

AKYAPAK

APK 101

Profile and Pipe Bending Machine



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AKYAPAK MAKİNE SANAYİ VE TİCARET A.Ş.

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INDEX

1. WARRANTY	4
2. TECHNICAL SPECIFICATIONS.....	5
2.1 STANDARD ACCESSORIES.....	5
2.2 SPECIAL ACCESSORIES.....	5
2.3 MAIN DIMENSIONS OF THE MACHINE	6
3. SAFETY FACTORS	6
3.1 POSSIBLE DANGERS	6
3.2 THE MACHINE FUNCTION	6
3.3 WORKING PLACE.....	7
3.4 THE DANGER SITUATION ARISING FROM THE ACCESSORIES.	8
3.5 EMISSIONS (VOICE DEBIT).....	8
3.6 THE DANGEROUS PLACES	8
3.7 THE WORKING PLACES.....	9
3.8 APPROPRIATE OPERATOR.....	9
3.9 TO PROTECT THE OPERATOR ONESELF.....	9
3.10 THE MACHINE ASSEMBLES PHASE SAFETY FACTORS.	10
3.11 IMMEDIATE SITUATION TO DO.....	10
3.12 WARNING SAFETY FACTORS	10
4. PROTECTION FACTORS	11
PROTECTION FACTORS (SAFETY EQUIPMENTS)	12
4.1 PROTECTION FACTORS CHECKING LIST	13
4.2 THE SHIPPING LOSSES.....	14
5. ASSEMBLY THE MACHINE.....	14
5.1 TRANSPORT AND RAISING THE MACHINE	14
5.2 EXTRACTING THE PACKAGE (DISASSEMBLE).....	15
5.3 SURROUNDING FACTORS.....	15
5.4 CLEANING THE PROTECTION MATERIAL.....	15
5.5 TO TAKE THE MACHINE ON THE SCALE	15
6. TO OPERATE THE MACHINE	16
6.1 ELECTRICAL CONNECTIONS.....	16
6.2 CONNECTING THE CONTROL PANEL TO THE MACHINE	16
6.3 CONTROLLING THE DIRECTION OF THE ELECTRICAL ENGINE ROTATION	16
6.4 CONTROL PANEL EQUIPMENTS (Standard)	17
6.5 CONTROL PANEL EQUIPMENTS OPTIONAL (Side Support Hydraulic)	17
6.6 CONTROL PANEL EQUIPMENTS OPTIONAL (Side Supports Digital Display)	18
6.7 LUBRICATION BEFORE WORKING	19

6.8 SETTLE THE HIDRAULIC OIL.....	19
7. THE USING FORMS	21
7.1 THE MACHINE USING.....	21
7.2 SUGGESTION FOR THE SELECTION OF THE BENDING MATERIAL	21
7.3 THE TOP ROLLS USING IN THE MACHINE.....	21
7.4 THE ROLLS REGULARITY	22
7.5 BENDING THE MATERIAL	22
7.6 TO GET THE SPIRAL	22
7.7 THE OPERATION LINE FOR THE BENDING MATERIAL	24
7.8 THE TOP ROLLS REGULARITY IN THE VERTICAL BENDING OPERATION FOR THE MOULDING MATERIAL.....	25
7.9 THE ROLLS REGULARITY IN THE BENDING OPERATION FOR THE PLATE MATERIAL.....	26
7.10 REGULARITY OF THE ROLLS TO BENDING THE SQUARE MATERIAL.....	27
7.11 REGULARITY OF THE ROLLS TO BENDING THE ROUND MATERIAL.....	28
7.12 REGULARITY OF THE ROLLS TO BENDING PIPE MATERIAL.	29
7.13 REGULARITY OF THE ROLLS FOR THE RECTANGLE CROSS SECTION	30
7.14 REGULARITY OF THE ROLLS TO BENDING THE ANGLE IRON OUTSIDE.	31
7.15 REGULARITY OF THE ROLLS TO BENDING THE ANGLE IRON.	32
7.16 REGULARITY OF THE SPECIAL ROLLS TO BENDING THE T IRON MATERIAL.	33
7.17 REGULARITY OF THE ROLLS TO NPU IRON BENDING.....	34
7.18 REGULARITY OF THE ROLLS FOR THE INP BENDING MATERIAL	35
8. THE ADJUSTMENT OF THE SIDE GUIDES.....	36
9. TO TAKE THE MACHINE IN THE HORIZONTAL POSITION.....	37
10. SPARE PARTS PLANS	38
10.1 BODY GROUP	38
10.2 UPPER SHAFT GROUP	39
10.3 SIDE SHAFT GROUP	40
10.4 CENTER SHAFT GROUP	41
10.5 CYLINDER GROUP.....	42
10.6 STANDARD SIDE GUIDE GROUP	43
10.7 SPECIAL SIDE GUIDE GROUP	44
10.8 HYDRAULIC SIDE GUIDES (OPTIONAL)	45

1. WARRANTY

- This warranty is valid for 12 months.
- This warranty is valid for the part changing or repairing those results from failures due to inaccurate material or manufacturing.
- Transport, travel and labor costs of the parts, that is required for renewing and repairing are not recompensed by this warranty.
- This warranty is completely invalid in conditions which include modifications on the machine without written permission or any damage caused by careless usage.
- This warranty does not cover the costs of the damages caused by careless usage or modifications without a written approval by the manufacturer.
- This warranty is invalid for the parts depreciated in normal working condition.
- This warranty is invalid for frayed parts under normal conditions.
- This warranty is invalid, if the machine is used for different operations, except the operations that it has been designed and manufactured for.

AKYAPAK provides assistance to the customers, when a problem occurs about operation and repair of the machine. You may contact us via e-mail, telephone and fax.

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2. TECHNICAL SPECIFICATIONS

- Shaft : $\varnothing 100$ mm.
- Rolls $\varnothing 315$ mm.
- Machine Speed : 5m/min.
- Machine Weight : 2080 kg
- Working Voltage (3 Phase) : 380/415V
- Frequency : 50 Hz
- Motor : 11kW
- Max Current : 25A
- Conductor cross section : 5x6 min.

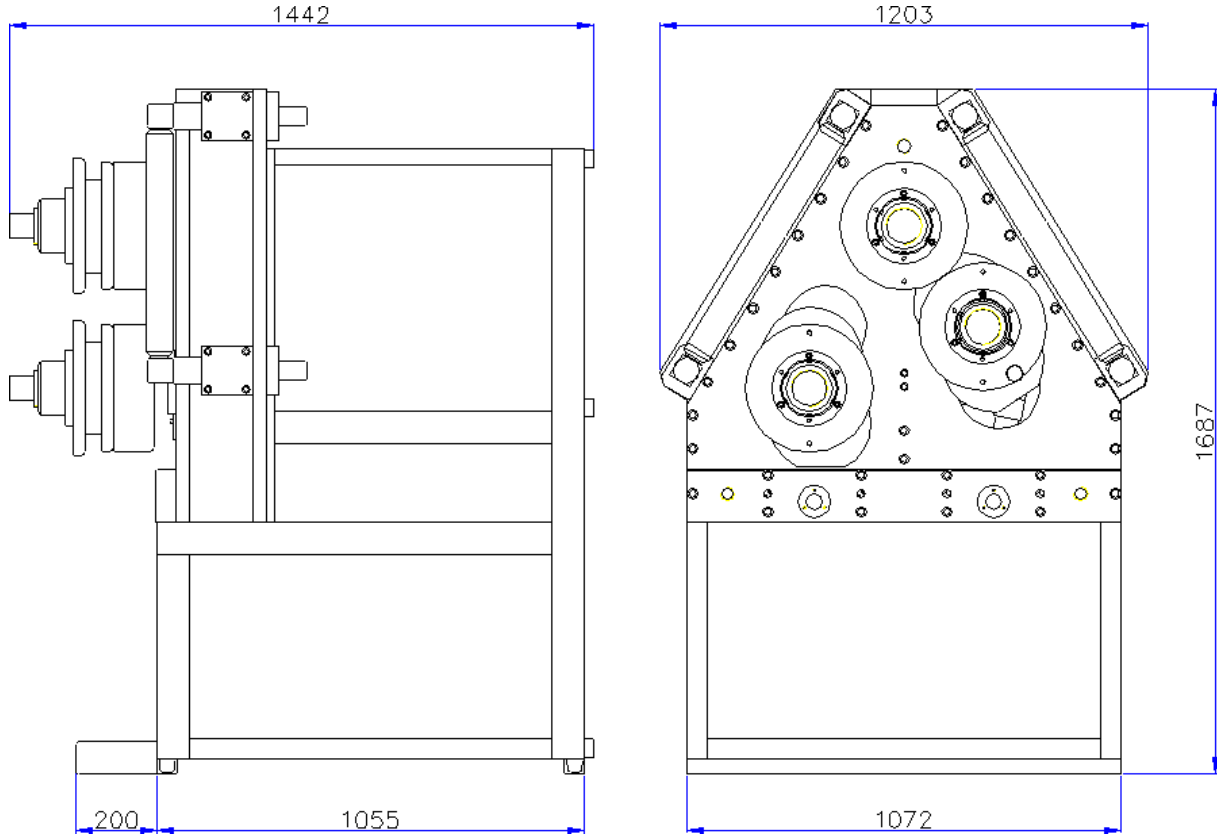
2.1 STANDARD ACCESSORIES

- Machine body is steel (St-52) construction
- Rolls are driven by hydraulic motor, planetary gearbox and gears
- Shafts are made of special steel hardened and grounded
- Side guide rolls are adjustable by manually
- Horizontal and vertical working
- Electrical and hydraulic protection against overloads
- Digital display for bottom rolls
- Lower rolls can moveable up and down
- Separate and moveable control panel
- In accordance for "CE"

2.2 SPECIAL ACCESSORIES

- Special profile rolls for pipe, profile and angle materials
- Spiral bending device
- Variable speed of rotation
- Adjustable hydraulic guide rolls in two directions
- Mechanical guide rolls for angle bending
- Digital readout for guide rolls
- NC playback control system
- CNC graphic control system
- Different voltage and frequency electric motor

2.3 MAIN DIMENSIONS OF THE MACHINE



3. SAFETY FACTORS

3.1 POSSIBLE DANGERS

The AKYAPAK profile and pipe bending machine is ornamenting with the all protection appliances.

For example: Gear, electrical installations completely are covered with protection cover.

The other dangerous places are the material bending places on the rolls.

From the wrong using and carelessness may come out the danger situations.

According to the right usage of the machine all the personal are responsible. In question don't bend on the machine outside the sheet metal, aluminum the other hard material. The losses which will give you the machine, also will give yourself. The modification in the machine is forbidden, for the safety and the productivity working the machine. In this User Manuel the determine work, maintenance and protection factors must to agree.

3.2 THE MACHINE FUNCTION

AKYAPAK Profile and Pipe Bending machine; Molding, metal sheet, quadrangular, circular, pipe, brace, T, NPU, NPI, the different form and size brass, stainless, the steel material is bending like circular. The pipe and molding material are convenient to make the antigorite. With the high capacity material for one time the machine, can not to bend.

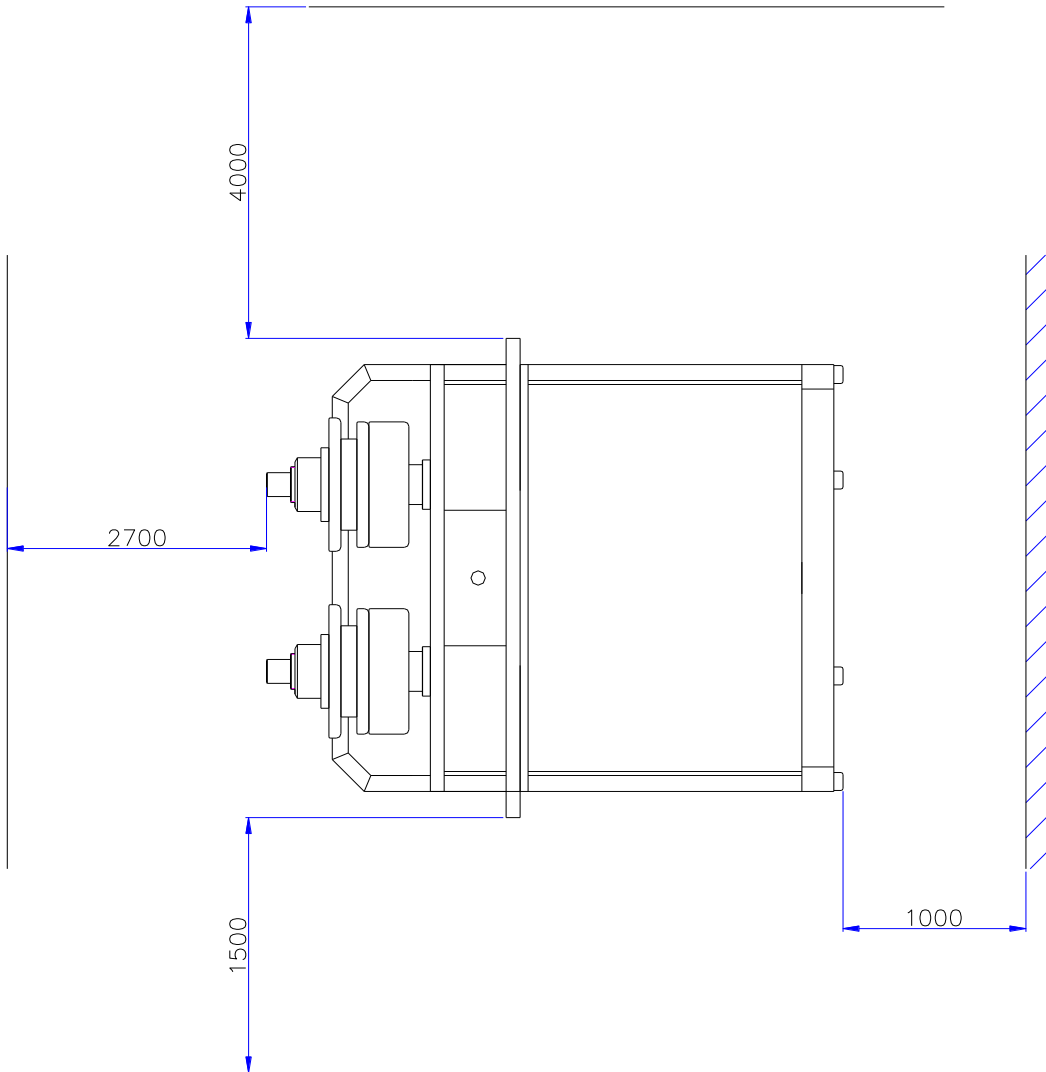
3.3 WORKING PLACE

When you assembly the machine, the machine requirement places and surroundings factors must be to pay attention.

To put into place the machine, the ground must be hard and strong. For reliable working, before settle the machine weight must be controlled. For the machine periodical maintenance must be found the enough safety places. Especially the back machine must have one meter the safety place.

In addition the material which will bended according to the maximum diameter near side the machine must have enough places. To be don't have the losses the third personal, around the surrounding machine must be present the warning signboard.

This writing condition is valid for the vertical and horizontal working machine.



3.4 THE DANGER SITUATION ARISING FROM THE ACCESSORIES.

Adjust the side support machine according to the material. When you bend the material use the top rolls according to the type of the material determine in the USER MANUEL. For the long material use the support apparatus. When you make antigorite adjust the side supports according the spiral width. Don't put on the machine the additional accessories.

ATTENTION! THE LIFE SAFETY

3.5 EMISSIONS (VOICE DEBIT)

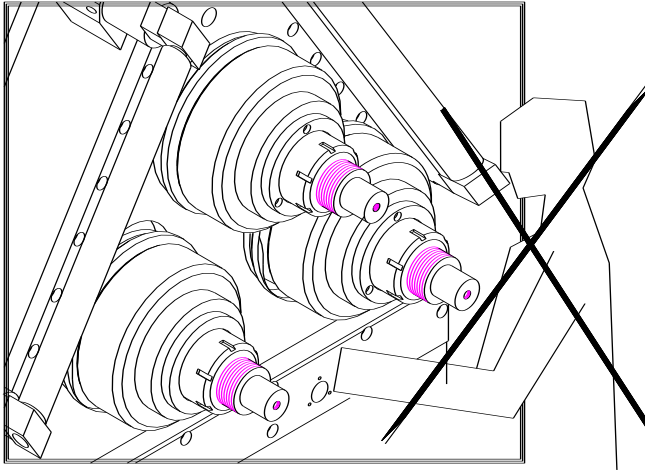
When the machine is load and working the voice level must be 70 dB down.

