

Excision

Dependable Precision

MANUAL /SEMI- AUTOMATIC HORIZONTAL BANDSAWING MACHINES INSTRUCTION MANUAL

PGD350 Bandsaw Machine



Manufacturer / *Excision Pty Ltd*

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Warranty

- The firm guarantees the machine described hereby, designed in compliance with all regulations in force, in particular safety and health regulations; the machine has undergone successful testing.
- The warranty covers a period of 12 months. It doesn't cover electrical motors and tools.
- The purchaser is entitled 'replacement of faulty parts'. Shipping and packing costs are at his expense.
- The warranty doesn't cover the parts damaged by falls or careless handling of the machine, incorrect operation, non-compliance with the maintenance rules. Any tampering with the machine, especially with the safety devices automatically expires the warranty and the manufacturer will be freed from any responsibility.
- Any kind of alteration on the machine ends the warranty and the manufacturer becomes free from every kind of responsibility.
- No claim for damages shall be accepted in case the machine lays idle for a long period of time.
- Machine is designed to be run indoors. It is not recommended to run the machine outdoors.

The serial number on the machine is a 'main reference for the warranty', instructions manual, after sale service and identify the machine in case of need.

Important

Upon the delivery of the machine, the consumer must make himself sure that all the devices indicated in the paragraph of the safety manual are present and working correctly. Furthermore, he must mount in conformity with the instructions indicated those devices which are not mounted at the time of delivery to facilitate transport.

When ordering spare parts

It is necessary to state:

- Machine model
- Serial number and year of production
- Item reference number

Without serial number no spare parts will be delivered

General Information

- The machines are manufactured in compliance with the accident prevention rules in force.
- Strictly comply with the instructions contained in this manual to obtain the best performance from the machine. Strict compliance with the rules contained herewith will ensure optimum results and avoid any inconvenience caused by the non-compliance of operation and maintenance instructions.
- Closely follow the instructions given below to avoid contacting the manufacturer for the problems which can be easily solved..
- If after having strictly compliance with the given instructions, the purchaser still needs the help of our technical assistance service, he must supply all the technical indications necessary to determine the type of problem and/or the parts which are not functioning correctly. This will enable our technical assistance service to intervene quickly and efficiently on the machine.

Copies of the instruction manual may be requested upon indication of the machine serial number.

General Safety Notes

All installation work including the electrical connection must only be carried out by qualified personnel.

The machine must only be operated by a technically trained and experienced operative who is also instructed in 'safety at work' procedures.

Any adjustments, cleaning, repairs or changing of the saw blade must under no circumstances be performed unless the machine is fully isolated from the electrical power supply. Ensure the emergency stop button on the control binnacle is pressed and the power supplies at the mains are disconnected."

The band saw must be regularly inspected and maintained in good serviceable condition. Eye protection, ear protection, gloves and protective clothing must be worn when any of the above procedures are being carried out, as well as when cutting fluid is prepared, introduced or displaced from the band saw machine (the relevant environmental regulations must be observed in case of the use and disposal of cutting fluid etc.)

The band saw must be installed on ground. Observe the permissible floor load. Than the band saw machine has been properly bolt to ground securely.

Allow sufficient working space around the band saw of at least 1 meter. Installations of stock roller conveyors require additional space and possibly a lifting mechanism for heavy workpieces.

Always ensure that the working area around the band saw is well lit.

Safety Instructions

- Be sure that electrical connection is made carefully. To avoid unwanted situations like electrical shock, protect the main supply cable with a holster.
- Before running the machine, be sure that all of the protections are mounted properly and all the covers are closed.
- Avoid from smoke and moisture.
- Please use the parts and equipment's which are recommended. Usage of unsuitable parts and materials which are bigger than the capacity of the machine can cause unwanted situations.
- Check the machine and inform the defects everyday.
- Don't leave any material after chancing the band.
- Do not hold the material while the machine is cutting. Always tighten the material by using essential parts.
- Please pay attention to choose the area of the machine which doesn't include anything that creates difficulties to control the machine
- Please be sure that the teeth of the band are looking to correct direction.
- Don't leave the band on the ground or any place that is dangerous for other people.
- Be careful when using the machine and keep the working area clean (clean the saw dusts and oil traces)
- Pay attention to security instructions when using the machine.
- Don't wear loose cloths when using the machine.
- Regardless use the protective gloves when using the machine.
- Don't get close too much to the machine when running.
- Before carrying out any cleaning or maintenance procedure, disconnect the machine from main supply.
- In some conditions, noise level can be about 85 db. Band choice and cutting speed is important factor for noise level.
- Illumination is an important factor for security.
- Ratio of coolant liquid is important for obtaining optimum lubrication.
- Never use the machine if you notice any fault of the machine or absence of any part of the machine.
- Control the emergency button at least once a week and be sure that it is working properly.

Definitions

(EN ISO 12100:2010)

User: the person, body or company who has bought or rented the machine and intends to employ it for the uses contemplated.

Operator: the physical person authorized by the user to operate the machine after having been suitable trained on the use and specific risks of the machine..

Authorized person: the skilled person, who is authorized by the user to carry out maintenance or setting-up operation of the machine.

Dangerous zone: anywhere inside and/or near a machine, which the presence of an exposed person represents a risk for his safety and health.

Exposed person: any person who finds himself in dangerous zone, either entirely or partially

Purpose of machine

This machine has been designed to be mainly used by light and medium structural steel industries.

This machine has been designed for the cutting of ferrous material and the other light materials with solid, hollow or cross section. Any other material use differing from the above mentioned materials is to be considered inappropriate and prohibited.

The machine operator must be trained and informed of risks and must have the instruction manual at his disposal.

The operator must not work in the vicinity of the danger zone (cutting area) with any other people.

During the cutting process, the operator must never put hands or use tools in the cutting area

RELATED DIRECTIVES AND STANDARDS

DIRECTIVES

MACHINERY DIRECTIVE- **2006/42/EC**

LOW VOLTAGE DIRECTIVE- **2006/95/EC**

ELECTROMAGNETIC COMPATIBILITY DIRECTIVE- **2004/108/EC**

STANDARDS

EN ISO 13857:2008; SAFETY OF MACHINERY-SAFETY DISTANCES TO PREVENT DANGER ZONES BEING REACHED BY UPPER LOWER LIMBS

EN ISO 4413:20106: HYDRAULIC FLUID POWER – GENERAL RULES AND SAFETY REQUIREMENTS FOR SYSTEMS AND THEIR COMPONENTS

EN ISO 13849-1:2008/AC:2009; SAFETY OF MACHINERY - SAFETY-RELATED PARTS OF CONTROL SYSTEMS - PART 1: GENERAL PRINCIPLES FOR DESIGN

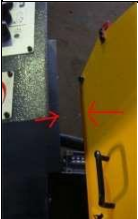




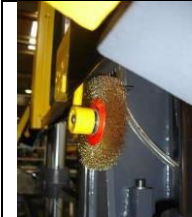


EN 13898:2003+A1:2009/AC:2010: MACHINE TOOLS - SAFETY - SAWING MACHINES FOR COLD METAL






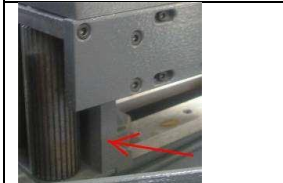
EN ISO 12100:2010; SAFETY OF MACHINERY - GENERAL PRINCIPLES FOR DESIGN – RISK ASSESMENT AND RISK REDUCTION.

EN 60204-1:2006/A1:2009; SAFETY OF MACHINERY - ELECTRICAL EQUIPMENT OF MACHINES - PART 1: GENERAL REQUIREMENTS

Residual Risks

Do Not Touch Below Mentioned Moving Or Movable Parts Of The Machine While It Runs.

	Mechanical Dangers	Residual Risks
	There might be hand/arm jam and crushing between the wheel cover and control panel.	Downfeed speed is designed to be less than 10mm/s. There are the warnings in manual and on machine.
	There might be finger jamming between the piston shaft and block.	Piston closing time is designed to be less than 10mm/s. To reduce the probability of piston jams wedge is designed to be substantially close to the plunger shaft diameter. There is warning label.
	There is hand jam possibility between the lower switch and vice plate.	Downfeed stops when the switch touches the screw. When there is finger jam the switch will be pressed and the movement will stop. In this way movement stops without harm.
	The switch which limits the downfeed presses on the plate, there is finger jam risk.	Downfeed speed is adjusted to less than 10mm/s, which helps running away faster.
	There is hand jam possibility between the upper switch and bow head.	Downfeed speed is adjusted to less than 10mm/s, which helps running away faster.
	There is jam possibility when you put your finger to the chip brush.	Brushes to provide sufficient clearance in accordance with EN 294 was closed by the stationary casing. There are warning at related sections.
	When the bow approaches down the gap between the piston and vice closes. Finger jam warning.	There are warnings in user manuals. There are warning signs on the machines.
	When the bow goes up the gap between the movable part and vice plates closes. Finger jam warning.	There are warnings in user manuals. There are warning signs on the machines.

