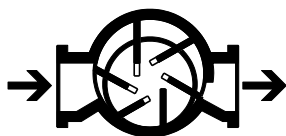
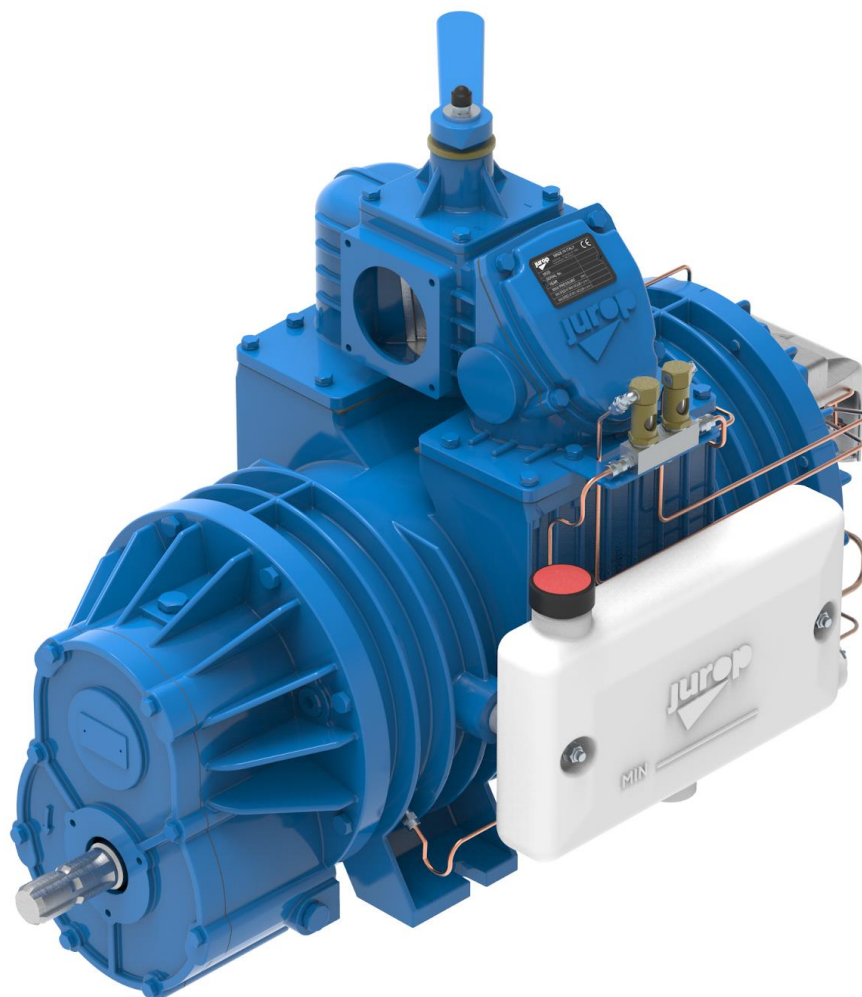


EN

PN 130 – 140 – 155 – 155R



ORIGINAL INSTRUCTIONS



## INSTALLATION, USE AND MAINTENANCE MANUAL



Rev. 09  
04-03-2022

COMPANY WITH  
QUALITY SYSTEM  
CERTIFIED BY DNV  
ISO 9001

COMPANY WITH  
ENVIRONMENTAL SYSTEM  
CERTIFIED BY DNV  
ISO 14001

2022 – **Juop** – Azzano Decimo (PN)

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## 1. General warnings

### 1.1. Introduction

- This booklet contains the necessary instructions for a correct installation, running, use and maintenance of the pump, as well as some practical suggestions for a safe operating.
- The knowledge of the following pages will grant a long and trouble-free operation of the pump.
- Following the instructions below contributes to limiting pump repair expenses by extending its duration, as well as preventing hazardous situations, thereby increasing its reliability.
- It is recommended to:
  - Understand and apply carefully the instructions before running the pump.
  - Keep the booklet at hand and have it known to all operators.
- Below is a brief description of the symbols used in this manual.



If these safety rules are not respected, operators can be injured and the pump or oilers damaged remarkably.



If these safety rules are not respected, the pump or system can be damaged.



Suggestions for an environment friendly use of the pump.



Useful information for an easy usage and maintenance of the pump.

- The graphic representations and photographs contained in this manual are there to illustrate the product in the parts that make it up and in specific operating phases. Though the model shown in the manual may differ from the one purchased, the operating principle at the base of the illustrated operating phase is the same.

- Pump has to be fitted with its own tag reporting the following data: Model, Serial number, Year, Max speed, Max pressure.

 <b>MADE IN ITALY</b> <small>Jurop S.p.A. - Via Crosera, 50 - 33082 Azzano Decimo - PN (ITALY)</small>		
MOD.		
SERIAL No.		
YEAR		
MAX PRESSURE (bar)		
MAX SPEED (r.p.m.)		

Pic. 1.1

### 1.2. Spare part request

- Use only **genuine spare parts** for maintenance and repairs. To order spare parts, provide the following details:

EXAMPLE:

- |  |                 |
|--|-----------------|
| a) The model of the pump (see pump tag):         | PN155           |
| b) The serial number of the pump (see pump tag): | J90001          |
| c) A description of the parts (see parts list):  | VANE (BAKELITE) |
| d) The quantity (see parts list):                | 5               |
| e) The code number of the part (see parts list): | 16016 AB6 B0    |

### 1.3. Warranty terms and conditions

- Compliance with the installation, use and maintenance instructions provided by this manual **is crucial for the recognition of warranty** against defective parts.

## 2. Technical data

### Pump PN130 – PN140 – PN155

- Rotary vacuum pump with radial vanes and air-cooling system.
- Lubrication with volumetric pump and side mounted tank.
- Built-in vacuum-pressure change-over valve.
- Check valve installed on the pump inlet.
- Aluminium conveyors.
- Direct drive with smooth shaft, right or left rotation.
- Gear box drive (splined shaft ASAE 1 3/8) 540 rpm or 1000 rpm, left rotation.
- Direct drive with splined shaft ASAE 1 3/8, left rotation.
- Hydraulic drive with gear motor, left rotation.

### Pump PN155R

As model PN155. In addition:

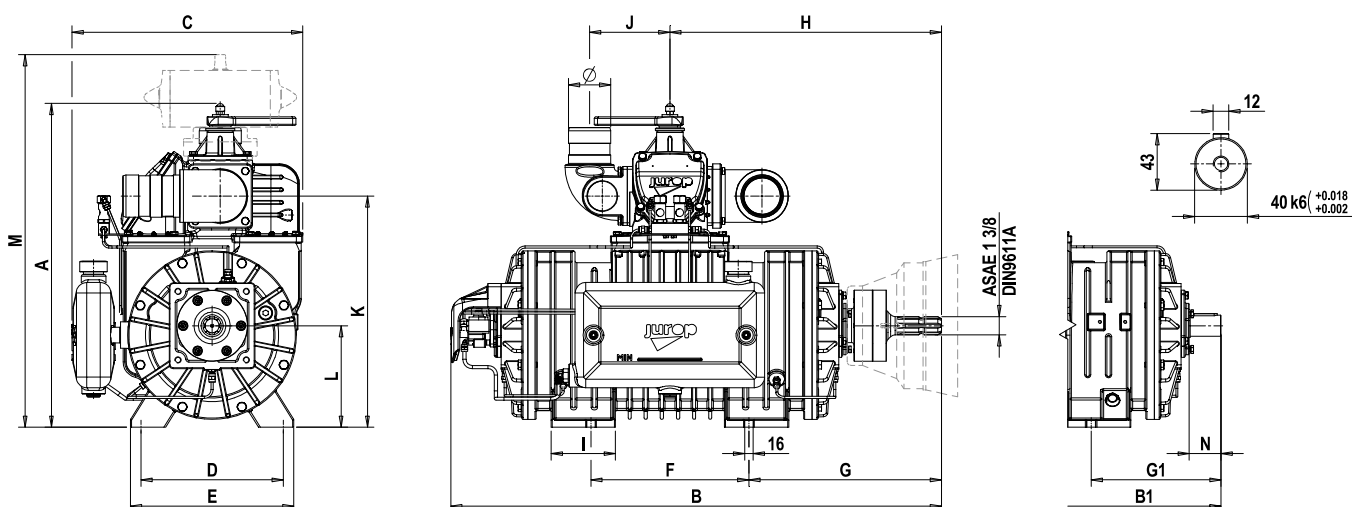
- Extra air injection cooling system.
- High resistant vanes.

### Other features on request

- Rotation other than the standard one.
- Pneumatic or hydraulic actuator for the 4-way valve.
- Flanged manifolds are available on request.

## 2.1. Dimensions and arrangements

### Direct transmission with splined / smooth shaft

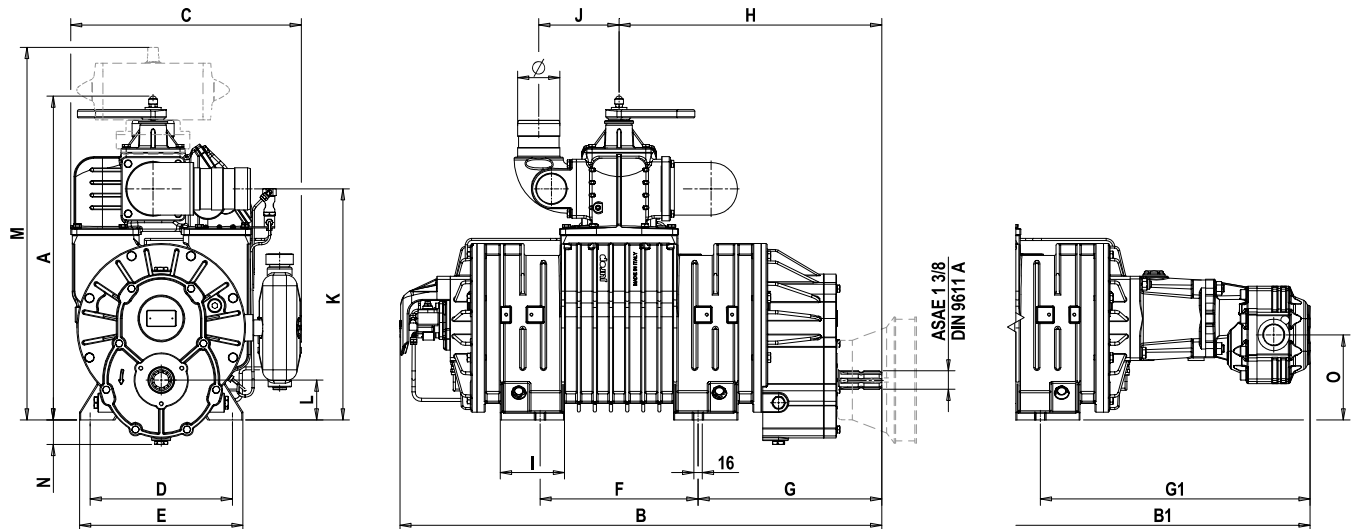


[mm]	A	B	B1	C	D	E	F	G	G1	H	I	J	K
PN 130	571	926	777,5	420	240	285	290	354	234	526	72,5	152,5	395
PN 140	590	956	804	420	240	285	290	369	245	556	77	152,5	414
PN 155	615	932	813	438	270	310	300	366	246,5	516	122	152,5	439
PN 155 R	615	932	813	438	270	310	300	366	246,5	516	122	152,5	439

[mm]	L	M	N
PN 130	175	663,5	60
PN 140	180	682,5	56
PN 155	193	707,5	60
PN 155 R	193	707,5	60

Ø (FIX)	Ø (ADJUSTABLE)
76 / 80 / 100	76 / 80 / 100
80 / 100	80 / 100
80 / 100	80 / 100
80 / 100	80 / 100

### Transmission with gearbox / with hydraulic motor

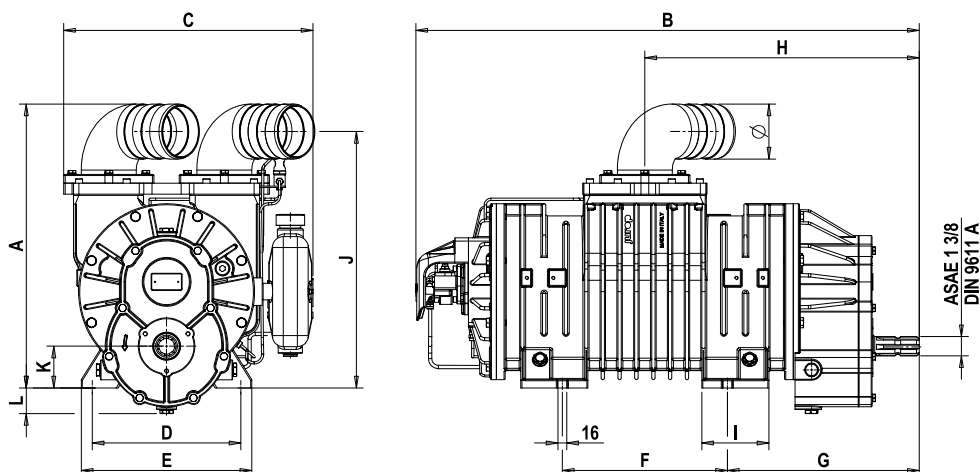


[mm]	A	B	B1	C	D	E	F	G	G1	H	I	J	K
PN 130	571	874	1040	420	240	285	290	333	499	474	72,5	152,5	395
PN 140	590	907	1070	420	240	285	290	348	514	493	77	152,5	414
PN 155	615	915	1078	438	270	310	300	349	512	499	122	152,5	439
PN 155 R	615	915	1078	438	270	310	300	349	512	499	122	152,5	439

[mm]	L	M	N	O
PN 130	53	663,5	70	144
PN 140	58	682,5	70	149
PN 155	76	707,5	47	162
PN 155 R	76	707,5	47	162

Ø (FIX)	Ø (ADJUSTABLE)
76 / 80 / 100	76 / 80 / 100
80 / 100	80 / 100
80 / 100	80 / 100
80 / 100	80 / 100

### Versions with aluminium conveyors (PN FL)



[mm]	A	B	C	D	E	F	G	H	I	J	K	L	Ø
PN 130	470	874	438	240	285	290	333	474	72,5	420	53	70	100
PN 140	489	907	438	240	285	290	348	493	77	439	58	70	100
PN 155	516	915	453	270	310	300	349	499	122	466	76	47	100

## 2.2. Usage limitations

Pump	Max. Speed – Operating speed (RPM)			P <sub>2</sub> (bar ABS)	T <sub>2</sub> (°C)	T <sub>2</sub> - T <sub>1</sub> (°C)
	Gearbox - 540	Gearbox - 1000	Direct - HYD			
PN130 – PN140	540 – 460 rpm	1000 – 850 rpm	1350 – 1100 rpm	2 bar	150°C	130°C
PN155 – PN155R	540 – 470 rpm	1000 – 900 rpm	1150 – 1000 rpm	2 bar (*)	150°C	130°C

P<sub>1</sub> : absolute pressure during suctionT<sub>1</sub> : temperature during suctionP<sub>2</sub> : absolute pressure during deliveryT<sub>2</sub> : temperature during delivery\* Belt drive only for PN155 D and PN155R D: P<sub>2</sub>= 1,5 abs bar.

## 2.3. Performances

Performances			PN 130	PN 140	PN 155
Air flow at free air condition		l/min	12900	13850	15200
		m³/h	774	830	910
Air flow at 60% vacuum rate		l/min	11400	12300	13500
		m³/h	684	738	810
Maximum vacuum		%	94	92	93
Vacuum at continuous duty		%	60	60	60 / 70 (PN155R)
Power required at max. vacuum		kW	10,5	13	16
Oil consumption		g/h	240	240	240
Oil tank capacity		l	4	4	4
Weight	PN...D	kg	165	173	194
	PN...M	kg	186	194	216
	PN...HDR	kg	197	205	227

### REFERENCE CONDITIONS

Performances referred to vacuum pump operating at max. speed

Actual performance may vary of ± 5%

Conveyed gas: air

Functioning in free air

Reference temperature: 20°C

Vacuum functioning: free outlet

Reference abs. pressure: 1.013 mbar

Pressure functioning: free inlet

## 2.4. Sound pressure level

Lw (A)				
Noise power of the only pump, without drive transmission suction group, mufflers.			[dB(A)]	
RPM	VACUUM/PRESSURE	PN 130	PN 140	PN 155
NOMINAL SPEED	vac 80%	101	102	102
	Δ press 0,6 bar	113	114	114

## 2.5. Lubrication

- To operate correctly, the machine must be lubricated/greased regularly, using the recommended products listed in the tables below.
- Products are recommended according to working temperature and are in compliance with normative:
  - industrial sector lubricants (recommended);
  - SAE: Automotive sector lubricants (equivalent).
- Carry out the operations above following the instructions provided in this manual.

