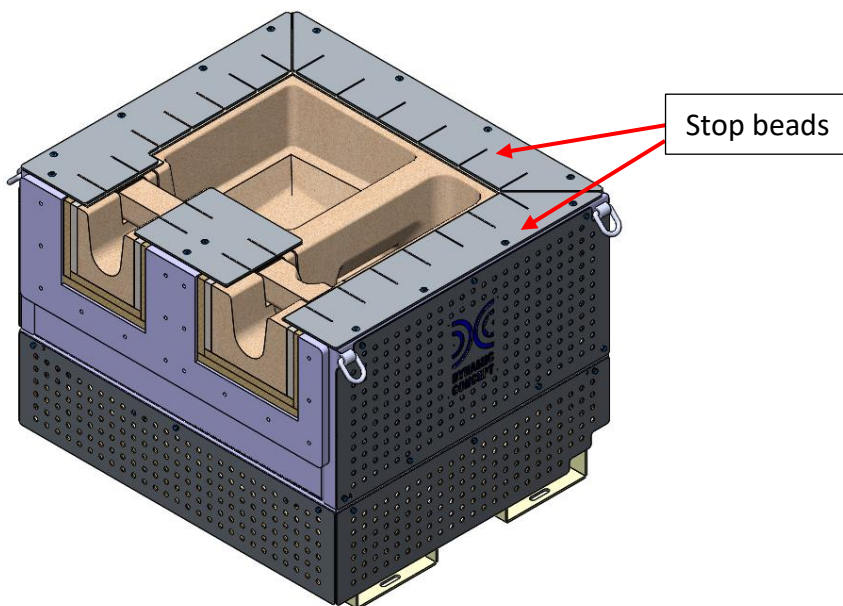


Figure 51 : Stop beads to remove from the filtering box

2. Remove the drainage block

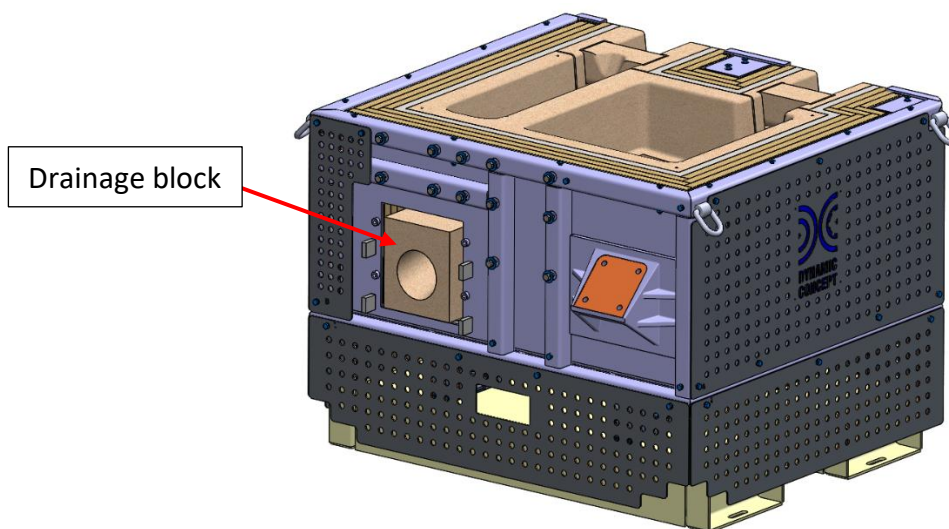


Figure 52 : Drainage block to remove from the filtering box

3. Remove the refractory bowl, the entrance and exit refractory troughs from the filtering box. Use the anchors of the refractory bowl for the lifting (see *Figure 53*). It is possible to break the bowl into pieces to facilitate its extraction.

