

TOTAL TEST PROPOSAL FOR CYLINDER REPAIR

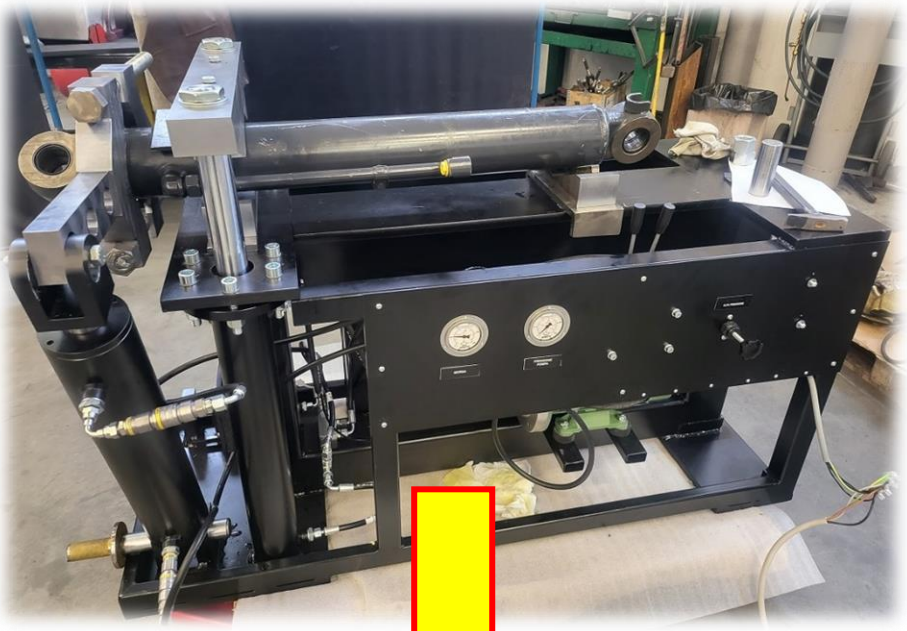
2025 PRODUCTION RANGE

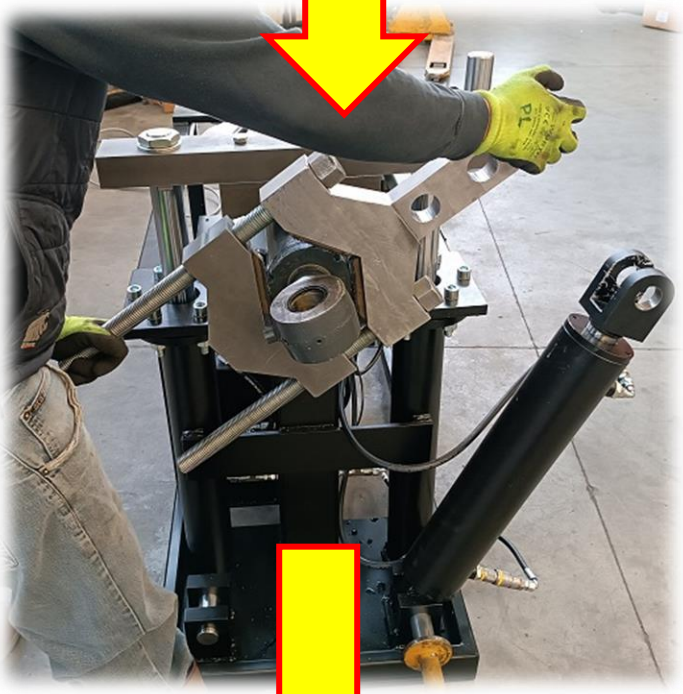


TOTAL TEST PROPOSAL 2025 PRODUCT PROPOSAL FOR REPAIR HYDRAULIC CYLINDER

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1) PORTABLE REPAIR BENCH BRC-1







Functioning description Cylinder Repair Bench model BRC-1

Below is a description of how the Cylinder Repair Bench works:

1) Lifting for transport:

The central frame of the bench can be used as a gripping point for lifting the equipment:

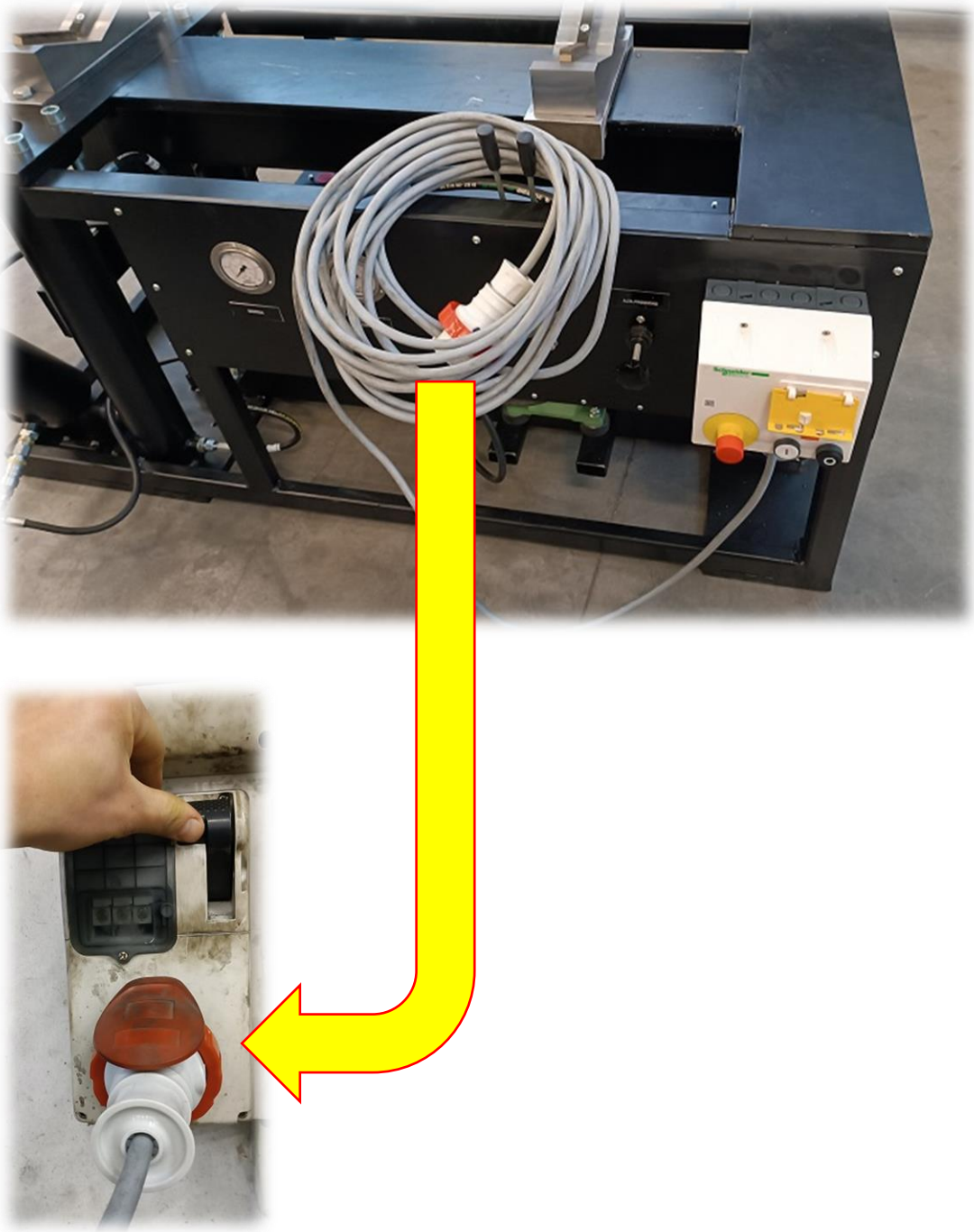


Raised bench for handling:



2) Electrical connection:

To start up the hydraulic unit, we will have to electronically connect the voltage socket to a 380 V 16 A connection, the socket will be connected to the starter switchboard:



3) Hydraulic unit start-up:

The hydraulic unit can be activated electronically via the appropriate electrical panel for the START / STOP of the electric motor:

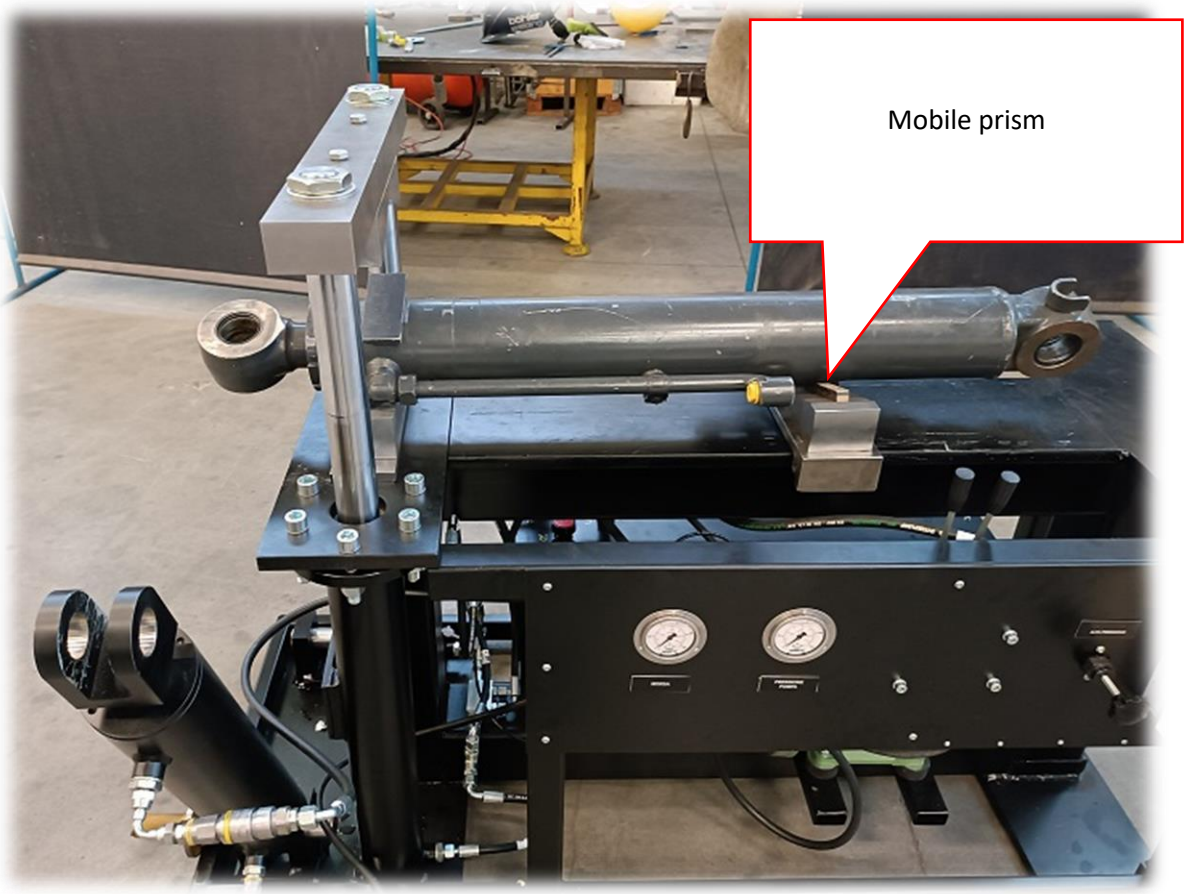






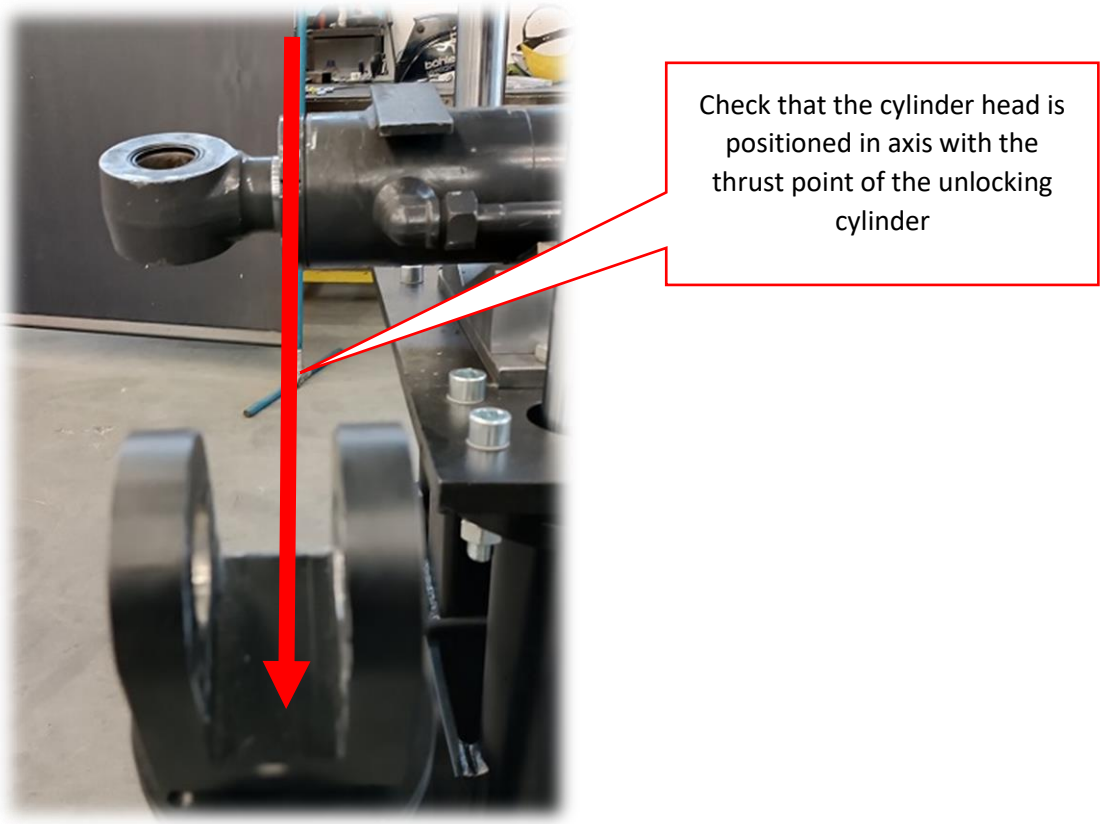
4) Loading cylinder in position:

The cylinder to be disassembled will be positioned on the appropriate support prisms:



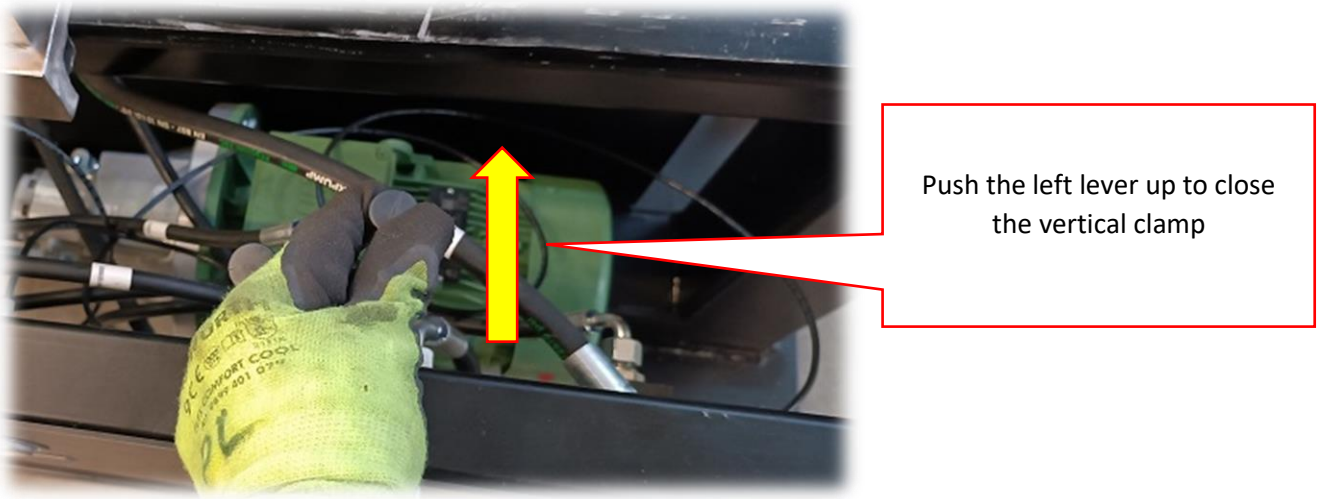
The rear support prism is movable, it can slide forward or backward depending on the length dimension of the cylinder to be loaded.

Before locking the cylinder with the vertical vice, we will have to position the head to be disassembled in line with the cylinder which, by pushing on the disassembly key, will unlock the head.

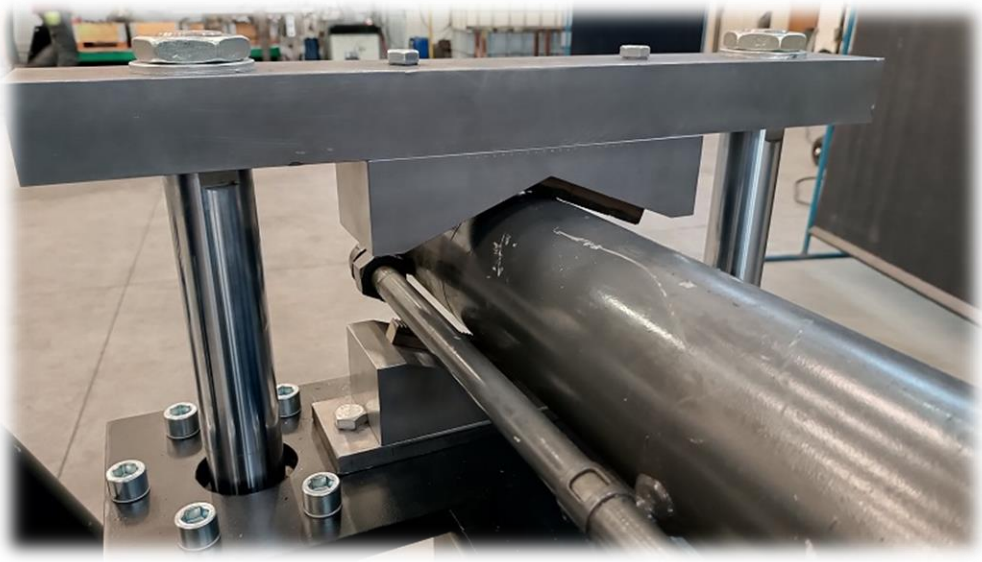


5) Locking of the loaded cylinder:

To lock the cylinder, we will have to activate the vertical locking cylinder by moving it with the appropriate distributor lever:

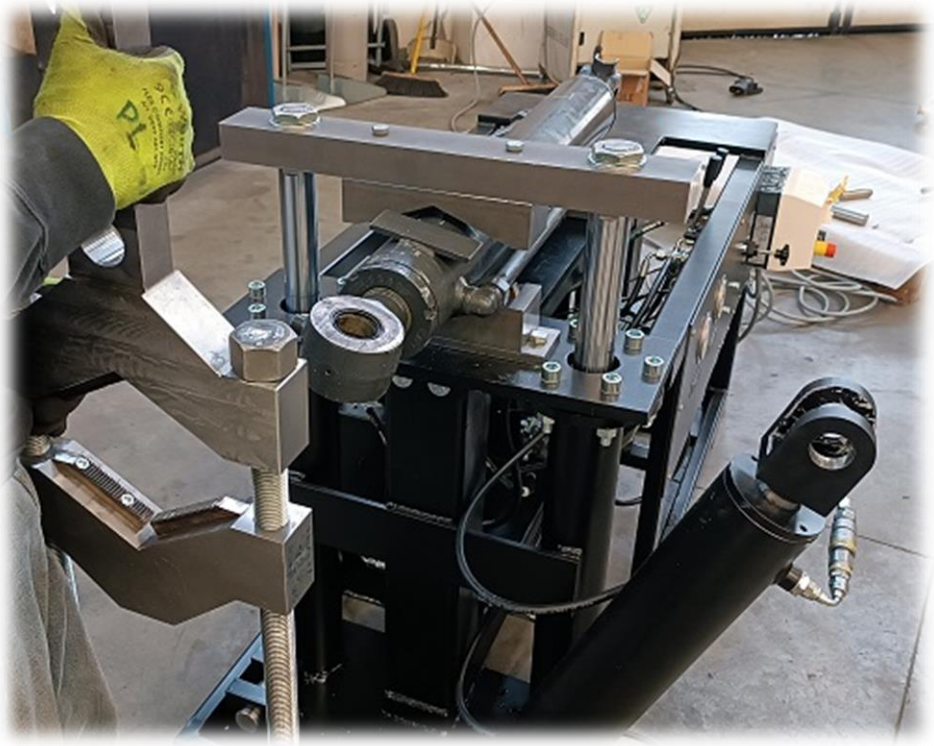


Vice locked on shirt:

