



INSTRUCTIONS BOOK

VERTICAL BROACHER

BM25

NS: 2026/379



PRADA NARGESA, S.L

Ctra. de Garrigàs a Sant Miquel s/n · 17476 Palau de Santa Eulàlia (Girona) SPAIN

Tel. +34 972568085 · nargesa@nargesa.com · www.nargesa.com

NARGESA CLIENTS

Prada Nargesa has more than 12.200 customers around the world. Some of our clients, those who offer service to third parties with the Nargesa machinery in their workshops, have been pleased to be part of this network that aims to connect them with possible future clients. In this way, all those people or companies that have a need for any part or tool that can be manufactured by using the Nargesa range of machinery, will be able to find a solution in their area to be able to satisfy their production requirements by hiring their services.



We have more than 12.200 customers in 150 different countries around the world

Discover its location on the interactive map on our website!

DO YOU WANT TO PARTICIPATE?

Send an email to nargesa@nargesa.com, include the following information and we will add you to this list.

We want to encourage all those who haven't participated yet in this great commercial network!

1. Company name
2. CIF/Tax Code
3. City
4. Country
5. Machine or machines

PRADA NARGESA

Prada Nargesa S.L. is a family business founded in 1970 located near Barcelona, Spain, with more than 50 years of experience in the sector of manufacturing of industrial machinery, and more than 10.000m² of facilities. Nargesa is a symbol of quality, reliability, warranty and innovation.

Our whole range of machines and accessories is manufactured entirely in Nargesa. We have a constant stock of 400 machines, and we have more than 21.300 machines sold all over the world.



OUR RANGE OF MACHINERY

Ironworker Machines
Ring Roller Bender and Pipe Bender
Non-mandrel Tube and Pipe Bender
Twisting / Scroll Bending Machines
Horizontal Press Brakes
End Wrought Iron Machines
Gas Forges

Iron Embossing Machines
Hydraulic Shear Machines
Hydraulic Press Brakes
Presses for Locks
Broaching Machines
Power Hammers

CERTIFICATES

Prada Nargesa has several certifications that backup both, the design and manufacturing processes, as well as the journey through exporting our products around the world and the quality of the manufacturing components we use for our machines. These facts turn into real advantages for our customers:



AUTHORIZED EXPORTER

- Faster customs procedures
- Reduction of tariff documentation
- Tariff preferences according to geographical location



PYME INNOVADORA
Válido hasta el 31 de mayo de 2026



INNOVATIVE SME

- Development in innovation, design and manufacturing technologies
- Certification and audit of efficiency in product and service
- Ability to foresee customer needs



R+D+I MANAGEMENT

- Manufacturing based on the R+D+I process
- Technological surveillance system

SUCCESS STORIES

At Prada Nargesa we believe that the testimony of our clients is our best guarantee, and that is why we like to expose some of the success stories that we have witnessed around the world:



Discover its location on the interactive map on our website!

DO YOU WANT TO PARTICIPATE?

Send an email to nargesa@nargesa.com including the following information and we will add you to our website:

- Company name
- Testimonial name
- Post in the Company
- Country
- Descriptive text
- Photography with the machine

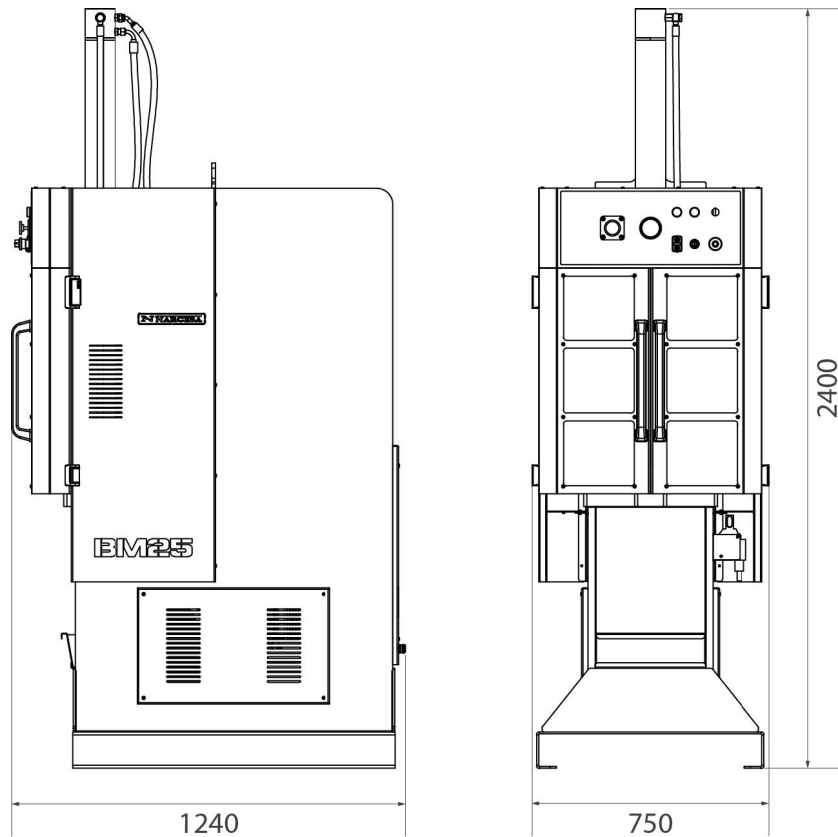
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TECHNICAL ANNEX

1. GENERAL INFORMATION

1.1. General dimensions

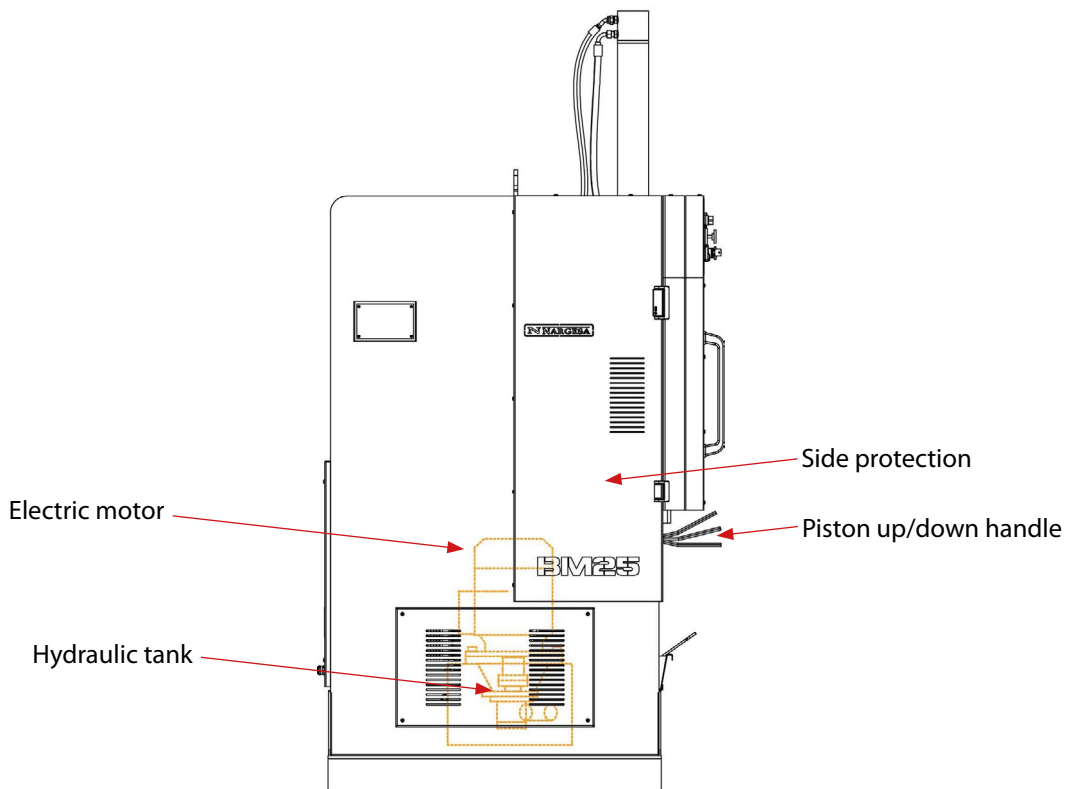
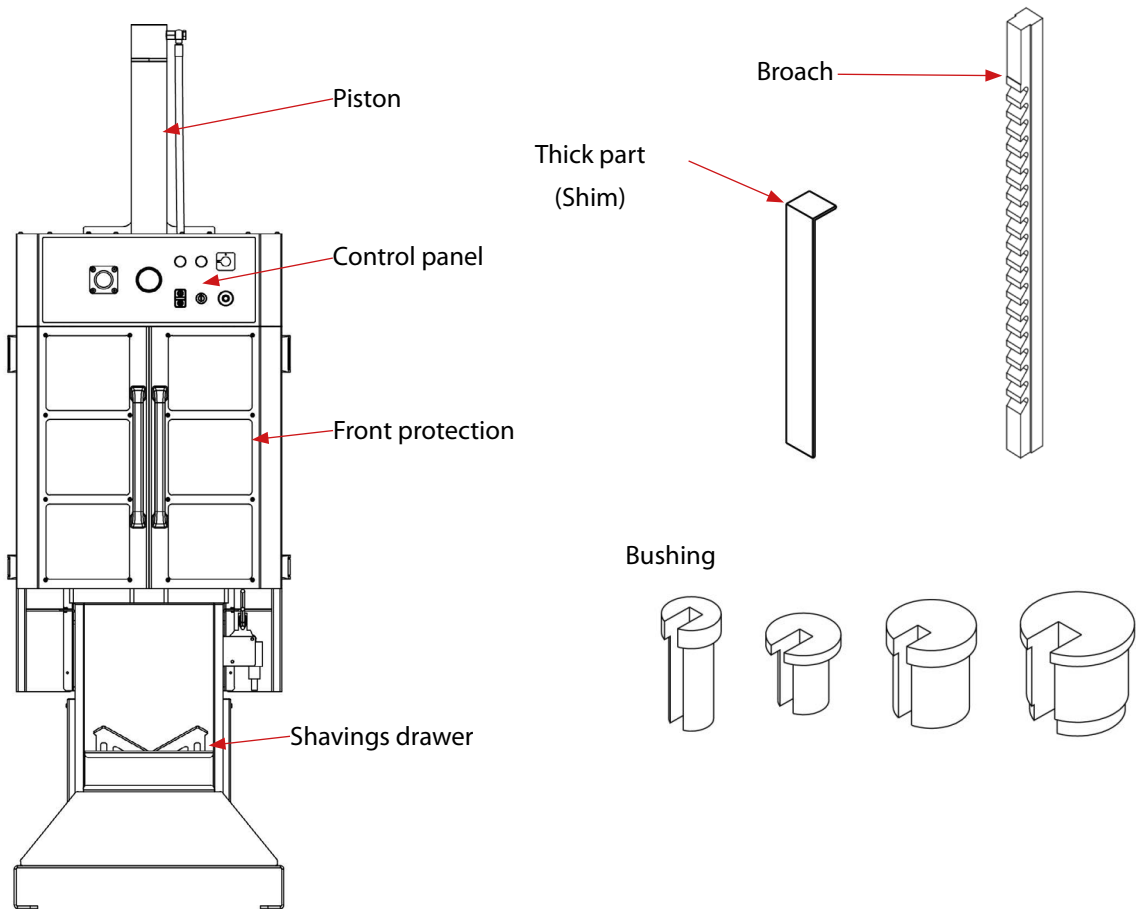


1.2. Description of the machine

Hydraulic Broaching machine BM25 NARGESA has been fabricated in a welded and mechanized steel monoblock. It's a machine useful for making notches and keyways in all kinds of pieces: sprockets, pulleys, gears, etc... It is also used like a press to unbolt oxidated parts, assembling and dismantling bearings, etc...

BM25 is made according to the European regulations for the manufacturing of industrial machinery

1.3. Identification of the machine



1.4. General characteristics

Motor power	2,2 Kw / 3 HP - 1460 r.p.m.
3-phased tension tension	230/400V
Hydraulic power	10 Tm
Max. broaching capacity	25 mm
Working speed	24 mm/s
Return speed	54 mm/s
Pump Flow	7,5 L
Hydraulic tank capacity	25 L
Shank displacement	600 mm
Goosneck	300 mm
Maximum diameter of the piece	600 mm*
Bench dimensions	420 mm x 420 mm
Dimensions	750x1240x2400 mm
Weight	850 Kg.
<i>*For different sizes, please ask the manufacturer</i>	

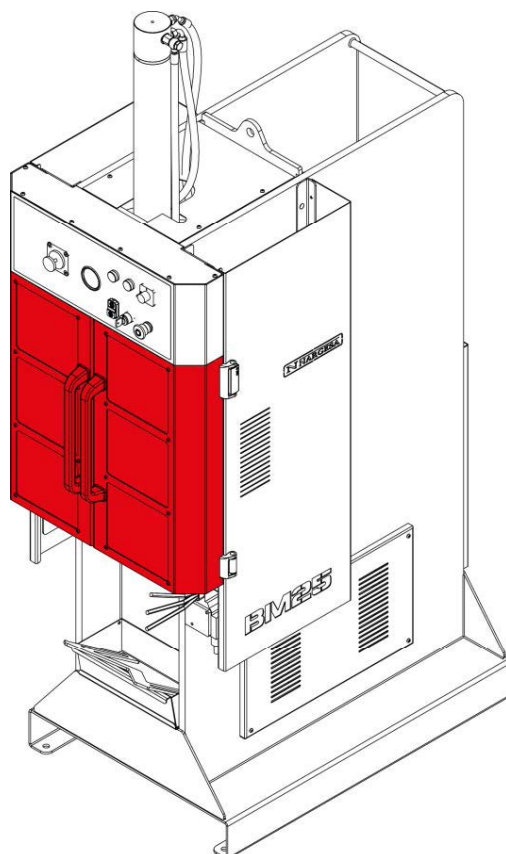
The machine has got an identification plate on one of the sides where it is printed the information about the manufacturer and the main characteristics of the machine. The plate has got the information detailed below:



1.5. Description of safety devices

The safety devices the broaching machine has got are the ones listed below:

- The door is located at the front part of the machine to prevent from any projected part could injure the operator. This door has a safety system which only allows any movement of the machine when the door is closed. Likewise, the machine has a key that activates a Danger light sign when turned and cancels this device; this option could be used in exceptional cases and under the operator's responsibility.



1.6. Contraindications for the machine usage

Never fit elements that are not recommended by the manufacturer.

1.7. Noise caused by the machine

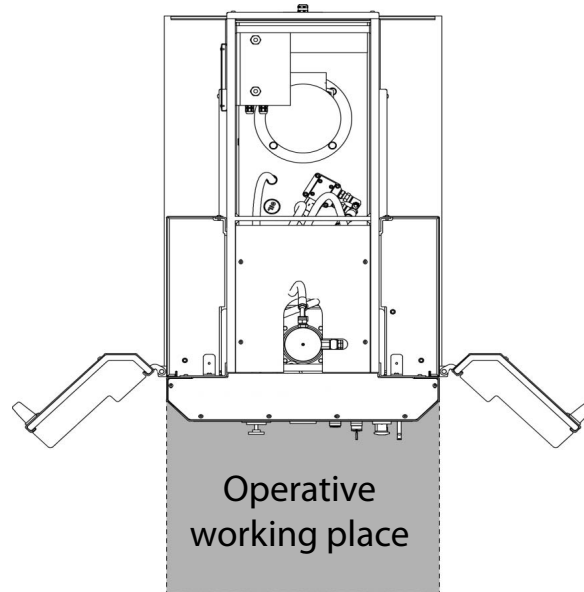
In this machine noise could be considered non-existent, the noise is almost non-existent under a normal working system. The pump is inside the container which is at the time inside the box that serves as the stand for the machine. All this minimizes noise and vibrations so the machine has a steady acoustic pressure level lower than 70dB at the working site.

1.8. Vibrations

Vibrations are almost non-existent, as it has been stated before. The hydraulic pump which is the element that could have a bit higher level of vibrations, is submerged inside an oil container so vibrations are minimized. At the same time the oil container is located on silent rubber blocks that produce a higher muffling of vibrations.

1.9. Operative working place

The broaching machine will only be used by an operative at the time who will be placed in front of the machine, never at a lateral of it because he ought to control the whole set of the machine. Moreover the machine main protection devices are thought for the frontal use of the machine.

