SAFETY MANUAL
USE AND MAINTENANCE

SPLITTING CYLINDER SP400-SP600

CE

TRANSLATION OF THE ORIGINAL VERSION

Rev. 6 11/2020

IMPORTANT

READ THIS MANUAL BEFORE USING THE TOOL

KEEP ALWAYS FOR FUTURE REFERENCES

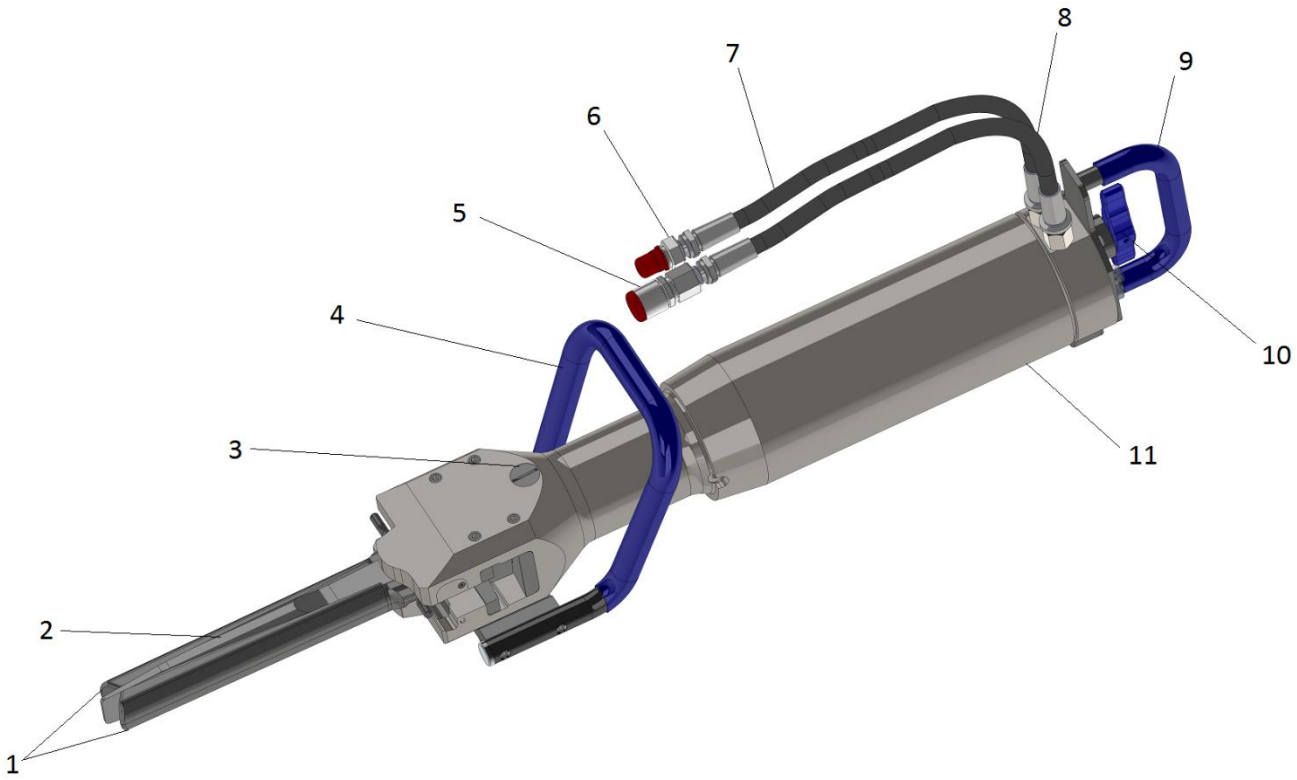
Index PAGE

PART LIST AND EXPLODED VIEW ARE ATTACHED TO THIS MANUAL IN A SEPARATE BOOKLET.

1 Safety Policy

TEHMA tools are designated and developed with the purpose to give the best result and performance when used properly.
Operator safety is one of the first aspect of the product design.
In order to avoid danger of injury, the equipment should only be operated by persons with appropriate training in the safety aspects and with a good knowledge of the equipment too.
It is therefore strictly necessary to read this user manual carefully and pay the utmost attention to the correct and prohibited uses of the tool and to all warnings regarding risks and dangers, before using the equipment.

2 Product Description



1 Counter wedges
2 Central wedge
3 Pin extraction cap
4 Handle
5 Quick-coupling female
6 Quick-coupling male
7 Low-pressure hose (Return)
8 High-pressure hose
9 Rear handle
10 Control cam
11 Hydraulic cylinder

3 Safety Norms

3.1 Prohibited uses

TEHMA tools have been designed exclusively for professional use for demolitions, industrial use and rescue. Any use other than those of this nature is therefore prohibited!

3.2 Risks connected with the use of the product

HUMAN RISK - DANGER

- Before to turn on the equipment, it must be ensured that nobody is endangered by its operations.
- When working close to live components and cables suitable measures must be taken to avoid current transfers to the equipment.
- Inspect the hoses and screwed connections for leaks and externally visible damage!
  Squirting hydraulic fluid can result in injuries, pay close attention and always wear gloves when handling the equipment and the hoses!

- When using the equipment, always wear the appropriate protections:
  - Gloves with a suitable thickness.
  - Helmet with protective visor.
  - Protective clothing for the limbs and the body.
- Please note that when crushing, tearing or breaking can cause falling material or sudden removal of such can cause it to catapult off.
- Always grab the tool in an appropriate manner to prevent it from falling over and injure someone.
- Hold the tool only by means of the handles.
- The transport and positioning of the SP600 cylinder in the hole requires two operators.