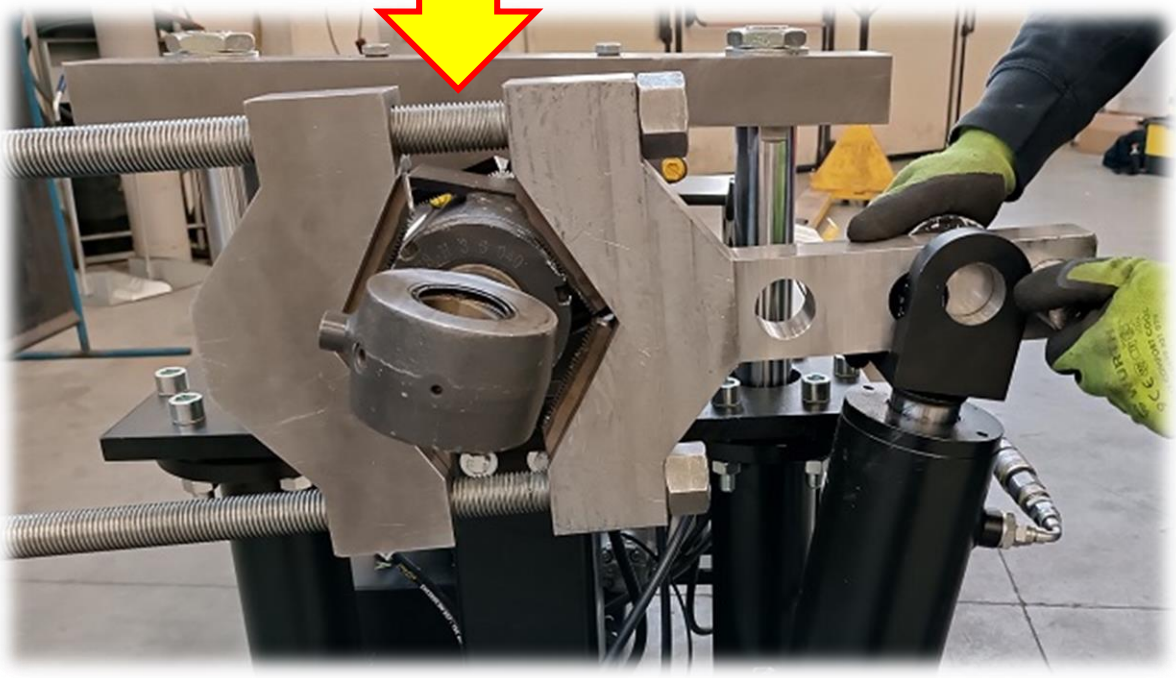


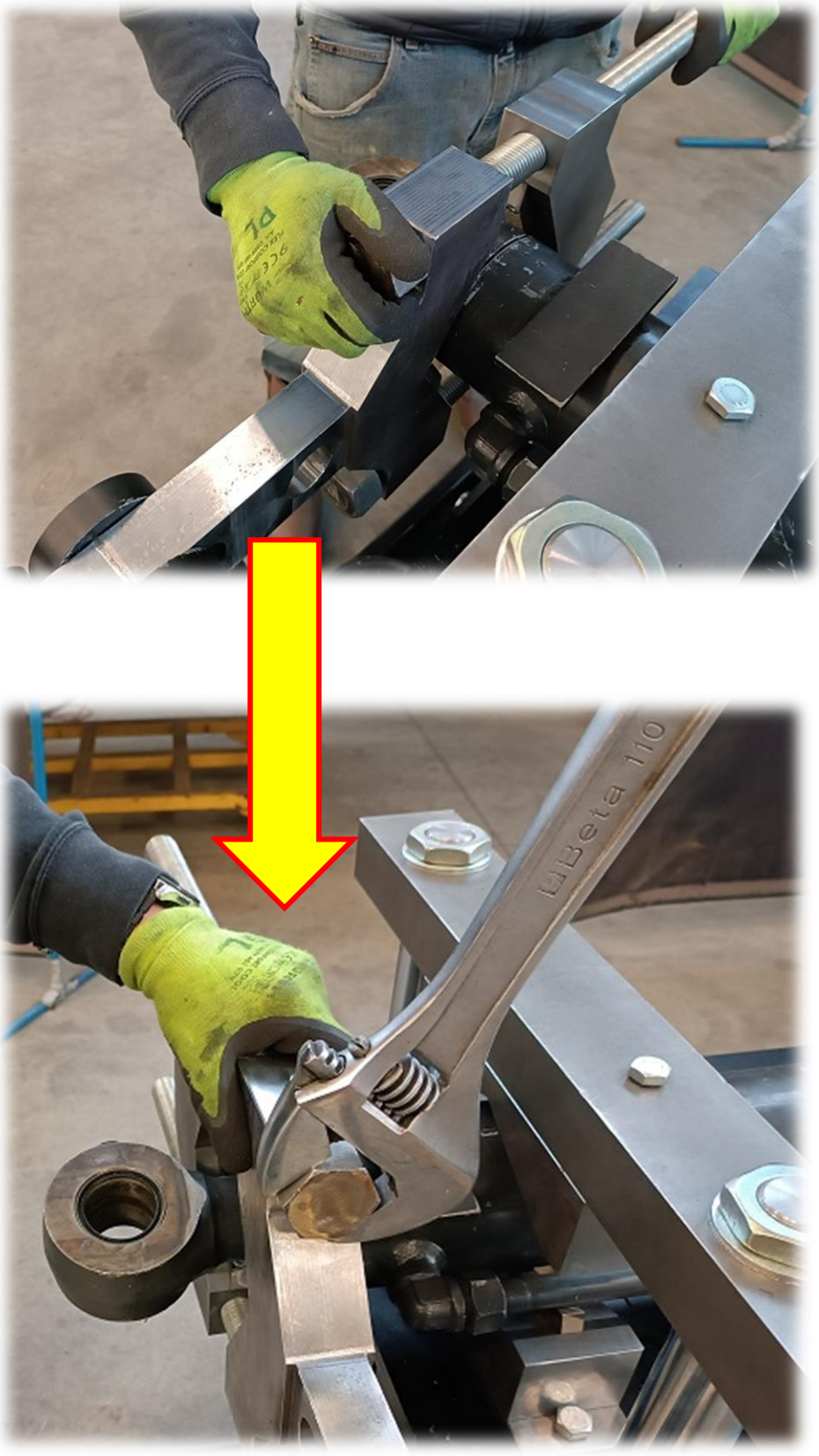
6) Cylinder head disassembly key connection:

Connect the disassembly key to the cylinder head:



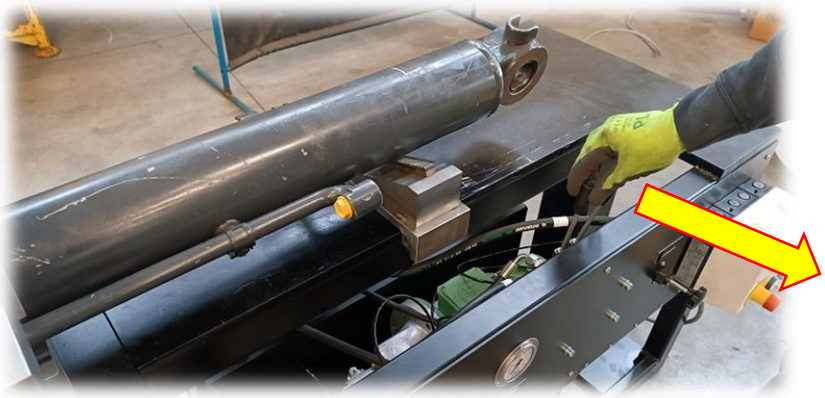




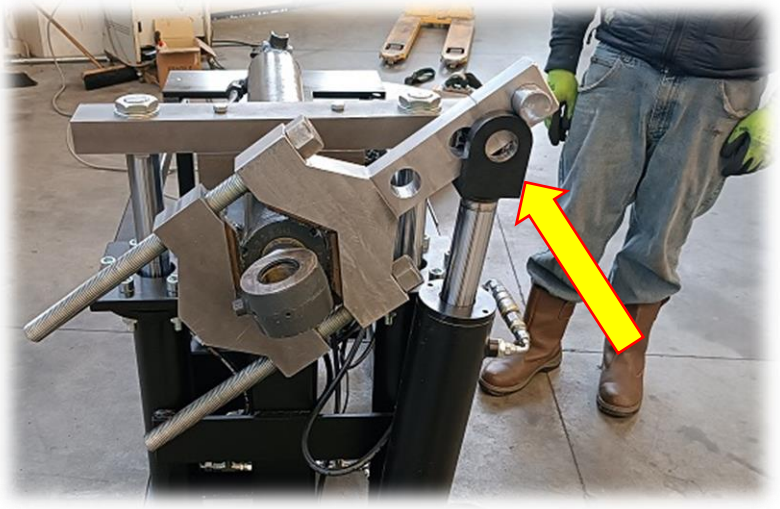

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7) Releasing the head with cylinder in thrust:

To unlock the head, the operator will have to push the cylinder, using the left lever, pulling it towards you, the cylinder will start pushing towards the key connected to the cylinder:

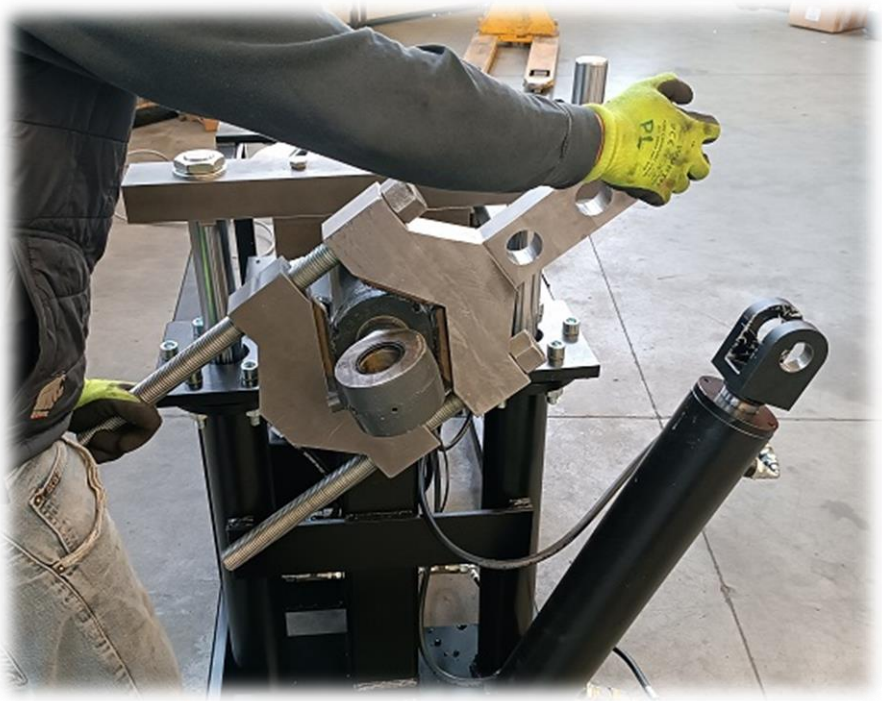






8) Unscrewing the manual head:

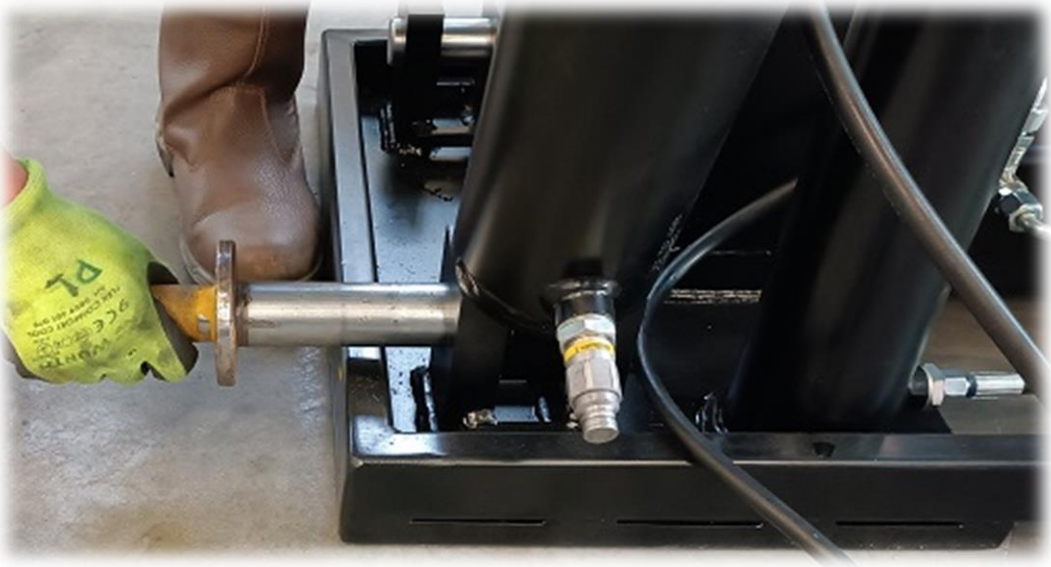
Since we have unlocked the head, we could manually check if it can be rotated, to do this we should disconnect the cylinder that pushes on the key and trying to rotate the key connected to the cylinder by hand, we will see if the unlocking was sufficient to completely unscrew the header:

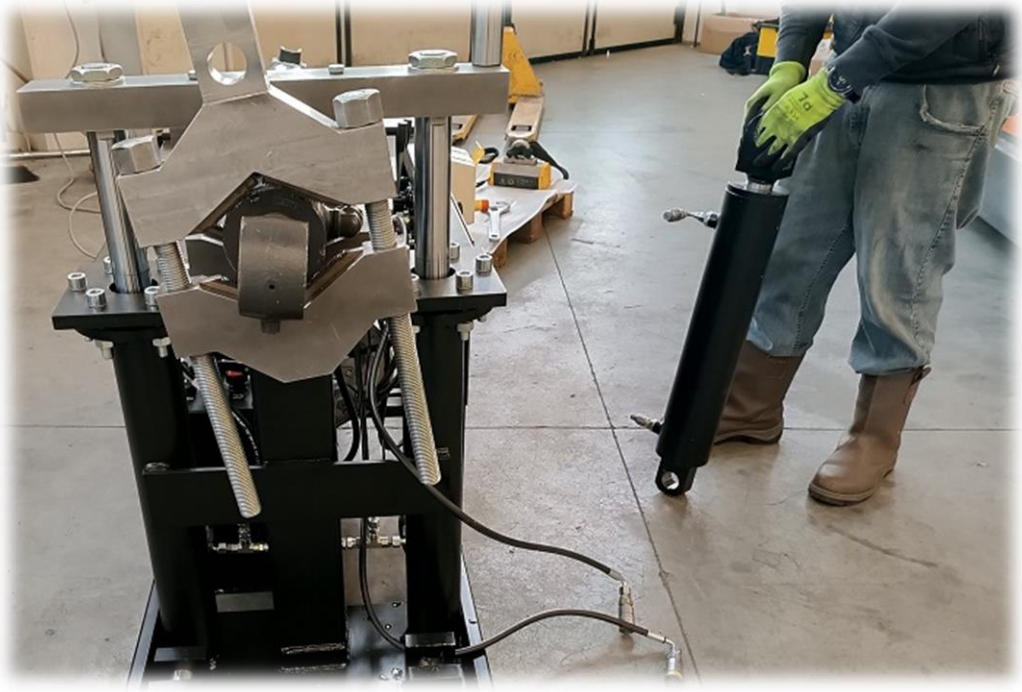


If we verify that the release was sufficient, we could proceed to disconnect the thrust cylinder, to have total freedom of rotation of the release key to quickly unscrew the head:

