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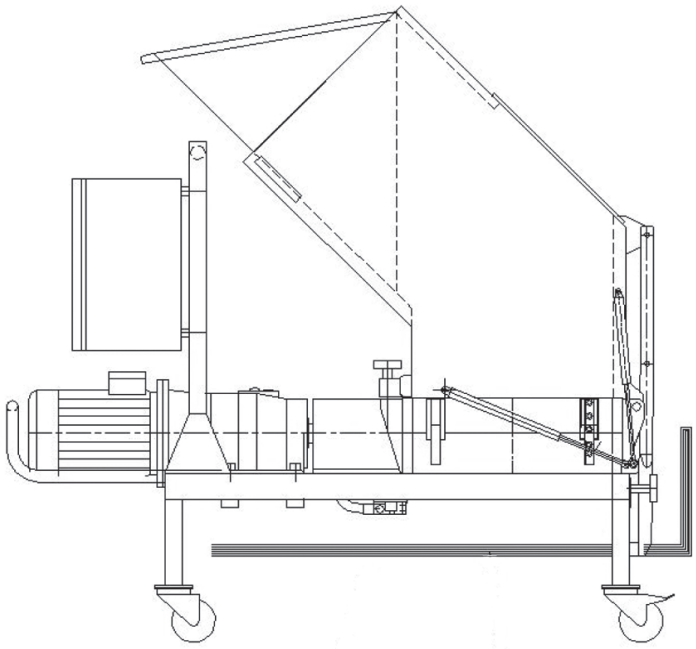
USER GUIDE

UGG025-0508

Goliath Twin Plus Granulator



Please record your equipment's model and serial number(s) and the date you received it in the spaces provided.

It's a good idea to record the model and serial number(s) of your equipment and the date you received it in the User Guide. Our service department uses this information, along with the manual number, to provide help for the specific equipment you installed.

Please keep this User Guide and all manuals, engineering prints and parts lists together for documentation of your equipment.

Date:

Manual Number: UGG025-0508/Nr4795/D

Serial Number(s):

Model Number(s):

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INSTRUCTIONS TO START UP
GOLIATH TWIN Plus GRANULATOR

GOLIATH TWIN Plus GRANULATOR:
Serial number:

1 – APPLICATIONS
2 – HANDLING - WEIGHT
3 – OVERALL DIMENSIONS
4 – TECHNICAL FEATURES
5 – DESCRIPTION OF GOLIATH TWIN COMPONENTS
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Nr 4795 / D

TECHNICAL SPECIFICATIONS

Our **GOLIATH TWIN Plus** granulators are available with standard hoppers or special custom hoppers. **Goliath Twin Plus** granulators can also be equipped with automatic hoppers, which feature a pneumatic slide gate.

The ABS system (option) is an anti-blocking system (see chapter 9)

The IMD system (option) permits detection of any metal part fallen in the cutting chamber before it causes serious damage.

The MASHER system (3nd shaft) is intended to force the introduction of big pieces, and can be equipped on the **GOLIATH TWIN Plus**

All **GOLIATH TWIN Plus** can be equipped with following trapezoidal tooth configurations:

t**pz5**: 5mm (0.2 inch) **tpz6**: 6mm (0.25 inch) **tpz8**: 8mm (0.31 inch)

They also have material reception bins with 1½, 2 and 2½ inch diameter suction boxes. Bins with larger capacities are also available as an option by adding a spacer, which raises the grinder.

All **GOLIATH TWIN Plus** Granulators are equipped with safety switches at the granulator opening and material bin.

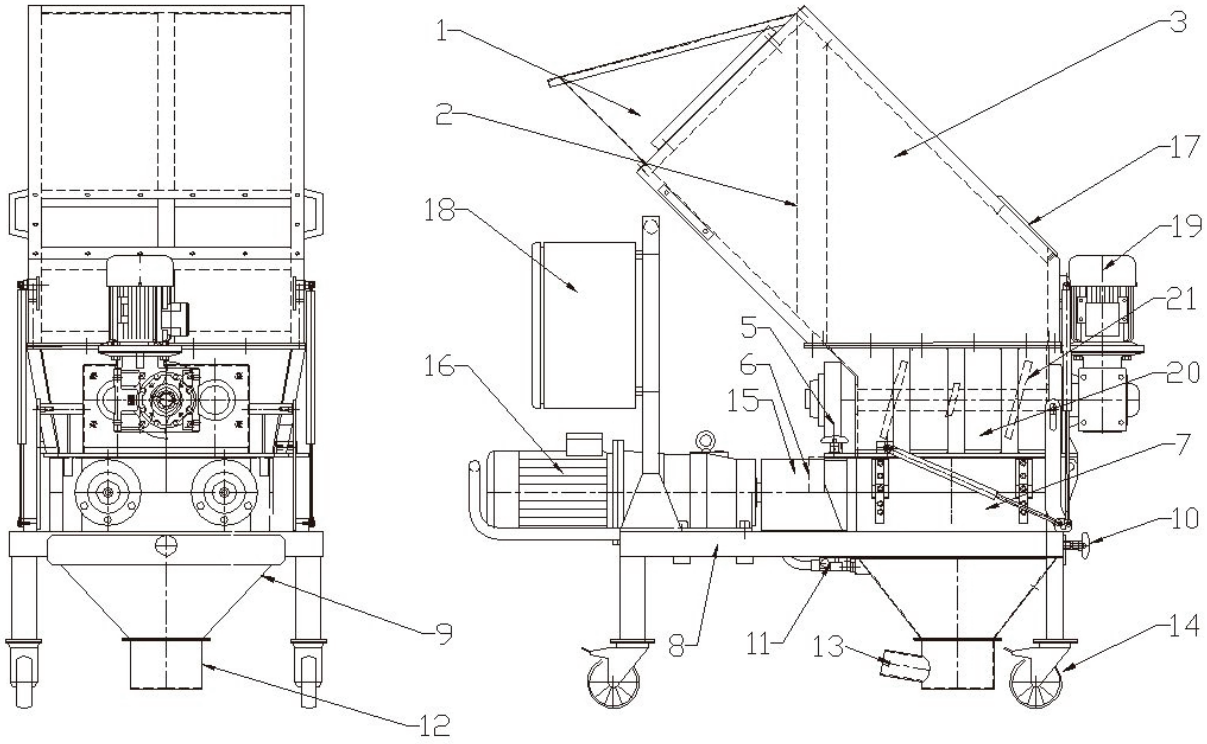
The sound level of the grinders is about 70 dB according to the material and shape of the parts

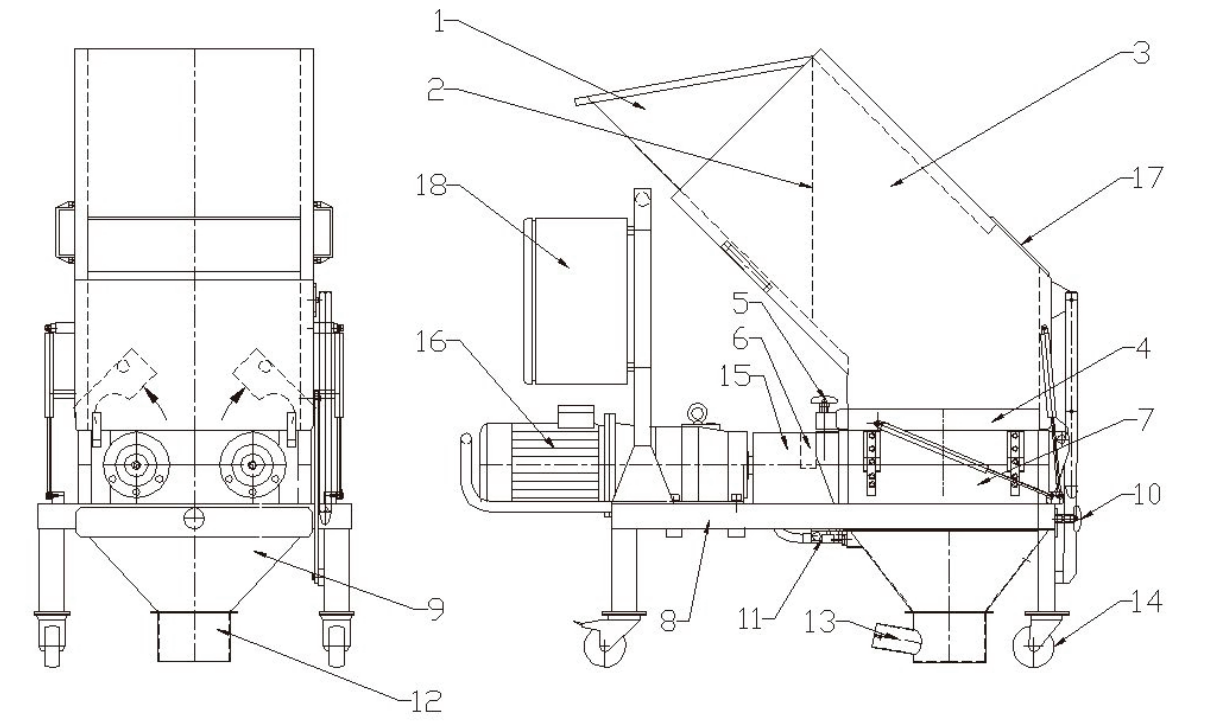
	GOLIATH TWIN Plus
Weight **Kg** / Masher (Pounds) ?	670/750 (1480 / 1650)
Motor (HP)	2 x 3
Masher Option (HP	1
Voltage (Volt)	240/480
Drive	Flexing coupling
Cutters S : Quantity (Ø248 mm; 9.77 inch)	7
Cutting chamber Dimensions mm (inches)	505 x 457 (19.88 x 17.99)
Rotational speed, rpm	27 rpm
Max. output, kg./h (lbs./h)	65 kg/h (145 lbs./hr)
ABS option	Yes
IMD option	Yes
Standard bin capacity in pounds	25

CAUTION: **GOLIATH TWIN Plus** ***output may vary substantially according to material, part shape and tooth configurations.***

5 DESCRIPTION OF GOLIATH TWIN Plus COMPONENTS (PL7563)

1	Plate funnel	**13**	Aluminum pipe
2	Flaps	**14**	Casters
3	Sound-proofed hopper	**15**	Coupling case
4	Hopper frame	**16**	Gear motors
5	Hopper closing hand wheel	**17**	Window
6	Hopper closing security	**18**	Electrical cabinet ABS
7	Cutting chamber : upper and lower unit	**19**	Gear motor 3rd shaft
8	Base frame	**20**	MASHER module
9	Bin	**21**	MASHER 3rd shaft group
10	Bin closing hand wheel	**22**	
11	Bin safety	**23**	
12	Rotary suction box 360°		





Granulator GOLIATH TWIN Plus
Broyeur GOLIATH TWIN Plus
Triturador GOLIATH TWIN Plus
Scheldmühle GOLIATH TWIN Plus

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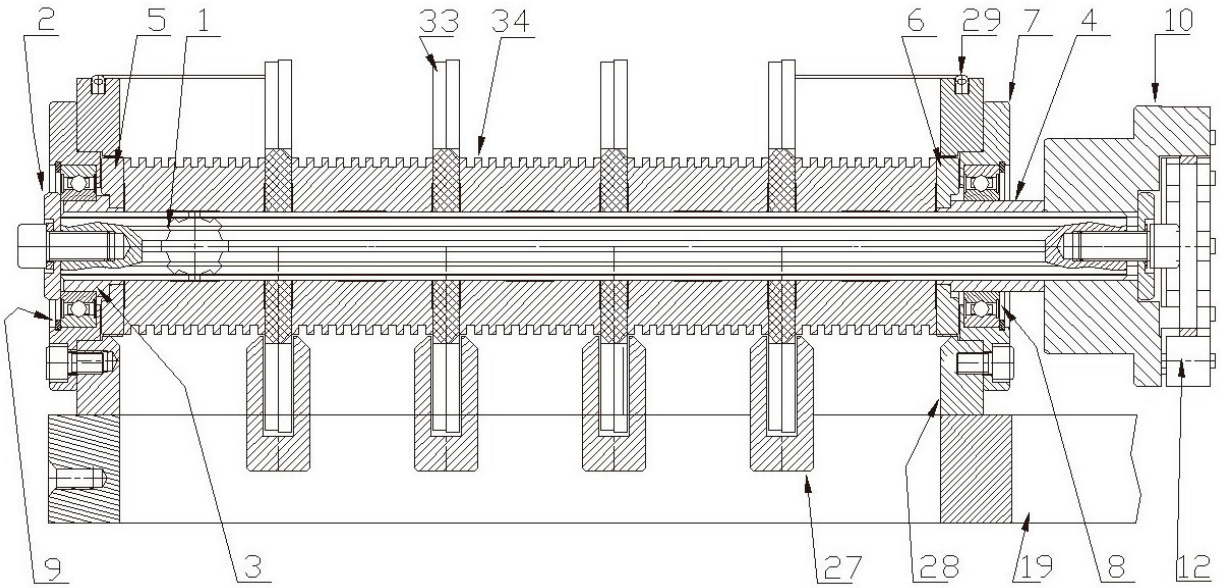
N°: 7563

6 DESCRIPTION OF GOLIATH TWIN Plus CUTTING CHAMBER (Drawing 7553)



1	**Fluted shaft**		
2	**End shaft washer**	**12**	**Coupling Hytrel star**
3	**Shouldered fluted sleeve**	**19**	**Base frame**
4	**Plain fluted sleeve**	**27**	**Auger**
5	**Right dust guard (ACP granulator)**	**29**	**Nitrile ring**
6	**Left dust guard (ACP granulator)**		
7	**Shaft end bearing**	**28**	**Hinged cutting chamber : inferior right and left side**
8	**Bearings**	**33**	**Cutter**
9	**Circlips**	**34**	**Rollers**
10	**Coupling**		

VERY IMPORTANT: ***When assembling dust shields 5 and 6, be very careful about their positioning. The left dust shield has a left-hand thread and the right dust shield has a right-hand thread. The function of this reverse thread is to catch and deflect the plastic scrap back into the cutting chamber. Should dust fields be reversed, ground material would fill the roller bearings and quickly jam the rotor. (See the assembly in chapter 11))***

7 ACCIDENT PREVENTION

IMPORTANT: ***For transportation*** **GOLIATH TWIN Plus** ***granulators can be delivered with hopper and funnel dismantled. Before connecting any electrical equipment, the hopper and funnel have to be fitted on the frame of the grinder with the provided square necked screws and (nylstop) nuts. To engage its safety put the bin in its right place (see below).***

AUGER FEED granulators positioned under the molding machine: The client is responsible for installing the grinder safely according to the safety standards, by ensuring installation under the molding machine platen (See chapter 10).

7-1 General recommendations

Read the instructions manual very carefully before operation.
The operator must be 18 or over , and must have been informed of the instructions for using the granulator.
Position the granulator in such a way that all of its parts are accessible.
Two people are required for moving a granulator on its casters.
Only move the granulator on flat, smooth surfaces. Its casters are not designed for use on any other type of surface.
Use protective gloves when performing any type of cleaning or maintenance operation inside the cutting chamber.
Only grind plastic parts in accordance with the capacity of the granulator used.

7-2 Warning :

WARNING!
Pinch or cut risk!
This plate is positioned at the places where there's a risk of pinch or cut.

ATTENTION!
This symbol is positioned at the places where the best care is needed.

WARNING!
Fatal power!
This plate is positioned on the door of the electric cabinet and, possibly on the connection cases.

7-3 Danger:

Machine equipped with rotary cutters. They are sharp and may cause injuries, even if they are stopped.

The grinder must not be used without the reception bin. This is a security part of the machine, which must always be positioned for its good operation.

The grinder must not be started without the feed hopper.

The grinder must not be started without the hopper. If this feeding hopper is not in place, the rotor is accessible and may cause injuries.

Fatal tension in the electric cabinet of the machine.

7-4 Be careful:

Only authorized and specialised personnel should perform the electrical installation.

It is imperative to stop the machin before opening the grinder for maintenance or repairs. Bring the main switch to “0” (STOP), then turn off the connector to the main power.