- Never hold the hoses in the hands, nor step on them when the tool is working and the hoses are under pressure.
- The hydraulic fluid contained in the equipment can be dangerous if swallowed or in direct contact with the skin.
- When boulders or large freestanding blocks of rock and concrete are split, the split pieces may fall to the ground, for this reason, never stand on or near the block and note in advance where the pieces may fall.
- During the splitting process, the splitting cylinder may jerk sideways suddenly. For this reason, avoid holding the tool and maintain a safe distance of at least one arm's length.
- During operation, never put hands on the tool body or on the hydraulic hoses.

DEVICE PROBLEM – CAUTION

- Inspect the equipment every time before and after the use for visible damages and defects.
  If necessary, with the machine stopped and disconnected, clean all the moving parts from dust and dirt.
- Before starting to use the equipment, start the power unit and let it run for a few minutes allowing the oil to reach the right temperature inside the circuit (control unit, pipes and the tool).
- Pay attention that during use, rock or concrete fragments do not get stuck between the contact surfaces of the wedges with the consequent risk that under the action of an enormous pressure, they may scratch the central wedge or the carbide layer of the counter wedges.
  Perform a quick visual check before each division cycle and accurate control during the greasing of the wedges.
- Do not use the tool as a hammer.
- Never use the tool as a lever when it is under pressure.
  The action of forces external to those deriving from normal operation, could cause serious damage to the internal components of the tool.

- Do not operate the tool if its counter wedges are not completely inserted into the drilled hole.
- During operation, make sure that the body or the handles of the device do not come into contact with the rock.
- Take the necessary measures to prevent the splitting cylinder from falling after the demolition, it should be secured e.g. with a rope attached to the handle.
- Do not use the wedge set as a chisel. It could get bent or snap off entirely.
- During breaks, switch off the equipment to prevent the oil from overheating unnecessarily.
- After use, place the tool on the ground making sure that no other object can hit the body or other parts of the tool.
- With use it may happen that the guide that holds the central wedge aligned with the tool axis is damaged and the wedge is no longer guided. To check this, remove the counter wedges, extract the center wedge and try to swing it. If this happens it is necessary to replace the monoblock with the guide (part no. 9 on the exploded view) as soon as possible.
- The maximum pressure noted at the end of this manual may not be exceeded.
- Any changes, additions or conversions to the equipment are prohibited and may result in loss of warranty!

RISK FOR THE ENVIRONMENT

- Remember that hydraulic liquids can have a negative effect on biological systems. Check regularly the device for leaks in order to avoid threats to the environment.
- Always dispose of exhausted hydraulic oil and any rags deriving from cleaning and maintenance operations, in an appropriate manner according with local laws.

NOTE: TEHMA is not liable for any damages resulting from improper use of the equipment or from modifications made to its products.

3.3 Hoses warnings

Hoses are to be inspected for previous damages always before the use. If necessary, they must be replaced. This operation is very important and the operator is responsible of this control for his safety and the correct working of the device.

When you connect the hoses to the equipment be very careful to:

- Do not bend the hoses.
- Do not connect twisted hoses.
- Do not drag or lay hoses across sharp edges.
- Avoid tensile load and torsion.
- Do not hang any weights on the hoses.
- Never bring the hoses into contact with brake fluid.
  (Make sure the hoses are always cleaned immediately if they come into contact with acids, alcohol, fuel, solvents, battery acids, phosphate ester and lyes.)
- Do not exceed the maximum pressure of 600 bar.
- Watch out for hairline cracks.
  (leaking high-pressure oil can involve in grave injuries!)
- Make sure that the hoses are at a safe distance from the jaws and moving parts of the tools.

3.4 Cleaning & Storage of hoses

Couplings must be always cleaned before and after every use of the device. Dust can be really dangerous if it comes into the circulation of the tool.

Make sure all the red dust protection caps are always put back on before to storage the hoses.
To avoid the premature aging store them in dry, cool and low-dust condition avoiding direct sunlight and UV rays.

4 Set Up

4.1 Tool Presentation

The TEHMA SP400 and SP600 concrete and rock splitter cylinder are professional tools designed for the construction industry, specially designed for demolishing rocks and big-thicknesses concrete structures as pillars, plinths, retaining walls, industrial floors, foundations.
The devices are particularly recommended in every situation where the work has to be done quickly, accurate avoiding as much as possible noise, percussion and vibrations that are usually the cause of structural damages and discomfort to the surrounding environment.
The operating principle is based on a hydraulic piston that drives a central wedge forward between two counter wedges, forcing them apart and into contact with the sides of the hole. This action generates an immensely powerful splitting force which establishes a split within seconds.

4.2 Equipment Check

Before starting to use the equipment, check it for external damages and leakages. This operation is very important and must be done before every use of the device.

4.3 Pump Unit Check

The pump unit must be switched off and set on unpressurised circulation before to be connected to the tool.