	<p>Gap under the cover may let get to the blade.</p>	<p>The chip exit hole under the cover is narrowed according to EN294 for protection.(check calculation part)</p>
	<p>There is possibility to get to the out of cutting part of the blade from front and back.</p>	<p>There are warnings in user manuals. There are warning signs on the machines.</p>
 <p>(optional)</p>	<p>Warning for the end of chip conveyor which may cause jamming.</p>	<p>There are warnings in user manuals. There are warning signs on the machines.</p>
	<p>Warning for jamming from the chip conveyor grid to chip conveyor.</p>	<p>There are warnings in user manuals. There are warning signs on the machines.</p>
	<p>Warning for reaching to the chain under the chain cover.</p>	<p>Under the cover is closed to prevent reaching to the chain.</p>
	<p>Warning for finger jamming between the roller and material.</p>	<p>Feeding mechanism cover is designed to prevent jamming. There are warning signs on the machines.</p>

Statement of Noise

Conditions for measurement

Tested Machine: PGD350– Blade size: 3160 x 27 x 0,9mm

Material in use: \varnothing 250 Solid Material

A Nominal sound pressure level in warehouse

L_{pfa,1m}=77dB(A) Coefficient of uncertainty k:4 db (testing appropriate to en 11202)

A nominal sound power level

Power level l_{wa}=95dB(A) (measured value)

Coefficient of uncertainty k:4 db (testing appropriate to en iso 3746)

Values for noise are level of issue and it doesn't state it's on safe working level. Even there is a connection between Issue and exposure levels, this can not be used safely to decide if advanced precautions are needed. Factors that effect the real level of exposure that effects work force are depending on features of warehouse,(other sources of noise, other works nearby, and quantity of machines) including exposure time

Allowed level of exposure may change from country to another. Beside these, this information lets the operator to consider the dangers and risks.

Warning

This chapter outlining the safety devices and norms was drawn up bearing in mind the normal use of the machine as stated in the chapter on the operation of the machine and the adequate preparation of the operators as regards the specific risks linked to the operation of the machine.

If the machine isn't used according to instruction given in the 'purpose of the machine' chapter in this manual, the manufacturer isn't responsible for any damage caused to people and things.

Furthermore, the manufacturer isn't responsible for any damage to people and things and things resulting from the non-compliance with the following warnings.

- A) Adopt all the necessary precautions during loading, calibration, part replacement, cleaning, and repair or maintenance operations to prevent someone else from turning the machine on.

- B) Do not temper with the safety devices and guards on the machine.

- C) Do not remove any of the safety devices and guards on the machine.

Always make sure that safety devices and guards are remounted after their temporary removal for technical reasons ordered by the boss

Connection To The Electrical System

Control panel is mounted on the electric panel. Machine is connected to the main supply in the electrical panel. **R, s and t shows the phases, n is neuter and pe is grounding.** Connection will be from the 13(I1) klemens which is at right klemens group.

Check the voltage which is mentioned at the first page of the manual before setting the electrical connection of the machine.

If the cable phase line is correct phase control led lightens in that way it is prevented to motors move on wrong ways. Be sure that the out-put voltage at the power supply is 22 ~ 28 vdc.

The machine is protected against short circuit with interrupters and against high voltage with thermal relays. Grounding and neutralizing have to be done to protect the machine .

Technical data

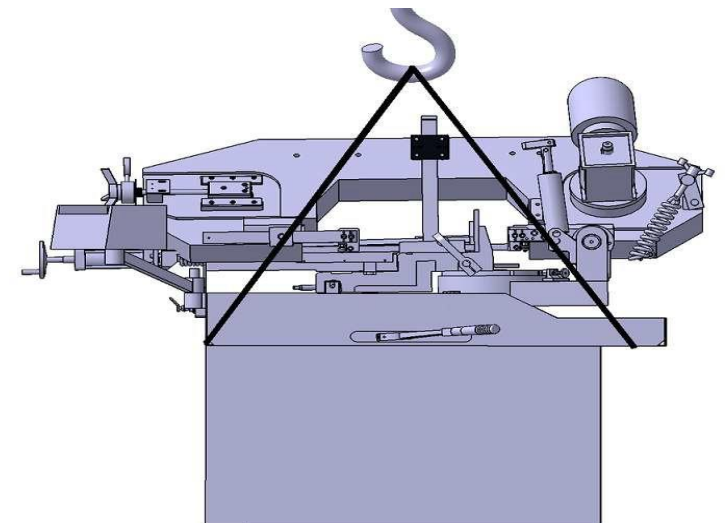
DIMENSIONS			BMS 270DG	BMSY 270 DG	BMSY 270 DGH
Cutting Capacity 0°	Round	mm	270	270	270
	Flat	mm	350 x 220	350 x 220	350 x 220
	Square	mm	270	270	270
Cutting Capacity -45°(Left)	Round	mm	210	210	210
	Flat	mm	270 x 210	270 x 210	270 x 210
	Square	mm	180	180	180
Cutting Capacity +45°(Right)	Round	mm	240	240	240
	Flat	mm	270 x 200	270 x 200	270 x 200
	Square	mm	170	170	170
Cutting Capacity +60°	Round	mm	150	150	150
	Flat	mm	150 x 100	150 x 100	150 x 100
	Square	mm	100	100	100
Main Drive Motor		kW	0,75 - 1,5	0,75 - 1,5	0,75 - 1,5
Hydraulic Motor		kW	0,37	0,37
Coolant Motor		kW	0,12	0,12	0,12
Cutting Speeds		m/min	34 - 68	34 - 68	34 - 68
Band Dimensions		mm	3160 x 27 x 0,9	3160 x 27 x 0,9	3160 x 27 x 0,9
Work Height		mm	820	820	820
Weight		Kg	465	500	500
Dimensions	Length	mm	1730	1730	1730
	Width	mm	770	770	770
	Height	mm	1460	1460	1460

Transportation and carrying of machine

The machines are sent to domestic buyers without packing and to foreign buyers on special transport pedestal.

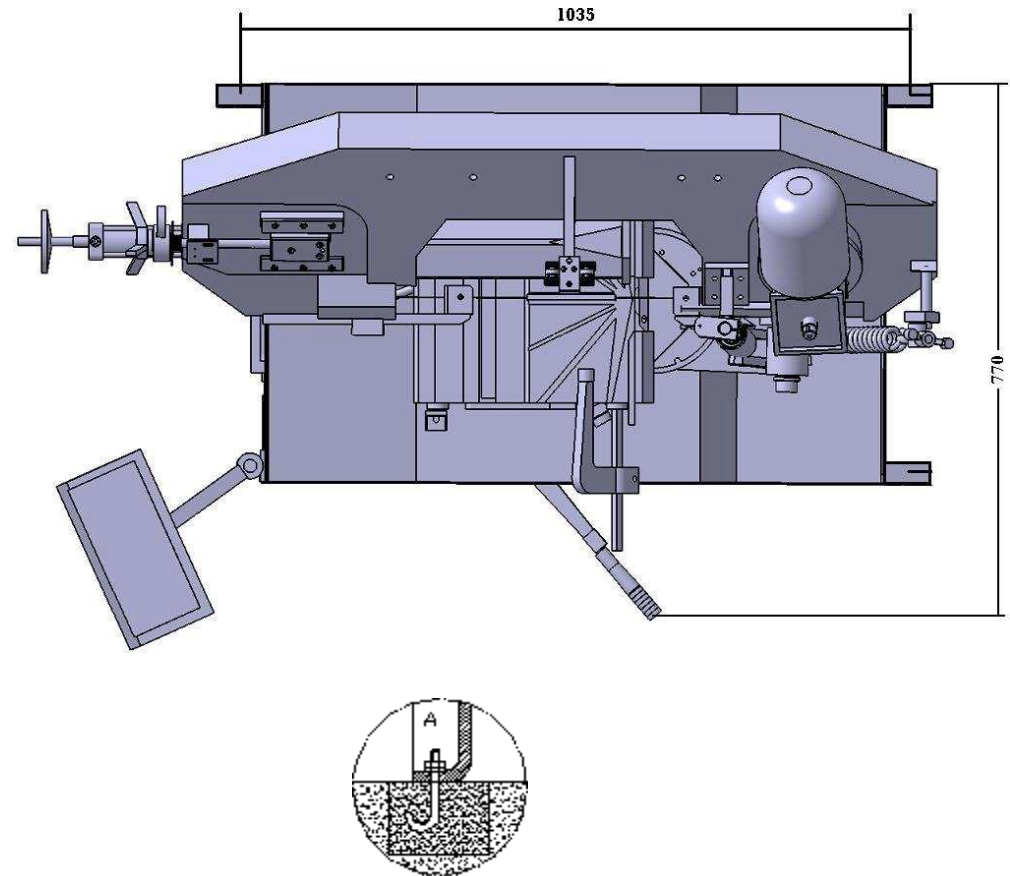
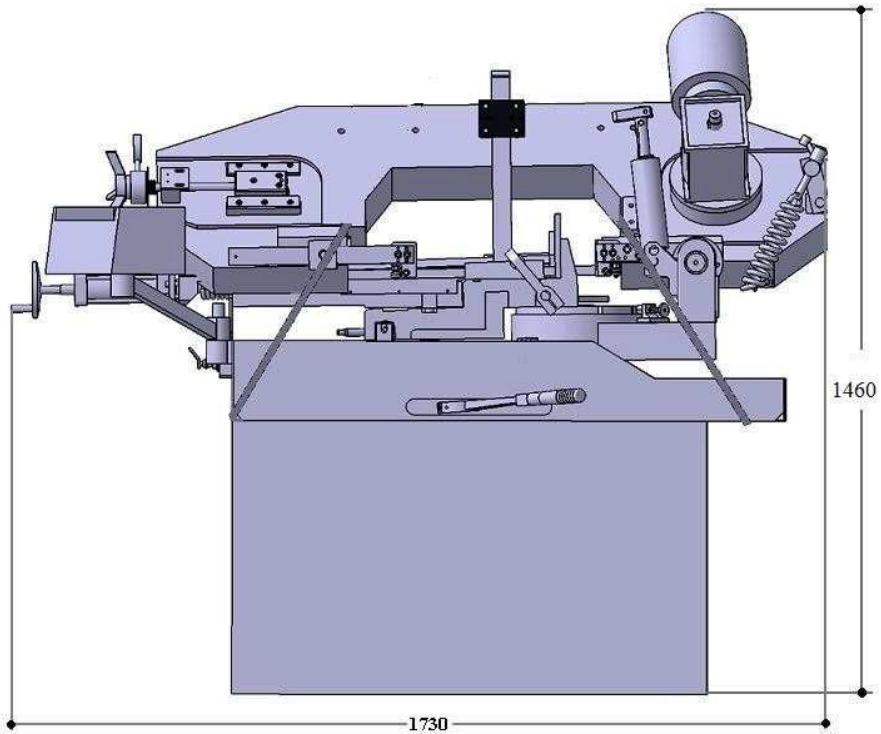
After arrival of the machine and having certified that no damage has been done to the machine, the machine may be unpacked. After unpacking, the machine left on the pedestal may be rolled on a roller to its destination or transported by means of a hemp rope in manner show below. During transport, special care should be paid to all the projecting elements to avoid their damage.