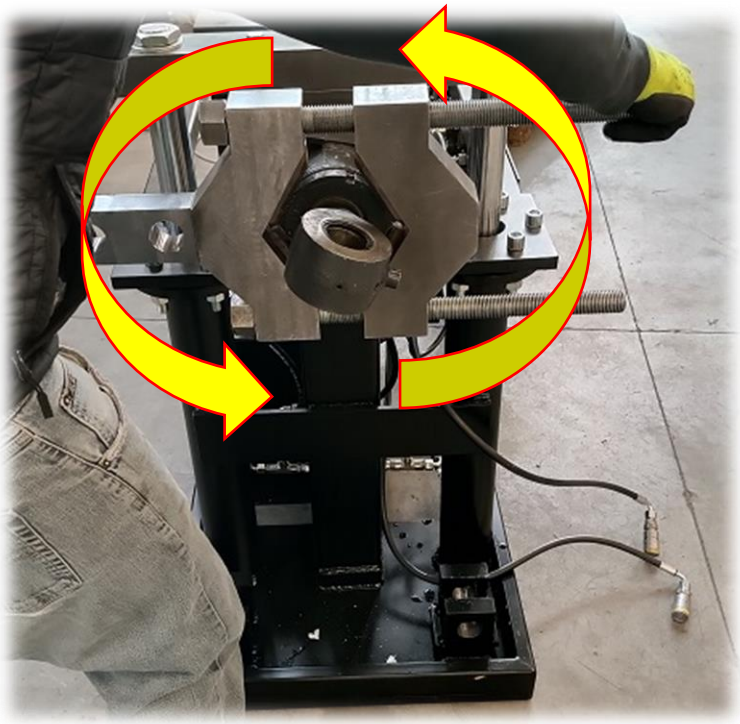


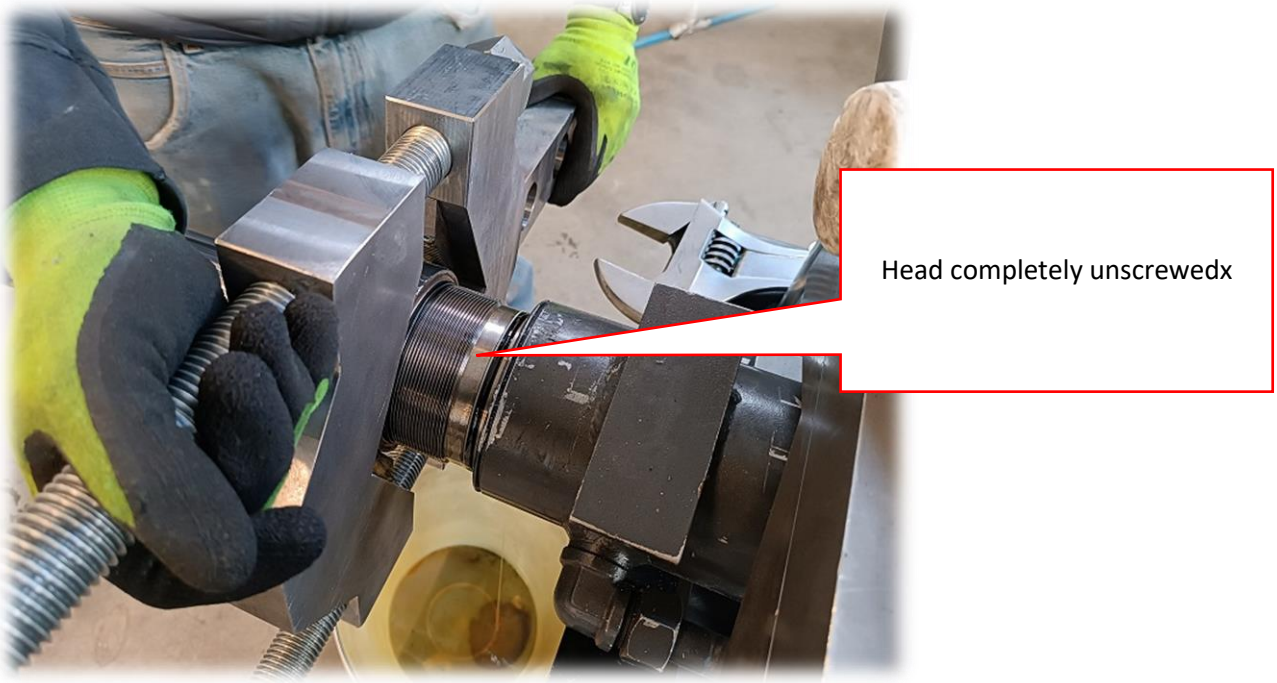




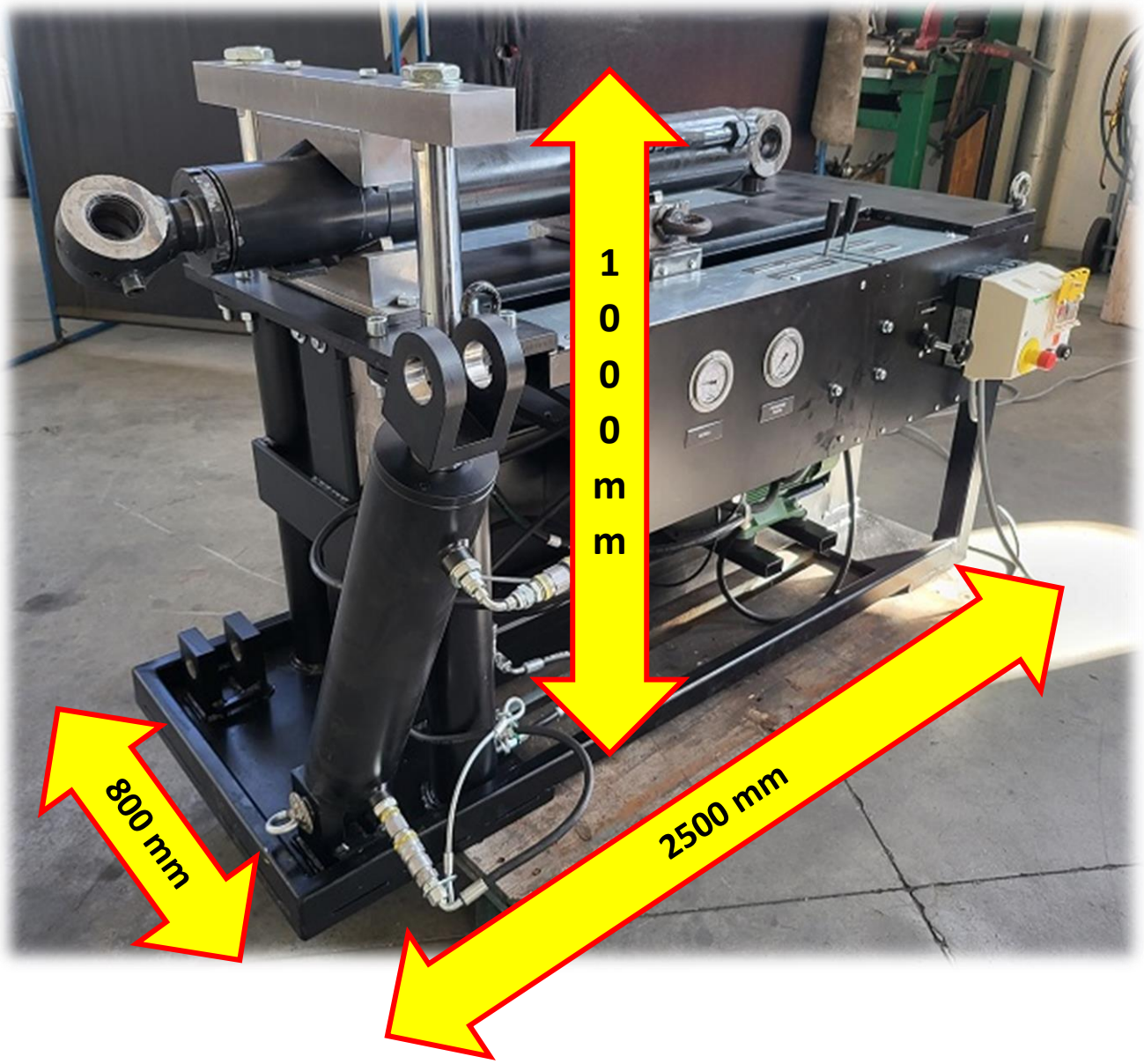


Once the release cylinder has been disconnected, the operator will have complete freedom to rotate the key manually to unscrew the head:

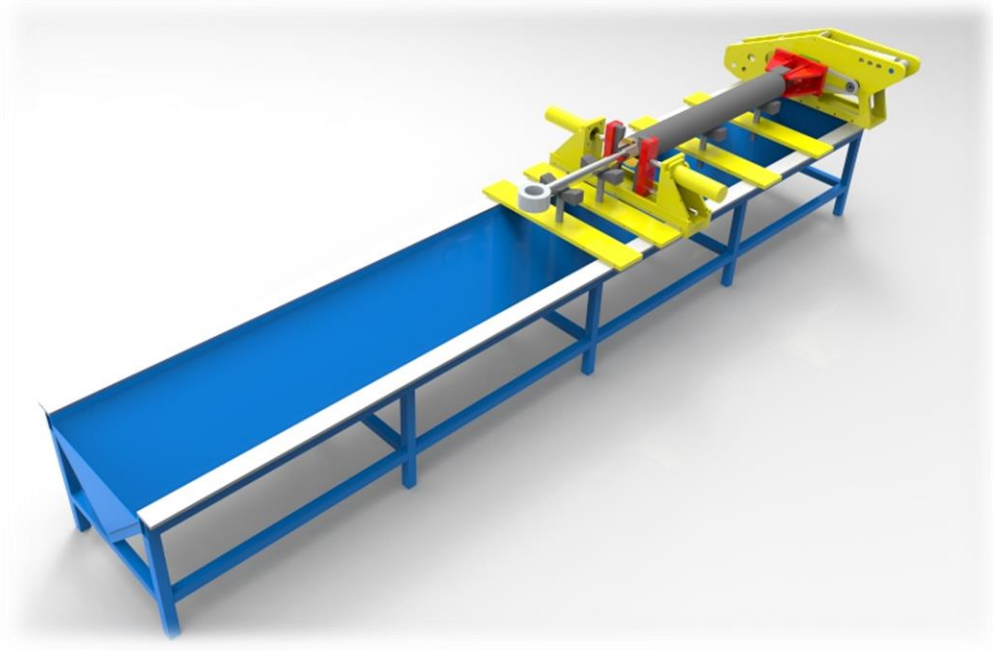




Overall dimension:



2) Static Hydraulic cylinder repair bench MODEL BRC-2



Description of the proposed machine

Offer for model BRC-2 bench for repair hydraulic cylinder.

The equipment is designed for disassembly and assembly operations of hydraulic cylinders.

The structure will consist of:

- Support frame up to 3000 kg;

- Oil collection tank around the entire perimeter of the structure;

- Hydraulic locking vice to stop the head;

- Adjustable stem support prisms;

- Adjustable shirt support prisms;

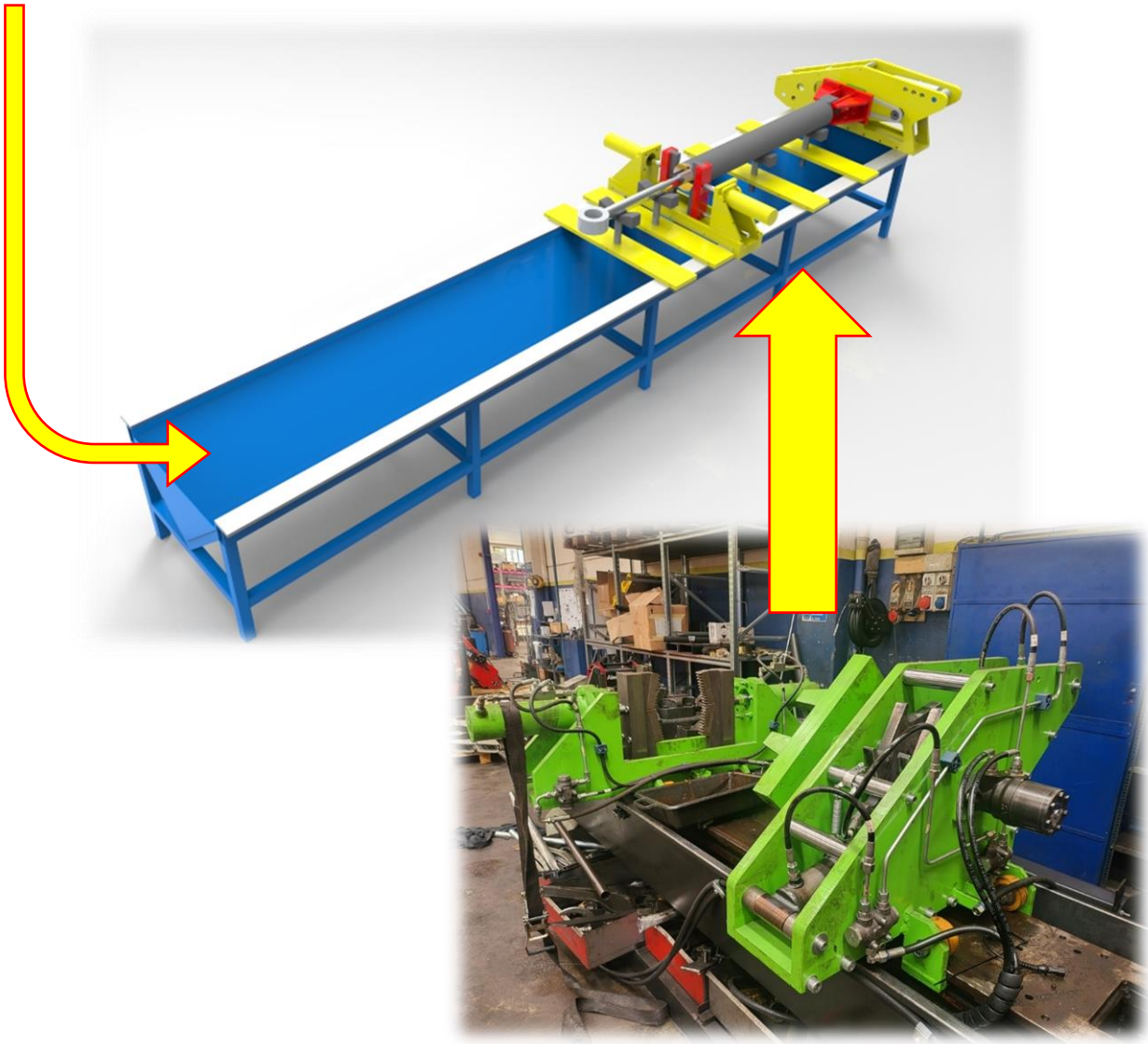
- Dismantling system up to 50'000 Nm optional 130’000 Nm;

The adjustment of the maximum operating pressure can be done manually from the panel, where the operator can activate the command that brings the very high pressure branch under pressure and through a special knob, we can adjust the maximum pressure required:

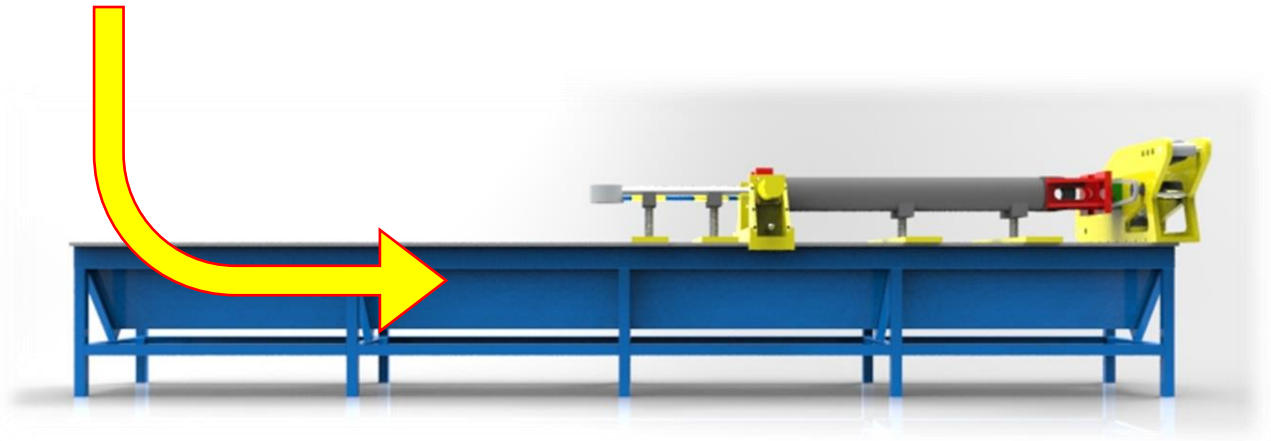


Description of the machine part

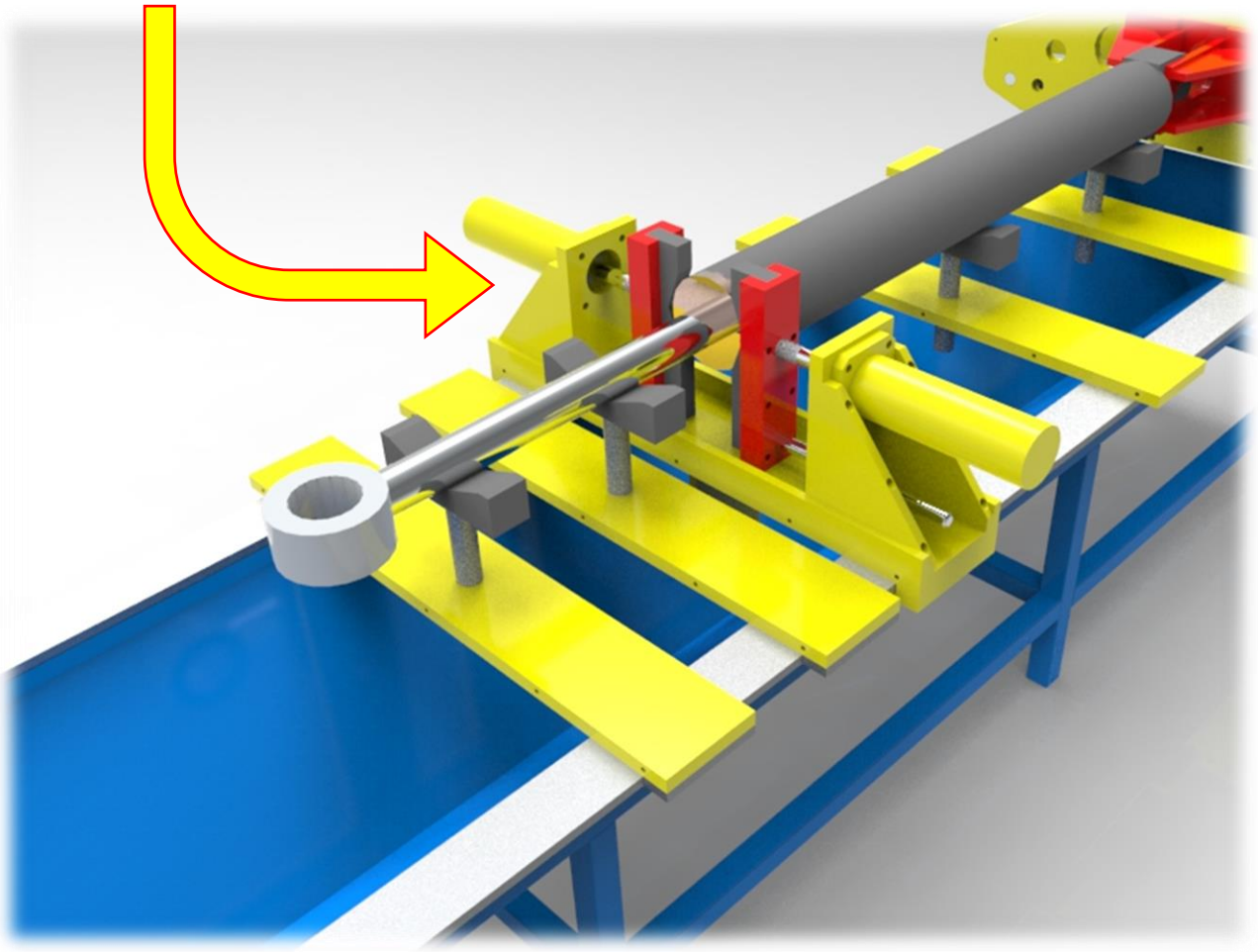
Support frame up to 3000 kg;



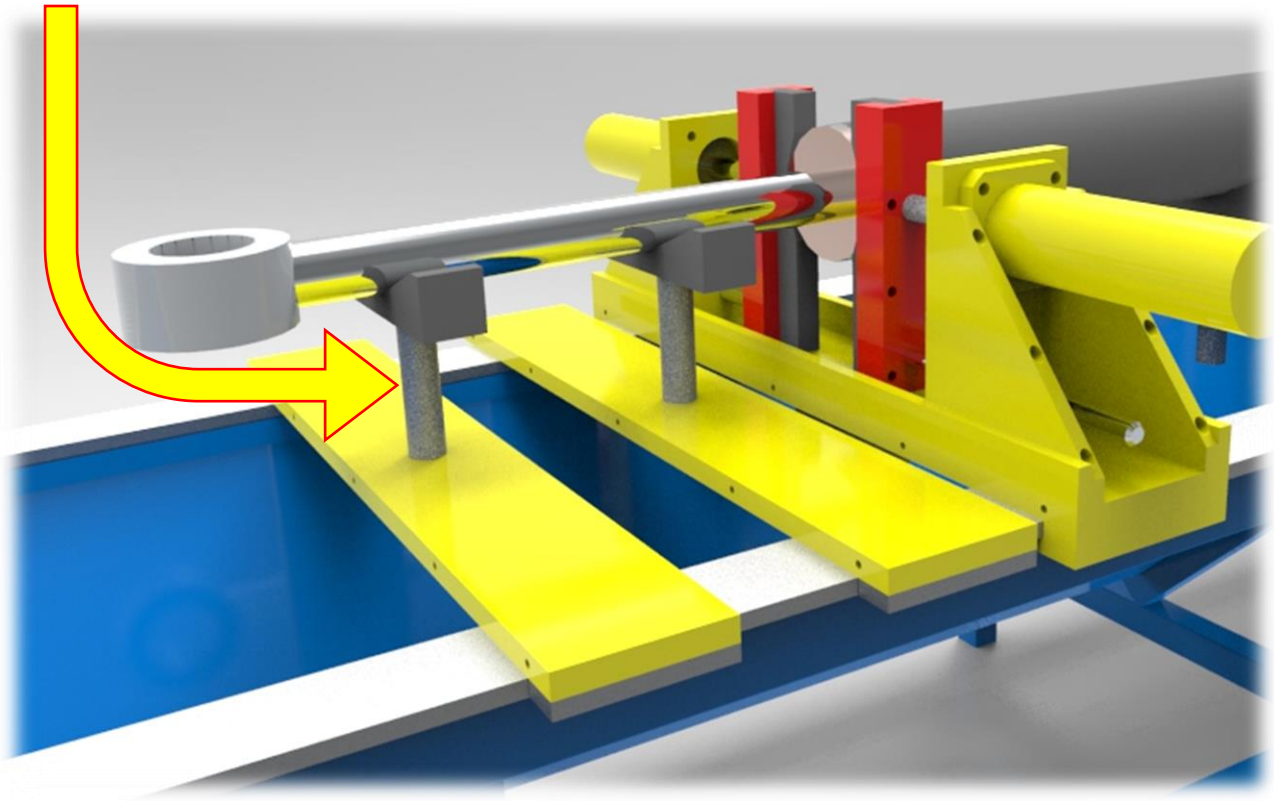
Oil collection tank around the entire perimeter of the structure;