### Recommended lubricant for the OIL TANK

Viscosity	Type	ENI	ESSO	SHELL	TOTAL	MOBIL	BP	TEXACO HAVOLINE	Q8
ISO VG 46	Olio minerale	Acer 46	Nuto 46	Morlina oil 46	Drosera MS 46	Nuto H 46	Bartran HV 46	Rando HD 46	Shubert 46
ISO VG 150	Olio minerale	Acer 150	Nuto 150	Morlina oil 150	Drosera MS 150	Nuto H 150	Bartran HV 150	Rando HD 150	Shubert 150

## Recommended oils and greases: GEARBOX

Viscosity	Type	ENI	ESSO	SHELL	TOTAL	MOBIL	BP	TEXACO HAVOLINE	Q8
ISO VG 220	Olio minerale EP	Blasia 220	Spartan EP 220	Omala oil 220	Carter EP 220	Mobilgear 630	Energol GR XP 220	Meropa 220	Goya 220

## 3. Safety and accident prevention



**Attention: carefully apply these prescriptions.**

### 3.1 General recommendations

- When transporting the machine use proper slinging. Store the pump in stable places.
- Installation and maintenance must be carried out with the unit totally disengaged from its drive system and must be performed by qualified personnel.
- Use adequate clothing (avoid ties, loose sleeves, necklaces and so on) and suitable protection equipment (gloves, protection glasses, boots...).
- Before each maintenance operation, stop the machine and restore the atmospheric pressure.
- Make sure that all the parts of the unit are idle and cool, before performing any maintenance operation.
- To prevent errors and hazardous situations, establish what each operator is responsible for in the different maintenance operations.
- Do not start the machine if the protection devices provided for transmissions are removed. Replace damaged part.
- Final manufacturer must make the transmission inaccessible by means of a fixed guard or interlocked movable guard.
- Operators working nearby must avoid prolonged exposure to the noise emitted by the aspirator, if not equipped with the proper ear-protection devices (IPDs recommended: ear protectors).
- When the pump is running, some parts may reach very high temperatures (above 70°C). Use all necessary precautions to avoid contact.
- Avoid accidental suction of solids: solids may be projected at high speed through the exhaust manifold and cause injuries. A filter must be mounted on the suction line (Mesh 55).
- Pressure relief valve: point the air flux away from the operators.
- Do not use the aspirator over its designed limits: the machine may be damaged and the operator may be injured.



**Do not exceed the speed and the power supply parameters indicated in the technical tables (see par. 2.2 - 2.3).**

- Based on the final use of the pump, the insertion in the housing machine and the typology of the same, the designer of the housing machine must apply safety signals (pictograms) to warn the operator on the risk still present. These pictograms essentially refer to three categories:
  - Signals prescribing the use of Individual Protection Devices (IPDs) such as, in this case, the use of gloves and ear protectors.

- Signals indicating to pay particular attention to the dangers related to the machine's components, such as: risk of dragging in the transmission equipment and contact with hot surfaces.
- Signals indicating specific parts of the machine for an easier identification, such as: greasing points, oil tanks, etc.

### 3.2 Intended use

- Vacuum pumps of the PN series are commonly used on stationary or mobile equipment for suction and transfer by means of vacuum or so called pneumatic-transportation of liquid and solid wastes. Any other usage shall be considered improper.
- As cooling is given by atmospheric air, pumps are foreseen for non-continuous duty; suggested uninterrupted working-time: about 15 minutes. Overheating of the pump will cause serious damages of the same and/or blocking of the rotor. The model PN do not accept operating temperatures over 150 °C (300 °F), checked at not more than 150 mm from the discharge connections.
- Do not suck toxic substances and inflammable or explosive gasses, since the internal components of the pump may reach high temperatures.



**Do not suck toxic substances and inflammable or explosive gasses, since the internal components of the pump may reach high temperatures.**

- Avoid suction of liquids or solids, they can seriously damage the pump.



**Attention: liquids or solids infiltrations can seriously damage the pump.**

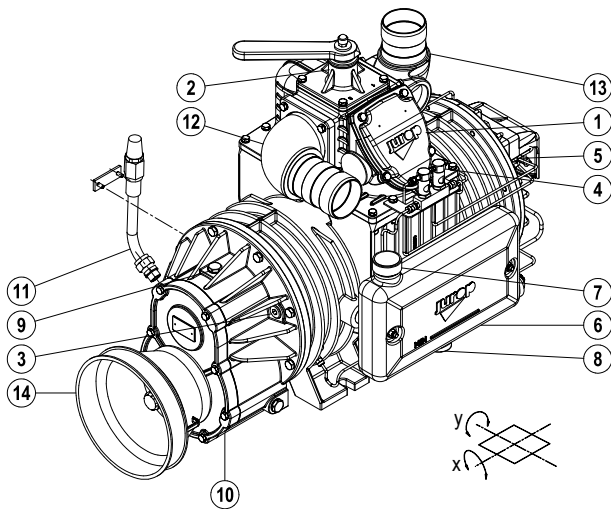
- Do not run the pump over its designed operating limits (see par. 2.3): it may break and transmission can be damaged.

### 3.3 Conveyed fluids

- PN are suitable for conveying filtered air. Before conveying other kind of gases, verify compatibility with pump's characteristics.
- The machine was not designed and built to operate in environments with potentially explosive atmosphere (outdoor or indoor).
- Please contact JUROP's Technical dept. if necessary.



## 4. Installation



Pic. 4.1

1.	Manifold with non-return valve on the pump inlet
2.	Vacuum/pressure changeover valve
3.	Vanes wear check port
4.	Drip oilers
5.	Lubrication pump
6.	Oil tank
7.	Oil tank inlet plug
8.	Oil tank outlet plug
9.	Gearbox oil inlet plug
10.	Gearbox oil outlet plug
11.	Air injection valve (only for PN155)
12.	Swivelling conveyor
13.	Conveyor with safety valve connection
14.	Shaft protection

### 4.1. Compulsory accessories

- Compulsory accessories for a correct running of the pump:
  - Safety filter mounted between the pump and the secondary shutoff.
  - Over-pressure safety relief valve.

### 4.2. Checking upon receipt

- When the goods are delivered, make sure that all parts listed on the delivery note are in perfect condition and have suffered no damage during shipping.
- Remove the parts of the packaging that can be dangerous if sucked by the compressor.
- Make sure the vacuum pump has its identification plate. Pumps without such identification are to be considered anonymous and potentially dangerous: in such an event, they must not be used, otherwise the manufacturer will be deemed free from any liability whatsoever.

### 4.3. Storing in the warehouse

- If the pump will not be installed inside a short time after delivery:
  - Remove the guards from the ports and spray a film of protective oil over the inner surfaces of the body, rotors and sides. Then attach again the guards.
  - Store in a closed and dry place. Renew the preserving oil periodically.
- To temporarily store a used pump, follow the instructions below:
  - Thoroughly clean the pump.
  - Equip the pump with suitable anti-corrosion protection.

### 4.4. Handling and installation

- Before each movement, verify that the lifting equipment has a suitable capacity (check the weight of the pump, possibly showed in this manual, in the paragraph 2.2).
- Do not lift the packaging or the machine when moving more than 50 cm from the ground. Proceed with the final lifting only near the installation point.
- Harness the machine with suitable straps / chains near the main body, paying attention to the position of the mass centre of gravity to ensure the load stability.



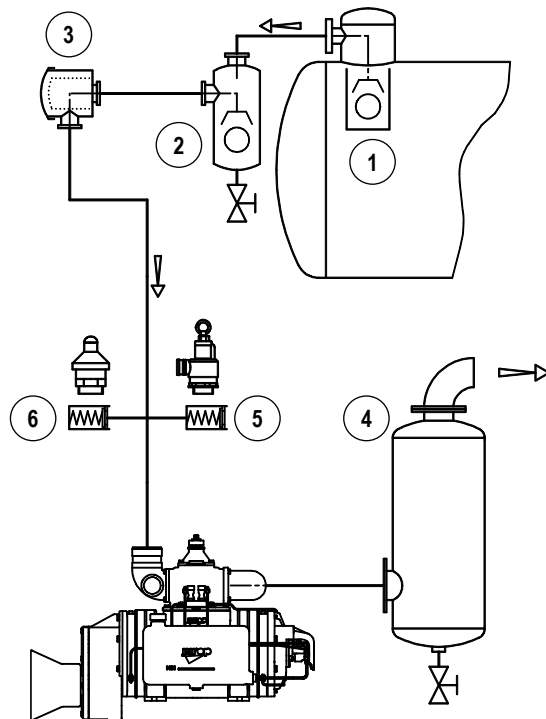
**Warning: do not stand under the machine when it is lifted during the installation.**

### 4.5. Mounting

- The pump must be assembled for an easy access for maintenance operations and secured rigidly to a frame or levelled base (max. 3° slant to the horizontal plane. See Fig. 4.1). The base must be such as to avoid vibrations, bending or deformation.
- It is recommended to install the pump on vibration adsorbing pads to reduce the noise and vibrations produced during its operation.
- The oil tank is mounted on the suction side of the unit. Thus, the rotation direction determines the pump overall dimensions. See par. 2.1.
- Leave enough space around the pump to allow the free circulation of air for cooling; avoid exposure to dirt and debris.
- Provide the necessary space to reach all points of lubrication control (oil level), and the oil tank filler cap, the lever of the 4-way switch, vanes inspection ports. See Pic. 4.1.
- Provide for suitable manoeuvring spaces of the inverter lever. The control lever has two possible switching positions well defined by the latches and numbers reported on the fusion. It is directly connected to the internal diverter tang of the inverter, making it very intuitive: 90° of the lever switching corresponds to 90° of the inverter switching.
- Based on the functionality of the system which will house the decompressor, the designer of the end machine, must:
  - Properly signal the functionality of the inverter according to the position of the manual operating lever or of the pneumatic actuator or of the hydraulic one.

- Install suitable pressure and / or vacuum restrainer valves near the inlet and outlet points of the machine.
- In the event that the pump is electrically isolated, connect it to the ground or make it equipotential with the housing machine. Check that the paint does not prevent its passage.
- The machine expels gas during delivery at temperatures that can reach the maximum permitted values for operation, with its lubricating oil in suspension. Oil consumption is stated in paragraph 2.3, the quantity of consumed oil corresponds to the quantity of oil emitted at delivery.
- In case of PN with hydraulic motor, provide the necessary space to disassemble the motor itself and proceed with joint lubrication.

#### 4.6. Vacuum / Pressure line



Pic. 4.2

1	Primary flow shutoff valve
2	Secondary shutoff
3	Suction filter
4	Exhaust silencer with oil separator
5	Over-pressure safety relief valve
6	Vacuum relief valve

- In order to avoid accidental suction of liquids inside the pump, install a primary (pos. 1) and a secondary flow shutoffs (pos. 2). If necessary, install also a suction filter (pos. 3) to protect from solids infiltration.
- The exhaust silencer is designed to reduce the noise level and to separate the oil mist coming out from the pump outlet port. The separator must be periodically drained from oil and condensate accumulated in the separator during the normal pump functioning.

- The diameter of the vacuum/pressure line pipes must be properly dimensioned to the pump flow and, in any case, larger than the diameter of the ports (Ø100 is recommended).
- The pipes weight must not solicit the body of the pump. Use high temperature resistant rubber connections.
- Before mounting the vacuum line to the pump, remove the port protections. Pipes and all line components must be clean.
- Avoid restrictions and tight curves as much as possible if not strictly necessary.
- Exhaust pipes can reach high temperatures. Hence, they must be properly isolated.
- Max. pressure safety valve on delivery: mount it close to the pump. The valve flow must prevent the PN130 - PN140 - PN155 from exceeding the absolute operating pressure (see par. "Usage limitations") or, in any case, the maximum pressure allowed by the system. Do not apply gate valves on the line.
- Over-pressure safety relief valve (pos. 6): to apply if necessary to limit the vacuum rate in the system.

#### 4.7. Vacuum-pressure inverter: remote control actuators

- A specific design of the vacuum-pressure diverter available on request enables the application of a pneumatic or hydraulic angular actuator (90°).
- See the exploded view at the end of the manual for spare parts.

	Pneumatic actuator	Hydraulic actuator
Fluid	Filtered, dried compressed air	Hydraulic oil ISO-L-HM
Filtration	ISO 8573-1 classe 4 (15 micron)	ISO 4406 21/19/16
Temperature	-20 ÷ +80 °C	-20 ÷ +80 °C
Rated pressure	5.6 bar	150 bar
Maximum pressure	8.4 bar	200 bar
Supply holes	G 1/4	G 1/8

##### Hydraulic actuator installation

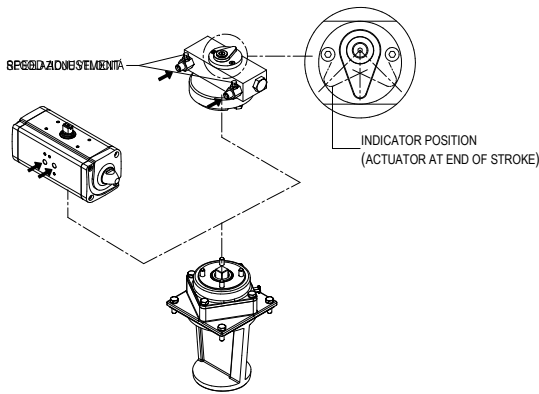
- Adjust movement speed using the two built-in valves.
- Use a closed-center distributor or apply a block valve.

##### Pneumatic actuator installation

- Adjust movement speed by applying two unidirectional flow control valves.

##### For both actuators

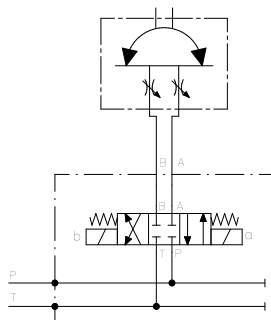
- Adjust speed: full rotation should not take less than 1 second.
- Fluid filtration: ensure a level equal to or greater than the recommended value.
- In the event of a (hydraulic or pneumatic) supply failure, the suction unit inverter will remain in the same position it was when the failure occurred.



Pic. 4.3

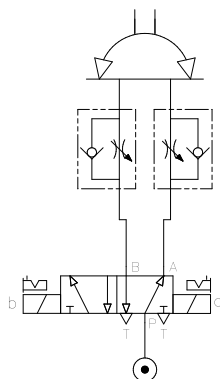
### Maintenance

- The diverter is adjusted before shipment and does not usually require further adjustments.
- Diverter lubrication:
  - Use Lithium grease NLGI 2. Quantity: 80-100 g every 1000 working cycles.
  - Do not grease using excessive amounts of grease.
- Hydraulic actuator: the control valves are equipped with an internal metal filter. Disassemble and clean if movement stops.
- Pneumatic actuator: for non-dried air, use temperature  $0 \div +80^{\circ}\text{C}$ .
- The following figure shows a possible schematic view of a correct hydraulic connection.



Pic. 4.4

- The following figure shows a possible schematic view of a pneumatic connection.



Pic. 4.5

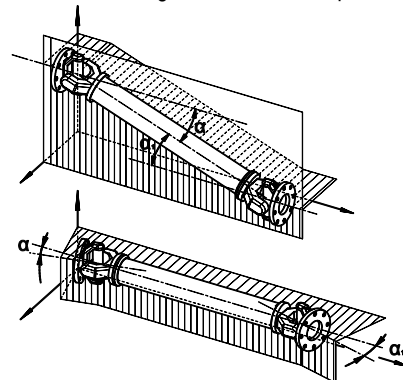
- In case of interruption of the pneumatic or hydraulic supply, the inverter of the suction unit remains in the same position it was when the failure occurred.