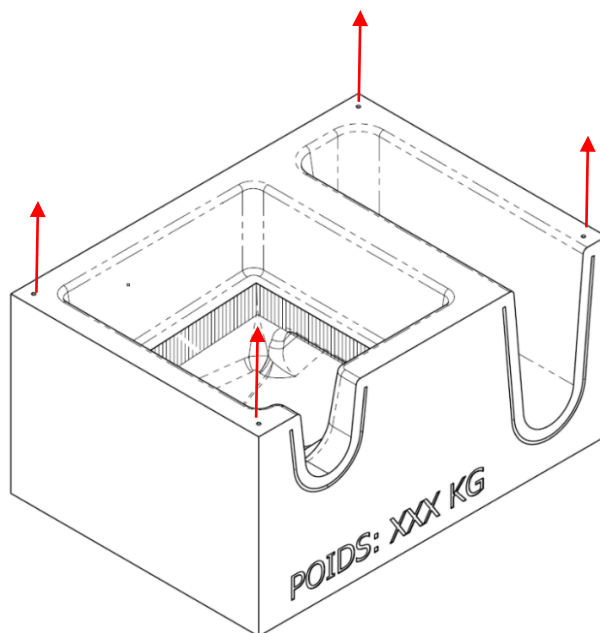


Figure 53 : Refractory bowl lifting points

4. Remove all the *DRI-LITE* from the filtering box. *DRI-LITE* is a powdered material with a maximum grain size of approximately 7 mm. When heated, it becomes solid.
5. Replace the filtering box insulation if needed (see instruction 11.7)
6. Insert the new refractory bowl into the filtering box.



Figure 54: New refractory bowl

7. Insert the entrance and exit refractory troughs into the filtering box. Align tiles with the box.



Figure 55: Entrance and exit refractory troughs into the filtering box

8. Fill the gap between the refractory bowl and the microporous panels with *DRI-LITE 84AL-H*. Use a vibrator to compact the powder effectively.



Figure 56: Gap between the refractory bowl and the microporous panels

9. Fill the gap between the refractory bowl and the entrance and exit refractory troughs with *MORTAR E-Z FILL "PYROFORM"* and wool' like describe at section 11.3.
10. Reinstall the stop beads and the ceramic paper over de refractory bowl
11. Reinstall the closing plate

IMPORTANT: After each refractory bowl replacement, preheat with the DYNAPRIME itself with the curing programmed in the PLC (see section 9.3).

11.7 FILTERING BOX INSULATION REPLACEMENT INSTRUCTIONS

These instructions alone are not sufficient to carry out the insulation replacement. You must also refer to the drawing A00-24121-MC-1000.

BOTTOM OF THE ENCLOSURE INSULATION

1. Place a 3mm ceramic paper at the bottom of the steel shell.
2. Cut the microporous panels. Prepare the square holes to allow for the insertion of the *ISOMAG* plates (see figure 50). You can cut the holes for the *ISOMAG* plates before or after the insertion of the microporous panels.
3. Place the 3 layers of 25mm microporous panels over the ceramic paper.
4. Seal the joints of the microporous panels with aluminum adhesive tape.
5. Insert the *ISOMAG* plates and seal with *MORTAR E-Z FILL "PYROFORM"*.

