

Operating Instructions

Hydraulic hole punch

HLS 85 S



HLS 85 S

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Imprint

Product identification

Hydraulic hole punch

HLS 85 S

Item number: 3818085

Manufacturer

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Information about the operating instructions

Genuine operating instructions

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Subject to technical modifications and changes.

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GENERAL NOTES

1. Introduction

Thank you for choosing this Metal Working Machine. We are proud to have you in our long list of satisfied customers all over the world.

This User's Manual is absolutely for your safety and is essential for the machine to have a long production life. As long as you keep up with our Manual you will be able to run your machine smoothly and safely. Keep in mind that the machine is designed absolutely to perform maximum safety and for efficient working.

In this Manual you can find instructions and information about:

- *Correct installations of the machine*
- *Description of the functional parts of the machine*
- *Set-up and start-up adjustments*
- *Correct standard and scheduled maintenance*
- *Simple safety regulations and accident prevention.*

Therefore, as far as the user's safety is concerned, in this handbook the possible risks connected with machine operation are pointed out as follows:



Attention: *Showing the risks of accident, if instructions are not followed.*



Warning: *Showing the probable damages to the machine or equipment, if the instructions are not strictly followed.*



Note: *It gives useful information.*

It is certainly necessary that the operator should read and understand all the Attention, Warning, Note specified in this Manual before starting with operation of the machine and before any lubrication or maintenance intervention.

On all steps of installation, operation and maintenance safety must be your first concern for the protection of yourself, other users and the service of the machine. In case of any failure please first refer to this Manual, and then if a solution cannot be found contact first of all the distributor where you purchased our product. Do not forget to refer to the drawings and the numbers for any spare part needed or to define any problem. Make sure you have the serial number and production year of the machine.

Our technical staff will make their best to help you in the most convenient way.

2. Transport

As soon as you receive the machine, check for any visible transport damages. Should there be any visible damages; report it straight away to the transporter company and of Stürmer Maschinen GmbH.

Remove any protective crates around the machine and read the instructions on related chapters of this Manual carefully to set up the machine. If the machine is damaged while transport, **immediately take some photographs for insurance claims.**

Take precautions while loading / unloading or moving the machine to avoid any injuries. Refer also to related chapter of this Manual for the best way of handling the machine.

3. Electrical Information

All necessary connection procedure can be found on this Manual. Do not try to connect the machine before reading these procedures and fully understanding the drawings. For any unclear matters get in touch with us or our distributors. Have the machine connected by a qualified electric technician. For, as we made clear in the “general conditions of guarantee”, under no circumstances installing mistakes, including electrical connection mistake, can not be covered by guarantee agreement. Always turn off power before making any connections or disconnecting the machine.

4. Maintenance

Your machine is designed and produced to work efficiently and smoothly. To achieve this you should also take care while operating the machine. Regard Maintenance sections to have the longest life from your machine. Try and use original spare parts where necessary and most importantly do not overload the machine or do not make any unauthorized modifications.

5. Safety

Take all precautions possible to avoid any personal injury while using the machine. Keep in mind to protect the third party people around the machine. Refer to safety directives.

WORK STATION

PUNCHING STATION

All punching operating are processed by means of hydraulic power thus giving the machine the ability to punch very efficiently and silently. It can either be used to punch thick materials or thin materials in layers together. Punching is silent, powerful, efficient. The waste materials in layers together. The punching table consists two parts. First is the punching flange. The second is holder. The holder is a device that holds the material after punching not to come back with the punch. It must be equally adjusted or it can break the punch. There are different holders for different materials. However the standard holder which we supply is suitable for punching is between 6-38 mm.

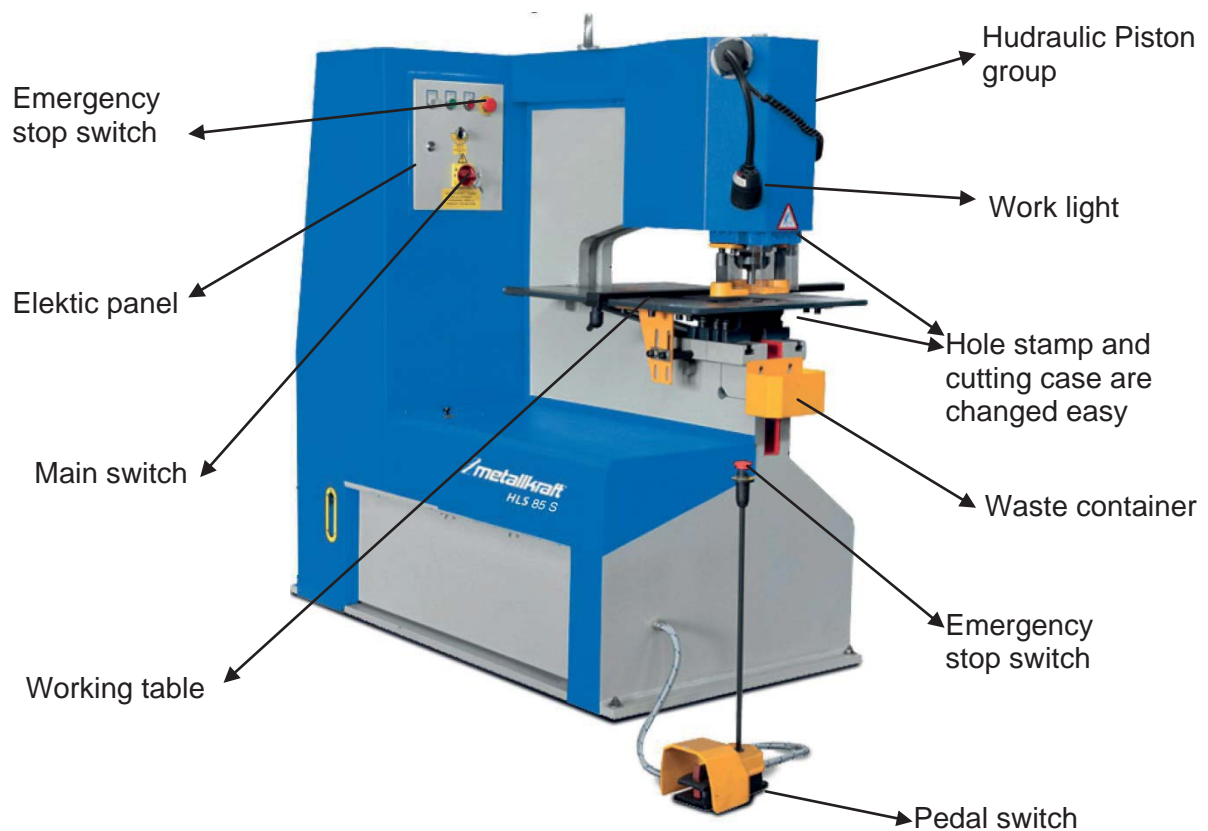
SAFETY PRECAUTIONS

- All power and depth and other adjustment must be done under full control of an experienced technician
- Please check all the moving parts before working
- Check the punch and die that they are in the same direction
- Adjust the holder equally and according to the material

- Always use the protective plastics
- On small and accuracy needing works use special protection

- While replacing the punch or die or holder shut the main switch
- Never leave the machine unattended
- Do NOT overload the machine

WORK STATION



Technical specifications

Pressure	85 t
Ø in max.sheet thickness	Ø33x20 mm / 57 x 12*** mm
Reach	625 mm
Stroke	80mm
Stroke / min.	21 min-1
Hole punch working height	950 mm
Motor output	7,5 kW
Electrical connections	400 V / 50 Hz
Dimensions in mm	1850x950x1920
Weight	3270 kg

Based on material strength 45 [kg/mm²]

The maximum punching pressure of this machine is 850 kN (85 ton)

The following tools are included in the basic equipment of the machine;

- Punch mount with bayonetclosure
- Punch and die reducers
No. 1, 2, 3, 30, 45, 60
- Stop with scale
- Foot pedal
- Hook wrench
- Hydraulic oil
- Work light

ADDITIONAL TOOLS

BENDING

Maximum bar size	250x20	[mm]
Maximum sheet metal size	500x3	[mm]

TRANSPORTATION

There is a ring mounted on top of the machine for transport purposes. You mount the chain or rope to this ring for all kind of displacement purposes.



DAMAGES

As soon as you receive the machine, make a general check on the machine and inform the transporter and the manufacturer in case of any visible damage. Especially be careful on these points:

- a) *Visible mounted tools*
- b) *Tools in the Safety guards*
- c) *Oil gauge*
- d) *Main power knob*
- e) *Foot pedal cable*



Attention:

If you see any visible damage on electric components, do **NOT** connect the machine to power. Inform the manufacturer as soon as possible. Ask a qualified electric engineer for connecting the machine. **Stürmer Maschinen Gm WILL NOT BE RESPONSIBLE FOR DAMAGE CAUSED BY IMPROPER CONNECTION OF ELECTRICS.**

SETTING UP THE MACHINE

Ask for help of an experienced and qualified technician while setting up the machine

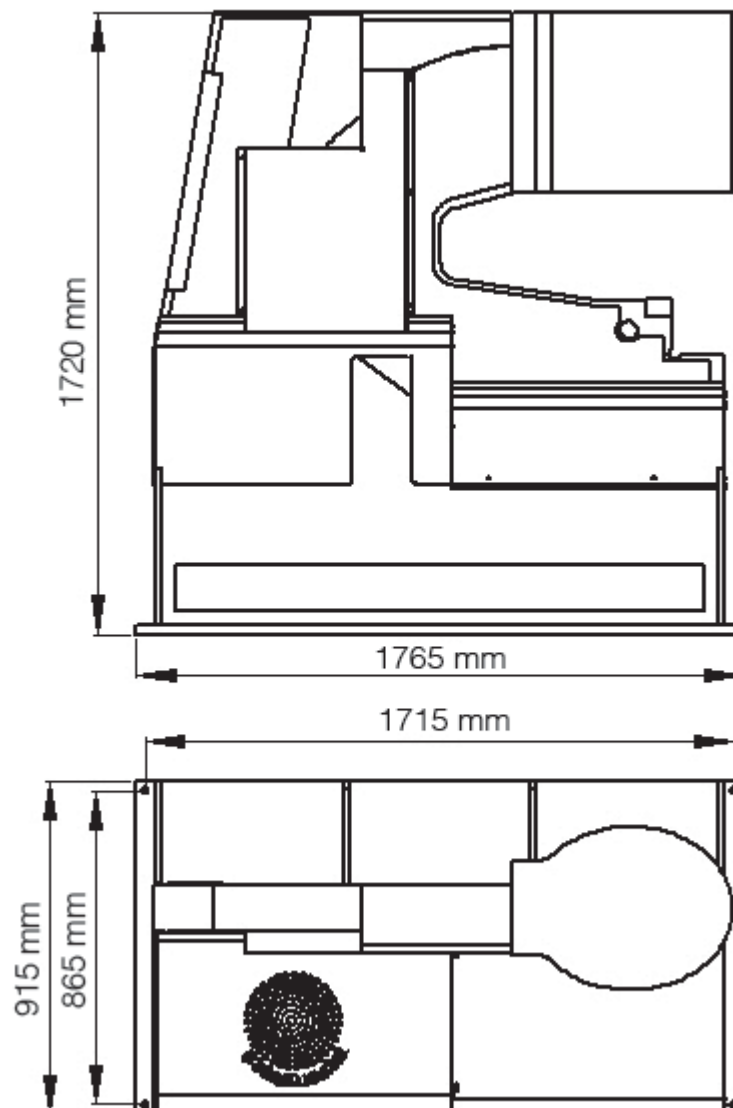
1-) Fundamental Plan of the Machine

5 holes (Refer to the drawing below) Dia : 15 mm

2-) Instructions

For an effective machine, the position and the base of the machine are important. Be careful on these points while placing the machine:

- The machine must be placed on a flat, preferably cement base. To fix the machine use bolts.
- There must be plenty of room all around the machine for easy working.
- The machine height is ideal for any workingman.
- There must be plenty of Light on top of the machine



SAFETY EXPLANATIONS

The **HLS-85 S** is equipped with a hydraulic check valve system in order to relieve the excess pressure when the machine is overloaded, thus preventing serious damage to the machine and the worker. All safety precautions are for your safety, which we believe will be obeyed by our customers unasked.