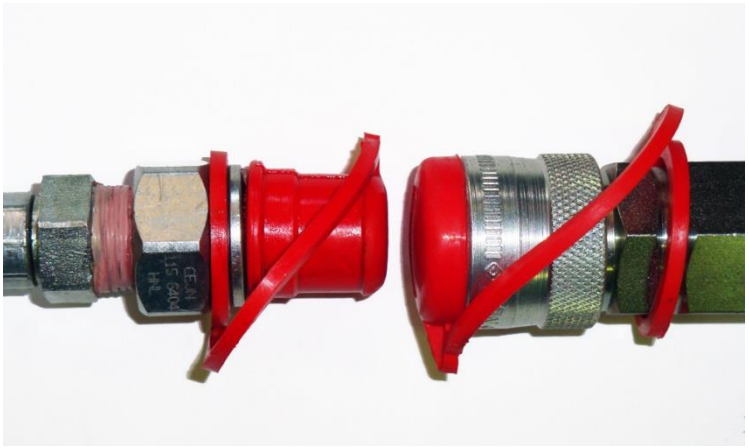
NOTE: It's very recommended to use the *TEHMA* power pack to drive the equipment. If the power unit is a different manufacturer, you have to ensure that it complies with *TEHMA* specifications in particular make sure the operating pressure of 60 Mpa (600 bar) is not exceeded otherwise potential dangers may occur are not the responsibility of *TEHMA*.

4.4 Connection of the equipment

On the side of the tool there are two short hoses. The one on the right ending with the female coupling is the high-pressure hose, the other one the return hose. They are connected to the power pack through one or more pair-extension hoses.
The position of the couplings enables unmistakable connection.
The device can be connected only if the hoses are depressurised.
Always connect first the return hose to the tool and disconnect it at final step.

Before coupling remove the dust, protection caps, then pull back the docking sleeve and hold. Connect coupling male and female and release the locking sleeve. The connection is now ready and secure. To decouple, carry out above in reverse order.

ATTENTION: the dust protection caps must put back on every time the hoses are decoupled.



4.5 First Use

The tool need to be prepared when used for the first time and after a repair. Connect it to the power pack and proceed advancing and retracting completely the central wedge twice without any load.
The device is now ready to work.

5 Work preparations

Before starting any operations, it is advisable to carry out several drilling and splitting trials to determine the correct arrangement of the holes.
If dealing with reinforced concrete, determine the thickness and locations of the steel rods, then assess the best positions for drilling and splitting.
To make demolition work faster and more cost effective, it is advisable keeping the maximum distance between the holes and having blocks of concrete or rock as large as possible commensurate with the load capacity of the transport vehicles employed.

6 Drilling

To permit the use of the hydraulic splitter, a hole must be drilled into which the splitting cylinder wedge and counter wedges can be inserted.
Holes can be made with a conventional, hand-held electric or pneumatic hammer drill, through a simple, straightforward process.
Where reinforcement is very tough or it is necessary to minimize dust, noise and vibrations (eg in hospitals, offices, etc.) it is advisable to operate with diamond tipped core drills.

6.1 Requisite drill-hole position

It is important to chose the correct position for the drill-hole to obtain satisfactory results.
If the hole is drilled at a shallower angle, too near the edge, or not perpendicular to and in the centre of the flat surface of the block of rock or concrete, only a small amount of material may be demolished.
The correct hole should be drilled at an angle of 90° - Fig. **A)**

6.2 Requisite drill-hole diameter

It is essential for the hole to be of the exact diameter for the wedge set.
If it is too small, the wedge set will not fit into it.
If it is too large, the gap between the wedge set and the sides of the hole will be excessive and the wedge will be unable to force the counter wedges against the sides of the hole with sufficient pressure to break concrete block.
The correct diameter is between 45-50 mm - Fig. **B)**

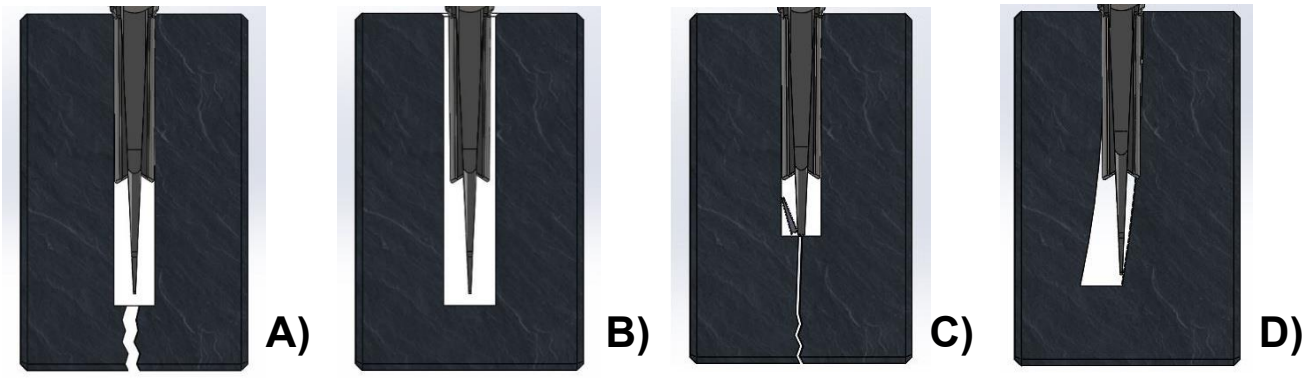
6.3 Requisite drill-hole depth

The drill-hole must be deep enough to allow for the wedge in extended condition, without fail.
If it is too shallow, the wedge will strike the bottom of the hole and possibly snap off.
The correct depth is 440 mm (SP400) / 640 mm (SP600) - Fig. **C)**

WARNING: always make sure of the correct size and straightness of the hole made using the aluminum tube supplied with the tool.
If it is not possible to fully insert the tube into the hole, do not use the device on this hole but drill a new more precise hole.