3.6 THE DANGEROUS PLACES

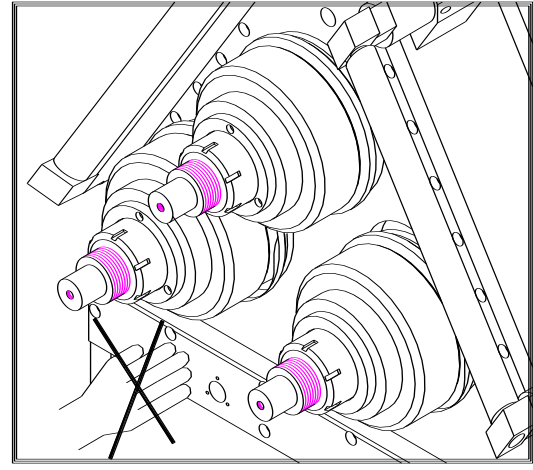
AKYAPAK profile and pipe bending machine rolls are with driving system. You may press between the top rolls your hand and your fingers. During the rotation of the top rolls be careful your hands and dress don't pressing between the rolls. Don't make maintenance when machine is working. Be careful the machine is in stopped position, when the cover is taken out.

AT THE ANY DANGER SITUATION: PRESS THE EMMERGENCY STOP BUTTON.

Stop the machine, before cleaning and repairmen. Pull the electrical main socket. Don't pull the safety protection from the machine



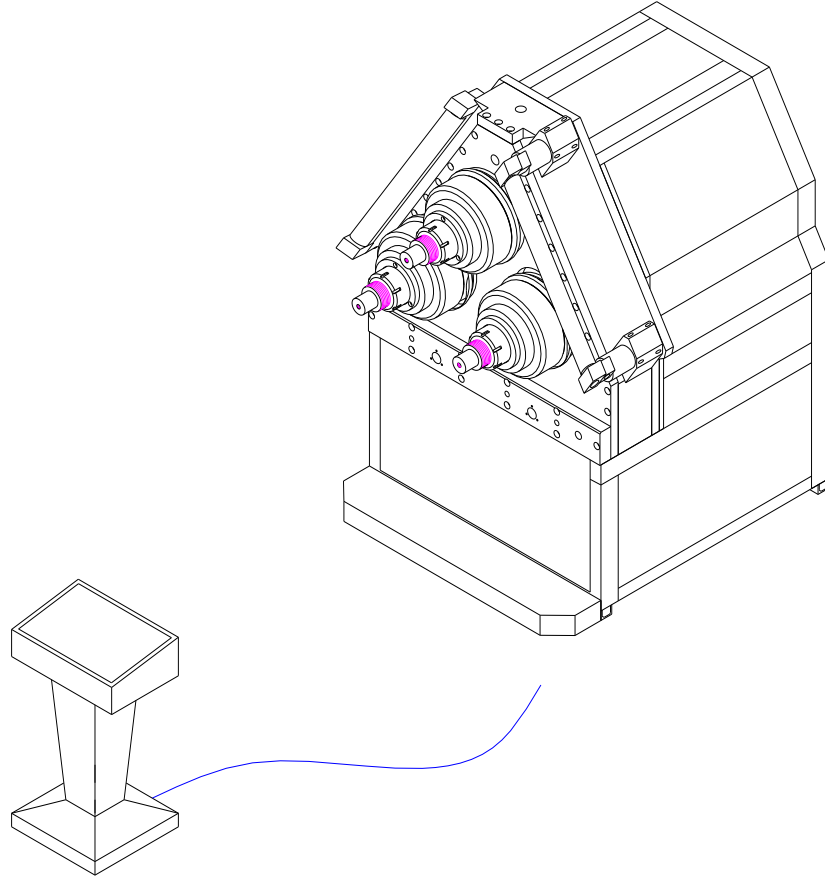
EXTERNAL PULLING DANGEROUS



TIGHTING DANGEROUS

3.7 THE WORKING PLACES

The working place is in the front of the machine. Adjust the control panel opposite side, when you want replaces the machine. The material must be in the front of the machine.



DANGER! When the machine is working, and the rolls are moving, don't drive to the material.

3.8 APPROPRIATE OPERATOR

The personal under 16 years cannot use the cylinder machine. AB-RULE the operator which will use this machine must read completely the user Manuel and confirm his boss. For the incomprehensible situations, call back to AKYAPAK.

3.9 TO PROTECT THE OPERATOR ONESELF

The operator cannot take the special disposition, for the machine using at the normally conditions. Nevertheless; At the working time of the machine, for the hard and sharp material, the operator must use the steal nose shoes and gloves. According the maintenance and repairmen the machine, the personnel which are authorized must have the needed equipment's at the wardrobe.

- Screwdriver set
- Tightening set
- Key set
- Lubrication gun
- Gloves, Steal nose shoes

3.10 THE MACHINE ASSEMBLES PHASE SAFETY FACTORS.

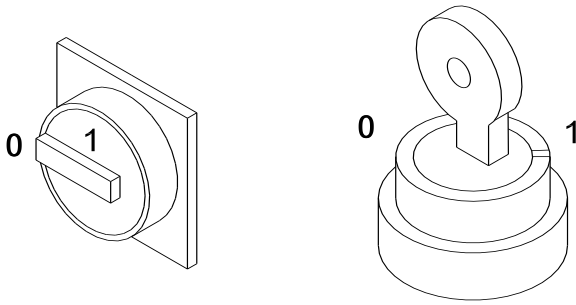
AKYAPAK profile and pipe bending machine must to place on the strong, hard and straight ground. The machine has risk to be turned upside-down, and may cause the heavy accidents. The machine working place must be clean.

3.11 IMMEDIATE SITUATION TO DO

At the immediate situation press the emergency button to stop the machine.

3.12 WARNING SAFETY FACTORS

This machine can only be used by authorized personal. The machine can only be used at the closed areas. Machine must be placed away from the burning and explosive material. When the operator is leaving his machine, he should turn the main switch to OFF position. The manufacturer is not responsible for any damages at the equipment's and parts, if changed without written permission.



4. PROTECTION FACTORS

The protection factors, for the operator working at the machine, are warning equipment's, attached below in -check list .This protection factors, are separate attached for USER.

CONTROL THE PROTECTION FACTORS

- Before every work in relays, control the protection factors.
- Once at the week periodically, control the safety elements.
- After all the repairs, you should control the protection factors.

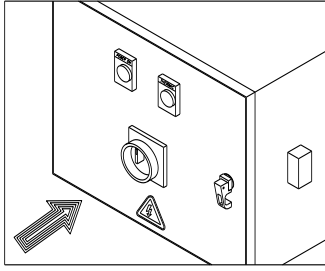
TO MAKE THE CONTROL, BE CAREFUL FOR THE FOLLOWING SUBJECTS

- Are the fixed position is right or not.
- If reliable or not
- The function is right or not.
- The assembly is right reliable or not.
- Before working if the machine has problem or mistake, satisfy the problem.
- In the working time if you see the problem, try to satisfy them.
- Before and at the working time don't pull out the safety elements, and don't leave the circuit.

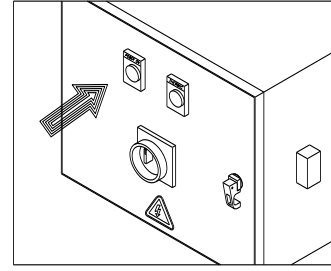
PROTECTION FACTORS (SAFETY EQUIPMENTS)

1. The protection sheets.
2. Electrical panel circuit breaker.
3. The energy display in the electrical panel.
4. Thermic display in the electrical panel.
5. Control panel emergency stop button.
6. Control panel selective switch 0/1.
7. Control panel display.
8. Control panel function button.
9. Warning label.
10. Energy cable reliable.
11. Control panel connection cable.
12. Hydraulic oil level.
13. The manual lubrication is done or not.

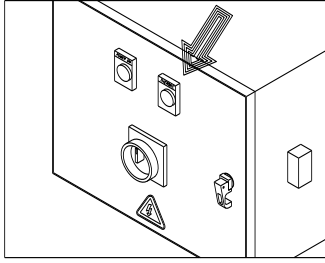
PROTECTION FACTORS (SAFETY EQUIPMENTS)



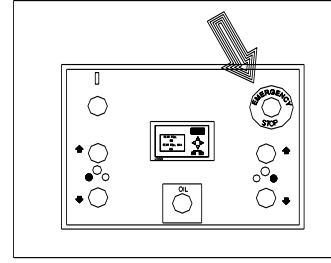
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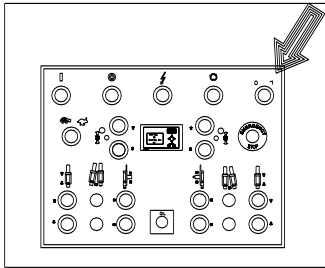
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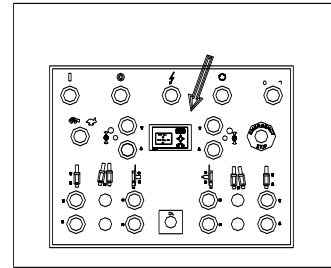
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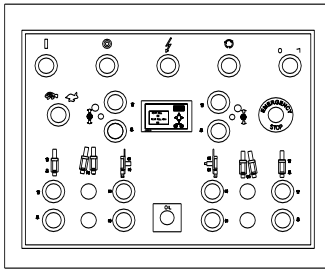
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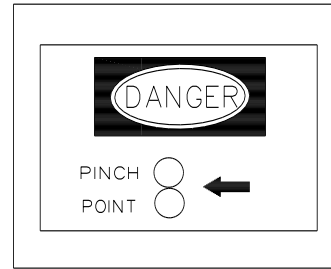
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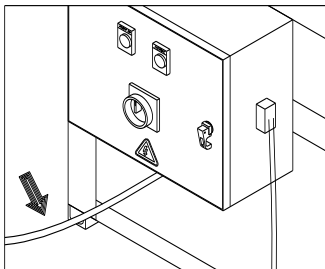
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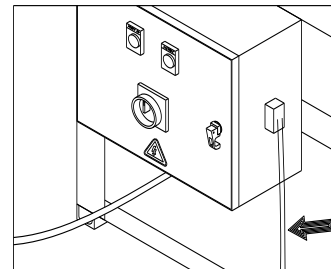
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9



10



11

4.1 PROTECTION FACTORS CHECKING LIST

- ☐ SHEET METAL COVER: MUST BE ASSEMBLY AND THE SCREW IS STRONG SCREWING.
- ☐ ELECTRICAL PANEL CIRCUIT BREAKER: The machine with motor must be assembly and cutting the energy system .Control the circuit breaker is close or not the energy system.
- ☐ THE ENERGY SIGNAL LAMP: The machine with motor must be assembly .Control the lamp is lighting or not.
- ☐ THERMIC LAMP: The machine with motor must be assembly .Control the lamp is lighting or not.
- ☐ EMMERGENCY STOP BUTTON: The foot pedal in the machine with motor is assembly (Control Panel) Control the foot pedal is close or not the system.
- ☐ THE DISPLAYS: Assembly inside the control panel machine with motor and is working or not must be control (OPTIONAL)
- ☐ THE WORKING BUTTONS: Assembly inside the control panel machine with motor, and is working or not must be control (OPTIONAL)
- ☐ ATTENTION LABELS: Assembly on the machine.
If the label is not there and or is worn illegible, absolutely request the AKYAPAK COMPANY.
- ☐ THE ENERGY CABLES: In the machine with motors the connecting ends must be control, and the cable has got a physical damage or not must be control also.
- ☐ THE CONTROL PANEL CABLE: In the machine with motor, the cable has got a physical damage or not must be control.
- ☐ THE LUBRICATION CONTROL: In the user manual the points which must lubricating are determine and must be control. The needed points must be lubricating.

4.2 THE SHIPPING LOSSES

ATTENTION! To take delivery of the MACHINE, control the possible losses on the machine. If the MACHINE has damages, write the protocol on the transporter receipt, and inform THE SHIPPING agency.

WARNING *The USER must read the user Manuel, use and start the machine in appropriate way.*The user must not take out the safety elements. , For example: Switch or Emergency stop button pulling out, must not change. This situation is danger for user and for the machine also.After this stimulating explanation, the producer is not responsible for loses.

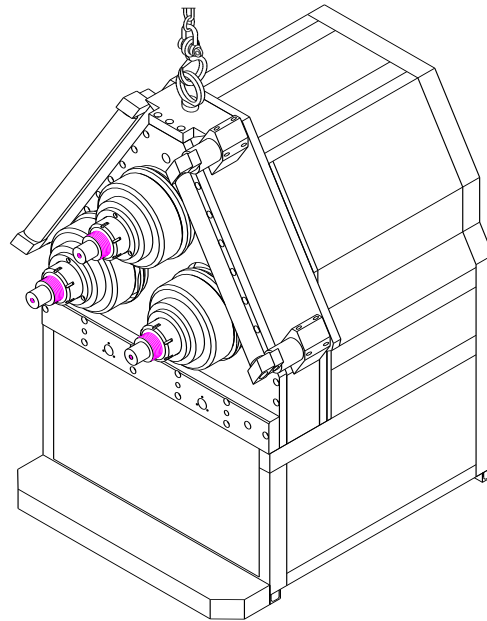
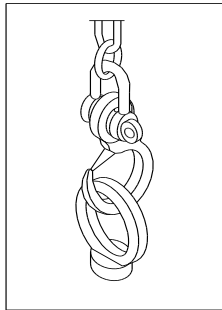
5. ASSEMBLY THE MACHINE

5.1 TRANSPORT AND RAISING THE MACHINE

AKYAPAK 3 rolls bending machine, must lift carefully with crane and helping with rope. Be careful for the damage at the lifting operations. The producer is not responsible for the damage arising in this situation. The transport equipment must be suitable to the DIN 61360 standards

DON'T LIFT THE MACHINE WITH THE FORK LIFT!

Machine weight is **2080 kg**



5.2 EXTRACTING THE PACKAGE (DISASSEMBLE)

To be unaffected from the transport and atmosphere conditions AKYAPAK PROFILE AND PIPE BENDING MACHINE is covered with nylon water infect material. For the following operations to be unaffected from the weather, must be carrying with nylon and rubberized waterproof cloth.

At the time of the pulling out the package, if you run into the damage from the transportation mistake, call the shipping agency and inform the manufacturer company for the damage.

The children must not contact with the package material (if the plastic and chemistry material are higher). The package must pull out with the gloves. During the carriage, the various parts of the machine are lubricating with oil. The oil may clean with diesel or solvent.

5.3 SURROUNDING FACTORS

The needed places for the machine using are determined at the paragraph 3.3.

To work the machine productive and long term, at the same time with sensitive operation the following factors must be care.

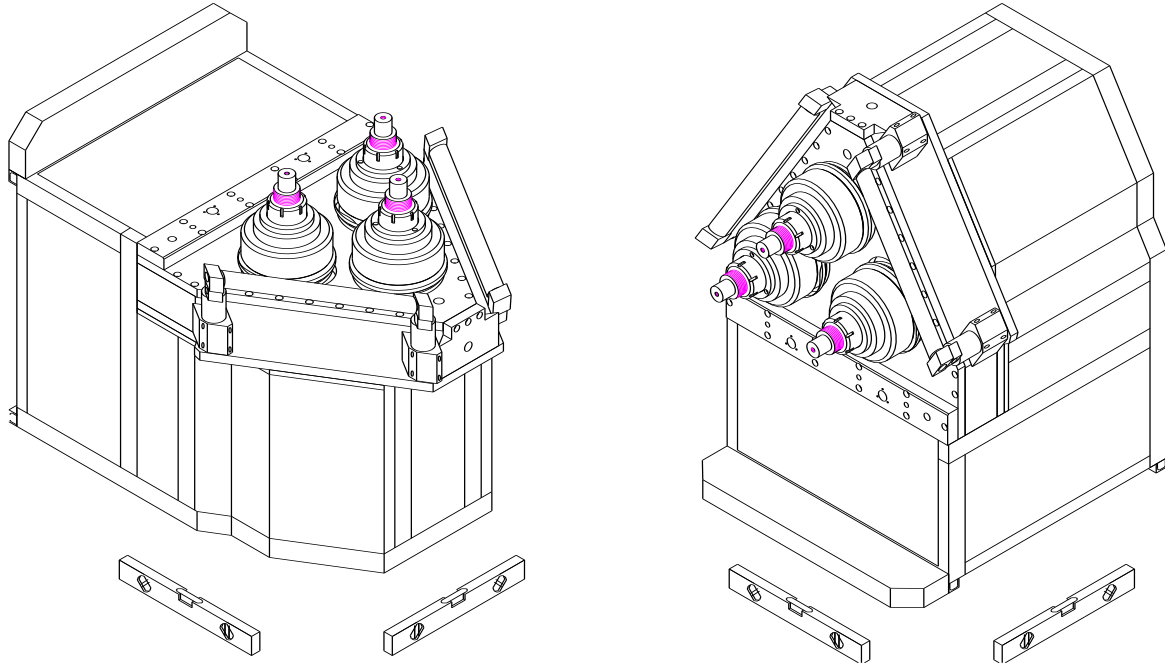
- Take far-off the machine from the metal filings production.
- Don't place the machine, near the machine which may make the vibration in the working places.
- Assembly the machine far-off the vibration surroundings.

5.4 CLEANING THE PROTECTION MATERIAL

All the lubricating surfaces must be cleaning with wet and damp cloth. The cleaning of the protection oil is explaining at the paragraph 5.2.