SAFETY UNITS

- Quick stop button use on the panel and main body
- Protective barriers

In this manual are summarized the important information for work safety. The following security explanations and instructions are considered as the essential information for your safety. Any and all persons who must operate the machine should be firstly trained well in terms of the operation and safety information and instructions. For this purpose, more copies of this manual shall always be asked from the supplier. It should be clearly fixed out that which persons will have the responsibility to change and arrange tools. These persons need to be essentially trained in terms of this subject.

All the machines are delivered as standard with a safety equipment, such equipment is for a high and general work safety. For this purpose, the machine should only be used in accordance for those purposes for which it has been constructed.

The most dangerous and probable deviations as to the construction limits of the machine are estimated to be as follows:

1. Machining of other materials as unalloyed steel (45 kg/mm²)
2. Erroneous use of the fixing installation
3. Punching or fixing very small work pieces, as these will easily cause the operators be subject to danger zones.

Should the additional tools be necessary to be used on the machine, which are not foreseen by the producer, it should be re-verified whether or not there is sufficient safety and security against work accidents. For this purpose, the producer should be contacted for advice when deemed necessary. All the maintenance works should be carried out by sufficiently qualified expert personnel. Particular attention should be paid to the correct assembly and arrangement of the hole stamps, cutting cases and other tools. In order to enable us and yourselves to fulfill our mutual and common responsibility for all people, we request you to read this manual very carefully before putting the machine into operation and to obey all the safety information and instructions.



Attention: ALL THE PARTS OF THE MACHINE DYED IN RED ARE DANGER ZONES AND PARTICULAR ATTENTION SHOULD BE PAID IN SUCH ZONES !

All the operators should be instructed in order not to place their fingers or other body parts near, in or under the parts of the machine colored in red. There is the risk of losing the body parts when these are placed in such zones!

All the safety components and fixing installations that should be removed for maintenance purposes, should be remounted again before the machine is reoperated. The operators should wear the clothing described by the employer. The producer recommend the use of protection eyeglasses against eventual stamp breaks and shoes with steel covering in order to prevent foot of the operator against falling materials.

SAFETY RULES

- 1. The assembly and adjustment works, tool changes and maintenance services shall only be realized by the technical personnel qualified for this purpose, who should strictly obey the instructions of the producer.*
- 2. Remove any oil remaining, cuttings and other impurities from the working zone where such remaining might be left the previous operator.*
- 3. Before the starts working on the machine, the operator should make sure that all the tools are in a perfect condition.*
- 4. Any leakage and order of hole stamps should be checked after each tool change and be readjusted if necessary.*
- 5. The scraper should always be adjusted according to the material resistance to be machined. Unequal scraping forces can easily result with tool breaks.*
- 6. Never punch any material which stronger than the diameter of the hole stamp. In this case, the hole stamp can be overloaded and easily break.*
- 7. Always punch trough holes. Never punch base holes, unless the tool is clearly foreseen for this purpose. The lateral elongation force, which occurs during punching of the base holes, might excessively press the hole stamp against the cutting case and consequently an easy break might result.*
- 8. The machine has been designed in a manner to work with the pieces which can be placed without having subjected the fingers or hands into the danger zone. For punching of the short pieces (for instance small sheet metal parts), special tools, scrapers and security components are pieces should be placed into the machine and taken back suitable holding tools.*
- 9. Before each tool change, make sure that the machine is disconnected from main switch.*
- 10. Completely disconnect the machine from the net before you carry out any maintenance work.*
- 11. Never let the machine function without any inspection.*
- 12. When you perform works where big forces are existing, the work piece should be additionally protected through a block having an assembled roll or similar installation, which is to be placed on the machine.*

13. *The machine capacity shall never be exceeded. For this purpose, check the "technical data" on this rules and compare the values with the information given on the manufacture plate. All the capacity information is based on a material having a resistance of 45 kg/mm²*
14. *Should the hydraulic circuit flow be overloaded, the hydraulic oil will be led back to the reserve tank over the overload valve until the pressure gets down again to the normal level.*



Attention: HOWEVER, IT IS. NECESSARY TO UNDERLINE THAT IT MIGHT BE DANGEROUS TO USE THE OVERLOAD VALVE AS A "SAFETY VALVE" IN ORDER TO EXCEED THE MACHINE CAPACITY.

The producer presents all the instructions for a work protection and safety and hopes to have a good and full calibration with you, the users, in order to ensure that the maximum Level of safety could be obtained.

CONTROLS BEFORE PUTTING INTO OPERATION

1. *Press on the green "**START**" button in order to start the machine. In order to ensure this, make sure that the red off button ("**STOP**") rotates clockwise (or directly to draw).*
2. *Make sure that the entries for hole stamp is safety fixed.*
3. *At the command table, change the status from "**NORMA**" to "**ADJUSTMENT**" (Consider that the readjustment course is not automatic at this position. When you leave the foot pedal loose, the machine does not return to standby, rather it simply gets left).*
4. *Make sure that the course limiter allows a maximum course. Now, press on the foot pedal so often that the hole stamp stays in the cutting case. Take care that the hole stamp is regularly arranged with the cutting case.*
5. *Change the position from "**ADJUSTMENT**" to "**NORMAL**" at the command board. Now the machine gets automatically back to the standby position.*
6. *Check whether or single cylinder perform, full course. Make sure that, no-hydraulic pressure occurs at the end of related course. In order to ensure that there is no air available in the hydraulic system, repeat the process several times (air might enter here during transport).*
7. *Verify all tubes, hoses connections, branching and reserve tank for eventual hydraulic leakage.*
8. *Fix again all the protection parts and remove all loose subjects from the working zone of the machine*

The machine is now ready for your job.

OPERATION OF THE MACHINE

Operation elements

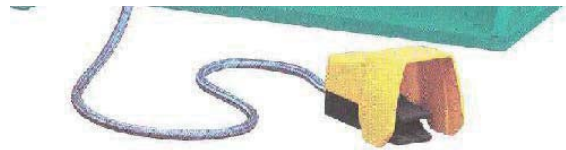
All the electrical delivery of the machine passes through the main switch. In order to connect this, rotate the switch clockwise. To confirm this, check that the control lamp starts lightening.

By pressing on the green **“START”** button, connect the motor (for the motor to be able to function, the **“STOP”** button should be disconnected. This can be realized by rotating the red button clockwise (or drawing this).

By pressing on the red **“STOP”** button, the motor will be stopped. The lightly pressed **“STOP”** button gets locked at command. In order to loosen the button and to cause the machine to function again, the **“STOP”** button will be turned clockwise (or drawn).

The pedal switch has three positions:

- Over position
- central position
- lower position



If pedal is driven till the lower position and there remains fixed, the machine gets into the deepest punching position. Nevertheless, the machine doesn't turn back to the standby position until the pedal is left loose.

The central pedal position allows the operator to effect unlimited positioning including over and down course. This central position is very practical because it allows the operator to carry out touching so that the work piece can be optimally positioned.

The switch **“NORMAL / ADJUSTMENT”** ensures that the machine is operated at touch operation or performs production at normal functioning.

When the switch is arranged on **“NORMAL”**, the machine performs a normal and full work cycle at each action of the foot pedal, that means the punch moves to the lowest position and then gets again into the standby.

When the switch is arranged to **“ADJUSTMENT”** the machine stops. When the pedal is left loose, the automatic back course at this position has been cancelled.

STROKE ADJUSTMENT

In order to lock the lowering stroke (that means repeated bending etc.) you must adjust the stopper A towards side.

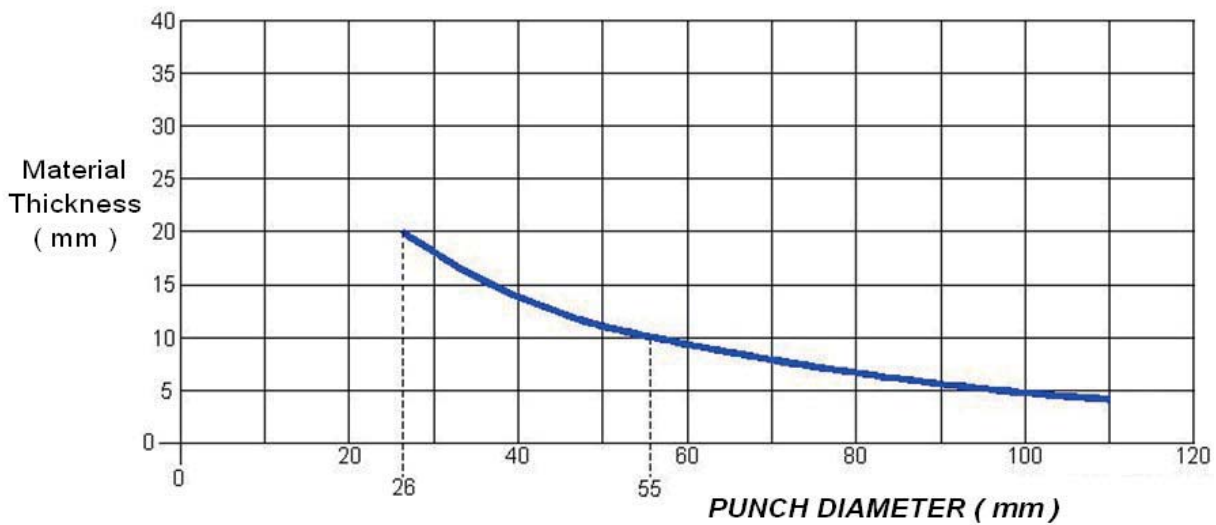
In order to lock the upper stroke B, use the punch stamp with the foot pedal and hold this in the lower position. Now lift the foot up in order to verify the position. If necessary, a readjustment shall be foreseen now.



Attention :

All the adjustments to be made on the stroke limiter, can also be carried out by using, the leading mode. For this purpose, the punch position is arranged in such a manner that the required position is obtained by the foot pedal and then the stoppers are adjusted upon request. After the adjustment process, you must cause the machine to function under normal tempo in order check the stoppers.

PUNCH CAPACITY



The diagram shows the punch capacity curves of the XS-series depending on the material thickness and stamp diameter. (Based on a construction steel having a traction resistance of 45 kg/mm²).