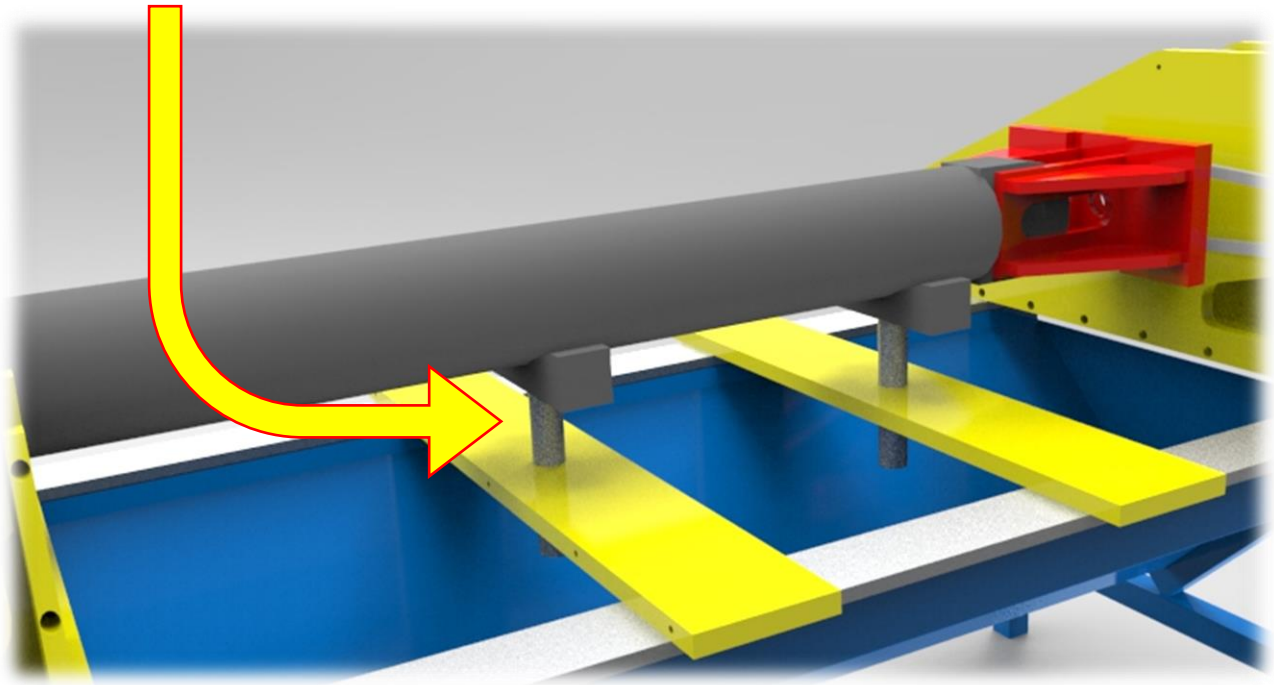
Hydraulic locking vice to stop the head;



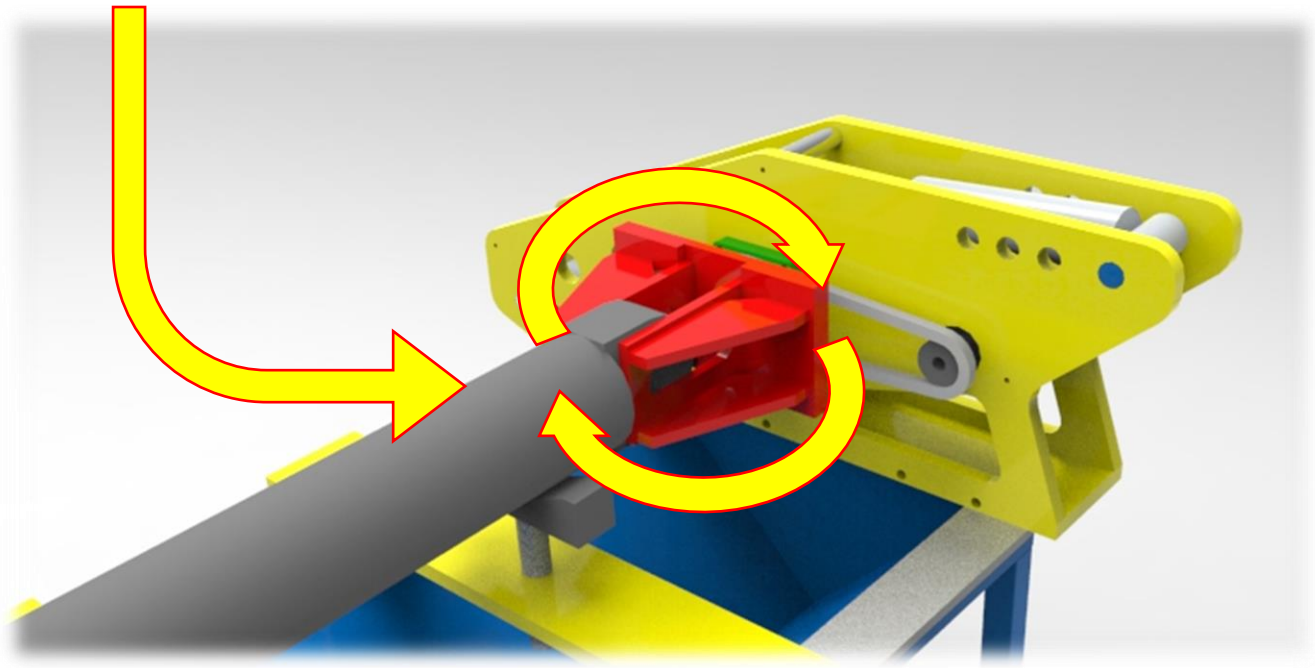
Adjustable stem support prisms;



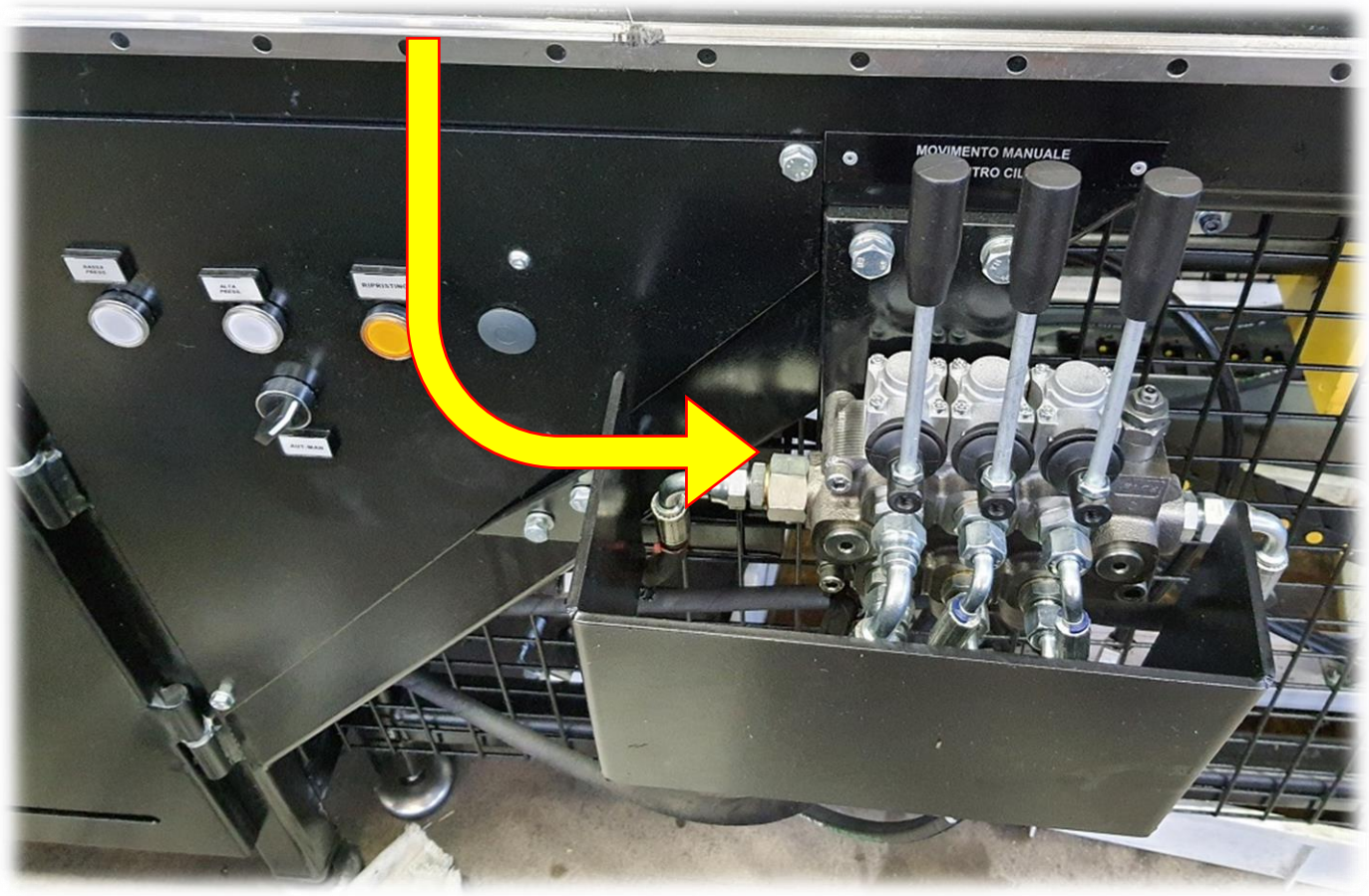
Adjustable shirt support prisms;



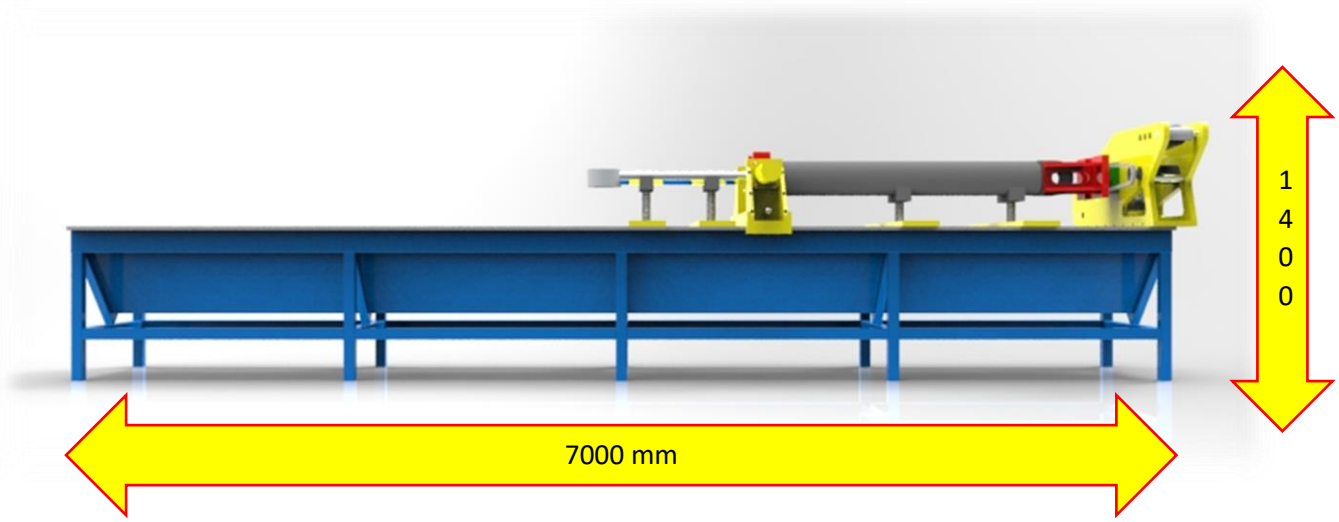
Dismantling system up to 50'000 Nm Optional 130'000 Nm

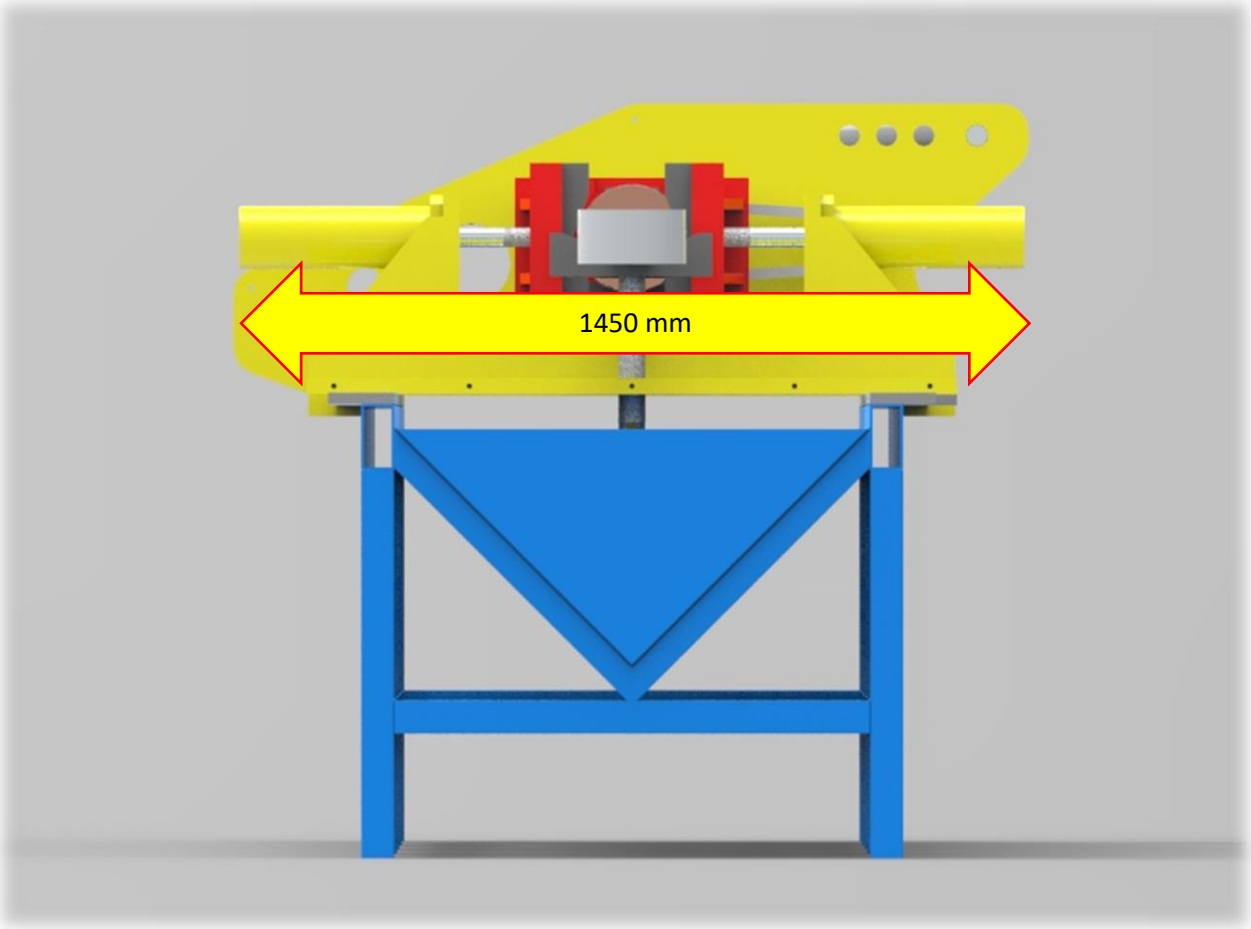


The actuations will be carried out via a multi-function distributor:



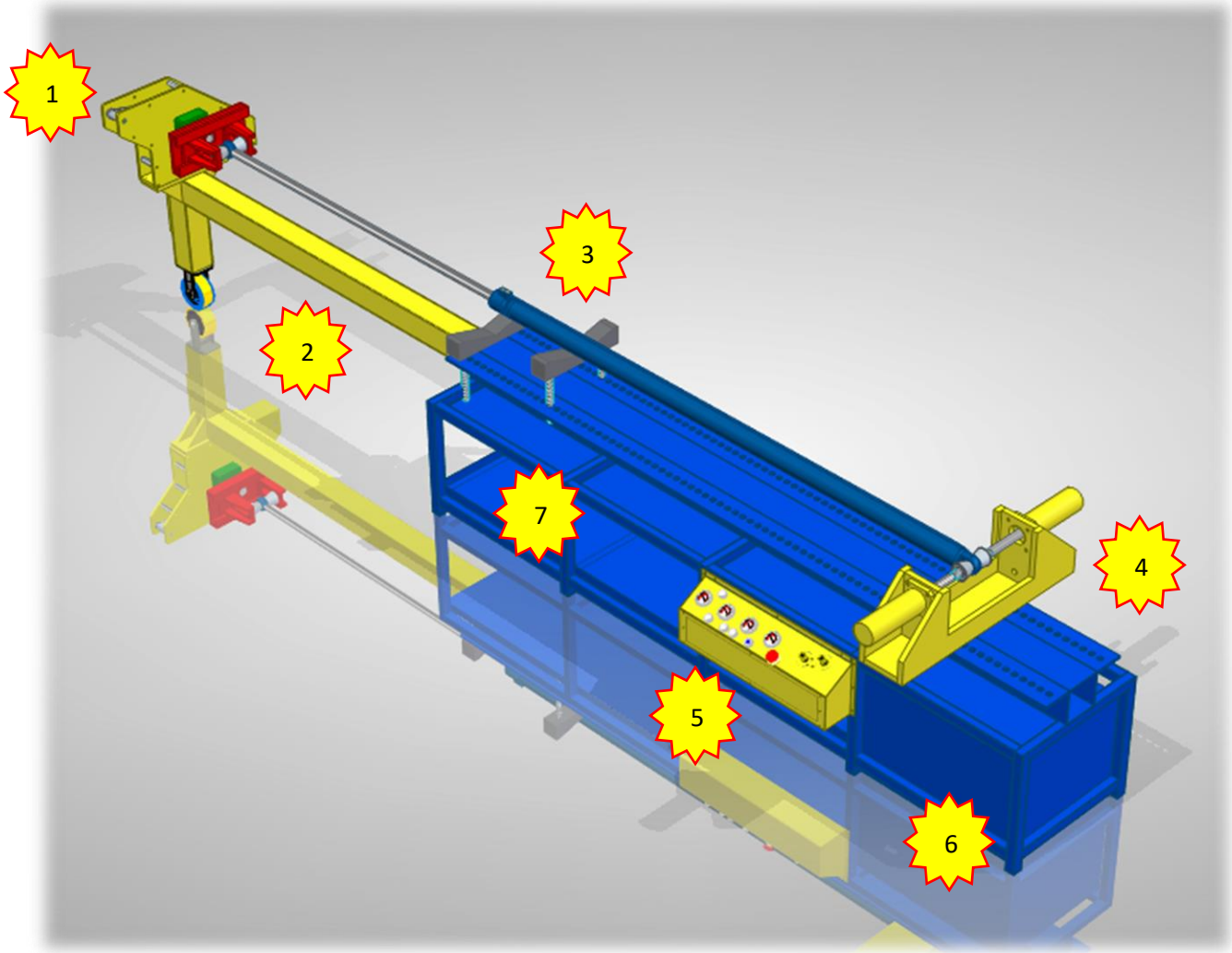
Overall dimension





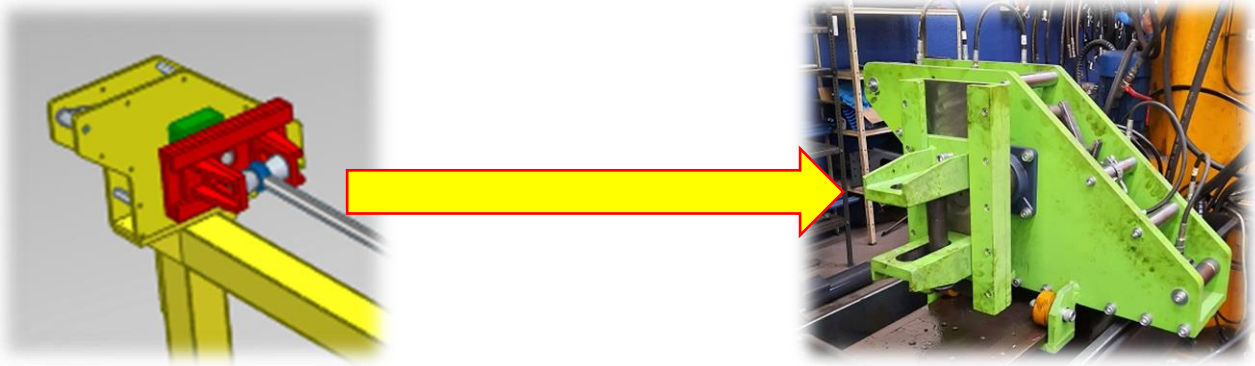
3) Static Hydraulic cylinder repair bench MODEL BRC-2 different solution

Description of the part on the machine:



N°	Description
1	Rotating system to perform the unlocking operations of the heads and bolts
2	Mobile arm controlled by a hydraulic cylinder to carry out the rod extraction and insertion operations
3	Height-adjustable supports to support the sleeve or stem during repair operations
4	Self-centering hydraulic press to clamp the external tube or cylinder head in repair operations
5	Control panel to regulate and activate the machinery during repair and testing operations
6	Oil tank
7	Welded structure to support the machinery

1	Rotating system to perform the unlocking operations of the heads and bolts



This equipment will be used to rotate the external tube of the cylinder for the disassembly operations of the head if it is screwed.