Excision may change the properties of the product without notice.



Mounting

Mostly there is no need for mounting. If you want to mount the machine to the ground, please keep in mind the dimensions given below, the height adjustable screws will be useful when adjusting the horizontal position of the machine.



Control Panel(PGD350)




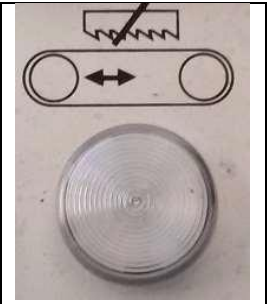


	<p>Signal button : Power supply off/on</p>		<p>Emergency stop button:prevents accidents at unexpected situations.</p>
	<p>Start button : start the cutting</p>		<p>Stop button :stops the cutting</p>
	<p>Coolant button : it is used to let the coolant liquid flow.</p>		<p>Speed control potmeter : controls the inverter to adjust the turning speed of blade</p>
	<p>down feed valve: use this valve to adjust cutting pressure</p>		<p>blade speed selector: use this switch to select the blade switch (35 – 70 m /sn.)</p>

Control Panel(PGD350)

The control panel of *bmsy 230dg* has two parts; one of them includes only the down feed valve and the other part includes all the buttons that you will need in usage of your sawing machine. You can see both parts below and the description of the buttons are written below them



	<p>Signal button : Power supply off/on</p>		<p>Acil stop butonu (PANEL ÜZERİNDE) Beklenmedik bir durumda oluşabilecek kazaları önlemek için kullanılır. Makinanın kontrol gerilimi kapatılır.</p>
	<p>Start button : start the cutting</p>		<p>Stop button :stops the cutting</p>
	<p>Coolant button : it is used to let the coolant liquid flow.</p>		<p>Speed control potmeter : controls the inverter to adjust the turning speed of blade</p>
	<p>Bow up button: moves the bow up manually and stops cutting.</p>		<p>Bow down button: moves down the bow manually.</p>

	<p>down feed valve: use this valve to adjust cutting pressure</p>		<p>indicator lamp: this lamp shows that the blade is broken or not tightened.</p>
	<p>hydraulic vice button: this button is not used in dg type machines (used in dgh)</p>		<p>Acil stop butonu (PEDAL ÜZERİNDE) Beklenmedik bir durumda oluşabilecek kazaları önlemek için kullanılır. Makinanın kontrol gerilimi kapatılır.</p>

The Adjustment Of Cutting Pressure

According to the grade of material, it provides to regulate cutting pressure. The cutting pressure should be reduced when the blade is being dull. After that the blade must be changed.

Area i : this shows that the tension of the blade is less than it must be. Adjust the blade tension.

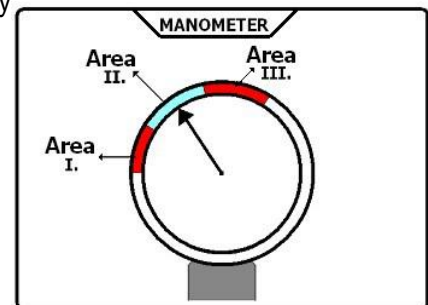
Area ii : this shows that the tension of the blade is normal

area iii : this shows that the tension of the blade is more than it must be. This may break the blade. Reduce the tension.

Hydraulic vice : **30 bar**

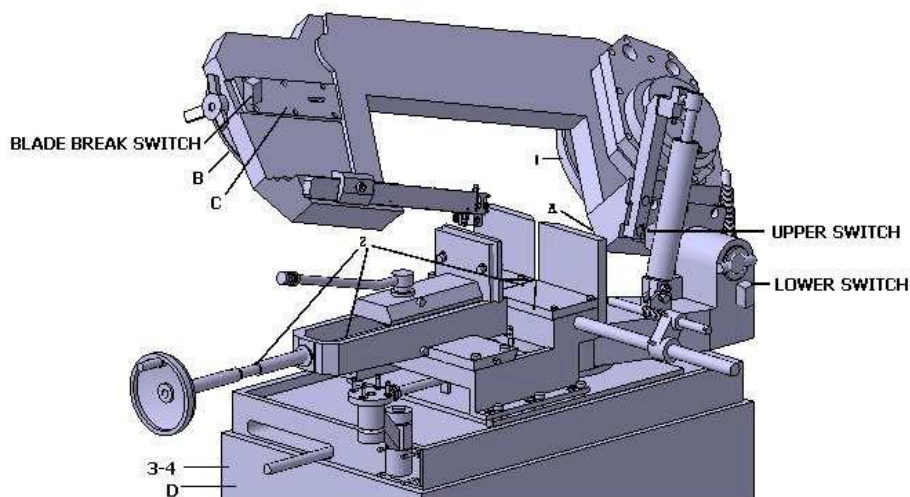
Main pressure:**30bar**

Hydromechanics blade tension : **min:150 bar max:170**



break

bar



Manual Cutting Operations

- 1) Switch on the main switch.
- 2) Select the manual-automatic selector to position 2.
- 3) Adjust s3 limit switch according to the material's diameter or height.
- 4) Press b3 pushbutton to go up the bow. (s2 limit switch must be in circuit otherwise the machine does not work.)
- 5) Adjust the length of the material to required length. (by using s4 switch.)
- 6) Press start pushbutton. (in manual position, start pushbutton must be kept pressed until the bow left s2 limit switch.)
- 7) Regulate the cutting pressure by the throttling valve.
- 8) Because of counter, the machine could be locked. In this situation the machine does not work. Upper line of counter must be preset after that the reset button must be pressed.
- 9) For the next cutting, follow the same way.

Automatic Cutting Operation

1. Switch on the main switch.
2. Select b6 selector to position 2.
3. Adjust s2 limit switch according to the materials diameter or height.
4. Press b3 pushbutton to the bow up.
5. Select b6 selector to position 1.
6. Slide the length-stop on the spindle until reaching required length and the tighten.
7. Preset the number of cuts required and press the reset button on the counter.
8. Press start button the cutting operation.
9. Regulate the cutting pressure by throttling valve.

After starting the cutting operation, you do not need any operation else, but according to the grade of material you switch on the coolant pump or not.

P.s. If the machine stopped without reaching preset number, the blade could be broken or the material length could be shortened.

Regulations

Defect symptoms

cause of defect

type of repair

After switching on the main Switch, the lamp on control Panel does not work.

a) fuse is off.

A) reset fuse.

B) burnt bulb.

B) replace bulb.

After going the bow down Completely, does not go up.

a) the bow does not touch S3 limit switch.

a) re-adjust s3 limit switch.

B) reverse direction pump Rotation.

b) take the cover off at the Backside of the machine And check if direction of Rotation agree with the Arrow. In case of discrepancy, phases in the Pump supply.

After pressing start button The motor does not work.

a) s2 limit switch does not Get in touch with the bow.

a) press bow-up button.

B) counter is locked.

B) preset the counter and Press reset button.

C) thermal protection has worked

c) wait a few minutes until

Thermal relay cool. If the

Motor still does not work. Press reset button.

Pump does not supply Coolant.

a) reverse direction of Pump rotation.

a) exchange phases in the Pump's supply.

B) lack of coolant.

B) pour in coolant.

C) shut valves that cut off Coolant.

c) open valve's.

D) thermal protection has Worked.

d) wait a few minutes until Relay cool. If the motor Still does not work press Key.

If the above defects have been removed and if the machine still does not work, check appropriate electric circuits and then call a crew trained to repair for this purpose.

Connecting with the mains

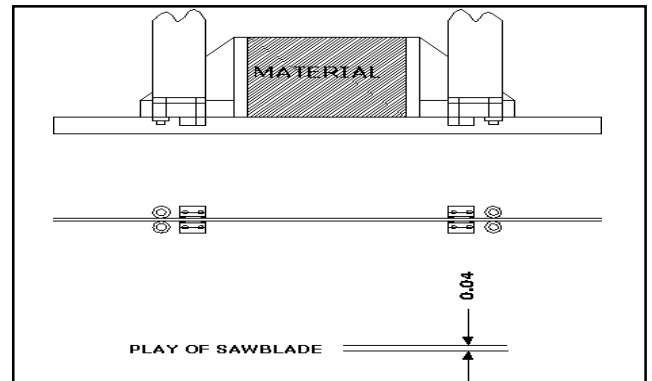
The machine is equipped with a drive motor driving by a v-belt and other necessary electrical equipment's. Electrical box is installed on the lower part. Control panel is mounted on the electrical box. The machine is connected with the mains at the electrical box. **R, s and t** stand for phases, **n** stands for neuter and **pe** stands for ground.