## 4.8. Pump mounting - drive connection

- For the machines of this series, the allowed power transmissions are:
  - Direct transmission (e.g.: from agricultural cardan shaft)
  - Oil hydraulic transmission (HYD).
- Protect with a fixed or interlocked guard and signal with pictograms the power transmission chosen and applied by the final installer, if there is the possibility that the operator will come into contact during handling.

### A) Cardan shaft drive

- Use telescopic cardan shafts.
- In order to achieve a uniform motion of the driven shaft, the following requirements must be met (see Pic. 4.6):
  - Equal working angle  $\alpha$  and  $\alpha_1$  of both couplings;
  - The internal fork joints must be coplanar;
  - Both driven and driving shafts must be coplanar.



Pic. 4.6

- It is also recommended working with limited articulated joint angles (max  $15^{\circ}$ ) and disengaging the transmission for those operations requiring great angles (steering or lifting).



**Follow the rotation direction as indicated on the pump front conveyor protection. Follow the instructions of the cardan shaft's manufacture.**

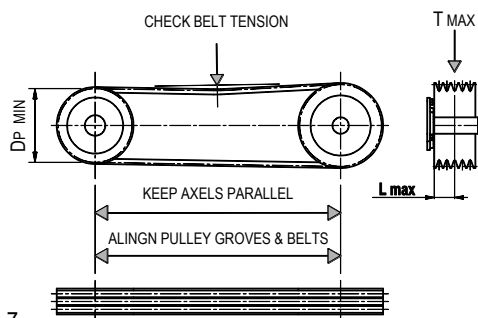
- Use the cardan guard supplied with the pump, by fixing it to the pump itself.



**Use the cardan guard supplied with the pump, by fixing it to the pump itself. In any case, the installation, by the final installer, must comply with the current EC accident prevention regulations and must be compatible with the geometry of the protection cap supplied with the machine.**

- The protection must not be removed; in case of removal, it is the responsibility of the final installer to provide for suitable guards according to the assembly.
- It is the responsibility of the final installer to provide for suitable guards, in presence of transmission shafts exposed during normal operation.

## B) Belt drive



Pic. 4.7

- Install a suitable pulley on the smooth shaft as close as possible to the pump: L max 35 mm.
- Apply an adequate belt tension (see manufacturer's data). T Max 3000N.
- Do not use driven or driving pulleys with a pitch diameter inferior to 180 mm. Small pulleys require a high belt tension which may cause premature wear to the bearing or transmission troubleshooting.
- If the pump PN155 is run through a belt drive, its working pressure must not exceed 1.5 abs. bars to prevent it from absorbing a power requiring an excessive belt tension. There is no limit to the operation in vacuum.



**Attention: If the pump PN155 is run through a belt drive, its working pressure must not exceed 1.5 abs.**

	PN 130	PN 140	PN 155
Max. Speed (rpm)	1350	1350	1150
Max. Vacuum (%)	94	92	93
Max. Pressure (bar abs)	2	2	1,5
T. max (N)	3300	3300	3300
L. max (mm)	35	35	35
Dp min transmission (mm)	180	180	180
Belts type	SPB	SPB	XPB
Nr. grooves	3	3	3

## C) Hydraulic drive transmission

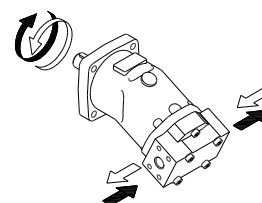
	PN 130	PN 140	PN 155
Displacement (cc/rev)	72	72	86
Max operating pressure (bar)	235	220	220
Max pressure draining line (bar)	5	5	5
Max. pressure motor exhaust (bar)	5	5	5

- **Fluid:** mineral oil for hydraulic systems in compliance with ISO/DIN.

Temperature	Optimum viscosity	Max. viscosity allowed
-20 / +80 °C	12 – 100 cSt	750 cSt

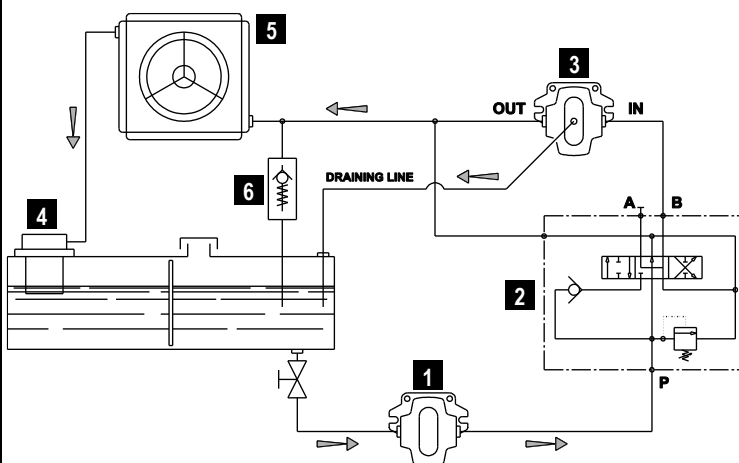
- **Filtration:** class 21/19/16 contamination according to ISO 4406 to be obtained with a  $\beta_x = 75$  filter.

- **Check circuit connections:** they must be applied in the same rotation direction as that indicated by the arrow on the pump front flange.



Pic. 4.8

- **Draining:** connect directly to the tank above the maximum oil level. Operating without draining line may damage the motor.
- **Distributor:** open-centre distributor in central idle position (vacuum pump off). It must be equipped with an adjustable overpressure safety valve.
- **Motor pipeline:** outlet pipe must not be of a smaller diameter than that of the inlet port. Inlet pipes always have a diameter smaller than outlet pipes. Choose preferably flexible pipes to avoid vibration transmission.
- **Tank:** with suction pipe and return separated by baffles. If necessary, use a heat exchanger to avoid oil heating above 70-80°C and protect it from extreme pressure with a pressure relief valve. Minimum approximate capacity: as twice as the circulation flow.



Pic. 4.9

1	Pompa HDR	4	Filtro olio
2	Distributore	5 *	Scambiatore calore (opzionale)
3	Motore HDR	6 *	Valvola sicurezza (opzionale)

- **Starting-up:** be sure that the system is well cleaned and pour oil into the tank and into the motor housing (necessary to lubricate the internal bearings).
- Vent the circuit and adjust the overpressure safety valve to the lowest possible value.
- Check the oil tank level.
- Increase pressure and rotation speed until operating values are reached.
- The machine/system manufacturer is responsible for dimensioning the lines.



**The machine/system manufacturer is responsible for dimensioning the lines.**

## 5. Start up

### 5.1. Starting-up of the pump

- Check oil levels in gearbox and side mounted tank.
- In order to choose the most suitable oil, see paragraph 2.5.
- Check that all protection devices are correctly installed.
- Check that there are no obstacles in the vacuum line.
- Check rotation direction: open all system valves and start running slowly.



**Do not rotate in the wrong direction: this may damage the vacuum pump. Follow the arrow indicated on the front flange.**

- Check which position of the four-way integrated valve lever allows vacuum or pressure functioning.
- Close the valve and increase vacuum rate (or operating pressure).
- Check that the lubricating pump works properly. Oil must regularly drip into the oilers. Typically (with degree of vacuum > 50%) about 40 drops/min (at maximum speed).
- Check loading and operating speed for vibrations or unusual noises.



**This vacuum pump is designed to work at maximum speed, but for longer operating we recommend the pump be run at working speed (see par. 2.3). Adequately prepare the transmission**

- Prepare adequately transmission.

### 5.2. Operating precautions

- Do not make the vacuum pump overheat: maximum air temperature on exhaust (or delivery) side: 150°C.
- Do not operate the pump without lubrication: it may cause quick wear and possible breakdown of vanes.
- Do not start running the pump under load: this may damage the drive system or the hydraulic motor.
- Check the rotation speed: it must never exceed the operating limits indicated on the identification plate of the vacuum pump.
- Do not accidentally operate the pump in the wrong direction: it may break the vanes.
- Do not convey the exceeding delivery outlet towards the suction port, otherwise it will suck warm gas.
- Control the air flow by adjusting the rotation speed: do not use the pressure relief valve to discharge the exceeding flow.
- After operation in dusty environments, after accidental sucking of liquids inside the pump or before a long inoperativity period it is recommended to wash the pump inside according to the following procedure:

1. Before washing the pump, be sure that it has cooled down. To obtain this in a short time, it is possible to run the pump for a few minutes at zero vacuum conditions, or stop it at all;



**Attention: Do not carry out this operation on very hot pumps (for example after a working day) until they have cooled down.**

2. Use 1-2 liters of water mixed with a non-flammable detergent. We suggest some product like Henkel Bonderite C-NE 5225: 5% concentration in water. This detergent grants a good protection against rust and oxidation.
3. Use one of the openings placed in the vacuum line (closest on the pump) to suck some water mixed with detergent.
4. Start the pump at low speed leaving opened all the suction valves in the tank, in order to keep low the vacuum rate (max vac. 10-20%). Let the detergent mix entering the pump very slowly.
5. The detergent mix stays suspended in the pump inside, before being expelled through the exhaust silencer.
6. After keeping the pump speed for a while to make the product reaching the internal parts, it is necessary to dry the pump preventing oxidation. When the detergent mix is finished, continue running the pump at the lowest possible vacuum rate for a few minutes, then close venting and suction valves up to 50-60% maximum, for a couple of minutes. With this operation the pump will dry from the heated air and protected from the chemical attack of the detergent.
7. Washing the pump with this detergent guarantees a protection after some days of inoperativity. If the pump is not used for more than two weeks, after having washed and dried the inner parts as described above, it is recommended to suck slowly 200 cc anti-rust and water-repellent protective oil (or, if not available, a very fluid gear oil).



**Attention: do not carry out also this operation on very hot pumps (for example after a working day) until they have cooled down.**



**In case the exhaust line cannot be disconnected, drain the liquids accumulated in the separator of the exhaust silencer.**

- Once the needed vacuum rate has been reached, we recommend reducing the vacuum pump speed to its working speed (see par. 2.3): this allows keeping the achieved vacuum/pressure rate constant. The pump speed can also be reduced to values lower than the working speed during the tank discharging phase (with the 4-way valve in pressure mode) without increasing the draining time.
- Thus, exhaust temperature is reduced, vane durability is increased and both oil consumption and power absorption are reduced.



**Once the needed vacuum rate has been reached, we recommend reducing the vacuum pump speed to its working speed.**

- If the decompressor operates in vacuum or under pressure with a capacity environment (such as a cistern) and is configured in the "FL" flanged version (without manifold with 4-way valve and non-return valve), it is advisable to intercept the working line of the machine when it is stopped, to prevent contrary rotations until the rebalancing of the



pressures. The interception can take place through a controlled valve or an automatic unidirectional valve (swing valve).

- Avoid starting the pump under load: motor and drive system can be excessively stressed.

## 6. Maintenance

- Any interventions must be performed when the machine is cold, stopped and switched off.
- Installation and maintenance must be operated only by qualified personnel wearing the proper clothes and the necessary tools as well as protection devices.
- Use suitable protection equipment (gloves, protection glasses, boots...)
- In the following table summarizes the main controls to be performed and the frequency of intervention.

Operating Condition	Maintenance Area	Check	8H	50H	500H	1000H
OPERATING	Vacuum line	Check safety valve (non-return valve)				
		Operating pressure				
	Transmission / Pump	Rotation speed				
		Lubrication: dripping into oilers				
		Sound pressure level (also HDR motor)				
STANDSTILL	Vacuum line	Suctions filters				
		4-way changeover valve: check and lubricate				
		Clean filter and vacuum line shutoff - Drain the oil gathered in the exhaust separator				
	Pump	Clean oilers glasses				
		Check vanes wear				
		Check oil level (oil tank)				
		Check oil level (gearbox)				
		Change oil (gearbox) <sup>1</sup>				
		Pump's inner washing <sup>2</sup>				
	Overall	Greasing				
		Check cardan shaft drive				
		Check transmission pulley				
		Swing valve wear check				

<sup>1</sup> In order to choose the most suitable oil, see paragraph 2.5.

<sup>2</sup> After operation in dusty environments, after accidental sucking of liquids inside the pump or before a long inoperativity period it is recommended to wash the pump inside according to the procedure described at paragraph 5.2.

### 6.1. Ordinary maintenance

#### Checking the drip oilers

- Keep clean the oilers glasses and check dripping into the same oilers.
- Be sure it is regular (about **40 drops/min** at max. speed, with degree of vacuum > 50%) to grant a correct lubrication of the pump. At lower speeds, the number of drops must be directly proportional.

#### Checking the side mounted oil tank level

- Do not run the pump with oil level under the minimum level: that may lead to dry functioning and cause serious damages.
- Tank capacity: 4l.

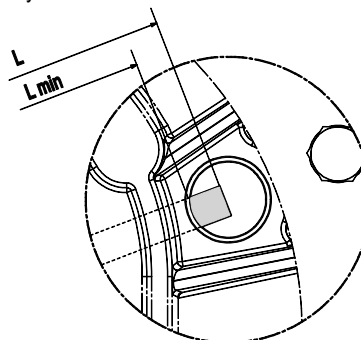
- Use pure fresh oil.



**Do not re-use the exhausted oil gathered on the bottom of the exhaust silencer.**

#### Checking the vanes wear (PN M + PN155 D)

- Unscrew the vanes wear check-plug on the housing.
- Turn the shaft until you see the vane.
- The vanes should slide to the bottom of the seat due to gravity: check they really do.



Pic. 6.1

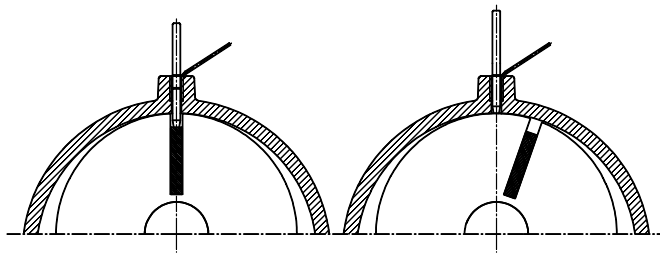
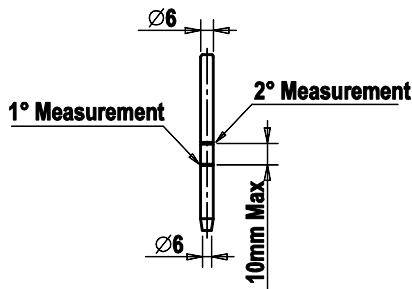


**Replace the vanes when their wear exceeds 10 mm (L – L min): they may break.**

- Replace all vanes at the same time.

#### Checking the vanes wear (PN130-140 D / HDR)

- Remove the plug and insert a metal rod  $\varnothing 6$  with a tapered end.
- Rest first the rod against the rotor and mark the spot.
- Afterwards turn slowly the drive shaft until the rod connects with the vane (inserted in its slot) and mark also this spot. If the distance between the two spots is more than 10 mm the vanes have to be changed.



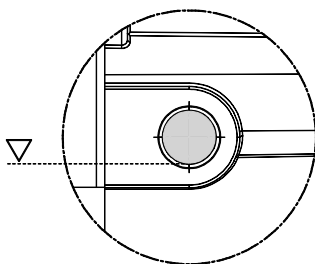
Pic. 6.2



**An excessive wear of the vanes most likely will result in the breakage of the vane itself because the guiding function of the rotor's slot will not be sufficient anymore with a reduced width of the vanes. Vanes breakage may cause serious damages on the inside parts of the pump.**

- At the end of this checking do not forget to replace the plug on the port.

#### Checking the gear box oil level



Pic. 6.3

- Check the level when the pump is cooled: it must almost reach the threaded port. Refill if necessary.

- For a complete replacement, 0.7 litres are required. Use mineral oil with EP additives for gears and transmissions.
- When changing the oil, also replace the outlet plug washer.



**Dispose of exhausted oil as provided by current specification.**

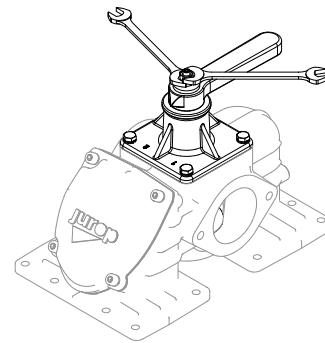
#### 6.2. Extraordinary maintenance

- Except for the cases described below, extraordinary maintenance on a PN must be carried out by specialized personnel only; otherwise the guarantee will be invalidated.
- All extraordinary maintenance interventions must be carried out when the machine is cold, stopped and switched off. Implement the safety instructions reported in the "Safety and accident prevention" Chapter, before performing any maintenance operation.