6.4 Drill-hole straightness

The drill-hole should be as straight as possible, otherwise the advancing wedge will strike the side of the hole, possibly bending the wedge set and causing it to snap off - Fig. **D)**



7 Correct Use

7.1 Safety warnings

ATTENTION: Before to start working with the equipment wear always protective clothing, gloves and safety helmet with visor.

7.2 Commands

1) Neutral position

The control cam is in the central position and the tool is set on unpressurised circulation.

2) Wedge extraction

Turning the control cam in a clockwise direction and keeping in this position the central wedge is extracted.

3) Wedge retraction

Turning the control cam in an anti-clockwise direction and keeping in this position the central wedge is retracted.

7.3 Direction of the split

The direction of the split can be readily determined in advance as it will be in the same direction as the upper handle of the splitting cylinder. The precise progression of the split, depends on the structure, hardness and quality of the rock or concrete.

7.4 Splitting process

A) Insert the splitting cylinder wedge set into the accurately drilled hole with the control cam in the neutral position and the central wedge fully retracted.

WARNING: the wedge set must be inserted into the hole to at least 3/4 of its length and preferably completely.

B) Set the control cam clockwise and move away.

WARNING: if the tool is inserted in a inclined hole and consequently does not work vertically, it is recommended to hold it parallel to the direction of the hole until the pressure in the circuit exceeds 200 bar.

C) The piston in the cylinder advances under hydraulic pressure, driving the wedge attached to it between the two counter wedges, forcing them apart. Once the material resistance is met, pressure in the system builds up to 60 MPa (600 bar).

D) Within a few seconds a split develops, thin reinforcing rods break off, while thicker rods are exposed in the gap.
This indicates that the splitting process has been successful.

E) As soon as the wedge is fully advanced, the cut-off valve on the TEHMA power pack relieves the pressure in the circuit, whereupon the pressure suddenly falls to about 70 bar.
Now it is possible to rotate the control cam in the opposite direction to retract the wedge.

ATTENTION: If you are not using a TEHMA pump unit, setting the control cam anti-clockwise with the tool under maximum pressure, can result extremely difficult.
For this reason, it is necessary to depressurize the system by setting the control valve lever of the pump to the neutral position or switching off the unit.

F) The crack should now be kept open with a wedge or similar object to prevent it from closing again when the splitting cylinder is removed from the hole.

G) Set the control cam anti-clockwise to retract the wedge

H) As soon as the wedge is fully retracted, the cut-off valve on the pump unit again relieves the pressure in the circuit whereupon the pressure suddenly again falls to about 70 bar.

I) The splitting cylinder can now be removed from the hole and the splitting process repeated in the next hole.

ATTENTION: when the split operations are completed or before a prolonged break, it is advisable to depressurize the hydraulic system by switching off the pump unit or at least setting the control valve lever to the neutral position, otherwise the hydraulic fluid in the system will overheat.

7.5 Installing the enlarging counter wedges

The initial split can be further enlarged enlarged by replacing the normal counter wedges with thicker enlarging counter wedges, a quick, straightforward process.
After the initial split:

- **A)** Place the divider cylinder on a flat surface with the central wedge fully retracted.
- **B)** With a screwdriver lift one of the clasps that holds the counter wedge until it clicks into place.
- **C)** Replace one of the two standard counter wedges with an enlarging wedge.
- **D)** Reposition the clasp that holds the counter wedge.

Now is possible perform a new splitting process by increasing the width of the initial split.
Successively, replace the second counter wedge repeating points A) - D) on the other side and repeat the split process to enlarge the split to its maximum width.

8 Combined uses

Using the MM30 three channel multiplier module, a single hydraulic unit can operate from 2 to 3 splitting cylinders simultaneously depending on the model

8.1 Enlarging splits with CS350 combi-shear

The TEHMA CS350 Combi shear can be used to enlarge a split which has already been widened with standard or special enlarging counter wedges. Blocks of concrete or rock can be forced apart or lifted to a maximum distance of 360 mm.

8.2 Cutting reinforcing rods with CS350 combi-shear

The TEHMA CS350 Combi shear can also be used to cut reinforcing rods that have that have not been broken off during the splitting process, remaining exposed in the gap.
Reinforcing rods can be cut to a maximum diameter of 23 mm.

8.3 Split with multiple splitting cylinders

If the blocks to be demolished are particularly large or hard, one splitting cylinder may not be enough.
In which case two or more must be used simultaneously and the cumulative split force will be equal to the force of one splitting cylinder (375t theoretical) multiplied by the total number of cylinders.

This use can be helpful even if an unusually long, precise fracture is required. (e.g. part of a large structure is required to remain standing, necessitating an accurate split.)

ATTENTION: the handles on all the splitting cylinders arranged in a row must face in the same direction to ensure a uniform split.

9 Use & Maintenance

9.1 Visual Check

- Existence of external damages on the body of the device
- Signs of wear and tear on the flat surface of the counter wedges
- Signs of wear and tear on the flat surface of the central wedge

- Good operating of the control cam
- Existence of damages or leaks on the hoses
- Availability of the dust protection caps

9.2 Lubricating the wedge set

During the splitting process, exceptionally high forces act on the wedge and counter wedges.
For this to take place with only negligible friction losses, the contact faces of the wedge set must be regularly lubricated with the grease provided. This lubricant is capable of withstanding the extreme friction and heat generated by the splitting process and consequently to reduce friction losses to the requisite extent.
WARNING: If the special grease used comes from a different manufacturer, it is necessary to ensure that it complies with TEHMA specifications.