Diameter of the punch stamp D (mm). During calculation of the punch capacity it should proceed according to the following formula:

$$P = \text{SHEARING SURFACE} \times \text{TRANTION RESISTANCE}$$

$$P = \pi \times D \times S \times \text{TRANTION RESISTANCE}$$

A calculation example :

A 20 mm hole will be necessary in a 12 mm thick homogenous steel sheet metal having 45 kg/mm² traction resistance

This is valid the following:

Punching pressure = Shearing surface x traction resistance x 0.0098 and

Shearing surface = Volume of the punch stamp x material thickness (so the traction resistance

Amounts to 45kg/mm², 0.0098 is the fixed value for the calculation of kg/mm² onKN

accordingly : $20 \times 3,142 \times 12 \times 45 \times 0,0098 = 333 \text{ KN (33,3 Tons)}$

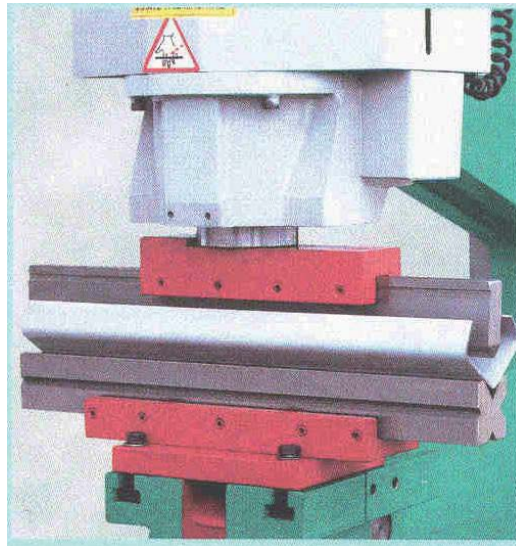


Attention :

Never punch with a hole stamp which is thinner than the material to be machined.

PRESS BRAKE BENDING

Bar bending max. Capacity 250 x 20 mm
Sheet bending max. Capacity 500 x 3 mm

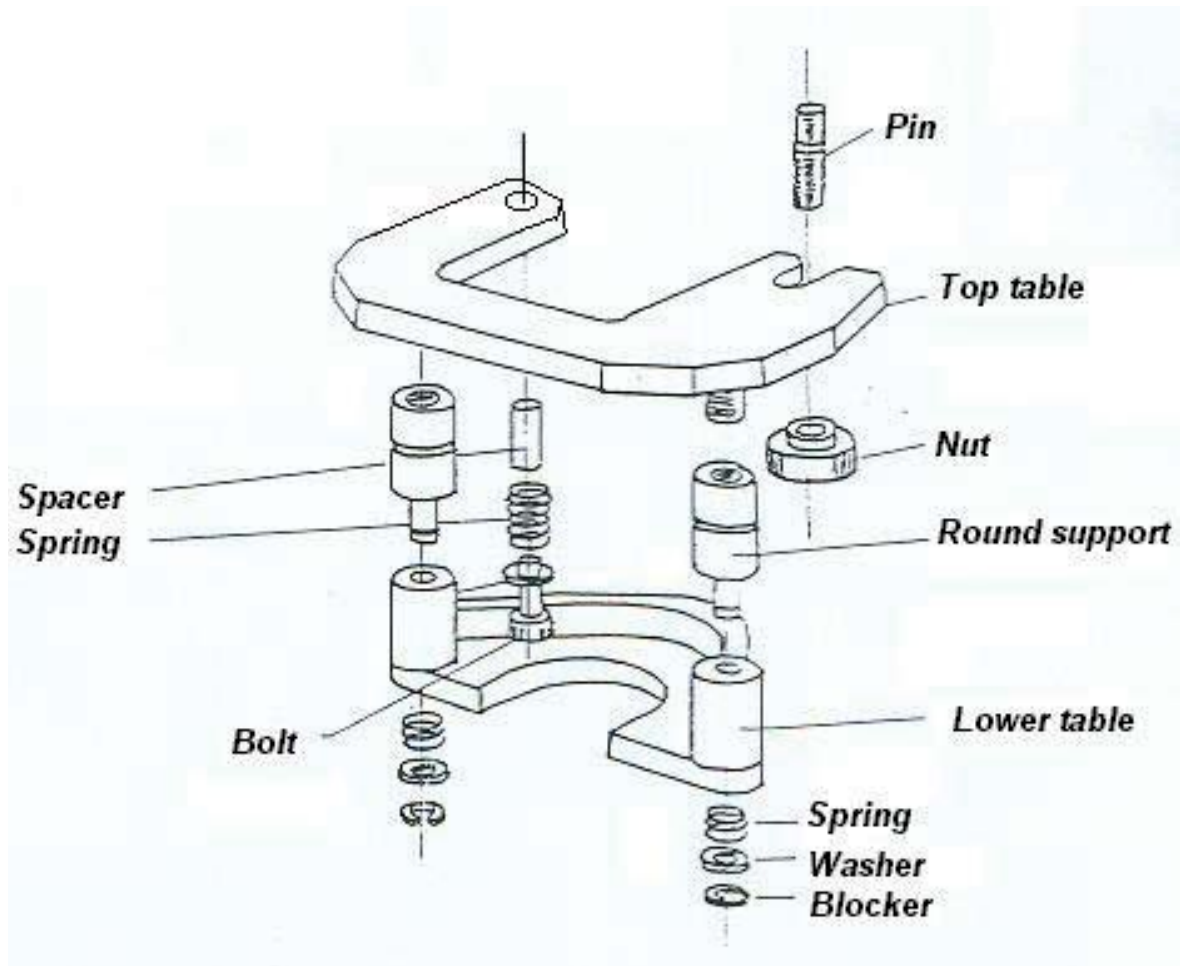


PIPE NOTCHING

Max. Pipe diameter is \varnothing 108 mm

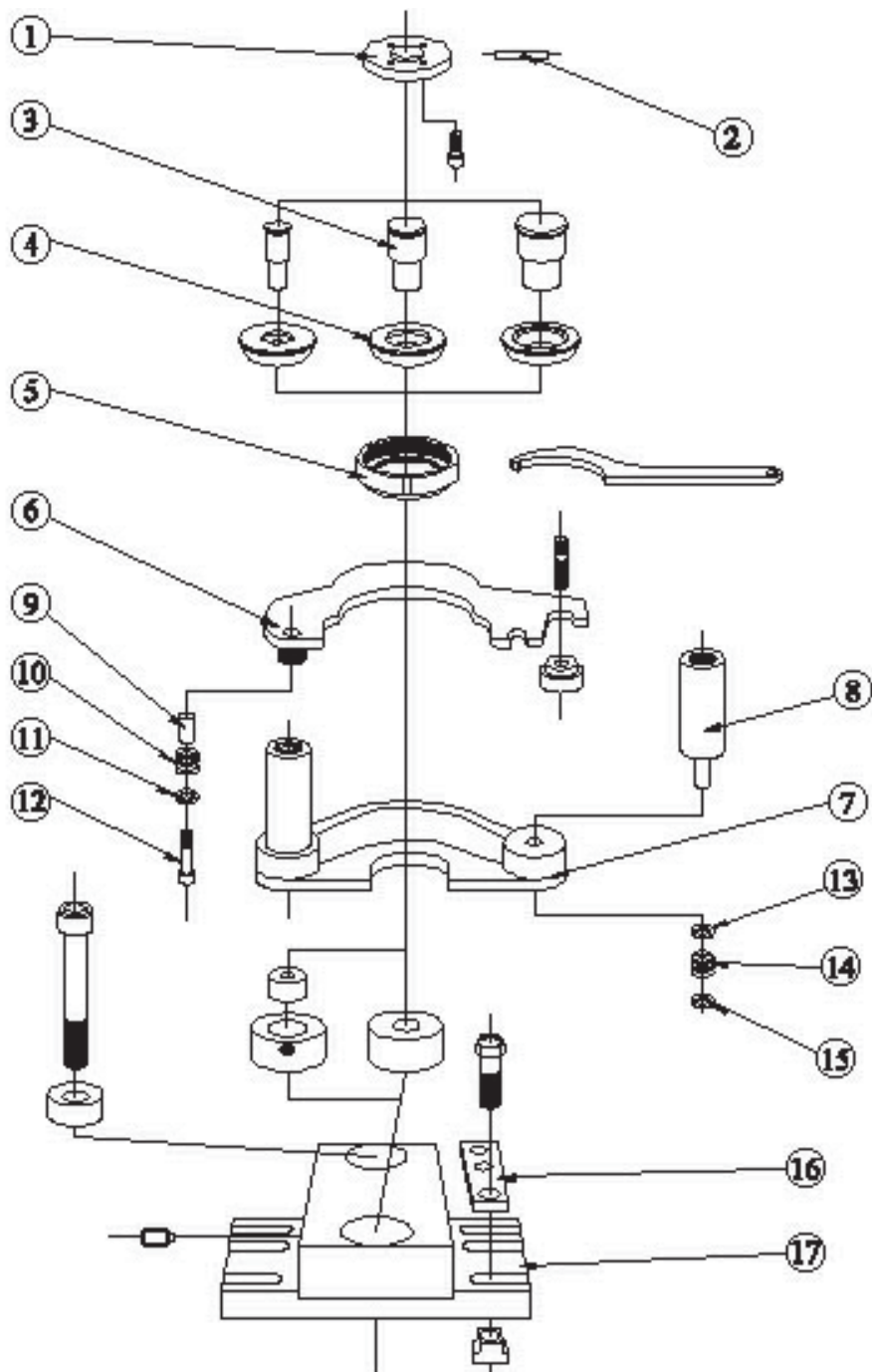


PUNCHING TABLE



In order to break the punching tool, you must use this table (holder) wisely. It must be always equaled and must be set for different pressures. The distance between lower table and material should be something between 1- 3 mm. Also to have the tool efficiently work the biggest part of the material should be covered by lower body during operation.

PUNCHING TOOLS



The part numbers in the above given figure 1 belong to the standard equipment.

The parts indicated in the below given table belong to the standard equipment. Some different hole stamps and cutting cases are illustrated on the lateral drawing.

As standard material, a 22 mm hole and cutting case delivered (the maximum diameter amounts to 38 mm). Adjust the hole stamp centrally so that an equally rotating cutting distance of 5 % of the material thickness remains. Never punch a material that is thicker than the diameter of the hole stamp.

Assembly No	Quantity	Part Identification
1	1	Pressrue plate
2	1	Passing spring
3	1	Hole stamp
4	1	Adapter
5	1	Holding ring
6	1	Top scraper plate
7	1	Lover table
8	2	Spring
9	1	Washer
10	1	Soc. head cap bolt
11	1	Washer
12	1	Soc. head cap bolt
13	2	Washer
14	2	Spring
15	2	Spring washer
16	2	Support tensioning
17	1	Tension plate

LUBRICATION OF THE PUNCH TOOLS

In order increase the service lives of the hole stamp and cutting case, we recommend you to use one of the below listed lubrications;

Shell Garia 927
 BP Servora 68
 Castroll Ilobroach 219
 Duckharns Adfomol EP7
 Joseph Batson LB 733

ARRANGEMENT OF THE PUNCH TOOLS IN GENERAL

The big punch bearing surface and the removable front block have been constructed in manner to allow a very wide range punch works:

Through the optionally obtained tools, the big holes in any form up to the diameter / quadrate as it is indicated in the capacity table can be produced. In addition, machining at overhanging position, with the removed front in addition, during machining at overhang, with the removed front block, the of U profiles of double T supports having diameters or eventually diagonals up to 38 mm highest capacity can be punched.