**Follow the safety prescriptions as described in Cap. "Safety and accident prevention".**

#### Adjusting the 4-way valve



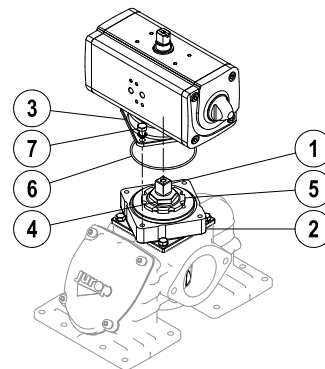
Pic. 6.4

- For pumps equipped with handle for manual operation or hydraulic actuator.
- Adjust the screws to avoid the valve blocking in its seat.



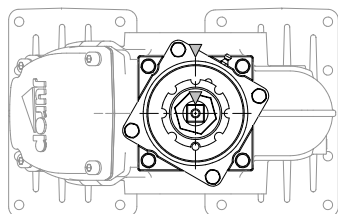
**Attention: do not exceed with the adjustment: possible vacuum loss.**

#### Adjusting the pneumatically operated 4-way valve



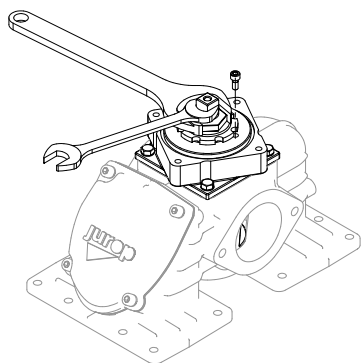
Pic. 6.5

- In case of reduced performance or difficult rotation of the valve in its seat, it is necessary to adjust the operating play.
- Unscrew the 4 screws M8x16 which fasten the top cover (7) to the inferior support (2).
- Clean the inner part from the lubricant.
- “Mark” the initial position of the cock (1). When mounting the cock back in place, it must be in the same position.



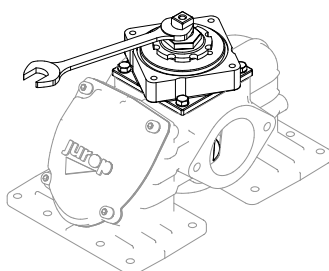
Pic. 6.6

- Turn the valve until one of the cock regulation ferrules (5) coincides with one of the threaded holes on the inferior flange (2). Block temporarily the nut ferrule with a screw.
- Hold the valve in place with a 17 mm spanner and loosen the nut (4) over the ferrule by  $\frac{1}{2}$  -  $\frac{3}{4}$  turn with a 36 mm spanner.



Pic. 6.7

- Valve adjustment: turn the valve clockwise by  $\frac{1}{8}$  turn ( $45^\circ$ ) in order to lower it (in case of excessive play between the valve and its seat and of reduced performance) or anticlockwise by  $\frac{1}{8}$  turn ( $45^\circ$ ) to raise it (in case of difficult rotation of the valve in its seat).
- Hold the valve in place with the spanner and fasten the nut (P4) above the ferrule.



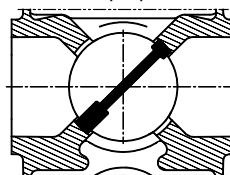
Pic. 6.8

- Remove the screw which temporarily blocks the ferrule and check for the correct rotation of the valve by adjusting the shaft frame. Repeat the valve adjustment, if necessary.

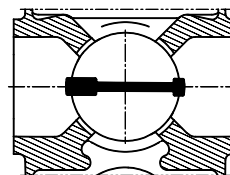


**Attenzione:** get the valve back into the previously “marked” position. Otherwise, the valve may work improperly.

- The valve - in both its end stroke positions - must separate the air flow sucked from the pump outlet air. The pump may be started in order to check for the proper functioning.



CORRECT POSITION



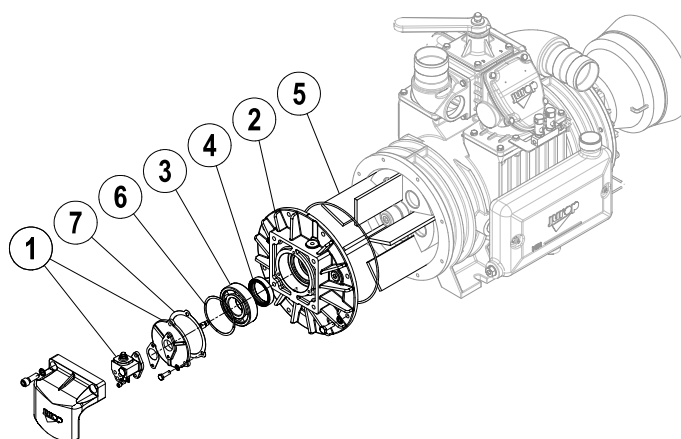
INCORRECT POSITION

Pic. 6.9

- Lubricate the areas near the ferrule in order to guarantee the lubrication of parts undergoing wear.
- Set the top cover back into place. Do not forget the OR-Ring (6). Fasten the 4 screws.

### Replacing the vanes

- Remove the vacuum pump from its bearing frame and wash it before disassembling.
- Disconnect the lubricating piping.



Pic. 6.10

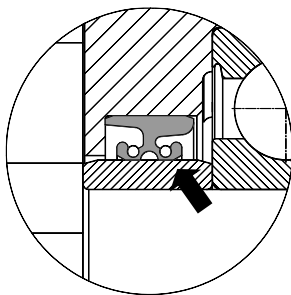
- Remove the lubricating pump (1). Remove the screws fixing the rear flange (2) and use the two threaded holes to remove the flange – bearing – seal housing. If necessary, hold the rotor by inserting a wooden block, protecting the internal bearings from damage.
- Remove the bearing (3) from the rear flange (2) and replace the seal if damaged (4).
- Lubricate with oil the new vanes (5) before inserting them inside each groove of the rotor.
- Reinstall all components in the following order: rear flange (2), seal ring (4), bearing (3), compensation ring (6), gasket (7) and flange with lubricating pump (1). We recommend the pivot-key be correctly fitted onto the shaft groove.



**Do not damage components during assembly by forcing them exceedingly.**

- Do not flip the seal ring during rotation of the shaft. Do not leave foreign objects inside the pump.





Pic. 6.11

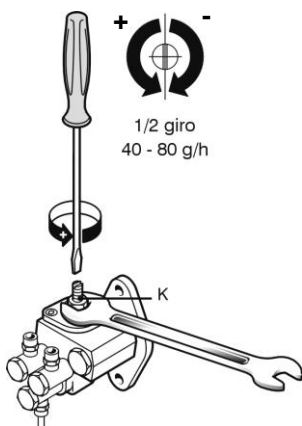
### Adjusting the self-lubricating pump

- The automatic lubricating pump is adjusted by the manufacturer before the shipping.
- If consumption noticeably differs from the indicated value, adjust it as follows:
  - Remove the upper protection cover;
  - Using a screwdriver and a 10 mm wrench, adjust the adjusting screw (K). Close the nut and remount the upper protection cover;
  - It is advisable to turn the screw of  $\frac{1}{4}$  of turn and verify the actual consumption.



**Do not reduce oil consumption below the value indicated in par. 2.4 (for functioning at speeds different from the maximum, flow is proportionate to rotating speed).**

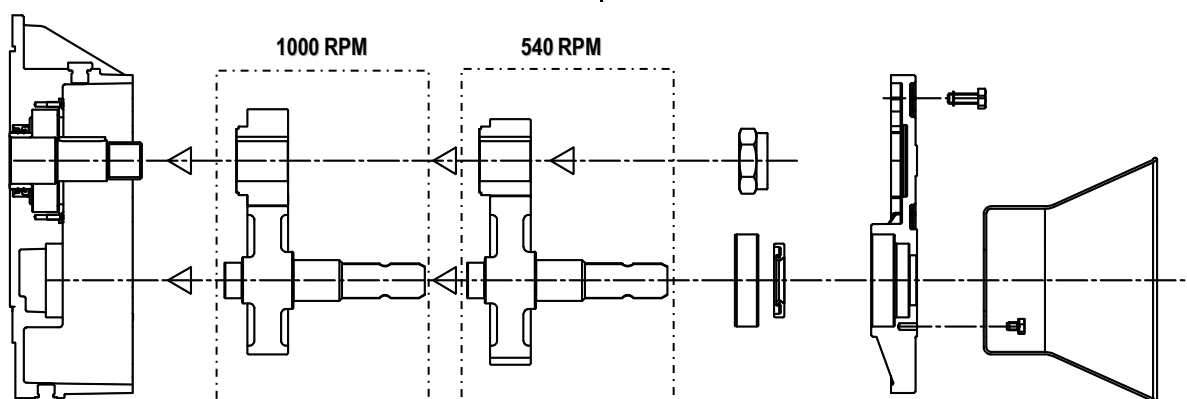
- $\frac{1}{2}$  turn of the adjusting screw causes a variation in the flow of appr. 40 - 80 g/h, depending on using conditions.



Pic. 6.12

### Replacing gearbox components

- The pump with a 540 rpm gear box can be transformed into a pump with a 1000 rpm gear box (and vice versa):
  - Take down the gearbox as illustrated. Remove also the drive shaft's pinion;
  - Install the new pinion closing the nut;
  - Mount the gear wheel including bearings and seals on the front cover, properly aligning components. This housing may now be installed in the gear box: fit the bearing in the internal housing on the flange;
  - Properly engage gears, replace the cover's gaskets to complete gear replacement. Insert the parallel pin, which maintains the correct alignment.
- See Fig. 6.13.



Pic. 6.13

## 7. Malfunctions: troubleshooting

### PROBLEMS

THE VACUUM PUMP OVERHEATS	
Cause	Solution
• Insufficient or absent lubrication	• Verify oil and rings. Check oil pump efficiency
• Low tank oil level	• Fill tank with oil
• Excessive rotation speed	• Reduce rpm to the prescribed working speed
• Prolonged functioning at max vacuum rate	• Reduce vacuum rate
• Vacuum and/or exhaust line of insufficient diameter	• Check dimensioning

THE VACUUM PUMP DOES NOT ROTATE	
Cause	Solution
• Broken vanes:	• Clean inner chambers, replace vanes
- due to infiltrated solids	• Check the secondary shutoff and filters of the suction line
- due to insufficient lubrication	• Check the oil pump
• Power transmission breakdown	• Check and replace the damaged parts
• Ice inside the pump (during the cold season)	• Remove ice and slowly start running it. Avoid suction of water

REDUCED PERFORMANCES	
Cause	Solution
• Four way changeover valve in idle position	• Move the lever to vacuum or pressure mode end stroke
• Four way changeover valve not correctly registered	• Adjust the functioning play and lubricate
• Worn vanes	• Replace vanes
• The non-return valve leaks	• Clean or replace if necessary
• Worn seal rings	• Replace
• Tank gate valves or gaskets leak	• Replace damaged or worn parts
• Tank connection pipes leak or are obstructed	• Replace damaged pipes
• Obstructed primary shutoff or suction filter	• Remove and clean
• Encrusted exhaust port	• Remove and clean
• Vacuum line components are too small dimensioned	• Verify dimensions for pump maximum performances
• Obstructed rubber couplings	• Replace

Unusual oil consumption	
Cause	Solution
• Insufficient or absent lubrication	• Check and adjust the lubricating pump

## 8. Scrapping

• Recycling materials allow reducing the environmental impact and respecting the environment.

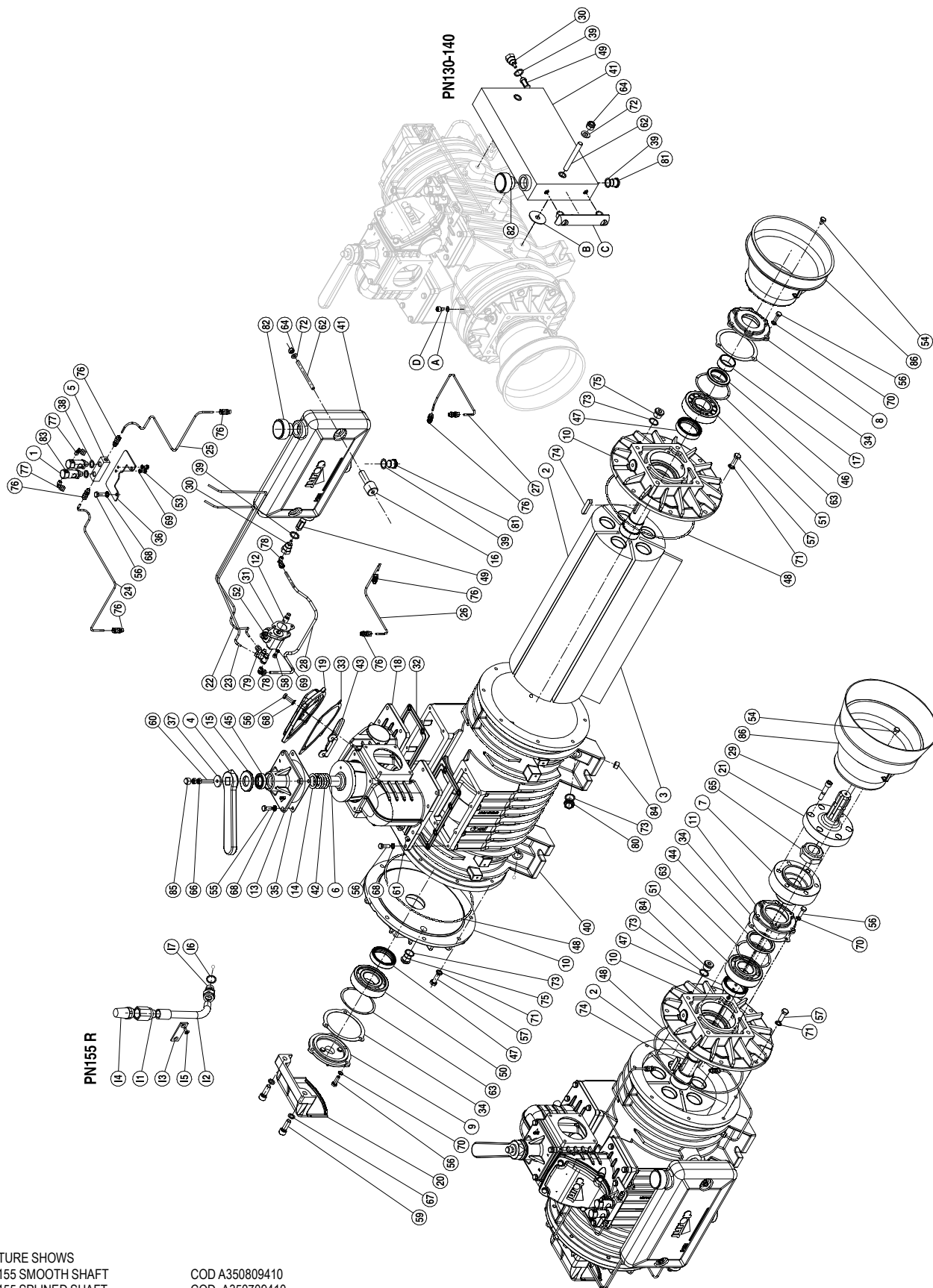


**Do not dispose of in the environment. Dispose of in compliance with the standards in force.**

• Before scrapping the machine, the following materials need to be separated and suitably disposed of:

Material	Cast Iron	Steel	Alluminum	Copper	Bronze	Rubber	Vane	Oil	Plastic
PN 130	86 %	11 %	0.7 %	0.3 %	0.1 %	0.3 %	0.9 %	0.5 %	0.2 %
PN 140	86 %	11 %	0.6 %	0.3 %	0.1 %	0.3 %	0.8 %	0.5 %	0.2 %
PN 155 / R	87 %	11 %	0.6 %	0.3 %	0.0 %	0.1 %	0.9 %	0.5 %	0.2 %

**PN130-140-155 DIRECT TRANSMISSION**



PICTURE SHOWS  
PN 155 SMOOTH SHAFT  
PN 155 SPLINED SHAFT

COD. A350809410  
COD. A350709410

PN 130 D  
PN 140 D  
PN 155 R D

COD. A45...  
COD. A20...  
COD. A36...