No body part must access the opening of the grinder if the main switch is not on the position « 0 » (STOP) and the connector disconnected.

If the rotor must be turned manually, please use gloves. Be very careful!

The grinder must not start before the hopper and the bin are properly closed.

The grinder must not be started if the door of the electrical cabinet or the transmission is open.

The doors of the electrical cabinet and the transmission must always be properly mounted, closed and locked when the grinder is in operation.

The key of the door of the electric cabinet and the transmission is a safety part. The person who is in charge of the security and the maintenance of the grinder must keep this key.

The door of the electrical cabinet and the transmission must never be accessible when the grinder is working.

The door of the electrical cabinet of the transmission must never be accessible when the grinder is working.

7-5 Safety

Use protective glasses for cleaning the grinder!

Use protective gloves for replacing the cutters !

7-6 Security system:

Opening the grinder:

When the hopper and funnel are definitely fixed on the grinder frame, access to the cutting chamber is possible when motor is stopped. A safety switch (DIN in 50047) located on the grinding block cuts the power supply at the frame opening.

The material bin:

Your **GOLIATH TWIN Plus** granulator is delivered with a material bin (standard or special). It is equipped with a safety switch, intended to cut power supply to the motor when removed from granulator. At each startup, check that the reception bin is properly positioned on its guide rails and backed up against the safety switch or the motor cannot run.

The hopper:

All our standard hoppers have a hopper-to-cutter distance exceeding 850 mm (33.4 inches) and are equipped with baffles and flaps.

Accessing the drive system:

Each **GOLIATH TWIN Plus** granulator (chain or flexible coupling drive) is manufactured with a housing (guard) in compliance with safety standards. Before any startup, always make sure the guard is in position.

8 ELECTRICAL COMPONENTS

In compliance with standard NFPA 79 (Electrical Standard for Industrial Machinery)

	GOLIATH TWIN Plus
Power KW / HP Rotors 1 and 2	**2x2.2 / 2x 3,0**
Power KW / HP Masher	**0.75 / 1.02**
Voltage Frequency	**240/480 60**
Electric cable Without MASHER	**4AWG12**
Electric cable With MASHER	**4AWG10 (240 V) 4AWG14 (480 V)**

Adjustment of the circuit breakers:

Function	Granulator	Brand of the gear-motor		Power KW/HP	Adjustment in Amp 240V ⅄⅄	480V ⅄
Rotors 1 and 2	GOLIATH TWIN Plus	Standard	Leroy Somer	2,2 / 3,0	8,2	4,1
Masher		Standard	Rossi/ABB	0,75 / 1,0	4,28	2,14
		HF80 B4.240/480 0,75KW				
		Adjustment current control relay			8	4

These values are given on motor plate.

8-1 Electrical diagram

The electrical diagram and its nomenclature are in the manual pouch. You will also find one copy in the electrical cabinet.

Gear-motor rotor references:

	Designation	Brand	Reference
M1 **M2**	Gear-motor	LEROY-SOMER	**CB 3233 2.2kw 240/480V 60hz UL SB7 R=68,6 LS80**

Gear-motor MASHER references:

	Designation	Brand	Reference
M3	Gear-motor	ROSSI	**HF80 B4.240/480 0,75KW**

9 OPERATING PRINCIPLE

GOLIATH TWIN Plus granulators are especially suited for the automatic recycling of sprues. The low rotation speed (25 rpm) allows for quiet grinding without making any dust.

The cutters break the sprues or scrap into several pieces. The roller teeth (see tooth configurations, Section14) cut these pieces into granules that fall into the bin located under the granulator.

The 3rd shaft, called MASHER (*patented device*), pulls bulky plastic pieces into the cutting chamber and prevents jamming in the throat. Cutters are installed on a rotating shaft that passes through the throat where the pieces are inserted. The rotation of the hooks pushes the pieces against the granulator's cutters, which then shreds them. Alternating the cutter rotation direction prevents long pieces from getting wrapped around the shaft and removes stuck scrap material. Rotation and stop times are pre-set by the manufacturer to allow the motor to cool down.

The bin may be emptied either manually, or via a suction system (outlet Ø1½", 2", 2½")

Upon request, the granulator may be equipped with a special granule-receiving bin (high level): if so, the granulator is raised. Regardless of the bin used, once it is removed, the granulator stops automatically (power is shut off with an electrical safety switch).

ABS-equipped **GOLIATH TWIN Plus** granulators with MASHER-system come with a 400x400 switch box, thereby protecting the motors and providing them with ABS functions.

9-1 ABS System on Rotors

The optional anti-blocking system (ABS) allows for automatic freeing of the stuck rotor caused by thick pieces or material overload. It is controlled by TWIDO-type (SCHNEIDER) programmable controller connected to a MAGELIS operator terminal.

The ABS can operate in 2 modes. If the granulator stops due to the ABS function, the warning light comes on and a message appears on the terminal (see Section 9.4).

WARNING: ***The ABS system in NO WAY protects you from damage caused by foreign material other than plastic falling into the*** **GOLIATH TWIN Plus** ***granulator. MODITEC cannot be held responsible for damage caused in the granulator's cutting chamber resulting especially from metallic objects falling into it.***

ABS Mode

Motor in continuous forward mode. If the proximity sensor detects a jammed rotor, forward operation of the motor is deactivated. Brief operation in reverse allows the piece to be removed before putting the motor in forward again. The granulator will stop if three jamming incidents in a row are identified. In this case, the granulator will stop after having gone into reverse (on the jammed rotor).

There is a time lag in between 2 reversals in the direction of rotation to ensure the motors are demagnetized.

Timed ABS Mode

The ABS function also includes an "automatic" un-jamming function:

In this mode, forward operation is cyclically interrupted by a timing switch adjusted on the controller (see **Adjustment of ABS Settings**). The end of the timing cycle causes forward operation to cease and initiates a brief rotation in reverse (useful for un-jamming the rotor). After the reverse operation, forward operation re-starts automatically. The ABS function has priority (counting the jammings in 3's) over the timing cycle that is re-initialized every time forward operation is engaged.

This function is especially useful when grinding soft materials or materials that have a tendency to heat up.

WARNING: ***The ABS should not trip too often (maximum – once every five minutes). This could be an indication that the granulator is too small for the task at hand.***

Adjusting the ABS Rotor Settings

Users can adjust 2 settings:

Function mode (ABS or timed ABS)

The mode is selected on the input terminal. A password is required to alter this setting (see Section 9.4).

Setting the timed ABS

The adjustment is made on the input terminal using a password (see Section 9.4).

Troubleshooting:

Check the circuit-breaker setting.
Check the mounting of the inductive sensors and their operation.
If the ABS cycle activates more frequently, check the blade sharpness.

9-2 ABS System on the MASHER Shaft

This optional anti-jamming system allows the MASHER to free itself if there is a material overload. It is controlled by the same controller, which handles the ABS function on the rotors.

If the granulator stops because of the ABS function, the warning indicator comes on and a message appears on the input terminal (see Section 9.4).

Operation:

MASHER jamming is detected by an overload relay located in the switch box.

The operating mode follows a specific cycle (program 1):

Forward rotation.
Stop period.
Reverse rotation.
Stop period.

If 3 consecutive jamming incidents occur, the granulator is not stopped , and a new cycle (Program 2) is initiated:

MASHER stopped for 15 sec.
Operation in direction A for 5 sec.
MASHER stopped for 15 sec.
Operation in direction A for 5 sec, and granulator rotors in reverse if jammed.
MASHER stopped for 15 sec.
Operation in direction B for 10 sec.
MASHER stopped for 15 sec.
Go to Program 1.

Program 2 places less stress on the MASHER and gives the rotors time to empty the cutting chamber. However, the granulator is stopped if 9 consecutive jamming incidents occur within 120 sec.

Program 2 places less stress on the MASHER and gives the rotors time to empty the cutting chamber. However, the granulator is stopped if 9 consecutive jamming incidents occur within 120 sec.

Adjusting MASHER ABS Parameters

Users can adjust 2 parameters:

Forward/reverse rotation timing

This time setting allows one to define the MASHER's rotation period (direction A, direction B) before switching direction. The adjustment is done on the operator terminal (see Section 9.4).

Setting the MASHER's stop time

This time setting allows one to define the MASHER's stop period between 2 directional changes. The adjustment is made on the operator terminal (see Section 9.4).

Troubleshooting:

Check the circuit breaker setting.
Check the overload relay.

9-3 Integrated Metal Detection (IMD) System

This system can be installed as an option on **GOLIATH TWIN Plus** granulators. It detects metal pieces in the cutting chamber before they cause major damage.

Principle:

It detects **conductive materials** that have fallen into the cutting chamber (mold flange pieces, screws, nuts, etc.) by their contact with the insulated part of the combs and the rest of the cutting chamber.

Operation:

The combs have a zone that is electrically insulated from the rest of the granulator.
The controller continuously monitors the voltage between the insulated comb and the rest of the granulator.
If this voltage is less than the set point (set at the terminal), the granulator stops. The red indicator light comes on and the following message is displayed on the terminal:

If this message is displayed, the power to the granulator must be shut off, disconnect the suction tube, clean the granulator thoroughly (see Section 11) and empty the bin.
When power is turned back on, the message should disappear. If it does not, clean again, paying particular attention to the insulated part of the combs.

***IMPORTANT*: An electrical contact (on a connector) changes its state upon detecting metal. It may be connected to the injection molding machine loader so as to stop the suction of its contents in the event metal is detected.**

Settings:

The sensitivity is pre-set by making set point adjustments on the terminal (see Section 9.4). Under normal operating conditions, the screen appears as follows:

The line: **IMD: 9.9/5.0V** corresponds to **Measurement/Set point**

Measurement is the voltage value measured directly between the insulated combs and the cutting chamber. If there are no metal pieces in the cutting chamber, its value is higher than the set point value.

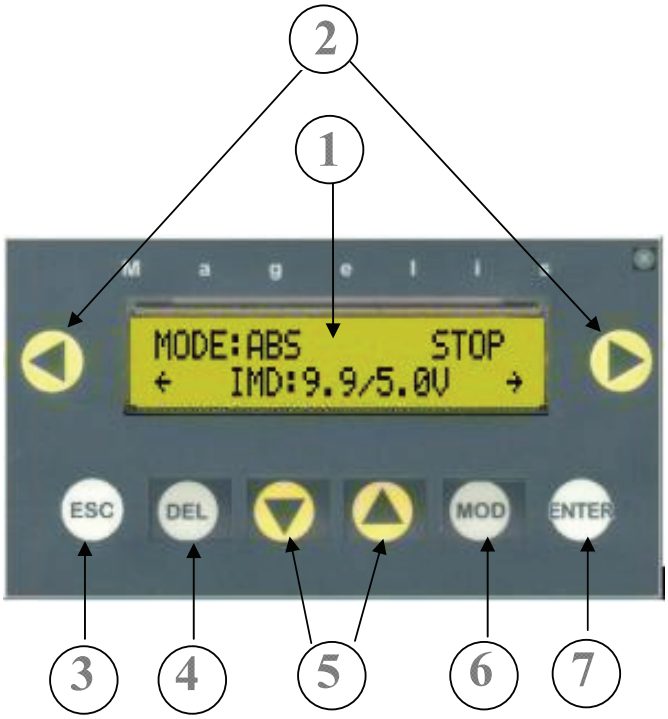
Set point corresponds to the detection sensitivity and is factory set to an average detection value of 5.0 V. If the detector is tripped for no apparent cause (no metal pieces in the cutting chamber), reduce the sensitivity, e.g. down to 2 V. Possible trips may be due to the presence of moisture in the granulator or ground material. Check if necessary.

9-4 Operator Terminal

Principle:

An operator control panel is connected to the controller and allows for information exchange. All adjustments are made on this panel. Warning messages inform operators about the granulator's status. Special menus allow for manually overriding the cutting and mashing rotors into reverse. A time-stamped file of the last 50 alarms can be viewed.

Description of terminal:



1- LCD screen, backlit

2- Buttons for links or contextual commands:
- -Change pages.
- -Change numbers in the variable input field.

3- **ESC** button:
- -Cancel an input or action.
- -Return to the preceding page.

4- Delete the digit or selected field.

5- Increase / decrease the selected numbers – Increase / decrease the value of a variable field – Select a value from a list of choices.

6- Select a field or go to the next one.

7- Validate a selection or input.

Modifying a value:

Input:

The input field must be visible on the screen and on a page authorizing changes (level 1, see the following sections). Selection is done by means of the 

button.
Repeated pressing of the MOD button on the display keyboard will skip to the variable fields from top to bottom.

When information is being entered in a field, the entire field flashes and information can be entered in two ways: in accelerated increments or by the code dial.

- Accelerated increments: pressing directly on the  or  buttons allows one to increase or decrease the total value of the field.

- Code dial: First, pressing on the  and  buttons permits selecting the number to be modified and it then begins to flash. Then, press on the  or  button to increase or decrease the values.

The 

button allows one to validate the input.

The 

button allows one to cancel an input. In this case, the value prior to the input is displayed.

Example:

The following example enables one to switch from ABS mode to timed ABS mode. Refer to the following screenshot (see the next section for level 1).

The 

button causes the **ABS** input field to blink.

The  button replaces the word **ABS** on the screen by **TimedABS** (Timed ABS).

The 

button allows one to validate the change.

Security Access to the Settings:

Two (2) security levels allow one to limit access to various panel settings.

Level 0:

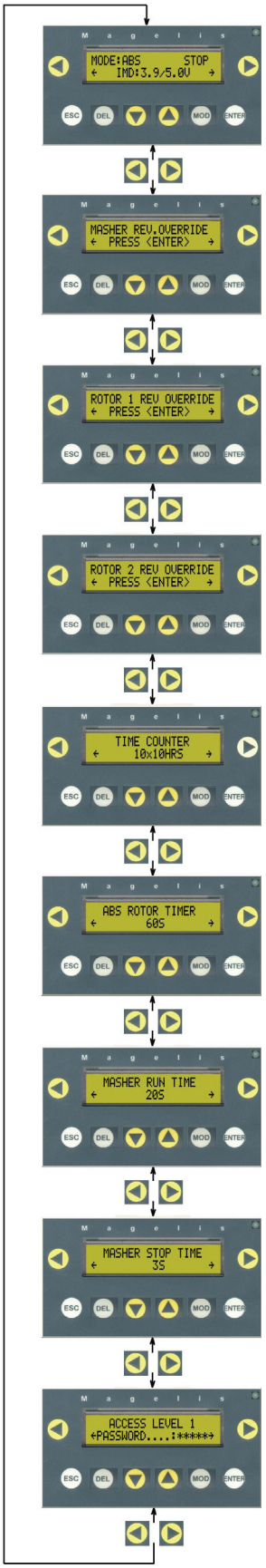
This level permits operators to check certain settings without modifying them. At this level, one can override the motors into reverse (in the menus provided for this purpose) and check the historical records.

Level 1:

This level requires a password and allows one to adjust various settings (ABS, IMD) and check the malfunction counter (jammed rotors and MASHER, circuit breakers, and IMD). Setting the time and date is also done at this level.

Description of the Pages:

Level 0 pages



Page 1:
Display: ABS mode selected (**ABS** or **TimedABS**)
Display of machine's status (**STOPPED/IN OPERATION/ERROR**)
IMD (option): **MEASUREMENT/SET POINT**

MASHER override
Pressing on the ENTER button allows one to override and change the MASHER shaft's direction of rotation.

Rotor 1 override
Pressing on the ENTER button allows one to override the cutting rotor1 into reverse.

Rotor 2 override
Pressing on the ENTER button allows one to override the cutting rotor 2 into reverse.

Granulator hour meter
Counts total granulator operating time from start-up. This counter measures in tens of hours, e.g. 10 x 10 hours = 100 hours of operating time.

Setting the timing of the rotors in TimedABS mode (display only)
The time of forward operation between 2 reverse modes (only in timed ABS mode). Changing this value is done using level 1 menus.