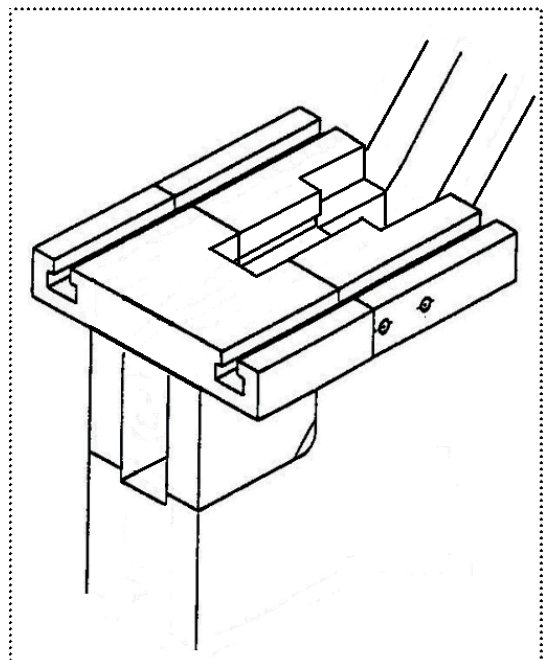
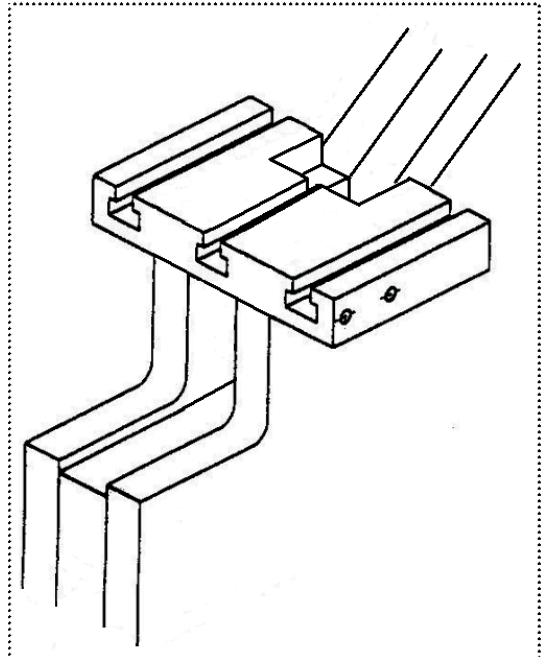
The punching stamp is held though a holding ring, according to the size of the stamp (punch) one or two of the delivered adapters can be used. The matrixes are fixed to the tensioning plate through a positioning screw.

When the filled punch stamps and matrixes are be arranged, it should be paid attention to the screw is correctly placed on the machined surface of the matrix. In order to allow a suitable play area and to ensure that the material is taken out, the punch stamp scraper plate should be correctly adjusted, however it should not effect the stamp course. Attention should be paid to that the lower course limiting switch has been adjusted as per the instructions. When the holes are punched with sufficient material, a flat contact occurs at both sides of the scraper plate. The scraper forces can be important and unbalanced scraper forces can lead to the break of the punch stamp through the contact with a side of the scraper.

No material should be punched which is thicker than the stamp diameter. The quality of the hole is a direct finger appearance on the situation of the punch stamp and matrix.

When the scraper fingers are used for very big holes or irregular forms, the fingers should be equally position and adjusted in order to prevent and unbalanced scraper load.

Additional tools at this multi purpose work station allow bar and sheet metal bending works, edge threading, tube threading and general column positioning works.



In order to install or change the punch tools you will need the following tools:

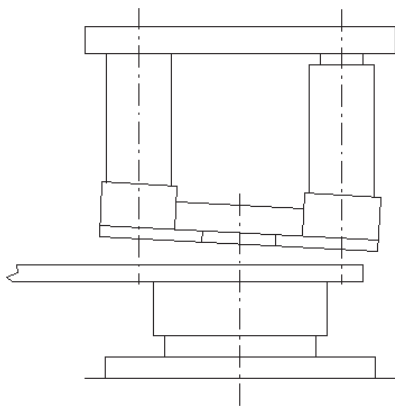
- Hook key
- Soc. head cap bolt key (6 mm)
- Screw key (24 mm)

WHILE ORDERING SPARE STAMPS AND MATRIXES. PLEASE ALWAYS INFORM OF THE FOLLOWING : MODEL, TYPE AND MANUFACTURING NUMBER OF THE MACHINE.

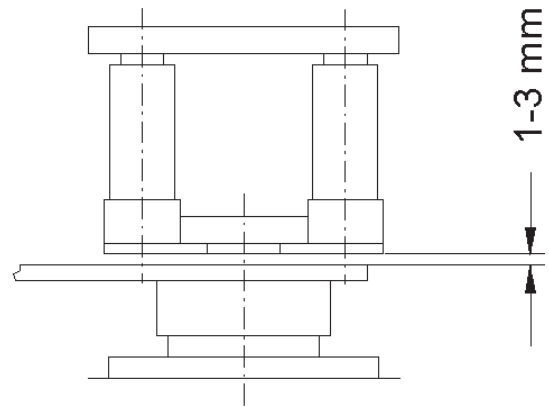
Below we explain step by step now the hole stamp and cutting case are changed:

- 1) In order to take out the cutting case, move the machine to a position where there is enough
- 2) Disconnect the machine at machine switch
- 3) Open the scraper, loose the coupling nut, fixing screws of the cutting case delivery plate and the M12 screws, which hold the cutting case. Remove the coupling nut together with the hole stamp and adapter. Remove the cutting case.
- 4) Place the required punch tool set. Make sure that the hole stamp and cutting case are correctly fixed.
- 5) Connect the machine and then position at "adjustment".
- 6) Move the hole stamp slowly towards the cutting case. Push the cutting case delivery plate correctly so that the hole stamp and cutting case are completely arranged.
- 7) Adjust the cutting case delivery plate in a manner that the cutting distance which remains between the hole stamp and cutting case is fully equal and draw the delivery plate fixed in this station.
- 8) Take the scraper back then adjust the distance between the scraper and cutting case according to the thickness of the material to be machined.
- 9) Adjust the course adjustment in such a manner that the shortest possible way should be left back.
- 10) In order to protect the operations, fix the **macralon** protection before you start working.

SAFETY PRECAUTIONS ON EACH OF THE WORK STATIONS IS WRITTEN UNDER ITS NAME

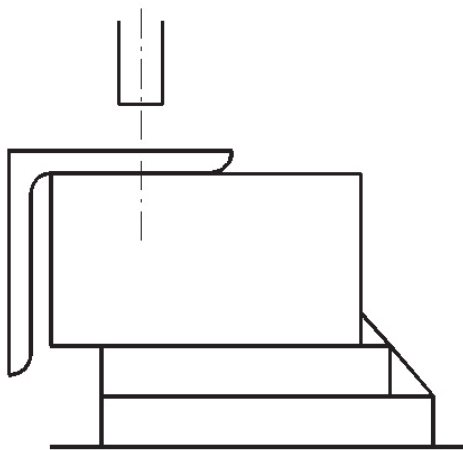


WRONG

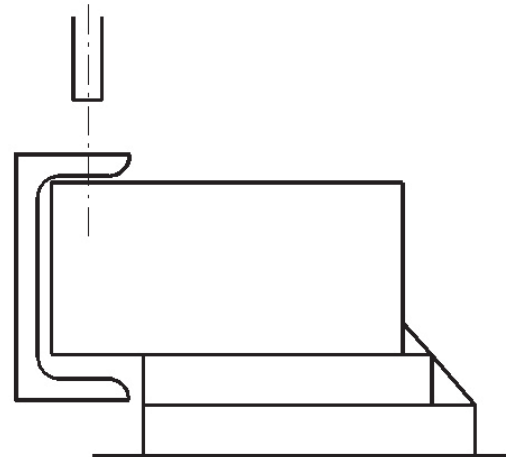


CORRECT

- *Wrong sized punch holder*
- *Wrong sized part*
- *Wrong distance*



Normal punching



Very small punching, which requires special eccentric die and tool

FLANGE PUNCHING

You can use the standard tool for all kind of punching, however for flange punching like pictured above (right side), you have to order us a new set of eccentric die and tool.

Electrical Information

MOTOR VOLTAGE - CURRENT CABLE VALUES																			
KW HP	220-240 V (50Hz/60Hz)					380-400 V (50Hz/60Hz)					415-460 V (50Hz/60Hz)					575 V (50Hz/60Hz)			
	A	A	0-75 m	75-100 m	100-150 m	A	A	0-75 m	75-100 m	100-150 m	A	A	0-75 m	75-100 m	100-150 m	A	A	75-100 m	100-150 m
	Fuse	Motor	Wire thickness (mm ²)			Fuse	Motor	Wire thickness (mm ²)			Fuse	Motor	Wire thickness (mm ²)			Fuse	Motor	Wire thickness (mm ²)	
3 4	16	11,5	4 x 1,5	4 x 2,5	4 x 4	10	7	4 x 1,5	4 x 1,5	4 x 1,5	10	6,5	4 x 1,5	4 x 1,5	4 x 1,5	6	3,5	4 x 1,5	4 x 1,5
4 5,5	25	14,5	4 x 2,5	4 x 4	4 x 6	16	8,5	4 x 1,5	4 x 1,5	4 x 2,5	16	8	4 x 1,5	4 x 1,5	4 x 1,5	10	5	4 x 1,5	4 x 1,5
5,5 7,5	25	20	4 x 4	4 x 6	4 x 10	16	11,5	4 x 1,5	4 x 1,5	4 x 2,5	16	11	4 x 1,5	4 x 1,5	4 x 2,5	16	8	4 x 1,5	4 x 1,5
7,5 10	32	27	4 x 6	4 x 6	4 x 10	25	15,5	4 x 1,5	4 x 2,5	4 x 4	25	14	4 x 1,5	4 x 2,5	4 x 2,5	16	10	4 x 1,5	4 x 2,5
11 15	50	39	4 x 10	4 x 10	4 x 16	32	22	4 x 2,5	4 x 4	4 x 6	32	21	4 x 2,5	4 x 2,5	4 x 4	25	16,5	4 x 2,5	4 x 4
15 20	63	52	4 x 10	4 x 16	4 x 25	40	30	4 x 4	4 x 4	4 x 6	40	28	4 x 4	4 x 4	4 x 6	24	20,5	4 x 2,5	4 x 4
18,5 25	80	64	4 x 10	4 x 16	4 x 25	50	37	4 x 6	4 x 6	4 x 10	50	35	4 x 6	4 x 6	4 x 6	40	21	4 x 4	4 x 6
22 30	80	75	4 x 16	4 x 25	4 x 35	63	44	4 x 10	4 x 10	4 x 10	50	40	4 x 6	4 x 6	4 x 10	40	26	4 x 6	4 x 6
30 40	125	103	-	-	-	80	60	4 x 16	4 x 16	4 x 16	63	55	4 x 10	4 x 10	4 x 10	50	32	4 x 10	4 x 10
37 50	150	126	-	-	-	100	72	4 x 16	4 x 16	4 x 16	80	66	4 x 16	4 x 16	4 x 16	63	50	4 x 10	4 x 10
55 75	200	182	-	-	-	125	105	4 x 25	4 x 25	4 x 35	125	100	4 x 25	4 x 25	4 x 35	80	70	4 x 25	4 x 25

MOTOR VOLTAGE - CURRENT CABLE VALUES			
KW HP	MONOPHASE MOTOR		
	A	A	q mm ²
1,1 1,5	16	9,2	4x1,5
2,2 3	25	17	4x2,5

TRIPHASE MOTOR						
MOTOR VOLTAGE - CURRENT CABLE VALUES						
KW HP	220-240 V (50Hz/60Hz)			380-400 V (50Hz/60Hz)		
	A	A	q mm ²	A	A	q mm ²
0,75 1	6	3,5	4x1,5	4	2	4x1,5
1,5 2	10	6,1	4x1,5	6	3,5	4x1,5

HYDRAULIC SYSTEM

A 7.5 kw motor drives a hydraulic pump, which supplies the power cylinders on each end of the machine through regulation valves. The punch cylinder is directly connected to the punching unit

Hydraulic oil

For this purpose are advised the oil types indicated in the machine plate. The oil filling and ventilation supports are located in the tank where access is provided after removal of the protection having cooling cavities located on machine base.