5.5 TO TAKE THE MACHINE ON THE SCALE

To work the machine productive and long time, must be assembly on the straight floor. The scale must have the sensitiveness approximately 0,04mm. Short pause for rest the sensitiveness must be controlling. The first control must be making after 24 hour. After the first control, monthly and yearly the control must be repeated.



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6. TO OPERATE THE MACHINE

6.1 ELECTRICAL CONNECTIONS

The electrical connection must be repair only at the side qualified electrician personnel.

Before repairing the technical characteristics on the table must be controlling.

Fit the energy cable into the whole auxiliary the machine.

Assembly the energy cable in the clamps L1-L2-L3-N-PE inside the electrical panel.

6.2 CONNECTING THE CONTROL PANEL TO THE MACHINE

Take the control panel near the side machine and put the plug inside the socket.

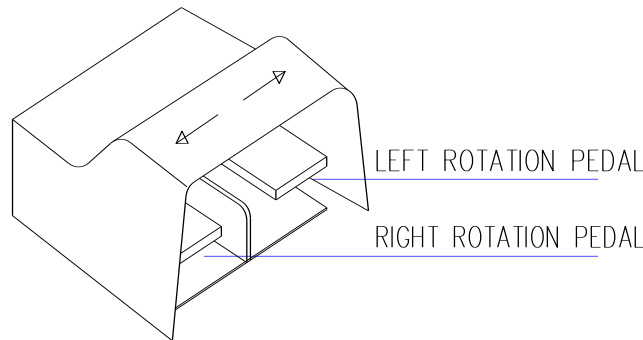
6.3 CONTROLING THE DIRECTION OF THE ELECTRICAL ENGINE ROTATION

After the electrical connections the electrician must control the rotation of the motor. Follow the description below.

1. Move the circuit breaker in the position-1.
2. Control the emergency stop button is setting or not.
3. Press the start button.
4. Control the rotation of the rolls.

To press on the foot pedal, control the rotation arrow (picture A), if the arrow of the rotation is correct, continue to work.

If the rotation of the rolls is not like on the picture arrow, press the emergency stop button to stop the machine. In this position, the machine working is loser. To correct this situation, must be cutting the energy of the machine and change the phase R and S inside the socket.



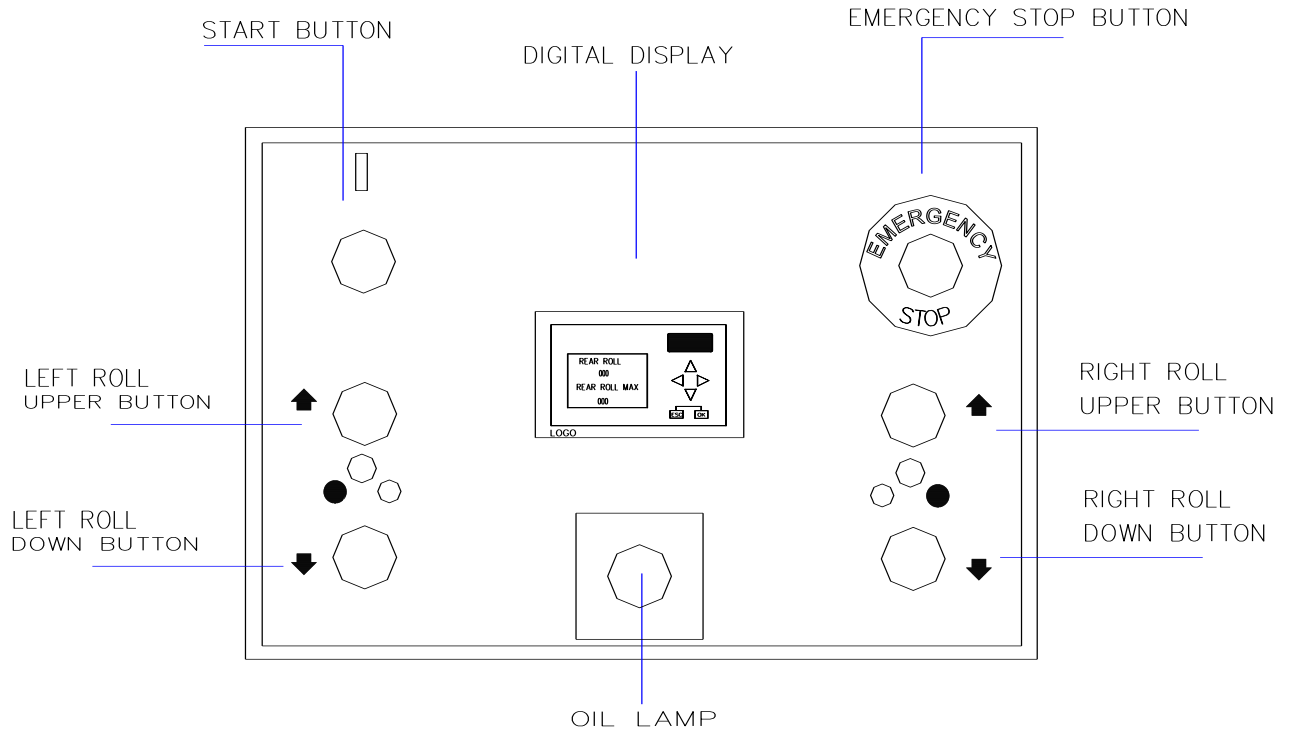
IF THE MACHINE DOESN'T START

- a) Control the emergency button is pressed or not.
- b) Control the thermic is cuttings or not.
- c) Control the switch 0-1 position is open or not.

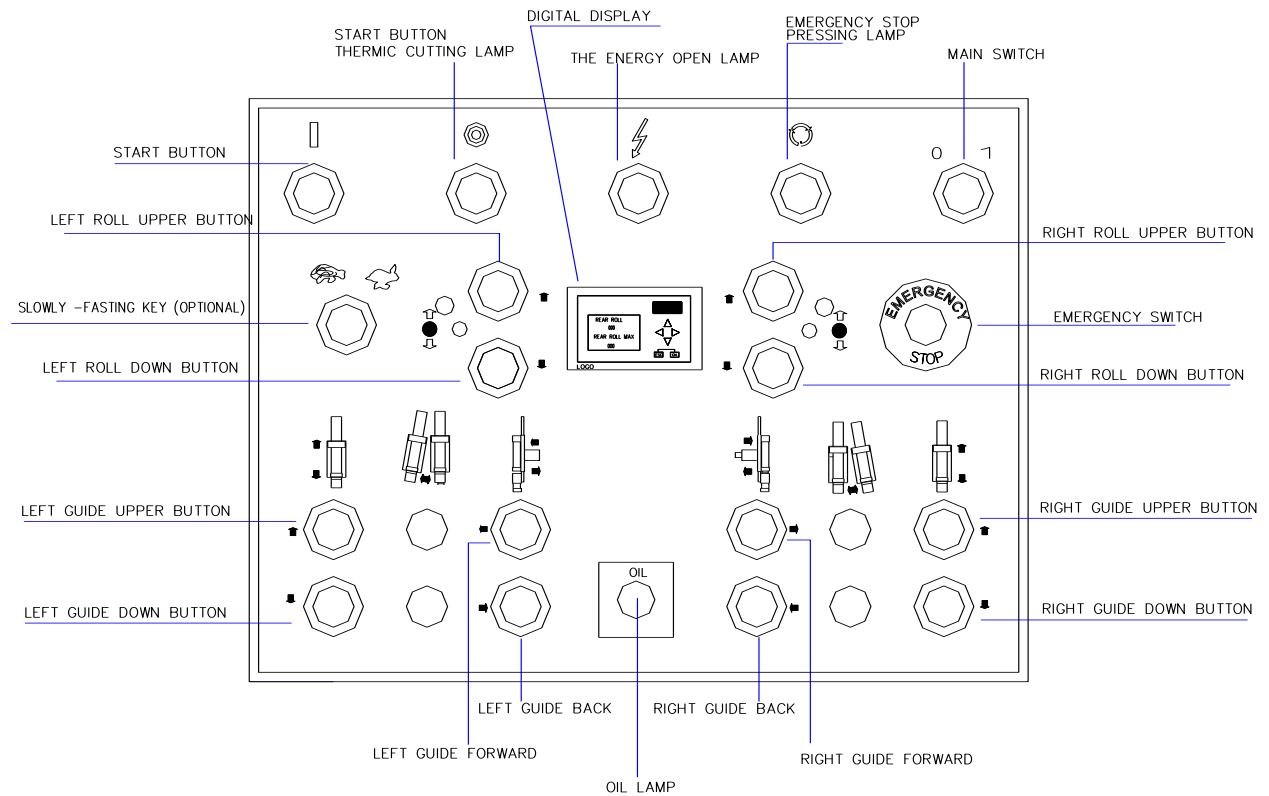
TECHNICAL MAGNETIC SWITCH

1. Found inside the electrical panel of the machine. Using for each motor in the machine.
2. When the current network is very high this electrical equipment stopped the machine from burning.
3. In the normally position the switch is position 1. When the motor is pulling the high current, the thermic will be in the position (0). To back again in the position (1) the thermic must be cold.

6.4 CONTROL PANEL EQUIPMENTS (STANDARD)



6.5 CONTROL PANEL EQUIPMENTS OPTIONAL (SIDE SUPPORT HYDRAULIC)



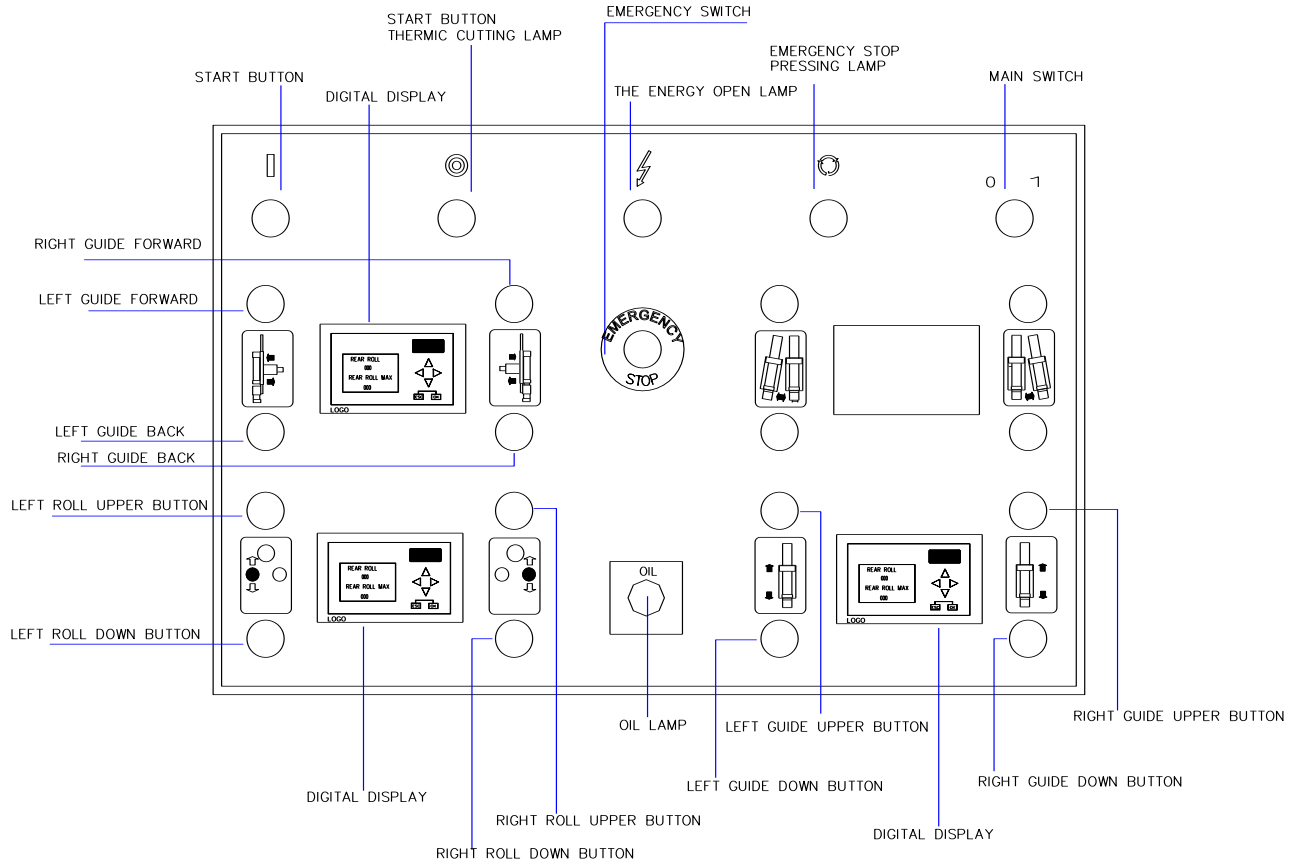
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6.6 CONTROL PANEL EQUIPMENTS OPTIONAL (SIDE SUPPORTS DIGITAL DISPLAY)



6.7 LUBRICATION BEFORE WORKING

Before using the machine, lubricate all the parts which are shown on lubrication plan.

6.8 SETTLE THE HIDRAULIC OIL

The AKYAPAK Company, sending to the customer produced machine without oil. Don't begin to work the machine without the oil.

Put the oil in the machine **140 Lt.** The oil which you will use in the hydraulic profile and pipe bending machine are the following.

HYDRAULIC OILS: After 2000 working hour, machine hydraulic oil must be change.

İSO	ROL	SHELL	TOTAL	AGIP	BP	ELF	GULF	ESSO
MH 32 HIV	Lİ 32 HIV	HİD.YA 32 HIV	ZS 32 HIV	OSO 32 HIV	HLP 32 HIV	ELF 32 AWHIV	32 AW HIV	NUTO HIV

GREASE OIL: Please lubricate the gears and parts with small brushes after each 500 hours of working

İSO	ROL	SHELL	TOTAL	AGIP	BP	ELF	GULF	ESSO
XM 3	MURCU RY 3	ALVANI AR3	MULTİS 3	GR MU EP3	GREASE LTX 3	ROXELA 3	GULF 3	BEACON 3

TRANSMISSION OIL: After 2000 working hour, machine hydraulic oil must be change.

İSO	ROL	SHELL	TOTAL	AGIP	BP	ELF	GULF	ESSO
CC 32	EP 320	OİL 320	CARTER EP 320	BLASİA 320	GRXP 320	SP 320	EP 320	EP 320

Control the air cavity in the hoses after putting the oil in the machine.

Control the oil level in the hydraulic tank indicator.

Control the oil is less in the tank with the determined period. If the oil is less add to the tank.

ATTENTION!! IN THE CONTROL PANEL THE YELLOW LAMP IS INDICATE THE OIL LEVEL HEAT AND INDICATE THE DANGEROUS LEVEL POSITION.

Control the air cavity in the hoses after putting the oil in the machine.

Control the oil level in the hydraulic tank indicator.

Control the oil is less in the tank with the determined period. If the oil is less add to the tank.

ATTENTION!! IN THE CONTROL PANEL THE YELLOW LAMP IS INDICATE THE OIL LEVEL HEAT AND INDICATE THE DANGEROUS LEVEL POSITION.