Three-phase motors allow an easy change of the poles at the connecting flexes in order to correct the direction of cutting

Blade guidance

For an accurate guidance of the bandsaw blade there are two rigid and precise vertical guide arms fitted with rollers for twisting pretwisting and carbide inserted plates for the final and exact blade guide. Put the blade arms always as close as possible to the material to be cut and tighten them.

The play of the blade can be re-set by altering the position of a carbide inserted guide plate.



The minimum play should be 0.04 mm.

MACHINE MAINTENANCE INSTRUCTIONS

1) Daily Maintenance

1) Clean the chips behind the wheels



1.2) Coolant oil tank



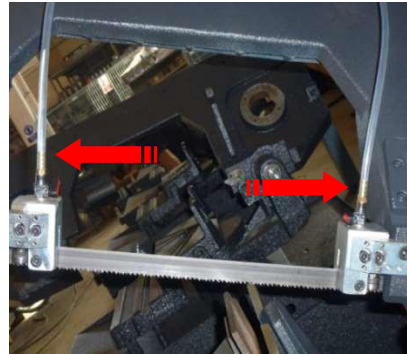
1.2 a) How to remove the chips from oil tank.

1.3) Remove the chips from the vice block.



1.4) Lubricate the clamping blocks.

1.5 a) Coolant hoses



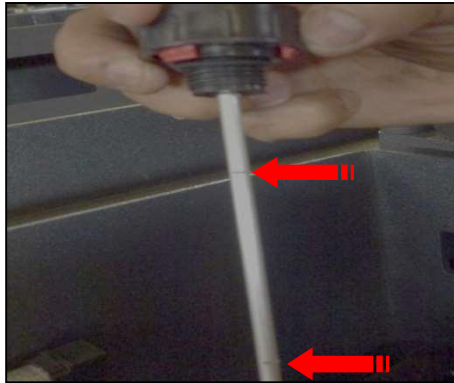
1.5 b) How to air the hoses mentioned above.

1.6) The manometer should be between 150 - 170 Bars.



2) Weekly maintenance

2.1) Hydraulic oil tank oil level should be between upper and lower levels. No 32



2.2) Remove the chips from the tank with shovel.

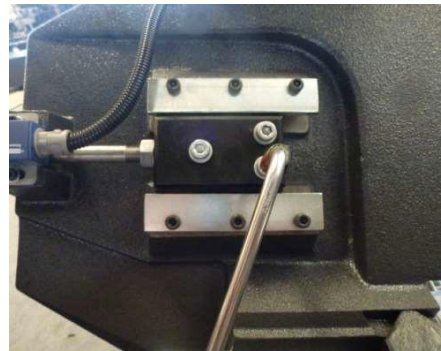


3) Monthly maintenance

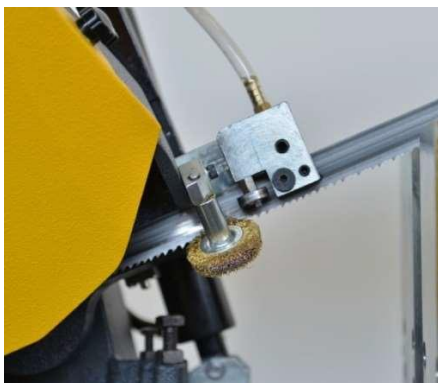
3.1. Lubricate the front and drive wheels as shown.



3.2. Check the bolts.



3.3) Check the chip brush.



4) 6 Months Maintenance

Changing the bearings

1) Remove the bolts and take out the pins.



2) Remove the clip



3) Remove the inner pin of bearing.



4) Change the bearing with a new one.



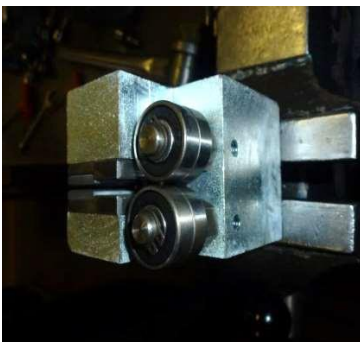
5) Hammer pin into the bearings



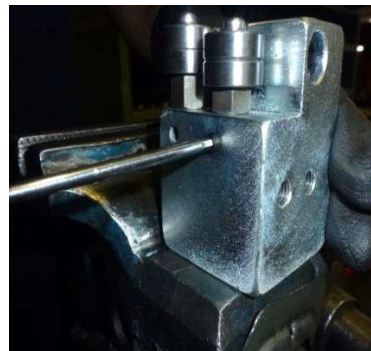
6) Place the clip.



7) Place the pins on the carbide block.

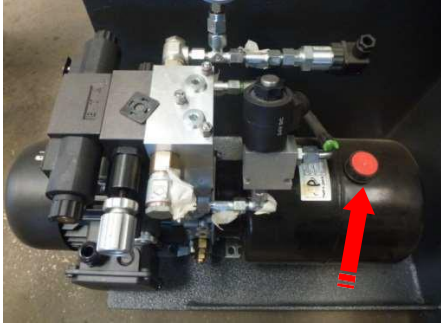


8) Fix the pins with stay bolts.



5) Annual maintenance

- 5) Remove the cap and put number 32 oil (oil, Mobil, Shell)



CHANGING THE SAWBLADE

1. Loosen the sawblade



2. Remove the sawblade from the carbide block.



3. Remove the sawblade from the wheel



4. Change the blade with new one.



5. Place the blade to the wheel.



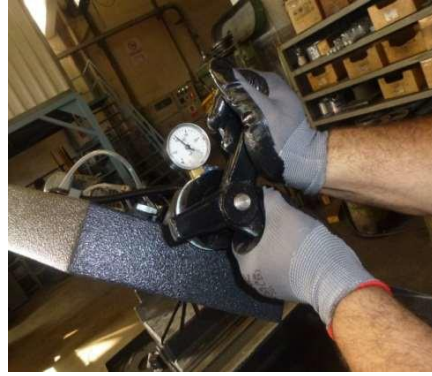
6. Place the sawblade between the bearings.



7. Place the sawblade between the carbide blocks straightly.



9. Tighten the sawblade with tensioning shaft.



Filling up coolant

1. Remove the coolant case onto a chock.



2. How to add coolant to the coolant tank.



3. Add coolant till the marked place.



4. Placing the coolant tank.



Cutting speeds

The machine has two pre-selected cutting speeds of 20 and 100 m/sec. Cutting speeds has to be selected according to the grade and dimensions of the material. If any vibration and/or noise raises from the blade, change the speed.

- All the details about the cutting of various materials and dimensions are given below