A) With a screwdriver or similar, spread the wedge and one counter wedge apart to gain access to the contact faces, then insert something to keep the space between the wedges.
B) With a spatula, apply a thin, even coating of lubricant to the contact faces of the wedge and counter wedge.
C) Repeat this process with the second counter wedge.

WARNING: Apply lubricant after approximately 3-5 splitting processes at the latest, or sooner if working on very hard rock or heavily reinforced concrete.

A)

B)

C)

9.3 Function Check

Every 350 operating hours or in case of doubt regarding the safety and reliability of the equipment, a function check can be performed to verify the existence of problems or damages.
Proceed advancing and retracting completely the central wedge twice without any load, the movement has to be flawless, without any jerks or suspicious noises.

9.4 Deactivation and storage

Once the work has been completed, the central wedge must be retracted at the level of the counter wedges.
The device has to be cleaned from the dirt which may have become attached during the use. It is recommended a complete lubrification of all the mechanics and mobile parts especially if the equipment is to be stored for a long period.

ATTENTION: never store the tool with the central wedge fully extended or retracted to avoid dangerous tensions on the internal mechanical parts.

9.5 Cleaning & Storage of hoses

Couplings must be always cleaned before and after every use of the device. Dust can be really dangerous if it comes into the circulation of the tool.
Make sure all the red dust protection caps are always repositioned before to storage the hoses.

To avoid the premature aging store them in dry, cool and low-dust condition avoiding direct sunlight and UV rays.

9.6 Changing the Hydraulic Fluid

The hydraulic fluid inside the tool must be changed after 300 operative hours, after two years at least and every time the hydraulic fluid inside the pump unit is changed to prevent the fresh fluid from becoming contaminated by the used one inside the tool.

E) Proceed advancing completely the central wedge.
F) Change the the fluid of the pump.
G) Screw off the return hose in the proximity of the nut before the quick coupling and put it into a separate collecting basin.
H) Fully retract the central wedge slowly enabling the old fluid running via the return hose into the basin.
I) Reconnect the return hose.
J) Deaerate the splitting cylinder

ATTENTION: Respect the environment the old hydraulic fluid is to be disposed according to principles of environmental protection and international norms.

9.7 Tool Disposal

- **THE HYDRAULIC OIL**
- **THE FLEXIBLE HOSES**

Are DANGEROUS WASTES that must be disposed of according to the local regulation of your country

ATTENTION: don't throw away liquids and materials of the above-mentioned list. The infringement of the rules regarding the disposal of dangerous wastes implies legal responsibilities.

Also, the storing and purchase/sales of the materials of the above-mentioned list have to be run according to the specific regulation.

For information about the handling and disposal of the dangerous wastes contact the Environment department of your local municipality.

At the end of their life, all components of the machine must be separated and disposed of in compliance with the laws in force in your country.

Except for the liquids and materials of the previous list, the other components of the products manufactured by TEHMA are fabricated with recyclable materials that can be stored, disposed and scrapped without particular cautions.

Materials and components used by TEHMA do not contain asbestos or other elements that require special caution for their use.

10 Repairs

All the mechanic components working inside the device are subject to a very high-mechanical stress and they must be checked after 150 operative hours at latest.
Nevertheless, appearances of attrition or wear can be detected early avoiding breakages by timely replacement of these worn parts.
Servicing may only be carried out by the manufacturer or personnel trained by the manufacturer and by the authorised *TEHMA* dealers.
Only *TEHMA* spare parts may be used to replace all components.

ATTENTION: Before to proceed to with repair works ensure the complete cleanliness of all components and the device.
Tools appropriate for the job and protective clothing are essential.

11 Problems & Resolutions

PROBLEM	CHECK	CAUSE	SOLUTION
Equipment doesn't work with the full power	Dose the pump unit work properly?	Too little hydraulic fluid in the system	Top up hydraulic fluid and deaerated the device.
	Is the hydraulic fluid above minimum level?		
Central wedge moves slowly or jerkily when activated	Dose the pump unit work properly?	Possible air in the hydraulic system	Deaerate the device
	Are the hoses connected properly?		
Hoses cannot be coupled	Hoses cannot be coupled	The hoses are pressurized	The pump unit must be switched off and set on unpressurised circulation.

Damage or decomposition on the surface on the hoses		Scratch or possible contact with aggressive agents.	Replace hoses.
Leaks from the hoses or connections	Can you tighten more the connections?	Possible damage	Replace the hoses.
	Are the hoses defective?		
Leaks from the couplings	Are the couplings connected properly?		Replace the coupling with TEHMA spare part.
	Is the coupling damaged?		
Leaks from the piston rod		Piston damaged	Repair by an authorised dealer or TEHMA itself.
		Defective rod seal	

If the malfunctions can't be resolved, please inform an authorised TEHMA dealer immediately.