MASHER operating time (display only)
MASHER operating cycle. In this example, the MASHER changes its direction of rotation every 20 seconds. Changing this value is done using level 1 menus.

MASHER stop time (display only)
MASHER stop time between 2 directional changes. Changing this value is done using level 1 menus.

Password
This page allows one to enter the password to access level 1. The password is **11111.**
Note: The password can only be entered when the granulator is stopped.

Level 1 pages

After entering the password, the first level 1 page is displayed. Level 1 allows one to change the settings (see the section on “Changing values”).

Changing the ABS mode
2 options: **ABS** or **Timed ABS.**

Setting the timing for Timed ABS

Setting the MASHER operating time

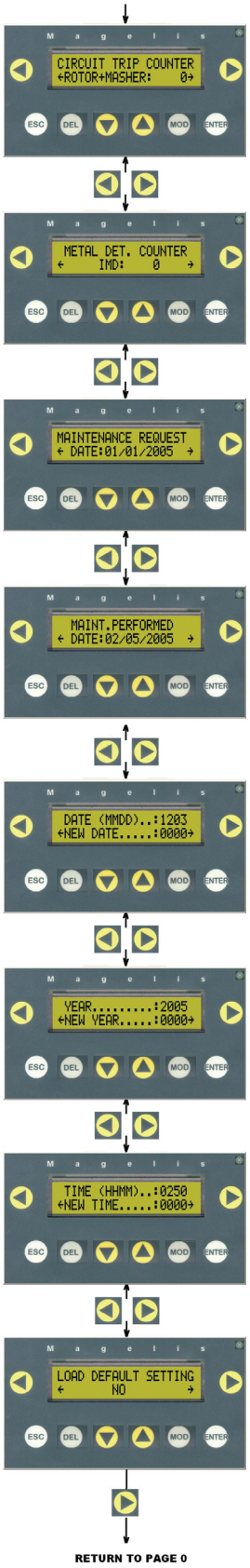
Setting the MASHER stop time

Adjusting the set point for the IMD (option)

Setting the bin high level sensor delay
As an option, the granulator may be equipped with a high level detector in the granule-receiving hopper. This setting delays stopping the granulator if it detects a “high” level.

Rotors jam counter
Counts the total number of rotors jams (ABS) since placing the machine into service.

MASHER jam counter
Counts the total number of MASHER jams (ABS) since placing the machine into service.



Circuit-trip counter

Counts the total number of rotors and MASHER circuit trips since placing the machine into service.

IMD counter (optional)

Counts the total number of times metal was detected in the granulator's cutting chamber since placing the machine into service.

Date of last maintenance request

This page is automatically updated every 4,400 hours when preventive maintenance is requested (see "maintenance page" section).

Date of last maintenance performed

This page must be updated by the person performing the maintenance. It stores the date of the last maintenance performed.

Setting the current date

This function is used when managing historical and maintenance records.

Setting the year

This function is used when managing historical and maintenance records.

Updating the panel

This function is used when managing historical records.

Loading factory settings

Reset default **factory** settings, such as:

-Timing of ABST rotor: 60 sec.
-Timing of MASHER operation: 20 sec.
-Timing of MASHER stop operation: 3 sec.
-IMD sensitivity (optional): 5.0 V.
-Timing of the hopper's "high" level: 30 sec.

NOTE: ***If the granulator is not operated for 30 days, the time, date, and year must be re-set when power is applied for the historical records to display properly.***

Alarm pages

The warning pages remain on-screen until the malfunction has been corrected. The different warning pages are listed below:

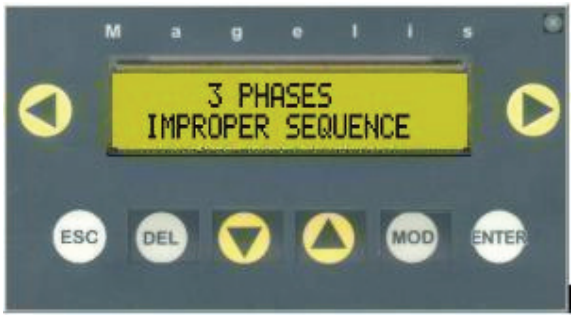
The following message appears when the hopper is open or improperly closed (locking wheel not fully screwed down). The IMD Measurement/Set point (optional) display is used to check for the presence of metal after cleaning the cutting chamber.

The following message appears when the bin is removed or improperly closed (locking wheel not fully screwed down).

The following message appears when the bin is full (only on granulators equipped with a high level detector).

The following message appears when one of the circuit breakers protecting the motors trips.

The following message appears when the sequence of the power supply phases is improper, which would generate a reverse rotation of the cutting rotors. In case this message appears, please disconnect the power supply plug and invert 2 phases. When switching on the machine, the message should disappear.



The following message appears if the emergency stop is activated or if the safety chain interlock is open.

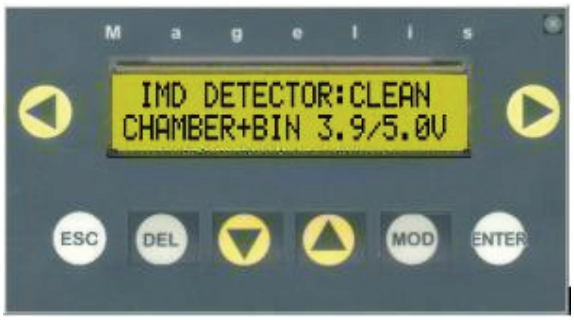
The following message appears when a granulator was stopped by the ABS function on the rotor 1.

The following message appears when a granulator was stopped by the ABS function on the rotor 2.

The following message appears when the granulator was stopped by the ABS function on the MASHER.

<u>WARNING</u>: The ABS should not be activated too often (once every 5 minutes maximum); otherwise, it could be a sign that the granulator is too small for the task at hand.

The following message appears when the IMD system (optional) has detected metal in the cutting chamber.



Maintenance pages

This maintenance message informs users that the granulator has operated for 4,400 hours and that preventive maintenance is recommended (see Section 11). This message can only be cleared by personnel having the level 1 access password (**11111**).

When the maintenance message appears, the current date and year are automatically recorded on the following level 1 page:

After performing the maintenance, the “maintenance performed” date must be indicated on the page provided for that purpose (level 1):

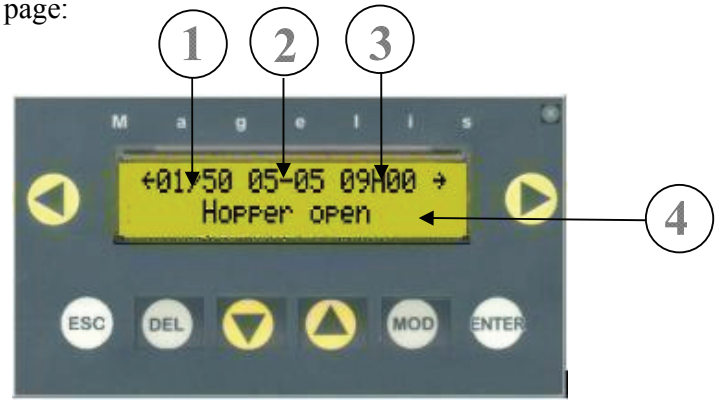
Alarm history

The operator panel allows one to view the last 50 alarms which have appeared on the machine. Each alarm is time-stamped. To access these pages, proceed as follows:

- Go to **page 1** and simultaneously press on  and  ; the following menu will appear:

- The 

button allows one to return to **page 1**; the  button pulls up the next page:



1- Historical record number: the terminal organizes alarms from the most recent (01/50) to the oldest (50/50). Scrolling through the list is done using  or  . The 

button returns users back to **page 1.**

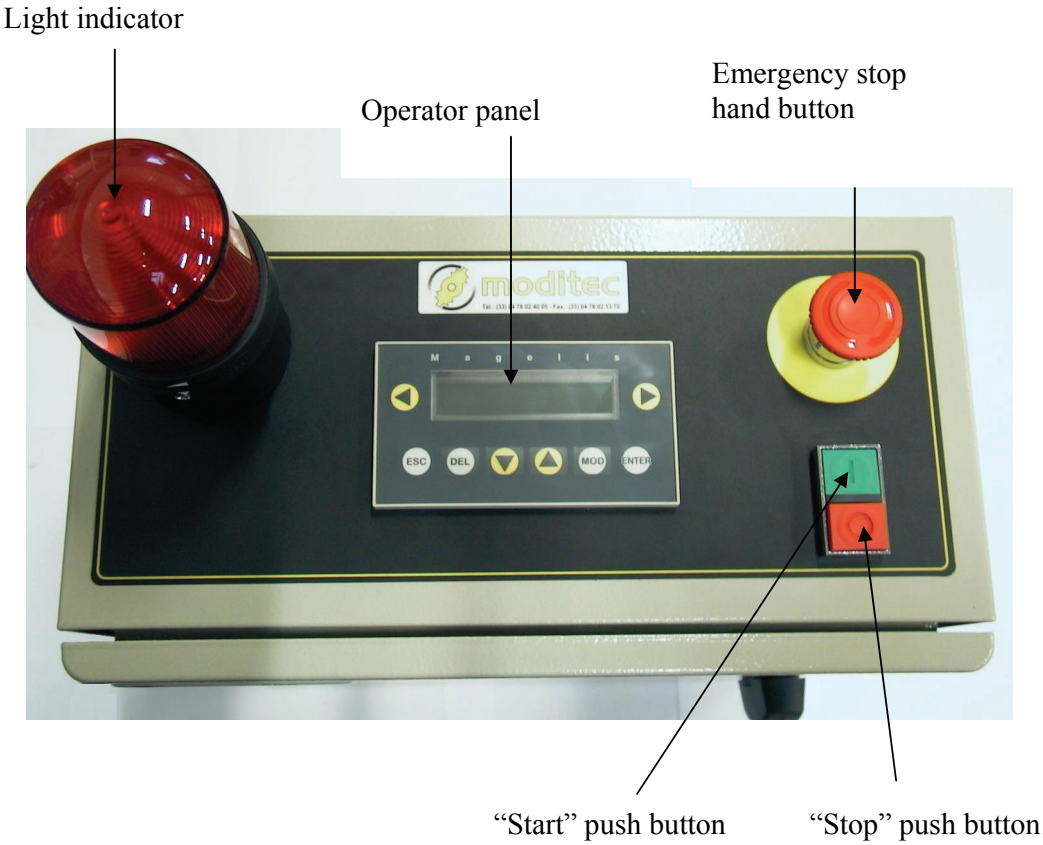
2- Date alarm appeared.

3- Time alarm appeared.

4- Alarm message. The following messages may appear in the historical records:

. Hopper open
. Bin open
. Motor circuit open
. 3 phase improper sequence
. Emergency stop/safety chain interlock
. Bin full
. ABS rotor 1.
. ABS rotor 2.
. ABS MASHER.
. IMD metal detection tripped
. Power on

9-5 Control panel



9-6 Optional "full-bin" detector:

These granulators may be equipped with an optional "full-bin" detector, consisting of a rotating paddle. This detector has a 24 V motor that continuously rotates the paddle. When the level of granules reaches the paddle and decelerates its rotation, an electrical signal is emitted that stops the granulator and illuminates the warning light indicator. This signal may also serve to activate suctioning of the regrind.

Furthermore, once the detector begins to turn freely again, the granulator automatically starts up, and the indicator light goes out.

This function may also be executed by a capacitive sensor.

10 ELECTRICAL CONNECTIONS AND ADJUSTMENTS

Check main power against granulator power requirements (240/3 or 480/3).

Open motor connection box and check motor wiring (Star-wired if 480/3 or double star wired if 240/3). Without specifications motor is 480 V/3 wired, but check before the start up.

Connect emergency stop to power source (connection on L1, L2, L3 and earth located).

Turn on switch ON/OFF:.

Check that the emergency stop switch is up.

Turn on granulator and check its rotation direction in accordance with the indicating arrows stuck on the motor cover. If the grinder runs on the wrong direction, stop it. Disconnect the supply plug and invert 2 phases on your plug. Restart the machine and check once again the right direction of the grinder.

The thermal overload relay located in the emergency stop is factory-set. We nevertheless recommend that you check overload relay settings against motor plate data.

CAUTION: On GOLIATH TWIN Plus granulators without ABS system, in case of rotor jam the thermal overload relay protecting the motor driving will cut out and switch rotor out of circuit.

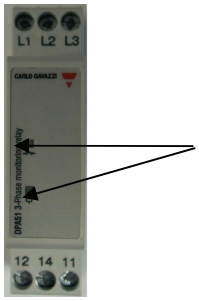
CAUTION: this handling is absolutely necessary prior to any startup because of safety.

Note: Some granulators are equipped with a L1 L2 L3 phase controller, in order to avoid that the grinder runs on the wrong direction. At the first electrical connection: respect the correspondence between the electricity network phases. If you don't know them:

Plug in on a random basis and switch on granulator.

If we have the message "3 PHASES IMPROPER SEQUENCE" on the digital display: invert 2 phases.

If the phase order is correct, the message disappears, the 2 lighting signals which are on the phase order controller are switched on.



Warning lights are switched on: correct phase order.

11 CLEANING, MAINTENANCE AND REPAIRS

See drawings 1586 and 1587 chapter 13

CAUTION: Disconnect the granulator from the main power prior to cleaning. Use protective gloves and glasses.

11-1 Routine cleaning (approximately 5 min)

Disconnect the **GOLIATH TWIN Plus** granulator, open the hopper and remove residual scrap from cutting chamber and hopper by using an industrial vacuum cleaner.
Open the hinged cutting chamber access panels (28a and 28b) and thoroughly clean the area under the combs and counter-combs.
With the rotation key of the cutters, rotate each shaft forward in order to clean **the cutter slots (27).**
Remove and clean regrind bin (24).
Fit a size 14 Allen wrench to the M16 bolt on each shaft end, rotate each shaft forward (M16 screw located at the end of support for ACP types). Check the hopper, the bin and roller teeth for plastic regrind.
Close the block after cleaning of junction surfaces.
Close the hopper and tighten its closing hand wheel (54/55).
Fully insert the bin into sliders and tighten its closing hand wheel (25/26).
Clean the rest of the granulator by using an industrial vacuum cleaner (between gear motors, on the top of the base frame, around the hopper and bin safety switches), end with the floor.

11-2 Maintenance and repairs

Preventive maintenance

The wear of the cutting elements depends on the material being worked and on the quantity of material to grind.
The sharpening intervals also affect this.

Every 6 months (or after 4400 hours of operation):

Check locking of combs and counter-combs .Recommended torque: 62 foot pounds . If the screw heads are worn, change immediately.
Check the wear of the rollers and combs. The teeth tips of the rollers or combs must be sharpened as soon as there are any signs of roundness. Combs and counter combs are reversible so both sides have to be used before sharpening.The quality of the granulates and output rate depend on this operation.
Check the wear of the rotor cutters (according to the EN 12012-1 standard).
Check the safety devices for the bin and hopper. If granules have penetrated the spanner slot, change the safety switch.

CAUTION: IMD combs can only be sharpened at PLASTEC NORTH AMERICA.

Annually (or after 8800 hours of operation):

In addition to the above points:

Check the wear of the cutters. They are reversible and can be turned around each time the rollers are sharpened. If necessary, have these sharpened along their circumference.

Check the wear of the dust-guards and replace as soon as their mesh starts to deteriorate. Failure to do this will result in greater wear of the ground edges, thus requiring longer maintenance times.

Check the oil level in the gear motor: it is not necessary to drain the oil, but if the oil level has to be topped up, take care when opening the level plug (perhaps drain the oil every three years).

Mineral oil EP ISO VG 220

WARNING: Do not top up beyond the level.

GOLIATH TWIN Plus granulators with MASHER 3rd shaft system: The gear motor is lubricated by a synthetic grease "for life". After grinding from 400 to 1,600 hours, the temperature can exceed 122°F. This is not a problem.

Synthetic oil (ISO): ex. AGIP BLASIA S320 AGIP

WARNING: Do not top up beyond the level.