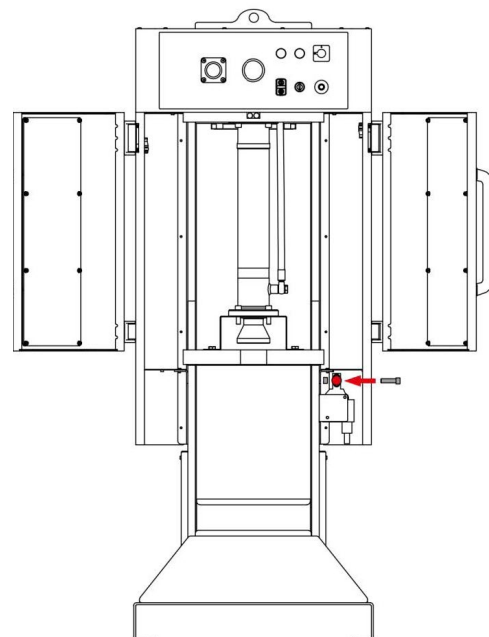
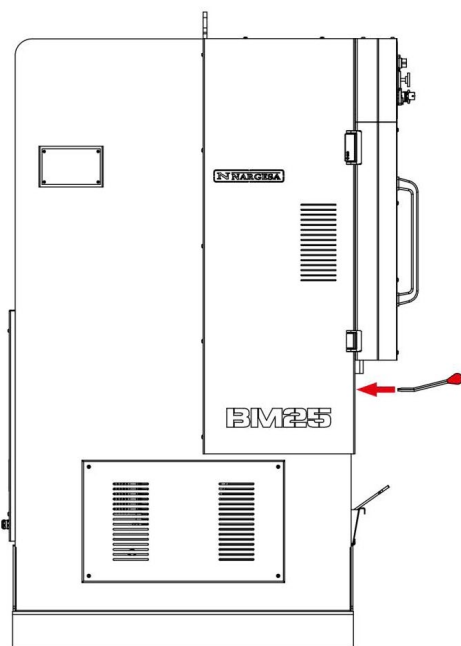


1.10. Assembly of the lever and piston

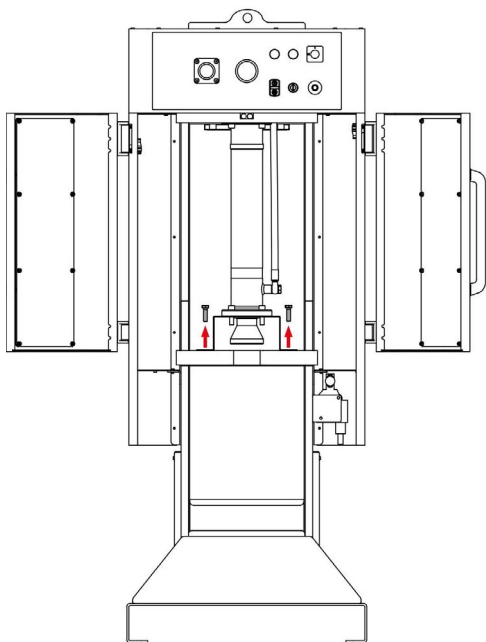
Before starting to work, it is necessary to set up the activation lever and place the piston in its working position.

1. Place the drive lever in its slot and fix it.

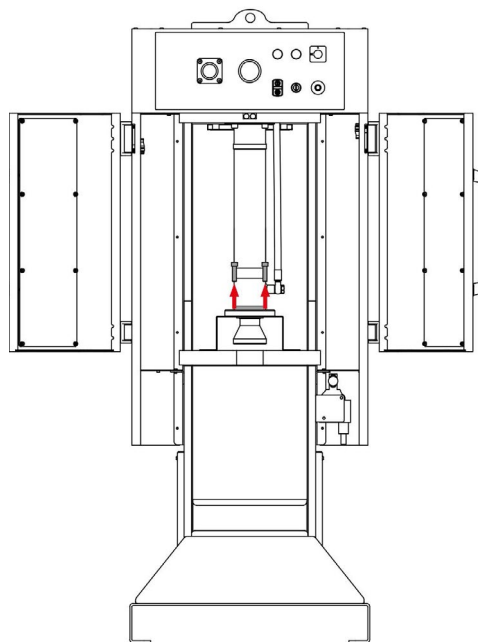
2. We fix it with the bolts and the nut.



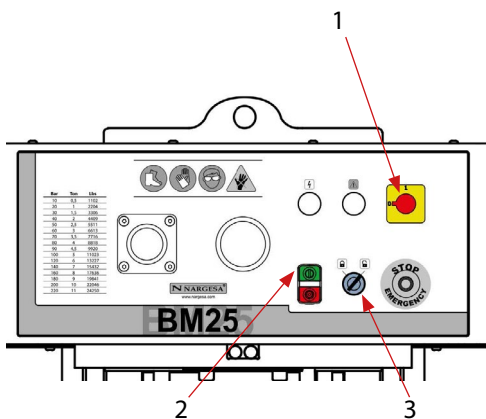
3. Remove the bolts of the support



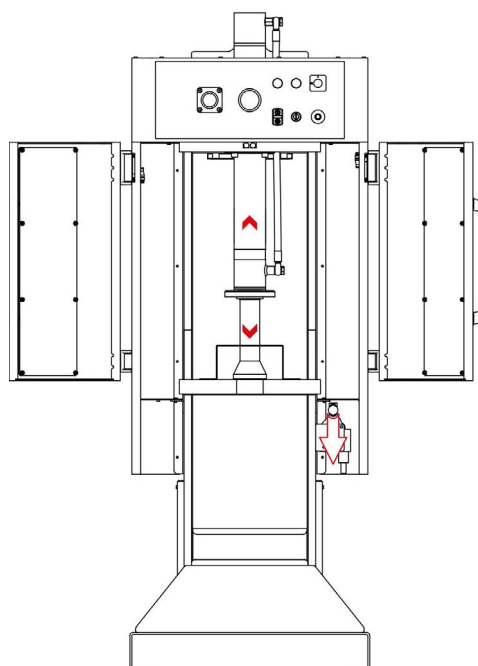
4. Remove the bolts that fix the piston to the stand



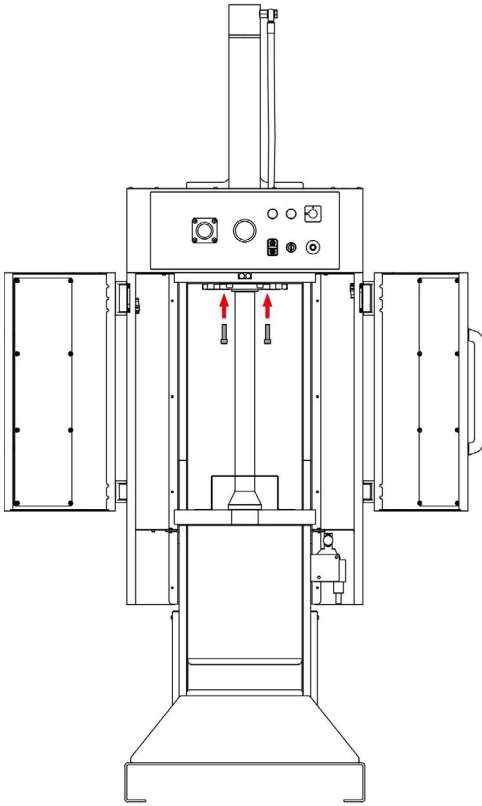
5. We start the machine with the main switch (1), the pump with the green button (2) and can-cel the safety with the key (3).



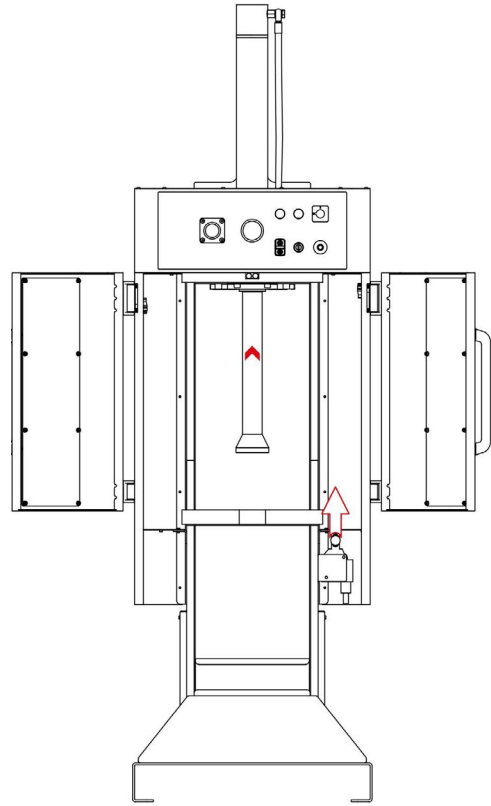
6. We carefully press the lever down so that the rod makes pressure on the table and the piston get risen. It is necessary to guide the piston with the hands so that it rises perpendicularly to the table.



7. When the piston is in its highest position, we fasten the upper fixing bolts



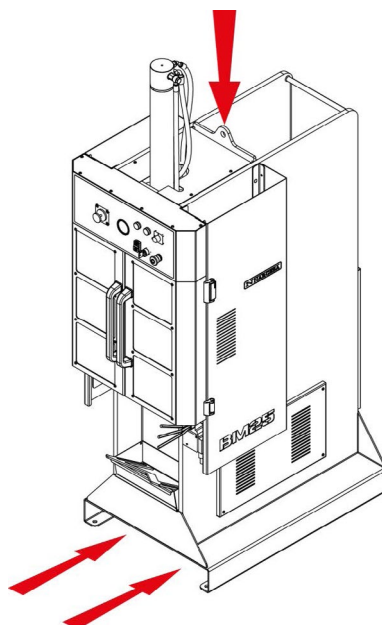
8. With the activation lever we put the piston up until we can remove the support



2. TRANSPORT AND STORAGE

2.1. Transport

El transporte sin elevación se efectuará con un transpalet. La elevación se realizará con una grúa en el punto de anclaje marcado para tal efecto.



2.2. Storage conditions

The broaching machine could never be stored in a place that does not fulfil the following requirements:

- * Humidity between 30% and 95% without water condensation.
- * Temperature from -25°C to 55°C or 75°C for periods of time no longer than 24h (Bear in mind that this temperatures are just for storage conditions. Performance temperatures are described in chapter 4.3)
- * Do not pile up machines or heavy objects above.
- * Do not dismantle for its storage.

3. MAINTENANCE

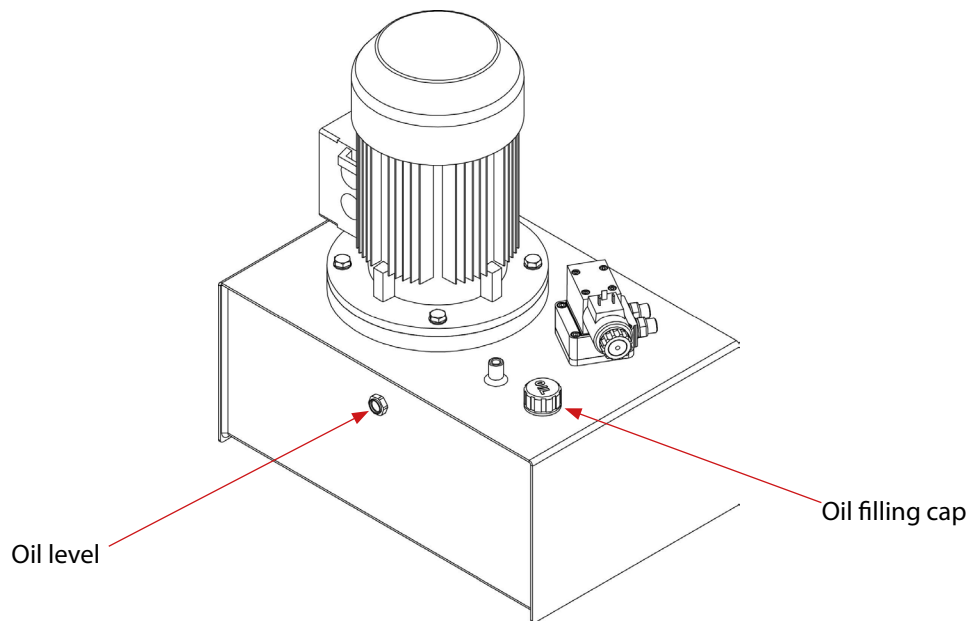
3.1. General maintenance

- Every 500 hours of use, check the oil level in the tank.

In the front of tank is oil level. In the absence of oil, fill until the level cap show 3/4 full.

- Replace every 2000 hours or every 3 years the hydraulic oil tank

Type: CEP SA HYDRAULIQUE HM 68



4. INSTALMENT AND STARTING UP

4.1. Instructions to fix it

When the machine is put down by a crane it is necessary to place it down correctly so it doesn't have to be moved once it is on the floor. In case it is not possible, then a moveable base must be placed below always caring for its inclination to avoid any possible turn over.

4.2. Assembling to reduce noise and vibrations

The machine will be fixed on the floor due to its own weight, therefore it needs to be located in a flat and leveled surface so any possible vibration could be also reduced.

4.3. Admissible outer conditions

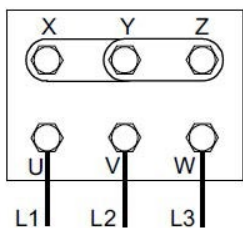
- * Environment temperature: between +5°C and +40°C without exceeding +35°C as average temperature within 24 hours.
- * Humidity: Between 30% and 90% without water condensation.

4.4. Connection to power supply

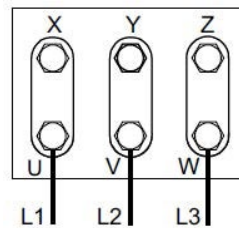
In order to carry out the electrical connections of the machine, first make sure it is not plugged to the electrical supply and that there is no tension in any of its pieces. The machine should be connected to only one source as well as to a proper ground socket to avoid possible accident and keep the equipment saved from any possible power leaking.

The standard machine is prepared to be connected to a 400V three phased system. In case the supply three phase tension was 230V a change must be carried out in the connections inside the machine to adapt it to that tension.

The machine has a 230/400V three-phased engine that comes star like connected. If the three phase line tension is 230V it must be connected triangularly. The engine is inside the box that serves as stand for the machine. The lateral of the machine must be opened and the cover of the engine connection box must be removed. The engine bobins will be accessible then and it will be possible to carry out the change from triangle to star connections as it is indicated in the following pictures:



Star picture
(preset)
For tension 400V



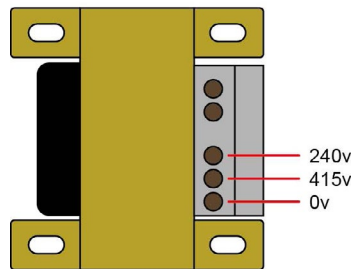
Triangle picture
For tension 230V

Once the engine bobins connection is finished, the cover of the box connections must be closed as well as the lateral door by fastening the screws.

4.4.1. Changing connection of the converter primary

Depending on the voltage available at the outlet it will be also required to change the connection of the converter primary which is fixed to the electrical panel inside the the machine box.

If the machine is connected to a 400V three-phased power supply it is necessary that the power connection of the transformer primary is made between terminals labeled "0V" and "415V". In case of having a 230V outlet drive, then disconnect the power cord from the terminal "415V" of the transformer primary using a screwdriver and connect it to terminal "230", right afterwards tighten the clamping screw with the screwdriver.



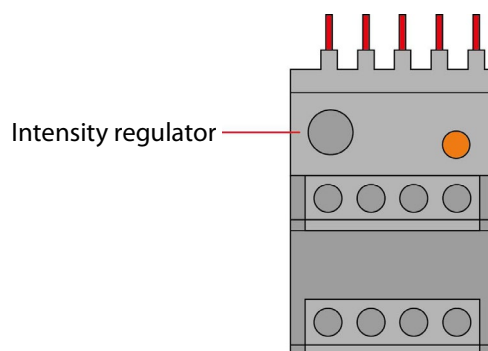
4.4.2. Adjusting Intensity of engine-keeper

Depending on the line voltage the current consumption varies the of the machine. It is therefore necessary to adjust the labor intensity of thermal motor protection. The rangers engine is fixed to the electrical panel inside the cabinet of the machine.

To adjust the intensity of the engine-keeper simply turn the knob located on the front, using a Phillip screwdriver, positioning the indicator arrow at the correct intensity.