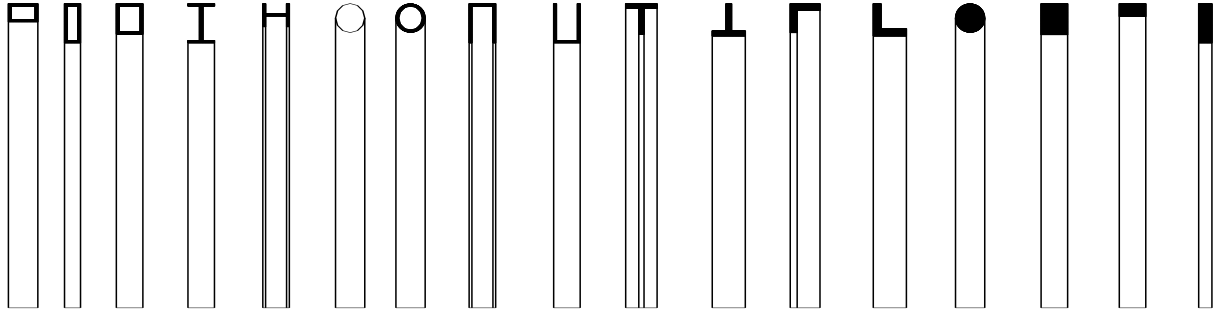
[TR] HİDROLİK YAĞ KULLANMA TALİMATI	Dış Ortam Sıcaklığı -20°+30°: 32 Numara Hidrolik Yağı Dış Ortam Sıcaklığı +20°+30°: 68 Numara Hidrolik Yağı
[EN] OIL TO BE USED	For Temperatures Between -20°+30°: Hydraus Oil 32 For Temperatures Between +20°+50°: Hydraus Oil 68
[D] ÖLMARKE	Bei Raumtemperaturen Von -20°+30°: Hydraus Oil 32 Bei Raumtemperaturen Von +20°+50°: Hydraus Oil 68
[I] OLIO CENTRALINA	Per Luoghi Con Temperature Ambientali -20°+30°: Hydraus Oil 32 Per Luoghi Con Temperature Ambientali +20°+50°: Hydraus Oil 68
[F] HUILE CONSEILLEE	Pour Des Temperatures Ambiantes -20°+30°: Hydraus Oil 32 Pour Des Temperatures Ambiantes +20°+50°: Hydraus Oil 68
[E] ACEITE ACONSEJADO	Para Lugares Con Temperatures Ambientales -20°+30°: Hydraus Oil 32 Para Lugares Con Temperatures Ambientales +20°+50°: Hydraus Oil 68

[Tr] Redüktör Yağı Kullanım Talimatı [En] Reductor Oil User Instruction [I] Tabella Oil Riduttore [Gb] Oil Epicycloidal Reducer [F] Tableau Oil Reducteurs [D] Olmarke Planetengetriebe [E] Aceite Reductores	-20°C/+5°C IV 95 min Omala oil 100	+5°C/+40°C IV 95 min Omala oil 150	+20°C/+65°C IV 95 min Omala oil 320	+30°C/+65°C IV 95 min Tivela oil SA
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7. THE USING FORMS

- Did you read the user manual completely?
- Did you understand everything?
- If you have any problem, please advise the producer.
- In spite of this user Manuel, for the damages arise from the wrong using, the producer is not responsible

7.1 THE MACHINE USING

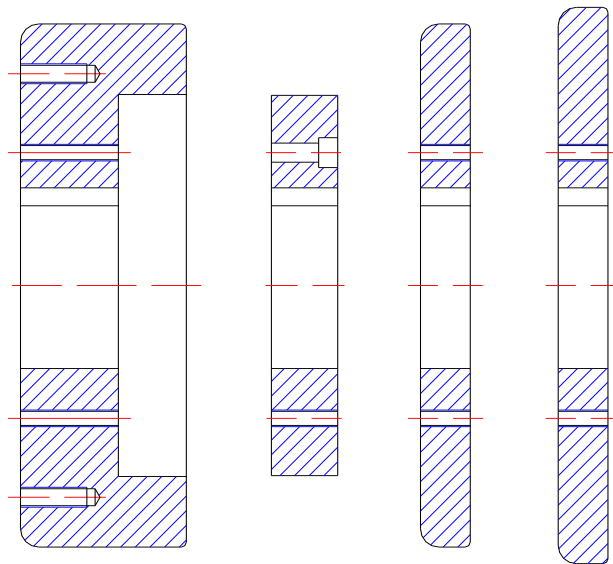


AKYAPAK profile and bending machine can bend the above material.

7.2 SUGGESTION FOR THE SELECTION OF THE BENDING MATERIAL

AKYAPAK profile and pipe bending machine can bend all type of the material. The bending result is dependent to the quality of the material. The steal contain of the material has elasticity characteristics and the bending material may have the elasticity after the bending part. If the resistance is not the same, to get the straight diameter is very difficult. If the material form surface is not in the require dimensions, you cannot get a fit bending. The material if possible must be clean, dry, without rust, without oil, with fixed heat and the same party goods necessity. At the pipe bending operation the bending pipe must be straight and correct. The inclined and curved pipe may give us the bad results.

7.3 THE TOP ROLLS USING IN THE MACHINE



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7.4 THE ROLLS REGULARITY

Near the AKYAPAK profile and pipe bending machine absolutely 12 pieces and one set rolls must be deliver. With appropriate and correct place the different rolls standard profiles can bending. (The bending capacity is indicating on the machine.)

ATTENTION! Some of the accidents happen from the wrong or over capacity using.

7.5 BENDING THE MATERIAL

In the AKYAPAK profile and pipe bending machine as the lower rolls shaft are moveable at the right or left side is possible make the kohl.

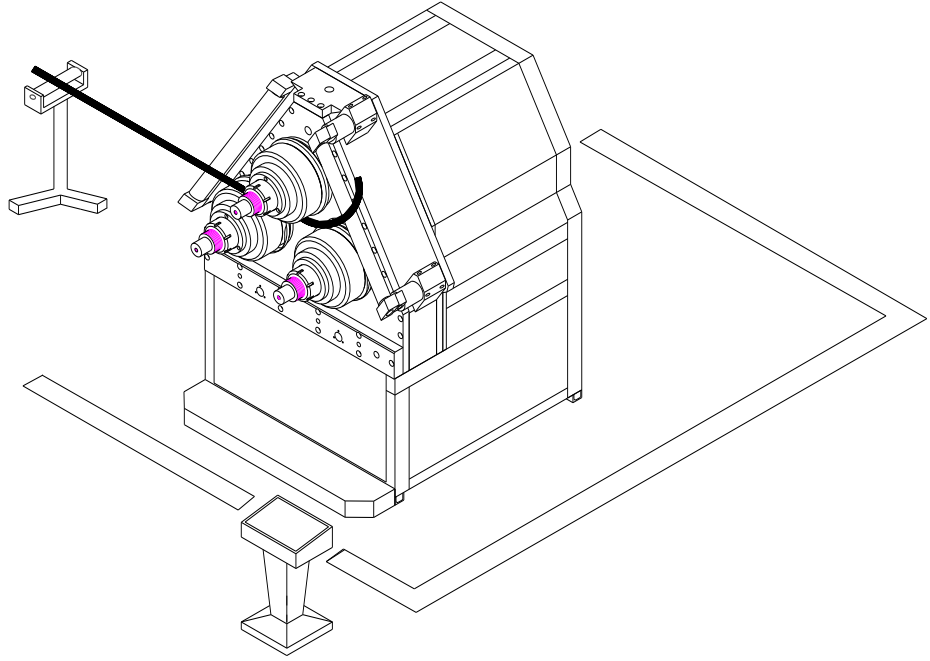
The material between rolls place and arrange in order bending forms .The material between rolls must be completely settle. Move the left and right cylinder. To get the needed diameters, control the cutting model. Do the pressure with the lower cylinder, to get the needed diameters. After the controlling with the model press the turning button and take the material out.

At the standard parts bending operation use the digital display.

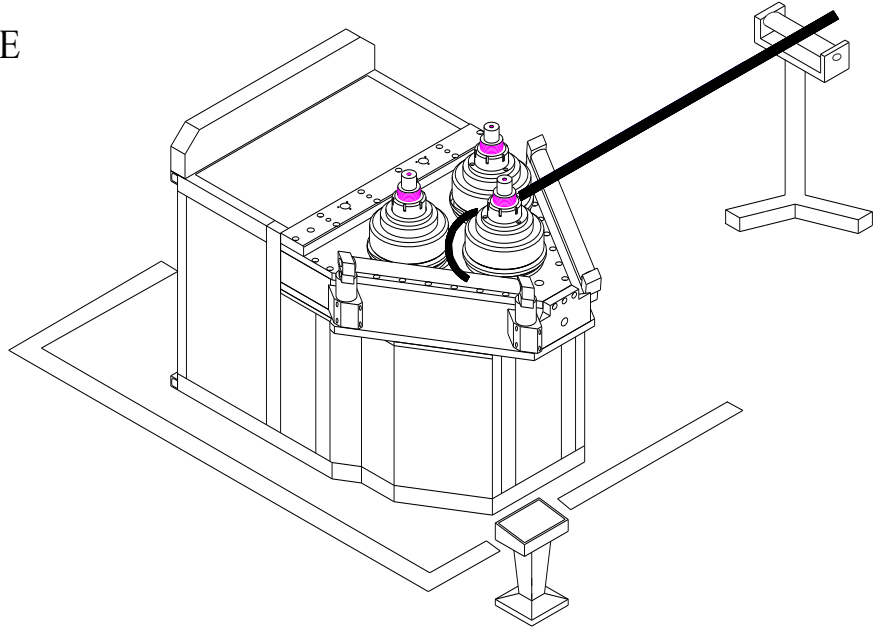
7.6 TO GET THE SPIRAL

Determine the material bending in spiral form. To get the needed diameter, cutting the one pieces material. (Development $\varnothing \times 3.14$).After the appropriate places the material, to get the needed diameter twist the material. After the bending operation, set the digital display. Place the material on the rolls, which will bend. According the bending pitch spiral, make more pressure with the side guide. Stopped the machine and through the arm supply the material passing direction the rolls. Use the base legs at the long spirals.

For the long parts in the bending operation, use the base legs under the material. The quantity of the base legs must be balanced to the material length. Specially to get the bigger diameters, use the machine in horizontal position. At the horizontal position, for working at the same form use the base legs. Careful the base legs must be adjusted. Be careful, about the working place and bending operations.



**RESPECT THE
WORKING PLACE**



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7.7 THE OPERATION LINE FOR THE BENDING MATERIAL

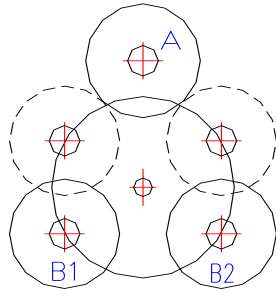
FORM 1 : The rotation of the rolls AKYAPAK profile and bending machine are indicating on the form 1. The A rolls is assembly to the machine fixed and may moving in the two sides. The B rolls at the working axel with hydraulic moving up and down and two sides are returning.

FORM 2: Place the material straight between the rolls. Pull to the axel B1 roll. Make the material ready for bending.

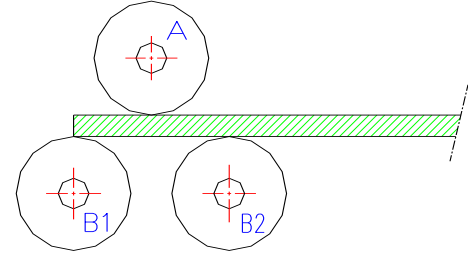
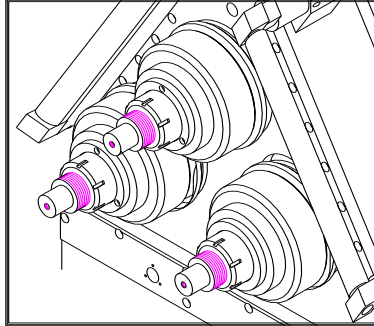
FORM 3: Move the roll B1 from the control panel left rolls .Rotate the roll B1 to get the needed diameter. Rotate the roll pressing the button B1 and B2 from the control panels.

FORM 4 : Pressing on the left pedal rotation B2 from the control panel, after that pressing the right roll up moving position .To get the needed diameters rotate the roll Press the right rotation position from the control panel to turn the material. Do this operation with the double side.

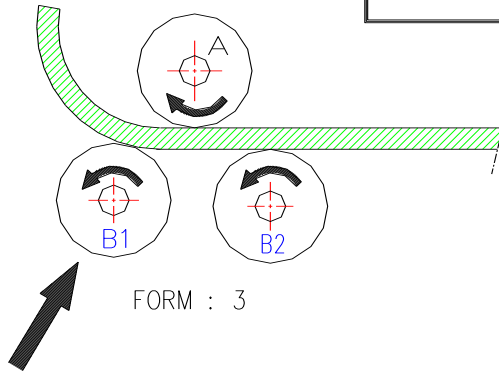
If in the bending operation is formed the burr on the hard material, use the oil to get the greasy surface.



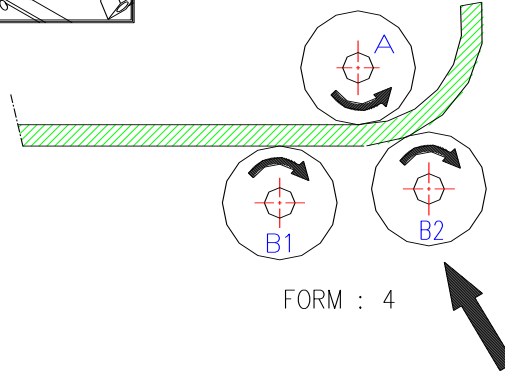
FORM: 1



FORM : 2



FORM : 3

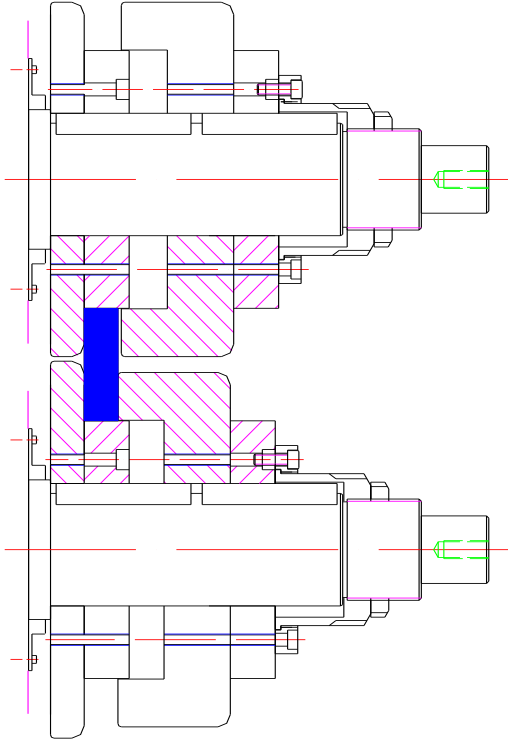


FORM : 4

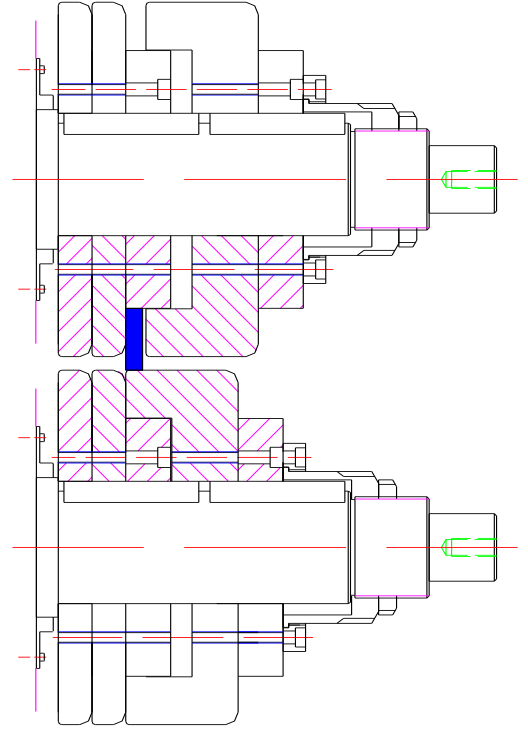
7.8 THE TOP ROLLS REGULARITY IN THE VERTICAL BENDING OPERATION FOR THE MOULDING MATERIAL.

FORM 1: The sizes in the bending table are given with maximum dimensions and large bending diameters for the regularity of the rolls.

FORM 2: The sizes in the bending table are given with minimum dimensions and small bending diameters for the regularity of the rolls.



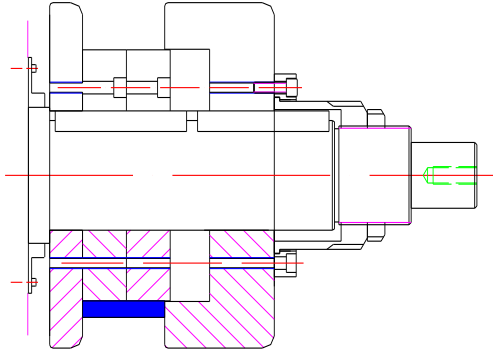
FORM – 1



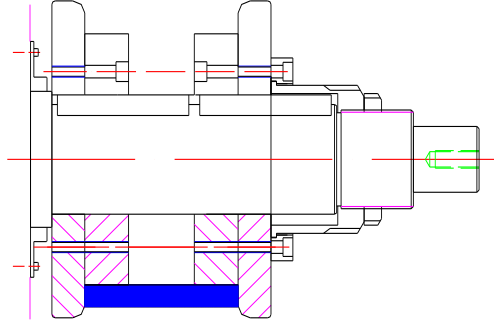
FORM – 2

7.9 THE ROLLS REGULARITY IN THE BENDING OPERATION FOR THE PLATE MATERIAL

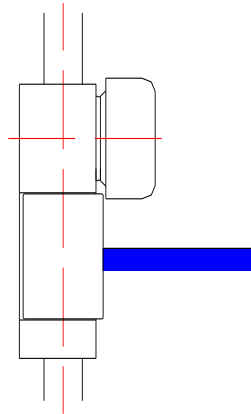
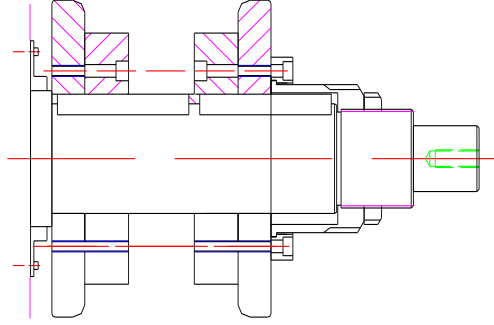
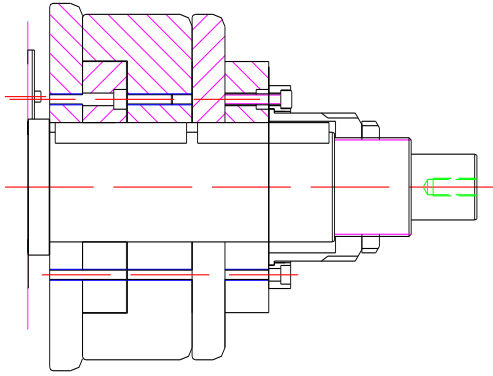
To bending the PLATE material horizontal position, the guide rolls pay attention to use as support.