Check the state of the toroidal rings of the gear motors, a light seepage can happen without anomaly. In case of leak, change the joint.

Check the wear of the mudguards of the hopper. Change them if necessary.

In case it's taken off line, store the **GOLIATH TWIN Plus** granulator in a dry place and spray the whole cutting chamber (top and underneath) with a rust inhibitor (example: a thin film of oil).

11-3 Dismantling of combs and counter combs and setting

In order to achieve an optimum quality of regrind, it is necessary that the cutter edges of the rollers and combs are properly set and ground.

The tolerance of 0.1 mm (0.0039 inch) between the bottom of the throat of the roller and the tooth end of the comb must be complied with.

Each time a comb is refitted, check that no roller rubs against the comb, by manually turning the rotor.

WARNING:

When all the elements (combs and counter-combs) are locked, turn the granulator shaft manually, to ensure that there is no blockage or friction.

Reminder: combs are reversible

11-3.1 Adjustment of the reversible combs and IMD combs

This operation must be carried out each time the rollers or rotor cutters are dismantled and each time the combs are re-assembled.

It is important to set a minimum gap between the comb and roller (0.08 to 0.1 mm or 0.003 to 0.004 inch). To do this, proceed as follows:

Disengage the gear-motor(s) (dismantle the coupling casings, slacken the M16 fixing screws of the gear motor and offset the latter rearwards. Then provisionally tighten 2 of the M 16 screws to hold the gear–motor in place).

The combs must all be removed from the granulator and be cleaned.

Clean the unit by blowing compressed air through the internal fixing screw threads, the comb support faces and rollers.

If the rollers have been dismantled, first retighten the two end screws (Ref 31) of the shaft, so that the unit can be repositioned in the work position. Knock each end with a hammer for this purpose (recommended torque for M16 screws: 140 foot pounds).

Take a comb and bring it down manually to make an indentation on the roller

Keep the comb firmly in place and hold it against the roller; insert a screw (HM 10x35, class 12.9) which has already been fitted with a Schnor diam.10 mm (0.39 inch) washer, and provisionally tighten using a wrench, but making sure that the comb does not move.

Now position the second screw and tighten temporarily.

Turn once or several times to ensure that the comb does not touch the roller at any time.

Fix the other combs in the same manner, starting from the centre and going outwards to the edges of the cutting chamber.

To conclude: retighten all the comb and counter-comb screws one by one. Recommended torque: 62 foot pounds. Check that there is no friction by turning the rotor by hand.

WARNING:

If a comb comes into contact with the rollers or if the combs are adjusted with too small a gap, there is a serious risk of granulator deterioration owing to successive tooth breakages.

A "squeaking" noise may also be produced when idling.

If the combs are adjusted with too large a gap, the granulate obtained will be "chewed" along the edges and the have torn threads.

Change the screws and washers as soon as the hexagonal head shows signs of wear, likely to impede future dismantling work.

11-3.2 Setting the reversible counter–combs

The counter-combs do not require very accurate adjustment.

Clean the unit by blowing compressed air through the internal fixing screw threads, the counter-comb support faces and rollers.

Lower the counter-combs right down against the rollers.

Insert the two end screws so that they come into contact with the counter-comb.

Manually raise the counter-comb by at least 0.5 mm (0.02 inch) and tighten the screws.

Check that the counter-comb is not in contact with the roller at any time.

Finally retighten all the comb and counter-comb screws, one by one. Recommended torque: 62 foot pounds.

11-4 Roller and cutter dismantling

***CAUTION**: When dismantling, be sure to remount dust guards on the same side they were dismounted. Granulators come with two different dust guard types:*

- 2 dust guard with right-hand male thread.

- 2 dust guard with left-hand male thread (marked with a groove).

The position of the left dust guard is indicated by the letter G on the block.

Dust guards catch and deflect dust back into the cutting chamber. If dust guards are reversed, their roller bearings may rapidly fill with regrind dust.

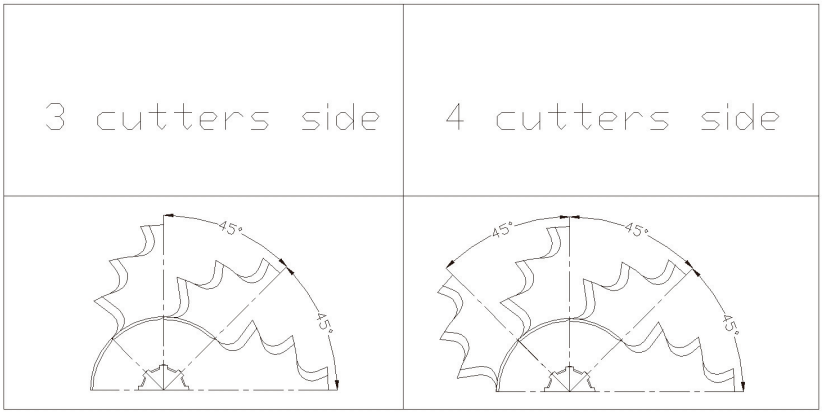
CAUTION: After assembling all the parts check that rollers and cutters turn freely.(See cleanup)

GOLIATH TWIN Plus *granulators have 2 shafts. Listed below is the procedure to take out the cutters and rollers for one shaft. The procedure for the second shaft is the same.*

First disconnect granulator from the mains.
Open the hopper and the bearing block with combs and counter-combs (28a and 28b).
Remove gear box protection (19 and 121).
Disconnect the gear motor (17).
Dismantle the M16 screw from coupling centre (31). Take off the washer.
Hit the fluted shaft (1) in the center with a bronze punch in order to loosen and progressively remove the shaft out of opposite side.
Remove each roller and cutter through open bearing block as the fluted shaft is extracted.
Proceed in reverse order to assemble.
For the cutters, please respect the angular gaps on the following scheme.
After re-tightening of the 2 M16 screws at the shaft ends (recommended torque:170 foot pounds), knock the interior side of the bearings and at the shaft ends with a hammer so that the free bearing goes into place.

Another procedure to dismantle consists in bringing out the shaft whole by unscrewing the 3 Chc M10 fixing screws of each bearing. Then the whole shaft can be replaced.

CAUTION: Adjust the combs once again each time a rotor shaft is dismantled.



11-5 Dismantling the MASHER shaft *(See drawing Nr. 8528 at chapter 13) :*

Closed hopper: Remove the studs (Rep 105 and 118), on the gear motor side and bearing.
Slacken the two M 16 screws on the gear motor side and bearing.
Remove the gear motor.
Open the hopper by holding the shaft.
Remove the shaft downward by removing the braces and the cutters one by one ;
Proceed in reverse order to assemble.

CAUTION:
During the assembly, put the spacers and the cutters in the right order.
The assembling order of the spacers is important for optimal operation.

12 TROUBLESHOOTING

The rotor rotates in the wrong direction :	Reverse two phases. The electrical plugs are not wired in the same way
The granulator does not start-up :	The power supply source has been cut off. The emergency stop button is locked on. The safety devices are locked on (hopper or bin), if these do not function. Test their terminals in the housing unit. The motor circuit breaker is triggered.
The motor switches to default or trips out :	The granulator is overloaded, or the ABS is faulty: remove the bits that clog up and re-start. The bin is full, the level detector is triggered. The circuit breaker setting is not appropriate for the motor load current .Leave the circuit breaker to cool down before re-starting. The work demanded of the machine exceeds the granulator's capacity. The bearings are damaged. The gear-motor is broken.
The dust guards push material into the bearings :	The dust guards have been reversed during mounting. The rotor rotates in the wrong direction.
The material heats up or melts during the grinding: The output rate decreases:	The granulator needs a cooling system. The cutting teeth are worn: sharpen them. There is too much play between the combs and the rollers. Adjust the combs to move them closer or use a pellet size that is more adapted to this material (consult Plastec). The hopper is full, or the suction box is clogged. The material is not appropriate for this type of grinding.
Unusual noises:	The combs and counter-combs rub against the rollers: check the screw tightening. A metal part has fallen into the granulator. Materials accumulate or stick under the counter-comb. The transmission, chain or coupling, is worn. The oil level in the reduction gear is not correct. A screw at one of the shaft ends is loose. Electrical connections are poor. Check the three phases.
The pellet does not drop adequately:	Bridging takes place in the hopper, or static electricity sticks the pellets together: use a mechanized agitator system. Change the Ø or use a different suction tube. Reduce the pellet size. Grind at a different temperature, cool the granulator.
Jamming of the cutter in the under-casing:	To free the cutter, put a bit of normal or penetrating oil in the jammed under-casing and turn the rotor. Clean the granulator.
The IMD detection does not work very well or at an inopportune moment:	Clean combs well with compressed air. See display measures in chapter 5

For any other information, please feel free to contact us.
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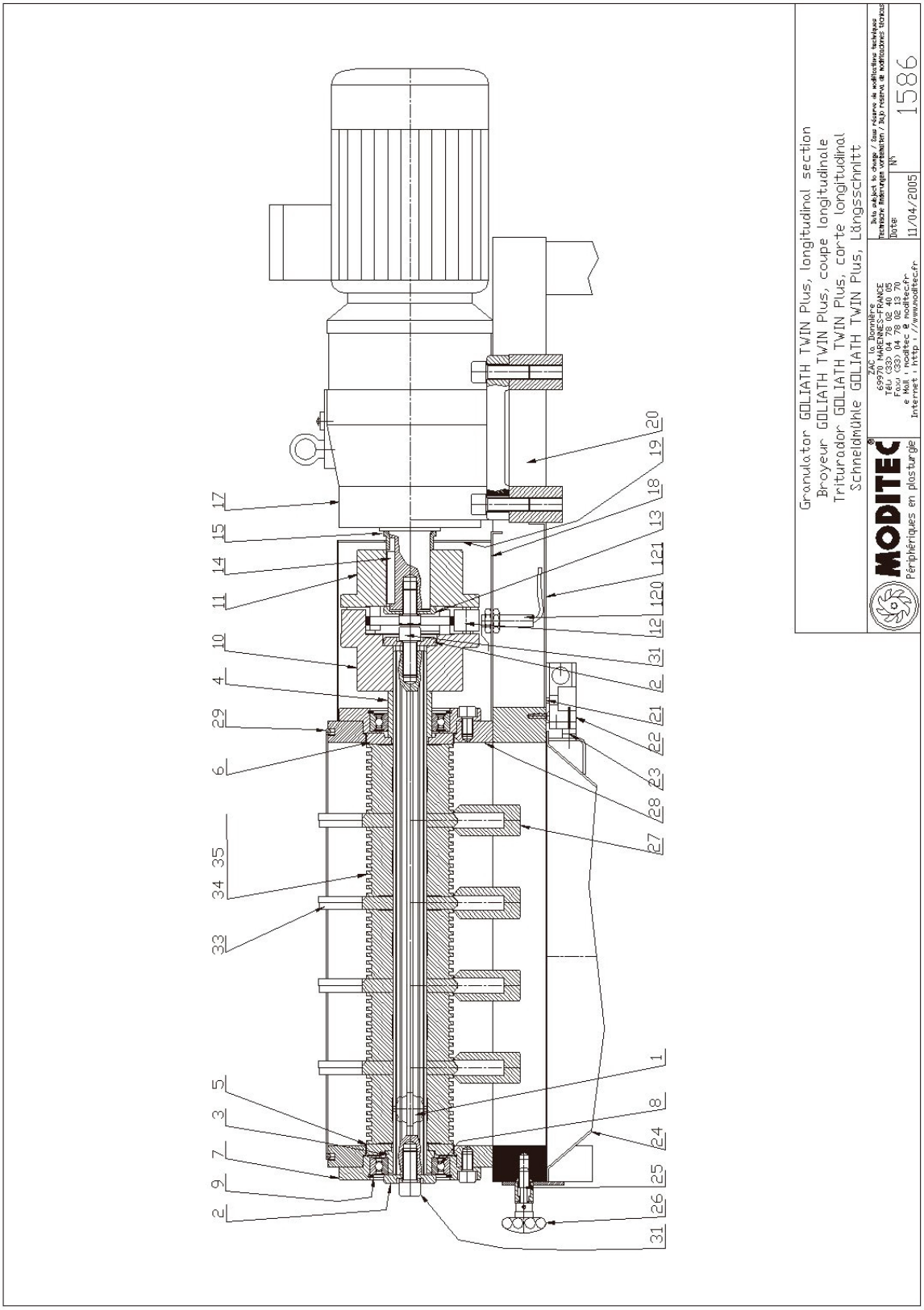
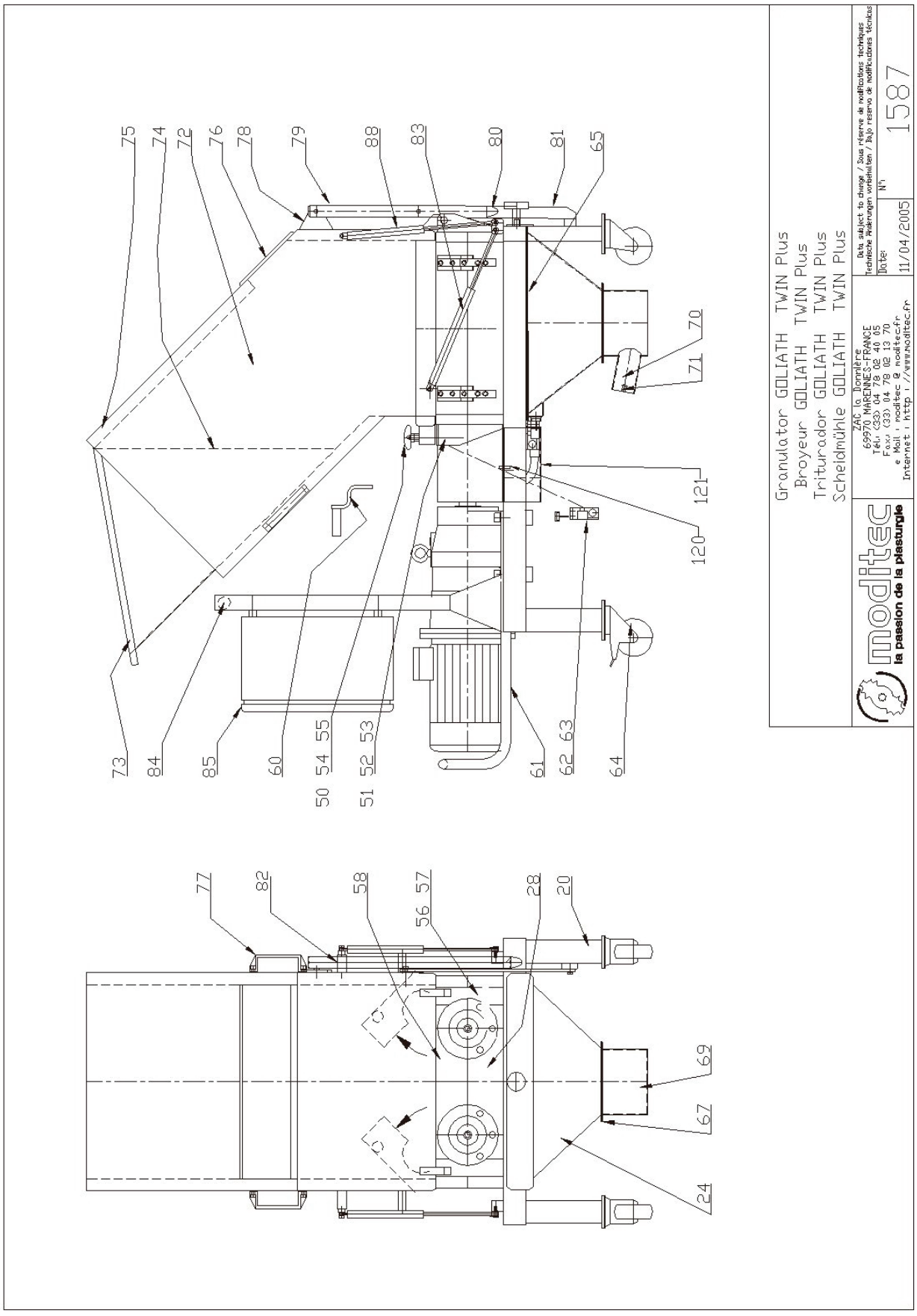
13 PARTS AND NOMENCLATURE LISTS (GOLIATH Twin Plus MASHER)