## PN 130 DIRECT TRANSMISSION

Pos.	Code	Description	Q.ty	Pos.	Code	Description	Q.ty
1	1401200700	OIL DRIPPER	2	51	4023115059	BEARING NJ 309 ECJ/C3-NMQ SMOOTH SH.	1
2	1521507200	ROTOR PN130 SMOOTH SHAFT / HDR	1		4023100046	BEARING 6309 SPLINED SHAFT	2
	1521507100	ROTOR PN130 SPLINED SHAFT	1	52	4024251000	OIL PUMP CW ROTATION	1
3	1601607000	VANE (BAKELITE)	4		4024251500	OIL PUMP CCW ROTATION	1
4	1605500100	HANDLE	1	53	4026101301	SCREW TE 8.8 M6X10 ZINC.	2
5	1608100000	DISTRIBUTOR	1	54	4026102802	SCREW TE 8.8 M8X12 ZINC.	3
6	1608502500	CONVEYOR	1	55	4026102806	SCREW TE 8.8 M8X20 ZINC.	4
7	1610052800	FLANGE SPLINED SHAFT	1	56	4026102807	SCREW TE 8.8 M8X25 ZINC.	22
8	1610508200	FRONT FLANGE	1	57	4026102908	SCREW TE 8.8 M10X30 ZINC.	16
9	1610512900	OIL PUMP FLANGE	1	58	4026121305	SCREW TCEI 8.8 M6X16 ZINC.	2
10	1610512800	DRIVE FLANGE	2	59	4026121710	SCREW TCEI 8.8 M12X35 ZINC.	2
11	16105BBB0	FRONT BEARING FLANGE SPLINED SHAFT	1	60	4026135415	GRUB SCREW 14.9 M8X50 ZINC.	1
12	1622002600	OIL PUMP DRIVE PIN	1	61	4026135504	GRUB SCREW 14.9 M10X10 ZINC.	1
13	1623100500	CONVEYOR CAP	1	62	4026171211	STUD SCREW 8.8 M12X80 ZINC.	2
14	162409YKB0	SPACER	1	63	4026300025	COMPENSATION RING	2
15	1624202300	SPACER	1	64	4026305508	SELF-LOCKING NUT M 12 SPLINED SHAFT	2
16	-			65	4026306115	SELF-LOCKING NUT M36X3	1
17	1626001100	BUSHING SMOOTH SHAFT	1	66	4026308005	NUT M8 ZINC.	2
18	16275007E0	MANIFOLD	1	67	4026350508	WASHER GROWER 12 ZINC.	2
19	16401008E0	CLAPET COVER	1	68	4026350706	WASHER GROWER 8 ZINC.	20
20	1642100200	REAR PROTECTION	1	69	4026351504	WASHER M6 ZINC.	4
21	16500B6XB0	SPLINED SHAFT 1 3/8	1	70	4026351505	WASHER M8 ZINC.	6
22	1663062600	DISCHARGE SHORT LUBRICATION LINE R	1	71	4026351506	WASHER M10 ZINC.	16
	16630C12B0	DISCHARGE SHORT LUBRICATION LINE L	1	72	4026357007	WASHER M12 ZINC.	2
23	1663062700	DISCHARGE LONG LUBRICATION LINE R	1	73	-		
	16630C13B0	DISCHARGE LONG LUBRICATION LINE L	1	74	4026501005	TAB 12X8X50 SMOOTH SHAFT	1
24	1663063000	LUBRIC. LINE DISTRIBUTOR - REAR FLANGE R	1		4026501003	TAB 12X8X40 SPLINED SHAFT	1
	1663071RB0	LUBRIC. LINE DISTRIBUTOR - REAR FLANGE L	1	75	-		
25	1663071RB0	LUBRIC. LINE DISTRIBUTOR - FRONT FLANGE R	1	76	4026702000	FITTING 4X1/8	8
	1663063000	LUBRIC. LINE DISTRIBUTOR - FRONT FLANGE L	1	77	4026706000	FITTING 90° 4X1/8	2
26	1663062900	LUBRICATION LINE HOUSING-REAR FLANGE R	1	78	4026706003	FITTING 90° 6X1/8	2
	1663071SB0	LUBRICATION LINE HOUSING-REAR FLANGE L	1	79	4026706101	ADJUSTABLE FITTING 4X1/8	2
27	1663071SB0	LUBRICAT. LINE HOUSING-FRONT FLANGE R	1	80	-		
	1663062900	LUBRICAT. LINE HOUSING-FRONT FLANGE L	1	81	4026904503	PLUG M20X1,5	1
28	1663063100	LUBRICATION LINE OILTANK - OIL PUMP R	1	82	4026910103	VENTIL PLUG 1"	1
	1663015XB0	LUBRICATION LINE OILTANK - OIL PUMP L	1	83	4026910601	PLUG 1/8"	2
29	1672001600	SCREW TCEI M10X1,5 SPLINED SHAFT	6	84	-		
30	1673001000	OIL FILTER PLUG	1	85	4029602701	NUT M8 PROTECTION	1
31	1680609700	OIL PUMP GASKET	1	86	4029602806	SHAFT PROTECTION SMOOTH SHAFT	1
32	1680610200	MANIFOLD GASKET	2		16426CR1B0	SHAFT PROTECTION SPLINED SHAFT	1
33	16807011E0	CLAPET COVER GASKET	1				
34	1680707300	FRONT FLANGE GASKET	2		1892005300	GASKET KIT PN130 DIRECT TRANSMISS.	1
35	1680707800	CONVEYOR GASKET	1				
36	1681100200	PLATE (FOR OIL DRIPPER)	1				
37	1685002800	WASHER 30X8,5	1				
38	1685100000	DRIPPER OIL WASHER 14X20X1,5	2				
39	1685100300	WASHER DI 20	2				
40	1687507600	PUMP HOUSING PN140	1				
41	1587009400	OIL TANK	1				
42	1691000000	SPRING	1				
43	18930008E0	CLAPET D.110 WITH O-RING	1				
44	4022200011	SEAL RING 64X80X8	1				
45	4022200030	SEAL RING 41X27X10	1				
46	4022200044	SEAL RING 65X45X8	1				
47	4022200113	SEAL RING 70X55X15	2				
48	4022200311	O-RING 4975	2				
49	4022300001	OIL FILTER	1				
50	4023100046	BEARING 6309 SMOOTH SHAFT	1				

**PN 140 DIRECT TRANSMISSION**

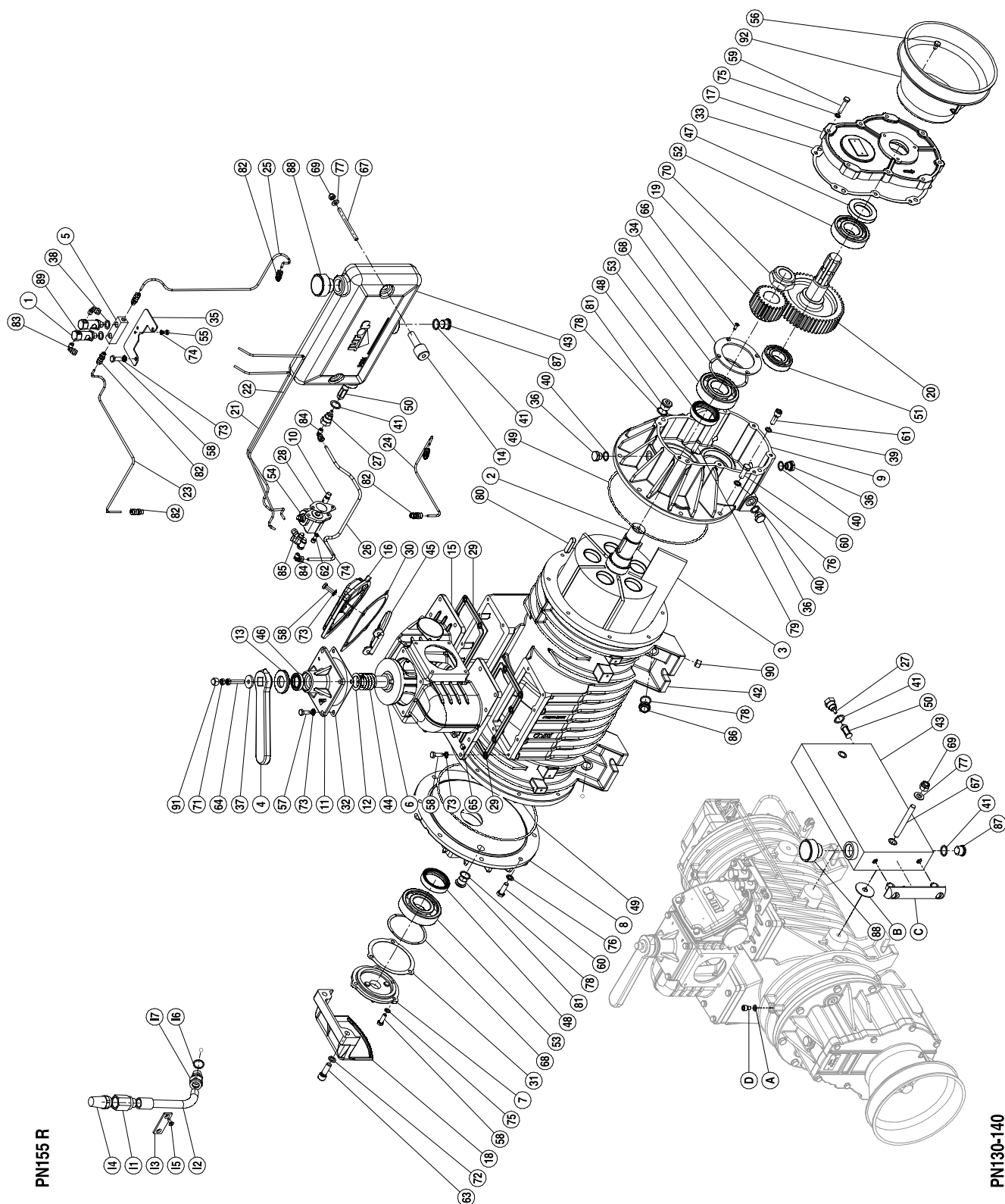
Pos.	Code	Description	Q.ty	Pos.	Code	Description	Q.ty
1	1401200700	OIL DRIPPER	2	51	4023115059	BEARING NJ 309 ECJ/C3-NMQ SMOOTH SH.	1
2	1521503600	ROTOR PN140 SMOOTH SHAFT / HDR	1		4023100046	BEARING 6309 SPLINED SHAFT	2
	1521503500	ROTOR PN140 SPLINED SHAFT	1	52	4024251000	OIL PUMP CW ROTATION	1
3	1601606200	VANE (BAKELITE)	4		4024251500	OIL PUMP CCW ROTATION	1
4	1605500100	HANDLE	1	53	4026101301	SCREW TE 8.8 M6X10 ZINC.	2
5	1608100000	DISTRIBUTOR	1	54	4026102802	SCREW TE 8.8 M8X12 ZINC.	3
6	1608502500	CONVEYOR	1	55	4026102806	SCREW TE 8.8 M8X20 ZINC.	4
7	1610052800	FRONT BEARING FLANGE SPLINED SHAFT	1	56	4026102807	SCREW TE 8.8 M8X25 ZINC.	22
8	1610508200	FLANGE	1	57	4026102908	SCREW TE 8.8 M10X30 ZINC.	16
9	1610512900	OIL PUMP FLANGE	1	58	4026121305	SCREW TCEI 8.8 M6X16 ZINC.	2
10	1610512800	DRIVE FLANGE	2	59	4026121710	SCREW TCEI 8.8 M12X35 ZINC.	2
11	16105BBB0	FRONT BEARING FLANGE SPLINED SHAFT	1	60	4026135415	GRUB SCREW 14.9 M8X50 ZINC.	1
12	1622002600	OIL PUMP DRIVE PIN	1	61	4026135504	GRUB SCREW 14.9 M10X10 ZINC.	1
13	1623100500	CONVEYOR CAP	1	62	4026171211	STUD SCREW 8.8 M12X80 ZINC.	2
14	162409YKB0	SPACER	1	63	4026300025	COMPENSATION RING	2
15	1624202300	SPACER	1	64	4026305508	SELF-LOCKING NUT M 12 SPLINED SHAFT	2
16	-			65	4026306115	SELF-LOCKING NUT M36X3	1
17	1626001100	BUSHING SMOOTH SHAFT	1	66	4026308005	NUT M8 ZINC.	2
18	16275007E0	MANIFOLD	1	67	4026350508	WASHER GROWER 12 ZINC.	2
19	16401008E0	CLAPET COVER	1	68	4026350706	WASHER GROWER 8 ZINC.	20
20	1642100200	REAR PROTECTION	1	69	4026351504	WASHER M6 ZINC.	4
21	16500B6XB0	SPLINED SHAFT 1 3/8	1	70	4026351505	WASHER M8 ZINC.	6
22	1663062600	DISCHARGE SHORT LUBRICATION LINE R	1	71	4026351506	WASHER M10 ZINC.	16
	16630C12B0	DISCHARGE SHORT LUBRICATION LINE L	1	72	4026357007	WASHER M12 ZINC.	2
23	1663062700	DISCHARGE LONG LUBRICATION LINE R	1	73	-		
	16630C13B0	DISCHARGE LONG LUBRICATION LINE L	1	74	4026501004	TAB 12X8X45 SMOOTH SHAFT	1
24	1663063000	LUBRIC. LINE DISTRIBUTOR - REAR FLANGE R	1		4026501003	TAB 12X8X40 SPLINED SHAFT	1
	1663071RB0	LUBRIC. LINE DISTRIBUTOR - REAR FLANGE L	1	75	-		
25	1663071RB0	LUBRIC. LINE DISTRIBUTOR - FRONT FLANGE R	1	76	4026702000	FITTING 4X1/8	8
	1663063000	LUBRIC. LINE DISTRIBUTOR - FRONT FLANGE L	1	77	4026706000	FITTING 90° 4X1/8	2
26	1663062900	LUBRICATION LINE HOUSING-REAR FLANGE R	1	78	4026706003	FITTING 90° 6X1/8	2
	1663071SB0	LUBRICATION LINE HOUSING-REAR FLANGE L	1	79	4026706101	ADJUSTABLE FITTING 4X1/8	2
27	1663071SB0	LUBRICAT. LINE HOUSING-FRONT FLANGE R	1	80	-		
	1663062900	LUBRICAT. LINE HOUSING-FRONT FLANGE L	1	81	4026904503	PLUG M20X1,5	1
28	1663063100	LUBRICATION LINE OILTANK - OIL PUMP R	1	82	4026910103	VENTIL PLUG 1"	1
	1663015XB0	LUBRICATION LINE OILTANK - OIL PUMP L	1	83	4026910601	PLUG 1/8"	2
29	1672001600	SCREW TCEI M10X1,5 SPLINED SHAFT	6	84	-		
30	1673001000	OIL FILTER PLUG	1	85	4029602701	NUT M8 PROTECTION	1
31	1680609700	OIL PUMP GASKET	1	86	4029602806	SHAFT PROTECTION SMOOTH SHAFT	1
32	1680610200	MANIFOLD GASKET	2		16426CR1B0	SHAFT PROTECTION SPLINED SHAFT	1
33	16807011E0	CLAPET COVER GASKET	1				
34	1680707300	FRONT FLANGE GASKET	2		1892005300	GASKET KIT PN140 DIRECT TRANSMISS.	1
35	1680707800	CONVEYOR GASKET	1				
36	1681100200	PLATE (FOR OIL DRIPPER)	1				
37	1685002800	WASHER 30X8,5	1				
38	1685100000	DRIPPER OIL WASHER 14X20X1,5	2				
39	1685100300	WASHER DI 20	2				
40	1687507600	PUMP HOUSING PN140	1				
41	1587009400	OIL TANK	1				
42	1691000000	SPRING	1				
43	18930008E0	CLAPET D.110 WITH O-RING	1				
44	4022200011	SEAL RING 64X80X8	1				
45	4022200030	SEAL RING 41X27X10	1				
46	4022200044	SEAL RING 65X45X8	1				
47	4022200113	SEAL RING 70X55X15	2				
48	4022200311	O-RING 4975	2				
49	4022300001	OIL FILTER	1				
50	4023100046	BEARING 6309 SMOOTH SHAFT	1				