FORM — 1



FORM — 2

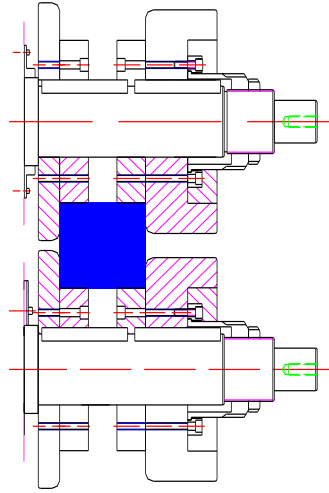


7.10 REGULARITY OF THE ROLLS TO BENDING THE SQUARE MATERIAL.

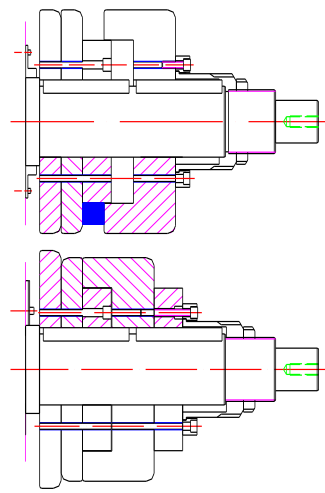
FORM 1: The sizes in the bending table are given with maximum dimensions and large bending diameters for the regularity of the rolls.

FORM 2: The sizes in the bending table are given with minimum dimensions and small bending diameters for the regularity of the rolls.

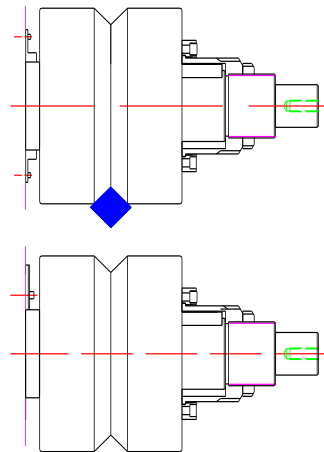
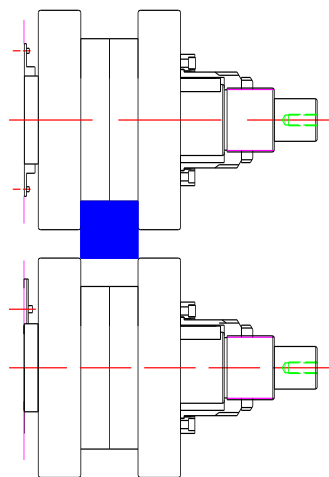
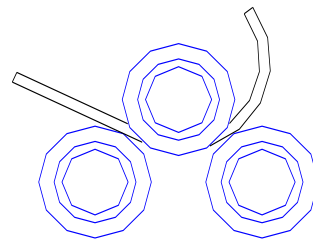
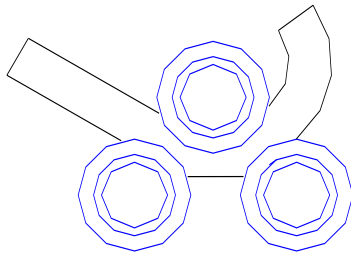
FORM 3: Bending with special rolls.



FORM - 1



FORM - 2



FORM - 3

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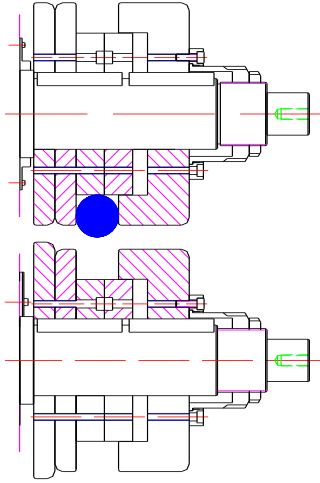
7.11 REGULARITY OF THE ROLLS TO BENDING THE ROUND MATERIAL

FORM 1: The sizes in the bending table are given with maximum dimensions and large bending diameters for the regularity of the rolls.

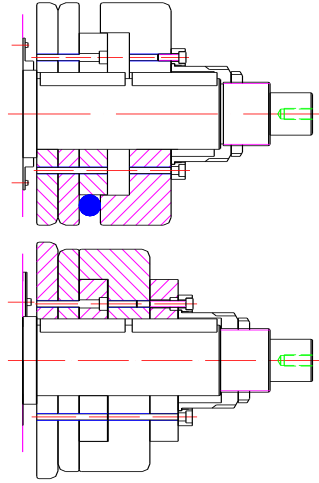
FORM 2: The sizes in the bending table are given with minimum dimensions and small bending diameters for the regularity of the rolls.

If the continuous and standard work are making, according to diameter of the material the opened groove on the rolls must using. Look for producer for detailed information.

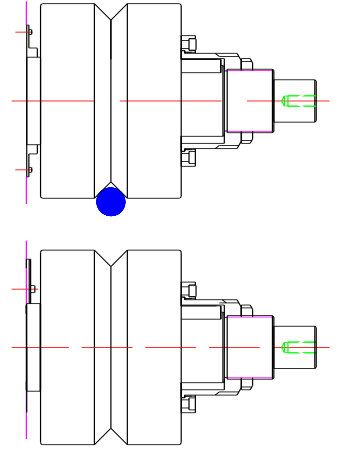
FORM 3: Bending with special rolls.



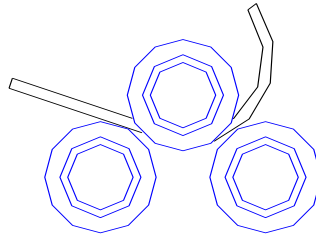
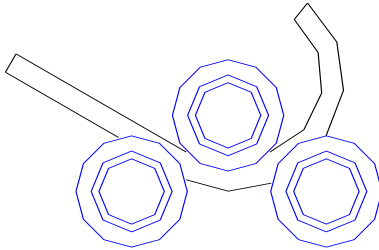
FORM - 1



FORM - 2



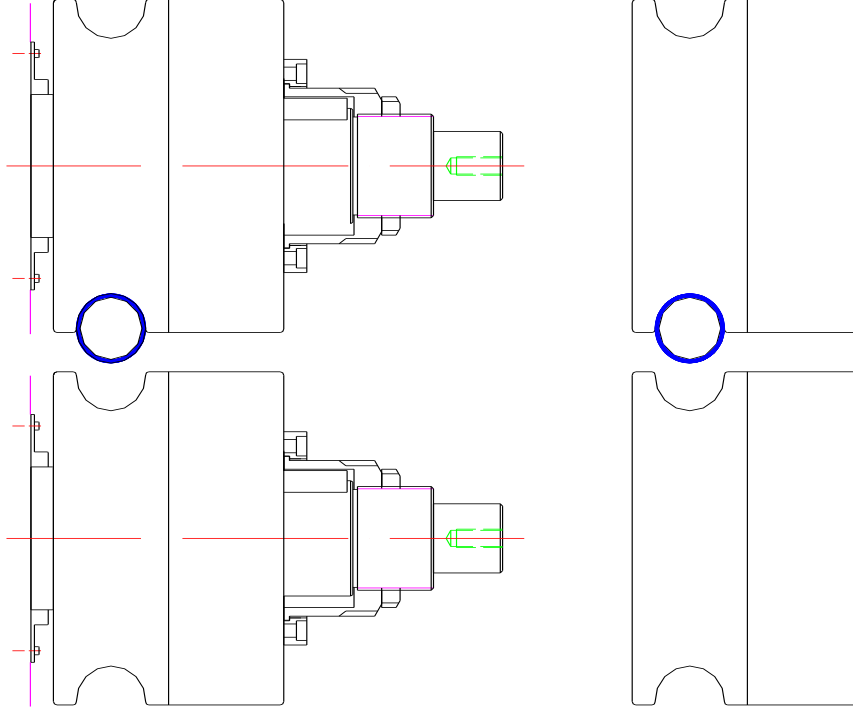
FORM - 3



7.12 REGULARITY OF THE ROLLS TO BENDING PIPE MATERIAL.

FORM 1: REGULARITY OF THE ROLLS GIVEN ON THE TABLE FOR THE BENDING SIZES.

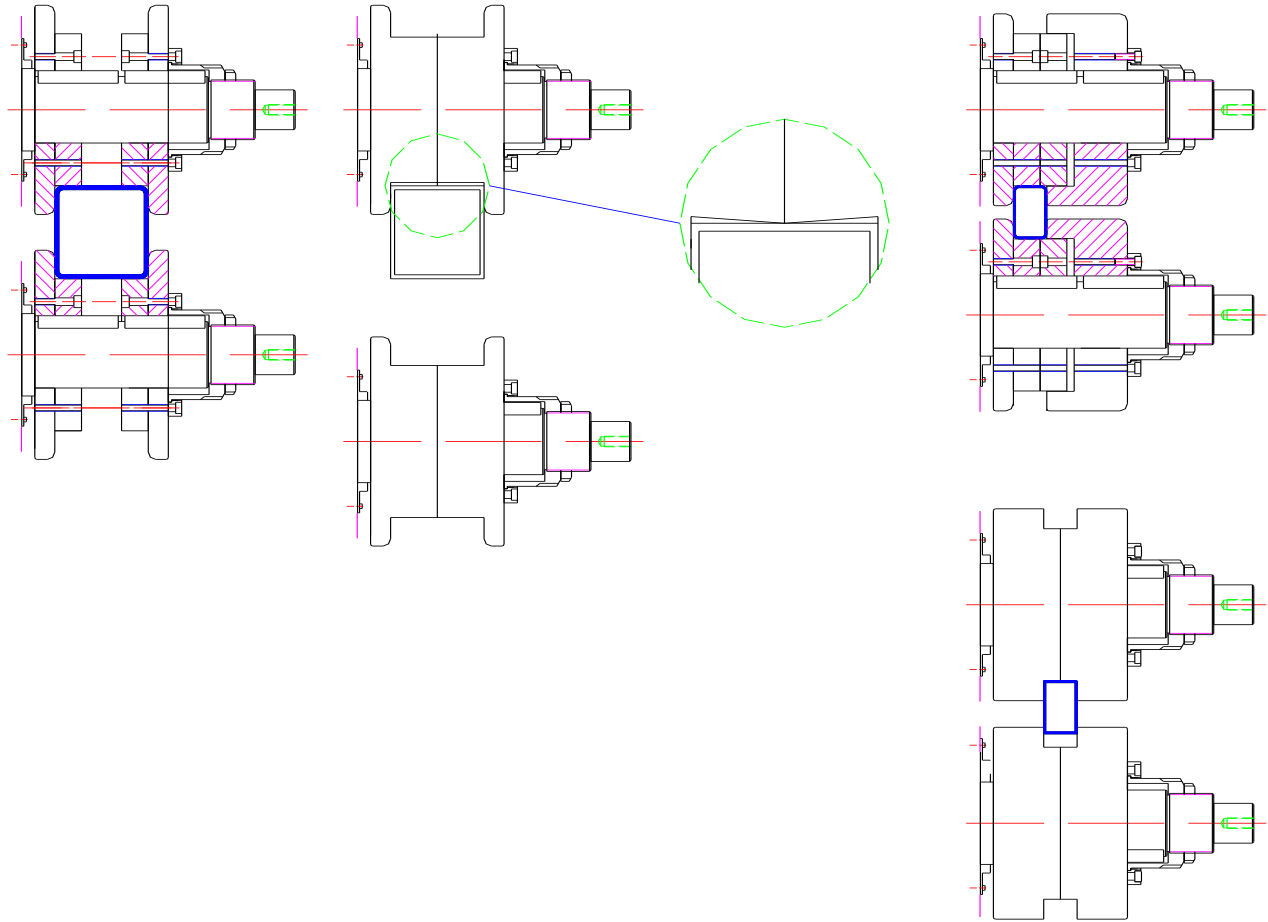
For each pipe dimension is necessary different rolls. To bend the thin pipe and stainless steel pipes, order from producer or Seller Company the derlin, kestamit materials set rolls.



7.13 REGULARITY OF THE ROLLS FOR THE RECTANGLE CROSS SECTION

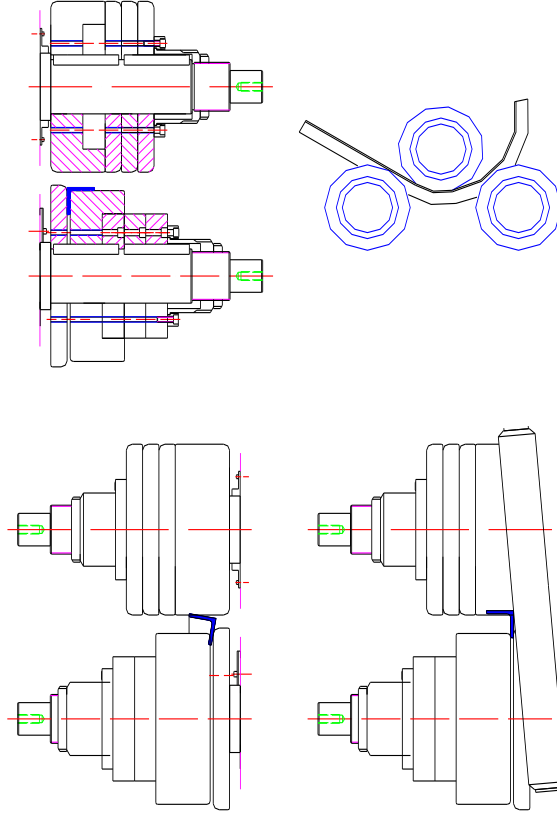
If the thickness of the profile is too much, of this you may bend with the standard rolls. But if the thickness is so little, the parts has to bending with the special rolls.

Especially for the profile with small thickness, the outside part bending diameter may create the collapse. To stopping the collapse in the material and easy taking outside the rolls the material must be filling inside with the sand.

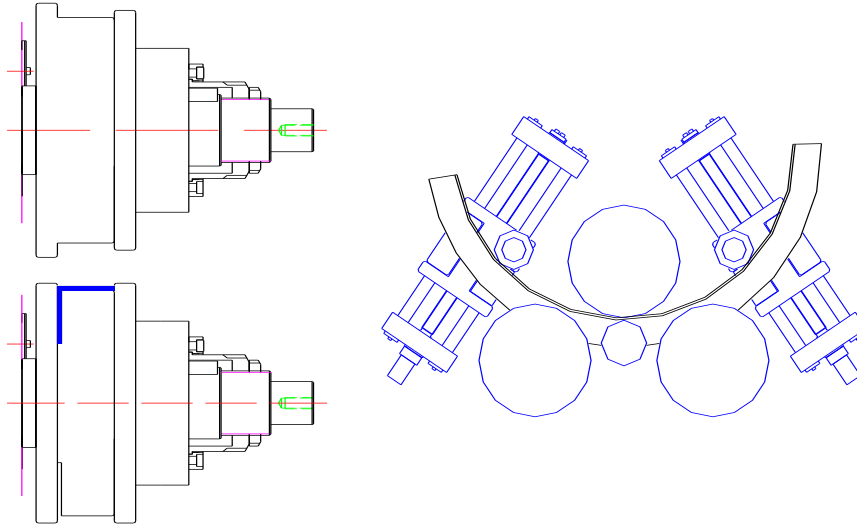


7.14 REGULARITY OF THE ROLLS TO BENDING THE ANGLE IRON OUTSIDE.

Place the bending parts between the rolls; straight to the rotation axle position. So the angle iron outside parts looking down the cavity must have much 10% tolerance. To the guide rolls use the light pressure and set against the bending material. If for this form after a several rotation the angle iron is corrugated, and gives the machine a slope, effect the guide rolls a little more. The strength moment, on the bending table with the maximum value small %20 from the bending material, you may bend for one time.

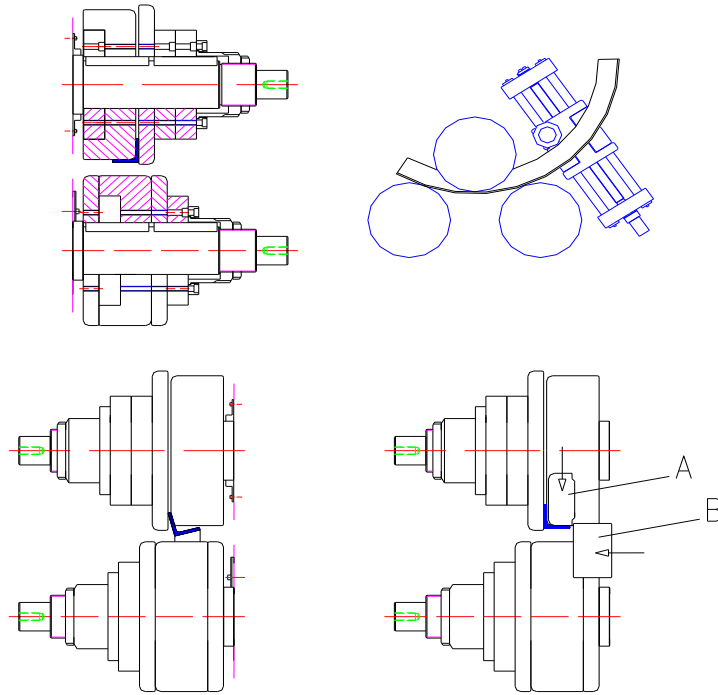


With the special top rolls the external bending regularity.