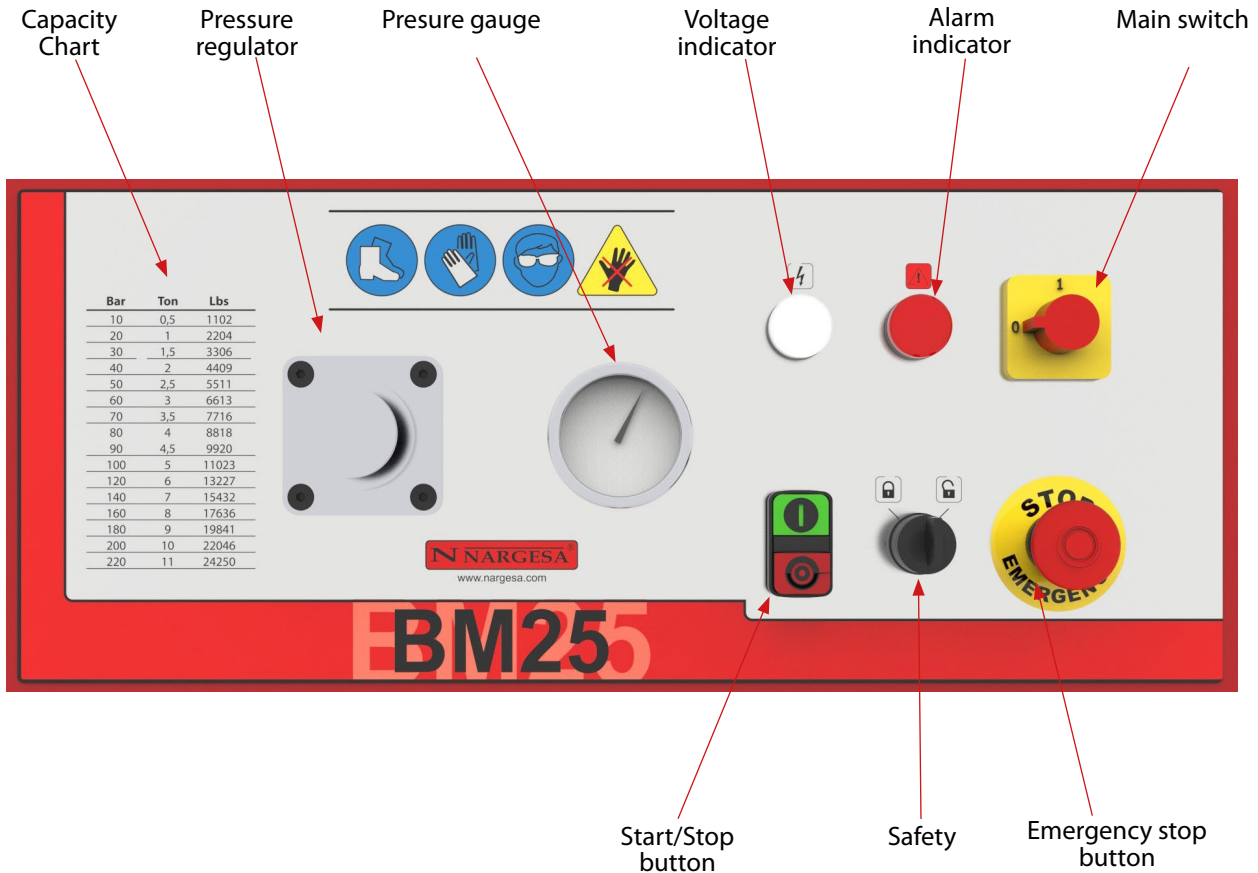
In case of having a three-phased outlet 400V drive the engine-keeper must be set at an intensity of "2.6A". On the contrary, in case of having a three-phased outlet 230V drive the engine-keeper at an intensity of "5A".

If the engine-keeper installed can not be adjusted to the required intensity, it must be replaced by one with a higher amperage.



5. OPERATION MANUAL

5.1. Control panel



5.2. Methods and stop systems of the machine

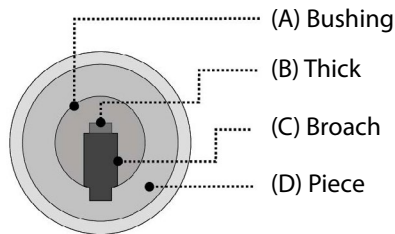
Pump stop: In order to stop only the pump, press the red button "PARO". With the pump stopped, the piston movement is cancelled.

Emergency stop: The machine is provided with an EMERGENCIA stop, located in the frontal part. All functions are neutralized by pressing the EMERGENCY button and so the machine is stopped as well.

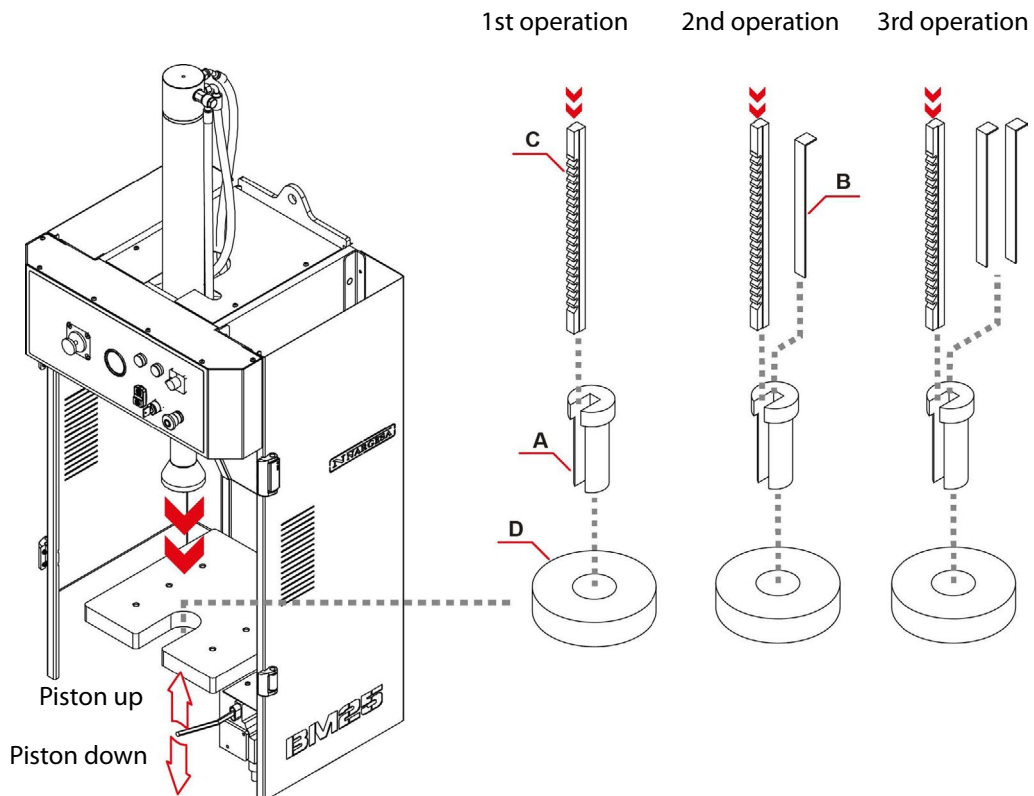
Main switch: All functions are neutralized and so the machine is stopped as well.

5.3. Samples to make a correct broaching operation

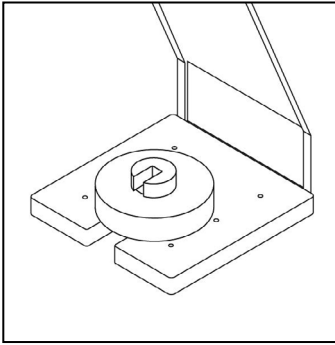
- 1 - Place the piece in the middle of the table.
- 2 - Insert the bushing.
- 3 - Place the broach in the bushing, lubricate abundantly in order to achieve a perfect broaching operation, especially during the first operation.
- 4 - Get the piston down from 20 to 40 mm until having the broach inserted in the bushing, then slightly raise up the piston so the broach recovers its vertical position and then repeat the same procedure 2 or 3 times until the broach overtakes the piece and it could be taken by the down part of the piece.
- 5 - It will be necessary to gradually insert 1, 2 or 3 thick parts depending on the broach since these are the ones that give the exact depth.
- 6 - Clean up all steel wool from the broach once the broaching operation is finished (it is very important for the broach not to be broken).
- 7 - Causes of an incorrect broaching.
 - The use of oil in bad conditions.
 - Do not place the broach in vertical position.
 - Do not intercalate the piston thrust.



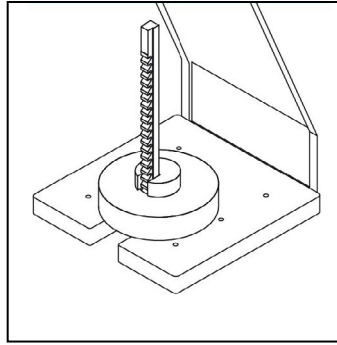
Depending on the carve depth, request "6. TABLE OF CHARACTERISTICS OF BRUSHES"



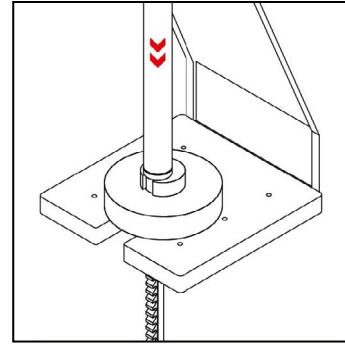
5.4. Samples to make cotter slots



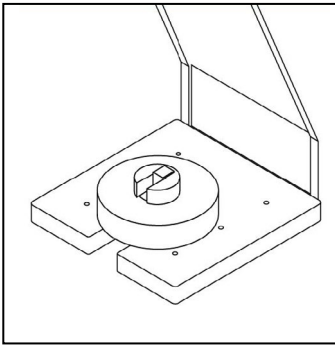
1. Place the bushing on the part



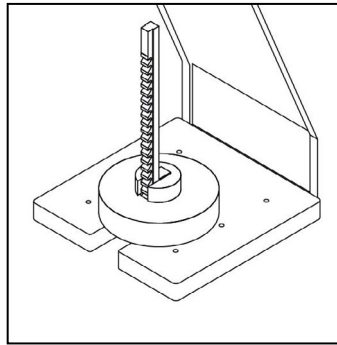
2. Place the broach. First pass With just the broach



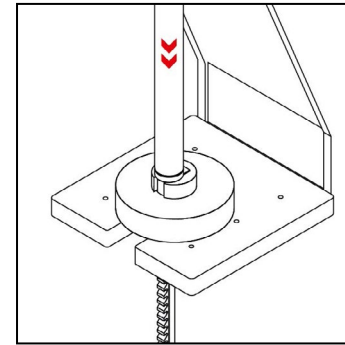
3. Get the piston down



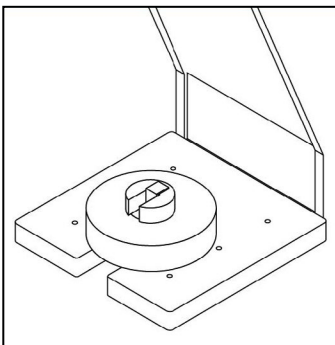
4. Place the thick part



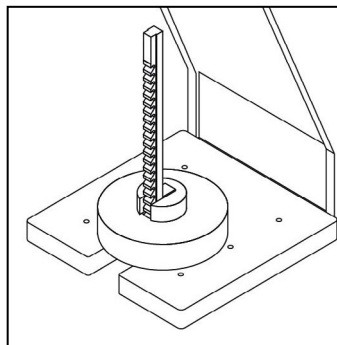
5. Place the broach



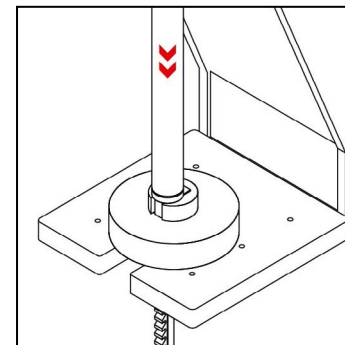
6. Get the piston down



7. Place the thick part



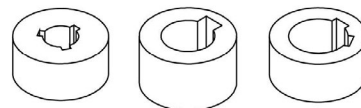
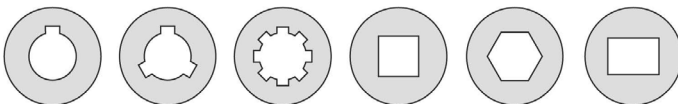
8. Place the broach



9. Get the piston down

Follow the steps 7, 8 and 9 until achieving the Desired size for the slot.

Examples of works



6. TABLE OF CHARACTERISTICS OF BRUSHES

6.1. Millimeter keyway broaches

MILLIMETER KEYWAY BROACHES											SHIMS		BUSHINGS	
Model	Broach	Tolerance (mm)	Tolerance (mm)	Sizes (mm)	Pins (mm)	N° Shims	Min. cutting length (mm)	Max. cutting length (mm)	Required pressure (lbs)	Required pressure (kg)	Shims	Thickness (mm)	Diameter (mm)	Length (mm)
A	2 mm	1,986 · 2,009	-0,014 + 0,009	3,175 x 127	2 x 2	0	5,159	28,575	720	326,58	-	-	6	28,575
	3 mm	2,987 · 3,009	-0,013 + 0,009	3,175 x 127	3 x 3	1	5,159	28,575	650	294,83	3 mm	0,787	8	28,575
													10	28,575
													12	28,575
B1	4 mm	3,985 · 4,01	-0,015 + 0,01	6,35x171,45	4 x 4	1	7,54	42,862	1140	517,09	4 mm	0,965	12	42,862
	5 mm	4,986 · 5,008	-0,014 + 0,008	6,35x171,45	5 x 5	1	7,54	42,862	1860	843,68	5 mm	1,27	14	42,862
													15	42,862
													16	42,862
													17	42,862
C	5 mm	4,986 · 5,008	-0,014 + 0,008	9,525 x 298,45	5 x 5	1	9,921	63,5	1470	666,78	5 mm	1,193	18	63,5
	6 mm	5,984 · 6,009	-0,016 + 0,009	9,525 x 298,45	6 x 6	1	9,921	63,5	2100	952,54	6 mm	1,587	19	63,5
	7 mm	6,982 · 7,018	-0,018 + 0,018	9,525 x 298,45	7 x 6	1	9,921	63,5	2900	1315,41	7 mm	1,587	20	63,5
	8 mm	7,983 · 8,013	-0,017 + 0,013	9,525 x 298,45	8 x 7	2	9,921	63,5	3680	1669,22	8 mm	1,27	22	63,5
													24	63,5
													25	63,5
													26	63,5
													28	63,5
													30	63,5
													32	63,5
D	10 mm	9,982 · 10,012	-0,018 + 0,012	14,287 x 352,42	10 x 8	2	25,4	152,4	6500	2948,35	10 mm	1,422	32	101,6
	12 mm	11,978 · 12,014	-0,022 + 0,014	14,287 x 352,42	12 x 8	2	25,4	152,4	8400	3810,17	12 mm	1,422	34	101,6
	14 mm	13,977 · 14,013	-0,023 + 0,013	14,287 x 352,42	14 x 9	2	25,4	152,4	11100	5034,87	14 mm	1,587	35	101,6
													36	101,6
													38	101,6
													40	101,6
													42	101,6
													44	101,6
													45	127
													46	127
E	16 mm	15,976 · 16,012	-0,024 + 0,012	19,05 x 393,7	16 x 10	3	25,4	152,4	9400	4263,76	16 mm	1,422	52	127
	18 mm	17,978 · 18,013	-0,022 + 0,013	19,05 x 393,7	18 x 11	3	25,4	152,4	10600	4808,07	18 mm	1,422	54	127
													55	127
													56	127
													58	127
													60	152,4
													62	152,4
													63	152,4
													64	152,4
													65	152,4
F	20 mm	19,974 · 20,015	-0,026 + 0,015	25,4 x 514,35	20 x 12	3	25,4	152,4	8800	3991,61	20 mm	1,587	75	152,4
	22 mm	21,973 · 22,014	-0,027 + 0,014	25,4 x 514,35	22 x 14	4	25,4	152,4	9400	4263,76	22 mm	1,422	80	152,4
	24 mm	23,975 · 24,015	-0,025 + 0,015	25,4 x 514,35	24 x 14	4	25,4	152,4	10600	4808,07	24 mm	1,587	85	152,4
	25 mm	24,973 · 25,013	-0,027+0,013	25,4 x 514,35	25 x 14	4	25,4	152,4	12300	5579,18	25 mm	1,422	90	152,4
													95	152,4
													100	152,4
													105	152,4
													110	152,4
												115	152,4	
												120	152,4	