12 Technical Data

SPLITTING CYLINDER SP400-SP600		
Model	SP400	SP600
Dimensions L x W x H (mm)	1035 x 195 x 195	1330 x 195 x 195
Splitting distance (mm)	17	17
Weight (hydraulic fluid included) (kg)	24.8	36.8
Noise level (dB)	<70	
Operative Pressure (Mpa)	60 (600 bar)	
Operating Fluid	MOBIL DTE 10 Excel 32 Engler	
Special lubricant for the wedges	Kluberpaste 46 MR 401	

13 Warranty

- All parts produced by TEHMA are guaranteed for a period of twelve months from the date of delivery to the final customer, against defect of: material, workmanship-assembly. Cost of labour and transports are not covered by warranty and should be paid by the customer. Parts and complete components not produced by TEHMA such as engines, compressors, alternators, etc., are covered by the warranty of the manufacturer.
- Batteries of power packs and “worn out“ accessories, such as quick couplers, spare wedges, flexible hoses or other accessories that have not an identification number, are covered by a warranty of three months from the date of delivery to the final customer.
- TEHMA reserves the right to substitute only those parts recognized to be defective after an inspection of TEHMA engineers under warranty at its own expenses and in its own plant. If the repairs during the warranty period are performed by the customers, TEHMA will reject any charge for labour expenses.

The warranty will be automatically voided if:

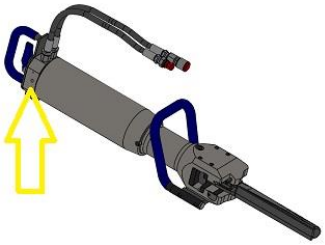
- Repairs are performed using non original, adapted or modified parts.
- The maximum hydraulic values of pressure, back pressure and flow are exceeded, or the filtration and other operative conditions of the hydraulic circuits are inadequate to power TEHMA tools.
- If the tool has been modified or used in excessive heavy applications or different from its natural applications.

In any case the warranty excludes any redraft or reimbursement for damages of any kind and there are no other explicit or implicit warranties besides the above mentioned one.

For additional information please read carefully the document "Warranty and general sales conditions" attached to this manual in a separate booklet.

FOR ANY CONTROVERSY, THE COMPETENT COURT IS IN LUGANO-SWITZERLAND.

14 Label



15 Manufacturer and European authorised representative (E.A.R.)

Manufacturer: ***European authorized representative (E.A.R.):***

TEHMA SA
Vicolo Concordia 1, 6932
Lugano - Breganzona, Switzerland

Virgilio Tentori Srl
Via Belfiore 31/D, 23900
Lecco, Italy

16 Fac-simile EU declaration of conformity

VIRGILIO TENTORI srl

DICHIARAZIONE CE DI CONFORMITÀ
DIRETTIVA 2006/42/EC

Noi Virgilio Tentori Srl nella qualità di mandatario, per conto della ditta TEHMA SA, Lugano (CH) dichiariamo sotto la Ns. esclusiva responsabilità che la macchina sotto descritta:

DENOMINAZIONE:	*CILINDRO DIVISORE*
TIPO:	*"SP400"*
NUMERO DI MATRICOLA:	SP4-XXX
ANNO DI COSTRUZIONE:	2020

è conforme ai requisiti essenziali di sicurezza previsti dalle seguenti disposizioni legislative:

Direttiva 2006/42/CE e successive modifiche ed integrazioni (Direttiva macchine);

Sono state inoltre applicate le seguenti norme:

UNI EN 12100
EN ISO 4413

UNI EN 13857

Galbiate: 15/01/2020

Il legale Rappresentante e custode e detentore del F.T.
Virgilio Tentori

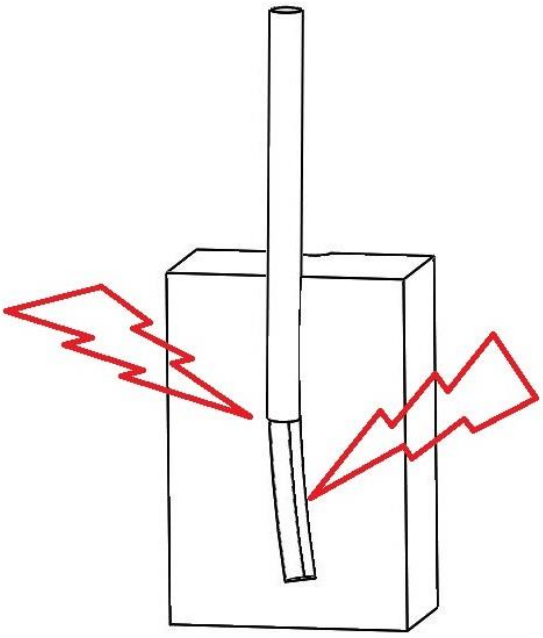
Start Up / After Work Procedure Check List - Rev. 7-2020