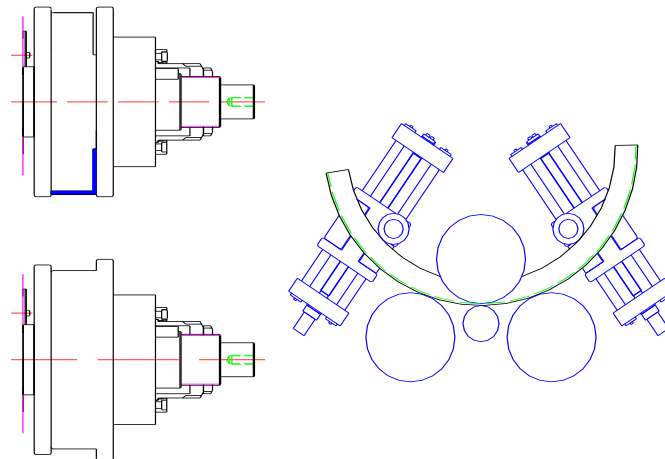


7.15 REGULARITY OF THE ROLLS TO BENDING THE ANGLE IRON.

- Press the bending parts in the straight form between the rolls. Only control the nut of the roll is tightening in the bending operation. When the material is bending, the nut must be tight, to not get the fluctuation.
- Adjust the side support spool pressing on the material light pressure.
- Adjust the side support spool to tightening the material.
- Control with the template dimensions, to get the bending diameter. When the needed diameter is getting, the material can bending. In this case at the bending operation the needed diameter can get 5% small.
- Apply the pressure with the side support spool. To get the needed diameter and material balance, pressing with the spool.
- The bending material must be getting out between the rolls, in the straight form.
- If the material is not getting in the straight form, the roll pressure must be adjusted.



REGULARITY OF THE SPECIAL ROLLS WITH INTERNAL BENDING



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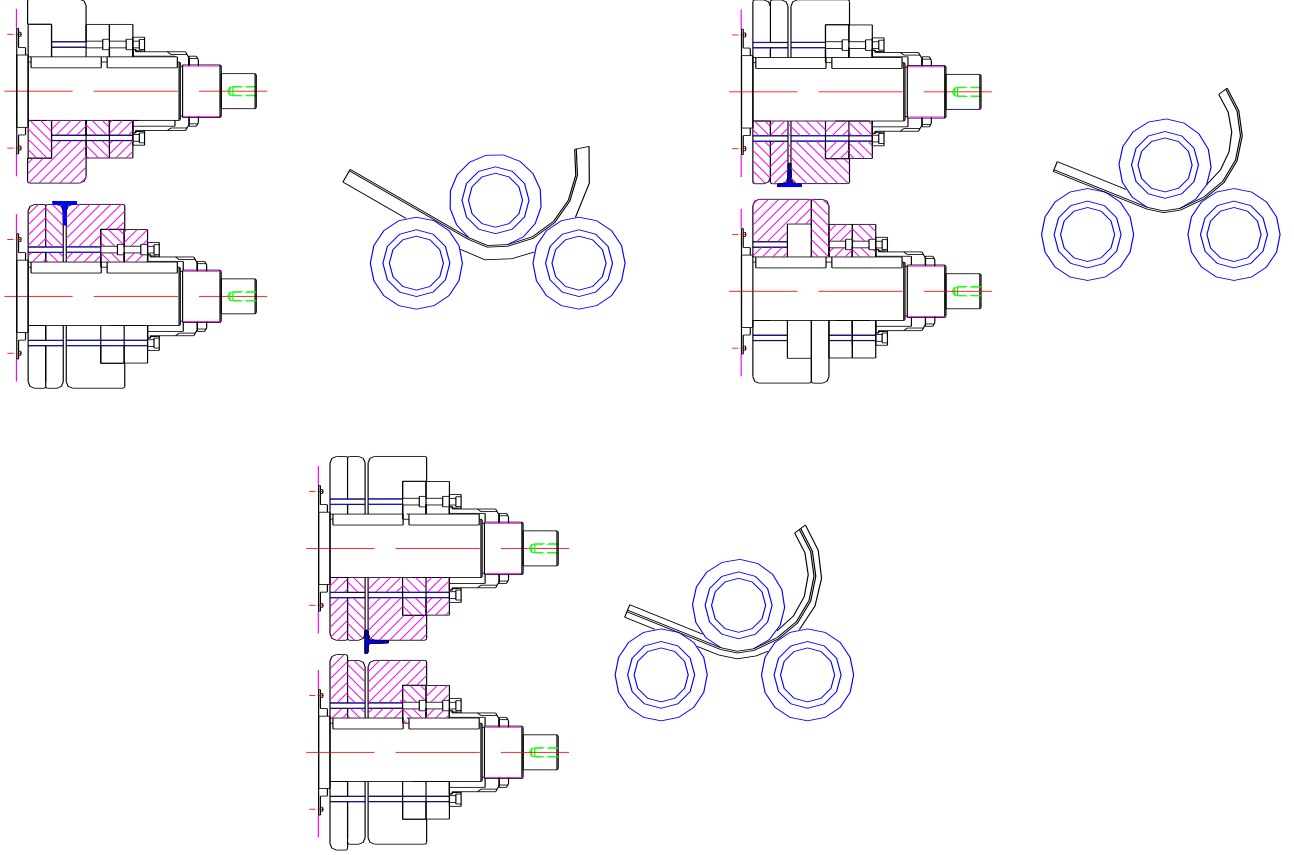
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7.16 REGULARITY OF THE SPECIAL ROLLS TO BENDING THE T IRON MATERIAL.

Bending the inside wing T iron material

Bending the outside wing T iron material

Bending the inside wing T iron material

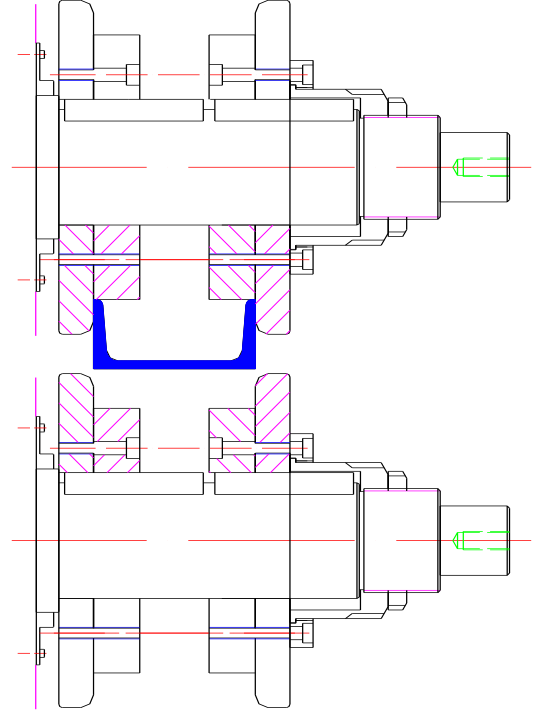
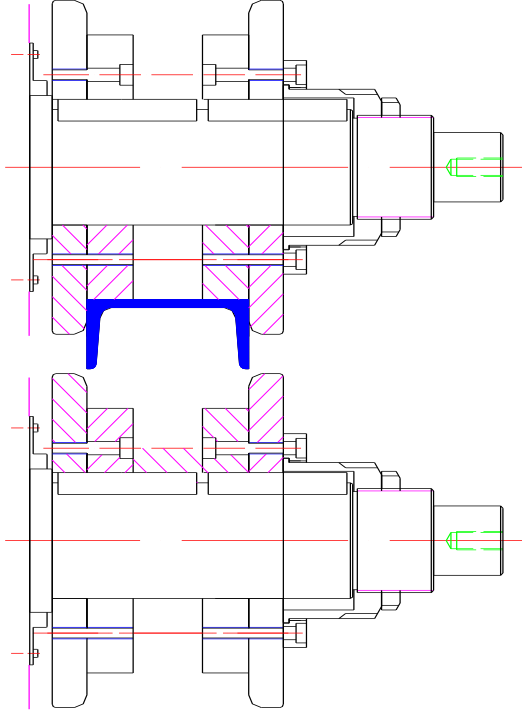


7.17 REGULARITY OF THE ROLLS TO NPU IRON BENDING.

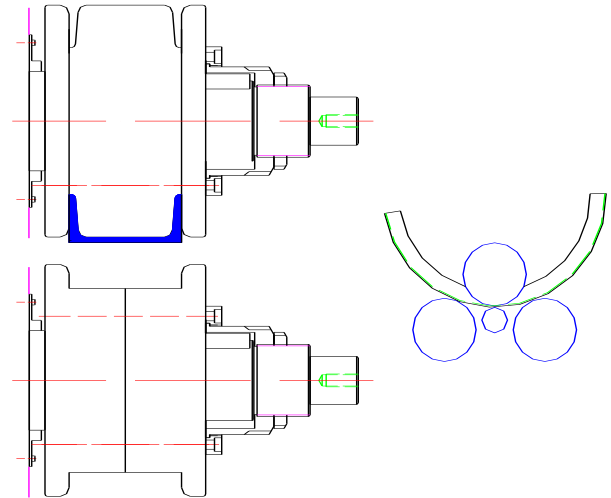
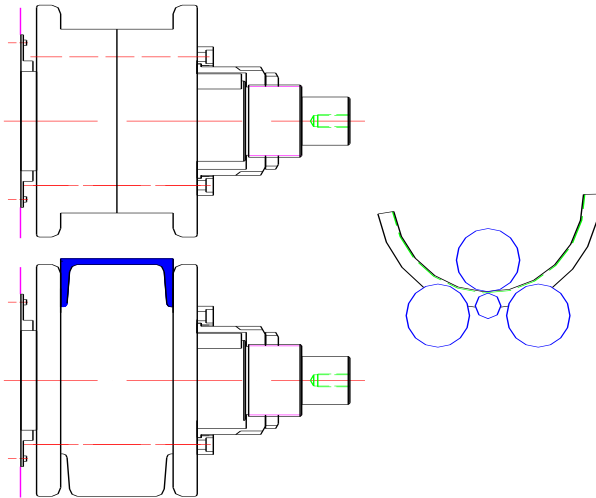
Bending the inside wing NPU iron material

Bending the outside wing NPU iron material

NOT: Place the material with the suitable dimensions, to get the small diameters and the middle of the material without the deformation.

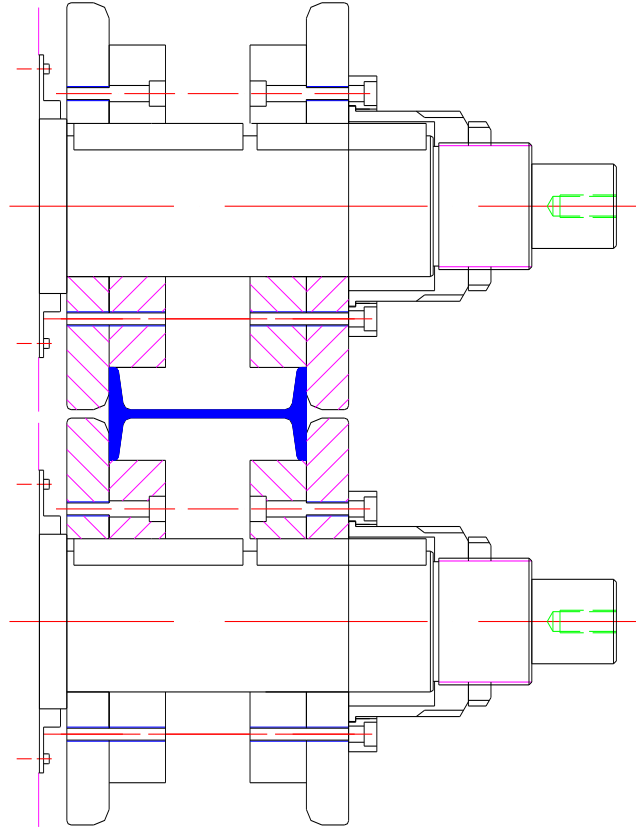


Bending regularity with the special top rolls

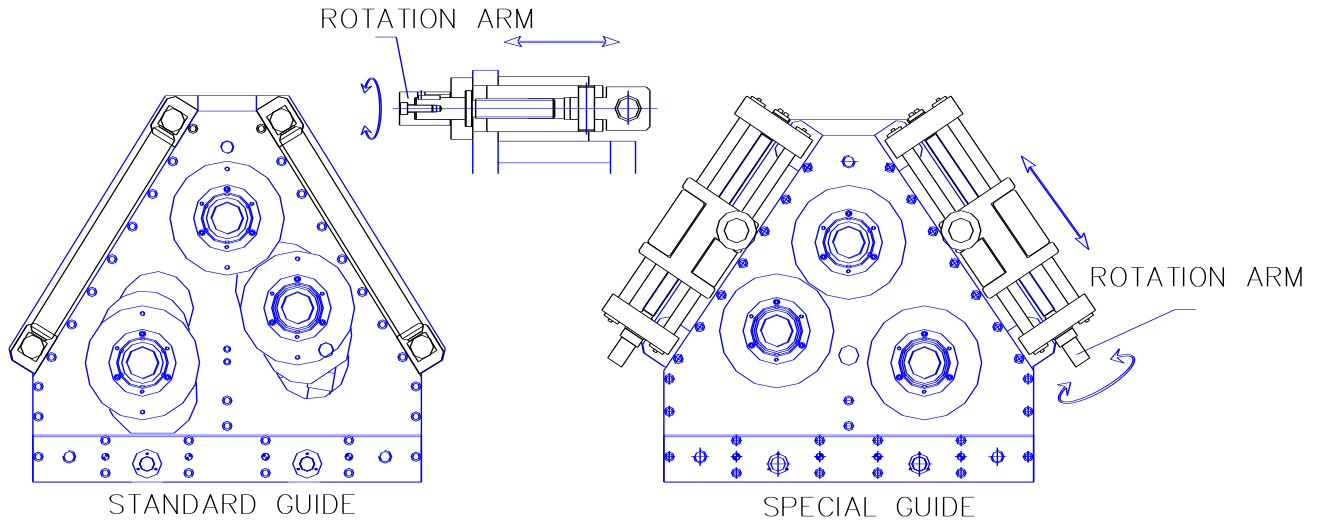


7.18 REGULARITY OF THE ROLLS FOR THE INP BENDING MATERIAL

Regularity of the rolls for the bending dimensions given on the table

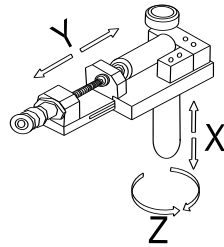


8. THE ADJUSTMENT OF THE SIDE GUIDES

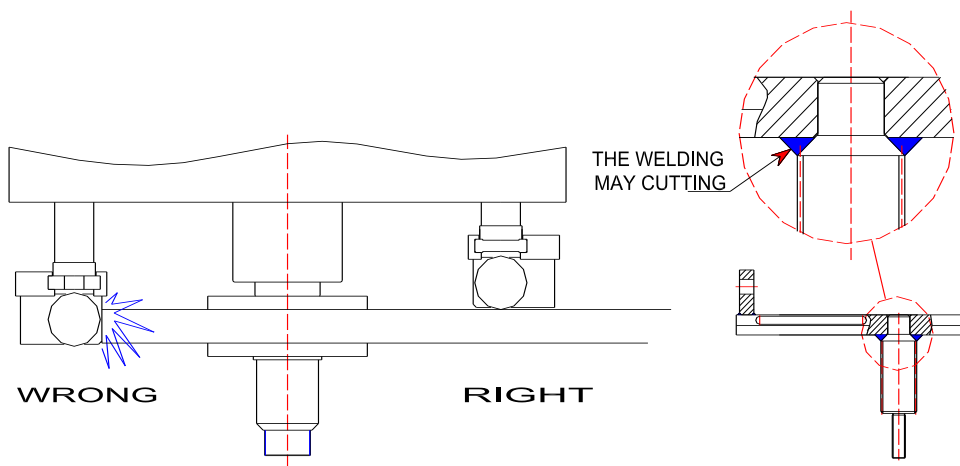


In the AKYAPAK Profile and pipe bending machines are assembly 2 pieces guide rolls mechanism to be bending the material rigid (set square).

The material bending with the guide rolls may make effect for the needed directions; In the standard machines the guide rolls with the key help, Optional, hydraulic guide rolls machines; moving from the control panels buttons.