The operator will have to hook the bush welded onto the pipe and block the head in the hydraulic vice:



To carry out the screwed head disassembly procedure, the operator must:

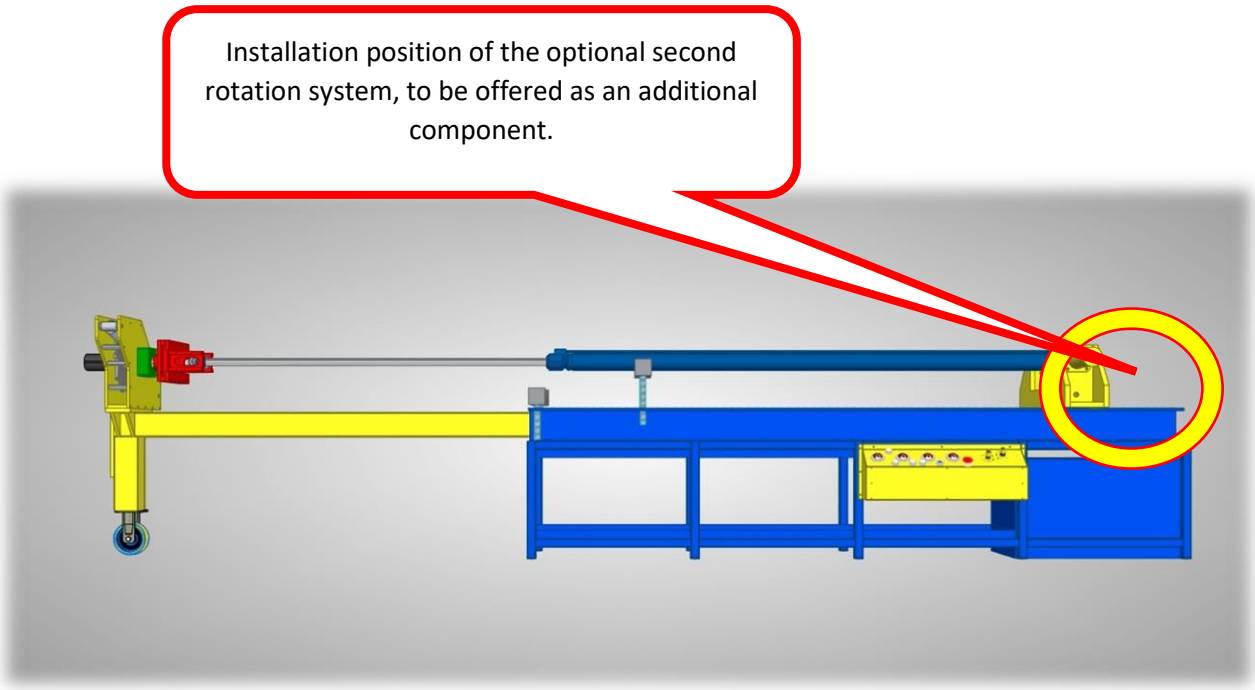
1) Unscrew the head with the external tube connected to the rotation system and the head blocked in the hydraulic vice;

2) After having unscrewed the head, the cylinder must be rotated on the bench by 180 degrees, in order to connect the rod to the front mobile carriage to carry out the rod exit phase;

3) After extracting the rod, if necessary the operator will already have the rod mounted in position to unscrew the bolt, the operator will have to remove the external tube of the cylinder from the bench to block the bolt in the hydraulic vice;

These operations will only be necessary in the working operations of the cylinders with the head screwed on, the cylinders which have bolts in the head must not be rotated 180 degrees during the working phases.

It will be possible to offer a second rotation equipment as an optional, which will be installed on the fixed bench and with this optional equipment the operator will never have to rotate the cylinder during repair operations.



2	Mobile arm controlled by a hydraulic cylinder to carry out the rod extraction and insertion operations

The mobile arm at the front of the machine will be used to carry out the rod extension operations or the final insertion phase.

Its overall length will be estimated according to the maximum stroke of the cylinders to be repaired.

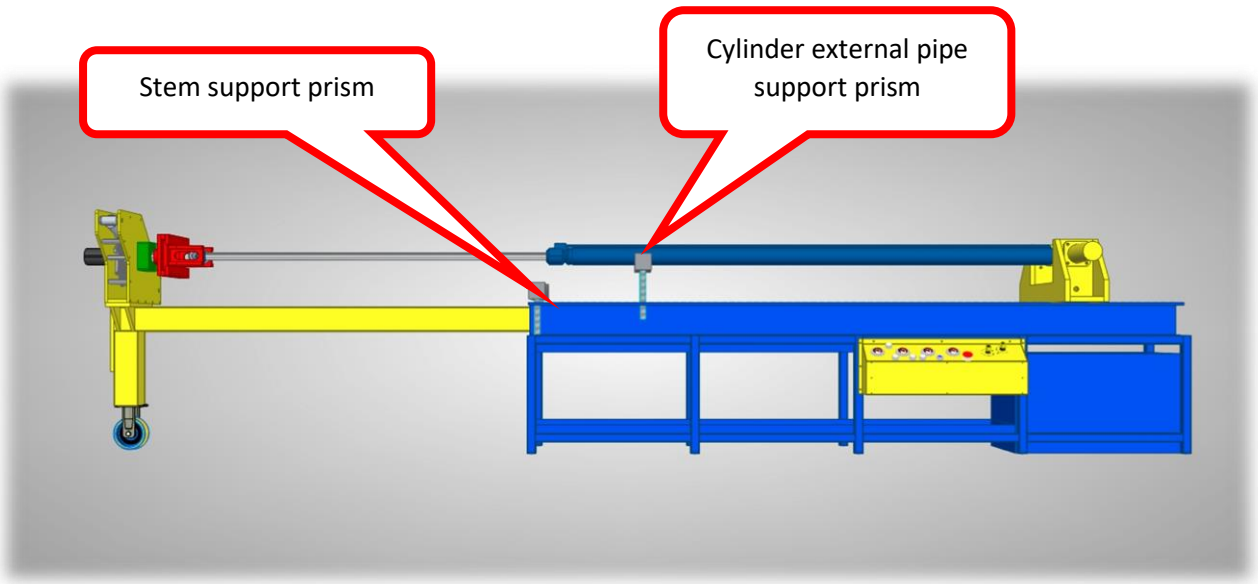
The arm will be connected to a wheel that will slide on the floor and support the body in movement.

Below is a photo of a similar application we created:



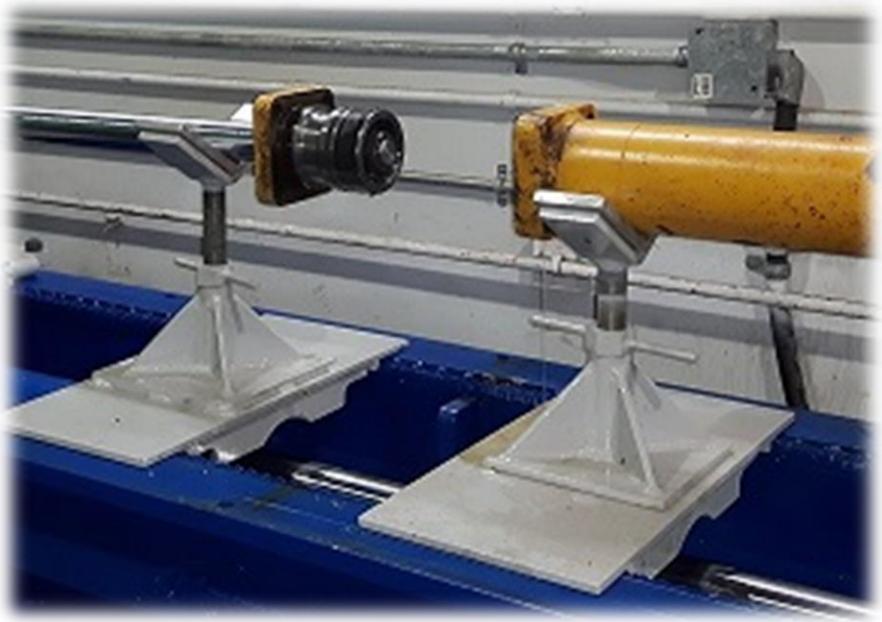
3	Height-adjustable supports to support the sleeve or stem during repair operations

There will be two support prisms for the stem and the jacket:



The prisms can be easily adjusted in height depending on the diameters of the cylinders being machined.

Below is an example of a manually adjustable stem and sleeve support system:



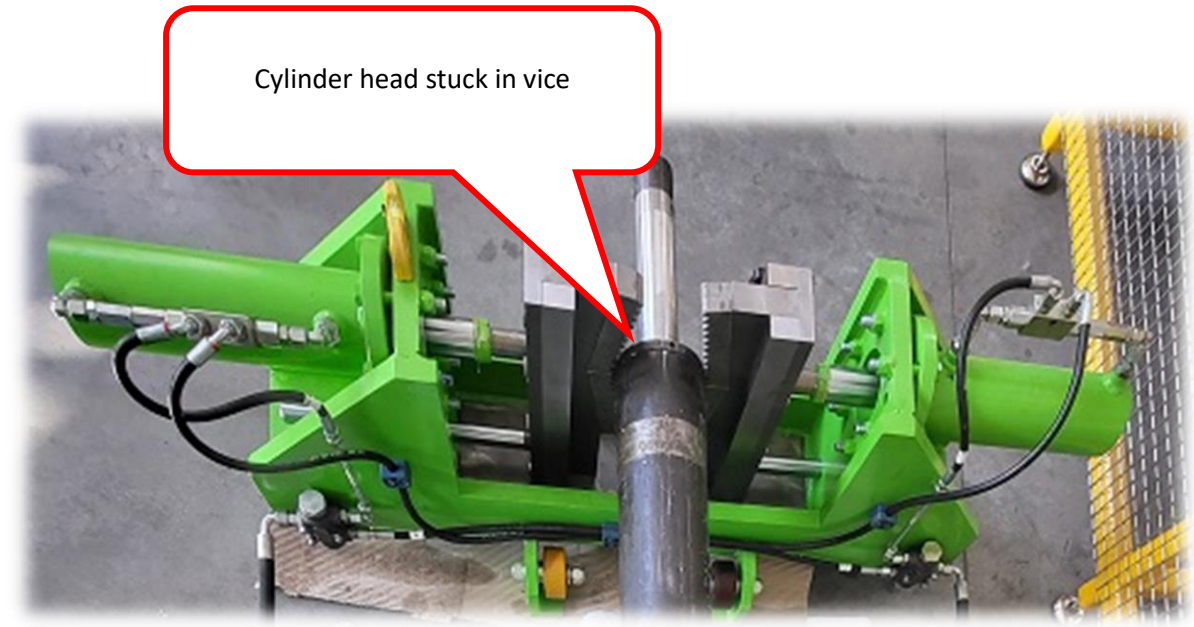
4	Self-centering hydraulic press to clamp the external tube or cylinder head in repair operations

To lock the head or piston during disassembly operations, in this machinery we will have a hydraulic "press" system, in which we can manually adjust the locking pressure.

The system will have a self-centering closing and opening, to lock the component in the center.

The points where we will come into contact with the external tube on the bushing or in the cylinder head, we will have the possibility of changing the "locking masks".

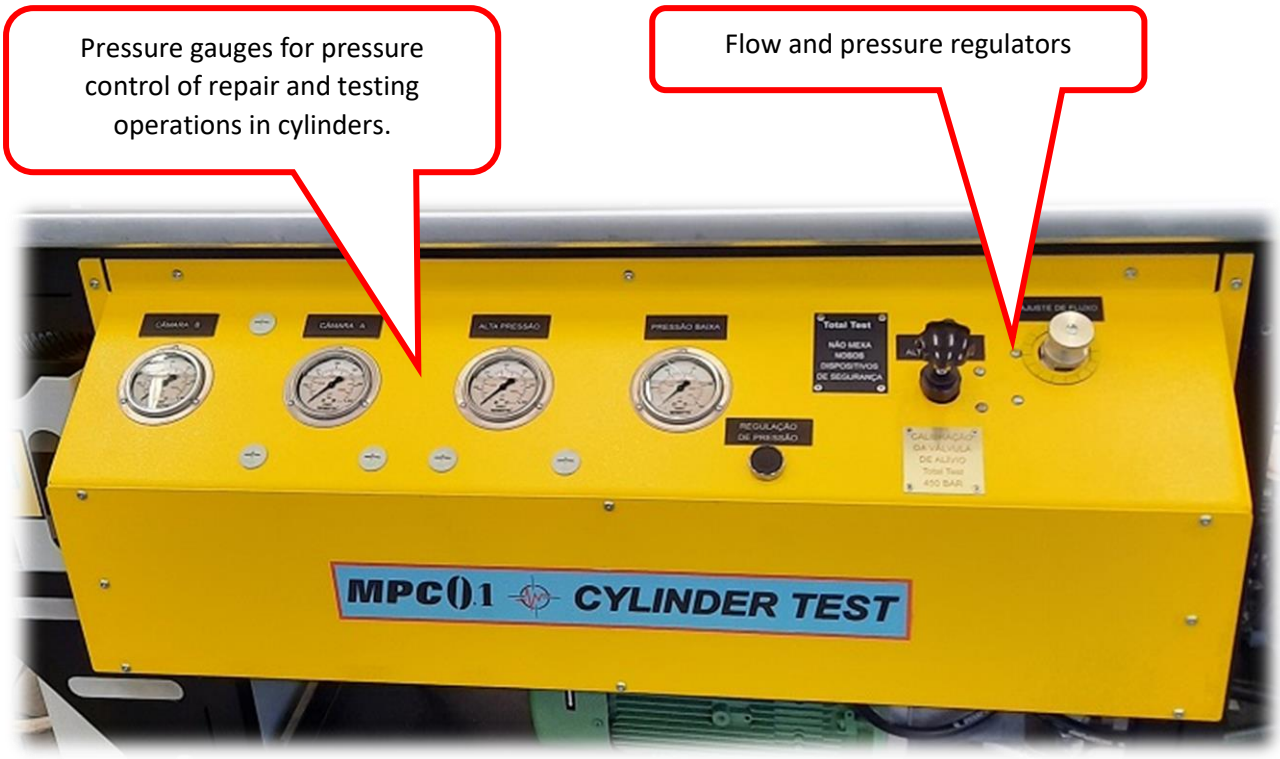
We may have different accessories to perform the correct locking of each component.





5	Control panel to regulate and activate the machinery during repair and testing operations

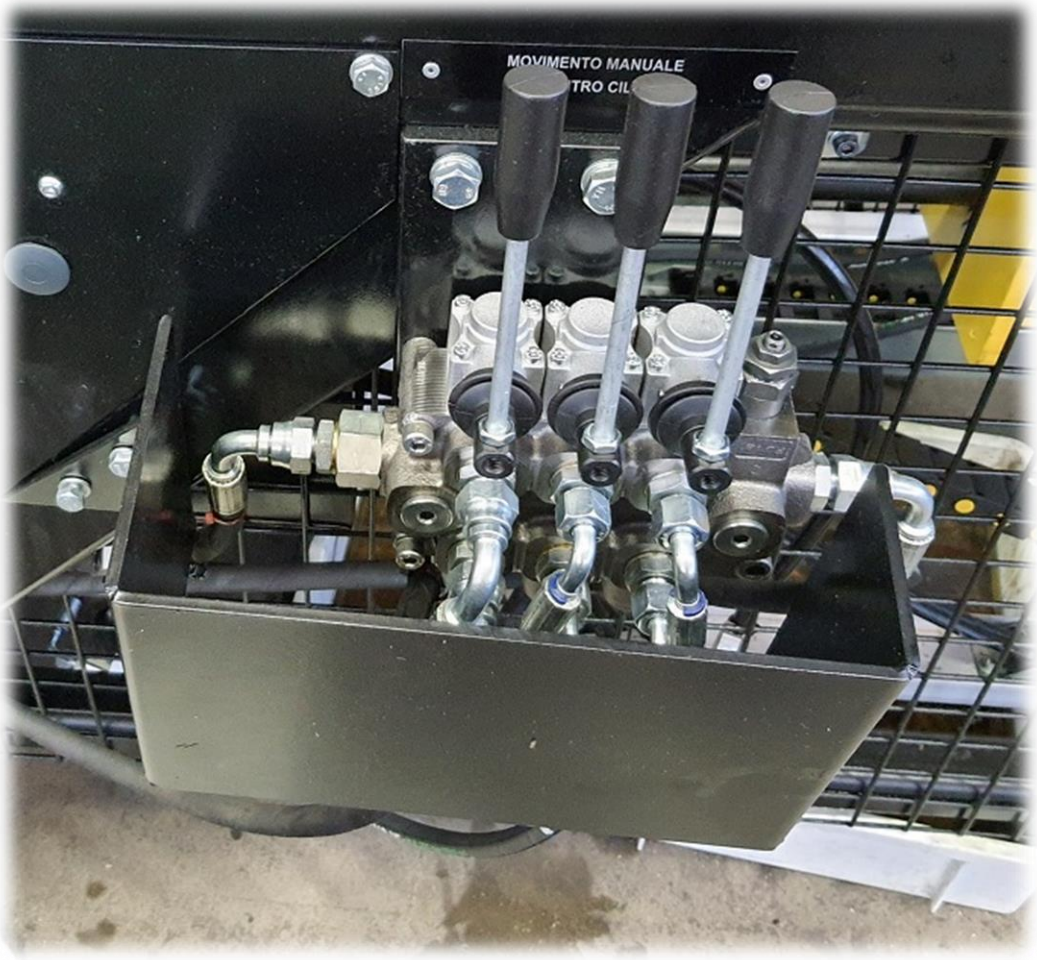
In the control panel we will be able to have the controls for regulating the flow rate, pressure and the controls for activating the hydraulic equipment for the cylinder repair controls and for testing operations.