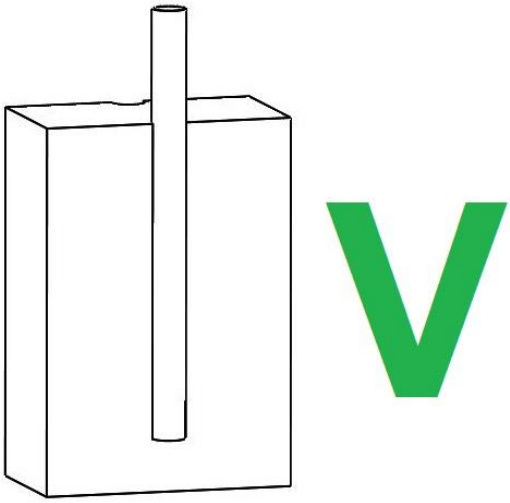
Start Up

No	Description	Checked
1	Remove the equipment from the cases and place them on the ground, being careful that the surface is free from hindrances. **Note**: The power unit must be placed horizontally, in a ventilated place.	
2	Inspect the equipment every time before use for visible damages / defects.	
3	Inspect the hoses and screwed connections for leaks and externally visible damage. Squirting hydraulic fluid under pressure can result in injuries!	
4	Connect the tool with the hoses and finally with the power pack making sure each quick coupling is correctly coupled and firmly held.	
5	Ensure hoses are not bent or twisted. Inspect to watch out for hairline cracks on the hoses.	
6	Move the flow lever of the power unit to a central - neutral position.	
7	Connect the electric plug (electric model only)	
8	Start the power unit and let it run for a minute allowing the oil to reach the right temperature.	
9	Select the channel where the tool is connected and let the equipment run for a further 2 minutes in order to allow the tool and the seals to reach the right temperature.	
10	Run a few complete cycles, being careful that pressure never exceeds 100~150 bar at the maximum opening / closing of the tool jaws / the central wedge (hydraulic model).	

After Work

No	Description	Checked
1	Inspect the equipment and hoses every time after use for visible damages / defects / cracks.	
2	Move the flow lever to a central - neutral position and turn off the power pack.	
3	Place the tool on a surface free from hindrances.	
4	Clean the tool from powder and debris.	
5	Clean the hoses, and couplings from powder and debris.	
6	Grease all pins including that central under the “grease” cap.	
7	Run a few complete cycles, being careful that pressure never exceeds 100-150 bar at the maximum opening / closing of the tool jaws.	
8	Perform a final cycle, being careful to not leave the jaws / the central wedge (hydraulic splitter) at the maximum opening / closing in order to avoid possible tensions on the internal components.	
9	Disconnect the tool and ensure reposition the red safety caps on the quick couplings.	
9	Lay the equipment in the cases and store them in a dry place.	

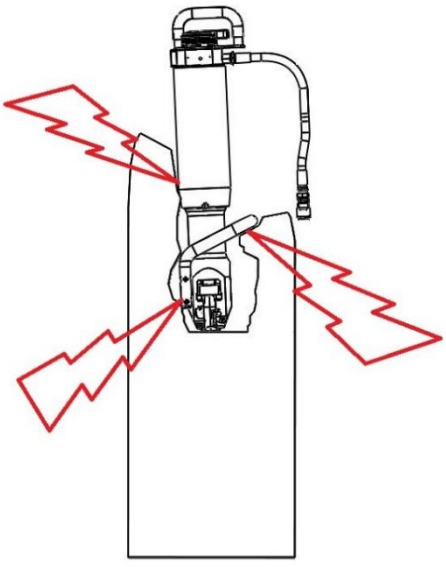


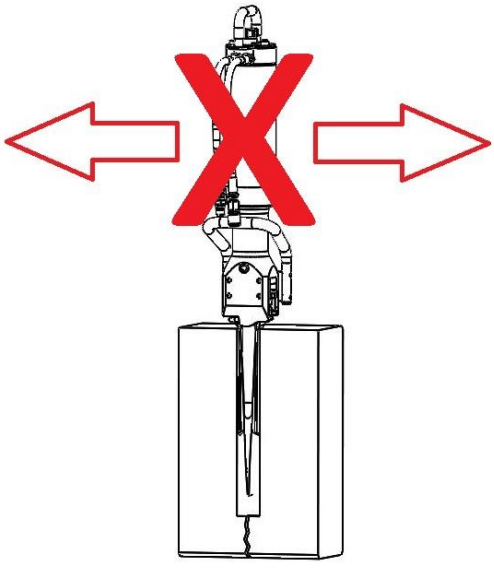


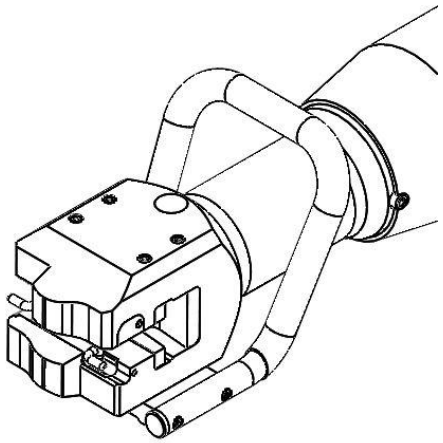
DEVICE PROBLEM – CAUTION

USE THE ALUMINUM PIPE SUPPLIED TO CHECK THE CORRECT SIZE AND SHAPE OF THE DRILLED HOLE BEFORE INSERTING THE TOOL!

MAKE SURE THAT NO PART OF THE TOOL, WITH THE EXCEPTION OF ITS WEDGES, COMES INTO CONTACT WITH THE ROCK DURING ITS USE.