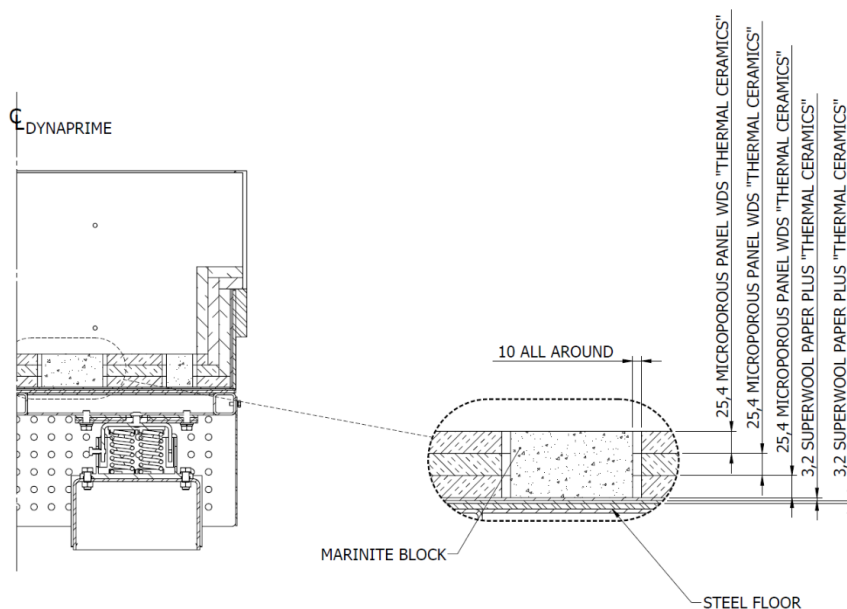


Figure 57 : Insulation layers at the bottom of the filtering box

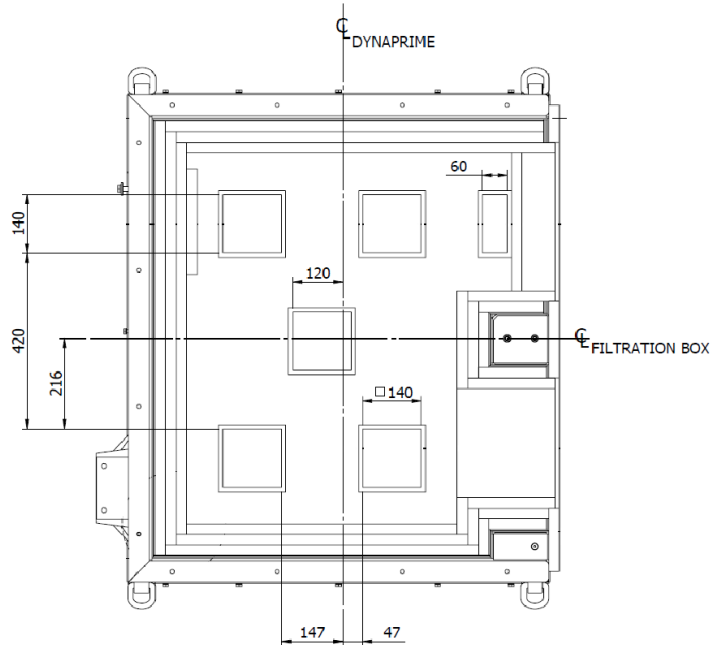


Figure 58 : Isomag holes localisation on the bottom insulation of the filtering box

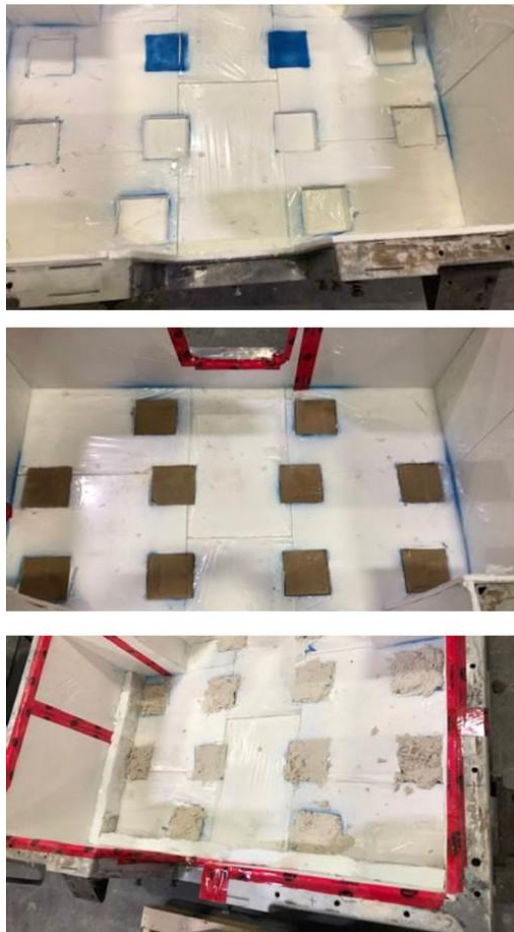


Figure 59 : Exemple of isomag installation on a Dynaprime filtering box

ENCLOSURE WALL INSULATION

Note: To maintain each layer of insulation, the use of adhesive tape and aerosol adhesive is permitted.

1. Cut and place two layers of 3mm ceramic paper against the walls of the steel shell.
2. Cut and place the two (2) layers of 25mm microporous panels over the ceramic paper.
3. Seal the joints of the microporous panels with aluminum adhesive tape.
4. Go to section 11.3 for the refractory bowl installation.