Possibility of installing a touch screen monitor as an optional to have more functions in testing operations and also reports:



Repair and testing operations can be controlled by a battery of lever distributors, thus allowing the operator to comfortably control the operations he needs:



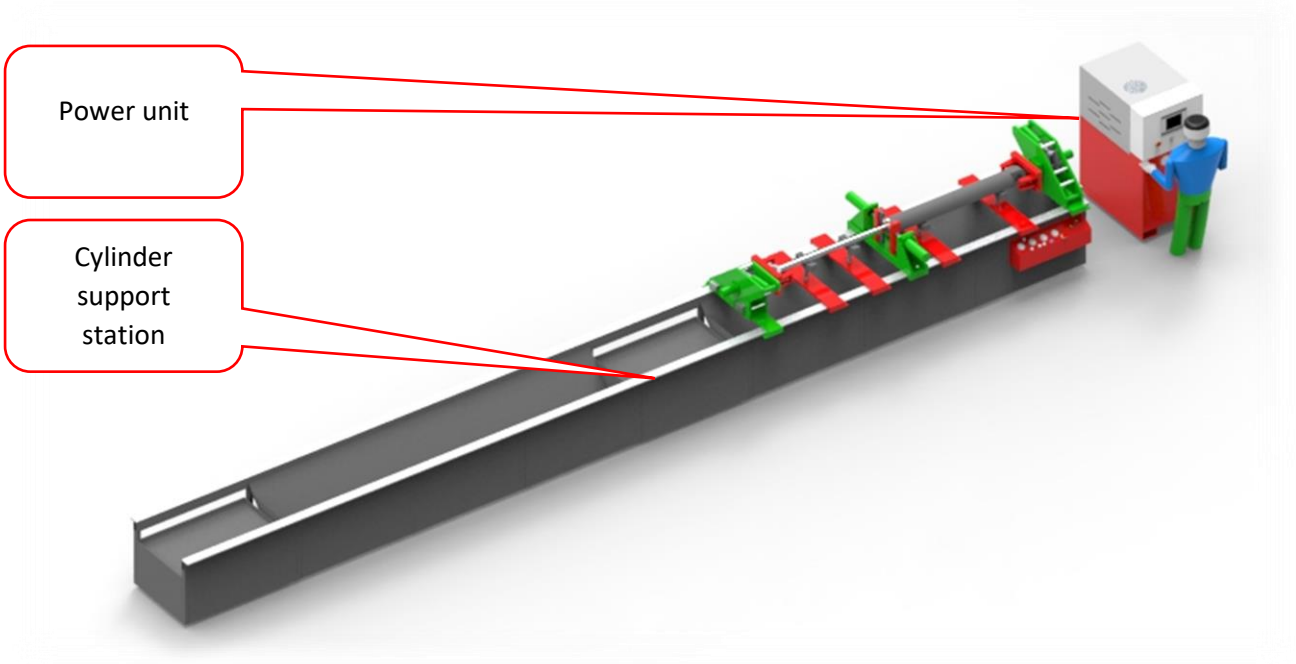
6	Oil tank
7	Welded structure to support the machinery

4) HEAWY DUTY Static Hydraulic cylinder repair bench MODEL BRC-4

Description of the proposal complete machine

The proposed hydraulic cylinder repair and testing machine will be made up of two units connected to each other:

- Support bench for cylinders to be repaired and tested;
- Hydraulic power unit to control repair equipment and carry out pressure tests up to 500 BAR;



The proposed machine will be able to accommodate cylinders up to:

- Maximum length when closed: 7000 mm;

- Maximum weight: 6000 kg;

- Maximum external pipe diameter: 620 mm;

- Maximum diameter of the external flange of the cylinder: 800 mm;

- Maximum clevis diameter: 620 mm;

- Maximum clevis width: 700 mm;

Description of the Repair Station BRC-4 bench

BRC-4 bench for repair hydraulic cylinder.

The equipment is designed for disassembly and assembly operations of hydraulic cylinders.

The structure will consist of:

- Support frame up to 6000 kg;

- Oil collection tank around the entire perimeter of the structure, the machine can collect up to 800 Lt of dirty oil;

- Hydraulic locking vice to stop the head;

- Adjustable stem support prisms;

- Adjustable shirt support prisms;

- Dismantling system up to 130'000 Nm;

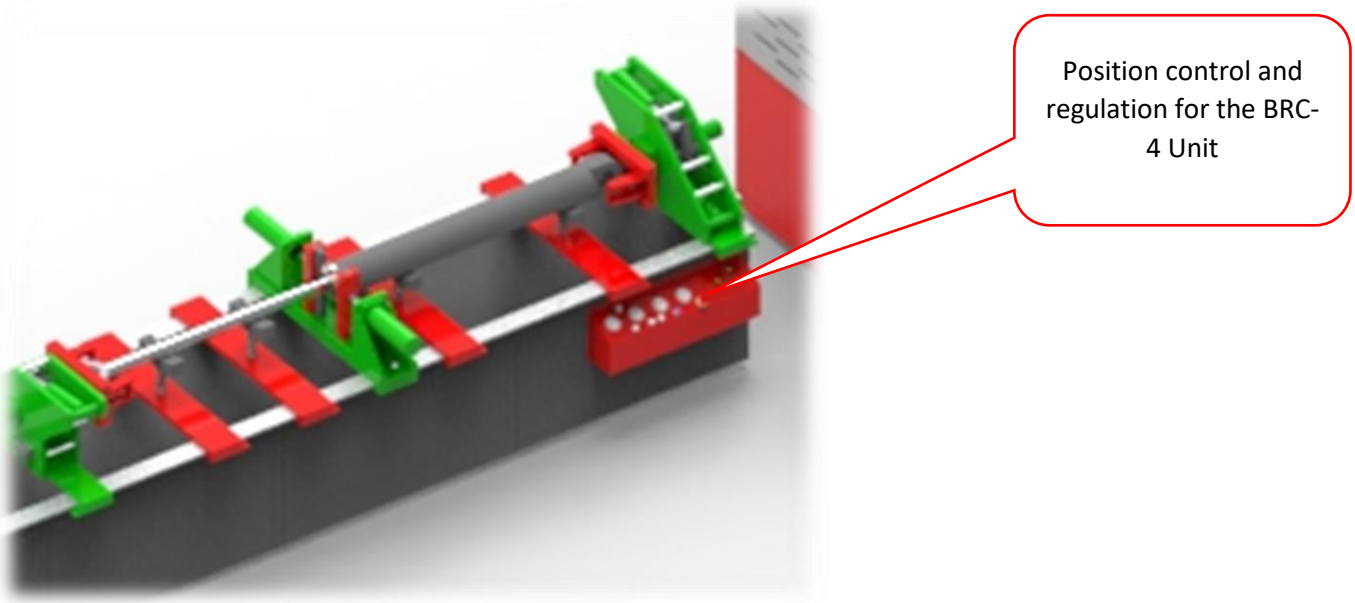
- Rod extension up to 7 Ton;

- Extraction rod speed can be regulated up to 1200 mm / 20 sec;

- Hydraulic Nut Runner: 6000 Nm at 8 RPM;

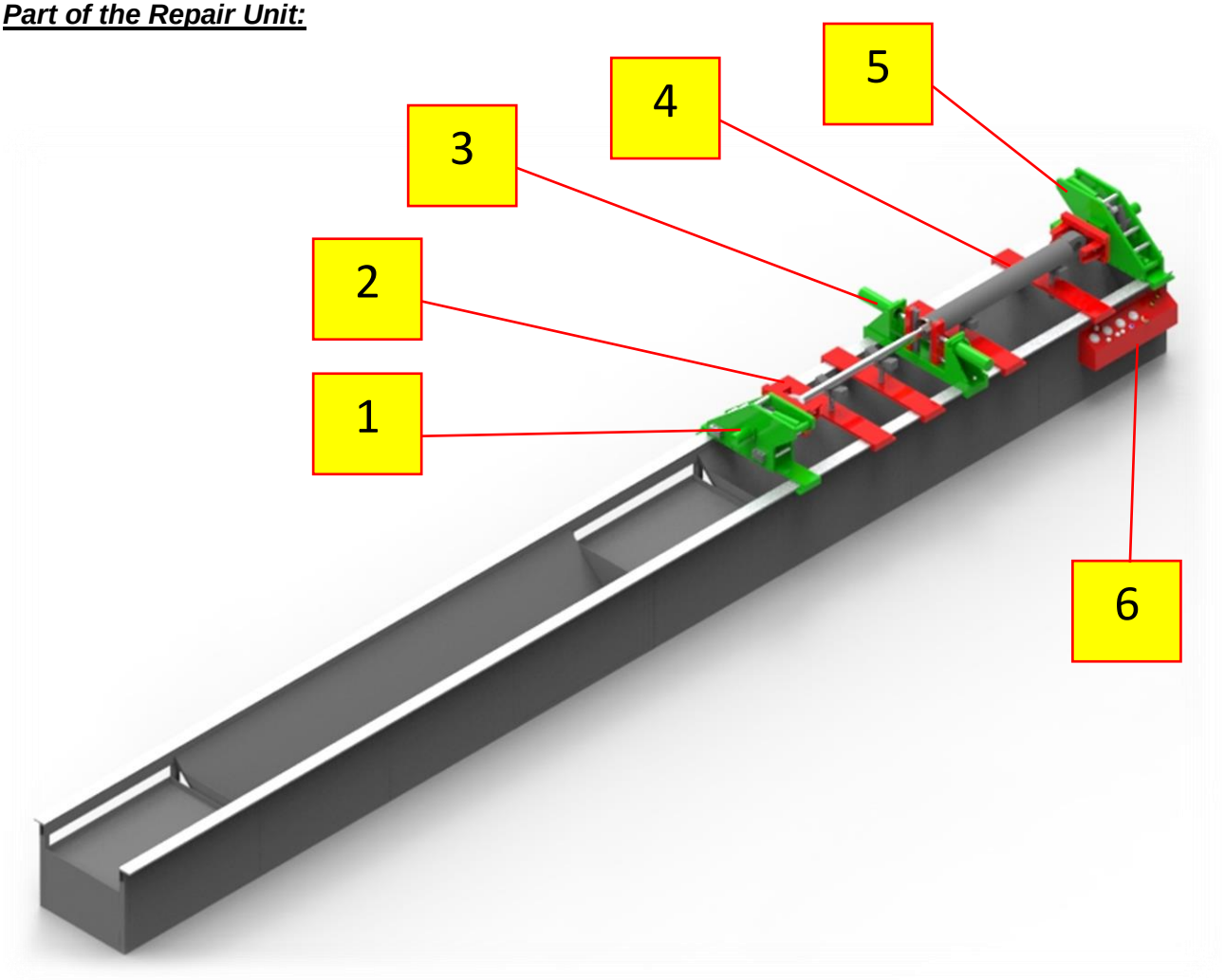
The adjustment of the maximum operating pressure can be done manually from the panel, where the operator can activate the command that brings the very high pressure branch under pressure and through a special knob, we can adjust the maximum pressure required:



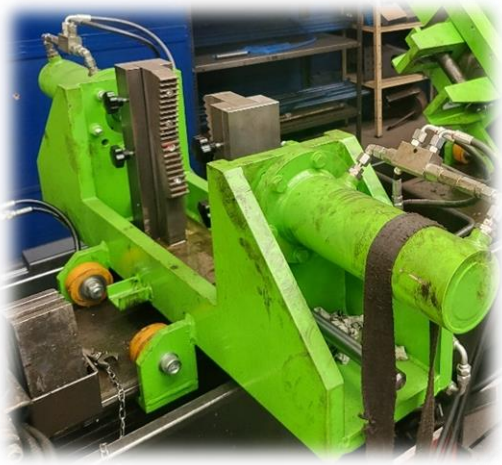


Description of the bench BRC-4

Part of the Repair Unit:



Part n°	***Description***
1	*Unlocking and rotation system connected to the rod to unlock the bolts on the piston inside the cylinder.*  
2	*Height-adjustable supports to support the stem, there will be two supports to comfortably carry out loading, disassembly and repair operations.* *The height of the supports will be easily adjustable depending on the diameter of the stem.*

	
3	*Self-centering vice for locking the heads to be dismantled and the bolts inside the piston.*  

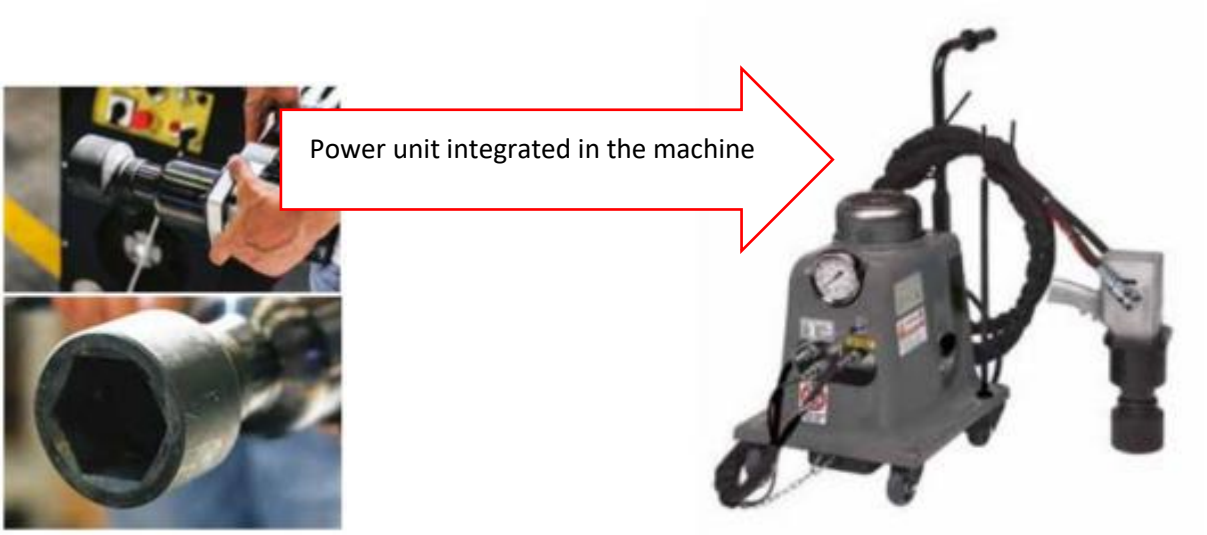
4	*Height-adjustable supports to support the tube, there will be two supports to comfortably carry out loading, disassembly and repair operations.* *The height of the supports will be easily adjustable depending on the diameter of the external tube.* 
5	*Unlocking and rotation system for unscrewing and screwing the cylinder heads.* *By holding the cylinder head still with the self-centering vice, this system will rotate the liner until the cylinder head is completely dismantled.*  

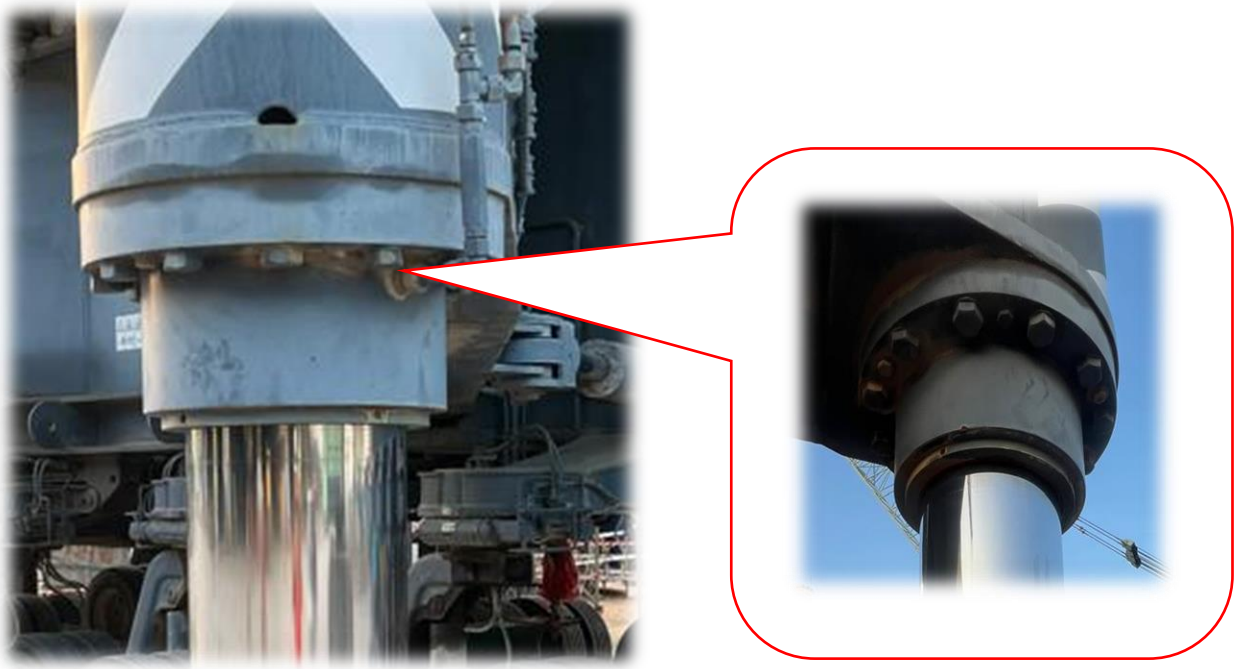
6	*Control and regulation panel for the flow rate and pressures of repair operations.* 

The repair bench can be controlled remotely with a specific personalized button panel, the radio control will be connected via network to the machine and will not be connected with electrical cables:



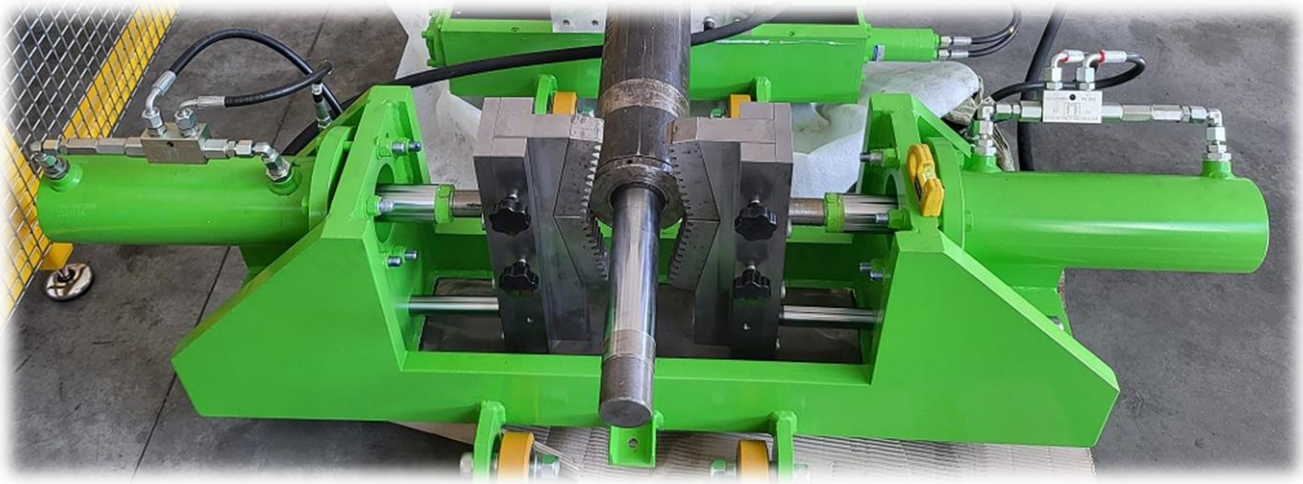
The screws that tighten the cylinder head will be disassembled using a special pneumatic screwdriver, which connected to a power unit, can be adjusted both to disassemble and to mount the screws, with the possibility of setting the tightening torque.