HYDRAULIC SPECIAL GUIDE



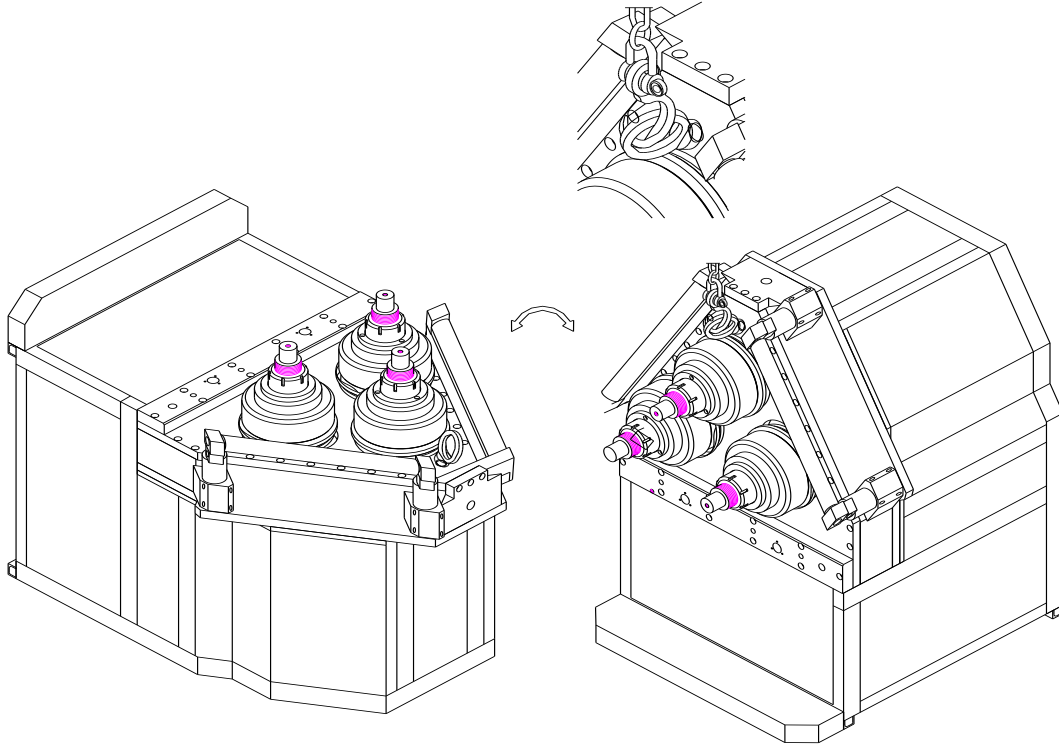
ATTENTION!

Don't use the guide rolls .The welding may break off. Don't adjust the machine in the starting position.

9. TO TAKE THE MACHINE IN THE HORIZONTAL POSITION

The AKYAPAK profile and pipe bending machine is suitable to work vertical and horizontal position. To get the vertical position connects the machine at the following illustration.

ATTENTION: For the accident come into existence the producer company is not responsible.



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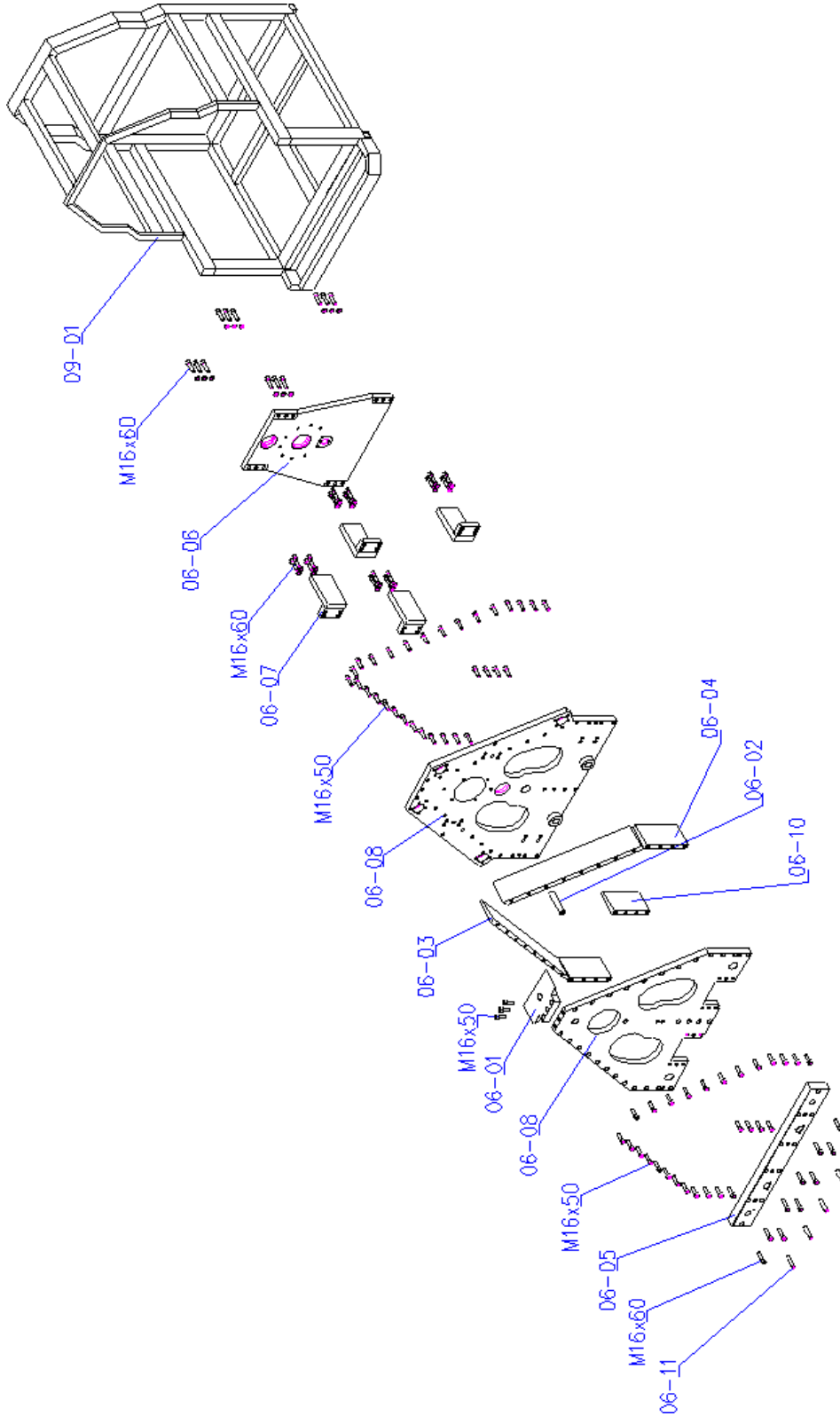
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10. SPARE PARTS PLANS

10.1 BODY GROUP



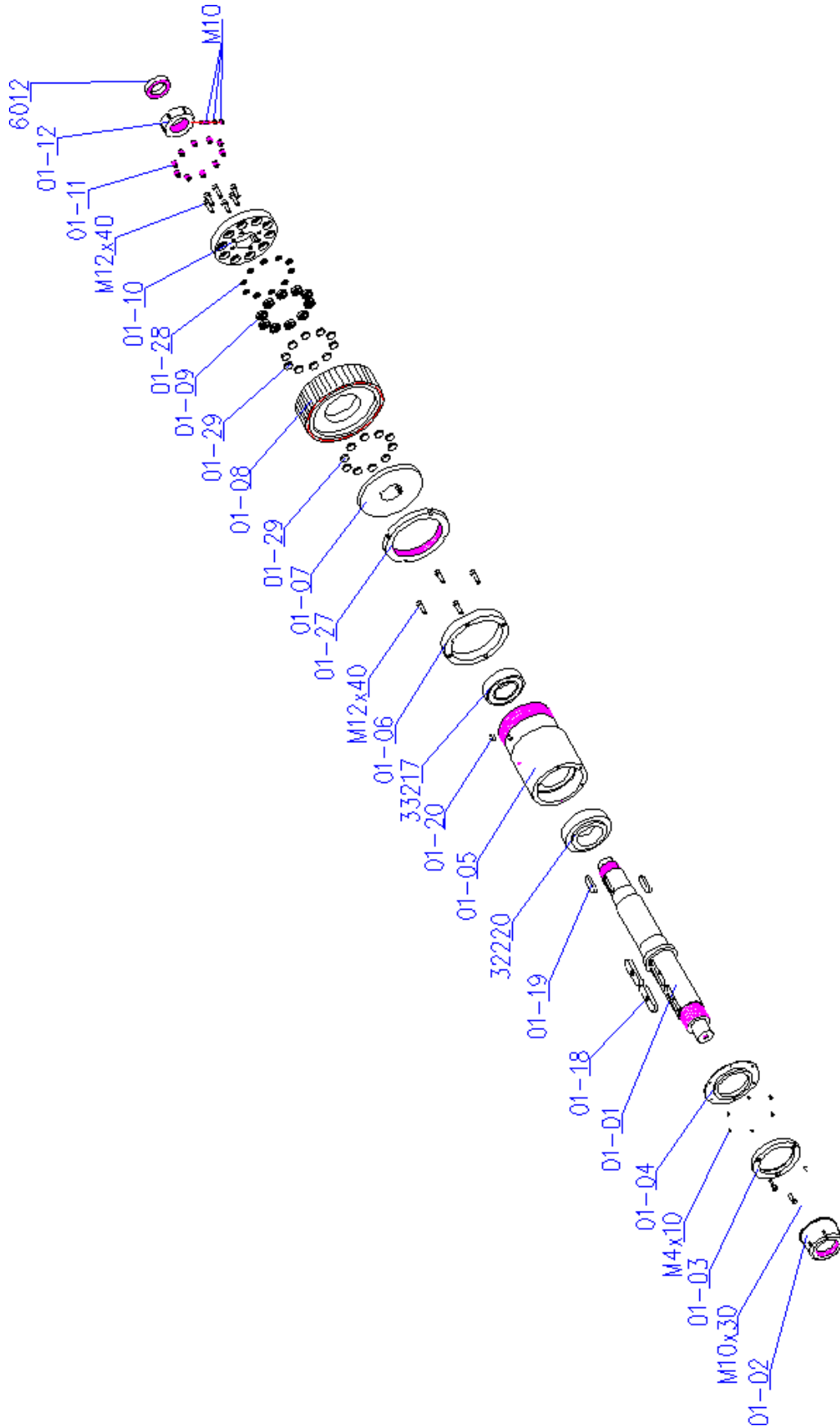
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10.2 UPPER SHAFT GROUP



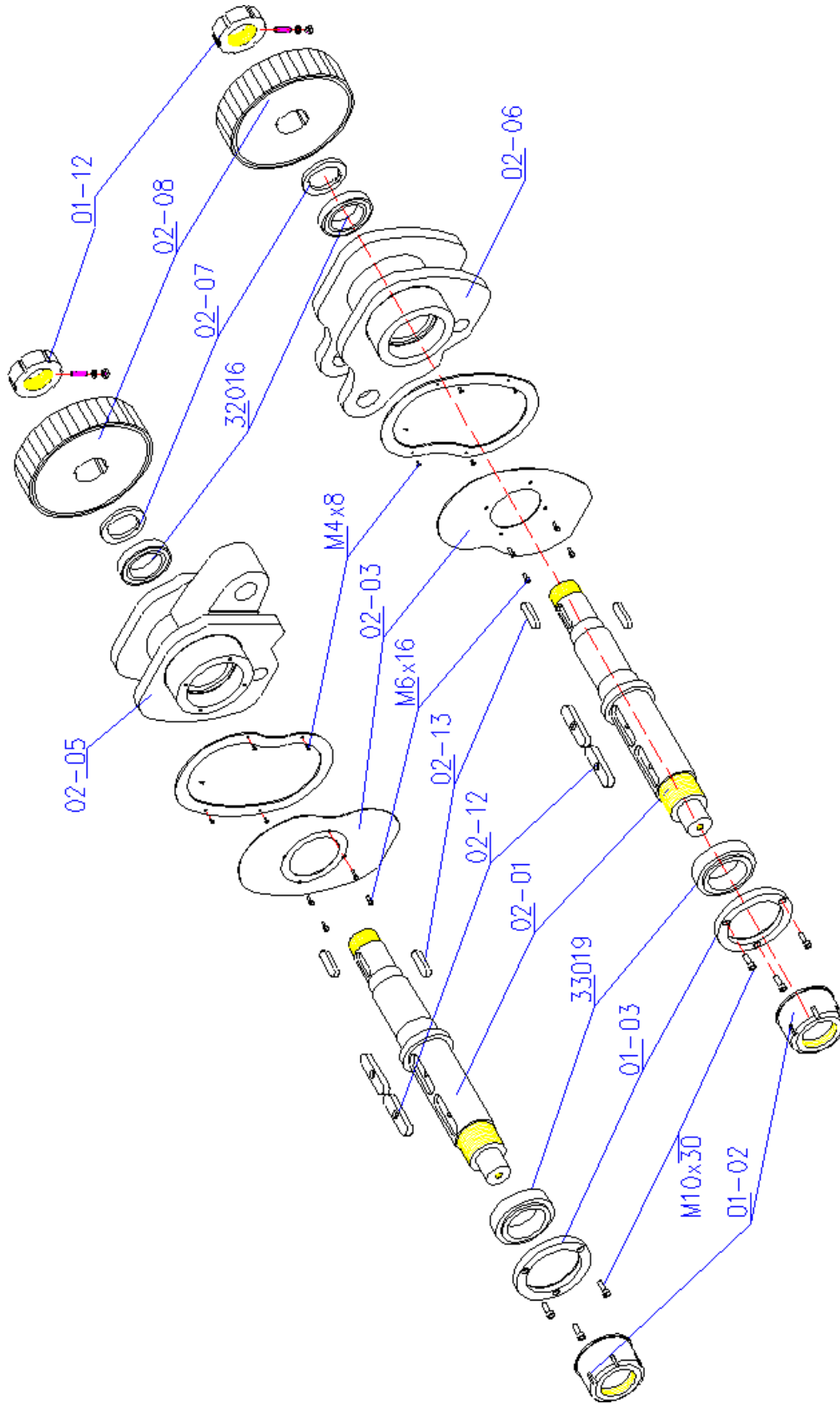
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10.3 SIDE SHAFT GROUP