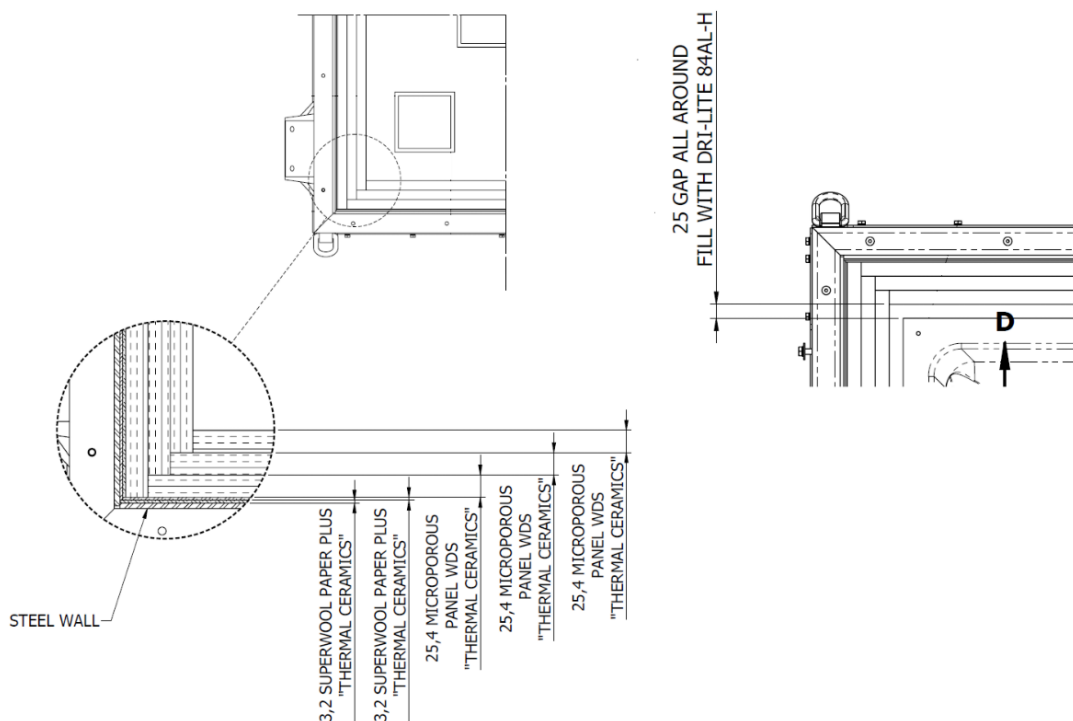


Figure 60 : Insulation layers at the walls of the filtering box

11.8 FILTERING BOX INLETS CONFIGURATION BAFFLE AND PLUG SEALS

Fill the groove with a thin layer of mastic, such as *PYROFORM E-Z Fill* or *PYROTEK Mastic 85*, before installing the baffle itself. Center the baffle in the groove and complete the sealing of the construction with mastic only.



Figure 61 Baffle sealing

11.9 ELECTRICAL PANELS AND JUNCTION BOXES MAINTENANCE

Maintenance must be performed at regular intervals depending on use and ambient conditions, at least once per year. All maintenance activities must be documented accordingly. Nature and extent of the work to be performed:

The hinges of the doors are checked for ease of movement and sprayed with a suitable, water-free lubricant.

Gaskets in the contact edge area must be replaced completely if damaged. If the gasket is damaged outside the contact edges, the sealing effect is usually still sufficient.

Common agents such as talcum, Vaseline or wax can be used to prevent damage due to gaskets freezing at low temperatures. All components and surfaces to be examined for external damage.

Steel enclosures are also inspected for traces of corrosion. Any damage is repaired as follows:

- Damage to small areas that affect only a part of the surface (e.g. scratches): Lightly sand off the surface at the damaged place and remove all traces of corrosion as well as all contamination. Depending on the degree of damage, apply the Rittal touch-up paint either with a paint stick, a brush or a spray can (alternative: 2K-PUR acrylic paint).
- Large area damage: Smooth the surface uniformly and clean with white spirit; then paint over the entire surface with Rittal touch-up paint (2K-PUR acrylic paint).

Surface damage to stainless steel enclosures, e.g. scratches, can be rectified by polishing