Absorption filter

The oil filter should be checked every twelve months. Access to the filter can be ensured after having dismantled the screws of the tank protection. If necessary the filter can be washed in paraffin.

Impurity section

After having taken out the lower machine body protection, the section located under the main chassis should be checked each year for dirt and impurities.

Cleaning

Under normal operation conditions, all the visible working parts should be regularly cleaned from foreign substances that can prevent a standard use of the machine.

REGULAR MAINTENANCE

Daily Maintenance;

Before starting machine

- Check full level in tank – top up us necessary
- Check oil level in oil pump – top up us necessary
- Check condition of punch and die
- Check surrounding work area is tidy, remove and off-cuts, slugs from floor area
- Clean off any mill scale which may have collected around the cutting apertures

Weekly maintenance;

- But depending on work load
- Examine power cable and foot pedal cable for damage or chafing
- Check movement of machine is smooth when running under no load condition

Monthly maintenance;

- Check arm adjustment for any slackness

Yearly;

- Change hydraulic fluid, check the oil absorption filter for any dirt and impurities

LUBRICATION

HYDRAULIC FLUID

Fill to top level of inspection glass. Use only mineral oil as recommended or equivalent. You can select a oil at the table 1

OILING LUBRICANT

Check oil level in pump reservoir daily, operate pump 2/3 times daily.

Castrol	Magna DR220
Shell	Tomma T220
B.P.	Energol GHI 220
Mobil	Vactra oil No. 4
Esso	Febis K220

Lubrication check

Before operating machine, the following important checks should be made.

- > The hydraulic fluid is at top level of inspection glass.
- > The oil pump has been operated, and that there is oil pressure indicated, check oil level in pump

HYDRAULIC OIL LIST

On most of our machines hydraulic systems we use Grade 32 Hydraulic Oil and Grade 46 Hydraulic Oil Generally we recommend the use of Shell Tellus Nr.46 and BP Energol Nr.46 for hydraulic systems.

Brand	DIN 51524 Specification 32 Grade Mineral Oil	DIN 51524 Specification 46 Grade Mineral Oil
Agip	OSO 32	OSO 46
BP	Energol HLP 32	Energol HLP 46
Castro	Hyspin AWS 32	Hyspin AWS 46
Elf	Elfolna 32	Elfolna 46
Esso	Nuto H 32	Nuto h 46
Fina	Hydran 32	Hydran 46
IP	Hydrus 32	Hydrus 46
Mobil	DTE 24	DTE 25
Q8	Haydn 32	Haydn 46
Shell	Tellus 32	Tellus 46
Texaco	Rando HD 32	Rando HD 46
Total	Azolla ZS 32	AzollaZS 46

Table 1

MACHINE ROD AND LEVER READJUSTMENT

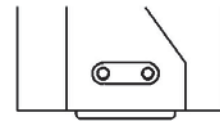
After a preliminary working period (about 5 to 6 days), it will be necessary to carry out arrangement adjustments on the machine.

Punch rod

- The arrangement of the rod will be realized with the help of a “rod leading plate”.
- This plate should be readjusted.
- The related adjustment screws are located at the exit side of the machine.

In order to adjust the rod, proceed in the following manner:

- Remove the punch stamp
- Loosen the safety nuts
- Readjust the rod adjustment screw (not to tighten too much)
- Lock the screws with a safety nut

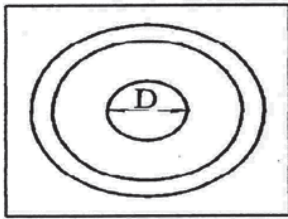


The adjustment control is to be made through a few in and out movement (about 6 times) of the rod. Then the machine should be checked in adjustment mode. If the rod does not move here, the plate should be readjusted and the process must be repeated.

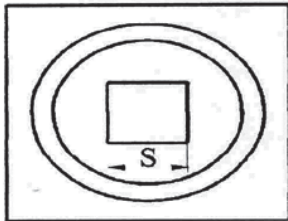
Maintenance Table

PERIOD / OPERATION	DAYLY	ONE WEEKLY	TWO WEEK	MONTHLY	THREE MONTHLY	YEARLY
Manuel pump and oil tank level check	X					
Hydraulic system oil check		X				
Screw check of bolster and notching units		X				
Hydraulic system oil leakage check			X			
Lubrication of blades				X		
Cleaning and check of suction filter					X	
Changing hydraulic system oil						X
Elektrical panel interior cleaning						X
Changing suction filter						X

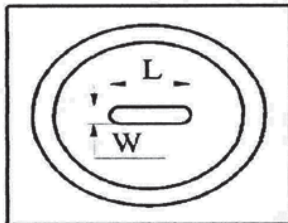
OPTIONAL PUNCH, DIE & BLADE



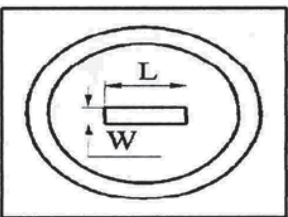
Round Punch	Code	Die	Code
D = Diameter		D = Diameter	
6-30mm (betw.)	1001	6-30mm (betw.)	2023
31 - 38 mm (a)	1004	31 - 38 mm (a)	2023
39 - 57 mm (b)	1007	39 - 57 mm (b)	2024
58 - 85 mm (c)	1010	58 - 85 mm (c)	2025
86 - 110 mm (d)	1011	86 - 110 mm (d)	2026



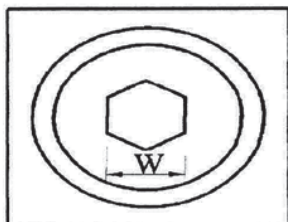
Square Punch	Code	Die	Code
S = Square		S = Square	
21 mm (upto)	1171	21 mm (upto)	2213
22 - 26 mm	1172	22 - 26 mm	2213
27 - 40 mm (b)	1175	27 - 40 mm (b)	2214
41 - 60 mm (c)	1178	41 - 60 mm (c)	2215
61 - 77 mm (c)	1179	61 - 77 mm (c)	2216



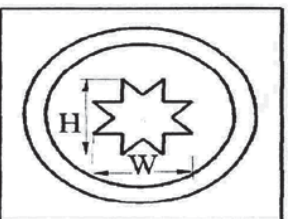
Elliptical Punch	Code	Die	Code
L = Length		L = Length	
30 mm (upto)	1184	30 mm (upto)	2221
31 - 38 mm (a)	1185	31 - 38 mm (a)	2221
39 - 57 mm (b)	1188	39 - 57 mm (b)	2222
58 - 85 mm (c)	1191	58 - 85 mm (c)	2223
86 - 110 mm (d)	1192	86 - 110 mm (d)	2224



Rectangular Punch	Code	Die	Code
L = Length		L = Length	
30 mm (upto)	1197	30 mm (upto)	2229
31 - 38 mm (a)	1198	31 - 38 mm (a)	2229
39 - 57 mm (b)	1201	39 - 57 mm (b)	2230
58 - 85 mm (c)	1204	58 - 85 mm (c)	2231
86 - 110 mm (d)	1205	86 - 110 mm (d)	2232

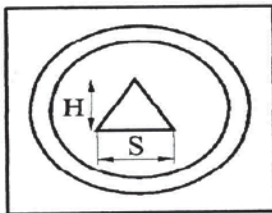


Hexagonal Punch	Code	Die	Code
W = Six-angle		W = Six-angle	
38 mm (upto) (a)	1502	38 mm (upto) (a)	2506
39 - 57 mm (b)	1503	39 - 57 mm (b)	2507
58 - 85 mm (c)	1524	58 - 85 mm (c)	2526
86 - 110 mm (d)	1525	86 - 110 mm (d)	2527

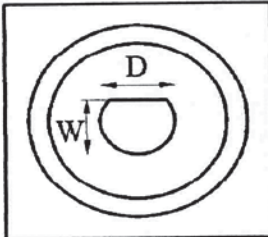


Star Punch	Code	Die	Code
W = Eight-Angle		W = Eight-Angle	
38 mm (upto) (a)	1553	38 mm (upto) (a)	1557
39 - 57 mm (b)	1554	39 - 57 mm (b)	1558
58 - 85 mm (c)	1555	58 - 85 mm (c)	1559
86 - 110 mm (d)	1556	86 - 110 mm (d)	1560

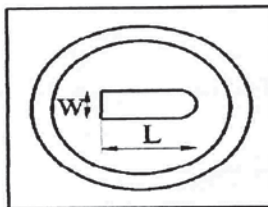
OPTIONAL PUNCH, DIE & BLADE



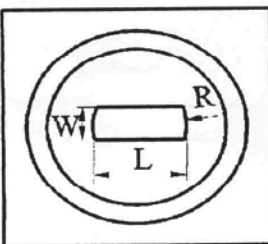
Triangle Punch	Code	Die	Code
S = Triangle		S = Triangle	
38 mm (upto) (a)	1512-1	38 mm (upto) (a)	2516-1
39 - 57 mm (b)	1513-1	39 - 57 mm (b)	2517-1
58 - 85 mm (c)	1518-1	58 - 85 mm (c)	2520-1
86 - 110 mm (d)	1519-1	86 - 110 mm (d)	2521-1



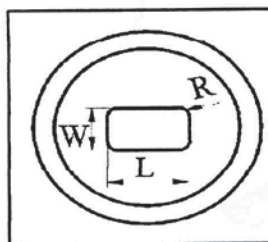
Half-Circle Punch	Code	Die	Code
D = Half Circle		D = Half Circle	
38 mm (upto) (a)	1512-2	38 mm (upto) (a)	2516-2
39 - 57 mm (b)	1513-2	39 - 57 mm (b)	2517-2
58 - 85 mm (c)	1518-2	58 - 85 mm (c)	2520-2
86 - 110 mm (d)	1519-2	86 - 110 mm (d)	2521-2



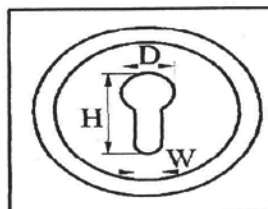
D-Form Punch	Code	Die	Code
L = D-Form		L = D-Form	
38 mm (upto) (a)	1512-3	38 mm (upto) (a)	2516-3
39 - 57 mm (b)	1513-3	39 - 57 mm (b)	2517-3
58 - 85 mm (c)	1518-3	58 - 85 mm (c)	2520-3
86 - 110 mm (d)	1519-3	86 - 110 mm (d)	2521-3



Wedge-Form Punch	Code	Die	Code
L = Wedge Shape		L = Wedge Shape	
38 mm (upto) (a)	1512-4	38 mm (upto) (a)	2516-4
39 - 57 mm (b)	1513-4	39 - 57 mm (b)	2517-4
58 - 85 mm (c)	1518-4	58 - 85 mm (c)	2520-4
86 - 110 mm (d)	1519-4	86 - 110 mm (d)	2521-4