13.1 Cutting chamber (PL1586):



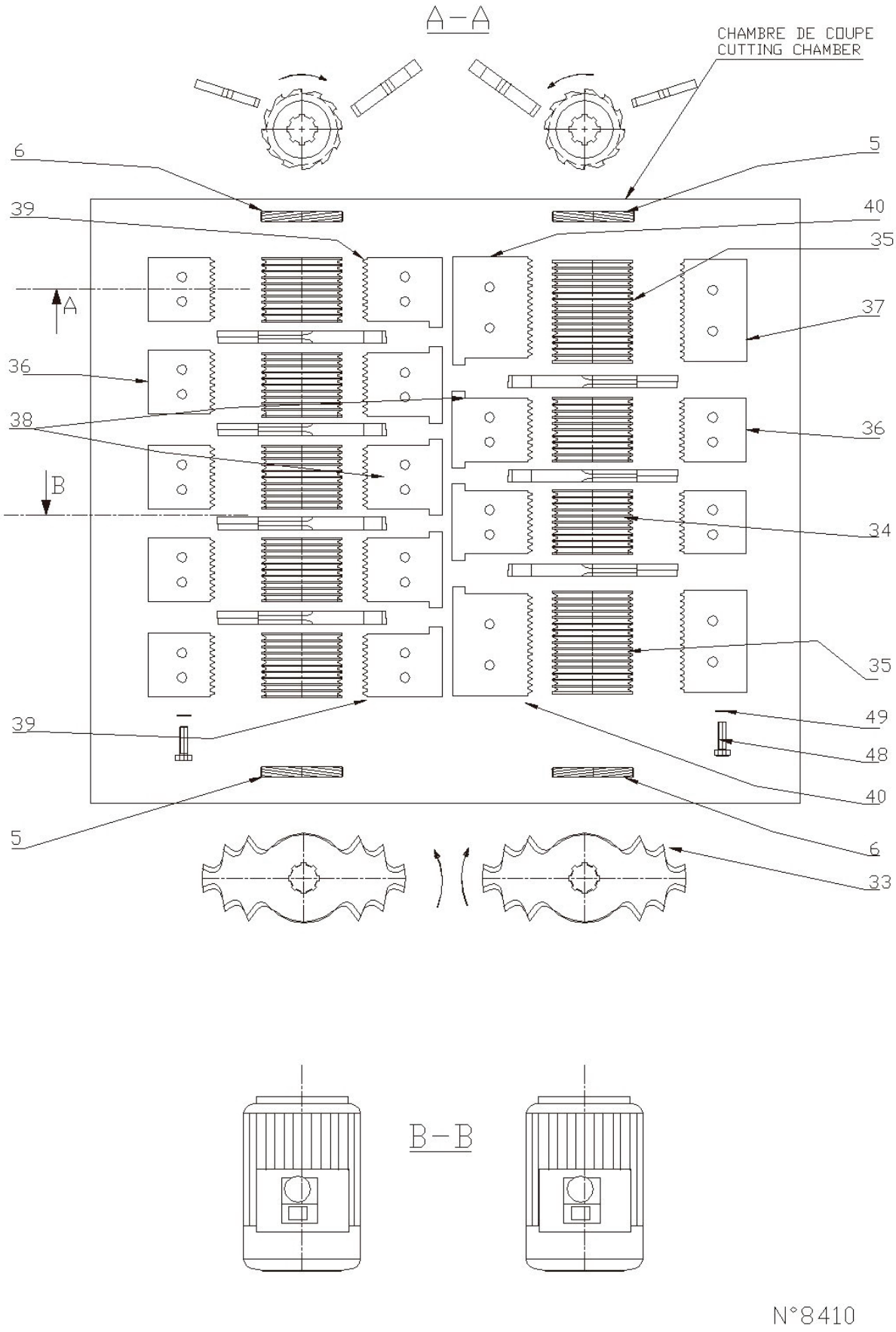
13.2 Général drawing (PL1587):

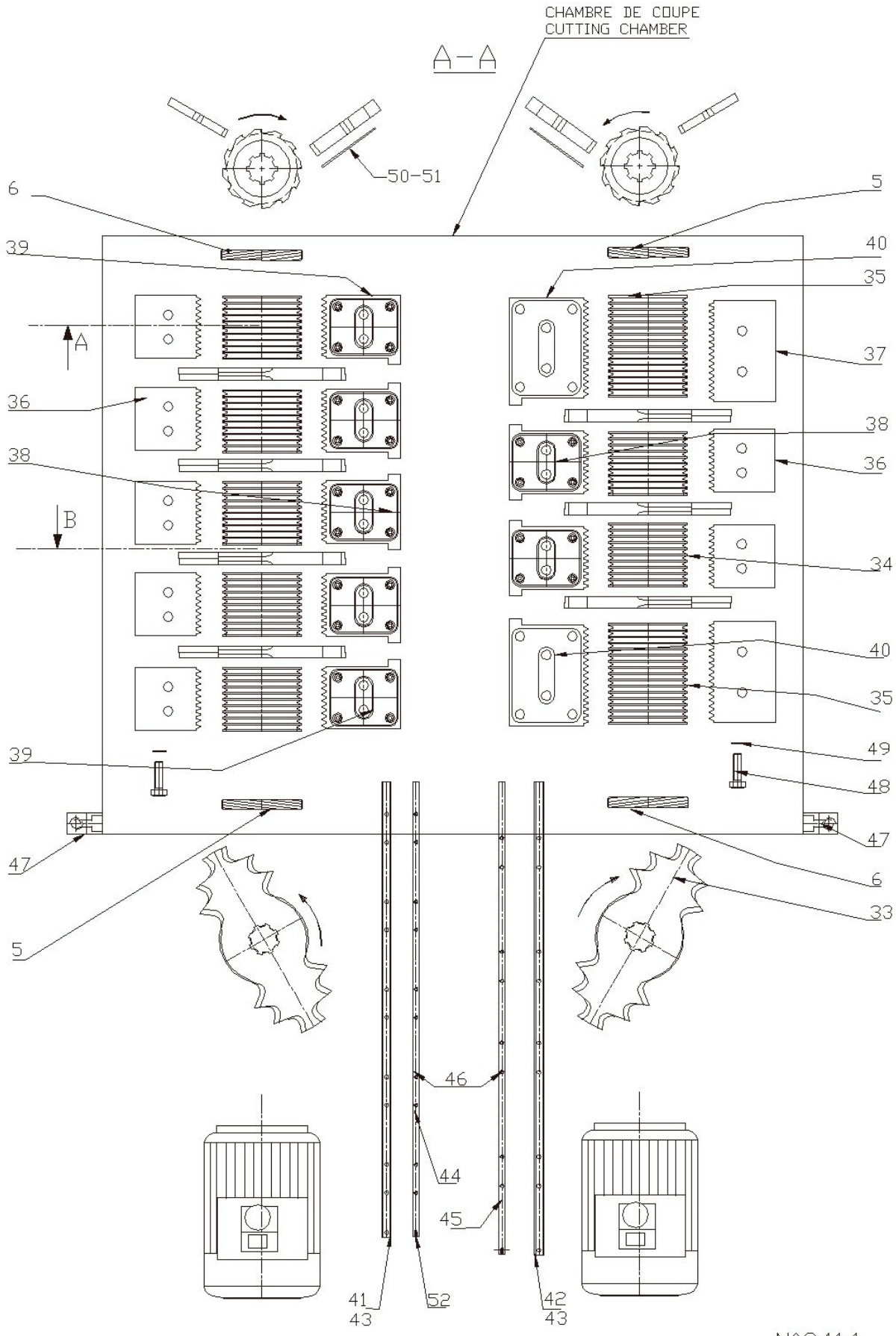


GRANULATOR PART LIST FOR GOLIATH TWIN Plus			
SEE DRAWING Nr 1586			
N°	Designation	Qty	GTPlus
1	TREATED FLUTED SHAFT MTR 3HP	2	200648
2	FLUTED SHAFT END WASHER	4	200563
3	SHOULDERED FLUTED SLEEVE	2	200632
4	PLAIN FLUTED SLEEVE	2	200631
5	LEFT DUST GUARD	2	200621
6	RIGHT DUST GUARD	2	200620
7	SHAFT END BEARING	4	200083
8	BALL BEARINGS 6210 2RS Ø50xØ90x20	4	7000939
9	CIRCLIPS 90I	4	7000601
10	½ FLEXIBLE COUPLING (fluted)	2	200424
11	½ FLEXIBLE COUPLING (keyed) (LS)	2	200423
12	STAR IN HYTREL / flexible coupling	2	200426
13	MOTOR END WASHER	2	200561
14	KEY 14x9x55	2	/
15	SPACING RING for MOTOR ACP	2	200562
17	GEARMOTOR 3 HP	2	230443
18	CRANK CASE BEARING PLATE	1	201501
19	COUPLING CRANK CASE	2	200460
20	FRAME	1	201522
21	BIN SAFETY SWITCH SUPPORT	1	200879
22	SWITCH (AZ16ZVK)	1	7007832
23	BIN SAFETY SWITCH KEY (B3)	1	7000192
24	BIN suitable with big suction box	1	291504
25	COMPLETE CLOSING HANDWHEEL for bin	1	200686
26a	CLOSING SCREW	1	205110
26b	BIN CROSSPIECE HANDWHEEL (ESM 15-281-50-	1	7001066
27	TWIN AUGER S	7	200251
28	CUTTING CHAMBER BLOCK TWIN	1	
29	JOINT	1	7000429
31	SCREW CHc M16x40	2	7000505
32	/		

GRANULATOR PART LIST FOR GOLIATH TWIN Plus			
SEE DRAWING Nr 1587			
N°	Designation	Qty	GTPlus
50	CLOSING SPRING	2	7002616
51	PUSH ROD	2	200657
52	PUSH ROD SPRING	2	7001266
53	RIGHT CLOSING	1	291158
	LEFT CLOSING	1	291159
54	COMPLETE HOPPER CLOSING HANDWHEEL	2	200688
	CLOSING SCREW	2	205112
55	CROSSPIECE BUTTON (ESM 15-201-63-M12)	2	7003341
56	RIGHT HOPPER CAP	1	291085
	LEFT HOPPER CAP	1	291086
57	CAP AXIS	2	200651
60	HANDLE	2	201490
61	SAFETY ARCH	2	290353
62	SAFETY SWITCH (AZ16ZVK)	1	7007832
63	HOPPER SAFETY KEY (Kit 2024)	1	7000192
64	REINFORCED PIVOTING BRAKE CASTER	2	7002674
	REINFORCED PIVOTING CASTERS	2	7002673
65	BIN SLIDER	2	200814
67	RING Ø200	1	7001449
68	JOINT D200	1	7001448
69	SUCTION BOX	1	190701
70	SUCTION PIPE Ø40	1	291673
	SUCTION PIPE Ø50	.	291674
71	MILLED BUTTON (ESM 16-110-6)	1	7001067
72	SOUNDPROOFED HOPPER	1	201705
73	FUNNEL	1	201712
74	MUD GUARD	1	7001401
75	MUD GUARD BEARING	1	201730
76	WINDOW	1	201723
77	HANDLE (ESM 11-560-132)	2	7001056
81	ROD	1	291067
82	BEARING SPACING RING GAS JACK	4	290472
83	GAS JACK opening	2	7001241
88	GAS JACK closing	2	7002107
84	CABINET SUPPORT HANDLE	1	200483
85	ELECTRICAL CABINET (ABS option)	1	/
120	DETECTOR	2	7007835
121	DETECTOR PROTECTION PLATE	1	201502

13.3 Wearing pieces (PL8410 and 8414):




CHAMBRE DE COUPE
CUTTING CHAMBER
A-A
50-51
6
39
A
36
38
B
39
47
5
5
40
35
37
38
36
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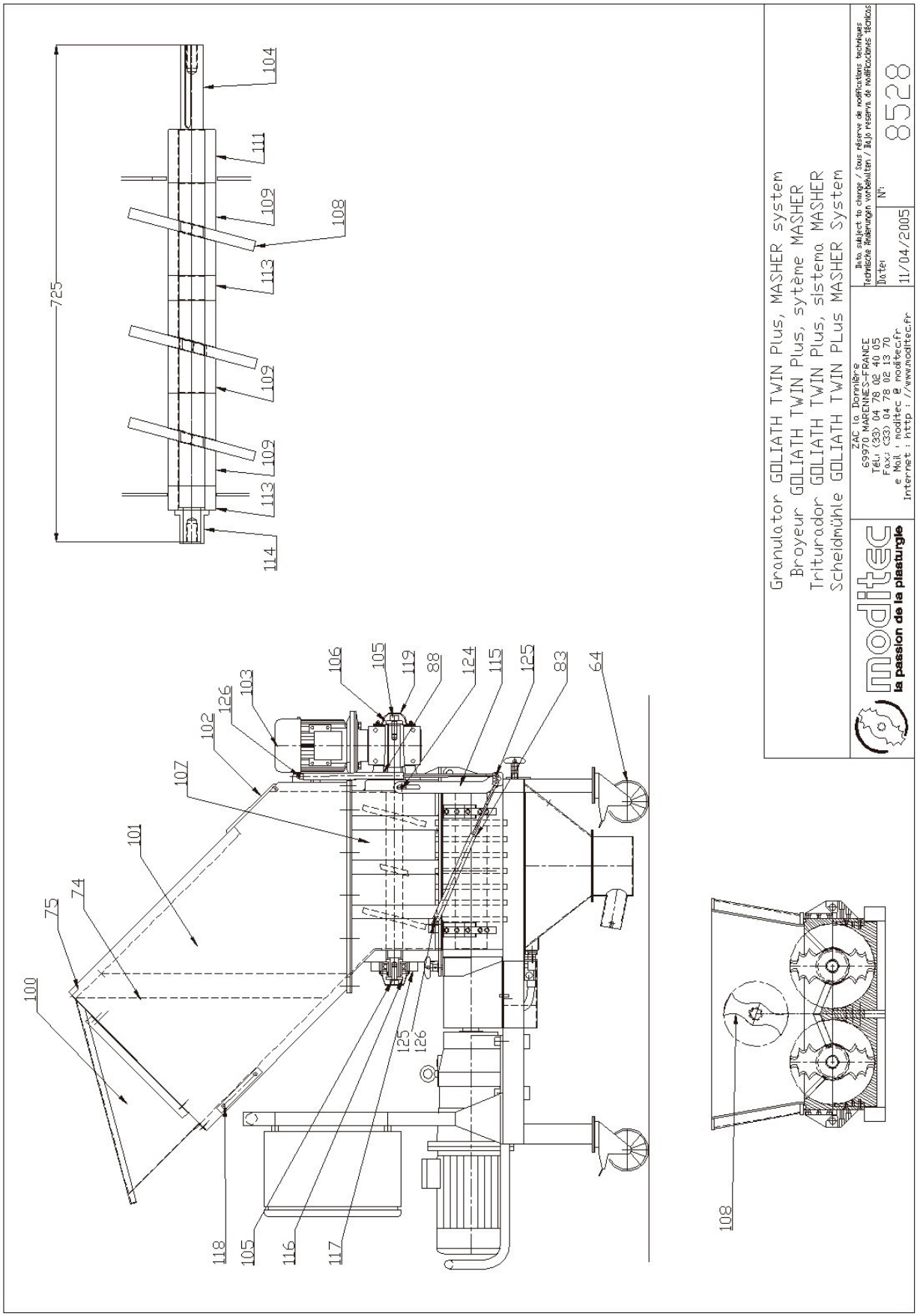
42
43
N°8414