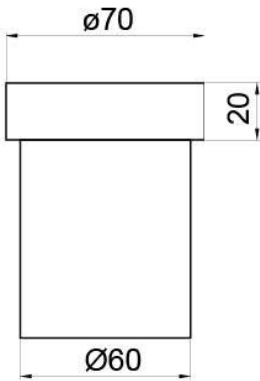
6.2. Inches keyway broaches

MILLIMETER KEYWAY BROACHES								SHIMS		BUSHINGS	
Model	Broach	Tolerance (inches)	Sizes (inches)	N° Shims	Min. cutting length (inches)	Max. cutting length (inches)	Required pressure (lbs)	Shims	Thickness (inches)	Diameter (inches)	Length (inches)
A	1/16	0,0625 - 0,0635	1/8 x 5	0	13/64	1 1/8	390	-	-	1/4	1 1/8
	3/32	0,0938 - 0,0948	1/8 x 5	0	13/64	1 1/8	780	-	-	5/16	1 1/8
	1/8	0,1252 - 0,1262	1/8 x 5	1	13/64	1 1/8	650	1/8	0,0310	3/8	1 1/8
										7/16	1 1/8
										1/2	1 1/8
B	3/32	0,0938 - 0,0948	3/16 x 6 3/4	0	19/64	1 11/16	930	-	-	1/2	1 11/16
	1/8	0,1252 - 0,1262	3/16 x 6 3/4	1	19/64	1 11/16	720	1/8	0,0310	9/16	1 11/16
	5/32	0,1564 - 0,1574	3/16 x 6 3/4	1	19/64	1 11/16	1320	5/32	0,0420	5/8	1 11/16
	3/16	0,1877 - 0,1887	3/16 x 6 3/4	1	19/64	1 11/16	1860	3/16	0,0500	11/16	1 11/16
										3/4	1 11/16
										13/16	1 11/16
										7/8	1 11/16
C	3/16	0,1877 - 0,1887	3/8 x 11 3/4	1	25/64	2 1/2	1540	3/16	0,0500	3/4	2 1/2
	1/4	0,2502 - 0,2512	3/8 x 11 3/4	1	25/64	2 1/2	2520	1/4	0,0625	13/16	2 1/2
	5/16	0,3127 - 0,3137	3/8 x 11 3/4	2	25/64	2 1/2	3960	5/16	0,0550	7/8	2 1/2
	3/8	0,3755 - 0,3765	3/8 x 11 3/4	2	25/64	2 1/2	4340	3/8	0,0625	15/16	2 1/2
										1	2 1/2
										1 1/16	2 1/2
										1 1/8	2 1/2
										1 3/16	2 1/2
										1 1/4	2 1/2
										1 5/16	2 1/2
									1 3/8	2 1/2	
									1 7/16	2 1/2	
									1 1/2	2 1/2	
									1 9/16	2 1/2	
D	5/16	0,3127 - 0,3137	9/16 x 13 7/8	2	1	6	8000	5/16	0,0560	1 7/16	4
	3/8	0,3755 - 0,3765	9/16 x 13 7/8	2	1	6	7000	3/8	0,0625	1 1/2	4
	7/16	0,4380 - 0,4390	9/16 x 13 7/8	3	1	6	9400	7/16	0,0580	1 9/16	4
	1/2	0,5006 - 0,5016	9/16 x 13 7/8	3	1	6	9800	1/2	0,0625	1 5/8	4
	9/16	0,5631 - 0,5641	9/16 x 13 7/8	4	1	6	8900	9/16	0,0560	1 11/16	4
										1 3/4	4
										1 13/16	5
										1 7/8	5
										1 15/16	5
										2	5
										2 1/16	5
										2 1/8	5
										2 3/16	5
										2 1/4	5
										2 5/16	5
										2 3/8	6
										2 7/16	6
										2 1/2	6
										2 9/16	6
										2 5/8	6
									2 11/16	6	
									2 3/4	6	
									2 13/16	6	
									2 7/8	6	
									2 15/16	6	
									3	6	

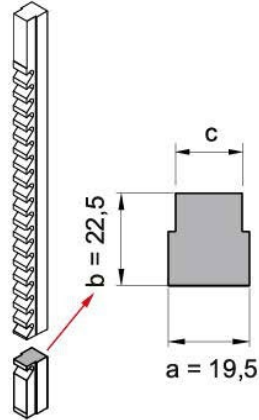
MILLIMETER KEYWAY BROACHES								SHIMS		BUSHINGS	
Model	Broach	Tolerance (inches)	Sizes (inches)	N° Shims	Min. cutting length (inches)	Max. cutting length (inches)	Required pressure (lbs)	Shims	Thickness (inches)	Diameter (inches)	Length (inches)
E	5/8	0,6260 - 0,6270	3/4 x 15 1/2	4	1	6	9600	5/8	0,0625	2 5/16	6
	3/4	0,7515 - 0,7525	3/4 x 15 1/2	5	1	6	11900	3/4	0,0625	2 3/8	6
										2 7/16	6
										2 1/2	6
										2 9/16	6
										2 5/8	6
										2 11/16	6
										2 3/4	6
										2 13/16	6
										2 7/8	6
										2 15/16	6
										3	6
										3 1/16	6
										3 1/8	6
										3 3/16	6
										3 1/4	6
										3 5/16	6
										3 3/8	6
										3 7/16	6
										3 1/2	6
									3 9/16	6	
									3 5/8	6	
									3 11/16	6	
									3 3/4	6	
									3 13/16	6	
									3 7/8	6	
									3 15/16	6	
									4	6	
F	7/8	0,8765 - 0,8775	1 x 20 1/4	6	1	6	9800	7/8	0,0625	3 1/16	6
	1	1,0015 - 1,0025	1 x 20 1/4	7	1	6	11100	1	0,0625	3 1/8	6
										3 3/16	6
										3 1/4	6
										3 5/16	6
										3 3/8	6
										3 7/16	6
										3 1/2	6
										3 9/16	6
										3 5/8	6
										3 11/16	6
										3 3/4	6
										3 13/16	6
										3 7/8	6
										3 15/16	6
										4	6
										4 1/16	6
										4 1/8	6
										4 3/16	6
										4 1/4	6
									4 5/16	6	
									4 3/8	6	
									4 7/16	6	
									4 1/2	6	
									7 9/16	6	
									4 5/8	6	
									4 11/16	6	
									4 3/4	6	
									4 13/16	6	
									4 7/8	6	
									4 15/16	6	
									5	6	

7. FORMULES FOR BROACHING

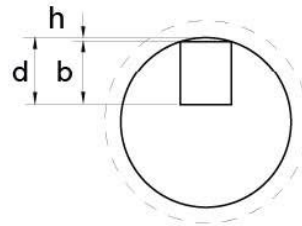
Picture 1
Bushing Ø60



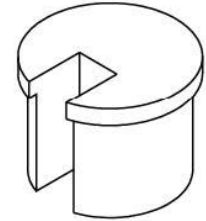
Picture 2
Broach 18mm



Picture 3
Height to mill
 $d = b + h$

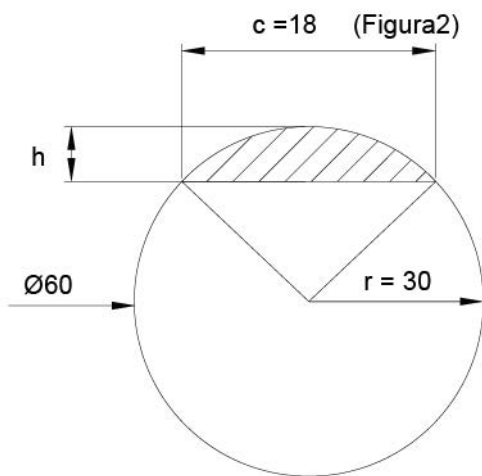


Finished part



1. Mechanize bushing (Picture 1)
2. Take the measurement of the tooth bottom of the brush. In this case the 18mm broach. (Picture 2)
3. Next step: to reduce the bushing in the milling center. Milling height "d" will be obtained from summing up the constant "h" and "b" (Picture 3)
4. The milling cutter to use in this case is the constant "a", that is to say, 19,5 mm (Picture 2)

Height "h" will be obtained from applying the following formula



$$h = r - \frac{1}{2} \sqrt{4r^2 - c^2}$$

$$h = 30 - \frac{1}{2} \sqrt{4 \times 30^2 - 18^2}$$

$$h = 30 - \frac{1}{2} \sqrt{3600 - 324}$$

$$h = 30 - 0,5 \sqrt{3276} = 57,236$$

$$h = 0,5 \times 57,236 = 28,618$$

$$h = 30 - 28,618 = 1,381$$

$$h = 1,38$$

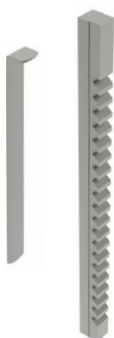
8. ACCESSORIES

Millimeter keyway broaches



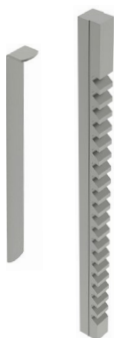
Broaching time
0:30 min.

Keyway broaches 2mm	REF: 125-09-01-BR-00001
Tolerance	JS9 (-0,014 +0,009)
Model	A
Broach dimensions	3,175 x 127mm
Standard keys	2 x 2mm
Min./Max. Cutting length	5,159mm / 28,575mm
Required pressure	720lbs / 326,58Kg
Required shims/ Nr of passes	0 shims / 1 pass
Bushing diameter	6, 8, 10, 12 and 15mm
Bushing length	28,575mm
Weight	0,020 Kg. Approx.



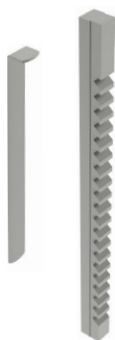
Broaching time
0:45 min.


Keyway broaches 3mm	REF: 125-09-01-BR-00002
Tolerance	JS9 (-0,013 +0,009)
Model	A
Broach dimensions	3,175 x 127mm
Standard keys	3 x 3mm
Min./Max. Cutting length	5,159mm / 28,575mm
Required pressure	650lbs / 294,83Kg
Required shims/ Nr of passes	1 shim / 2 passes
Thickness	0,787mm
Bushing diameter	6, 8, 10, 12 y 15mm
Bushing length	28,575mm
Weight	0,020 Kg. Approx.



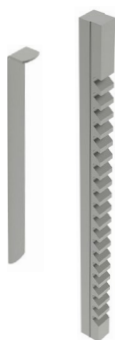
Broaching time
1:00 min.


Keyway broaches 4mm	REF: 125-09-01-BR-00003
Tolerance	JS9 (-0,015 +0,01)
Model	B1
Broach dimensions	6,35 x 171,45mm
Standard keys	4 x 4mm
Min./Max. Cutting length	7,54mm / 42,862mm
Required pressure	1.140lbs / 517,09Kg
Required shims/ Nr of passes	1 shim / 2 passes
Thickness	0,965mm
Bushing diameter	12, 14, 15, 16, 17, 18 and 19mm
Bushing length	42,862mm
Weight	0,100 Kg. Approx.



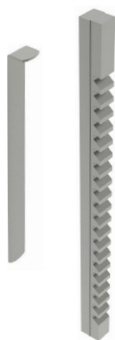
 Broaching time
1:00 min.


Keyway broaches 5mm	REF: 125-09-01-BR-00004
Tolerance	JS9 (-0,014 +0,008)
Model	B1
Broach dimensions	6,35 x 171,45mm
Standard keys	5 x 5mm
Min./Max. Cutting length	7,54mm / 42,862mm
Required pressure	1.860lbs / 843,68Kg
Required shims/ Nr of passes	1 shim / 2 passes
Thickness	1,27mm
Bushing diameter	12, 14, 15, 16, 17, 18 and 19mm
Bushing length	42,862mm
Weight	0,100 Kg. Approx.



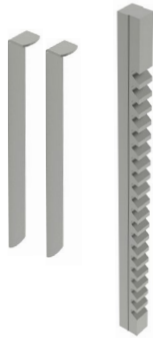
 Broaching time
1:20 min.


Keyway broaches 5mm	REF: 125-09-01-BR-00005
Tolerance	JS9 (-0,014 +0,008)
Model	C
Broach dimensions	9,52 x 298,45mm
Standard keys	5 x 5mm
Min./Max. Cutting length	9,921mm / 63,5mm
Required pressure	1.470lbs / 666,78Kg
Required shims/ Nr of passes	1 shim / 2 passes
Thickness	1,193mm
Bushing diameter	18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 34, 35 and 36mm
Bushing length	63,5mm
Weight	0,350 Kg. Approx.



 Broaching time
1:20 min.

Keyway broaches 6mm	REF: 125-09-01-BR-00006
Tolerance	JS9 (-0,016 +0,009)
Model	C
Broach dimensions	9,52 x 298,45mm
Standard keys	6 x 6mm
Min./Max. Cutting length	9,921mm / 63,5mm
Required pressure	2.100lbs / 952,54Kg
Required shims/ Nr of passes	1 shim / 2 passes
Thickness	1,587mm
Bushing diameter	18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 34, 35 and 36mm
Bushing length	63,5mm
Weight	0,350 Kg. Approx.

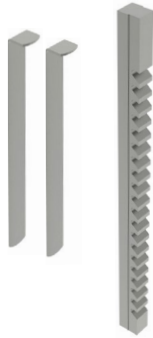



 Broaching time
2:30 min.

Keyway broaches 8mm

REF: 125-09-01-BR-00008

Tolerance	JS9 (-0,017 +0,013)
Model	C
Broach dimensions	9,52 x 298,45mm
Standard keys	8 x 7mm
Min./Max. Cutting length	9,921mm / 63,5mm
Required pressure	3.680lbs / 1.669,22Kg
Required shims/ Nr of passes	2 shims / 3 passees
Thickness	1,27mm
Bushing diameter	18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 34, 35 and 36mm
Bushing length	63,5mm
Weight	0,350 Kg. Approx.

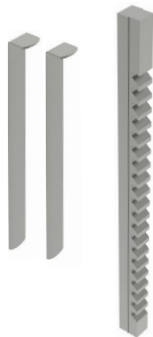



 Broaching time
2:30 min.

Keyway broaches 10mm

REF: 125-09-01-BR-00009

Tolerance	JS9 (-0,018 +0,012)
Model	D
Broach dimensions	14,28 x 352,42mm
Standard keys	10 x 8mm
Min./Max. Cutting length	25,4mm / 152,4mm
Required pressure	6.500lbs / 2.948,35Kg
Required shims/ Nr of passes	2 shims / 3 passes
Thickness	1,422mm
Bushing diameter	32, 34, 35, 36, 38, 40, 42, 44, 45, 46, 48, 50, 52, 54, 56mm
Bushing length	101,6 and 127mm
Weight	1 Kg. Approx.

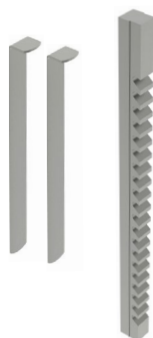



 Broaching time
2:30 min.

Keyway broaches 12mm

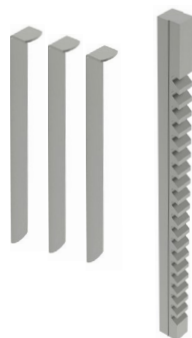
REF: 125-09-01-BR-00010


Tolerance	JS9 (-0,022 +0,014)
Model	D
Broach dimensions	14,28 x 352,42mm
Standard keys	12 x 8mm
Min./Max. Cutting length	25,4mm / 152,4mm
Required pressure	8.400lbs / 3.810,17Kg
Required shims/ Nr of passes	2 shims / 3 passes
Thickness	1,422mm
Bushing diameter	32, 34, 35, 36, 38, 40, 42, 44, 45, 46, 48, 50, 52, 54, 56mm
Bushing length	101,6 and 127mm
Weight	1 Kg. Approx.



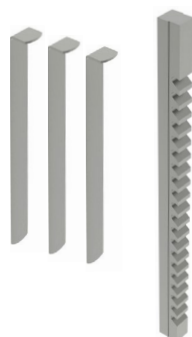
 Broaching time
2:30 min.


Keyway broaches 14mm		REF: 125-09-01-BR-00011
Tolerance	JS9 (-0,023 +0,013)	
Model	D	
Broach dimensions	14,28 x 352,42mm	
Standard keys	14 x 9mm	
Min./Max. Cutting length	25,4mm / 152,4mm	
Required pressure	11.100lbs / 5.034,87Kg	
Required shims/ Nr of passes	2 shims / 3 passes	
Thickness	1,587mm	
Bushing diameter	32, 34, 35, 36, 38, 40, 42, 44, 45, 46, 48, 50, 52, 54, 56mm	
Bushing length	101,6 and 127mm	
Weight	1 Kg. Approx.	