Dismounting description

In the machine, the operator, after having loaded the cylinder to be repaired, will be able to block the head of the cylinder to be unscrewed in the central locking vice:



The following types of heads can be unscrewed using the same vice without having to use different tools:

Type of header	***Disassembly description***
	*The cylinder head can be disassembled by holding the cylinder head still with the self-centering vice, which will have 2 retaining pins for the cylinder head and we will then rotate the liner until complete disassembly.*

	*In the heads where we will have bolts, the operator will be able to use the pneumatic gun for disassembly with the possibility of setting the maximum torque.*
	*The cylinder head can be disassembled by holding the cylinder head still with the self-centering vice, which will have 2 retaining pins for the cylinder head and we will then rotate the liner until complete disassembly.*

	*The cylinder head can be disassembled by holding the cylinder head still with the self-centering vice, which will have 2 retaining pins for the cylinder head and we will then rotate the liner until complete disassembly.*
	*The head will be blocked by the grip of the vice with a special grip surface and high blocking force.*

	*In the heads where we will have bolts, the operator will be able to use the pneumatic gun for disassembly with the possibility of setting the maximum torque.*
	*The cylinder head can be disassembled by holding the cylinder head still with the self-centering vice, which will have 2 retaining pins for the cylinder head and we will then rotate the liner until complete disassembly.*

The areas where dangerous repairs are carried out will be made safe by special mobile guards which will protect operators from the possible breakage of components during work operations.

It will be very important for us to study the total safety of operators at any stage of the repair process, from the first disassembly phase to the final testing phase.

Power Unit and Testing station MPC3

Object of the offer:

Offer for MPC-1 model machine with automatic execution of pressure tests, **with maximum pressure 500 BAR.**





5) MPC1 LITTLE HYDRAULIC TESTING MACHINE AND POWER UNIT FOR REPAIR BENCH DESCRIPTION





Description for testing machine produced in Total Test.

Total Test propose two type of testing machine:

1) MAX PRESSURE: 3000 PSI;

2) MAX PRESSURE: 5000 / 6000 PSI;

The difference from the two machine is for the max pressure for the test, the first model 3000 PSI hawe only the low / high pressure pump, the model of 5000 / 6000 PSI hawe low and hight pressure pump and in additional a very high pressure pump.

The machine will have 4 output pipes:

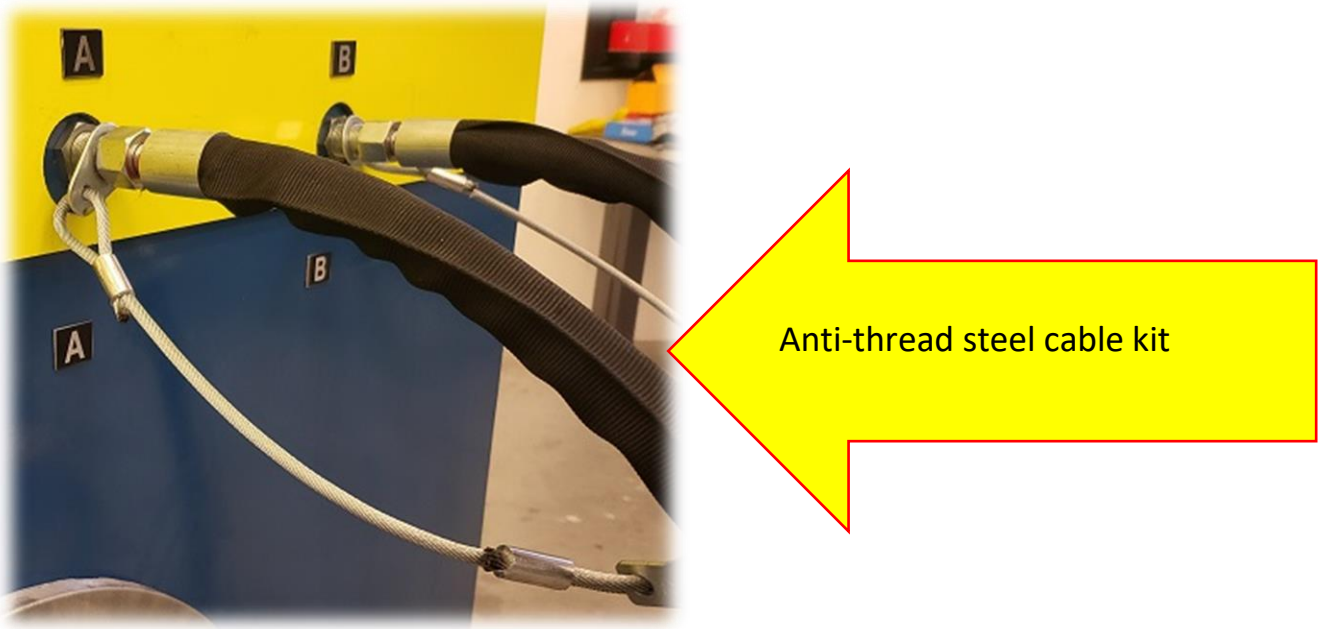
- 2 to control the “nutbuster” and repair bench command;

- 2 to be connected to the cylinder for testing operations;

The pipes to be connected to the nutbuster will be 3/8" in size and can work up to 3000 PSI.

While the pipes to carry out the tests will always be 3/8" in size and will be supplied in two different configurations depending on whether the machine needs to reach 3000 PSI or 6000 PSI.

All pipes will be supplied with a specific safety kit for the external seal of the pipe and the anti-slip steel cables:

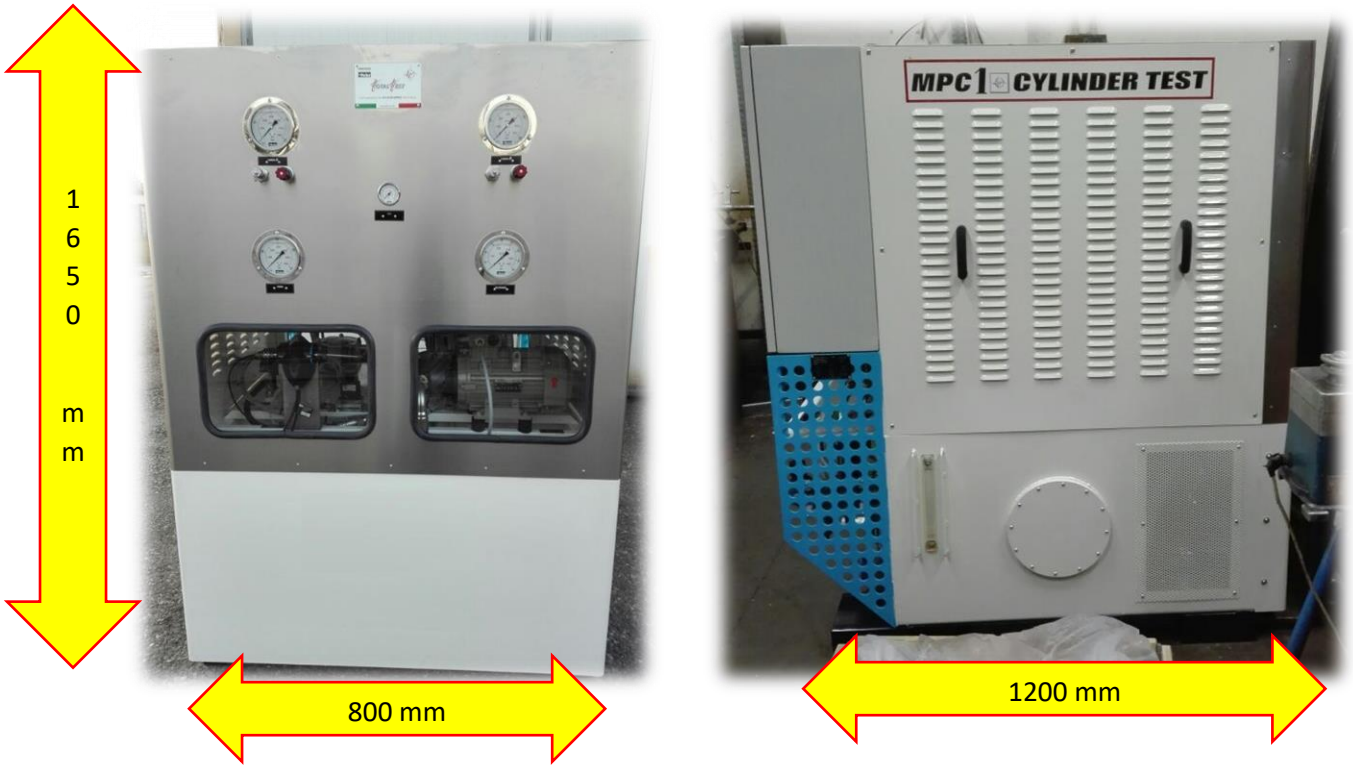


Both machines must have the following functions

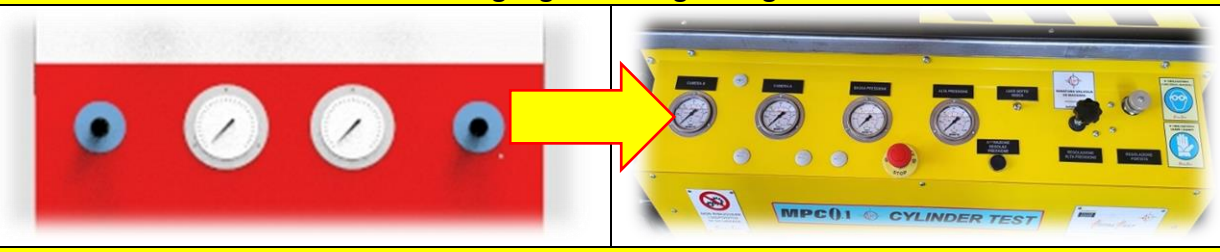
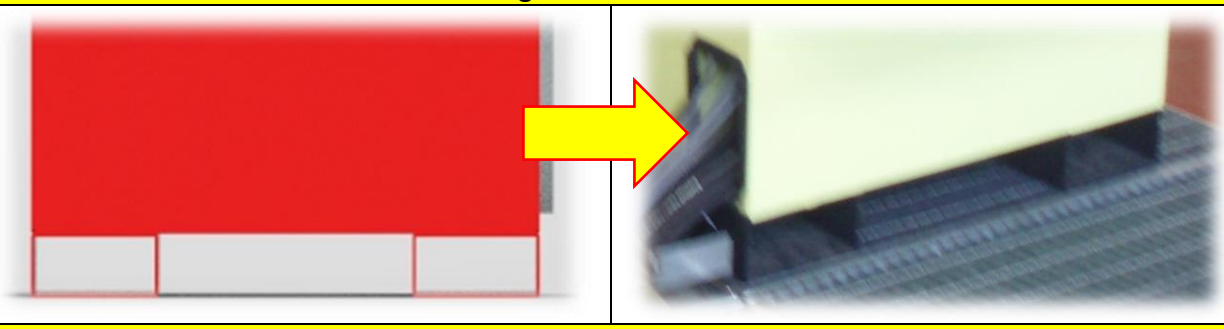
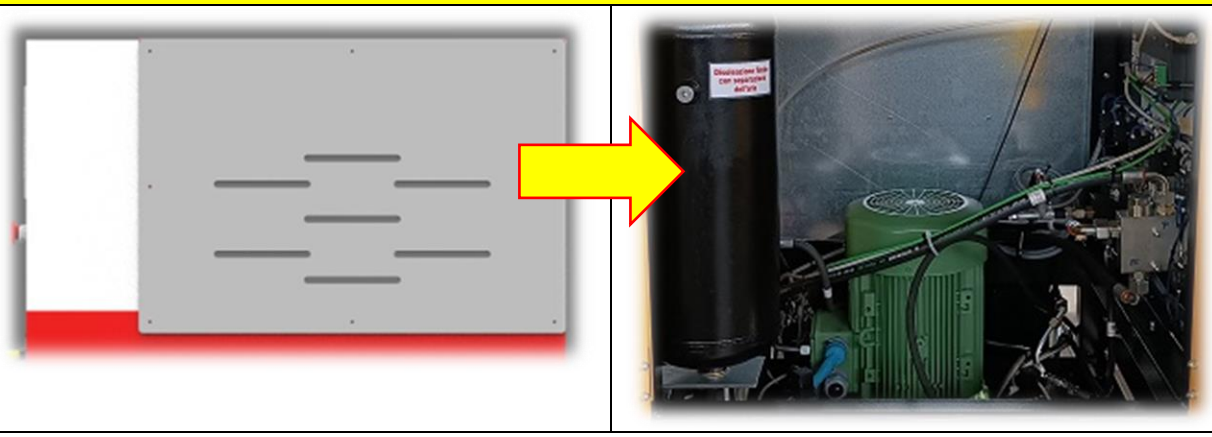
AUTOMATIC OIL TEST	
FUNCTION	**DESCRIPTION**
FLUSHING	LOW PRESSURE OPEN AND CLOSE OF THE CYLINDER
PRESSURE TEST	PRESSURE TEST UP TO THE HIGH PRESSURE SET WITH THE CYLINDER COMPLETE OPEN AND CLOSE
INTERMEDIATE LEAK TEST	PRESSURE TEST UP TO THE HIGH PRESSURE SET, WITH THE CYLINDER IN THE INTERMEDIATE POSITION OF THE CYLINDER, FOR CHECK IN THERE IS AN INTERNAL LEAKAGE
FINAL CLOSE WITH AIR	AT THE END OF THE TEST THE MACHINE COMPLETLE CLOSE THE CYLINDER WITH AIT IN CHAMBER B
TEST REPORT	AT THE END OF EVERY TEST THE MACHINE CREATE A DIGITAL TEST REPORT IN PDF FORMAT, WITH ALL THE TEST MADE AND ALL THE TEST RESULT
MANUAL OIL TEST	
SAME AS AUTOMATIC	IN MANUAL TESTING THE MACHINE WILL BE ABLE TO CARRY OUT THE SAME TESTS THAT ARE CARRIED OUT AUTOMATICALLY, THE OPERATOR WILL HAVE TO ACTIVATE THEM INDIVIDUALLY
TEST REPORT	**IN MANUAL TESTING, THE TEST REPORT WILL BE GENERATED BY A GRAPH THAT SHOWS THE PRESSURE/TIME TREND.**
NUTBUSTER CONTROL TUBES	
ELECTRICAL VALVE FOR CONTROL THE NUTBUSTER	IN THE MACHINE WE HAD AND ELECTRICAL VALVE WITH TWO SOLENOID, FOR CONTROL IN THE TWO WAY THE NUTBUSTER, IN THESE WAY THE FINAL CUSTOMER WITH THESE MACHINE CAN CONTROL ALSO THE REPAIR EQUIPMENT.

OPTIONAL TO BE CHOOSE	
AIR COMPRESSOR IN THE MACHINE	AN INTERNAL COMPRESSOR CAN BE ADDED TO THE MACHINE IF THE END CUSTOMER WILL NOT BE ABLE TO CONNECT HIS COMPANY'S AIR TO THE MACHINE
OIL CONTAMINATION READER	A CONTAMINATION READER MAY BE INSTALLED IN THE MACHINE WHICH DETECTS THE CLEANLINESS CLASS OF THE OIL IN THE MACHINE TANK

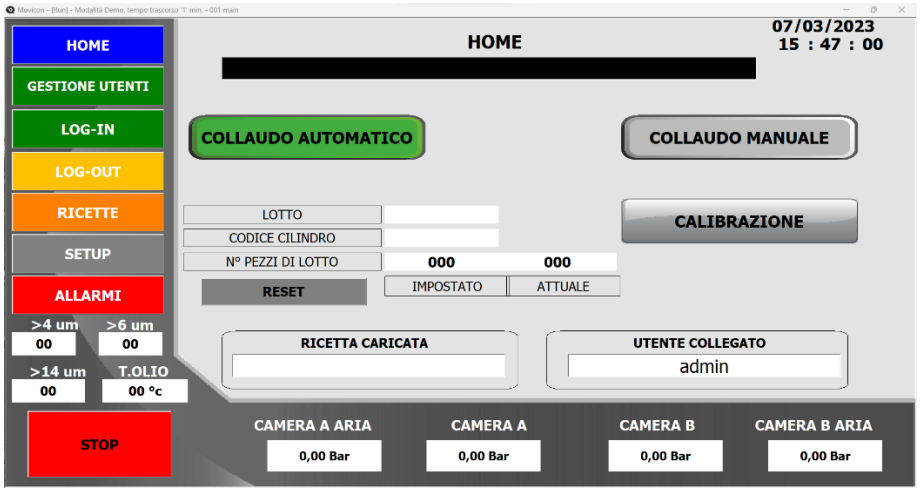
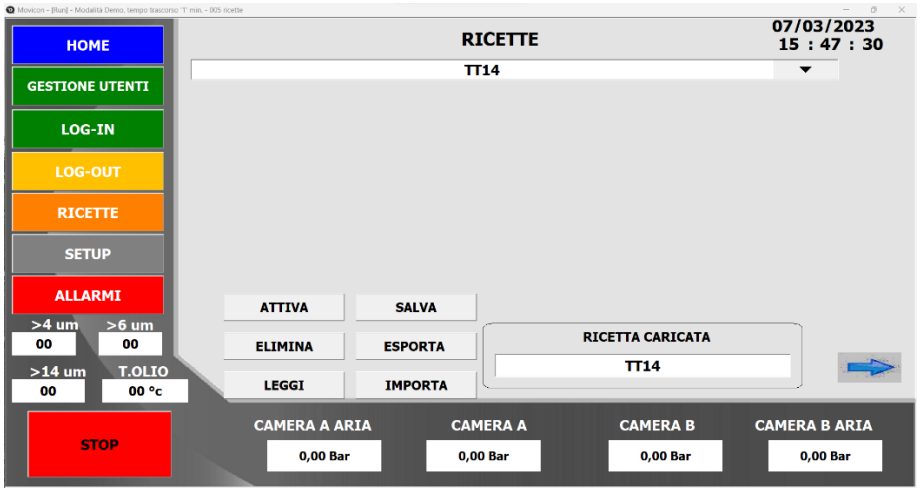
LAYOUT OF THE PROPOSAL MACHINE

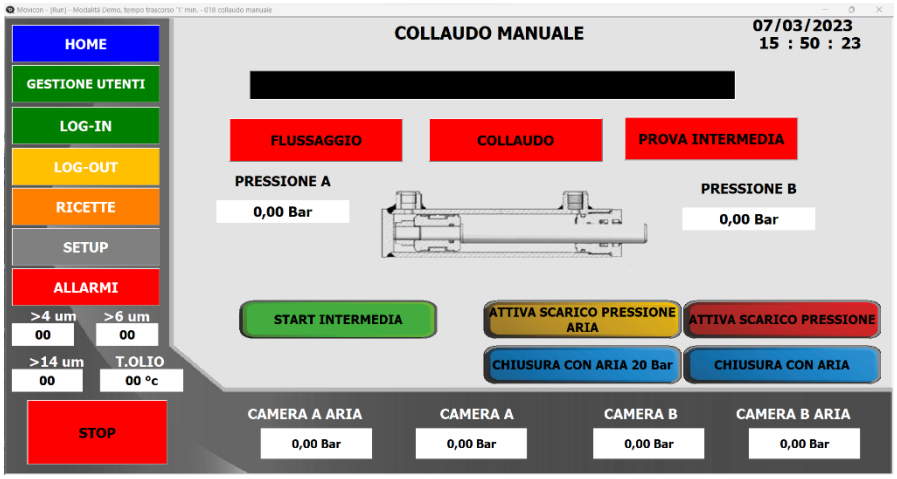
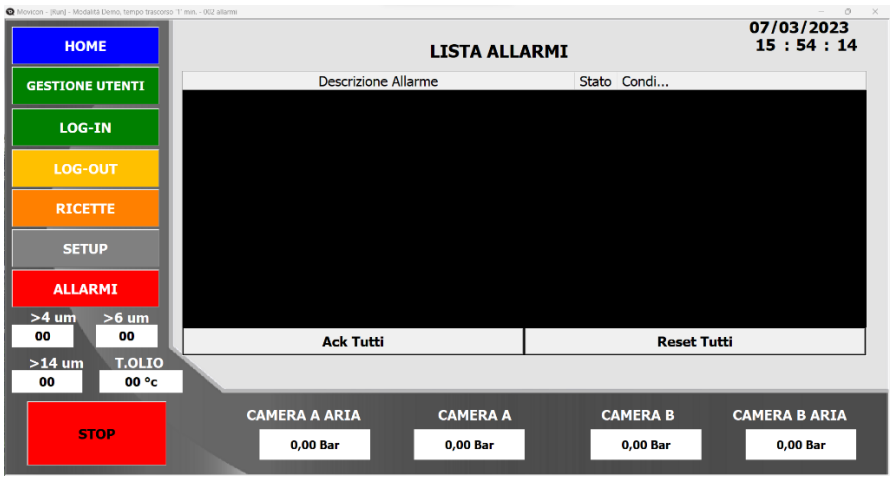


MONITOR TOUCH SCREEN

Pressure gauges and regulating valves

Lifting socket with forklift

Door for maintenance access


EXAMPLE SCREENS FOR THE COMMAND AND CONTROL PANEL

HOME PAGE	
TEST PROGRAM MANAGEMENT	
AUTOMATIC TEST EXECUTION	

MANUAL TEST EXECUTION	
MACHINE SETUP	
ALARM MANAGE PAGE	

TEST REPORT

The machine will create a report file in PDF format at the end of each automatic test, the file can be downloaded onto a USB stick and stored on the company PCs.