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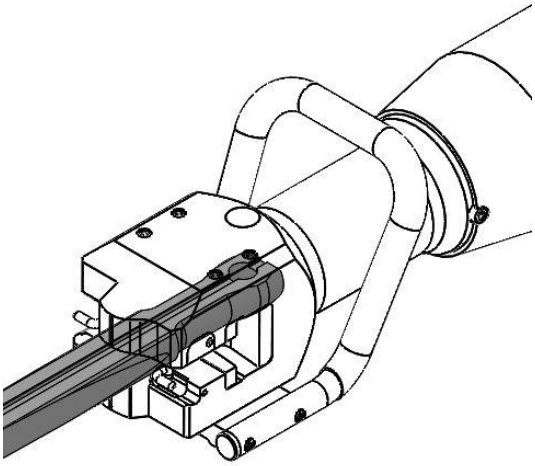

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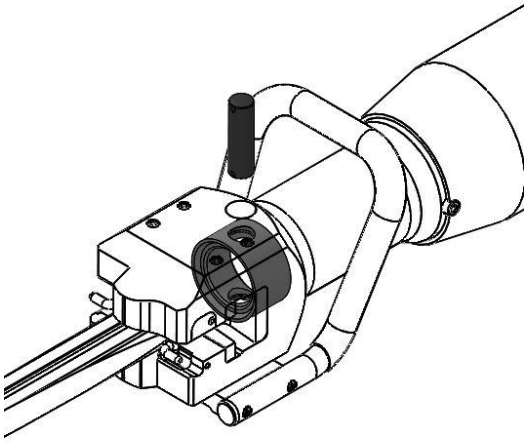

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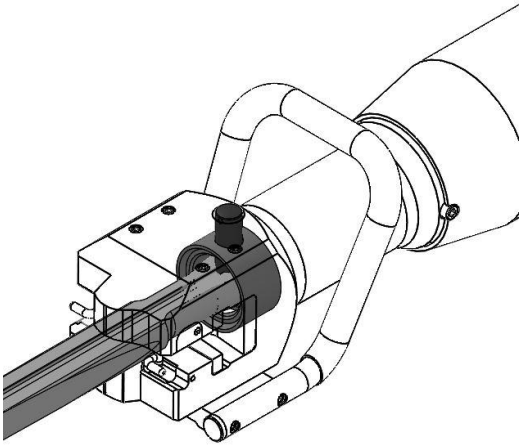

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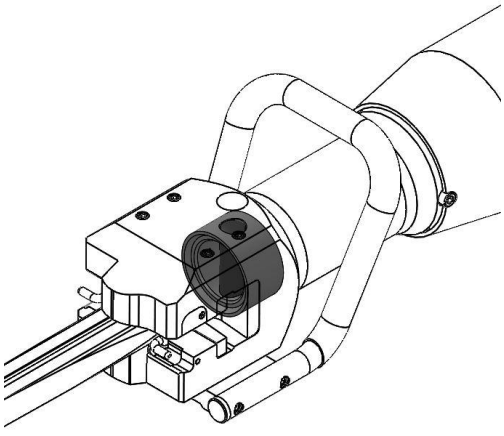

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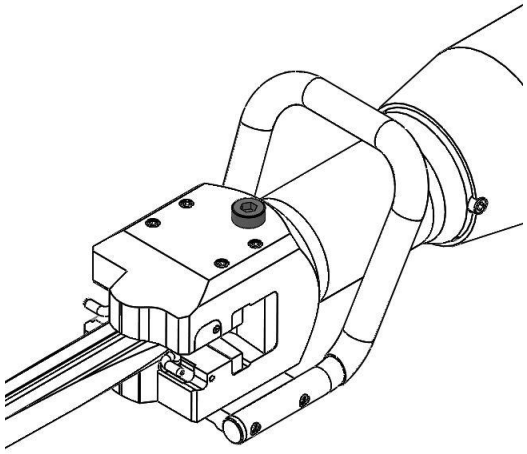

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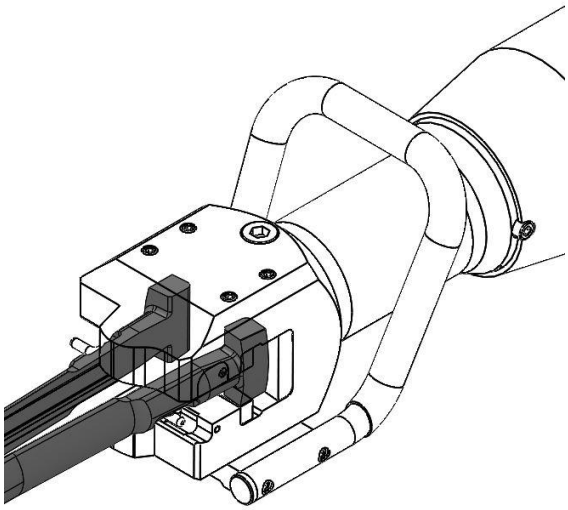

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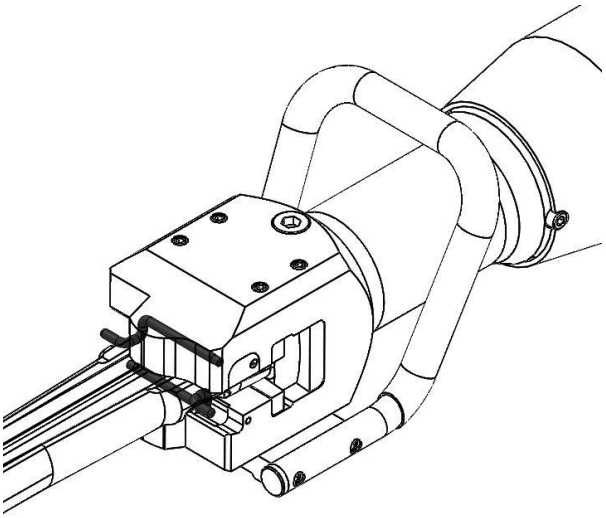

8

DEVICE PROBLEM – CAUTION

MAKE SURE THAT THE PIN IS PERFECTLY SEATED AND DOES NOT PROTRUDE FROM THE GUIDE RING