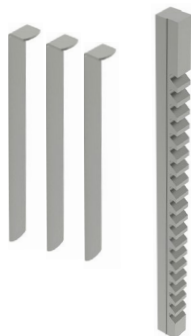
 Broaching time
3:40 min.


Keyway broaches 16mm		REF: 125-09-01-BR-00012
Tolerance	JS9 (-0,024 +0,012)	
Model	E	
Broach dimensions	19,05 x 393,7mm	
Standard keys	16 x 10mm	
Min./Max. Cutting length	25,4mm / 152,4mm	
Required pressure	9.400lbs / 4.263,76Kg	
Required shims/ Nr of passes	3 shims / 4 passes	
Thickness	1,422mm	
Bushing diameter	52, 54, 55, 56, 58, 60, 62, 63, 64, 65, 66, 68, 70, 72mm	
Bushing length	127 and 152,4mm	
Weight	1,5 Kg. Approx.	



 Broaching time
3:40 min.

Keyway broaches 18mm		REF: 125-09-01-BR-00013
Tolerance	JS9 (-0,022 +0,013)	
Model	E	
Broach dimensions	19,05 x 393,7mm	
Standard keys	18 x 11mm	
Min./Max. Cutting length	25,4mm / 152,4mm	
Required pressure	10.600lbs / 4.808,07Kg	
Required shims/ Nr of passes	3 shims / 4 passes	
Thickness	1,422mm	
Bushing diameter	52, 54, 55, 56, 58, 60, 62, 63, 64, 65, 66, 68, 70, 72mm	
Bushing length	127 and 152,4mm	
Weight	1,5 Kg. Approx.	

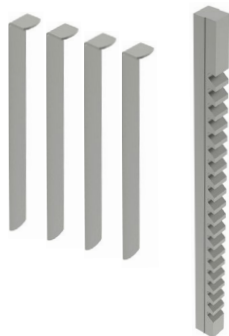



 Broaching time
4:20 min.

Keyway broaches 20mm

REF: 125-09-01-BR-00014

Tolerance	JS9 (-0,026 +0,015)
Model	F
Broach dimensions	25,40 x 514,35mm
Standard keys	20 x 12mm
Min./Max. Cutting length	25,4mm / 152,4mm
Required pressure	8.800lbs / 3.991,61Kg
Required shims/ Nr of passes	3 shims / 4 passes
Thickness	1,587mm
Bushing diameter	75, 80, 85, 90, 95, 100, 105, 110, 115 and 120mm
Bushing length	152,4mm
Weight	3,5 Kg. Approx.

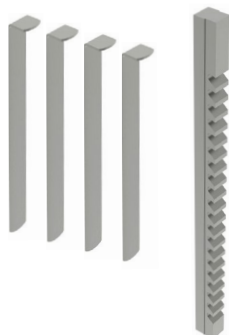



 Broaching time
5:00 min.

Keyway broaches 22mm

REF: 125-09-01-BR-00015

Tolerance	JS9 (-0,027 +0,014)
Model	F
Broach dimensions	25,40 x 514,35mm
Standard keys	22 x 14mm
Min./Max. Cutting length	25,4mm / 152,4mm
Required pressure	9.400lbs / 4.263,76Kg
Required shims/ Nr of passes	4 shims / 5 passes
Thickness	1,422mm
Bushing diameter	75, 80, 85, 90, 95, 100, 105, 110, 115 and 120mm
Bushing length	152,4mm
Weight	3,5 Kg. Approx.

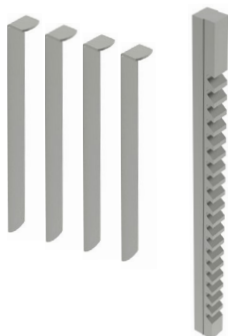



 Broaching time
5:00 min.

Keyway broaches 24mm

REF: 125-09-01-BR-00016

Tolerance	JS9 (-0,025 +0,015)
Model	F
Broach dimensions	25,40 x 514,35mm
Standard keys	24 x 14mm
Min./Max. Cutting length	25,4mm / 152,4mm
Required pressure	10.600lbs / 4.808,07Kg
Required shims/ Nr of passes	4 shims / 5 passes
Thickness	1,587mm
Bushing diameter	75, 80, 85, 90, 95, 100, 105, 110, 115 and 120mm
Bushing length	152,4mm
Weight	3,5 Kg. Approx.




 Broaching time
5:00 min.

Keyway broaches 25mm		REF: 125-09-01-BR-00017
Tolerance	JS9 (-0,027 +0,013)	
Model	F	
Broach dimensions	25,40 x 514,35mm	
Standard keys	25 x 14mm	
Min./Max. Cutting length	25,4mm / 152,4mm	
Required pressure	12.300lbs / 5.579,18Kg	
Required shims/ Nr of passes	4 shims / 5 passes	
Thickness	1,422mm	
Bushing diameter	75, 80, 85, 90, 95, 100, 105, 110, 115 and 120mm	
Bushing length	152,4mm	
Weight	3,5 Kg. Approx.	


Inch keyway broaches



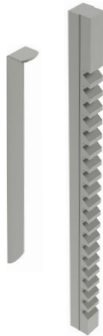
 Broaching time
0:30 min.

Keyway broaches 1/16 inch		REF: 125-09-01-BRP-00001
Tolerance	JS9 (0,0625 · 0,0635)	
Model	A	
Broach dimensions	1/8 x 5 inches	
Min./Max. Cutting length	13/64 inch / 1 1/8 inches	
Required pressure	390lbs	
Required shims/ Nr of passes	0 shims / 1 pass	
Bushing diameter	1/4, 5/16, 3/8, 7/16 and 1/2 inch	
Bushing length	1 1/8 inches	
Weight	0,020 Kg. Approx.	



 Broaching time
0:30 min.

Keyway broaches 3/32 inch		REF: 125-09-01-BRP-00002
Tolerance	JS9 (0,0938 · 0,0948)	
Model	A	
Broach dimensions	1/8 x 5 inches	
Min./Max. Cutting length	13/64 inch / 1 1/8 inches	
Required pressure	780lbs	
Required shims/ Nr of passes	0 shims / 1 pass	
Bushing diameter	1/4, 5/16, 3/8, 7/16 and 1/2 inches	
Bushing length	1 1/8 inches	
Weight	0,020 Kg. Approx.	



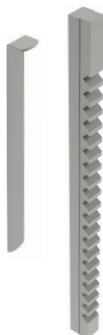
Broaching time
0:45 min.

Keyway broaches 1/8 inch	REF: 125-09-01-BRP-00003
Tolerance	JS9 (0,1252 · 0,1262)
Model	A
Broach dimensions	1/8 x 5 inches
Min./Max. Cutting length	13/64 inch / 1 1/8 inches
Required pressure	650lbs
Required shims/ Nr of passes	1 shim / 2 passes
Thickness	0,0310 inches
Bushing diameter	1/4, 5/16, 3/8, 7/16 and 1/2 inches
Bushing length	1 1/8 inches
Weight	0,020 Kg. Approx.



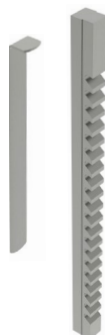
Broaching time
0:40 min.


Keyway broaches 3/32 inch	REF: 125-09-01-BRP-00004
Tolerance	JS9 (0,0938 · 0,0948)
Model	B
Broach dimensions	3/16 x 6 3/4 inches
Min./Max. Cutting length	19/64 inch / 1 11/16 inches
Required pressure	930lbs
Required shims/ Nr of passes	0 shims / 1 pass
Bushing diameter	1/2, 9/16, 5/8, 11/16, 3/4, 13/16 and 7/8 inch
Bushing length	1 11/16 inches
Weight	0,100 Kg. Approx.



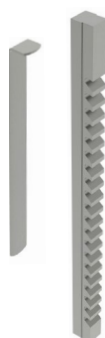
Broaching time
1:00 min.


Keyway broaches 1/8 inch	REF: 125-09-01-BRP-00005
Tolerance	JS9 (0,1252 · 0,1262)
Model	B
Broach dimensions	3/16 x 6 3/4 inches
Min./Max. Cutting length	19/64 inch / 1 11/16 inches
Required pressure	720lbs
Required shims/ Nr of passes	1 shim / 2 passes
Thickness	0,0310 inches
Bushing diameter	1/2, 9/16, 5/8, 11/16, 3/4, 13/16 and 7/8 inches
Bushing length	1 11/16 inches
Weight	0,100 Kg. Approx.



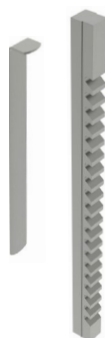
 Broaching time
1:00 min.


Keyway broaches 5/32 inch	REF: 125-09-01-BRP-00006
Tolerance	JS9 (0,1564 · 0,1574)
Model	B
Broach dimensions	3/16 x 6 3/4 inches
Min./Max. Cutting length	19/64 inch / 1 11/16 inches
Required pressure	1.320lbs
Required shims/ Nr of passes	1 shim / 2 passes
Thickness	0,0420 inches
Bushing diameter	1/2, 9/16, 5/8, 11/16, 3/4, 13/16 and 7/8 inch
Bushing length	1 11/16 inches
Weight	0,100 Kg. Approx.



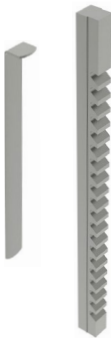
 Broaching time
1:00 min.

Keyway broaches 3/16 inch	REF: 125-09-01-BRP-00007
Tolerance	JS9 (0,1877 · 0,1887)
Model	B
Broach dimensions	3/16 x 6 3/4 inches
Min./Max. Cutting length	19/64 inch / 1 11/16 inches
Required pressure	1.860lbs
Required shims/ Nr of passes	1 shim / 2 passes
Thickness	0,0500 inches
Bushing diameter	1/2, 9/16, 5/8, 11/16, 3/4, 13/16 and 7/8 inches
Bushing length	1 11/16 inches
Weight	0,100 Kg. Approx.



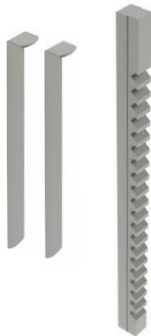
 Broaching time
1:20 min.

Keyway broaches 3/16 inch	REF: 125-09-01-BRP-00008
Tolerance	JS9 (0,1877 · 0,1887)
Model	C
Broach dimensions	3/8 x 11 3/4 inches
Min./Max. Cutting length	25/64 inch / 2 1/2 inches
Required pressure	1.540lbs
Required shims/ Nr of passes	1 shim / 2 passes
Thickness	0,0500 inches
Bushing diameter	3/4, 13/16, 7/8, 15/16, 1, 1 1/16, 1 1/8, 1 3/16, 1 1/4, 1 5/16, 1 3/8, 1 7/16, 1 1/2 and 1 9/16 inches
Bushing length	2 1/2 inches
Weight	0,350 Kg. Approx.



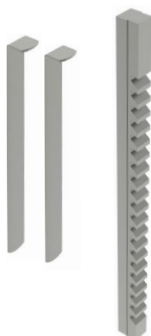
Broaching time
1:20 min.

Keyway broaches 1/4 inch		REF: 125-09-01-BRP-00009
Tolerance	JS9 (0,2502 · 0,2512)	
Model	C	
Broach dimensions	3/8 x 11 3/4 inches	
Min./Max. Cutting length	25/64 inch / 2 1/2 inches	
Required pressure	2.520lbs	
Required shims/ Nr of passes	1 shim / 2 passes	
Thickness	0,0625 inches	
Bushing diameter	3/4, 13/16, 7/8, 15/16, 1, 1 1/16, 1 1/8, 1 3/16, 1 1/4, 1 5/16, 1 3/8, 1 7/16, 1 1/2 and 1 9/16 inches	
Bushing length	2 1/2 inches	
Weight	0,350 Kg. Approx.	



Broaching time
2:30 min.


Keyway broaches 5/16 inch		REF: 125-09-01-BRP-00010
Tolerance	JS9 (0,3127 · 0,3137)	
Model	C	
Broach dimensions	3/8 x 11 3/4 inches	
Min./Max. Cutting length	25/64 inch / 2 1/2 inches	
Required pressure	3.960lbs	
Required shims/ Nr of passes	2 shims / 3 passes	
Thickness	0,0550 inches	
Bushing diameter	3/4, 13/16, 7/8, 15/16, 1, 1 1/16, 1 1/8, 1 3/16, 1 1/4, 1 5/16, 1 3/8, 1 7/16, 1 1/2 and 1 9/16 inches	
Bushing length	2 1/2 inches	
Weight	0,350 Kg. Approx.	



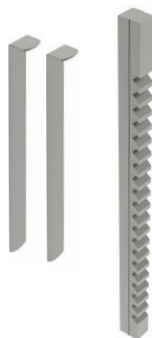
Broaching time
2:30 min.


Keyway broaches 3/8 inch		REF: 125-09-01-BRP-00011
Tolerance	JS9 (0,3755 · 0,3765)	
Model	C	
Broach dimensions	3/8 x 11 3/4 inches	
Min./Max. Cutting length	25/64 inch / 2 1/2 inches	
Required pressure	4.340lbs	
Required shims/ Nr of passes	2 shims / 3 passes	
Thickness	0,0625 inches	
Bushing diameter	3/4, 13/16, 7/8, 15/16, 1, 1 1/16, 1 1/8, 1 3/16, 1 1/4, 1 5/16, 1 3/8, 1 7/16, 1 1/2 and 1 9/16 inches	
Bushing length	2 1/2 inches	
Weight	0,350 Kg. Approx.	



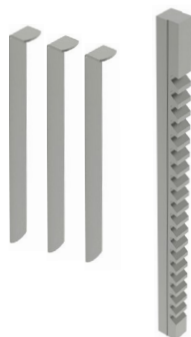
 Broaching time
2:30 min.


Keyway broaches 5/16 inch		REF: 125-09-01-BRP-00012
Tolerance	JS9 (0,3127 · 0,3137)	
Model	D	
Broach dimensions	9/16 x 13 7/8 inches	
Min./Max. Cutting length	1 inch / 6 inches	
Required pressure	8.000lbs	
Required shims/ Nr of passes	2 shims / 3 passes	
Thickness	0,0560 inches	
Bushing diameter	1 7/16, 1 1/2, 1 9/16, 1 5/8, 1 11/16, 1 3/4, 1 13/16, 1 7/8, 1 15/16, 2, 2 1/16, 2 1/8, 2 3/16, 2 1/4, 2 5/16, 2 3/8, 2 7/16, 2 1/2, 2 9/16, 2 5/8, 2 11/16, 2 3/4, 2 13/16, 2 7/8, 2 15/16 and 3 inches	
Bushing length	4 inches	
Weight	1,00 Kg. Approx.	



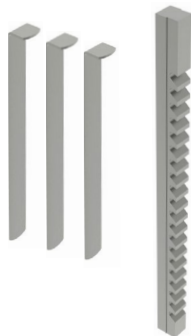
 Broaching time
2:30 min.


Keyway broaches 3/8 inch		REF: 125-09-01-BRP-00013
Tolerance	JS9 (0,3755 · 0,3765)	
Model	D	
Broach dimensions	9/16 x 13 7/8 inches	
Min./Max. Cutting length	1 inch / 6 inches	
Required pressure	7.000lbs	
Required shims/ Nr of passes	2 shims / 3 passes	
Thickness	0,0625 inches	
Bushing diameter	1 7/16, 1 1/2, 1 9/16, 1 5/8, 1 11/16, 1 3/4, 1 13/16, 1 7/8, 1 15/16, 2, 2 1/16, 2 1/8, 2 3/16, 2 1/4, 2 5/16, 2 3/8, 2 7/16, 2 1/2, 2 9/16, 2 5/8, 2 11/16, 2 3/4, 2 13/16, 2 7/8, 2 15/16 and 3 inches	
Bushing length	4 inches	
Weight	1,00 Kg. Approx.	



 Broaching time
3:00 min.