B-B

GRANULATOR PART LIST for GOLIATH TWIN Plus					
SEE DRAWING Nr 8410					
Rep	**Designation**	**Qty:**	**Tooth configuration**		
			tpz5	**tpz6**	**tpz8**
33	Ø248 (9,76 inch) BLADE	7	200248	200248	200248
34	HELICAL ROLLER	7	200169	200167	200156
35	HELICAL TWIN ROLLER	2	200549	200534	200550
36	REVERSIBLE COUNTER COMB	7	200526	200514	200527
37	TWIN COUNTER COMB	2	200553	200535	200554
38	MIDDLE COMB	5	200522	200520	200524
39	SIDE COMB	2	200523	200521	200525
40	SIDE TWIN COMB	2	200551	200548	200552
48	10x40 (,39x1,38 inch) HM BOLT	36	7003001	7003001	7003001
49	SCHNOR Ø10 (0,39 inch) WASHER	36	7000592	7000592	7000592
OPTION IMD see drawing Nr 8414					
38	COMB IMD MIDDLE	5	200579	200580	200581
39	COMB IMD SIDE	2	200576	200577	200578
40	COMB TWIN IMD SIDE	2	200582	200583	200584
41	UPPER INSULATING PE SECTION (4	1	200540	200540	200540
42	UPPER INSULATING PE SECTION (3	1	200541	200541	200541
43	LOWER INSULATING PE SECTION	2	200542	200542	200542
44	CONDUCTIVE BAR (4 ctx)	1	200543	200543	200543
45	CONDUCTIVE BAR (3 ctx)	1	200546	200546	200546
46	STAINLESS STEEL PUSH SCEW M4	18	7001085	7001085	7001085
50	INSULATING PLATE	5	292591	292591	292591
51	GTWIN INSULATING PLATE	2	292598	292598	292598
47	OUTLET CONDUIT SUPPORT	2	200516	200516	200516
52	END BAR SCREW	2	7001028	7001028	7001028

13.4 Pieces for masher system (PL8528):



GRANULATOR PART LIST FOR GOLIATH TWIN Plus

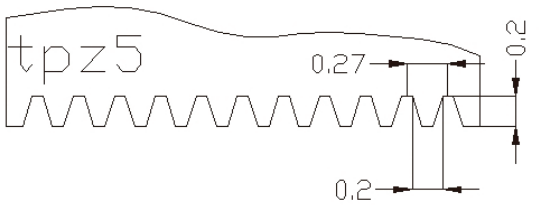
SPECIAL PARTS MASHER SYSTEM
see drawing Nr 8528

N°	Designation	Qty	Code
100	MASHER SYSTEM FUNNEL	1	291629
101	MASHER SYSTEM HOPPER	1	291627
102	WINDOW	1	291628
103	GEAR MOTOR 0,75KW	1	230566
104	FLUTED SHAFT	1	201820
105	SCREW CHc M16X30	2	7000504
106	MOTOR SIDE WASHER	1	200563
107	MASHER SYSTEM	1	291616
108	INCLINATED HOOKS	3	292081
109	INCLINATED SPACING RING	6	292082
111	SPACING RING Lg 78	1	291618
113	SPACING RING Lg 35.5	2	292005
114	SHOULDERED RING	1	201833
83	GAS JACK opening	2	7001587
88	GAS JACK closing	2	7001587
74	MUD FLAT	2	7001394
75	MUD FLAT BEARING PLATE	2	291630
115	ARM	2	291067
64	ALU/PE WHEELS WITH BRAKE D125	4	7003207
126	GAS JACK BEARING	4	291631
116	BEARING SIDE WASHER	1	200567
117	BEARING	1	7001516
118	HANDLE	2	7001056
119	MOTOR PROTECTION	1	200785
122	MOTOR SIDE CAP	2	291625
123	BEARING SIDE CAP	2	291626
124	SHOULDERED SCREW 10x12x12	2	291062
125	SHOULDERED SCREW 6x8x12	8	7000756

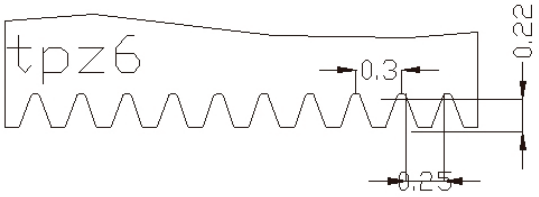
14 DIFFERENT TYPES OF TOOTH CONFIGURATIONS (Drawing 8615)

GOLIATH Plus

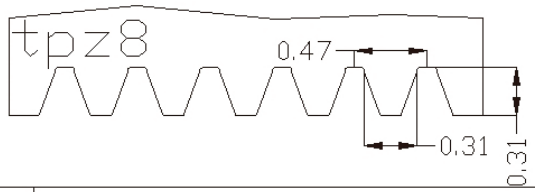
Trapezoidal 5 tooth configuration roller



Trapezoidal 6 tooth configuration roller

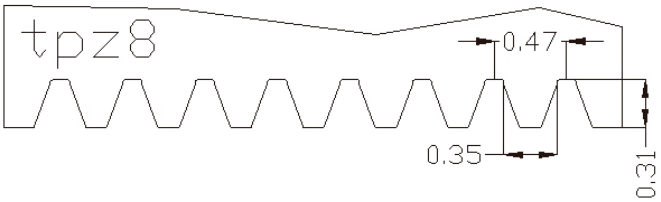


Trapezoidal 8 tooth configuration roller

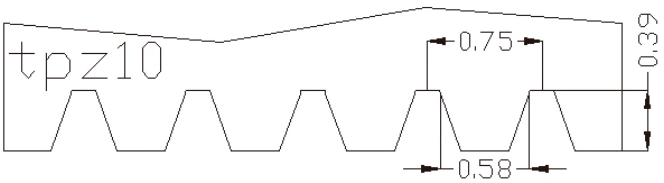


BIGGER

Trapezoidal 8 tooth configuration roller



Trapezoidal 10 tooth configuration roller



GOLIATH Plus and BIGGER tooth configuration
for US

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Internet : http : //www.moditec.fr

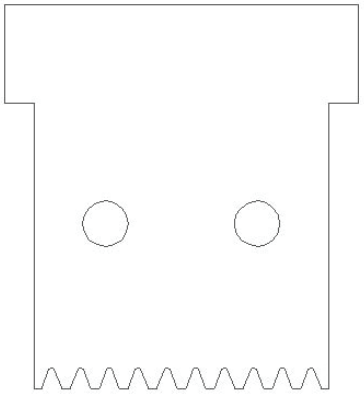
Date: 30/08/2005

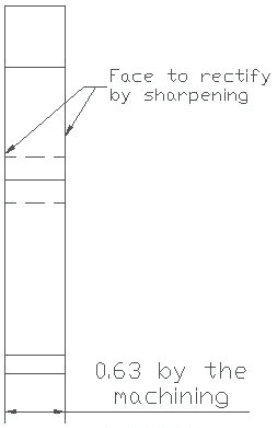
N°: 8615

15 ADJUSTMENT AND SHARPENING OF COMBS AND ROLLERS (Nr 8616)

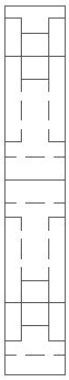
-Sharpening of the combs for all tooth configurations:

The sharpening of the combs is done by plane rectification of the indicated face.





STANDARD REVERSIBLE COMB

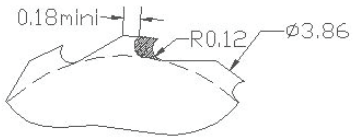


sharpening at MODITEC

IMD COMB

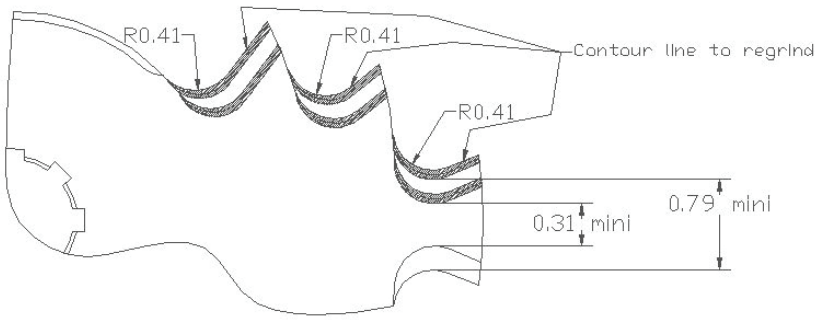
-Sharpening of the rollers for all tooth configurations:

The sharpening of the rollers is done with a forming-wheel as for a form cutter of machine tool.



-Sharpening of the cutters:

The sharpening of the cutters is done with carbide by shaping of the existing profile. Please respect the under mentioned geometry. Please let the width of 15mm like it is.



Sharpening of the cutting pieces of the GOLIATH Plus granulators for US

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Date: 29/08/2005

N°: 8616

1 FIELDS OF APPLICATION

GOLIATH TWIN Plus granulators with MASHER systems (to force the introduction of big pieces) are ***exclusively*** designed for grinding plastic scrap and are particularly well-suited for the automatic recycling of sprues. They are designed for beside-the-press manual and robot feeding and can be installed in-line with a conveyor, under a sorter or under an injection molding machine. **GOLIATH TWIN Plus** granulators are ruggedly constructed and designed for around-the-clock operation.

Only scrap of appropriate dimensions and material must be ground with this granulator (no sprues or parts too thick, no soft materials).

CAUTION: ***Tramp metal (nuts, bolts, screws, keys....) could seriously damage the cutting chamber.***
See IMD system (option) chapter 9

2 HANDLING – WEIGHT

See drawing Nr 7343 on the following pages

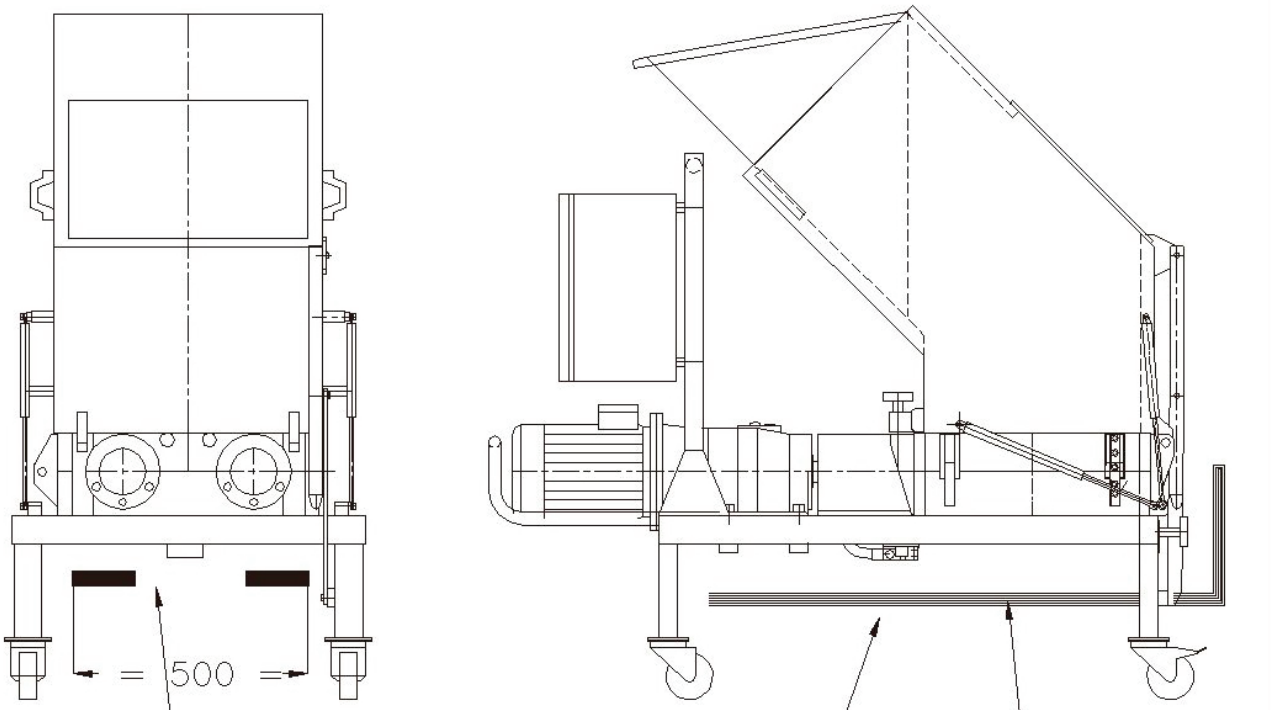
All **GOLIATH TWIN Plus** granulators are equipped with 4 turning casters with brakes for easy moving in the grinding room. We recommend these granulators to be loaded and/or unloaded by pallet truck. One of the two forks must be positioned under the machine in place of the reception bin.

CAUTION*: When handling a pallet truck, be careful not to damage the safety switch located under the granulator.*

Net weight	Kg	Pounds
GOLIATH TWIN Plus MASHER	**750**	**1650**

3 OVERALL DIMENSIONS

See drawing Nr 7551 on following pages.



Drawing of GOLIATH TWIN Plus handling
Manutention des broyeurs GOLIATH TWIN Plus
Manipulacion de los trituradores GOLIATH TWIN Plus
Hand habung der GOLIATH TWIN Plus Schneidmühlen

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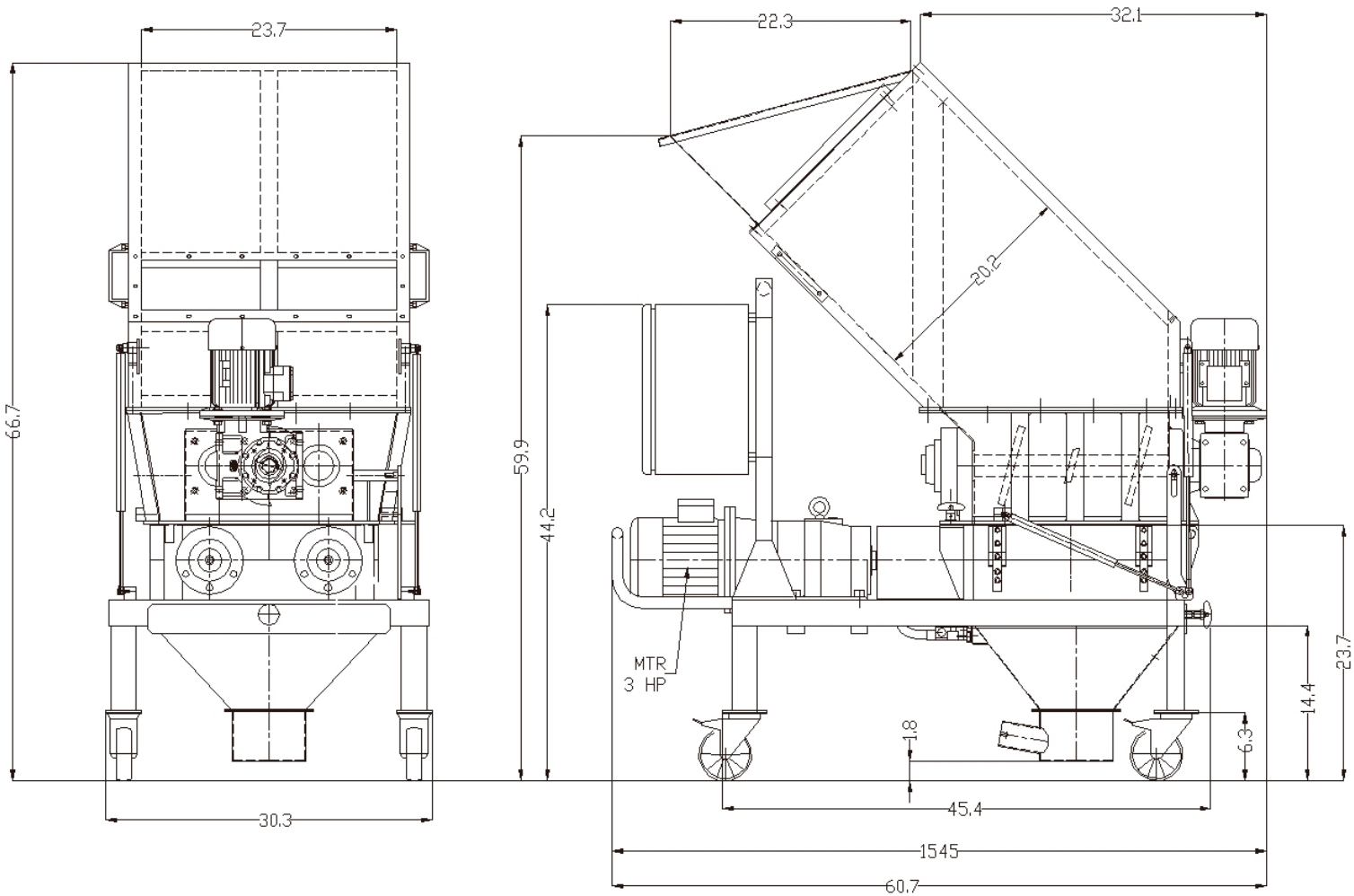
Date: 22/07/2003