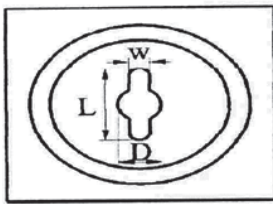


Radiused Quadrangle Punch	Code	Die	Code
L = Radiused Quadrangle punch		L = Radiused Quadrangle punch	
38 mm (upto) (a)	1512-5	38 mm (upto) (a)	2516-5
39 - 57 mm (b)	1513-5	39 - 57 mm (b)	2517-5
58 - 85 mm (c)	1518-5	58 - 85 mm (c)	2520-5
86 - 110 mm (d)	1519-5	86 - 110 mm (d)	2521-5

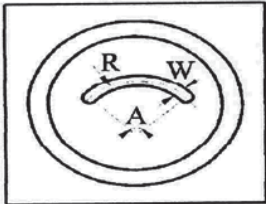


Key Punch	Code	Die	Code
H = Key		H = Key	
38 mm (upto) (a)	1512-6	38 mm (upto) (a)	2516-6
39 - 57 mm (b)	1513-6	39 - 57 mm (b)	2517-6
58 - 85 mm (c)	1518-6	58 - 85 mm (c)	2520-6
86 - 110 mm (d)	1519-6	86 - 110 mm (d)	2521-6

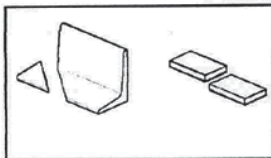
OPTIONAL PUNCH, DIE & BLADE



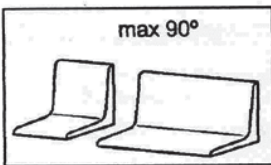
Double-Key Punch	Code	Die	Code
L = Double-Key		L = Double-Key	
38 mm (upto) (a)	1512-7	38 mm (upto) (a)	2516-7
39 - 57 mm (b)	1513-7	39 - 57 mm (b)	2517-7
58 - 85 mm (c)	1513-7	58 - 85 mm (c)	2520-7
86 - 110 mm (d)	1513-7	86 - 110 mm (d)	2521-7



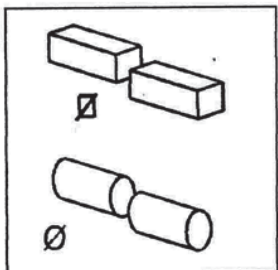
Radial Punch	Code	Die	Code
W = Radial hole		W = Radial hole	
38 mm (upto) (a)	1512-8	38 mm (upto) (a)	2516-8
39 - 57 mm (b)	1513-8	39 - 57 mm (b)	2517-8
58 - 85 mm (c)	1518-8	58 - 85 mm (c)	2520-8
86 - 110 mm (d)	1519-8	86 - 110 mm (d)	2521-8



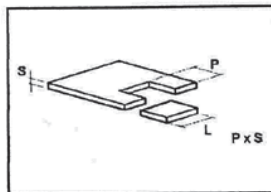
Blades	Kod No			
Top Blade	1601-1			
Bottom Blade	1601-2			



Blades	Kod No			
Inner Blade	1602-1			
Outer Blade	1602-2			

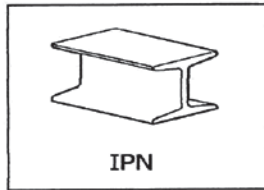


Blades	Kod No			
Complete Blade SET	1603			

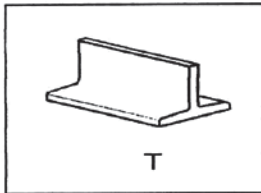


Blades	Kod No			
Top Blade	1604-1			
Bottom Blade	1604-2			

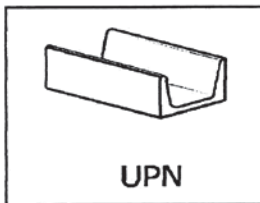
OPTIONAL PUNCH, DIE & BLADE



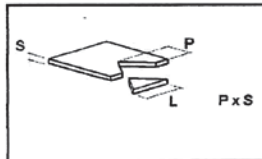
Blades	Kod No				
Complete Blade SET	1605				



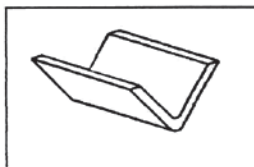
Blades	Kod No				
Complete Blade SET	1606				



Blades	Kod No				
Complete Blade SET	1607				



V-Notching	Kod No				
Complete SET	1608				



Press-brake	Kod No				
Complete SET	1609				

Important Notes: Below-mentioned accessories must be purchased.

- (a) Between 31-38mm, Adepter
- (b) Between 39-57mm, Adepter, Guide-Nut, Pressure-Plate & Tension-Plate
- (c) Between 58-85mm, Adepter, Guide-Nut, Pressure-Plate & Tension-Plate
- (d) Between 86-110mm, Adepter, Guide-Nut, Pressure-Plate & Tension-Plate

Description	Prices
Adapter	
Guide-Nut	
Pressure Plate	
Tension Plate	

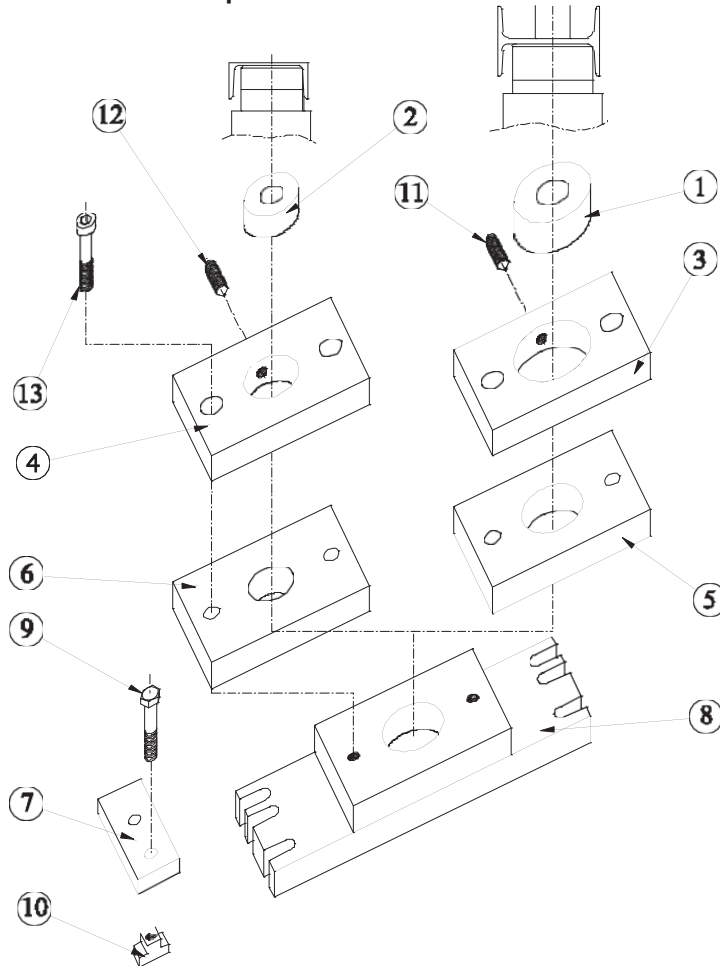
SPECIAL ACCESSORIES

Drilling of the I and U profiles

During punching of the I profiles, change the standard scraper head with the lengthened type.

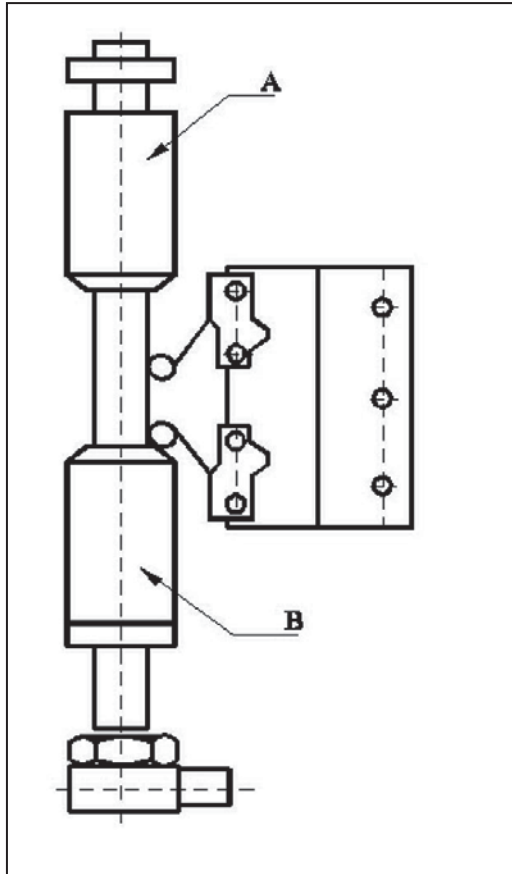
Min. profile size 85 for I or U profile

Max. profile size 120 for I or U profile



NO	PART DESCRIPTION	QUANTITY
1	Hole ring (5 - 38) usable with stamp	1
2	Hole ring (3 - 19) usable with stamp	1
3	Hole ring holding plate	1
4	Hole ring holding plate	1
5	Adapter plate	1
6	Adapter plate	1
7	Support tensioning	2
8	Matrix support	1
9	Hex. Soc. Head cap bolt	6
10	T nut	6
11	Set screw	1
12	Set screw	1
13	Soc. Head cap bolt	2

STROKE ADJUSTMENT



Limitation of the downstroke (e.g., for repeated bending processes), move the stopper A downwards. The feeding path to the workpiece is thereby reduced and accordingly the upper starting position of the punch accordingly lowered.