## PN 155 DIRECT TRANSMISSION

Pos.	Code	Description	Q.ty	Pos.	Code	Description	Q.ty
1	1401200700	OIL DRIPPER	2	51	4023115059	BEARING NJ 309 ECJ/C3-NMQ SMOOTH SH.	1
2	15215BXUB0	ROTOR PN130 SMOOTH SHAFT / HDR	1		4023100046	BEARING 6309 SPLINED SHAFT	2
	15215BXTB0	ROTOR PN130 SPLINED SHAFT	1	52	4024251000	OIL PUMP CW ROTATION	1
3	16016AB6B0	VANE (BAKELITE)	5		4024251500	OIL PUMP CCW ROTATION	1
4	1605500100	HANDLE	1	53	4026101301	SCREW TE 8.8 M6X10 ZINC.	2
5	1608100000	DISTRIBUTOR	1	54	4026102802	SCREW TE 8.8 M8X12 ZINC.	3
6	1608502500	CONVEYOR	1	55	4026102806	SCREW TE 8.8 M8X20 ZINC.	4
7	16100B6PB0	FLANGE SPLINED SHAFT	1	56	4026102807	SCREW TE 8.8 M8X25 ZINC.	22
8	1610508200	FRONT FLANGE	1	57	4026102908	SCREW TE 8.8 M10X30 ZINC.	16
9	1610512900	OIL PUMP FLANGE	1	58	4026121305	SCREW TCEI 8.8 M6X16 ZINC.	2
10	161059RIB0	DRIVE FLANGE	2	59	4026121710	SCREW TCEI 8.8 M12X35 ZINC.	2
11	16105BBBB0	FRONT BEARING FLANGE SPLINED SHAFT		60	4026135415	GRUB SCREW 14.9 M8X50 ZINC.	1
12	1622002600	OIL PUMP DRIVE PIN	1	61	4026135504	GRUB SCREW 14.9 M10X10 ZINC.	1
13	1623100500	CONVEYOR CAP	1	62	4026171614	STUD SCREW 8.8 M8X90 ZINC.	2
14	162409YKB0	SPACER	1	63	4026300025	COMPENSATION RING	2
15	1624202300	SPACER	1	64	4026305504	SELF-LOCKING NUT M 8	2
16	16246048E0	BUSHING (OIL TANK)	2	65	4026306115	SELF-LOCKING NUT M36X3	1
17	1626001100	BUSHING SMOOTH SHAFT	1	66	4026308005	NUT M8 ZINC.	2
18	16275007E0	MANIFOLD	1	67	4026350508	WASHER GROWER 12 ZINC.	2
19	16401008E0	CLAPET COVER	1	68	4026350706	WASHER GROWER 8 ZINC.	20
20	1642100200	REAR PROTECTION	1	69	4026351504	WASHER M6 ZINC.	4
21	16500B6XB0	SPLINED SHAFT 1 3/8	1	70	4026351505	WASHER M8 ZINC.	6
22	1663062600	DISCHARGE SHORT LUBRICATION LINE R	1	71	4026351506	WASHER M10 ZINC.	16
	16630C12B0	DISCHARGE SHORT LUBRICATION LINE L	1	72	4026357005	WASHER PIANA M8 ZINC.	2
23	1663062700	DISCHARGE LONG LUBRICATION LINE R	1	73	4026359003	WASHER 21,5X26X1,5	4
	16630C13B0	DISCHARGE LONG LUBRICATION LINE L	1	74	4026501005	TAB 12X8X50 SMOOTH SHAFT	1
24	1663063000	LUBRIC. LINE DISTRIBUTOR - REAR FLANGE R	1		4026501004	TAB 12X8X45 SPLINED SHAFT	1
	1663071RB0	LUBRIC. LINE DISTRIBUTOR - REAR FLANGE L	1	75	4026701603	PLUG 1/2 ZINC.	2
25	1663071RB0	LUBRIC. LINE DISTRIBUTOR - FRONT FLANGE R	1	76	4026702000	FITTING 4X1/8	8
	1663063000	LUBRIC. LINE DISTRIBUTOR - FRONT FLANGE L	1	77	4026706000	FITTING 90° 4X1/8	2
26	16630C14B0	LUBRICATION LINE HOUSING-REAR FLANGE R	1	78	4026706003	FITTING 90° 6X1/8	2
	16630C15B0	LUBRICATION LINE HOUSING-REAR FLANGE L	1	79	4026706101	ADJUSTABLE FITTING 4X1/8	2
27	16630C15B0	LUBRICAT. LINE HOUSING-FRONT FLANGE R	1	80	4026904001	PLUG ½" ZINC.	2
	16630C14B0	LUBRICAT. LINE HOUSING-FRONT FLANGE L	1	81	4026904503	PLUG M20X1,5	1
28	16630C19B0	LUBRICATION LINE OILTANK - OIL PUMP R	1	82	4026910103	VENTIL PLUG 1"	1
	16630C16B0	LUBRICATION LINE OILTANK - OIL PUMP L	1	83	4026910601	PLUG 1/8"	2
29	1672001600	SCREW TCEI M10X1,5 SPLINED SHAFT	6	84	4026910603	PLUG 3/8"	2
30	1673001000	OIL FILTER PLUG	1	85	4029602701	NUT M8 PROTECTION	1
31	1680609700	OIL PUMP GASKET	1	86	4029602806	SHAFT PROTECTION SMOOTH SHAFT	1
32	1680610200	MANIFOLD GASKET	2		16426CR1B0	SHAFT PROTECTION SPLINED SHAFT	1
33	16807011E0	CLAPET COVER GASKET	1				
34	1680707300	FRONT FLANGE GASKET	2		18920CZQB0	GASKET KIT PN155 DIRECT TRANSMISS.	1
35	1680707800	CONVEYOR GASKET	1				
36	1681100200	PLATE (FOR OIL DRIPPER)	1		<b>PN155 R</b>		
37	1685002800	WASHER 30X8,5	1	I1	1493300200	VALVE R ½"	2
38	1685100000	DRIPPER OIL WASHER 14X20X1,5	2	I2	1663014000	FILTER SUPPORT	2
39	1685100300	WASHER DI 20	2	I3	1681006600	PLATE	2
40	16875AB9B0	PUMP HOUSING PN155	1	I4	4022301004	SILENCER FILTER ¾"	2
41	1687600000	OIL TANK	1	I5	4026155605	SCREW TSPEI 10,9 M6X16 ZINC.	4
42	1691000000	SPRING	1	I6	4026359003	WASHER 21,5X26X1,5	2
43	18930008E0	CLAPET D.110 WITH O-RING	1	I7	4026701301	COPPER FITTING ½" Ø18	2
44	4022200011	SEAL RING 64X80X8	1				
45	4022200030	SEAL RING 41X27X10	1				
46	4022200044	SEAL RING 65X45X8	1				
47	4022200113	SEAL RING 70X55X15	2				
48	4022200311	O-RING 4975	2				
49	4022300001	OIL FILTER	1				
50	4023100046	BEARING 6309 SMOOTH SHAFT	1				



**PN 130-140-155 WITH GEARBOX**



PICTURE SHOWS  
PN 155 M (540 RPM) COD. A353209410

PN 130 M COD. A45...  
PN 140 M COD. A20...  
PN 155 R M COD. A36...

## PN 130 WITH GEARBOX

Pos.	Code	Description	Q.ty	Pos.	Code	Description	Q.ty
1	1401200700	OIL DRIPPER	2	56	4026102802	SCREW TE 8.8 M8X12 ZINC.	3
2	1521507100	ROTOR PN130 WITH GEARBOX	1	57	4026102806	SCREW TE 8.8 M8X20 ZINC.	4
3	1601607000	VANE (BAKELITE)	4	58	4026102807	SCREW TE 8.8 M8X25 ZINC.	19
4	1605500100	HANDLE	1	59	4026102808	SCREW TE 8.8 M8X30 ZINC.	8
5	1608100000	DISTRIBUTOR	1	60	4026102908	SCREW TE 8.8 M10X30 ZINC.	15
6	1608502500	CONVEYOR	1	61	-		
7	1610512900	OIL PUMP FLANGE	1	62	4026121305	SCREW TCEI 8.8 M6X16 ZINC.	2
8	1610512800	REAR FLANGE	1	63	4026121710	SCREW TCEI 8.8 M12X35 ZINC.	2
9	1610512700	GEARBOX FLANGE	1	64	4026135415	GRUB SCREW 14.9 M8X50	1
10	1622002600	OIL PUMP DRIVE PIN	1	65	4026135504	GRUB SCREW 14.9 M10X10	1
11	1623100500	CONVEYOR CAP	1	66	4026155503	SCREWSPEI M5X12	4
12	162409YKB0	SPACER	1	67	4026171211	STUD SCREW 8.8 M12X80 ZINC.	2
13	1624202300	SPACER	1	68	4026300025	COMPENSATION RING	2
14	-			69	4026305508	SELF-LOCKING NUT M 12	2
15	16275007E0	MANIFOLD	1	70	4026306115	SELF-LOCKING NUT M36X3	1
16	16401008E0	CLAPET COVER	1	71	4026308005	NUT M8 ZINC.	2
17	1640501200	GEARBOX COVER	1	72	4026350508	WASHER GROWER 12 ZINC.	2
18	1642100200	REAR PROTECTION	1	73	4026350706	WASHER GROWER 8 ZINC.	20
19	1651005500	PINION Z 28 (540 RPM)	1	74	4026351504	WASHER M 6 ZINC.	4
	1651010700	PINION Z 42 (1000 RPM)	1	75	4026351505	WASHER M 8 ZINC.	11
20	1651010500	GEAR Z 70 (540 RPM)	1	76	4026351506	WASHER M 10 ZINC.	15
	1651010600	GEAR Z 56 (1000 RPM)	1	77	4026357007	WASHER M 12 ZINC.	2
21	1663062600	DISCHARGE SHORT PIPELINE GEARBOX L	1	78	4026359003	WASHER 21,5X26X1,5	1
22	1663062700	DISCHARGE LONG PIPELINE GEARBOX L	1	79	4026401806	PIN 10X36	2
23	1663063000	PIPELINE DISTR.-REAR FLANGE GEARBOX L	1	80	4026501003	TAB 12X8X40	1
24	1663062900	PIPELINE HOUSING-REAR FL. GEARBOX L	1	81	4026701603	PLUG ½ ZINC.	2
25	1663062800	PIPELINE HOUSING-DISTRIBU. GEARBOX L	1	82	4026702000	FITTING 4X1/8	6
26	1663063100	PIPELINE TANK-OIL PUMP GEARBOX L	1	83	4026706000	FITTING 90° 4X1/8	2
27	1673001000	OIL FILTER PLUG	1	84	4026706003	FITTING 90° 6X1/8	2
28	1680609700	OIL PUMP GASKET	1	85	4026706101	ADJUSTABLE FITTING 4X1/8	2
29	1680610200	MANIFOLD GASKET	2	86	-		
30	16807011E0	CLAPET COVER GASKET	1	87	4026904503	PLUG M20X1,5	1
31	1680707300	FRONT FLANGE GASKET	1	88	4026910103	VENTIL PLUG 1"	1
32	1680707800	CONVEYOR GASKET	1	89	4026910601	PLUG 1/8"	2
33	1680614100	GEARBOX GASKET	1	90	-		
34	1681006500	PLATE	1	91	4029602701	NUT M8 PROTECTION	1
35	1681100200	PLATE (FOR OIL DRIPPER)	1	92	4029602806	SHAFT PROTECTION	1
36	1684000000	DISCHARGE PLUG 3/8	4				
37	1685002800	WASHER FE 30X8,5	1		<b>PN 130 ONLY</b>		
38	1685100000	OIL DRIPPER WASHER 14X20X1,5	2	A	1685100800	WASHER 8X14X1,5	2
39	-			B	1685600200	VULKOLAN WASHER 47,5X13X2	2
40	1685100200	WASHER 17X22X1,5	4	C	4022106001	VERTICAL SIGHT LEVEL	1
41	1685100300	WASHER DI 20	2	D	4026121401	SCREW TCEI 8.8 M8X12 ZINC.	2
42	1687510300	HOUSING PN130	1				
43	1587009400	OIL TANK (FE)	1		1892005300	GASKET KIT PN130 WITH GEARBOX	1
44	1691000000	SPRING	1				
45	18930008E0	CLAPET D.110 WITH O-RING	1				
46	4022200030	SEAL RING 41X27X10	1				
47	4022200040	SEAL RING 72X40X10	1				
48	4022200113	SEAL RING 70X55X15	2				
49	4022200323	O-RING 4850	2				
50	4022300001	OIL FILTER	1				
51	4023100020	BEARING 6207	1				
52	4023100040	BEARING 6308	1				
53	4023100046	BEARING 6309	2				
54	4024251000	OIL PUMP CW ROTATION	1				
	4024251500	OIL PUMP CCW ROTATION	1				
55	4026101301	SCREW TE 8.8 M6X10 ZINC.	2				