CUTTING RECOMENDATIONS

NOTE:THE CUTTING SPEEDS GIVEN BELOW ARE GUIDELINES ONLY

MATERIAL	MATERIAL DESIGNATION DIN	MATERIAL NO	CUTTING SPEED		COOLANT			
			SPECIAL LG-SUPER	BI-METAL	EMULSION	CUTTING OIL		
						YES	NO	
STRUCTUAL STEEL	ST 35 - ST 42	1.0308-	40 - 55	60 - 80	1:10		X	
	ST 350 - ST 70	1.0052-	30 - 45	50 - 70	1:20		X	
HARDENING STEEL	C 10 - C 16	1.0301-	45 - 65	60 - 90	1:10		X	
	14 NICR 14	1.5752	30 - 40	40 - 50	1:10		X	
	21 NICR MO 2	1.6523	30 - 45	45 - 55	1:10		X	
	16 MR CR 5	1,7131	30 - 45	50 - 65	1:10		X	
NITRICTED STEEL	34 CRAL 6	1,8504	-----	20 - 35	1:20			X
	34 CR AL NI 7	1,8550	-----	20 - 35	1:20			X
FREE CUTTING STEEL	9 S 20	1,0711	45 - 65	70 - 120	1:10	X		
HEAT TREATABLE STEEL	C 35 C 45	1,0501-	35 - 55	55 - 75	1:20			X
	41 CR 4	1,7035	35 - 35	40 - 60	1:20			X
	40 MN 4	1,5038	35 - 45	50 - 65	1:20			X
	42 CRMO 4	1,7225	30 - 40	35 - 50	1:20			X
	36 NI CR 6	1,5710	30 - 40	50 - 60	1:20			X
	24 NI CR 14	1,5754	25 - 35	40 - 60	1:20			X
BALL BEARING STEEL	100 - CR 6	1,3505	25 - 35	50 - 65	1:30			X
	105 - CR 4	1,3503	25 - 35	50 - 65	1:30			X
	100 - CRMO 6	1,3520	20 - 30	40 - 50	1:30			X
SPRING STEEL	65 SI 7	1,0906	30 - 40	40 - 60	1:30			X
	50 CRV 4	1,8159	30 - 40	40 - 60	1:30			X
UNALLOYED TOOL STEEL	C 80 W 1	1,1525	25 - 35	50 - 60	1:30			X
	C 125 W 1	1,1560	20 - 30	20 - 35	1:30			X
	C 105 W 2	1,1645	25 - 35	40 - 50	1:30			X
ALLOYED TOOL STEEL	105 CR 5	1,2060	30 - 40	50 - 60	1:30			X
	X 210 CR 12	1. 2080	-----	20 - 35	-----			X
	X 40 CR MO V 51	1,2344	20 - 30	30 - 40	1:30			X
	X 210 CR W 12	1,2436	-----	20 - 30	-----			X
	X 165 CR MP V 12	1,2601	-----	20 - 35	1:30			X
	56 NICRMOV 7	1,2714	25 - 30	20 - 40	1:30			X
	100 CRMO 5	1,2303	20 - 30	35 - 45	1:30			X
	X 32 CRMOV 33	1,2365	20 - 30	30 - 45	1:20	X		
HIGH SPEED STEEL	S 5-6-2	1,3343	-----	25 - 40	1:30			X
	S 5-6-2-5	1,3243	-----	25 - 40	1:30			X
	S 18-0-1	1,3355	-----	25 - 40	1:30			X
	S 18-1-2-10	1,3265	-----	25 - 40	1:30			X
VALVE STEEL	X 45 CRSI 93	1,4718	-----	30 - 40	1:20	X		
	X 45 CRNIW 189	1,4873	-----	30 - 40	1:20	X		
HIGH TEMPERATURE STEEL	CRNI 2520	1,4843	-----	25 - 40	1:10	X		
	X 20 CRMOV 211	1,4922	-----	25 - 40	1:10	X		
	X5 NICRTI 2615	1,4980	-----	25 - 40	1:10	X		
HEAT RESISTING STEEL	X 10 CRAL 7	1,4713	-----	20 - 35	1:10	X		
	X 15 CRNISI 25 / 20	1,4841	-----	20 - 35	1:10	X		
	X 10 CRSI 6	1,4712	-----	20 - 35	1:10	X		
STAINLESS AND ACID RESISTING STEEL	X 5 CRNI 189	1,4301	-----	25 - 35	1:10	X		
	X 10 CRNIMPT 1810	1,4571	-----	25 - 35	1:10	X		
	X 10 CR 13	1,4006	-----	25 - 35	1:10	X		
	X 5 CRNIMO 1810	1,4401	-----	25 - 35	1:10	X		
STEEL CASTING	GS - 38		30 - 40	50 - 60	1:50			X
	GS - 60		30 - 40	50 - 60	1:50			X
CAST IRON	GG - 16		30 - 40	40 - 50	-----			X
	GG - 30		30 - 40	40 - 50	-----			X
	GTW - 40		30 - 40	40 - 50	-----			X
	GTS - 65		30 - 40	40 - 50	-----			X
HIGH TEMPERATURE NICKEL ALLOYS	NIMONIC	2,4631	-----	15 - 25	1:10	X		
	HASTELLOY	X 2,4972	-----	15 - 25	1:10	X		
	INCONEL	2,4640	-----	15 - 25	1:10	X		
ALUMINIUM ALLOYS	AL 99,5	3,0255	80 - 300	100 - 700	1:10			X
	ALMG 3	3,3535	80 - 300	100 - 700	1:10			X
BRONZE / TIN BRONZE	CUSN 6	2,1020	50 - 70	70 - 100	1:50			X
	G - CUSN 10	2,1050	50 - 70	70 - 100	1:50			X
ALUMINIUM - BRONZE	CUAL 8	2,0920	30 - 45	50 - 70	1:30			X
	CUAL 8 FE 38	2,0920,60	30 - 40	40 - 50	1:20	X		
RED BRASS	G - CUSN 10 ZN	2,1086,01	30 - 45	70 - 100	1:50			X
	G - CUSN 5 ZN PB	2,1096,01	30 - 45	70 - 100	1:50			X
BRASS	CUZN 10	2,0230	80 - 200	100 - 300	1:50			X
	CUZN 31 S	2,0490	80 - 200	100 - 300	1:50			X