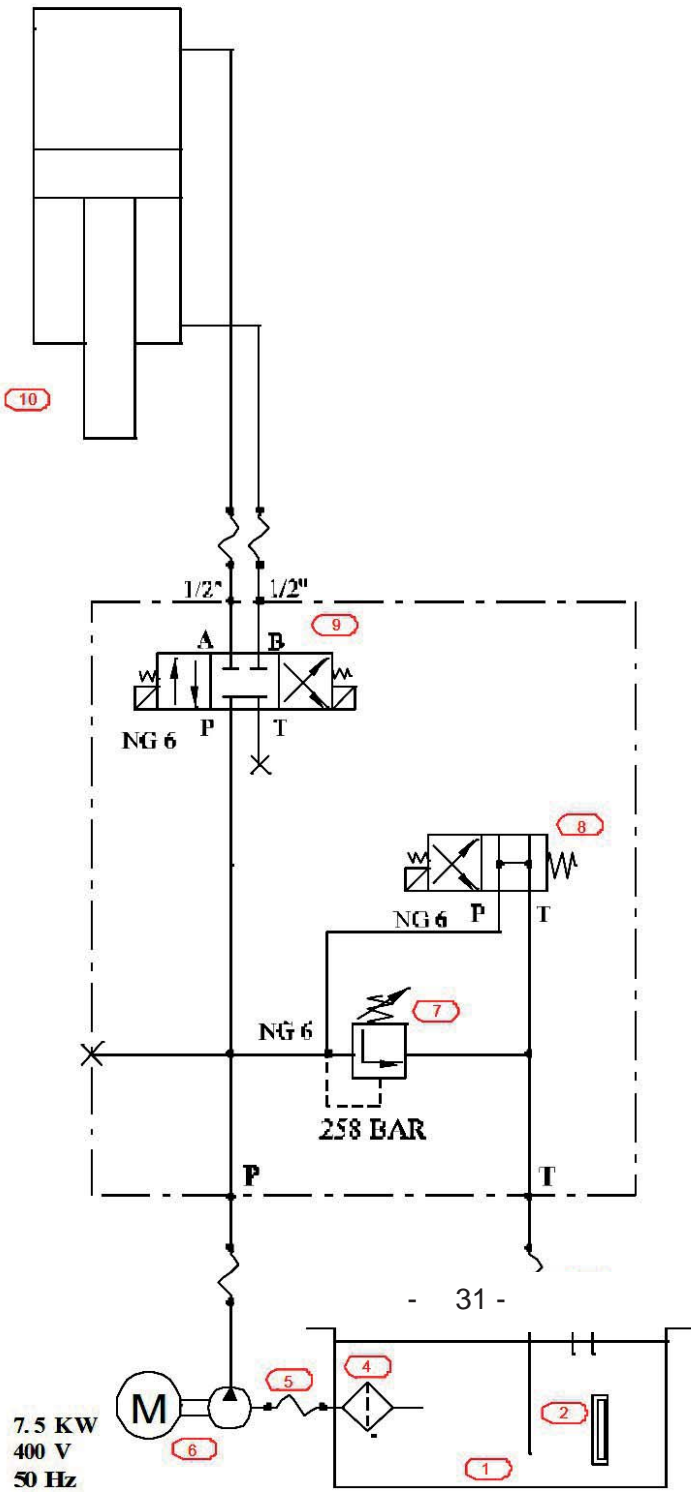
To adjust of the lower end point of the punch on the downstroke activate the punch with the pedal and hold it in the lower position. If this position must be corrected upward or under, must the stopper B adjusted accordingly.

After adjusting of the stopper must check the end position of the tool again and eventually if necessary the end stop must readjust until the exact end position is reached.

HYDRAULIC SPARE PARTS AND PLAN

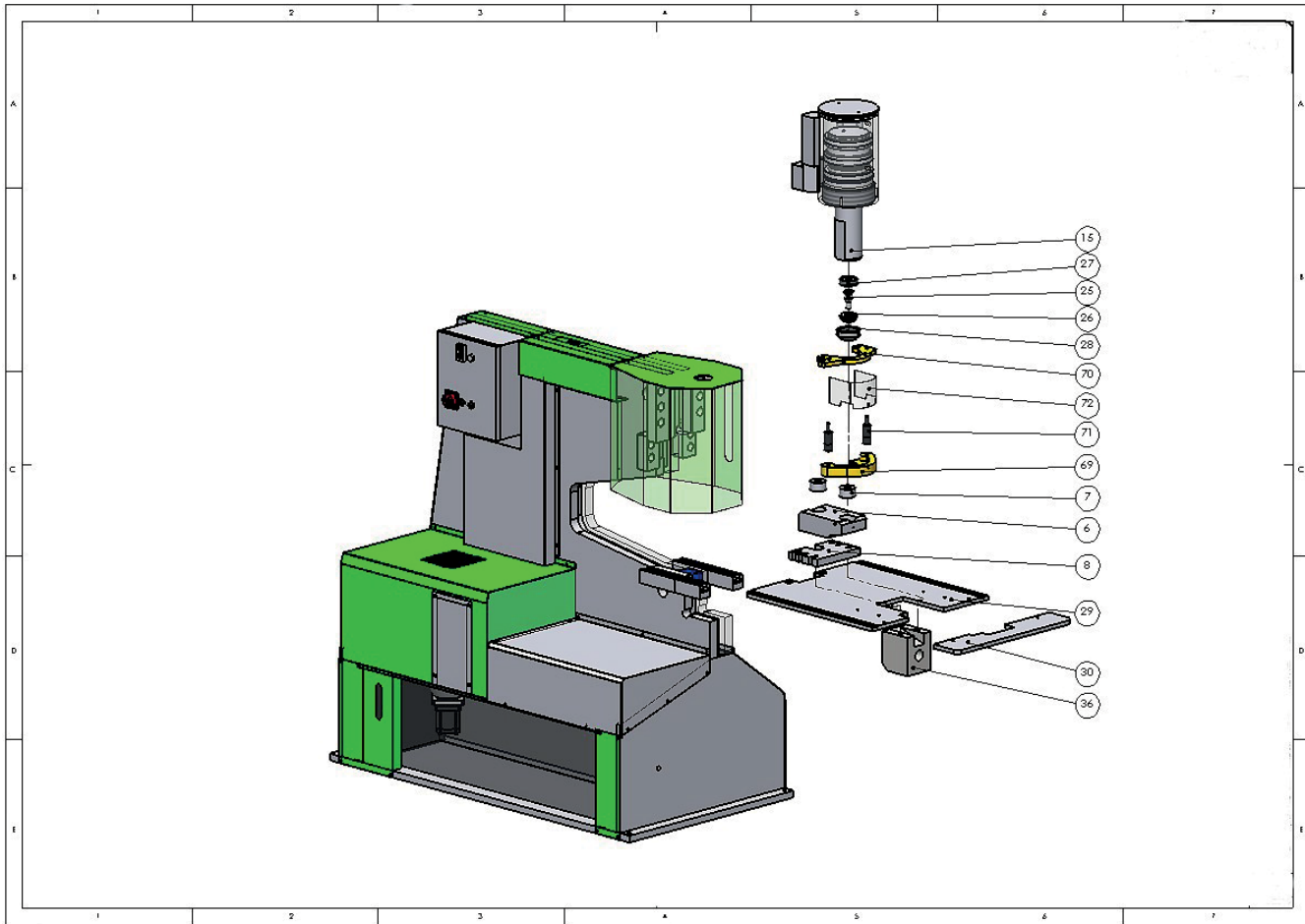
HYDRAULIC SPARE PARTS LIST			
NO	DESCRIPTION	CODE	IDENTITY
1	OIL TANK	70 Lt	1
2	LEVEL POWER SWITCH		1
3	OIL TANK CAP		1
4	SUCTION FILTER		
5	GEAR PUMP		1
6	ELECTRIC MOTOR	7, 5 kW	1
7	PRESSURE CONTROL VALVE		1
8	DIRECTION CONTROL VALVE		1
9	DIRECTION VALVE		2
10	CYLINDER	Ø 180 Honed Pipe	1