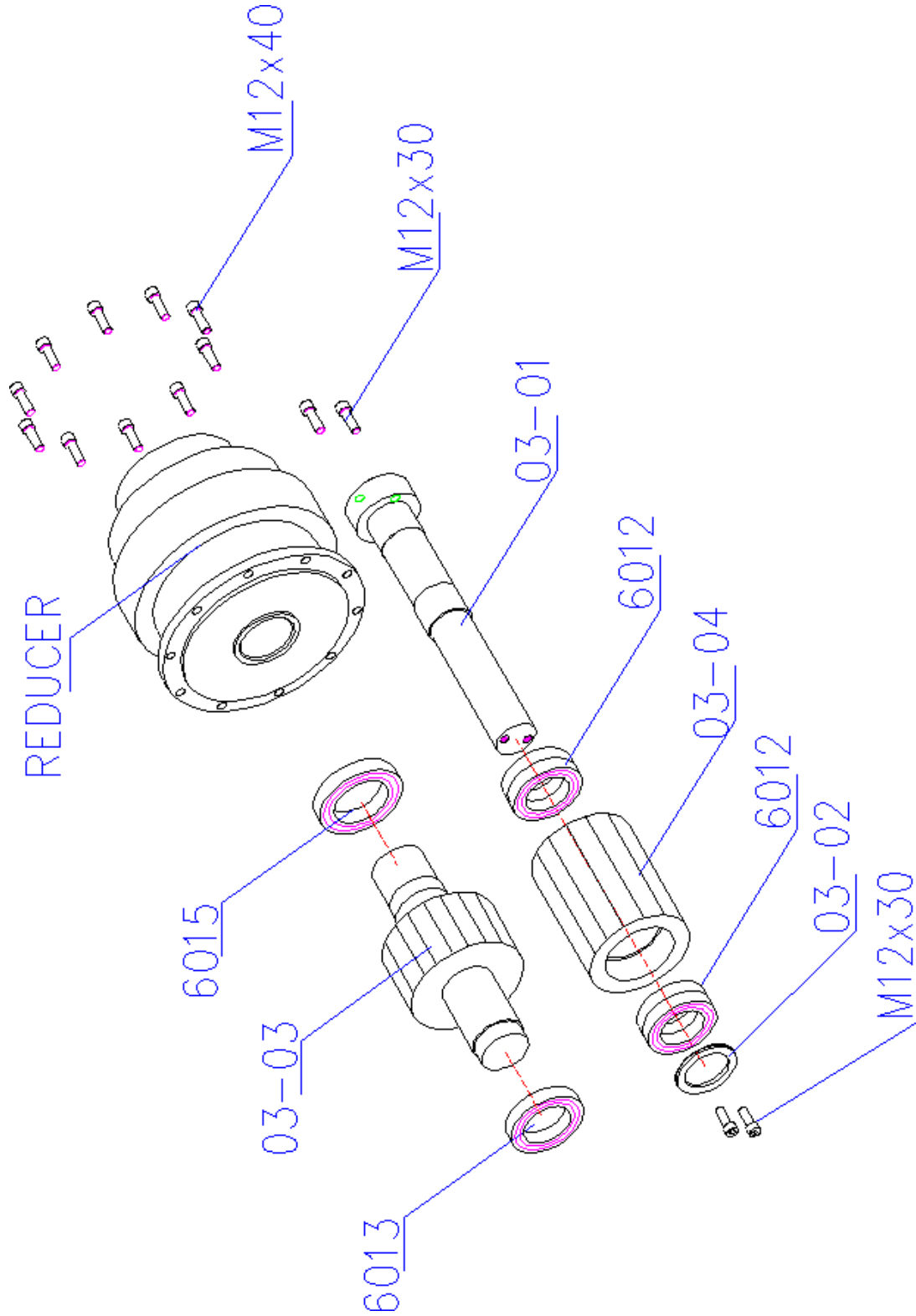


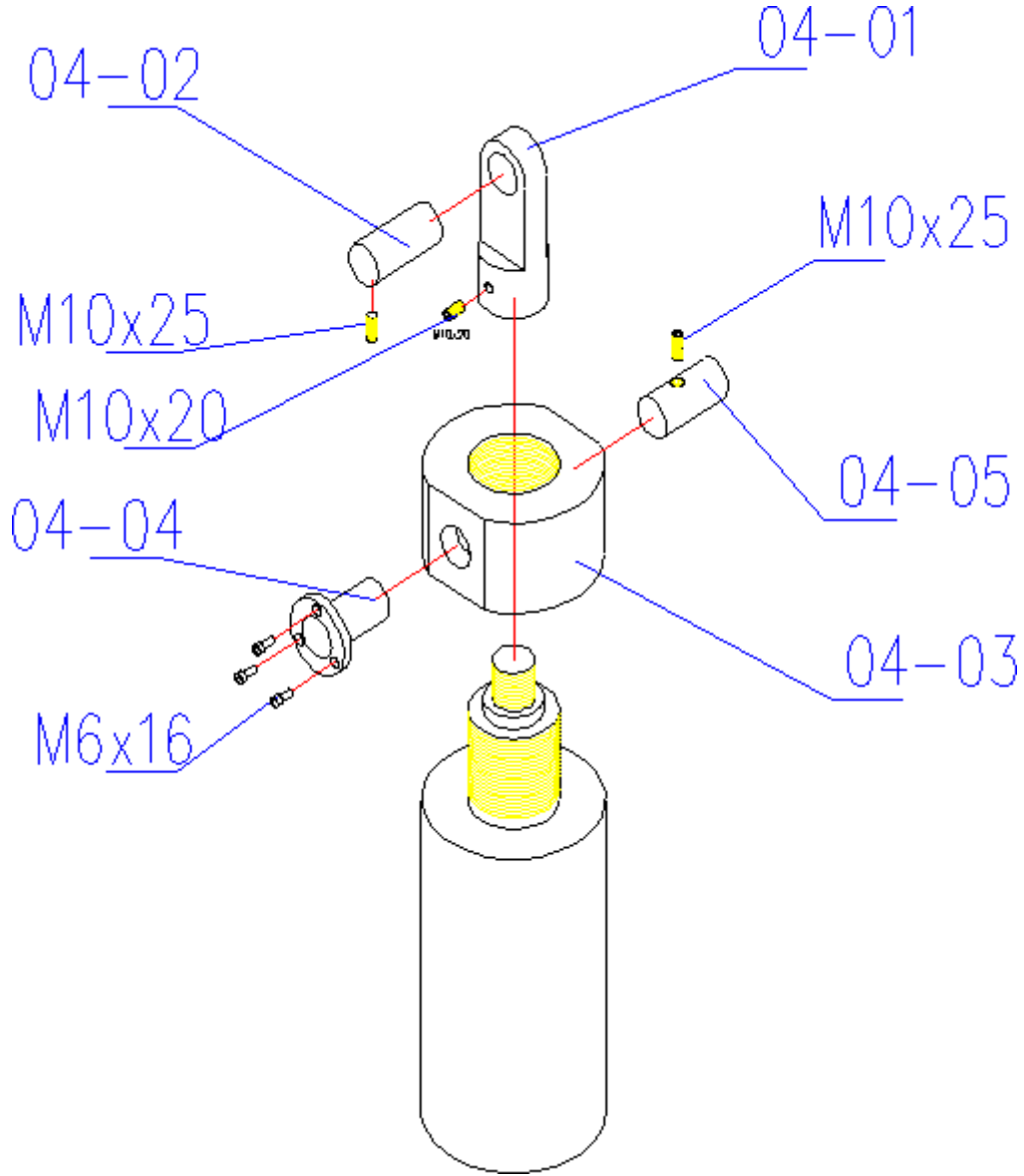
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10.4 CENTER SHAFT GROUP**AKYAPAK MAKİNE SANAYİ VE TİCARET A.Ş.****Address:** Akçalar Sanayi Bölgesi Sanayi Cad.
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Fax: +90 224 280 75 01**E-mail:** info@akyapak.com.tr
Web Site: akyapak.com.tr

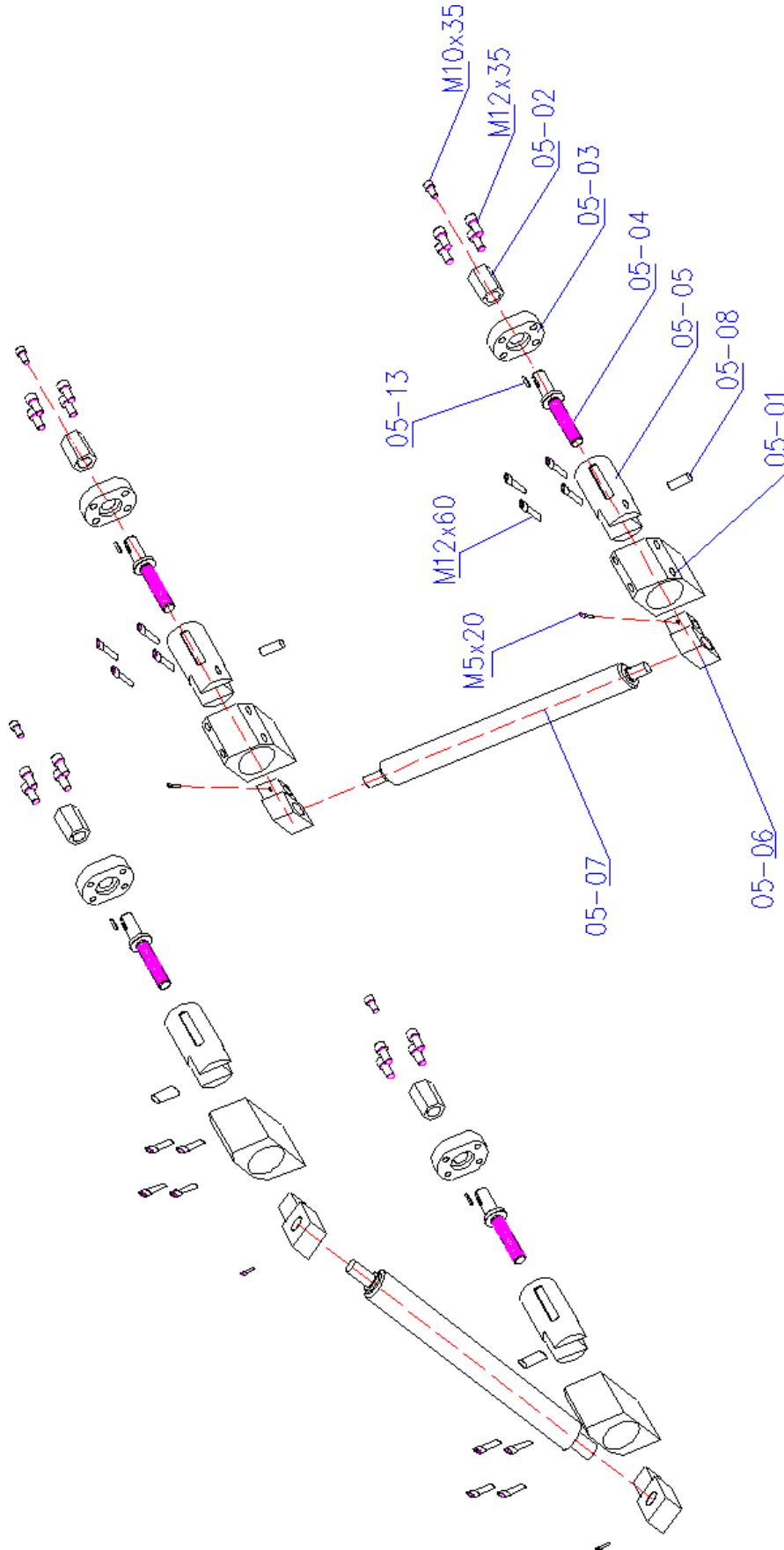
10.5 CYLINDER GROUP

AKYAPAK MAKİNE SANAYİ VE TİCARET A.Ş.

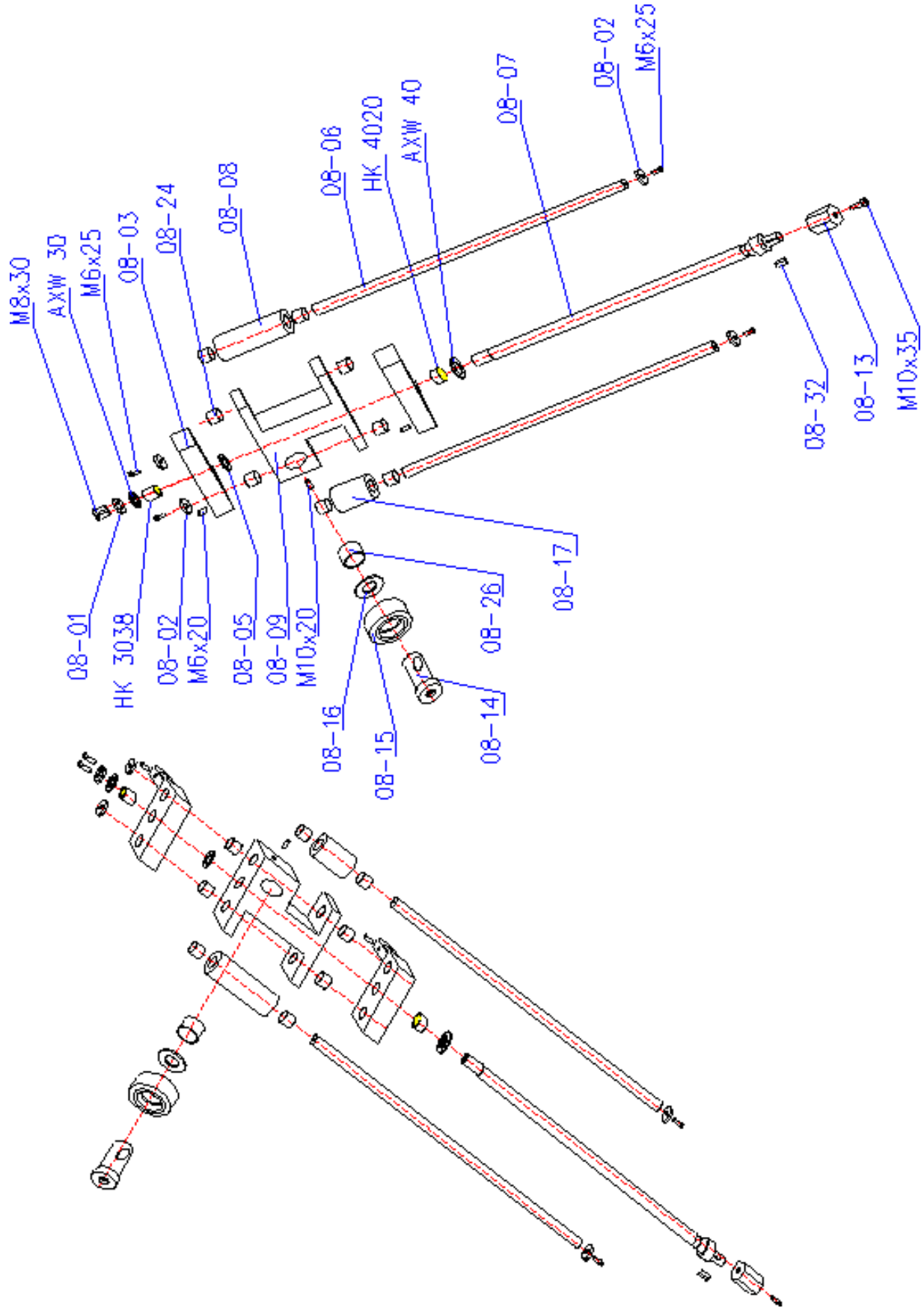
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Web Site: akyapak.com.tr

10.6 STANDARD SIDE GUIDE GROUP**AKYAPAK MAKİNE SANAYİ VE TİCARET A.Ş.****Address:** Akçalar Sanayi Bölgesi Sanayi Cad.
No: 8/A 16225 Akçalar BURSA / TÜRKİYE**Phone:** +90 224 280 75 00
Fax: +90 224 280 75 01**E-mail:** info@akyapak.com.tr
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10.7 SPECIAL SIDE GUIDE GROUP



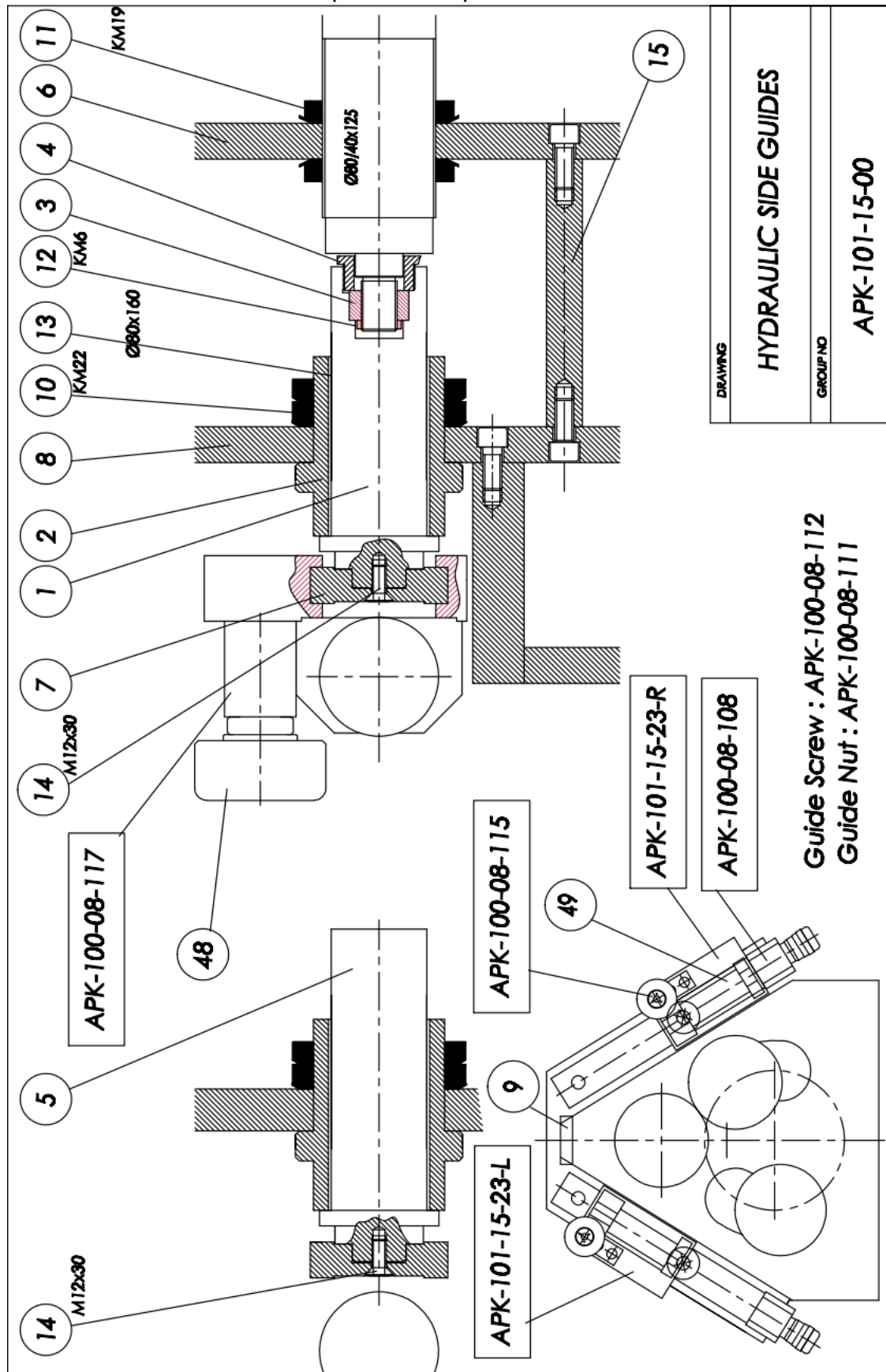
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10.8 HYDRAULIC SIDE GUIDES (OPTIONAL)



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