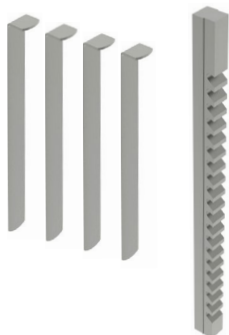
Keyway broaches 7/16 inch		REF: 125-09-01-BRP-00014
Tolerance	JS9 (0,4380 · 0,4390)	
Model	D	
Broach dimensions	9/16 x 13 7/8 inches	
Min./Max. Cutting length	1 inch / 6 inches	
Required pressure	9.400lbs	
Required shims/ Nr of passes	3 shims / 4 passes	
Thickness	0,0560 inches	
Bushing diameter	1 7/16, 1 1/2, 1 9/16, 1 5/8, 1 11/16, 1 3/4, 1 13/16, 1 7/8, 1 15/16, 2, 2 1/16, 2 1/8, 2 3/16, 2 1/4, 2 5/16, 2 3/8, 2 7/16, 2 1/2, 2 9/16, 2 5/8, 2 11/16, 2 3/4, 2 13/16, 2 7/8, 2 15/16 and 3 inches	
Bushing length	4 inches	
Weight	1,00 Kg. Approx.	




 Broaching time
3:00 min.

Keyway broaches 1/2 inch **REF: 125-09-01-BRP-00015**

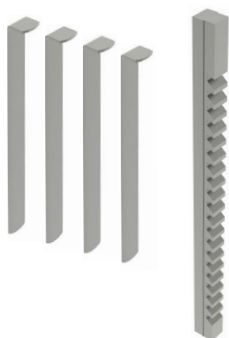
Tolerance	JS9 (0,5006 · 0,5016)
Model	D
Broach dimensions	9/16 x 13 7/8 inches
Min./Max. Cutting length	1 inch / 6 inches
Required pressure	9.800lbs
Required shims/ Nr of passes	3 shims / 4 passes
Thickness	0,0625 inches
Bushing diameter	1 7/16, 1 1/2, 1 9/16, 1 5/8, 1 11/16, 1 3/4, 1 13/16, 1 7/8, 1 15/16, 2, 2 1/16, 2 1/8, 2 3/16, 2 1/4, 2 5/16, 2 3/8, 2 7/16, 2 1/2, 2 9/16, 2 5/8, 2 11/16, 2 3/4, 2 13/16, 2 7/8, 2 15/16 and 3 inches
Bushing length	4 inches
Weight	1,00 Kg. Approx.




 Broaching time
3:40 min.

Keyway broaches 9/16 inch **REF: 125-09-01-BRP-00016**

Tolerance	JS9 (0,5631 · 0,5641)
Model	D
Broach dimensions	9/16 x 13 7/8 inches
Min./Max. Cutting length	1 inch / 6 inches
Required pressure	8.900lbs
Required shims/ Nr of passes	4 shims / 5 passes
Thickness	0,0560 inches
Bushing diameter	1 7/16, 1 1/2, 1 9/16, 1 5/8, 1 11/16, 1 3/4, 1 13/16, 1 7/8, 1 15/16, 2, 2 1/16, 2 1/8, 2 3/16, 2 1/4, 2 5/16, 2 3/8, 2 7/16, 2 1/2, 2 9/16, 2 5/8, 2 11/16, 2 3/4, 2 13/16, 2 7/8, 2 15/16 and 3 inches
Bushing length	6 inches
Weight	1,00 Kg. Approx.




 Broaching time
4:00 min.

Keyway broaches 5/8 inch **REF: 125-09-01-BRP-00017**

Tolerance	JS9 (0,6260 · 0,6270)
Model	E
Broach dimensions	3/4 x 15 1/2 inches
Min./Max. Cutting length	1 inch / 6 inches
Required pressure	9.600lbs
Required shims/ Nr of passes	4 shims / 5 passes
Thickness	0,0625 inches
Bushing diameter	2 5/16, 2 3/8, 2 7/16, 2 1/2, 2 9/16, 2 5/8, 2 11/16, 2 3/4, 2 13/16, 2 7/8, 2 15/16, 3, 3 1/16, 3 1/8, 3 3/16, 3 1/4, 3 5/16, 3 3/8, 3 7/16, 3 1/2, 3 9/16, 3 5/8, 3 11/16, 3 3/4, 3 13/16, 3 7/8, 3 15/16 and 4 inches
Bushing length	6 inches
Weight	1,500 Kg. Approx.

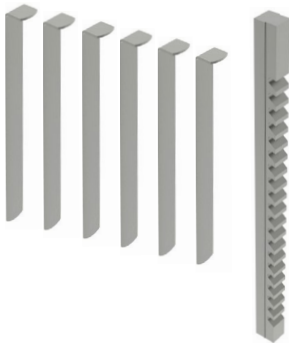



 Broaching time
5:00 min.

Keyway broaches 3/4 inch

REF: 125-09-01-BRP-00018

Tolerance	JS9 (0,7515 - 0,7525)
Model	E
Broach dimensions	3/4 x 15 1/2 inches
Min./Max. Cutting length	1 inch / 6 inches
Required pressure	11.900lbs
Required shims/ Nr of passes	5 shims / 6 passes
Thickness	0,0625 inches
Bushing diameter	2 5/16, 2 3/8, 2 7/16, 2 1/2, 2 9/16, 2 5/8, 2 11/16, 2 3/4, 2 13/16, 2 7/8, 2 15/16, 3, 3 1/16, 3 1/8, 3 3/16, 3 1/4, 3 5/16, 3 3/8, 3 7/16, 3 1/2, 3 9/16, 3 5/8, 3 11/16, 3 3/4, 3 13/16, 3 7/8, 3 15/16 and 4 inches
Bushing length	6 inches
Weight	1,500 Kg. Approx.



 Broaching time
6:00 min.

Keyway broaches 7/8 inch

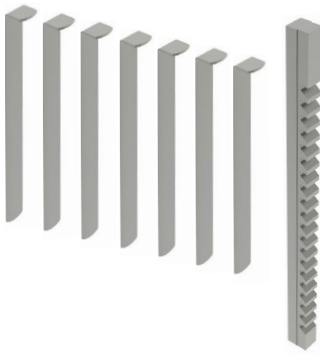
REF: 125-09-01-BRP-00019

Tolerance	JS9 (0,8765 - 0,8775)
Model	F
Broach dimensions	1 x 20 1/4 inches
Min./Max. Cutting length	1 inch / 6 inches
Required pressure	9.800lbs
Required shims/ Nr of passes	6 shims / 7 passes
Thickness	0,0625 inches
Bushing diameter	3 1/16, 3 1/8, 3 3/16, 3 1/4, 3 5/16, 3 3/8, 3 7/16, 3 1/2, 3 9/16, 3 5/8, 3 11/16, 3 3/4, 3 13/16, 3 7/8, 3 15/16, 4, 4 1/16, 4 1/8, 4 3/16, 4 1/4, 4 5/16, 4 3/8, 4 7/16, 4 1/2, 7 9/16, 4 5/8, 4 11/16, 4 3/4, 4 13/16, 4 7/8, 4 15/16 and 5 inches
Bushing length	6 inches
Weight	3,500 Kg. Approx.

Keyway broaches 1 inch

REF: 125-09-01-BRP-00020

Tolerance	JS9 (1,0015 · 1,0025)
Model	F
Broach dimensions	1 x 20 1/4 inches
Min./Max. Cutting length	1 inch / 6 inches
Required pressure	11.100lbs
Required shims/ Nr of passes	7 shims / 8 passes
Thickness	0,0625 inches
Bushing diameter	3 1/16, 3 1/8, 3 3/16, 3 1/4, 3 5/16, 3 3/8, 3 7/16, 3 1/2, 3 9/16, 3 5/8, 3 11/16, 3 3/4, 3 13/16, 3 7/8, 3 15/16, 4, 4 1/16, 4 1/8, 4 3/16, 4 1/4, 4 5/16, 4 3/8, 4 7/16, 4 1/2, 7 9/16, 4 5/8, 4 11/16, 4 3/4, 4 13/16, 4 7/8, 4 15/16 and 5 inches
Bushing length	6 inches
Weight	3,500 Kg. Approx.



Broaching time
8:00 min.

Bushings



F114 steel guide bushes in H8 diameter tolerance to optimize the perfect finish of the part.

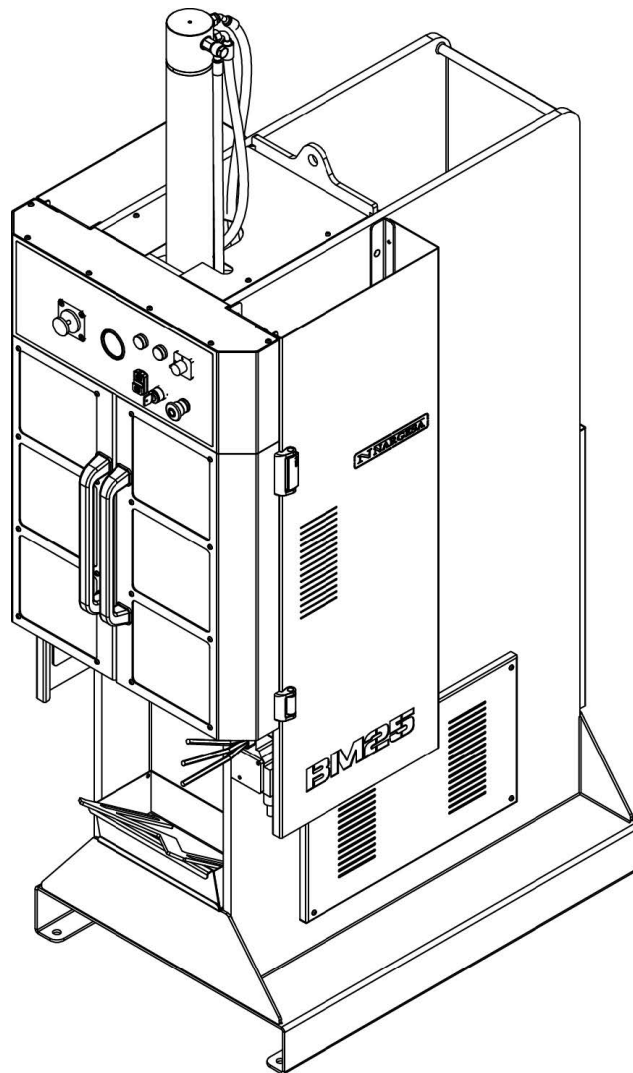
For other dimensions, request the manufacturer.

Reference	Model	Diameter	Length	Tolerance	Broaches
125-09-01-CBR-00002	A	10 mm	32 mm	J9	2 - 3 mm
125-09-01-CBR-00004	B	12 mm	46 mm	J9	4 - 5C mm
125-09-01-CBR-00005	B	14 mm	46 mm	J9	4 - 5C mm
125-09-01-CBR-00006	B	16 mm	46 mm	J9	4 - 5C mm
125-09-01-CBR-00007	B	17 mm	46 mm	J9	4 - 5C mm
125-09-01-CBR-00008	C	18 mm	65 mm	J9	5 - 6 - 8 mm
125-09-01-CBR-00009	C	19 mm	65 mm	J9	5 - 6 - 8 mm
125-09-01-CBR-00010	C	20 mm	65 mm	J9	5 - 6 - 8 mm
125-09-01-CBR-00011	C	22 mm	65 mm	J9	5 - 6 - 8 mm
125-09-01-CBR-00012	C	24 mm	65 mm	J9	5 - 6 - 8 mm
125-09-01-CBR-00013	C	25 mm	65 mm	J9	5 - 6 - 8 mm
125-09-01-CBR-00014	C	28 mm	65 mm	J9	5 - 6 - 8 mm
125-09-01-CBR-00015	C	30 mm	65 mm	J9	5 - 6 - 8 mm
125-09-01-CBR-00016	D	32 mm	102 mm	J9	10 - 12 - 14 mm
125-09-01-CBR-00017	D	35 mm	102 mm	J9	10 - 12 - 14 mm
125-09-01-CBR-00018	D	38 mm	102 mm	J9	10 - 12 - 14 mm
125-09-01-CBR-00020	D	40 mm	102 mm	J9	10 - 12 - 14 mm
125-09-01-CBR-00021	D	42 mm	102 mm	J9	10 - 12 - 14 mm
125-09-01-CBR-00022	D	45 mm	127 mm	J9	10 - 12 - 14 mm
125-09-01-CBR-00023	D	48 mm	127 mm	J9	10 - 12 - 14 mm
125-09-01-CBR-00024	D	50 mm	127 mm	J9	10 - 12 - 14 mm
125-09-01-CBR-00025	E	55 mm	127 mm	J9	16 - 18 mm
125-09-01-CBR-00026	E	60 mm	154 mm	J9	16 - 18 mm
125-09-01-CBR-00027	E	65 mm	154 mm	J9	16 - 18 mm
125-09-01-CBR-00028	F	70 mm	154 mm	J9	20 - 22 - 24 - 25 mm
125-09-01-CBR-00029	F	75 mm	154 mm	J9	20 - 22 - 24 - 25 mm
125-09-01-CBR-00030	F	80 mm	154 mm	J9	20 - 22 - 24 - 25 mm
125-09-01-CBR-00031	F	85 mm	154 mm	J9	20 - 22 - 24 - 25 mm
125-09-01-CBR-00032	F	90 mm	154 mm	J9	20 - 22 - 24 - 25 mm
125-09-01-CBR-00033	F	95 mm	154 mm	J9	20 - 22 - 24 - 25 mm



TECHNICAL ANNEX

Vertical Broaching Machine BM25



PRADA NARGESA, S.L

Ctra. de Garrigàs a Sant Miquel s/n · 17476 Palau de Santa Eulàlia (Girona) SPAIN

Tel. +34 972568085 · nargesa@nargesa.com · www.nargesa.com

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Elemento	Miniatura	Nº de pieza	Descripción	CTDAD
14		120-09-01-00113	Arandela Utillaje	2
15		020-D933-M12X40	Tornillo Hexagonal DIN 933 M12X40	2
16		130-09-01-00082	Conjunto Soldado Cajón	1
18		122-PLC-0000-001	Placa Caracteristicas General	1
23		120-09-01-00114	Utillaje M	1
30		020-D912-M12X45	TORNILLO ALLEN DIN912 M12X45	4
31		122-ADH-00003	Adhesivo Triangulo 400Vac De 100 Mm	1
32		020-D7337-3X8	Remache De Clavo DIN7337 De Al D3X8	4
35		040-JMG-00004	Junta Metal Goma 3/8" Gas	11
37		040-RG-00003	Racor Giratorio Macho Hembra 3/8"	2
39		040-DISM-00001	DISTRIBUIDOR MANUAL 102N1PA12D	1
51		050-PE-00006	Prensaestopa M20X1.5	1
54		120-09-01-00130	MANGUERA 3/8" - TG 3/8" - MACHO 3/8" L=750 mm	1

Elemento	Miniatura	Nº de pieza	Descripción	CTDAD
55		120-09-01-00131	MANGUERA 3/8" - TG 3/8" - MACHO 3/8" L=750 mm	1
63		050-IG-00001	Interruptor General Kg10Ak300	1
103		050-BIS-00001	BISAGRA DE SEGURIDAD	2
104		050-BIS-00002	BISAGRA	2
111		020-D913-M5X16	Esparrago Allen DIN913 M5X16	22
112		020-D125B-M5	Arandela DIN 125 B M5	22
113		020-D934-M5	Tuerca Hexagonal DIN934 M5	22
118		020-I7380-M6X10	Tornillo Allen Abombado ISO 7380 M6X10	40
122		120-09-01-00152	POLICARBONATO PUERTAS BM25	2
123		020-I7380-M6X16	Tornillo Allen Abombado ISO7380 M6X16	22
124		020-D934-M6	Tuerca Hexagonal DIN 934 M6	20
126		050-GEN-00022	Soporte Perfil Led	2
130		040-CMH-00002	CODO 90º MACHO HEMBRA 3/8"	2

Elemento	Miniatura	Nº de pieza	Descripción	CTDAD
132		031-APM-00004	Asa puente 342	2
133		020-D125B-M8	Arandela Biselada DIN 125B M8	4
134		020-D934-M8	Tuerca Hexagonal DIN 934 M8	4
138		020-D7991-M3x8	Tornillo Allen DIN 7991 M3X8	4
140		020-D125B-M6	Arandela Biselada DIN 125B M6	20
147		050-KIE-09-01-002		1
148		031-BM-00005	Base Magnetica D16 Espiga M6	2
149		120-09-01-00157	Tira led 250mm	1
150		020-D933-M8X55	Tornillo Cabeza Hexagonal DIN 933 M8x55	2
160		130-09-01-00148	Conjunto Soldado Estructura	1
161		120-09-01-00200	Puerta Trasera	1
163		130-09-01-00146	Conjunto Pistón	1
164		130-09-01-00157	Grupo Hidraulico BM25	1