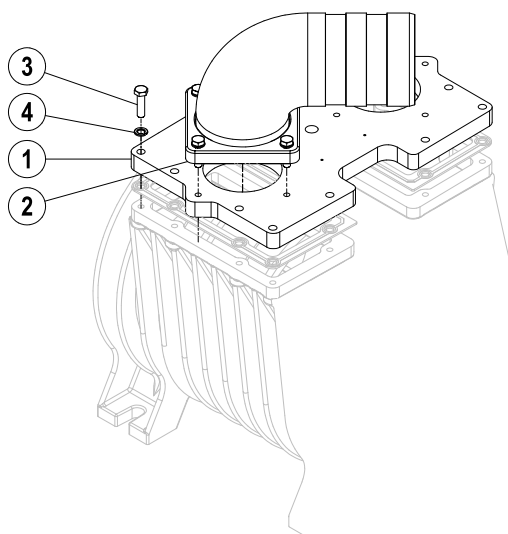
**PN 140 WITH GEARBOX**

Pos.	Code	Description	Q.ty	Pos.	Code	Description	Q.ty
1	1401200700	OIL DRIPPER	2	56	4026102802	SCREW TE 8.8 M8X12 ZINC.	3
2	1521503500	ROTOR PN140 WITH GEARBOX	1	57	4026102806	SCREW TE 8.8 M8X20 ZINC.	4
3	1601606200	VANE (BAKELITE)	4	58	4026102807	SCREW TE 8.8 M8X25 ZINC.	19
4	1605500100	HANDLE	1	59	4026102808	SCREW TE 8.8 M8X30 ZINC.	8
5	1608100000	DISTRIBUTOR	1	60	4026102908	SCREW TE 8.8 M10X30 ZINC.	15
6	1608502500	CONVEYOR	1	61	-		
7	1610512900	OIL PUMP FLANGE	1	62	4026121305	SCREW TCEI 8.8 M6X16 ZINC.	2
8	1610512800	REAR FLANGE	1	63	4026121710	SCREW TCEI 8.8 M12X35 ZINC.	2
9	1610512700	GEARBOX FLANGE	1	64	4026135415	GRUB SCREW 14.9 M8X50	1
10	1622002600	OIL PUMP DRIVE PIN	1	65	4026135504	GRUB SCREW 14.9 M10X10	1
11	1623100500	CONVEYOR CAP	1	66	4026155503	SCREWSPEI M5X12	4
12	162409YKB0	SPACER	1	67	4026171211	STUD SCREW 8.8 M12X80 ZINC.	2
13	1624202300	SPACER	1	68	4026300025	COMPENSATION RING	2
14	-			69	4026305508	SELF-LOCKING NUT M 12	2
15	16275007E0	MANIFOLD	1	70	4026306115	SELF-LOCKING NUT M36X3	1
16	16401008E0	CLAPET COVER	1	71	4026308005	NUT M8 ZINC.	2
17	1640501200	GEARBOX COVER	1	72	4026350508	WASHER GROWER 12 ZINC.	2
18	1642100200	REAR PROTECTION	1	73	4026350706	WASHER GROWER 8 ZINC.	20
19	1651005500	PINION Z 28 (540 RPM)	1	74	4026351504	WASHER M 6 ZINC.	4
	1651010700	PINION Z 42 (1000 RPM)	1	75	4026351505	WASHER M 8 ZINC.	11
20	1651010500	GEAR Z 70 (540 RPM)	1	76	4026351506	WASHER M 10 ZINC.	15
	1651010600	GEAR Z 56 (1000 RPM)	1	77	4026357007	WASHER M 12 ZINC.	2
21	1663062600	DISCHARGE SHORT PIPELINE GEARBOX L	1	78	4026359003	WASHER 21,5X26X1,5	1
22	1663062700	DISCHARGE LONG PIPELINE GEARBOX L	1	79	4026401806	PIN 10X36	2
23	1663063000	PIPELINE DISTR.-REAR FLANGE GEARBOX L	1	80	4026501003	TAB 12X8X40	1
24	1663062900	PIPELINE HOUSING-REAR FL. GEARBOX L	1	81	4026701603	PLUG ½ ZINC.	2
25	1663062800	PIPELINE HOUSING-DISTRIBU. GEARBOX L	1	82	4026702000	FITTING 4X1/8	6
26	1663063100	PIPELINE TANK-OIL PUMP GEARBOX L	1	83	4026706000	FITTING 90° 4X1/8	2
27	1673001000	OIL FILTER PLUG	1	84	4026706003	FITTING 90° 6X1/8	2
28	1680609700	OIL PUMP GASKET	1	85	4026706101	ADJUSTABLE FITTING 4X1/8	2
29	1680610200	MANIFOLD GASKET	2	86	-		
30	16807011E0	CLAPET COVER GASKET	1	87	4026904503	PLUG M20X1,5	1
31	1680707300	FRONT FLANGE GASKET	1	88	4026910103	VENTIL PLUG 1"	1
32	1680707800	CONVEYOR GASKET	1	89	4026910601	PLUG 1/8"	2
33	1680614100	GEARBOX GASKET	1	90	-		
34	1681006500	PLATE	1	91	4029602701	NUT M8 PROTECTION	1
35	1681100200	PLATE (FOR OIL DRIPPER)	1	92	4029602806	SHAFT PROTECTION	1
36	1684000000	DISCHARGE PLUG 3/8	4				
37	1685002800	WASHER FE 30X8,5	1		<b>PN 140 ONLY</b>		
38	1685100000	OIL DRIPPER WASHER 14X20X1,5	2	A	1685100800	WASHER 8X14X1,5	2
39	-			B	1685600200	VULKOLAN WASHER 47,5X13X2	2
40	1685100200	WASHER 17X22X1,5	4	C	4022106001	VERTICAL SIGHT LEVEL	1
41	1685100300	WASHER DI 20	2	D	4026121401	SCREW TCEI 8.8 M8X12 ZINC.	2
42	1687507600	HOUSING PN140	1				
43	1587009400	OIL TANK (FE)	1		1892005300	GASKET KIT PN140 WITH GEARBOX	1
44	1691000000	SPRING	1				
45	18930008E0	CLAPET D.110 WITH O-RING	1				
46	4022200030	SEAL RING 41X27X10	1				
47	4022200040	SEAL RING 72X40X10	1				
48	4022200113	SEAL RING 70X55X15	2				
49	4022200323	O-RING 4850	2				
50	4022300001	OIL FILTER	1				
51	4023100020	BEARING 6207	1				
52	4023100040	BEARING 6308	1				
53	4023100046	BEARING 6309	2				
54	4024251000	OIL PUMP CW ROTATION	1				
	4024251500	OIL PUMP CCW ROTATION	1				
55	4026101301	SCREW TE 8.8 M6X10 ZINC.	2				

## PN 155 WITH GEARBOX

Pos.	Code	Description	Q.ty	Pos.	Code	Description	Q.ty
1	1401200700	OIL DRIPPER	2	56	4026102802	SCREW TE 8.8 M8X12 ZINC.	3
2	15215BXTB0	ROTOR PN155 WITH GEARBOX	1	57	4026102806	SCREW TE 8.8 M8X20 ZINC.	4
3	16016AB6B0	VANE (BAKELITE)	5	58	4026102807	SCREW TE 8.8 M8X25 ZINC.	19
4	1605500100	HANDLE	1	59	4026102810	SCREW TE 8.8 M8X40 ZINC.	8
5	1608100000	DISTRIBUTOR	1	60	4026102908	SCREW TE 8.8 M10X30 ZINC.	15
6	1608502500	CONVEYOR	1	61	4026120506	SCREW TCEI 8.8 M10X30 ZINC.	2
7	1610512900	OIL PUMP FLANGE	1	62	4026121305	SCREW TCEI 8.8 M6X16 ZINC.	2
8	161059RIB0	REAR FLANGE	1	63	4026121710	SCREW TCEI 8.8 M12X35 ZINC.	2
9	161059TDB0	GEARBOX FLANGE	1	64	4026135415	GRUB SCREW 14.9 M8X50	1
10	1622002600	OIL PUMP DRIVE PIN	1	65	4026135504	GRUB SCREW 14.9 M10X10	1
11	1623100500	CONVEYOR CAP	1	66	4026155505	SCREW TSPEI M5X10	4
12	162409YKB0	SPACER	1	67	4026171614	STUD SCREW 8.8 M8X90 ZINC.	2
13	1624202300	SPACER	1	68	4026300025	COMPENSATION RING	2
14	16246048E0	BUSHING (OIL TANK)	2	69	4026305504	SELF-LOCKING NUT M 8	2
15	16275007E0	MANIFOLD	1	70	4026306115	SELF-LOCKING NUT M36X3	1
16	16401008E0	CLAPET COVER	1	71	4026308005	NUT M8 ZINC.	2
17	164059V5B0	GEARBOX COVER	1	72	4026350508	WASHER GROWER 12 ZINC.	2
18	1642100200	REAR PROTECTION	1	73	4026350706	WASHER GROWER 8 ZINC.	20
19	1651005300	PINION Z 25 (540 RPM)	1	74	4026351504	WASHER M 6 ZINC.	4
	165109KFB0	PINION Z 37 (1000 RPM)	1	75	4026351505	WASHER M 8 ZINC.	11
20	165109KEB0	GEAR Z 53 (540 RPM)	1	76	4026351506	WASHER M 10 ZINC.	15
	165109KGB0	GEAR Z 41 (1000 RPM)	1	77	4026357005	WASHER M 8 ZINC.	2
21	1663062600	DISCHARGE SHORT PIPELINE GEARBOX L	1	78	4026359003	WASHER 21,5X26X1,5	4
22	1663062700	DISCHARGE LONG PIPELINE GEARBOX L	1	79	4026401806	PIN 10X36	2
23	1663063000	PIPELINE DISTR.-REAR FLANGE GEARBOX L	1	80	4026501004	TAB 12X8X45	1
24	16630C14B0	PIPELINE HOUSING-REAR FL. GEARBOX L	1	81	4026701603	PLUG ½ ZINC.	2
25	16630C18B0	PIPELINE HOUSING-DISTRIBU. GEARBOX L	1	82	4026702000	FITTING 4X1/8	6
26	16630C19B0	PIPELINE TANK-OIL PUMP GEARBOX L	1	83	4026706000	FITTING 90° 4X1/8	2
27	1673001000	OIL FILTER PLUG	1	84	4026706003	FITTING 90° 6X1/8	2
28	1680609700	OIL PUMP GASKET	1	85	4026706101	ADJUSTABLE FITTING 4X1/8	2
29	1680610200	MANIFOLD GASKET	2	86	4026904001	PLUG ½ ZINC.	2
30	16807011E0	CLAPET COVER GASKET	1	87	4026904503	PLUG M20X1,5	1
31	1680707300	FRONT FLANGE GASKET	1	88	4026910103	VENTIL PLUG 1"	1
32	1680707800	CONVEYOR GASKET	1	89	4026910601	PLUG 1/8"	2
33	16807BCNB0	GEARBOX GASKET	1	90	4026910603	PLUG 3/8	2
34	1681006500	PLATE	1	91	4029602701	NUT M8 PROTECTION	1
35	1681100200	PLATE (FOR OIL DRIPPER)	1	92	4029602806	SHAFT PROTECTION	1
36	1684000000	DISCHARGE PLUG 3/8	4				
37	1685002800	WASHER FE 30X8,5	1	18920CZRB0	GASKET KIT PN155 WITH GEARBOX.		1
38	1685100000	OIL DRIPPER WASHER 14X20X1,5	2				
39	1685100100	WASHER 10X16X1,5	2				
40	1685100200	WASHER 17X22X1,5	4				
41	1685100300	WASHER DI 20	2				
42	16875AB9B0	HOUSING PN155	1				
43	1687600000	OIL TANK	1				
44	1691000000	SPRING	1				
45	18930008E0	CLAPET D.110 WITH O-RING	1				
46	4022200030	SEAL RING 41X27X10	1				
47	4022200040	SEAL RING 72X40X10	1				
48	4022200113	SEAL RING 70X55X15	2				
49	4022200311	O-RING 4975	2				
50	4022300001	OIL FILTER	1				
51	4023100020	BEARING 6207	1				
52	4023100040	BEARING 6308	1				
53	4023100046	BEARING 6309	2				
54	4024251000	OIL PUMP CW ROTATION	1				
	4024251500	OIL PUMP CCW ROTATION	1				
55	4026101301	SCREW TE 8.8 M6X10 ZINC.	2				

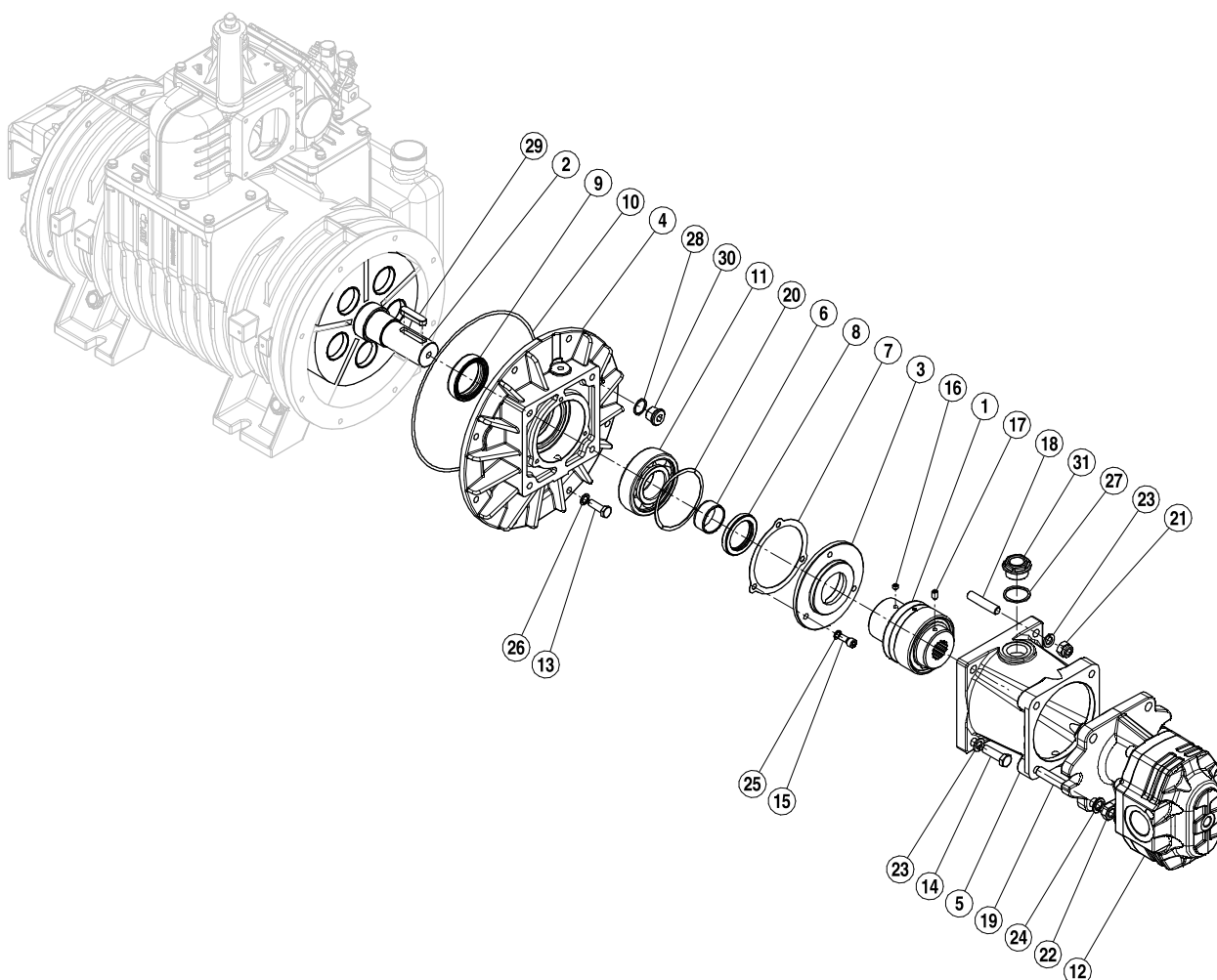
## PN VERSIONE "FL"



Pos.	Code	Description	Qty
1	1627504800	FLANGED MANIFOLD	1
	1627504900	THREADED FLANGED MANIFOLD	1
2	1852103800	ADJUSTABLE CONVEYOR Ø76	2
	1852103900	ADJUSTABLE CONVEYOR Ø80	2
	1852104000	ADJUSTABLE CONVEYOR Ø100	1
3	4026102807	SCREW TE 8.8 M8X25 ZINC.	12
4	4026350706	WASHER GROWER 8 ZINC.	12