Hydraulic plan

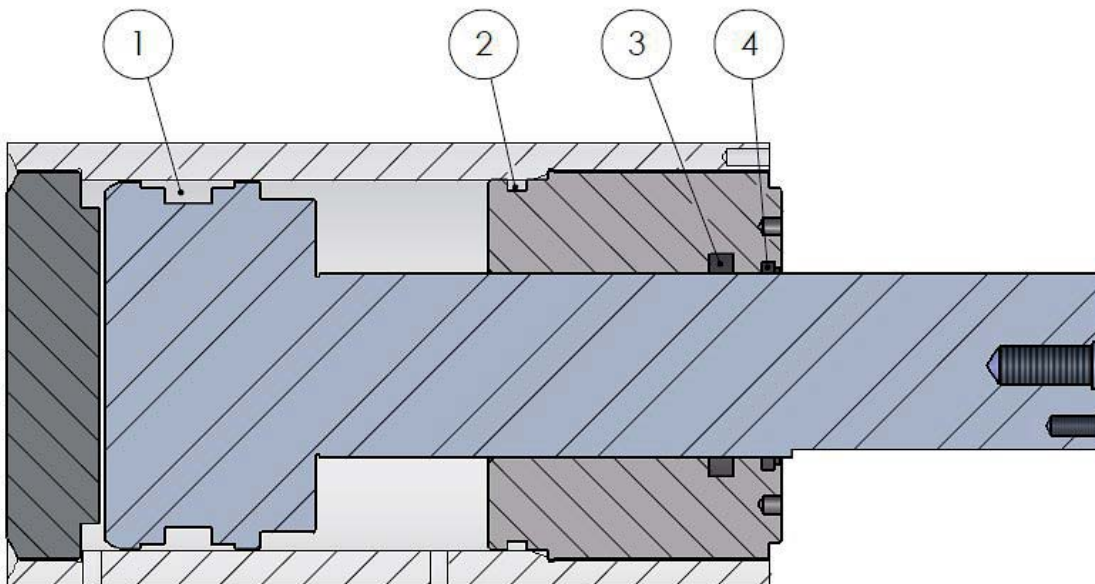


SPARE PARTS DRAWINGS

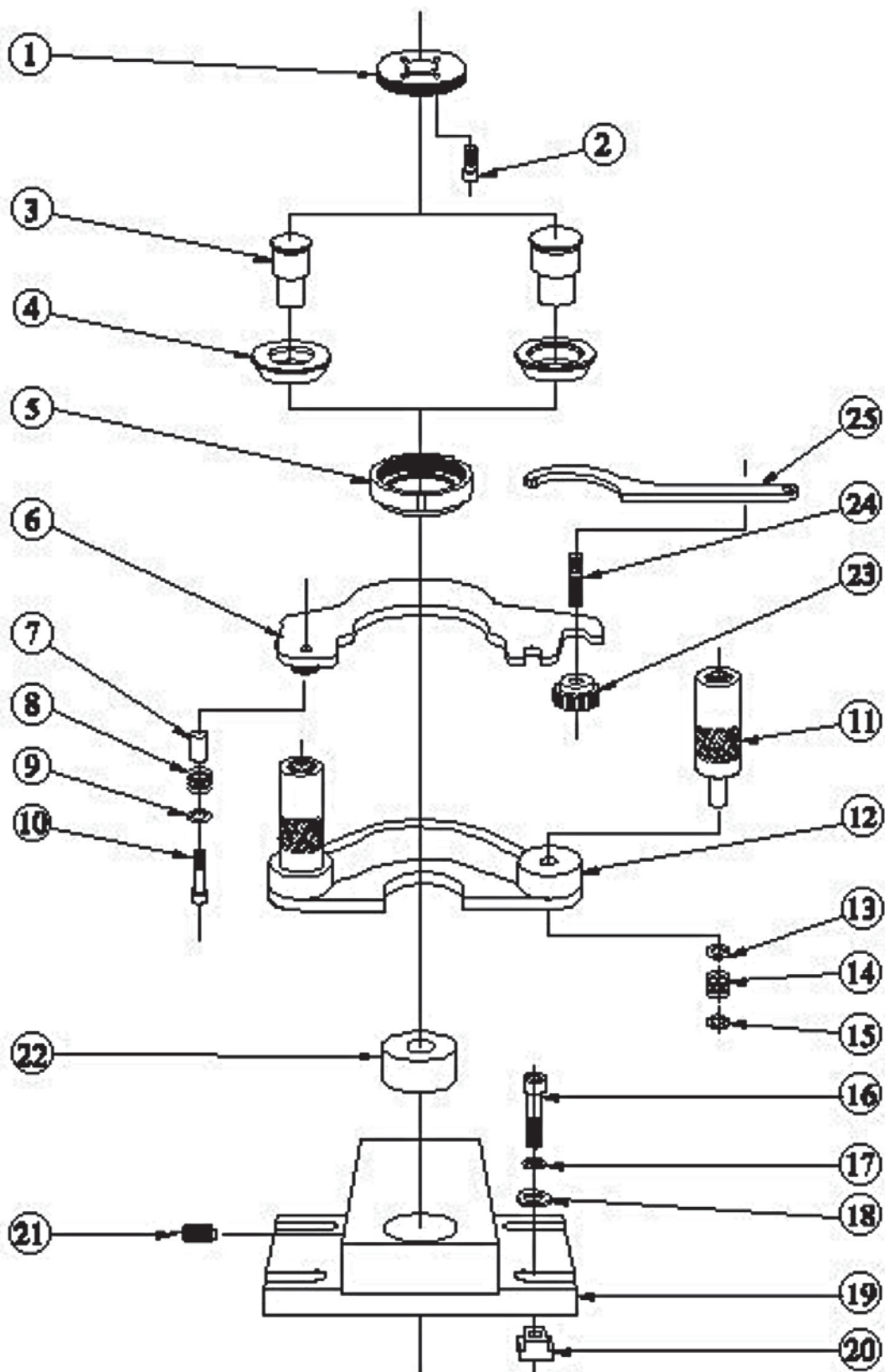
Workstation



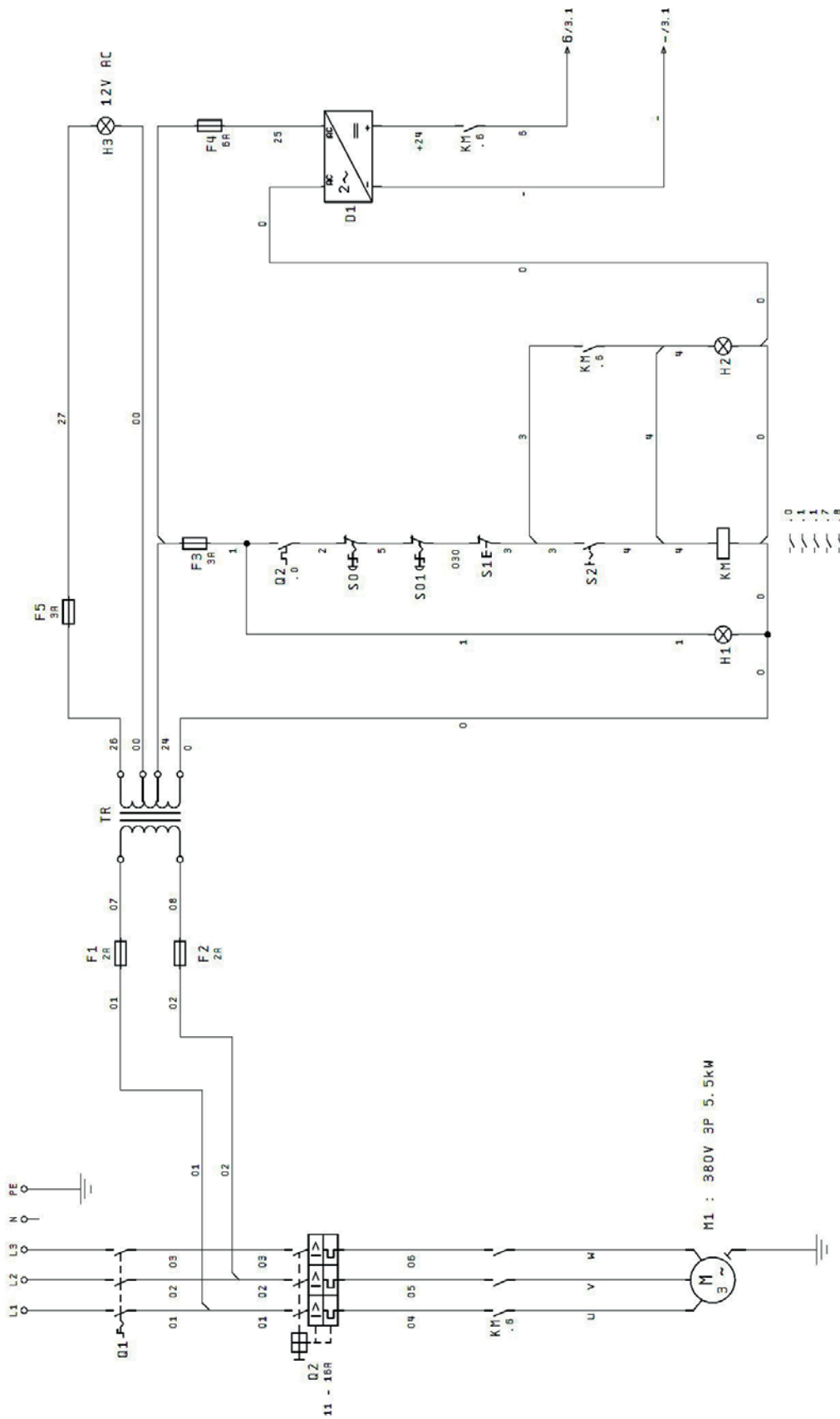
Cylinder



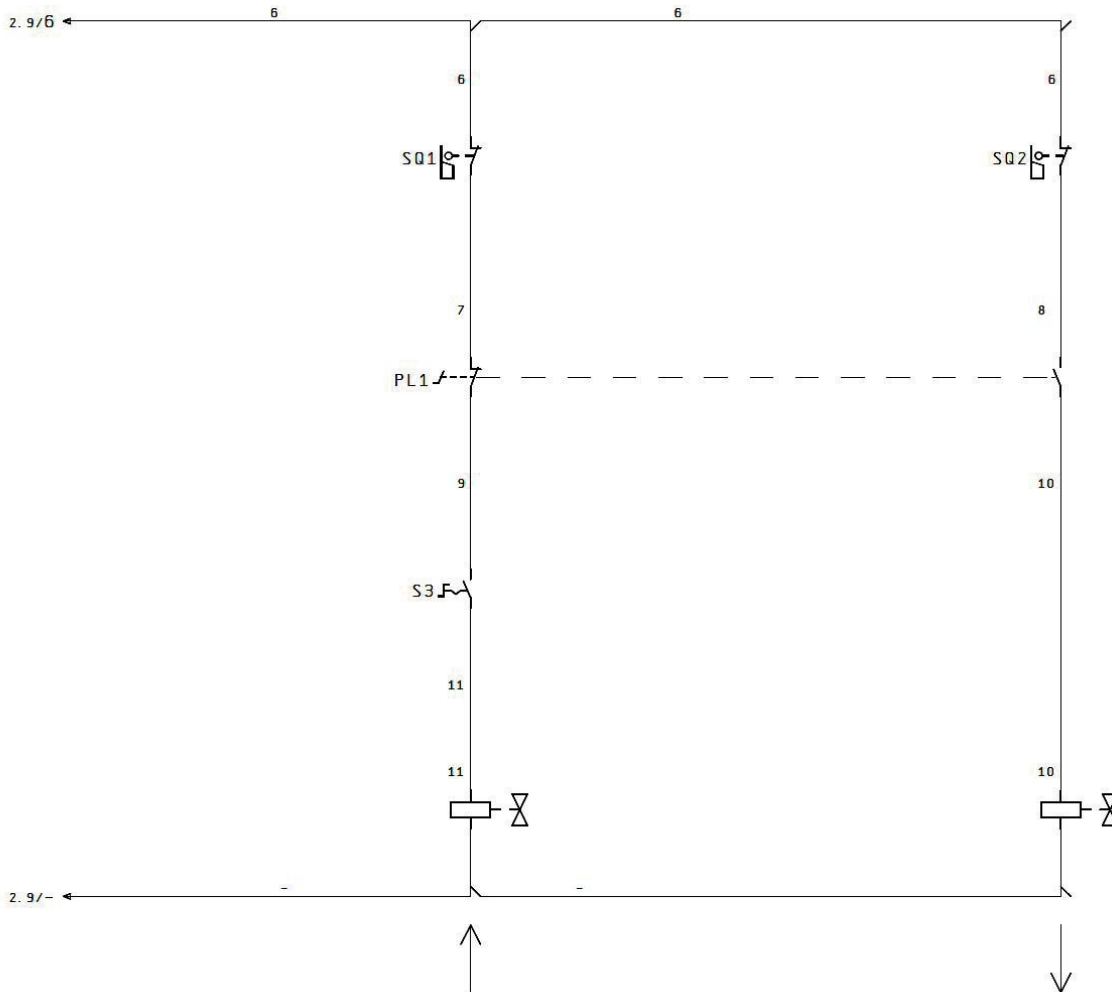
Punching fixture



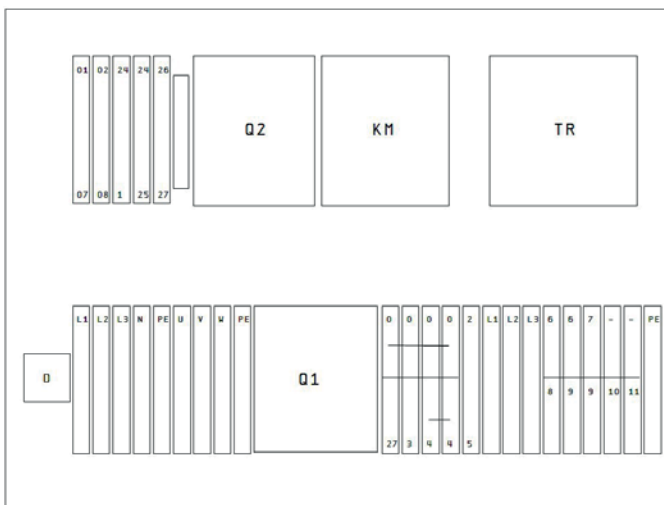
WIRING DIAGRAM 1



WIRING DIAGRAM 2



WIRING DIAGRAM 3



CODE	EXPLANATION
Q1	MAIN SWITCH
Q2	MOTOR PROTECTION OVERLOAD THERMAL RELAY (11 - 16A)
KM	MOTOR CONTACTOR
	AUXILIARY CONTACTS FOR MOTOR PROTECTION OVERLOAD THERMAL SWITCH
TR	TRANSFORMATOR (+15/0/-15/230/400/440 // 0/12 0/24V 200VA)
D1	BRIDGE DIODE
F1 F5	FUSE TERMINAL
S0	EMERGENCY STOP
S01	EMERGENCY STOP
S1	STOP BUTTON
H1	POWER ON LAMP
S2 - H2	START BUTTON AND LAMP
S3	ADJUSTMENT - WORKING SELECT SWITCH
SQ1 - SQ2	UPPER AND BOTTOM LIMIT SWITCHES
PL1	FOOT PEDAL
H3	LAMP

EU-DECLARATION OF CONFORMITY

According to Machinery, Directive 2006/42/, Annex II 1.A

Manufacturer / distributor Stürmer Maschinen GmbH
Dr.-Robert-Pfleger-Straße 26
D-96103 Hallstadt

hereby declares that the following product

Product Metalkraft® Metallbearbeitungsmaschinen

Category: HLS 85 S

Description: 3818085

Item number: Hydraulic hole punch

Machine type:

Serial number: _____

Year of manufacture: 20____

corresponds, on the basis of its design and construction, as well as the version that we have put into circulation, with the relevant fundamental health and safety requirements of (subsequent) EU Directives.

Relevant EU-Directives 2014/30/EU EMC- Directive

The following, harmonised standards have been applied:

DIN EN ISO 12100:2010 Safety of machinery - General principles for design - Risk assessment and risk reduction

DIN EN 60204-1:2007-06 Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2005)

Responsible for documentation: Engineering Department, Dr.-Robert-Pfleger-Str. 26, D-96103 Hallstadt

Hallstadt, 15.04.2016



Kilian Stürmer
CEO, Director