Elemento	Miniatura	Nº de pieza	Descripción	CTDAD
165		130-09-01-00152	CONJUNTO TAPA LATERAL IZQUIERDA BM25	1
166		130-09-01-00153	CONJUNTO PUERTA IZQUIERDA BM25	1
167		130-09-01-00151	CONJUNTO TAPA LATERAL DERECHA BM25	1
168		130-09-01-00154	CONJUNTO PUERTA DERECHA BM25	1
169		120-09-01-00192	REGULACION CIERRE PUERTAS BM25	1
170		050-PEM-22	Paro Emergencia Ø22	1
171		120-09-01-00172	Tapa Ventilación	2
172		050-SLL-00001	Selector Llave 2 Posiciones. Rb2Bg2	1
173		050-PL-00009	PILOTO SEÑALIZACION ROJO Ø22	1
174		050-PUL-00003	Pulsador Paro Marcha Con Led D22	1
175		050-PL-00002	Piloto De D22 mm 24VAC Blanco	1
176		040-VLP-00005	Valvula Limitadora Presion Sgrdp03-1/G23	1
177		130-09-01-00149	CONJUNTO FRONTAL BM25	1

Elemento	Miniatura	Nº de pieza	Descripción	CTDAD
178		040-MAN-00002	Manometro 0-300 Bars D63 Empotrable Toma 1/4' Trasera	1
179		040-FIM-00001	Fijacion Trasera Manometro Empotrar D63	1
180		120-09-01-00185	Angulo soporte chapa lateral	2
181		120-09-01-00188	Metacrilato lateral BM25	2
182		120-09-01-00189	Tapa Superior Frontal BM25	1
183		020-D7991-M6X12	Tornillo Allen Avellanado DIN7991 M6X12	4
184		040-RMM-00003	Racor 3/8" Macho Macho	3
185		040-CMH-00003	Codo 90º - Macho/Hembra con TG - Conos 60° - G1/4"-19 (BSP)	1
186		040-TESP-00002	Tornillo Para Esfera De 3/8' Con Prolongacion 1/4'	1
187		120-09-01-00199	MANGUERA 3/8" - CODO TG 3/8" - TG 3/8" L=1800 mm	1
188		120-09-01-00195	MANGUERA 3/8" - MACHO 3/8" - ESFERA 3/8" L=1750 mm	1
189		040-TES-00003	Tornillo Para Esfera De 3/8	1
190		120-09-01-00197	MANGUERA 3/8" - CODO TG 3/8" - ESFERA 3/8" L=880 mm	1

Elemento	Miniatura	Nº de pieza	Descripción	CTDAD
191		120-09-01-00198	MANGUERA 3/8" - CODO 45º TG 3/8" - MACHO 3/8" L=2125 mm	1
192		120-09-01-00196	Manguera Minimex Manometro 1/4-Tg 1/4 L=300 Presion de Trabajo 250 Bar	1
193		122-CAL-0901-004	Placa Aluminio De Mandos Bm25	1
195		020-D9021-M6	Arandela Ancha DIN9021 Para M6	8
196		020-D6923-M6	Tuerca DIN 6923 M6	6
197		031-SIB-00005	SILENT BLOCK D20X15 M6 ESPARRAGO Y ROSCA	4
198		020-D913-M6X12	ESPARRAGO ALLEN DIN 913 M6X12	4
199		120-09-01-00203	SOPORTE PISTON TRANSPORTE	1
200		020-D125B-M12	Arandela DIN 125 B M12	8
201		020-D934-M12	Tuerca DIN 934 M12	4
202		020-D933-M12X35	Tornillo Hexagonal DIN 933 M12X35	4
203		020-D933-M12X20	Tornillo Hexagonal DIN 933 M12X20	4
204		120-09-01-00033	Suplemento Vástago	1

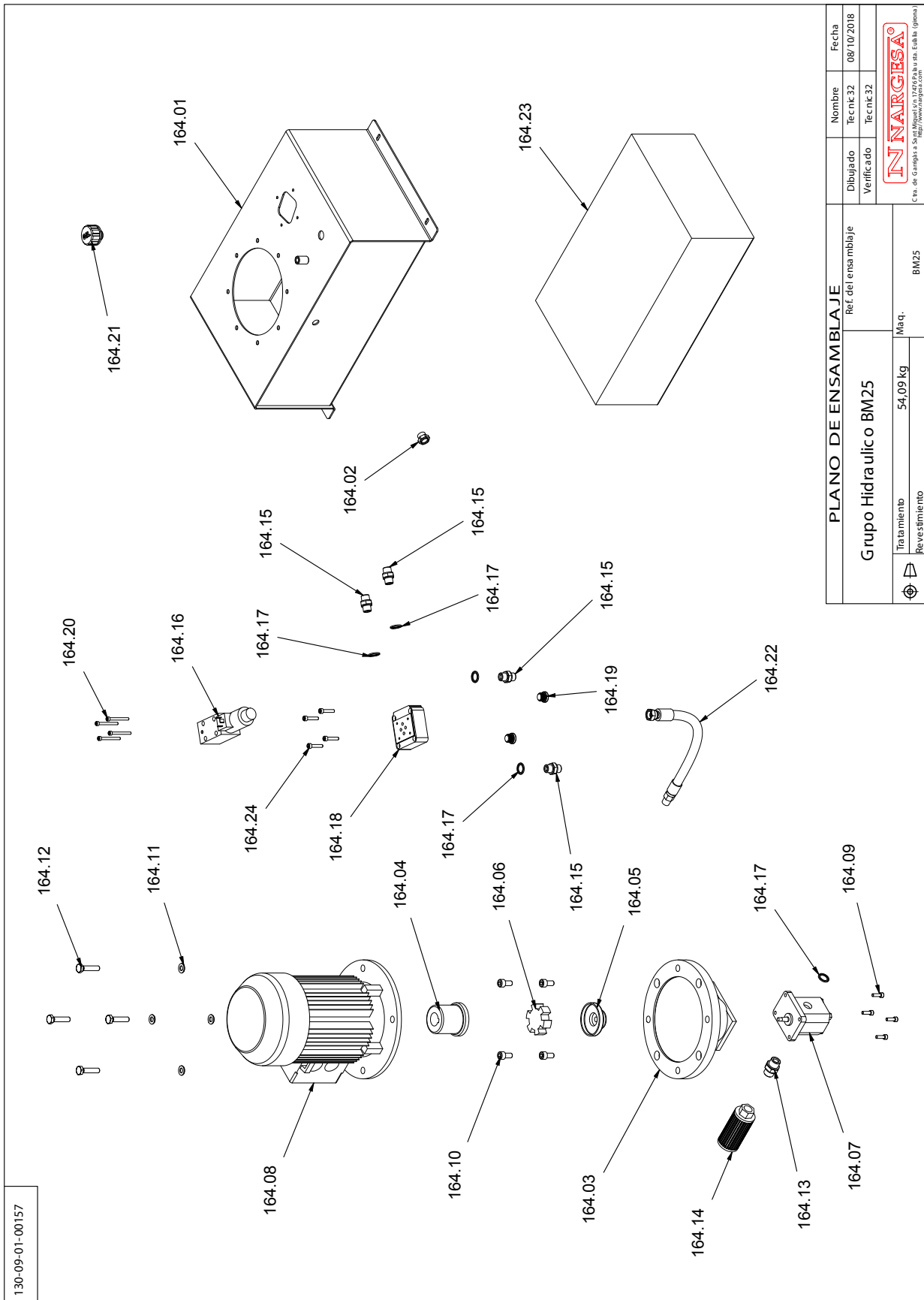
A2. Piston assembly

130-09-01-00146	Nº Despiece		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">PLANO DE ENSAMBLAJE</td> </tr> <tr> <td style="text-align: center;">Dibujado</td> <td style="text-align: center;">Nombre</td> </tr> <tr> <td style="text-align: center;">Verificado</td> <td style="text-align: center;">Fecha</td> </tr> <tr> <td style="text-align: center;">Técnico 32</td> <td style="text-align: center;">Técnico 32</td> </tr> <tr> <td colspan="2" style="text-align: center;"> </td> </tr> <tr> <td colspan="2" style="text-align: center; font-size: small;"> C/ta. de Granjilla s. 3, Polígono Industrial de Fábila s/n, E-48114 (Gernika) Tel: 945 21 11 00 - Fax: 945 21 11 01 - Email: nargesa@nargesa.com </td> </tr> </table>	PLANO DE ENSAMBLAJE		Dibujado	Nombre	Verificado	Fecha	Técnico 32	Técnico 32			C/ta. de Granjilla s. 3, Polígono Industrial de Fábila s/n, E-48114 (Gernika) Tel: 945 21 11 00 - Fax: 945 21 11 01 - Email: nargesa@nargesa.com		
PLANO DE ENSAMBLAJE																
Dibujado	Nombre															
Verificado	Fecha															
Técnico 32	Técnico 32															
C/ta. de Granjilla s. 3, Polígono Industrial de Fábila s/n, E-48114 (Gernika) Tel: 945 21 11 00 - Fax: 945 21 11 01 - Email: nargesa@nargesa.com																
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">Ref. del ensamblaje</td> </tr> <tr> <td colspan="2" style="text-align: center;">130-09-01-00146</td> </tr> <tr> <td style="text-align: center;">Maq.</td> <td style="text-align: center;">N/D</td> </tr> <tr> <td style="text-align: center;">Revestimiento</td> <td style="text-align: center;">PINTURA</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">100-09-01-003</td> </tr> <tr> <td style="text-align: center;">BMW25</td> </tr> </table> </td> <td></td> </tr> </table>	Ref. del ensamblaje		130-09-01-00146		Maq.	N/D	Revestimiento	PINTURA			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">100-09-01-003</td> </tr> <tr> <td style="text-align: center;">BMW25</td> </tr> </table>	100-09-01-003	BMW25	
Ref. del ensamblaje																
130-09-01-00146																
Maq.	N/D															
Revestimiento	PINTURA															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">100-09-01-003</td> </tr> <tr> <td style="text-align: center;">BMW25</td> </tr> </table>	100-09-01-003	BMW25														
100-09-01-003																
BMW25																

TECHNICAL ANNEX - VERTICAL BROACHING MACHINE BM25

Elemento	Miniatura	Nº de pieza	Descripción	CTDAD
163.01		120-09-01-00162	Dolla Bronce	1
163.02		130-09-01-00147	Conjunto Soldado Pistón	1
163.03		130-09-01-00034	Vástago Pistón	1
163.04		040-JMG-00004	Junta Metal Goma 3/8' Gas	5
163.05		040-TES-00003	Tornillo Para Esfera De 3/8	2
163.06		040-SMH-00003	SUPLEMENTO MACHO HEMBRA 3/8 "	1
163.07		040-GSF-00002	GUIA D60XD65X9.5	1
163.08		120-09-01-00165	MANGUERA 3/8" - ESFERA 3/8" - ESFERA 3/8" L=745 mm	1
163.09		120-09-01-00035	Arandela Separadora Pistón	1
163.10		120-09-01-00201	Suplemento Vástago	1
163.11		040-RAS-00010	RASCADOR 60x70x7/10	1
163.12		040-BA-00017	JUNTA COLLARIN BA D60XD70X7.3	1
163.13		040-JT-00031	JUNTA TORICA D73X4 90 Shore	1
163.14		040-DPS-00006	Junta DPS D80XD66X16X32	1
163.15		020-D914-M6X8	ESPARRAGO ALLEN DIN 914 M6X8	1

A3. Hydraulic group



130-09-01-00157

PLANO DE ENSAMBLAJE			
Ref. del ensamblaje		Nombre	Fecha
Grupo Hidraulico BM25		Tecnico 32	09/10/2018
Tratamiento		Tecnico 32	
Revestimiento			
Maq.			
54,09 kg			
BM25			



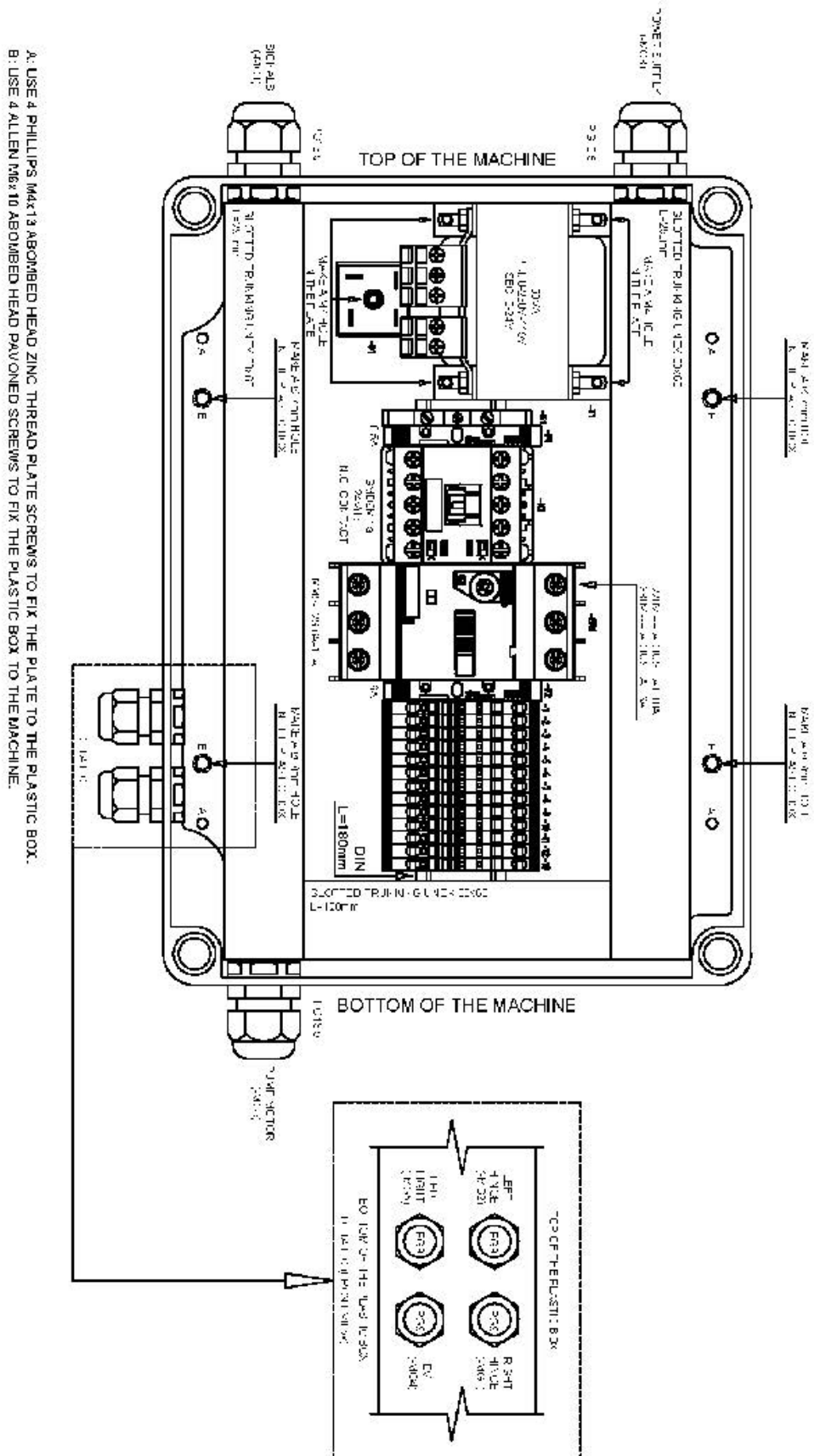
C.tra. de G.amp.13 a Sant.Miguel 1/11 1740/Pala de Sta. Eulalia (gerona)
<http://www.nargesa.com>
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TECHNICAL ANNEX - VERTICAL BROACHING MACHINE BM25

Elemento	Miniatura	Nº de pieza	Descripción	CTDAD
164.01		130-09-01-00158	Conjunto Soldado Deposito BM25	1
164.02		040-NA-00001	Visor Nivel Aceite De 3/8" Gas	1
164.03		040-CA-00002	Campana Acoplamiento Bomba Tipo Lo Motor 3/4/5.5 CV	1
164.04		040-AE-00007	Acoplamiento Lado Motor 3/4 / 5.5CV	1
164.05		040-AE-00008	Acoplamiento Lado Bomba Lo Para Motor 3/4 / 5.5 CV	1
164.06		040-AE-00009	Estrella Acoplamiento Para Motor 3/4 / 5.5 CV	1
164.07		040-BH-00002	Bomba Hidraulica De Aluminio De 7.5 L 1L07.5DE10R	1
164.08		050-ME-00003	Motor Electrico 2.2Kw 1500Rpm 50-60Hz B5 220/380V	1
164.09		020-D912-M6X20	Tornillo Allen DIN912 M6X20	4
164.10		020-D912-M10X20	Tornillo Allen DIN 912 M10X20	4
164.11		020-D125B-M10	Arandela Biselada DIN 125B M10	4
164.12		020-D933-M10X45	Tornillo Hexagonal DIN933 M10X45	4
164.13		040-RMM-00004	Racor 1/2" Macho Macho	1