\* PN130 ONLY

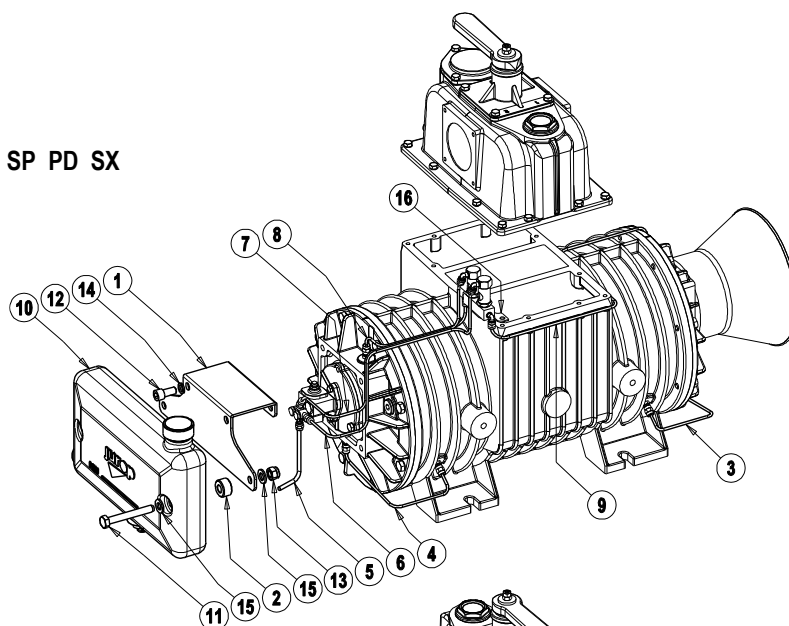
## PN WITH HYDRAULIC MOTOR



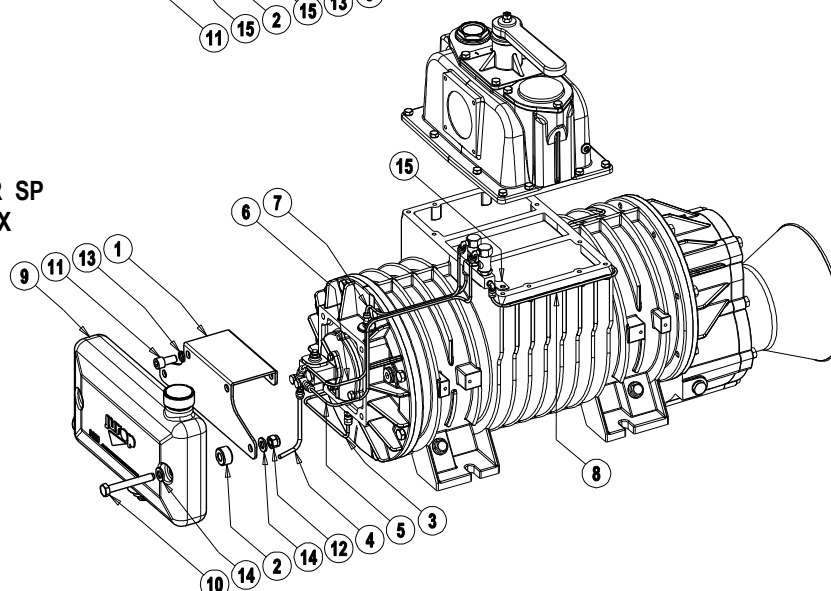
Pos.	Code	Description	Qty	Pos.	Code	Description	Qty
<b>PN 130 HYD</b>				26	4026351506	WASHER M 10 ZINC.	16
1	1470102300	HYD JOINT	1	27	4026359001	WASHER 33,5X40X1,5	1
2	1521507200	ROTOR PN130 SMOOTH SHAFT / HYD	1	28	-		
3	1610021600	FLANGIA TRASMISSIONE IDRAULICA	1	29	4026501004	TAB 12X8X45	1
4	1510512800	FLANGE	2	30	-		
5	1612501000	HYD MOTOR MOUNTING FLANGE	1	31	4026904003	PLUG 1" ZINC.	1
6	1626001100	BUSHING	1	<b>PN 155 HYD</b>			
7	1680707300	FRONT FLANGE GASKET	2	1	14701BEBB0	HYD JOINT	1
8	4022200044	SEAL RING 65X45X8	1	2	15215BXUB0	ROTOR PN155 SMOOTH SHAFT / HYD	1
9	4022200113	SEAL RING 70X55X15	2	3	1610021600	FLANGE	1
10	4022200311	O-RING 4975	2	4	161059RIB0	FLANGE	2
11	4023100046	BEARING 6309	2	5	1612501000	HYD MOTOR MOUNTING FLANGE	1
12	4024107001	HYDRAULIC MOTOR	1	6	1626001100	BUSHING	1
13	4026102908	SCREW TE 8.8 M10X30 ZINC.	16	7	1680707300	FRONT FLANGE GASKET	2
14	4026103004	SCREW TE 8.8 M12X40 ZINC.	2	8	4022200044	SEAL RING 65X45X8	1
15	4026121405	SCREW TCEI 8.8 M8X20 ZINC.	3	9	4022200113	SEAL RING 70X55X15	2
16	4026136003	GRUB SCREW 14.9 M8X8 ZINC.	1	10	4022200311	O-RING 4975	2
17	4026136006	GRUB SCREW 14.9 M8X14 ZINC.	1	11	4023100046	BEARING 6309	2
18	4026103004	SCREW TE M12X40 ZINCATA	2	12	4024107001	HYDRAULIC MOTOR	1
19	4026171304	STUD SCREW 8.8 M14X40 ZINC.	4	13	4026102908	SCREW TE 8.8 M10X30 ZINC.	16
20	4026300025	COMPENSATION RING	2	14	4026103004	SCREW TE 8.8 M12X40 ZINC.	2
21	4026305508	NUT M12 SELF LOCKING	2	15	4026121405	SCREW TCEI 8.8 M8X20 ZINC.	3
22	4026308008	NUT M 14 ZINC.	4	16	4026136003	GRUB SCREW 14.9 M8X8 ZINC.	1
23	4026350709	WASHER GROWER 12 ZINC.	4	17	4026136006	GRUB SCREW 14.9 M8X14 ZINC.	1
24	4026350710	WASHER GROWER 14 ZINC.	4	18	4026171203	STUD SCREW 8.8 M12X40 ZINC.	2
25	4026351505	WASHER M 8 ZINC.	6	19	4026171304	STUD SCREW 8.8 M14X40 ZINC.	4
26	4026351506	WASHER M 10 ZINC.	16	20	4026300025	COMPENSATION RING	2
27	4026359001	WASHER 33,5X40X1,5	1	21	4026305508	NUT M12 SELF LOCKING	2
28	-			22	4026308008	NUT M 14 ZINC.	4
29	4026501005	TAB 12X8X50	1	23	4026350709	WASHER GROWER 12 ZINC.	4
30	-			24	4026350710	WASHER GROWER 14 ZINC.	4
31	4026904003	PLUG 1" ZINC.	1	25	4026351505	WASHER M 8 ZINC.	6
<b>PN 140 HYD</b>				26	4026351506	WASHER M 10 ZINC.	16
1	1470102300	HYD JOINT	1	27	4026359001	WASHER 33,5X40X1,5	1
2	1521503600	ROTOR PN140 SMOOTH SHAFT / HYD	1	28	4026359003	WASHER 21,5X26X1,5	4
3	1610021600	FLANGE	1	29	4026501005	TAB 12X8X50	1
4	1510512800	FLANGE	2	30	4026701603	PLUG ½ ZINC.	2
5	1612501000	HYD MOTOR MOUNTING FLANGE	1	31	4026904003	PLUG 1" ZINC.	1
6	1626001100	BUSHING	1				
7	1680707300	FRONT FLANGE GASKET	2				
8	4022200044	SEAL RING 65X45X8	1				
9	4022200113	SEAL RING 70X55X15	2				
10	4022200311	O-RING 4975	2				
11	4023100046	BEARING 6309	2				
12	4024107001	HYDRAULIC MOTOR	1				
13	4026102908	SCREW TE 8.8 M10X30 ZINC.	16				
14	4026103004	SCREW TE 8.8 M12X40 ZINC.	2				
15	4026121405	SCREW TCEI 8.8 M8X20 ZINC.	3				
16	4026136003	GRUB SCREW 14.9 M8X8 ZINC.	1				
17	4026136006	GRUB SCREW 14.9 M8X14 ZINC.	1				
18	4026103004	SCREW TE M12X40 ZINCATA	2				
19	4026171304	STUD SCREW 8.8 M14X40 ZINC.	4				
20	4026300025	COMPENSATION RING	2				
21	4026305508	NUT M12 SELF LOCKING	2				
22	4026308008	NUT M 14 ZINC.	4				
23	4026350709	WASHER GROWER 12 ZINC.	4				
24	4026350710	WASHER GROWER 14 ZINC.	4				
25	4026351505	WASHER M 8 ZINC.	6				

**PN155 / PN155R SP (REAR OIL TANK)**

**PN155-PN155R SP PD SX**



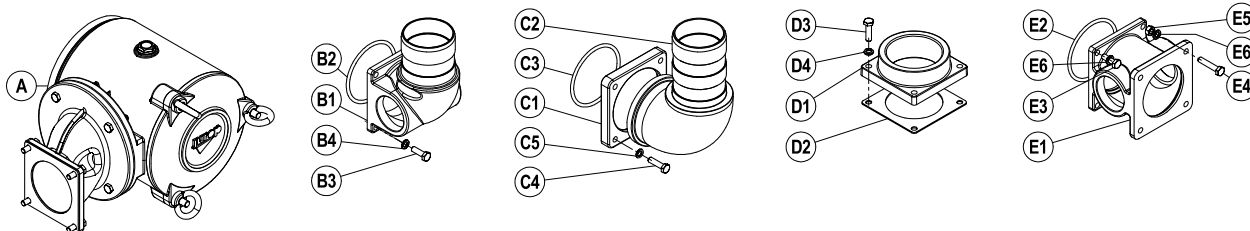
**PN155 – PN155R SP  
M540 - M1000 SX**



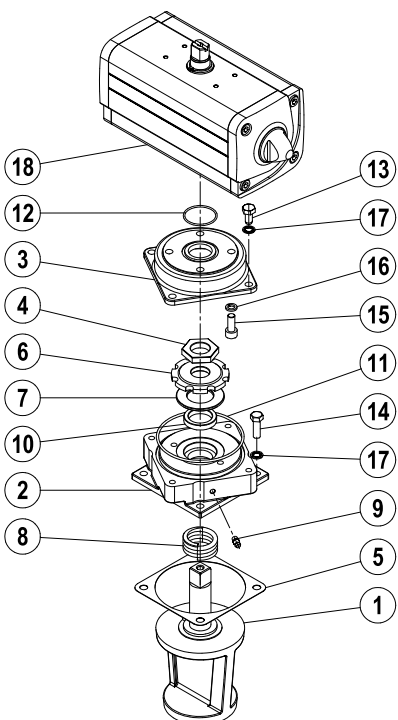
Pos.	Code	Description	Qty	Pos.	Code	Description	Qty
<b>LUBRICATION DIRECT DRIVE</b>				<b>LUBRICATION M540-M1000 SX</b>			
1	1612034000	OIL TANK SUPPORT	1	1	1612034000	OIL TANK SUPPORT	1
2	1624042800	SPACER	2	2	1624042800	SPACER	2
3	16630C14B0	OIL PIPE	1	3	16630C14B0	OIL PIPE	1
4	16630C15B0	OIL PIPE	1	4	1663067000	OIL PIPE	1
5	1663067000	OIL PIPE	1	5	1663067800	OIL PIPE	1
6	1663067800	OIL PIPE	1	6	1663067900	OIL PIPE	1
7	1663067900	OIL PIPE	1	7	1663068000	OIL PIPE	1
8	1663068000	OIL PIPE	1	8	1663068200	OIL PIPE	1
9	1663068100	OIL PIPE	1	9	1687600000	OIL TANK	1
10	1687600000	OIL TANK	1	10	4026103013	SCREW M12X90	2
11	4026103013	SCREW M12X90	2	11	4026121708	SCREW M12X25	2
12	4026121708	SCREW M12X25	2	12	4026305508	NUT M12	2
13	4026305508	NUT M12	2	13	4026350508	GROWER M12	2
14	4026350508	GROWER M12	2	14	4026357007	WASHER PIANA M12	2
15	4026357007	WASHER M12	2	15	1612033900	SUPPORT OILERS	1
16	1612033900	SUPPORT OILERS	1				



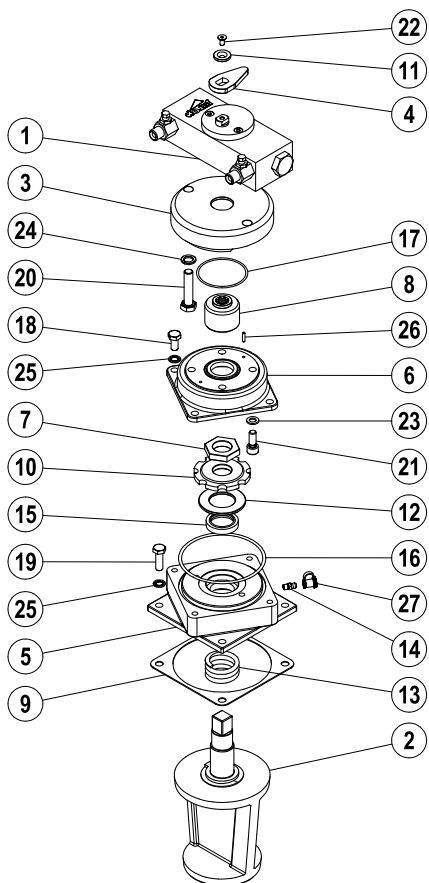
## ACCESSORIES PN



Pos.	Code	Description	Q.ty	Pos.	Code	Description	Q.ty
A	185212L4B0	SUCTION UNIT WITH FILTER			1852111700	FLANGE 3" NPT	
	18920KT1B0	SUCTION FILTER KIT (WITHOUT FILTER)		D1	1610101500	FLANGE 3" NPT	1
	1852103300	FIXED SUCTION CONVEYOR Ø76	*	D2	1680709900	MANIFOLD GASKET	1
	1852103400	FIXED SUCTION CONVEYOR Ø80		D3	4026102808	SCREW TCEI 8,8 M8X30 ZINC.	4
	1852103500	FIXED SUCTION CONVEYOR Ø100		D4	4026350706	WASHER GROWER 8 ZINC.	4
B1	1627101300	SUCTION CONVEYOR Ø80	1		1852104100	KIT FOR SAFETY VALVE	
	1627101200	SUCTION CONVEYOR Ø100	1	E1	1627102500	SAFETY VALVE G2 SUPPORT	1
B2	4022200310	O-RING 6362 VITON	1	E2	4022200310	O-RING 6362	1
B3	4026102807	SCREW TE M8X25 ZINC.	4	E3	4026102807	SCREW TE 8,8 M8X25 UNI5739 GALV.	4
B4	4026350706	WASHER GROWER 8	4	E4	4026102810	SCREW TE 8,8 M8X40 UNI5739 GALV.	4
	1852103800	ADJUSTABLE CONVEYOR Ø76	*	E5	4026308005	NUT M8 UNI5588 GALV.	4
	1852103900	ADJUSTABLE CONVEYOR Ø80		E6	4026350706	WASHER GROWER 8 FLAT SEC. GALV.	8
	1852104000	ADJUSTABLE CONVEYOR Ø100				* PN130 ONLY	
C1	1610101100	FLANGE	1				
C2	1627102700	CONVEYOR Ø80	1				
	1627102400	CONVEYOR Ø100	1				
C3	4022200310	O-RING 6362 VITON	1				
C4	4026102808	SCREW TE M8X30 ZINC.	4				
C5	4026350706	WASHER GROWER 8	4				



Pos.	Code	Description	Q.ty
	143028GZB0	PNEUMATIC OPERATED 4-WAY KIT	
1	160858KBB0	INSIDE VALVE	
2	161258H0B0	SUPPORT FLANGE	1
3	1640580QB0	COVER	1
4	167007ZAB0	NUT	1
5	1680707800	CONVEYOR-CAP GASKET	1
6	168409PQB0	WASHER	1
7	168529TFB0	SPACER	1
8	1691000200	SPRING	1
9	4022100100	GREASER M6X1	1
10	4022200005	SEAL 37X27X7	1
11	4022200330	OR SEAL 3375	1
12	4022200331	OR SEAL 2137	1
13	4026102804	SCREW TE M8X16	1
14	4026102807	SCREW TE M8X25 GALV.	4
15	4026121405	SCREW TCEI M8X20 GALV.	4
16	4026350505	WASHER GROWER 8 GALV.	4
17	4026351505	WASHER M8 GALV.	4
18	4027100405	PNEUMATIC ACTUATOR	8



Pos.	Code	Description	Q.ty
	<b>14302032E0</b>	<b>HYDRAULIC OPERATED 4-WAY KIT</b>	
1	14302031E0	HYDRAULIC ACTUATOR	1
2	160858KBB0	INSIDE VALVE	1
3	16100416E0	HYDRAULIC ACTUATOR FLANGE	1
4	16120286K0	PLATE	1
5	161258H0B0	SUPPORT FLANGE	1
6	1640580QB0	COVER	1
7	167007ZAB0	NUT	1
8	16732001E0	COUPLER	1
9	1680707800	CONVEYOR-CAP GASKET	1
10	168409PQB0	RING NUT	1
11	16850007E0	WASHER M5	1
12	168529TFB0	SPACER	1
13	1691000200	SPRING	1
14	4022100100	GREASER M6X1	1
15	4022200005	Y-SEAL 37X27X7	1
16	4022200330	O-RING 3375	1
17	4022200374	O-RING 2212	1
18	4026102804	SCREW TE M8X16 GALV.	4
19	4026102807	SCREW TE M8X25 GALV.	4
20	4026102911	SCREW TE M10X45 GALV.	2
21	4026121405	SCREW TCEI M8X20 GALV.	4
22	4026155002	SCREW INOX304 TSPEI M5X10	1
23	4026312B01	WASHER DA 8	4
24	4026350708	WASHER GROWER 10 GALV.	2
25	4026351505	WASHER M8 GALV.	8
26	4026401101	PIN 3X12	2
27	4029602700	PROTECTION CAP	1

Model	Issue date	Revision No.	Revision date	Filled out by	Viewed by
PN130-140-155 PN155R	14-07-2011	09	04-03-2022	U.T.	A.T.

## Jurop SpA

Via Crosera, 50  
33082 Azzano Decimo, PN (Italy)

Tel. +39 0434 636811  
Fax. +39 0434 636812

<http://www.jurop.it>  
e-mail: [info@jurop.it](mailto:info@jurop.it)

Jurop SpA reserves the right to modify the products described in this manual without prior notice.