RECOMENDATION FOR TOOTH STYLE AND TOOTH PITCH SELECTIONS FOR HSS BI-METAL BANDSAWS



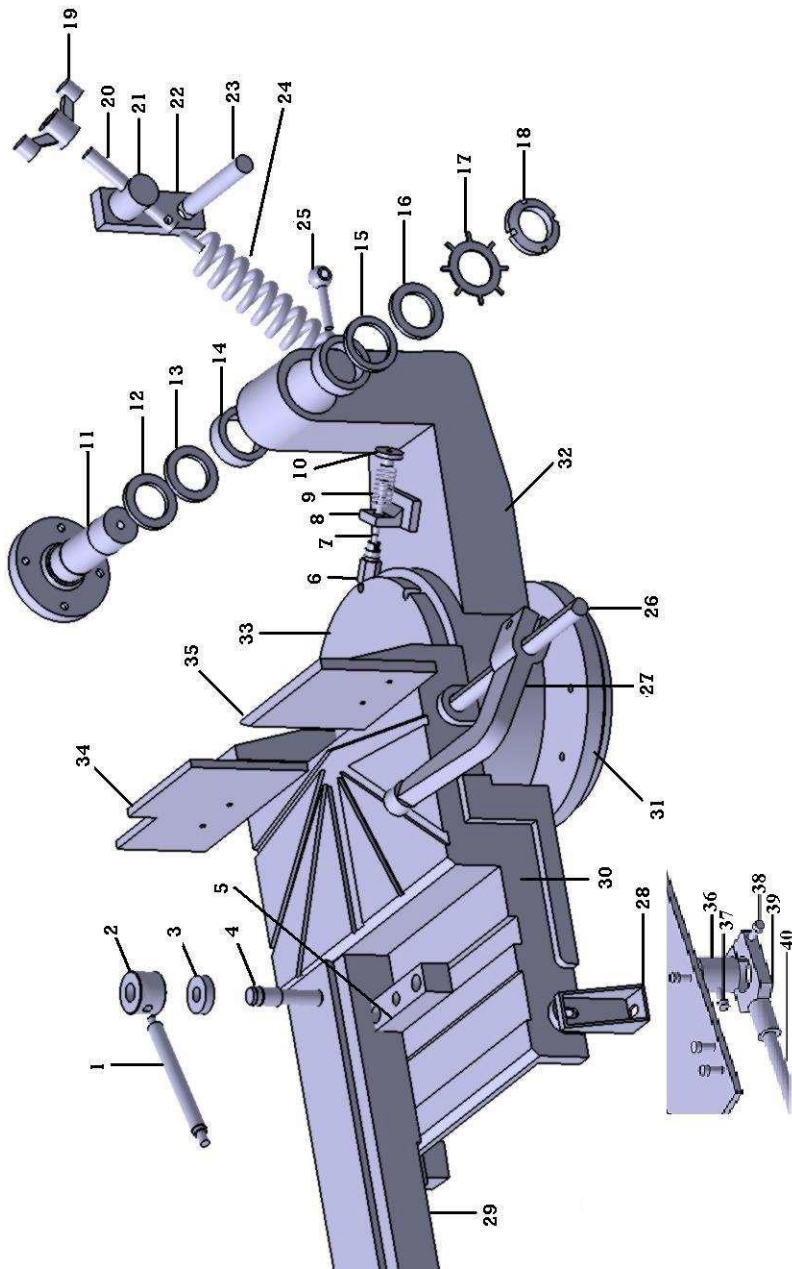
Dependable Precision

**MANUAL /SEMI- AUTOMATIC
HORIZONTAL BANDSAWING
MACHINES
INSTRUCTION MANUAL**

PGD 350 Bandsaw Machine

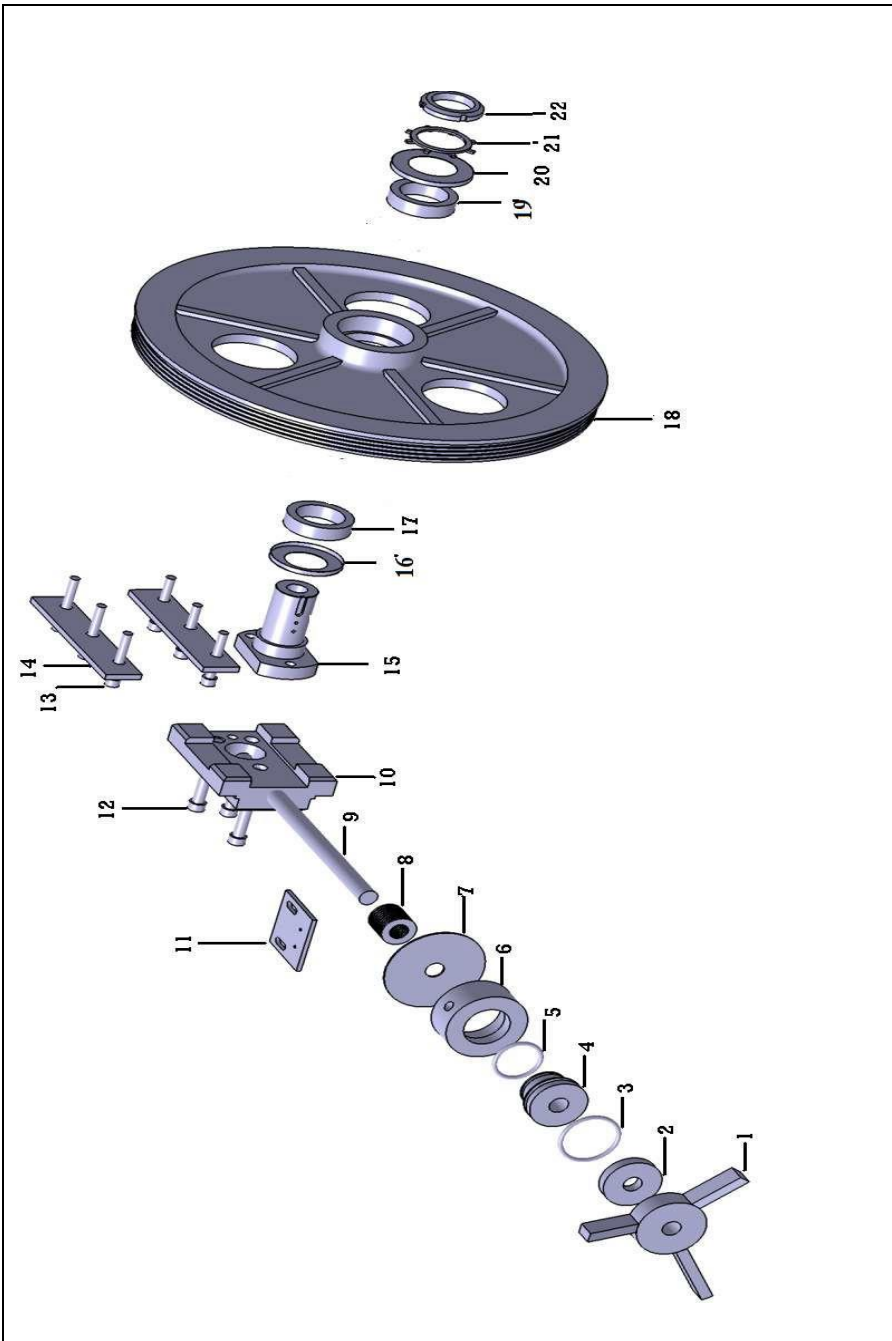


SPARE PART TABLES



VICE UPPER GROUP

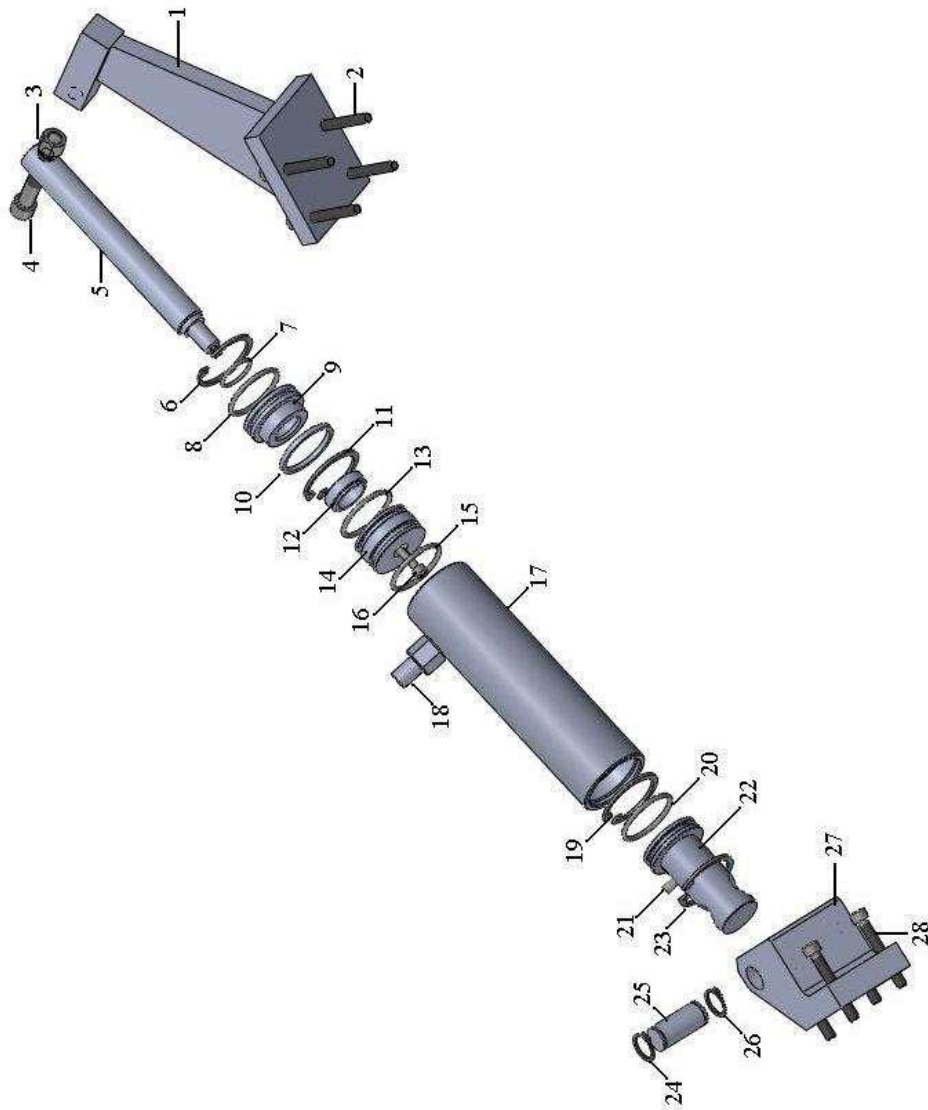
PART NMR	PART CODE	PART NAME
001	270,01,01	VICE QUICK CLAMPING SHAFT
002	270,01,02	QUICK CLAMPING BLOCK
003	270,01,03	QUICK CLAMPING WASHER
004	270,01,04	QUICK CLAMPING PIN
005	270,01,05	QUICK CLAMPING FLAT
006	270,01,06	ANGLE PIN
007	270,01,07	ANGLE PIN 2
008	270,01,08	ANGLE FIXING BODY
009	270,01,09	ANGLE LEAN STOP SPRING
010	270,01,10	ANGLE NUT
011	270,01,11	BODY CONNECTION SHAFT
012	270,01,12	METAL RING
013	270,01,13	BEARING 32008
014	270,01,14	WASHER
015	270,01,15	BEARING 32008
016	270,01,16	METAL RING
017	270,01,17	WASHER
018	270,01,18	NUT M40x1,5
019	270,01,19	CONNECTION ARM
020	270,01,20	SPRING SHAFT
021	270,01,21	SPRING BLOCK
022	270,01,22	SPRING FLAT
023	270,01,23	CONNECTION SHAFT
024	270,01,24	SPRING
025	270,01,25	HANDLE
026	270,01,26	SCALE LEAN STOP SHAFT
027	270,01,27	SCALE LEAN STOP CASTING
028	270,01,28	LEG
029	270,01,29	LOWER MOVING VICE
030	270,01,30	SET SQUARE
031	270,01,31	LOWER FLANGE
032	270,01,32	SWIVEL ARM
033	270,01,33	UPPER FLANGE
034	270,01,34	FIXING JAW(REAR)
035	270,01,35	FIXING JAW(FRONT)
036	270,01,36	ANGLE ADJUST NUT
037	270,01,37	M10x30 INBUS
038	270,01,38	M10x70 INBUS
039	270,01,39	ANGLE ADJUST PLIER
040	270,01,40	PLIER SHAFT



TENSIONING GROUP

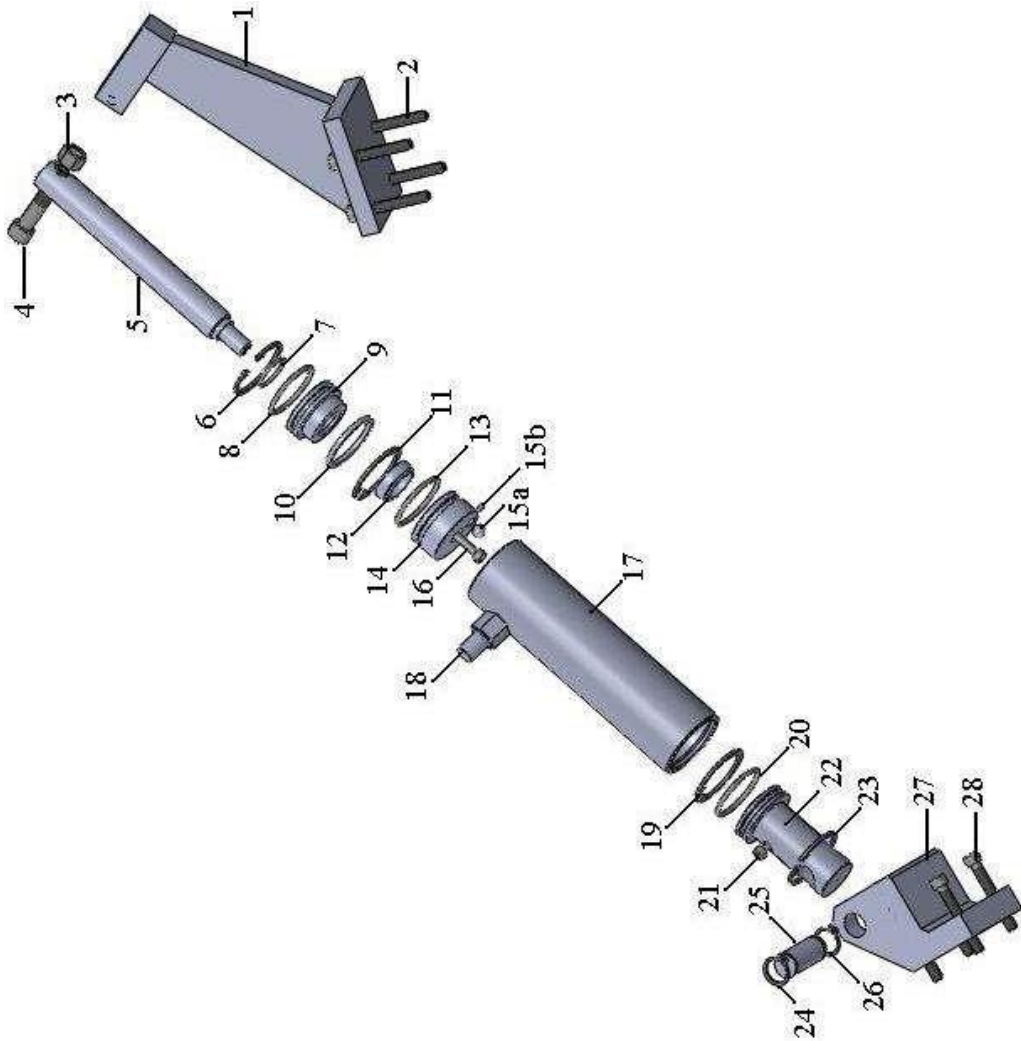
PART NUMBER	PART CODE	PART NAME
001	270,02,01	HANDLE
002	270,02,02	BEARING 51103
003	270,02,03	ORING Ø42,86x3,53
004	270,02,04	INNER BLOCK
005	270,02,05	ORING Ø34,59x2,62
006	270,02,06	OUTER BLOCK
007	270,02,07	WASHER
008	270,02,08	WASHER Ø16x34x2 10 PIECES
009	270,02,09	SHAFT
010	270,02,10	BUSHING
011	270,02,11	SWITCH PLATE
012	270,02,12	M10X45 INBUS
013	270,02,13	M8X30 INBUS
014	270,02,14	UPPER FLAT
015	270,02,15	SHAFT
016	270,02,16	BEARING SHEET IRON-FRONT
017	270,02,17	BEARING 32007
018	270,02,18	FRONT WHEEL
019	270,02,19	BEARING 32007
020	270,02,20	BEARING SHEET IRON - REAR
021	270,02,21	WASHER
022	270,02,22	M35x1,5 NUT