In manual tests, however, the machine will record the pressure trend for the duration of the tests performed; at the end of the tests, the machine will generate a file that can always be downloaded via USB:

REPORT DI COLLAUDO

ID ORIDNE DI RIFERIMENTO
CODICE CILINDRO

RICETTA DI COLLAUDO	PIPPO	
NUMERO LOTTO	0 DI	
TEMPERATURA OLIO	30	°C
NUMERO CICLI FLUSSAGGIO	2	
CLASSE DI CONTAMINAZIONE	-32768 : -32768: -32	
ESITO GENERALE POSITIVO	X	
ESITO GENERALE NEGATIVO		

COLLAUDO IN PRESSIONE CAMERA A

PRESSIONE MASSIMA	114.72	Bar
TEMPO DI COLLAUDO	15	Sec
DELTA P RILEVATO	1.32	Bar
ESITO INCERTO	X	
ESITO POSITIVO	X	
ESITO NEGATIVO		

COLLAUDO IN POSIZIONE INTERMEDIA

PRESSIONE MASSIMA	116.16	Bar
TEMPO DI COLLAUDO	20	Sec
ESITO POSITIVO	X	
ESITO NEGATIVO		

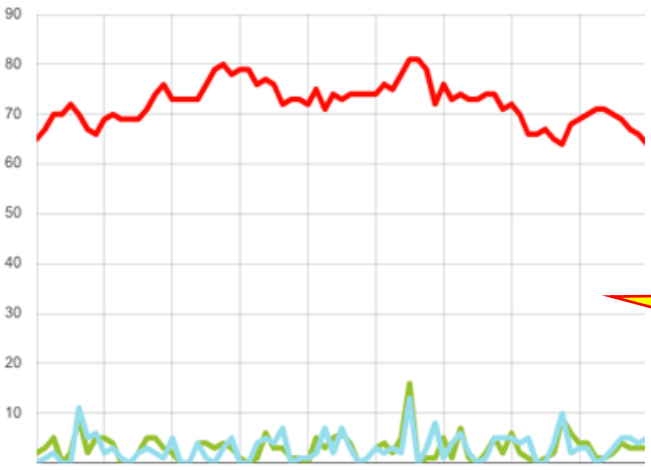
COLLAUDO IN PRESSIONE B

PRESSIONE MASSIMA	114.36	Bar
TEMPO DI COLLAUDO	15	Sec
DELTA P RILEVATO	3.72	Bar
ESITO INCERTO	X	
ESITO POSITIVO	X	
ESITO NEGATIVO		

DATA E ORA

DATA DI COLLAUDO	28/02/2023
ORA INIZIO COLLAUDO	16 : 26 : 34
ORA FINE COLLAUDO	16 : 35 : 42

EXAMPLE OF AN AUTOMATIC CYCLE TEST REPORT



EXAMPLE OF A MANUAL CYCLE TEST REPORT WITH GRAFH OF PRESSURE AND TIME

6) MPC3 BIG AND COMPLETLE AUTOMATIC HYDRAULIC TESTING MACHINE AND POWER UNIT FOR REPAIR BENCH







MPC-3 automatic cylinder testing machine, is a completle automated solution for testing little, medium and big cylinder.

These machine proposal can reach a max flow rate up to 120 lt/min and 450 BAR pressure test.

The software is similar to the Ukraine one we made and all the machine is completle automated in the control of flow, pressure and execution of the test.

We hawe also a PC inside the electrical BOX, usefull for make a digital connection from the machine to the customer company and in these way we can made an “easy and fast remote absistance”:



We wont to propose also two type of testing machine:

1) MAX PRESSURE: 3000 PSI;

2) MAX PRESSURE: 5000 / 6000 PSI;

The difference from the two machine is for the max pressure for the test, the first model 3000 PSI hawe only the low / high pressure pump, the model of 5000 / 6000 PSI hawe low and hight pressure pump and in additional a very high pressure pump.

The machine will have 4 output pipes:

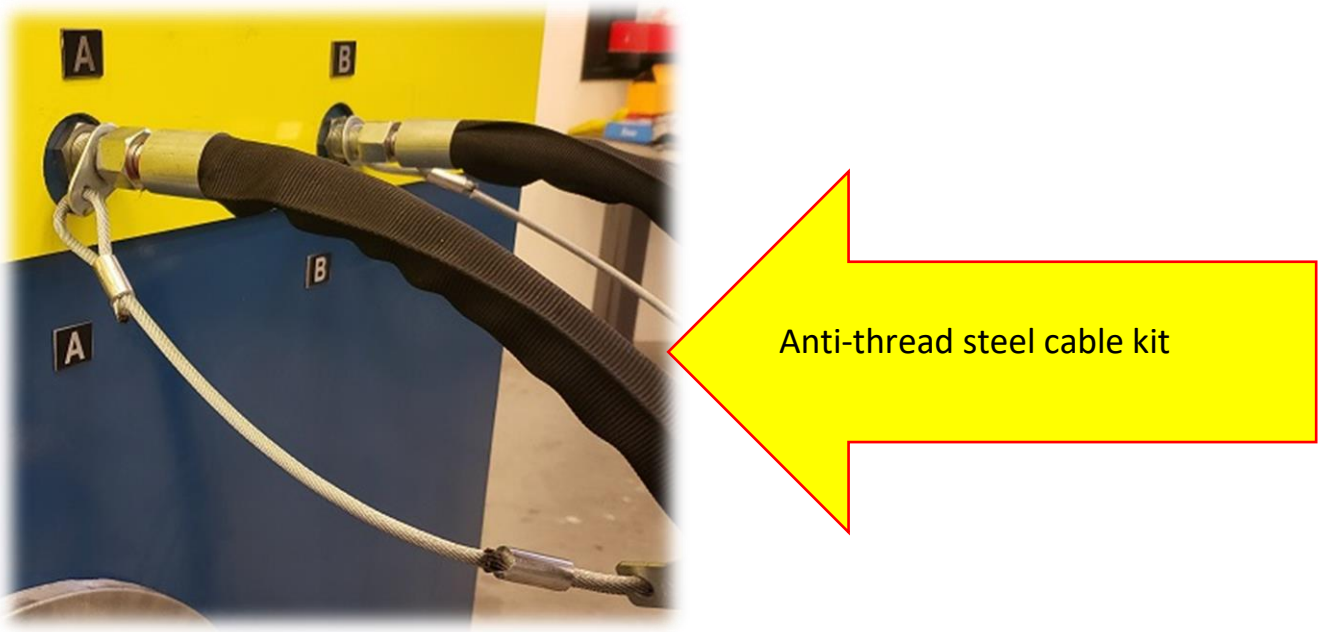
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The pipes to be connected to the nutbuster will be 3/8" in size and can work up to 3000 PSI.

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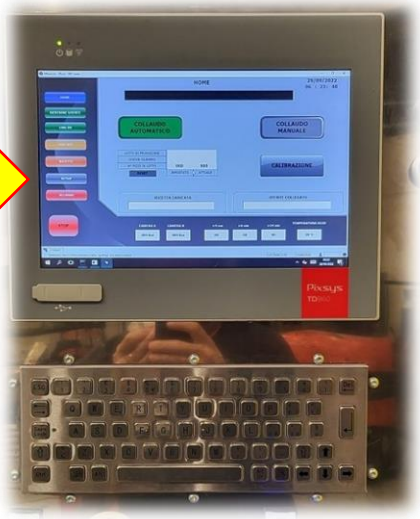
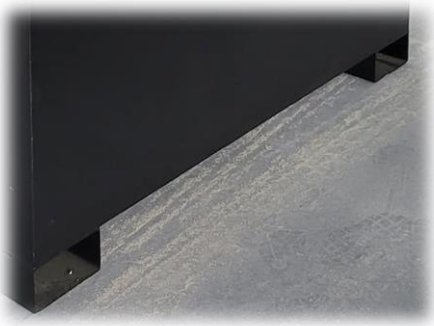
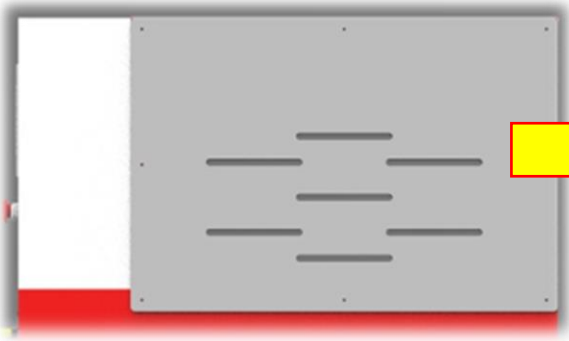
Both machines must have the following functions

AUTOMATIC OIL TEST	
FUNCTION	**DESCRIPTION**
FLUSHING	LOW PRESSURE OPEN AND CLOSE OF THE CYLINDER
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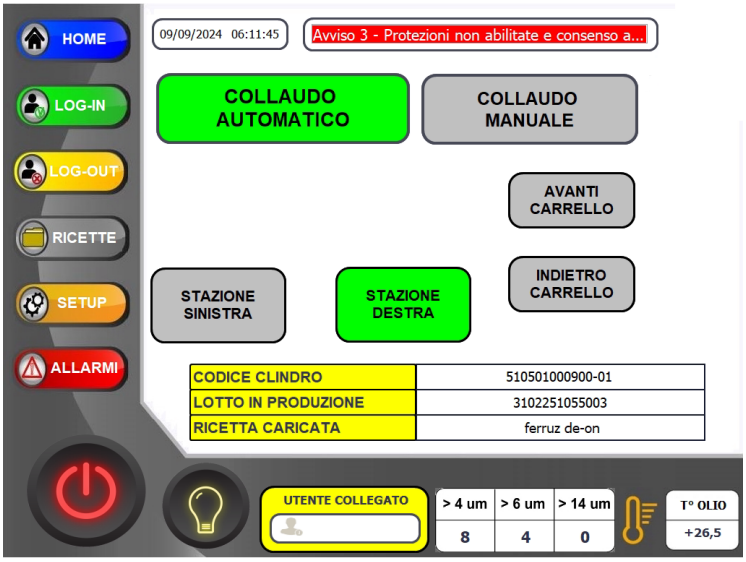
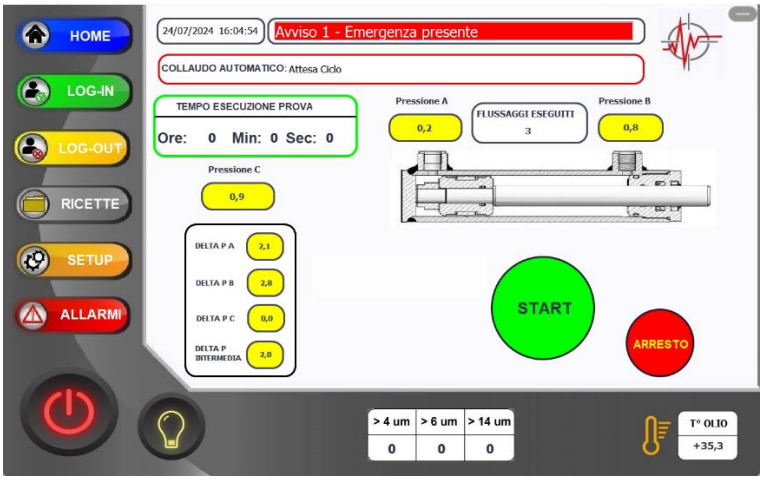
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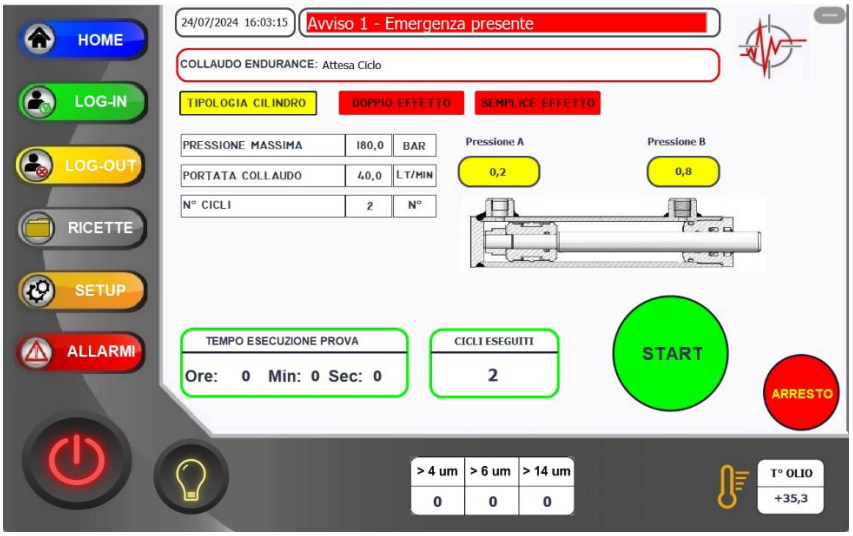
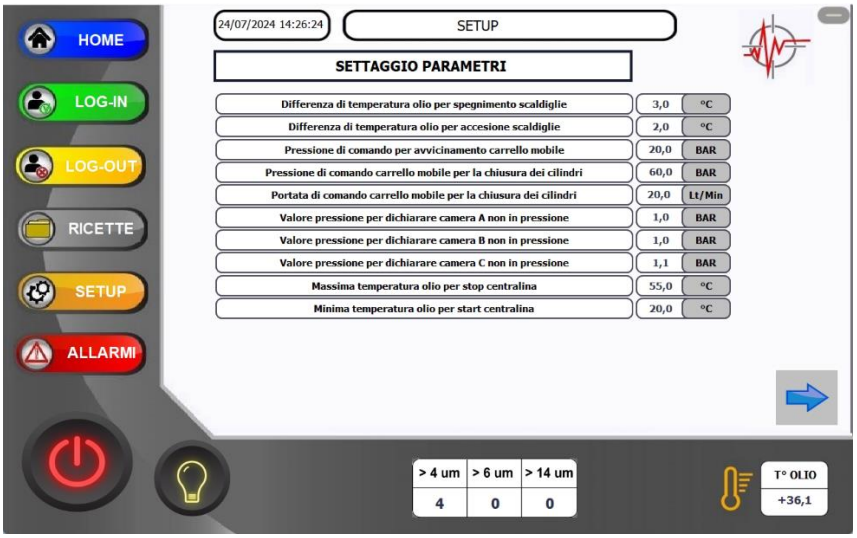
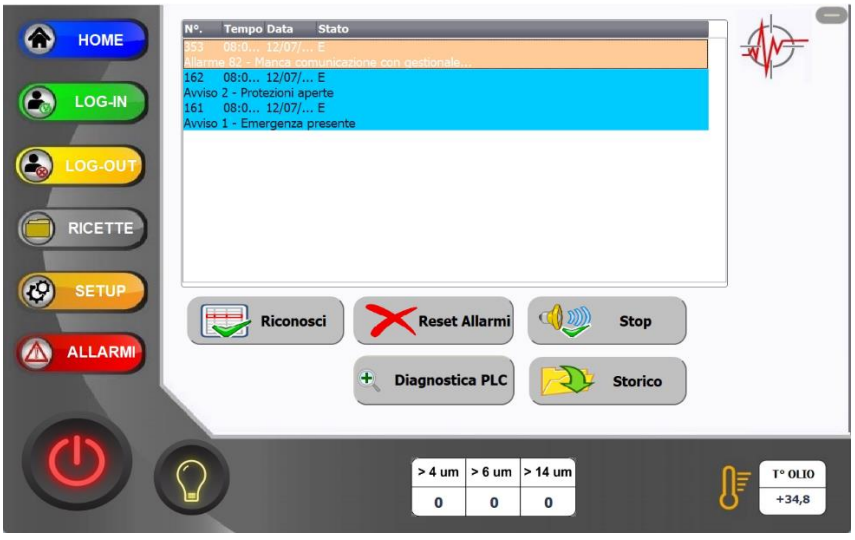
LAYOUT OF THE PROPOSAL MACHINE



MONITOR TOUCH SCREEN AND KEYBOARD	
	
Pressure gauges	
	
Lifting socket with forklift	
	
Door for maintenance access	
	

EXAMPLE SCREENS FOR THE COMMAND AND CONTROL PANEL

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CODICE CILINDRO

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TEMPERATURA OLIO	30	°C
NUMERO CICLI FLUSSAGGIO	2	
CLASSE DI CONTAMINAZIONE	-32768 : -32768: -32	
ESITO GENERALE POSITIVO	X	
ESITO GENERALE NEGATIVO		

COLLAUDO IN PRESSIONE CAMERA A

PRESSIONE MASSIMA	114.72	Bar
TEMPO DI COLLAUDO	15	Sec
DELTA P RILEVATO	1.32	Bar
ESITO INCERTO	X	
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ESITO NEGATIVO		

COLLAUDO IN POSIZIONE INTERMEDIA

PRESSIONE MASSIMA	116.16	Bar
TEMPO DI COLLAUDO	20	Sec
ESITO POSITIVO	X	
ESITO NEGATIVO		

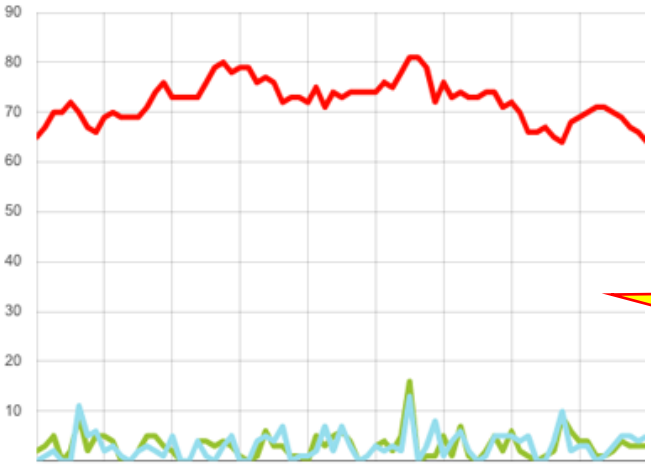
COLLAUDO IN PRESSIONE B

PRESSIONE MASSIMA	114.36	Bar
TEMPO DI COLLAUDO	15	Sec
DELTA P RILEVATO	3.72	Bar
ESITO INCERTO	X	
ESITO POSITIVO	X	
ESITO NEGATIVO		

DATA E ORA

DATA DI COLLAUDO	28/02/2023
ORA INIZIO COLLAUDO	16 : 26 : 34
ORA FINE COLLAUDO	16 : 35 : 42

EXAMPLE OF AN AUTOMATIC CYCLE TEST REPORT



EXAMPLE OF A MANUAL CYCLE TEST REPORT WITH GRAFH OF PRESSURE AND TIME