N°: 7343



Granulator GOLIATH TWIN Plus, MASHER system for US gearmotor

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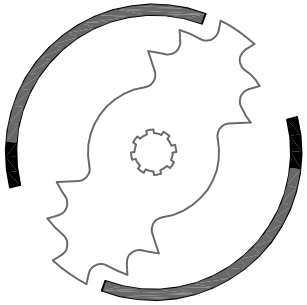
Date: 07/04/2005

N°: 7551



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IND	DATE	NAME	MODIFICATIONS
0	16/05/06		First edition

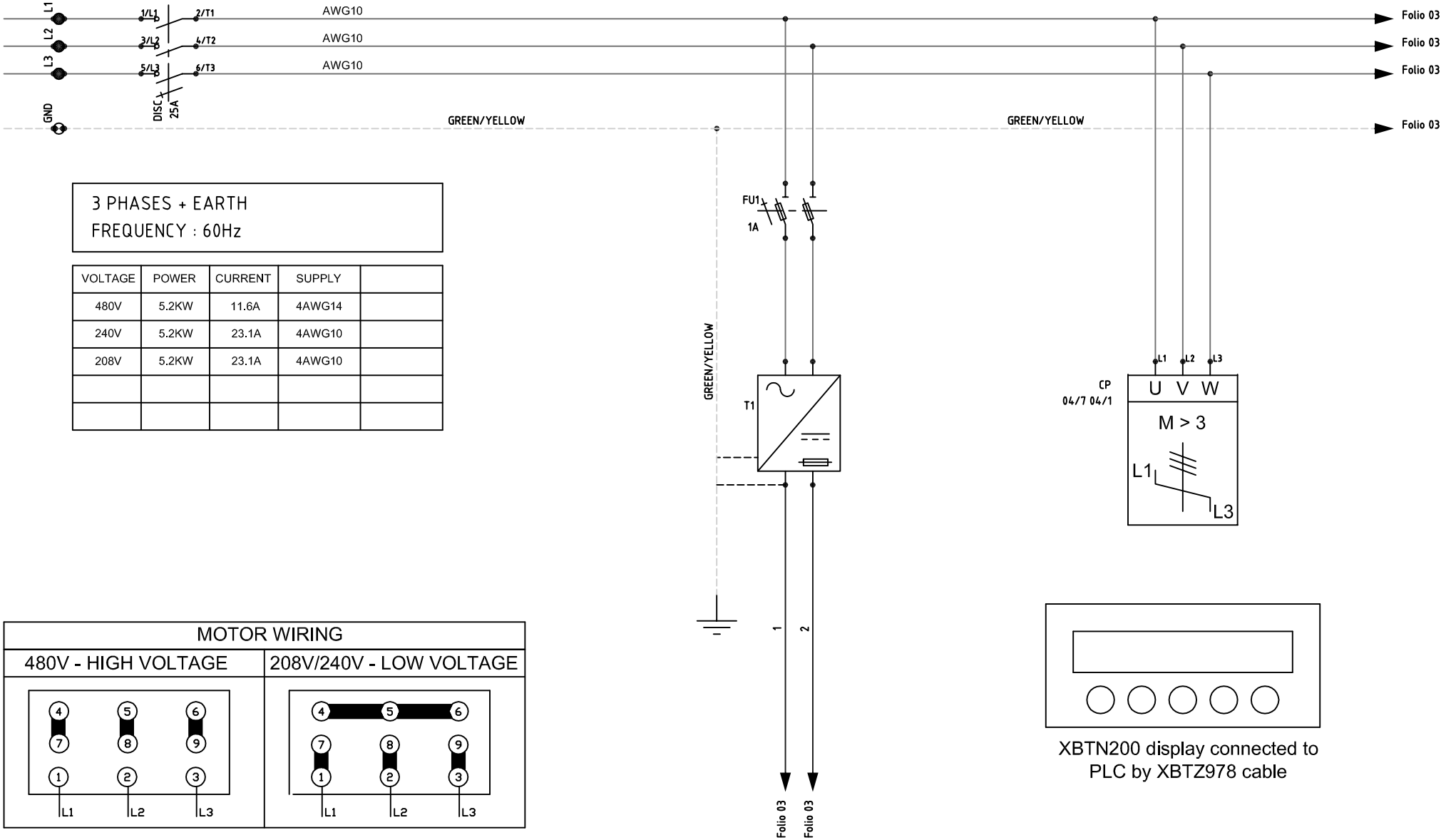
GOL.TWIN Plus MASHER (31700D)
2X2.2KW+0.75KW/208V-230V-480V
DRAWING: 31700D

DRAWN BY:
DATE:

CHECKED BY:
DATE:

INDEX 0

SHEET 01



3 PHASES + EARTH
FREQUENCY : 60Hz

VOLTAGE	POWER	CURRENT	SUPPLY	
480V	5.2KW	11.6A	4AWG14	
240V	5.2KW	23.1A	4AWG10	
208V	5.2KW	23.1A	4AWG10	

MOTOR WIRING

480V - HIGH VOLTAGE

208V/240V - LOW VOLTAGE

XBTN200 display connected to
PLC by XBTZ978 cable

moditec

DRAWING: 31700D

Main supply

GOL.TWIN Plus MASHER (31700D)
2X2.2KW+0.75KW/208V-230V-480V

IND	NAME	DATE	MODIFICATIONS
0		16/05/06	First edition

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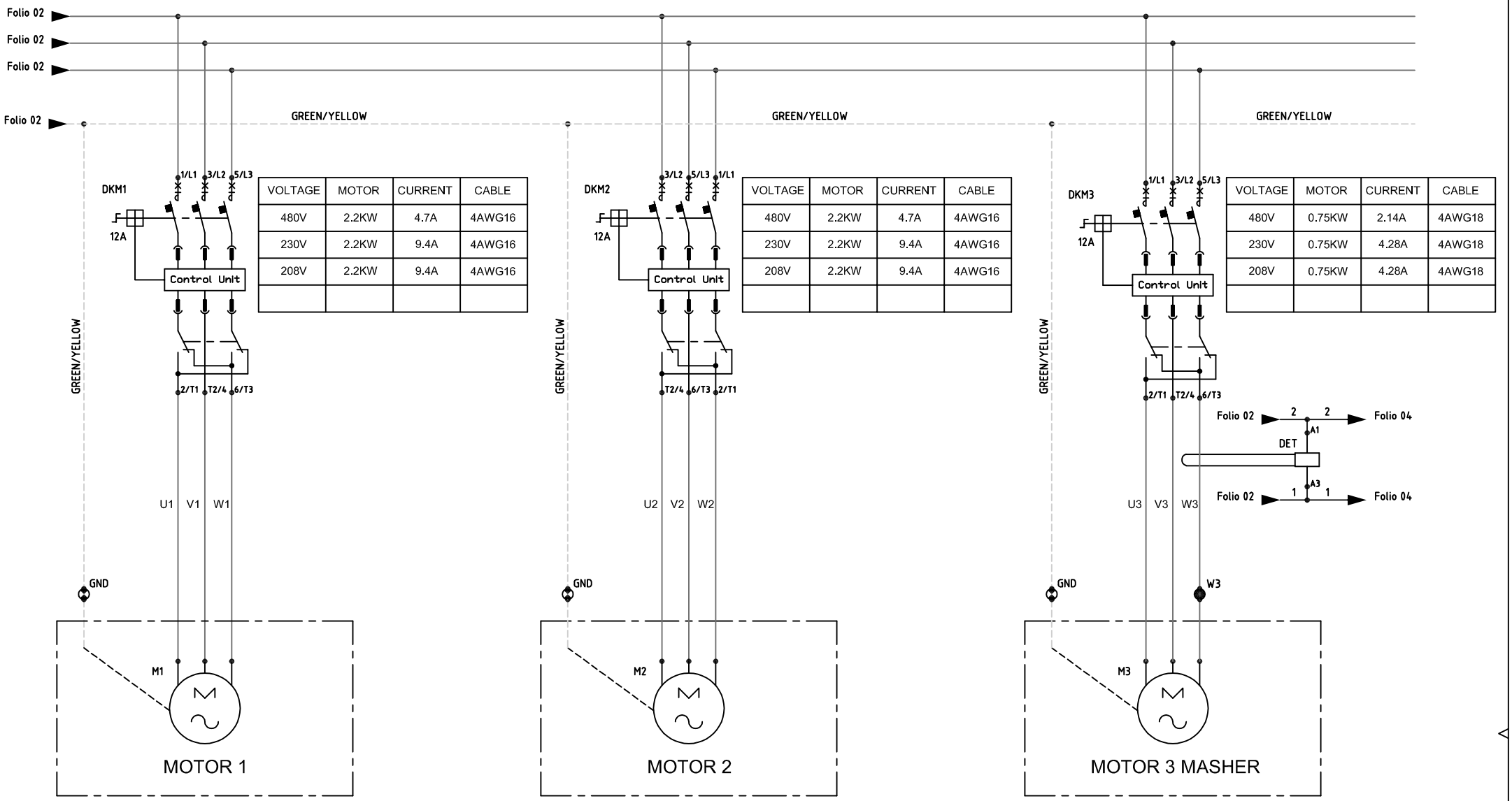
SHEET 02



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DRAWING: 31700D

Power supply

GOL.TWIN Plus MASHER (31700D)
2X2.2KW+0.75KW/208V-230V-480V

IND	NAME	DATE	MODIFICATIONS
0		16/05/06	First edition

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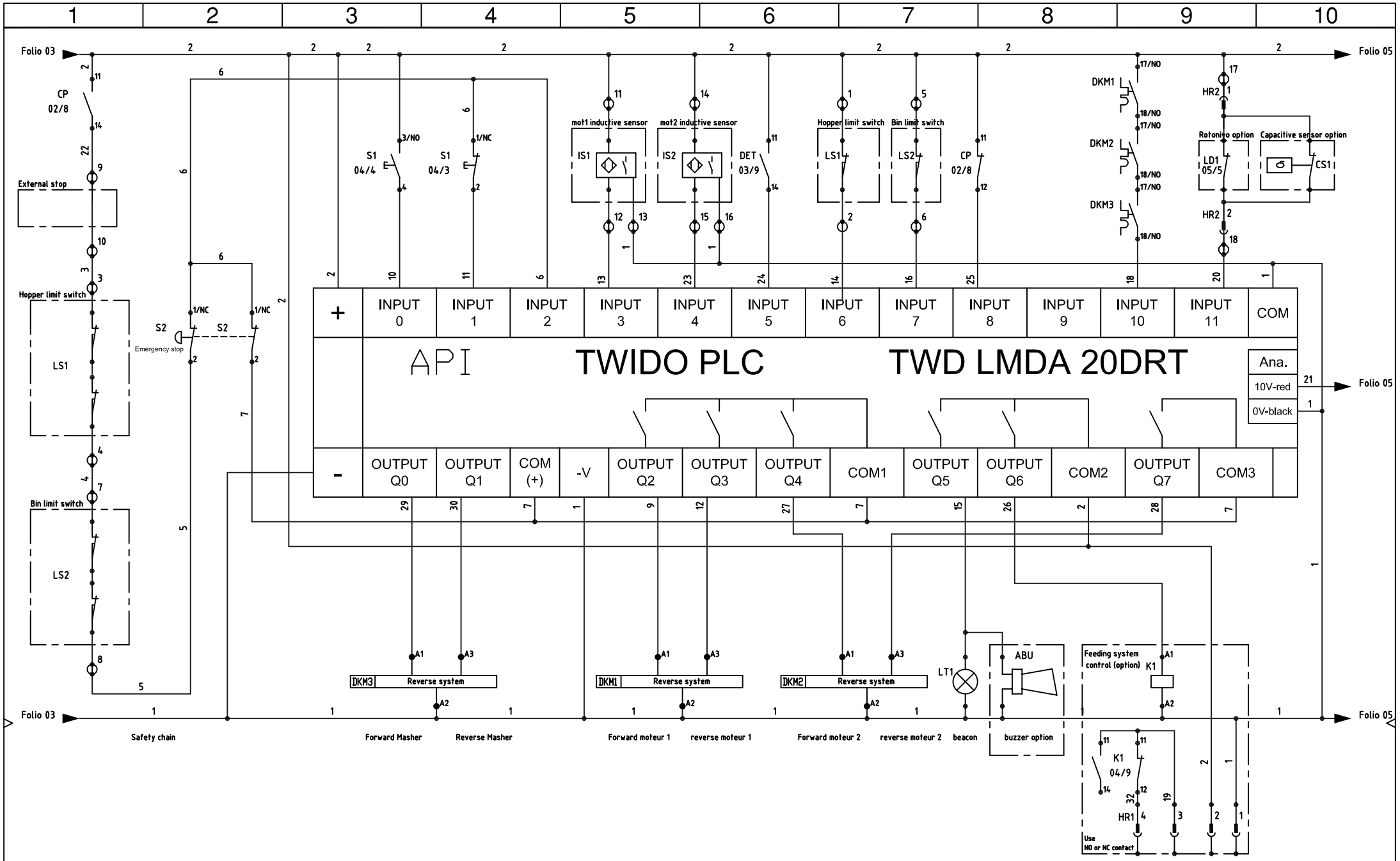
SHEET 03