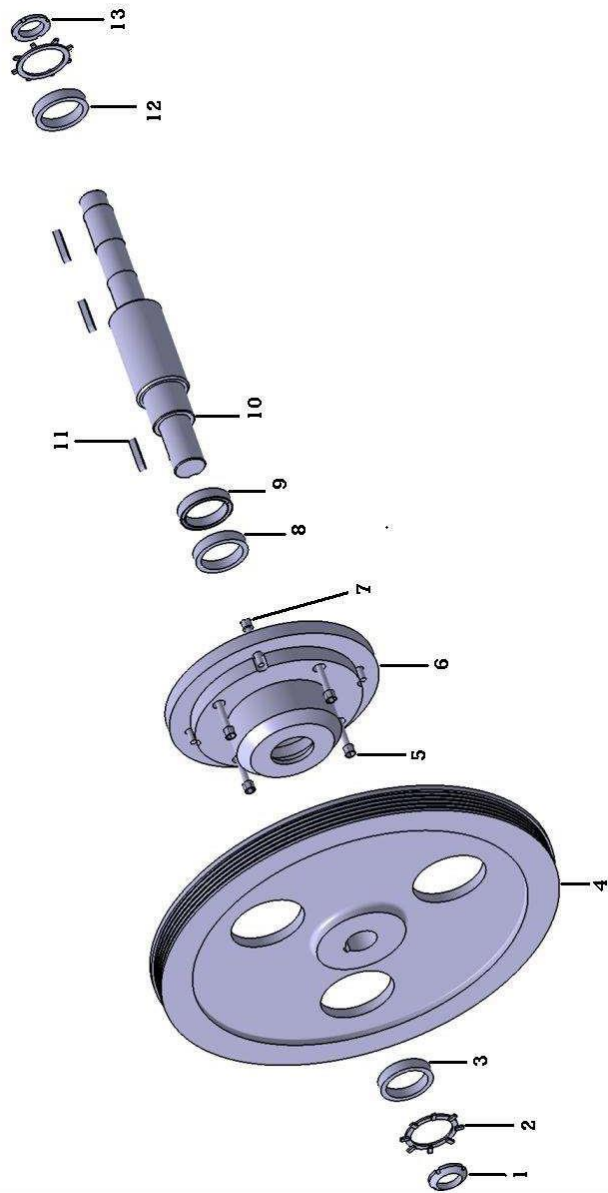
LIFTING PISTON GROUP(BMSY 270DG-DGH)

PART NUMBER	PART CODE	PART NAME
001	270,03,01	PISTON HOLDER
002	270,03,02	M8X30 INBUS
003	270,03,03	M12 NUT
004	270,03,04	M12X60 INBUS
005	270,03,05	PISTON SHAFT
006	270,03,06	PISTON RING
007	270,03,07	ORING 24,99x2,62
008	270,03,08	ORING 42,86x3,5
009	270,03,09	SHAFT HOLDER (UPPER)
010	270,03,10	BAND
011	270,03,11	PISTON RING 472/50
012	270,03,12	METAL RING
013	270,03,13	ORING 42,86x3,5
014	270,03,14	SHAFT'S END
015	270,03,15	ORING 42,86x3,5
016	270,03,16	M6X15 INBUS
017	270,03,17	PISTON PIPE
018	270,03,18	PIPE UNION 1/8"
019	270,03,19	PISTON RING 472/50
020	270,03,20	ORING 42,86x3,5
021	270,03,21	PIPE UNION 1/8"
022	270,03,22	RETAINING RING
023	270,03,23	PISTON RING 472/50
024	270,03,24	SPISTON RING 471/20
025	270,03,25	LOWER SHAFT
026	270,03,26	SEGMAN 471/20
027	270,03,27	LOWER PLATE
028	270,03,28	M8X30 INBUS



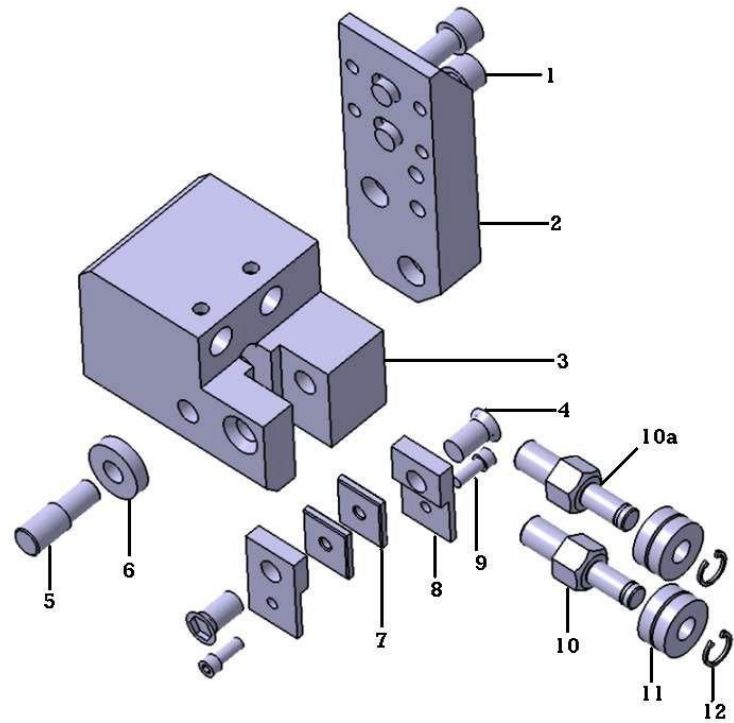
LIFTING PISTON GROUP (BMS 270DG)

PART NUMBER	PART CODE	PART NAME
001	270,04,01	PISTON HOLDER
002	270,04,02	M8X30 INBUS
003	270,04,03	M12 NUT
004	270,04,04	M12X60 INBUS
005	270,04,05	PISTON SHAFT
006	270,04,06	PISTON RING 472/50
007	270,04,07	ORING 24,99x3,53
008	270,04,08	ORING 42,86x3,5
009	270,04,09	SHAFT HOLDER (UPPER)
010	270,04,10	BAND
011	270,04,11	SEGMAN 472/50
012	270,04,12	METAL RING
013	270,04,13	ORING 42,86x3,5
014	270,04,14	SHAFT'S END
015	270,04,15	BALL
016	270,04,16	M6 INBUS
017	270,04,17	PISTON PIPE
018	270,04,18	PIPE UNION 1/8"
019	270,04,19	PISTON RING 472/50
020	270,04,20	ORING 42,86x3,5
021	270,04,21	PIPE UNION 1/8"
022	270,04,22	RETAINING RING
023	270,04,23	PISTON RING 472/50
024	270,04,24	PISTON RING 471/20
025	270,04,25	LOWER SHAFT
026	270,04,26	PISTON RING 471/20
027	270,04,27	LOWER PLATE
028	270,04,28	M8X30 INBUS