12. DRAWINGS, SCHEMATICS

Drawing number	Drawing name
Mechanical drawings (serial number A00-24121-0000-001)	
ASM – COMPLETE ASSEMBLY	A00-24121-GN-0000
ASM - FILTERING BOX	A00-24121-MC-1000
ASM - PRIMING MECHANISM	A00-24121-MC-1100
ASM - CROSSBAR	A00-24121-MC-1200
ASM – DRAINING MECHANISM	A00-24121-MC-1300
ASM - MOUNTING BASE	A00-24121-MC-2000
ASM - LEFT BRACKET	A00-24121-MC-2200
ASM - SUPPORT FOR CJB01 AND PJB01 ENCLOSURES	A00-24121-EM-2220
ASM - AIR AND GAS CONNECTION POINTS	A00-24121-MC-2210
ASM - RIGHT BRACKET	A00-24121-MC-2100
ASM - LOCKING MECHANISM	A00-24121-MC-2110
ASM - MAIN CABLE CHANNEL	A00-24121-EM-2300
ASM – PREHEATING COVER	A00-24121-MC-3000
ASM – BURNER TRANSFORMATOR SUPPORT	A00-24121-EM-3200
ASM – FLOATING COVER	A00-24121-MC-3100
ASM - BURNER	A00-24121-MC-3110
ASM – IMMERSION HEATER	A00-24121-MC-3120
ASM - COMPRESSED AIR SILENCER	A00-24121-MC-3111
LIFTING - FILTERING BOX	A00-24121-EX-2000
LIFTING - COMPLETE ASSEMBLY	A00-24121-EX-1000
Mechanical drawings (serial number A00-24121-0001-001)	
ASM – COMPLETE ASSEMBLY	A00-24121-GN-0001
ASM - FILTERING BOX	A00-24121-MC-1001
ASM - PRIMING MECHANISM	A00-24121-MC-1100
ASM - CROSSBAR	A00-24121-MC-1200
ASM – DRAINING MECHANISM	A00-24121-MC-1301
ASM - MOUNTING BASE	A00-24121-MC-2000
ASM - LEFT BRACKET	A00-24121-MC-2200
ASM - SUPPORT FOR CJB01 AND PJB01 ENCLOSURES	A00-24121-EM-2220
ASM - AIR AND GAS CONNECTION POINTS	A00-24121-MC-2210

ASM - RIGHT BRACKET	A00-24121-MC-2100
ASM - LOCKING MECHANISM	A00-24121-MC-2110
ASM - MAIN WIRING CHANNEL	A00-24121-EM-2300
ASM – PREHEATING COVER	A00-24121-MC-3001
ASM - SUPPORT FOR ENCLOSURES AND PJB02	A00-24121-EM-3400
ASM – FLOATING COVER	A00-24121-MC-3101
ASM - BURNER	A00-24121-MC-3110
ASM – IMMERSION HEATER	A00-24121-MC-3120
ASM - COMPRESSED AIR SILENCER	A00-24121-MC-3120
Services drawing	
ASM – PNEUMATIC AND NATURAL GAS SERVICES	A00-24121-GA-0002
Pneumatic drawings	
ASM – PNEUMATIC GROUP SERVICE	A00-24121-PN-1000
PNEUMATIC SCHEMATIC	A00-24121-SP-1000
PNEUMATIC CONNECTION DIAGRAM	A00-24121-SP-1100
Natural gas drawings	
ASM – NATURAL GAS GROUP SERVICE	A00-24121-GZ-2000
ASM – NATURAL GAS SERVICE LINE - BUMPDOWN STATION	A00-24121-GZ-2001
NATURAL GAS CONNECTION DIAGRAM	A00-24121-SP-2100
COMPRESSED AIR ASSEMBLY	250277-AT-1000
FUEL TRAIN	250277-FT-1000
MODULATING FUEL TRAIN	250277-FT-1001
PROCESS DIAGRAM	250277-PI-1000
ELECTRICAL SCHEMATIC	250277-ES-1000
Electrical drawings (Dynaprime Left and Right)	
INDEX	24121-901-001
NETWORK DIAGRAM	24121-902-002
BLOCK DIAGRAM	24121-903-003
LOCALISATION DIAGRAM	24121-904-004
PNEUMATIC DIAGRAM - P&ID	24121-905-005
GROUNDING DIAGRAM	24121-906-006
POWER DIAGRAM - 400VAC SUPPLY	24121-912-010
POWER DIAGRAM - COVER ACTUATOR	24121-912-011
POWER DIAGRAM - COVER ACTUATOR	24121-912-011
CONTROL DIAGRAM - 230VAC DISTRIBUTION	24121-915-020