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DRAWING: 31700D

ABS automation

GOL.TWIN Plus MASHER (31700D)
2X2.2KW+0.75KW/208V-230V-480V

IND	NAME	DATE	MODIFICATIONS
0		16/05/06	First edition

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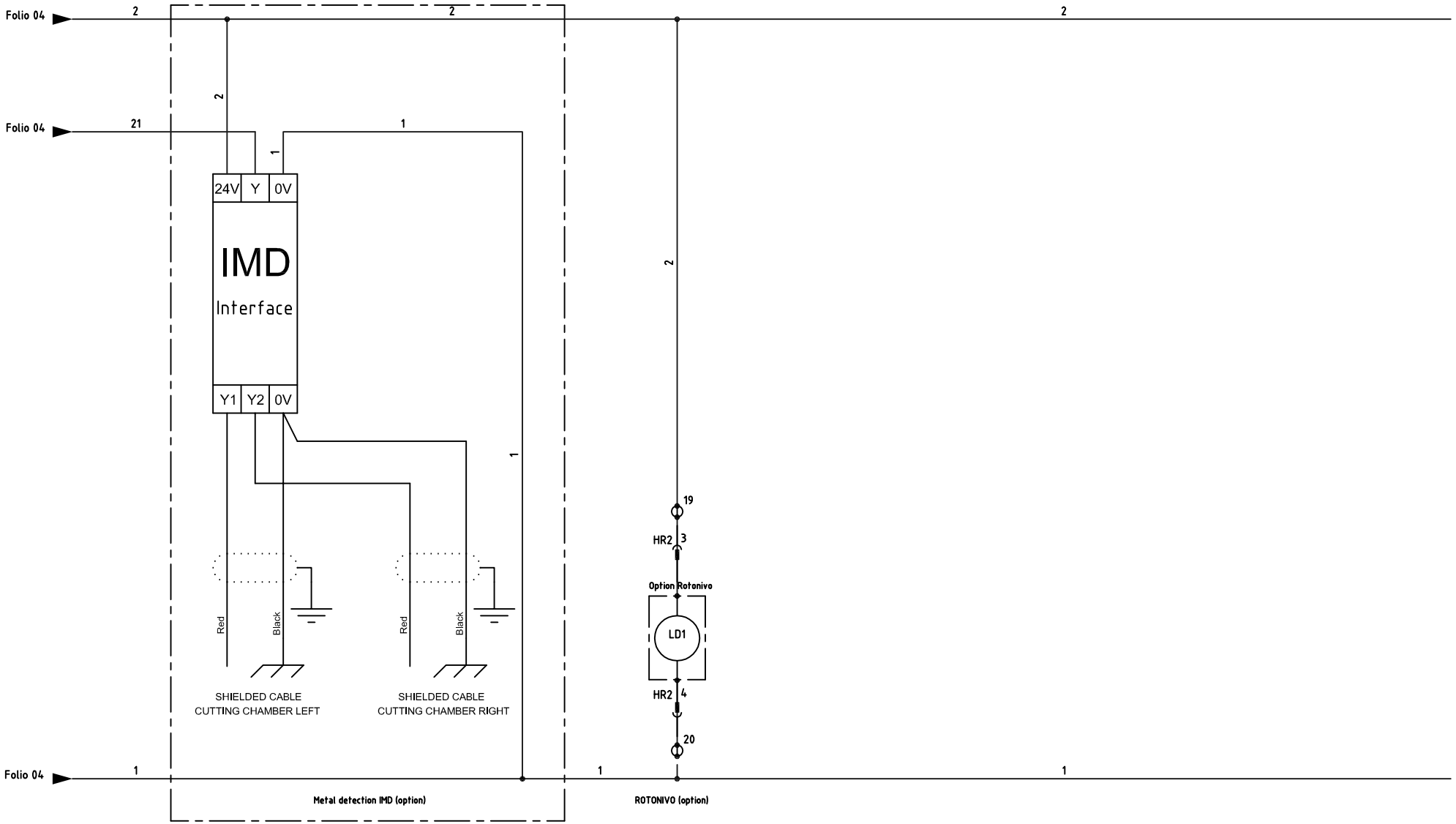
SHEET 04



moditec

DRAWING: 31700D

Options

GOL.TWIN Plus MASHER (31700D)
2X2.2KW+0.75KW/208V-230V-480V

IND	NAME	DATE	MODIFICATIONS
0		16/05/06	First edition

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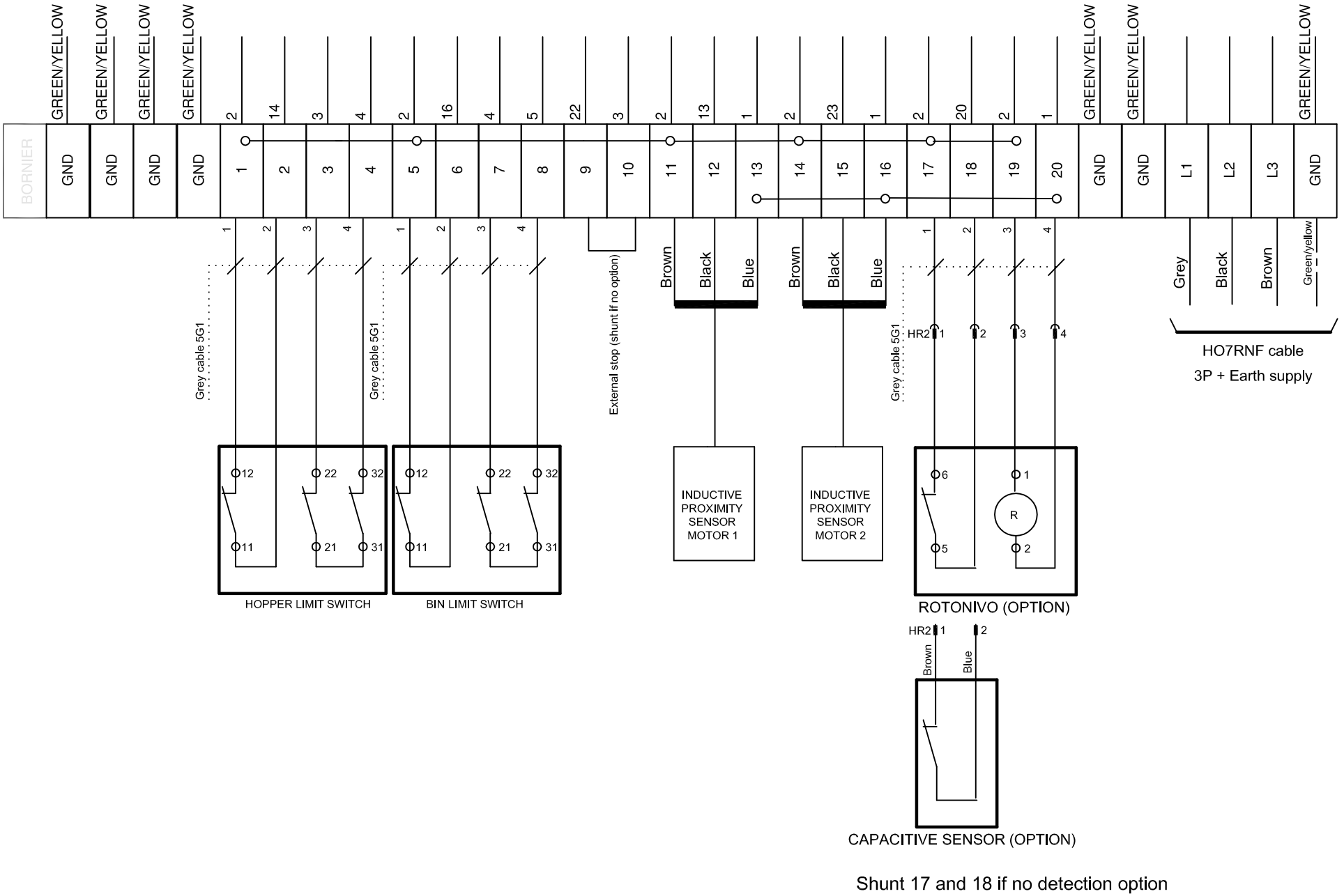
SHEET 05



moditec

DRAWING: 31700D

Terminal blocks

GOL.TWIN Plus MASHER (31700D)
2X2.2KW+0.75KW/208V-230V-480V

IND	NAME	DATE	MODIFICATIONS
0		16/05/06	First edition

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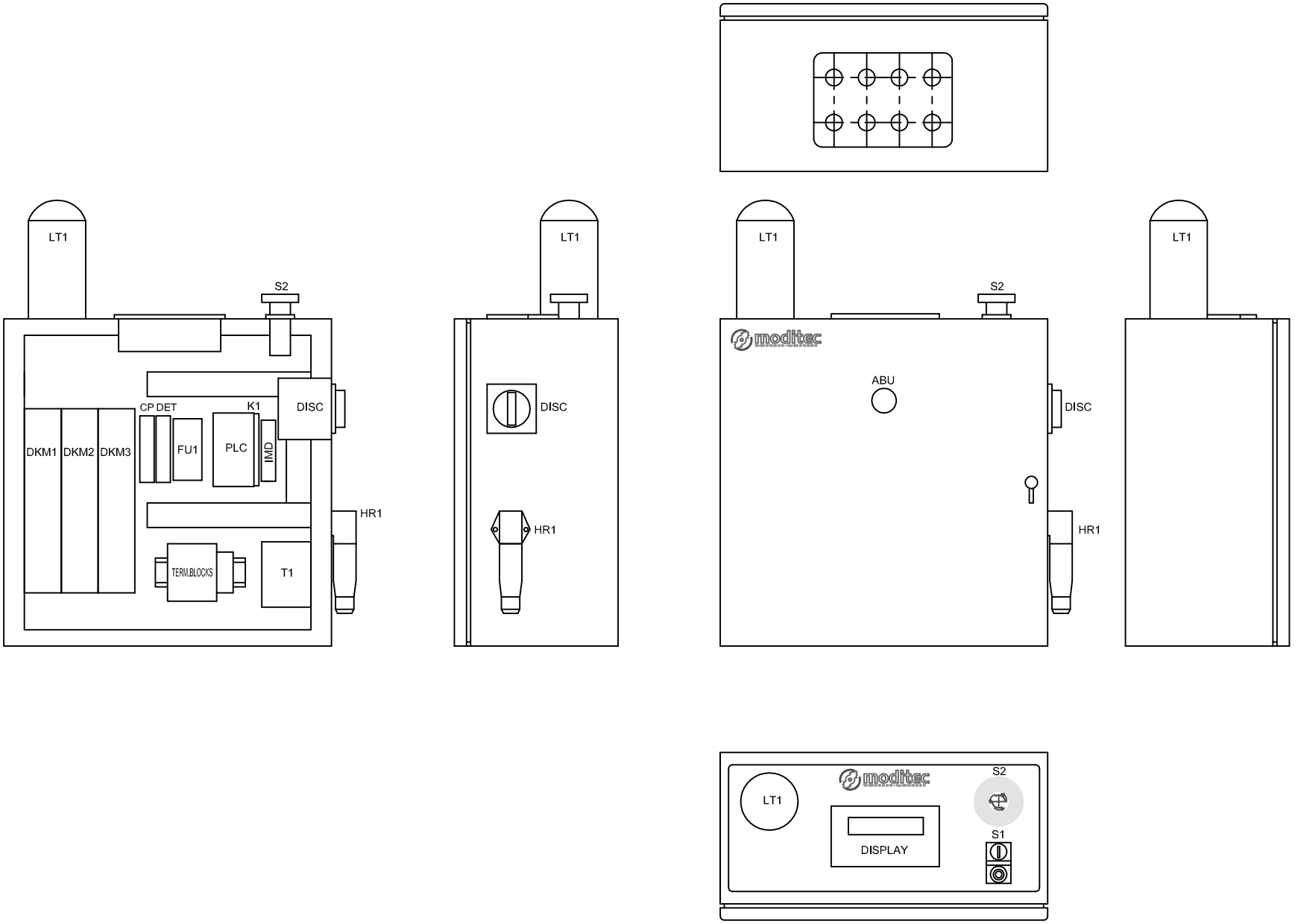
SHEET 06



moditec

DRAWING: 31700D

Electrical cabinet

GOL.TWIN Plus MASHER (31700D)
2X2.2KW+0.75KW/208V-230V-480V

IND	NAME	DATE	MODIFICATIONS
0		16/05/06	First edition

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SHEET 07

MARKER	DESIGNATION	QUANTITY	REFERENCE	MANUFACTURER
ELECTRICAL BOX	Metal enclosure 400X400X200	1.0	ST4420	ETA
ELECTRICAL BOX	Solid mounting plate	1.0		ETA
DISC	Main and emergency stop switch disconnector	1.0	194E-E25-1753-6N	Allen Bradley
T1	24V DC supply 1.5A	1.0	8878570000	Weidmuller
FU1	Fuse carrier	2.0	UK6.3-HESI	Phoenix
FU1	Fuse 1A 500VAC 6.32	4.0	L098128P	Ferraz-Shawmut
DKM1/DKM2/DKM3	Motor starter 12A+ Reversing block	3.0	LU2B12BL	SquareD
DKM1/DKM2/DKM3	Auxiliary contact block	3.0	LUA1-C20	SquareD
DKM1/DKM2	Control unit 3A - 12A	2.0	LUCB-12BL	SquareD
DKM3	Control unit 1.25A - 5A	1.0	LUCB-05BL	SquareD
CP	3 phases monitoring relay (408V)	1.0	DPA01CM60	Carlo Gavazzi
CP	3 phases monitoring relay (208V and 230V)	1.0	DPA51CM44	Carlo Gavazzi
DET	Current control relay	1.0	84871102	Crouzet
PLC	TWIDO controller 12E/8S 24VDC	1.0	TWD-LMDA-20DRT	Telemecanique
PLC	Real time clock cartridge	1.0	TWD-XCP-RTC	Telemecanique
DISPLAY	Compact display module	1.0	XBT-N200	Telemecanique
CABLE	Cable for display module	1.0	XBT-Z978	Telemecanique
IS1	Inductive proximity sensor	1.0	AM6/AP-2H	MD
IS2	Inductive proximity sensor	1.0	AM6/AP-2H	MD
S1	Double-headed pushbutton -green/red-	1.0	800EP-U2B213LX11	Allen Bradley
S2	Emergency stop	1.0	800EP-MTS443LX02	Allen Bradley

moditec

DRAWING: 31700D

List of components

GOL.TWIN Plus MASHER (31700D)
2X2.2KW+0.75KW/208V-230V-480V

IND	NAME	DATE	MODIFICATIONS
0		16/05/06	First edition

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SHEET 08

MARKER	DESIGNATION	QUANTITY	REFERENCE	MANUFACTURER
LT1	Beacon	1.0	855T-B24DN4	Allen Bradley
LT1	Beacon	1.0	855TBSBC	Allen Bradley
TERM.BLOCKS	End cover	1.0	D-ST6	Phoenix
TERM.BLOCKS	Spring type terminal blocks	3.0	ST6	Phoenix
TERM.BLOCKS	Spring type terminal block for protective earth	1.0	ST6PE	Phoenix
TERM.BLOCKS	End cover	1.0	D-ST2.5	Phoenix
TERM.BLOCKS	Spring type terminal blocks	1.0	ST2.5	Phoenix
TERM.BLOCKS	End cover for double deck type terminal block	1.0	D-STTB2.5	Phoenix
TERM.BLOCKS	Double deck type terminal block	10.0	STTB2.5	Phoenix
TERM.BLOCKS	Double deck type terminal block for protective earth	3.0	STTB2.5PE	Phoenix
LS1	Safety limit switch	1.0	AZ16-03zvk	Schmersal
LS1	Accessories for safety limit switch	1.0	KIT AZ15/16 zv-2024	Schmersal
LS2	Safety limit switch	1.0	AZ16-03zvk	Schmersal
LS2	Key for safety limit switch	1.0	AZ15/16B3	Schmersal

moditec

DRAWING: 31700D

List of components

GOL.TWIN Plus MASHER (31700D)
2X2.2KW+0.75KW/208V-230V-480V

IND	NAME	DATE	MODIFICATIONS
0		16/05/06	First edition

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SHEET 09

Options

MARKER	DESIGNATION	QUANTITY	REFERENCE	MANUFACTURER
	ROTONIVO Option			
HR2	Connector	1.0	CKA03IAPS	Ilme
HR2	Connector	1.0	CKA03VS	Ilme
HR2	Connector	1.0	CKM04N	Ilme
HR2	Connector	1.0	CKF04N	Ilme
LD1	Level detector 24VDC with paddle	1.0	RN4001-24VDC-	UWT
	Capacitive sensor option			
HR2	Connector	1.0	CKA03IAPS	Ilme
HR2	Connector	1.0	CKA03VAS	Ilme
HR2	Connector	1.0	CKM04N	Ilme
HR2	Connector	1.0	CKF04N	Ilme
CS1	Capacitive proximity sensor	1.0	CA30CLN25CP	Carlo Gavazzi
	Feeding system (control) option			
K1	Auxiliary relay 1RT 24VAC/DC	1.0	385100240060	Finder
HR1	Connector	1.0	CKA03IA	Ilme
HR1	Connector	1.0	CKA03VS	Ilme
HR1	Connector	1.0	CKM04N	Ilme
HR1	Connector	1.0	CKF04N	Ilme

MARKER	DESIGNATION	QUANTITY	REFERENCE	MANUFACTURER
	Metal detection option IMD			
IMD	IMD interface	1.0	7007040	Moditec
TERM.BLOCK	Spring type terminal block for protective earth	1.0	ST2.5PE	Phoenix
	Buzzer option			
ABU	Buzzer	1.0	SC235BF2	Sonitron

moditec

DRAWING: 31700D

List of components
options

GOL.TWIN Plus MASHER (31700D)
2X2.2KW+0.75KW/208V-230V-480V

IND	NAME	DATE	MODIFICATIONS
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SHEET 11