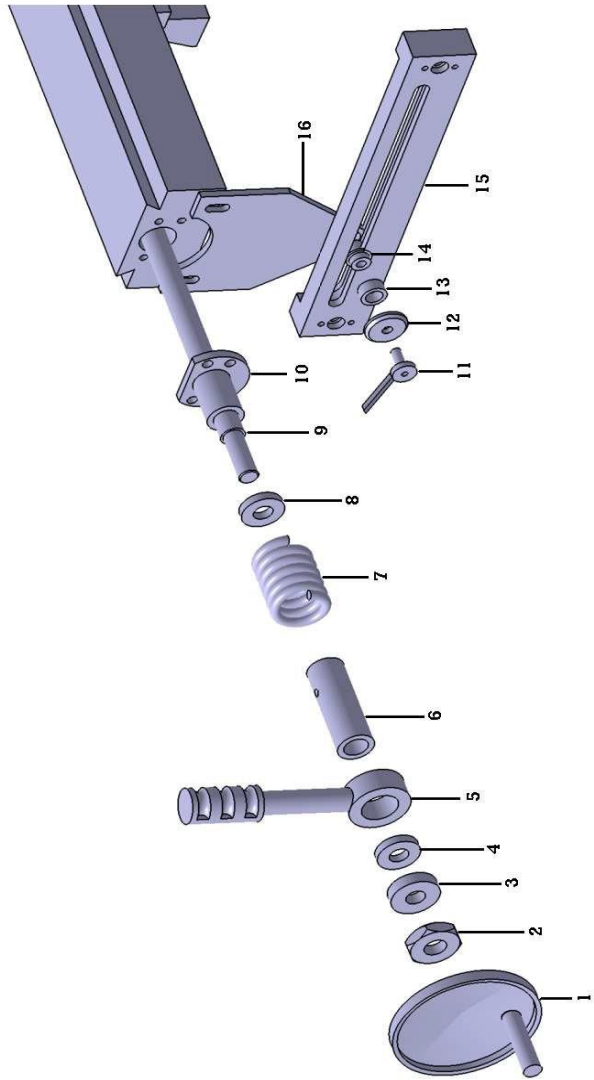
REDUCTOR GROUP

PART NUMBER	PART CODE	PART NAME
001	270,05,01	NUT M30X1,5
002	270,05,02	WASHER
003	270,05,03	WASHER
004	270,05,04	REAR WHEEL
005	270,05,05	M10X45 INBUS
006	270,05,06	COVER
007	270,05,07	M10X30 INBUS
008	270,05,08	DUST SEAL 40X55X8
009	270,05,09	BEARING 6208
010	270,05,10	REDUCTOR SHAFT
011	270,05,11	KEY
012	270,05,12	WASHER
013	270,05,13	NUT M25X1,5



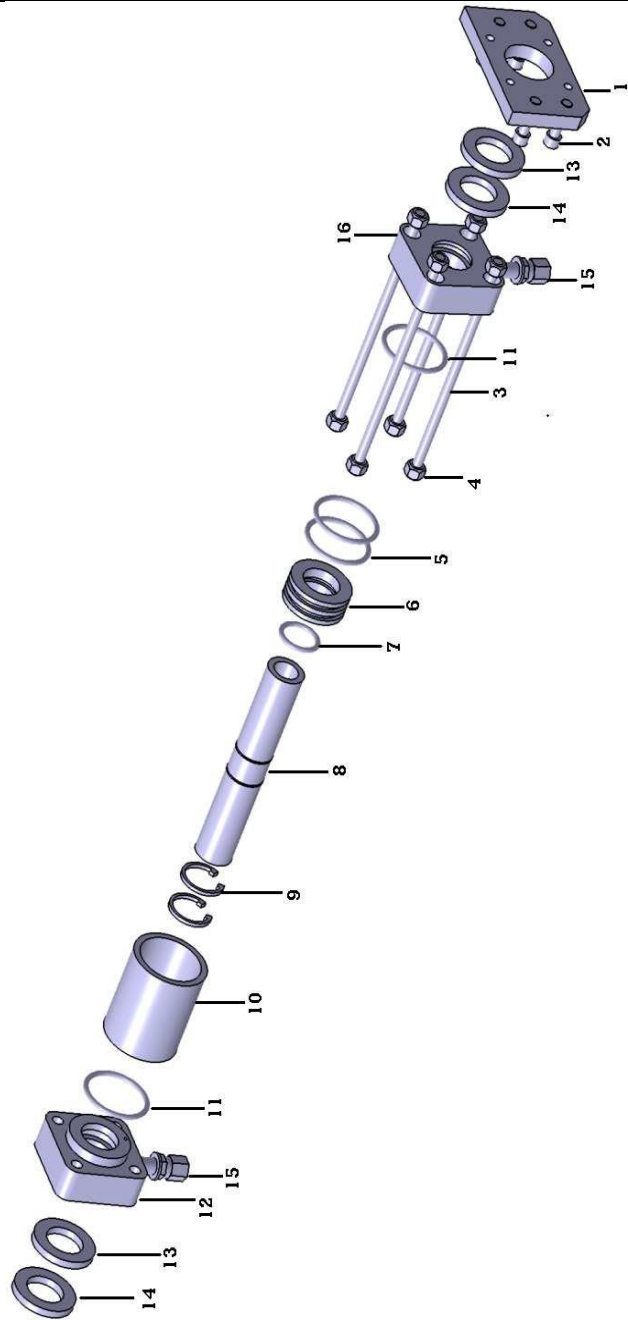
CARBIDE GUIDE GROUP

PART NUMBER	PART CODE	PART NAME
001	270,06,01	M8X20 INBUS
002	270,06,02	FIXING FLAT
003	270,06,03	CARBIDE PLATE
004	270,06,04	M8X20 INBUS (COUNTERSUNK)
005	270,06,05	M8X8 SETSKUR
006	270,06,06	BEARING 608
007	270,06,07	CARBIDE
008	270,06,08	CARBIDE BUSHING
009	270,06,09	M4X8 BOLT (COUNTERSUNK)
010	270,06,10	STRAIGHT SHAFT
010A	270,06,10A	ECCENTRIC SHAFT
011	270,06,11	BEARING 608
012	270,06,12	SEGMAN 471/8



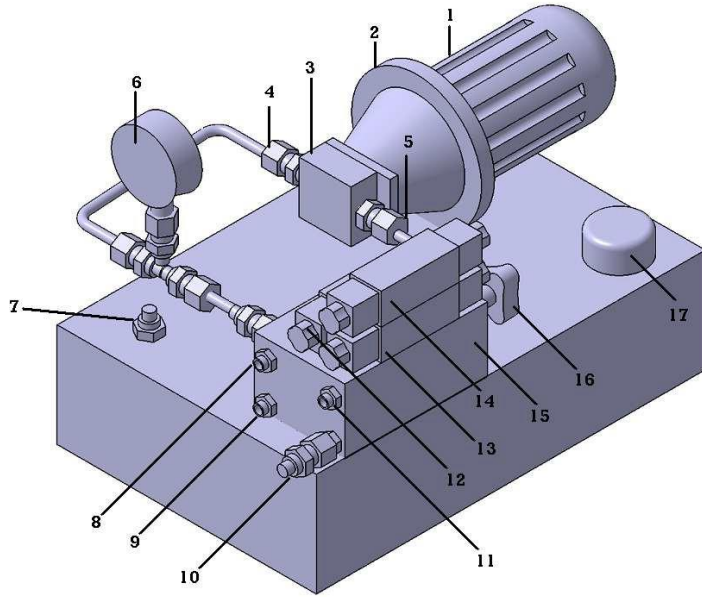
VICE ARM GROUP

PART NUMBER	PART CODE	PART NAME
001	270,07,01	HANDLE
002	270,07,02	M20x1,5 NUT
003	270,07,03	METAL RING
004	270,07,04	BEARING 51104
005	270,07,05	CLAMPING ARM
006	270,07,06	BUSHING BASTION
007	270,07,07	SPRING
008	270,07,08	METAL RING
009	270,07,09	VICE SHAFT
010	270,07,10	VICE NUT
011	270,07,11	HANDLE
012	270,07,12	WASHER
013	270,07,13	METAL RING
014	270,07,14	METAL RING BASTION
015	270,07,15	TRACK
016	270,07,16	CONNECTION FLAT



HYDRAULIC VICE PISTON GROUP

PART NUMBER	PART CODE	PART NAME
001	270.08.01	CONNECTION FLAT
002	270.08.02	M8X25 INBUS
003	270.08.03	M8 PIPE
004	270.08.04	M8NUT
005	270.08.05	ORING
006	270.08.06	PISTIN HEAD
007	270.08.07	ORING
008	270.08.08	CHROME SHAFT
009	270.08.09	SEGMAN 471/30
010	270.08.10	PISTON BODY
011	270.08.11	ORING
012	270.08.12	VICE BLOCK (REAR)
013	270.08.13	OIL SEAL 30x40x8
014	270.08.14	DUST SEAL 30x38
015	270.08.15	REKOR Ø6 1/8"
016	270.08.16	VICE BLOCK (FRONT)



270DGH HYDRAULIC GROUP

PART NUMBER	PART CODE	PART NAME
001	270.09.01	MOTOR
002	270.09.02	FLANGE
003	270.09.03	PUMP
004	270.09.04	EXIT
005	270.09.05	OIL INPUT
006	270.09.06	MANOMETER
007	270.09.07	ROTATION REKOR
008	270.09.08	VICE PISTON EXIT
009	270.09.09	VICE PISTON EXIT
010	270.09.10	BOW LIFTING PART
011	270.09.11	BOW MOVE DOWN PART
012	270.09.12	SINGLE VALVE(VICE)
013	270.09.13	LOCK
014	270.09.14	DOUBLE BOBIN
015	270.09.15	BLOCK
016	270.09.16	BOW ADJUST PRESSURE BOLT
017	270.09.17	DEPOT COVER



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