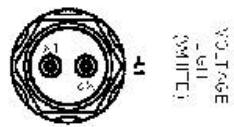
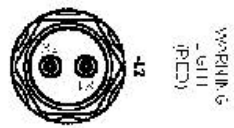
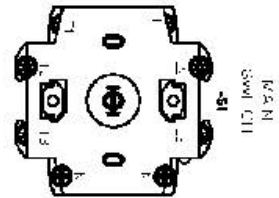
Elemento	Miniatura	Nº de pieza	Descripción	CTDAD
164.14		040-FL-00002	Filtro De Aspiracion 1/2' REF 2FA15R125N	1
164.15		040-RMM-00003	Racor 3/8" Macho Macho	4
164.16		040-ELV-00007	Electrovalvula Bending Plegadoras Detector M5x0.5 NAG5	1
164.17		040-JMG-00004	Junta Metal Goma 3/8' Gas	5
164.18		040-BAS-00002	BASE ELECTROVALVULA ROQUET REF. 321002	1
164.19		040-TVA-00004	Tapón de Vaciado ALLEN 3/8" GAS	2
164.20		020-D912-M5X50	Tornillo Allen DIN 912 M5X50	4
164.21		040-TLL-00003	Tapon Llenado De 1/2' Doble Respiradero Y Filtro	1
164.22		120-09-01-00128	Manguera Flexible 3/8" TL3/8-MF3/8 L=400 mm Presion 250 Bars	1
164.23			ACEITE HIDRAULICO HM-68 25 LITROS	1
164.24		020-D912-M6X30	Tornillo Allen DIN912 M6X30	4

A4. Electric box

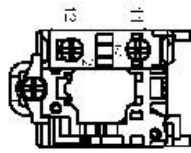


TOP OF THE MACHINE

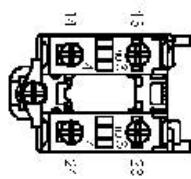
INNER VIEW OF THE PLATE



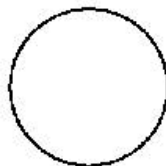
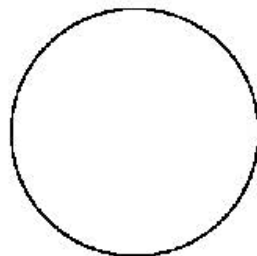
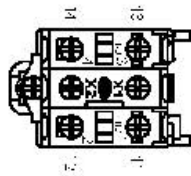
EMERGENCY STOP



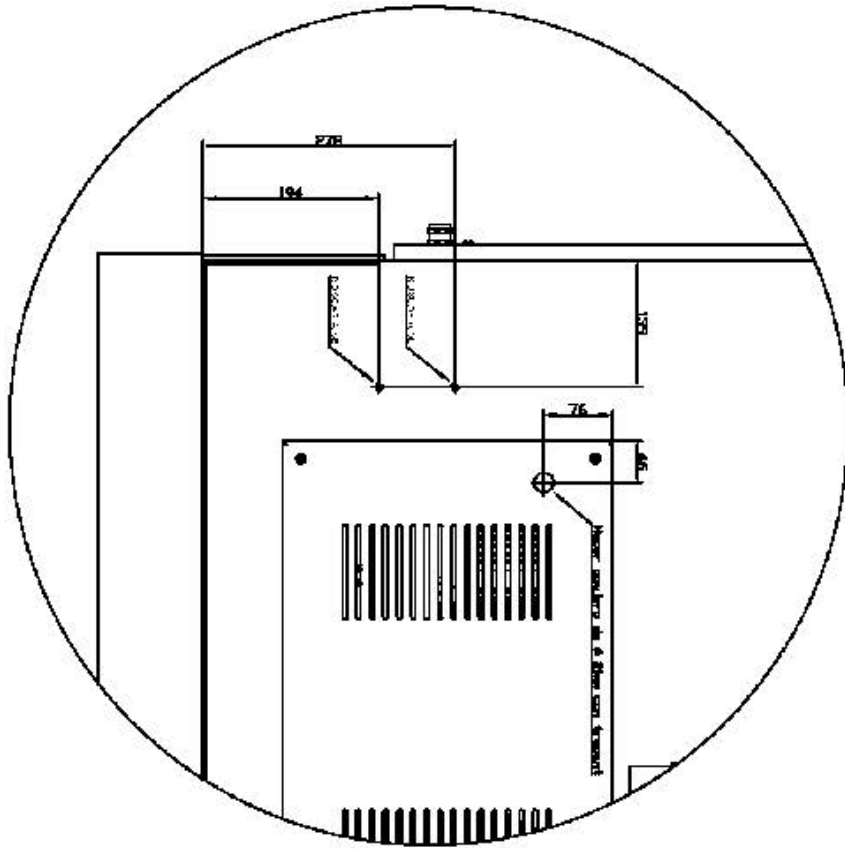
CANCELLATION KEY



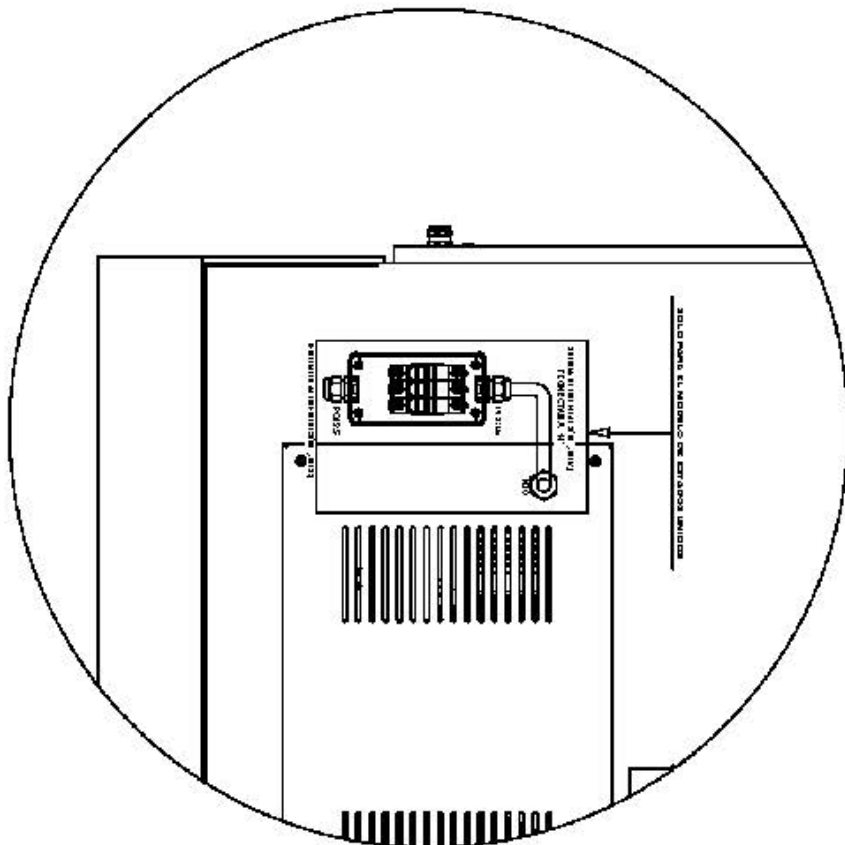
START-UP BUTTON + ON LIGHT (GREEN)



BOTTOM OF THE MACHINE

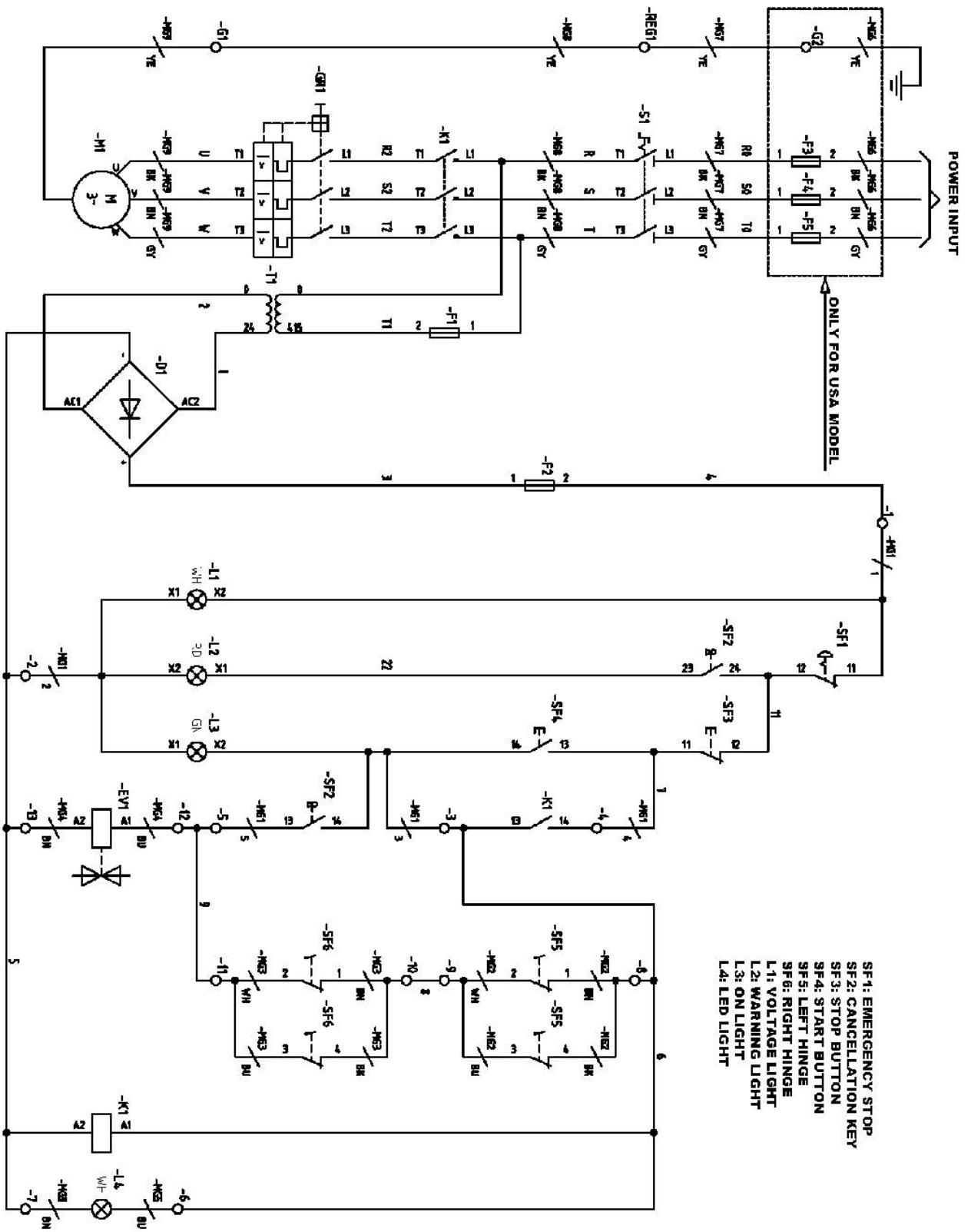


DETALLE AGUJEROS
MODELO ESTADOS UNIDOS

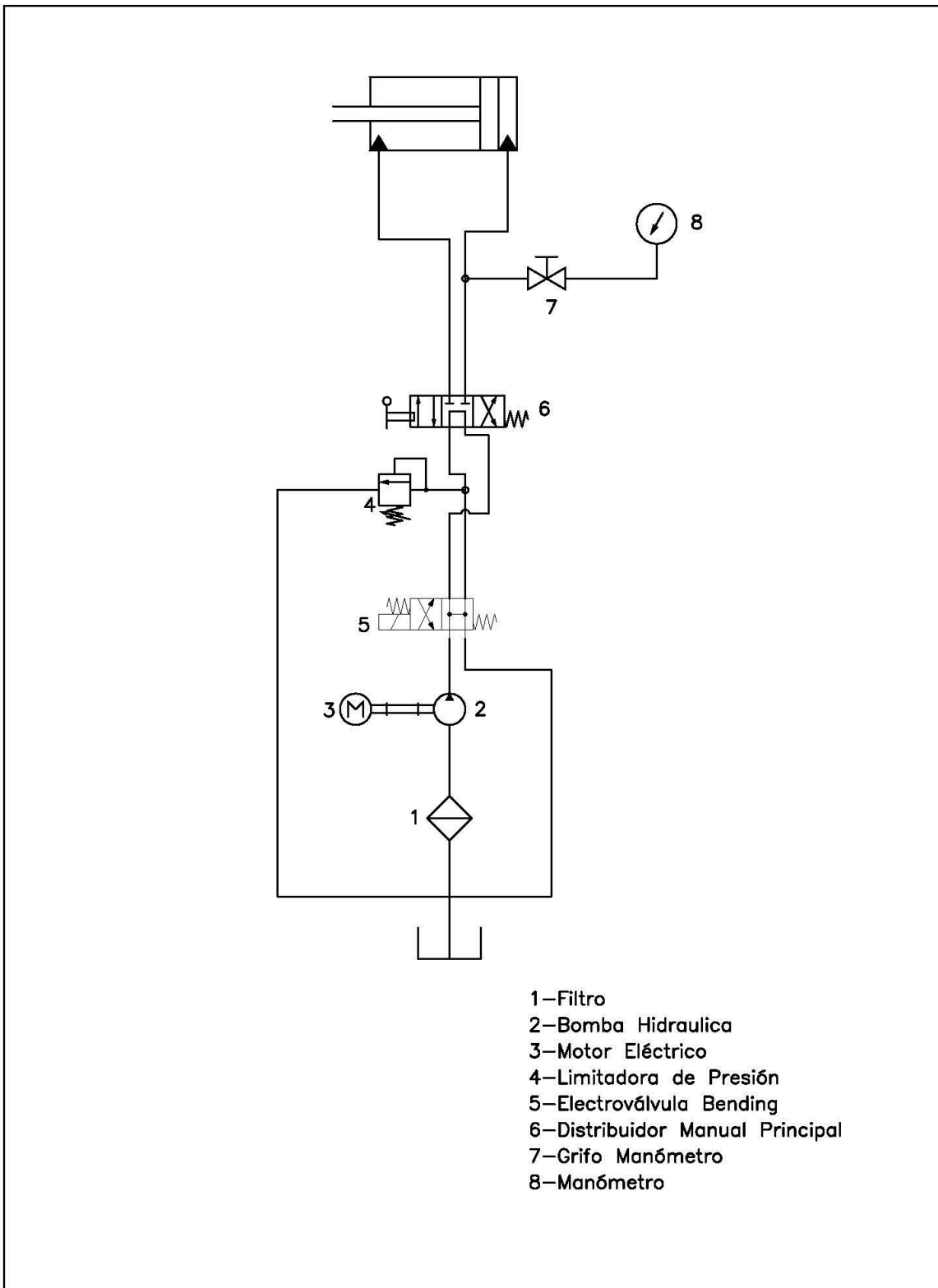


DETALLE MONTAJE MINICOFRET
MODELO ESTADOS UNIDOS

A5. Electric map



A6. Hydraulic map



- 1-Filtro
- 2-Bomba Hidraulica
- 3-Motor Eléctrico
- 4-Limitadora de Presión
- 5-Electroválvula Bending
- 6-Distribuidor Manual Principal
- 7-Grifo Manómetro
- 8-Manómetro

ESQUEMA HIDRAULICO BM25		Ref.	Und.	Nº Desp.	Nombre	Fecha
		Num.		Dibujado	Técnico 20	05-05-2014
Material		Medida corte		mm	Verificado	
Revestimiento		Tratamiento		N NARGESA®		
Color	Peso	Tol. general	Maq.			

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TWISTING/SCROLL BENDING MACHINES



HYDRAULIC PRESS BRAKES



HYDRAULIC SHEAR MACHINES



GAS FORGES



IRON EMBOSsing MACHINES



END WROUGHT IRON MACHINES



BROACHING MACHINES



POWER HAMMERS



BLACKSMITH FORGING PRESS