CONTROL DIAGRAM - 230VAC DISTRIBUTION	24121-915-021
CONTROL DIAGRAM - 24VDC DISTRIBUTION	24121-915-030
CONTROL DIAGRAM - 24VDC DISTRIBUTION	24121-915-031
CONTROL DIAGRAM - 24VDC DISTRIBUTION	24121-915-032
CONTROL DIAGRAM - FLAME RELAY BCU-4000	24121-915-040
CONTROL DIAGRAM - FLAME RELAY BCU-4500	24121-915-045
CONTROL DIAGRAM - R43.52-HUB-01	24121-915-050
CONTROL DIAGRAM - R43.52-HUB-02	24121-915-051
SAFETY DIAGRAM - TSHH-7006	24121-917-070
SAFETY DIAGRAM - TSHH-7106	24121-917-070
PLC DIAGRAM	24121-930-100
PLC DIAGRAM - SAFETY DIGITAL INPUT, 8 CHANNELS	24121-930-130
PLC DIAGRAM - SAFETY DIGITAL INPUT, 8 CHANNELS	24121-930-140
PLC DIAGRAM - SAFETY DIGITAL INPUT, 8 CHANNELS	24121-930-150
PLC DIAGRAM - SAFETY DIGITAL OUTPUT, 8 CHANNELS	24121-930-160
PLC DIAGRAM - SAFETY DIGITAL OUTPUT, 8 CHANNELS	24121-930-170
PLC DIAGRAM - ANALOG INPUT, 8 CHANNEL (1/2)	24121-930-180
PLC DIAGRAM - ANALOG INPUT, 8 CHANNEL (2/2)	24121-930-181
PLC DIAGRAM - ANALOG INPUT, 8 CHANNEL (1/2)	24121-930-190
PLC DIAGRAM - ANALOG INPUT, 8 CHANNEL (2/2)	24121-930-191
PLC DIAGRAM - ANALOG INPUT, 8 CHANNEL (1/2)	24121-930-200
PLC DIAGRAM - ANALOG INPUT, 8 CHANNEL (2/2)	24121-930-201
PLC DIAGRAM - ANALOG INPUT, 8 CHANNEL (1/2)	24121-930-210
PLC DIAGRAM - ANALOG INPUT, 8 CHANNEL (2/2)	24121-930-211
PLC DIAGRAM - DIGITAL INPUT, 16 CHANNEL (1/2)	24121-930-220
PLC DIAGRAM - DIGITAL INPUT, 16 CHANNEL (2/2)	24121-930-221
PLC DIAGRAM - DIGITAL INPUT, 16 CHANNEL (1/2)	24121-930-230
PLC DIAGRAM - DIGITAL INPUT, 16 CHANNEL (2/2)	24121-930-231
PLC DIAGRAM - DIGITAL INPUT, 16 CHANNEL (1/2)	24121-930-240
PLC DIAGRAM - DIGITAL INPUT, 16 CHANNEL (2/2)	24121-930-241
PLC DIAGRAM - DIGITAL OUTPUT, 16 CHANNEL (1/2)	24121-930-152
PLC DIAGRAM - DIGITAL OUTPUT, 16 CHANNEL (2/2)	24121-930-153
WIRING DIAGRAM - R43.52-PP-01	24121-950-400
WIRING DIAGRAM - R43.52-CP-01	24121-950-401
WIRING DIAGRAM - R43.52-GP-01	24121-950-402

WIRING DIAGRAM - R43.52-CJB-01	24121-950-403
WIRING DIAGRAM - R43.52-CJB-02	24121-950-404
WIRING DIAGRAM - R43.52-PJB-01	24121-950-405
WIRING DIAGRAM - R43.52-PJB-02	24121-950-406
PANEL ARRANGEMENT - R43.52-PP-01 & R43.52-CP-01	24121-970-500
PANEL ARRANGEMENT - R43.52-PP-01	24121-970-501
PANEL ARRANGEMENT - R43.52-CP-01	24121-970-502
PANEL ARRANGEMENT - R43.52-CJB-01	24121-970-503
PANEL ARRANGEMENT - R43.52-CJB-02	24121-970-504
PANEL ARRANGEMENT - R43.52-PJB-01	24121-970-505
PANEL ARRANGEMENT - R43.52-PJB-02	24121-970-506

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13. SPARE PARTS LIST

Please refer to the spare parts list or contact DYNAMIC CONCEPT for any other inquiries.

Document number: 24121-LPS-01

Spare parts are guaranteed within the warranty limits defined by the component supplier.

Wear parts are not covered by the warranty.

It is the user's responsibility to stock the necessary consumables, wear parts, and spare parts (production downtime related to the replacement of wear parts or spare parts is not the manufacturer's responsibility).



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