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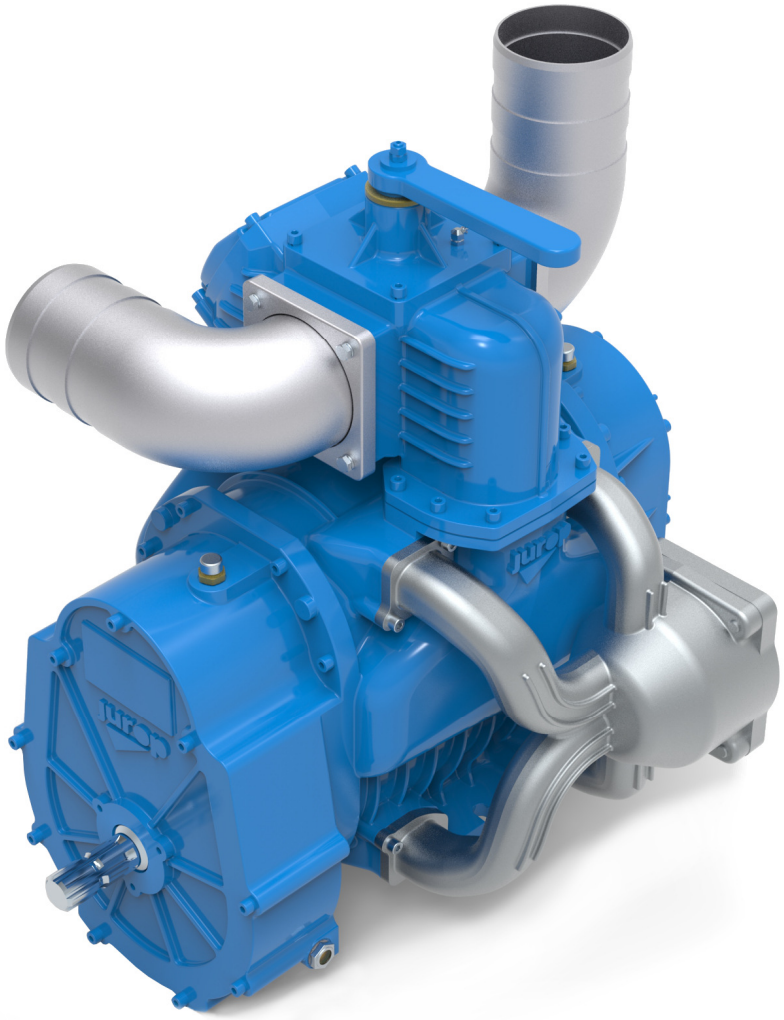
DL75-95-125-150-180-220-250-270-300

ORIGINAL INSTRUCTIONS



INSTALLATION, USE AND MAINTENANCE MANUAL

jurop

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

Rev. 06
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Contents

1.	**General warnings**	pag.	4
1.1	Introduction		4
1.2	Spare part request		4
1.3	Warranty terms and conditions		4
2.	**Technical data**	pag.	5
2.1	Dimensions and arrangements		6
2.2	DL Performances		9
2.3	DL HDR Performances		9
2.4	Sound pressure level		9
2.5	Usage limitations		10
2.6	Lubrication		10
3.	**Safety and accident prevention**	pag.	11
3.1	General recommendations		11
3.2	Intended use		11
3.3	Conveyed fluids		11
4.	**Installation**	pag.	12
4.1	Compulsory accessories		12
4.2	Checking upon receipt		12
4.3	Storing in the warehouse		12
4.4	Mounting		12
4.5	Vacuum – Pressure Line		13
4.6	Air injection system		14
4.7	Overheating alarm (optional)		14
4.8	Hydraulic actuator adjustment		14
4.9	Pneumatic actuator adjustment		15
4.10	Pump mounting – Drive connection		15
5.	**Start up**	pag.	17
5.1	Pump starting-up		17
5.2	Precautions when starting the system		17
6.	**Maintenance**	pag.	18
6.1	Ordinary maintenance		18
6.2	Extraordinary maintenance		19
7.	**Malfunctions: troubleshooting**	pag.	20
8.	**Scarapping**	pag.	20
9.	**Accessories**	pag.	21

SPARE PART DATA SHEET – PUMPS DL75-95-125	22
SPARE PART DATA SHEET – PUMPS DL150-…-300	26
SPARE PART DATA SHEET – DL ACCESSORIES	33

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:
- Read, 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.

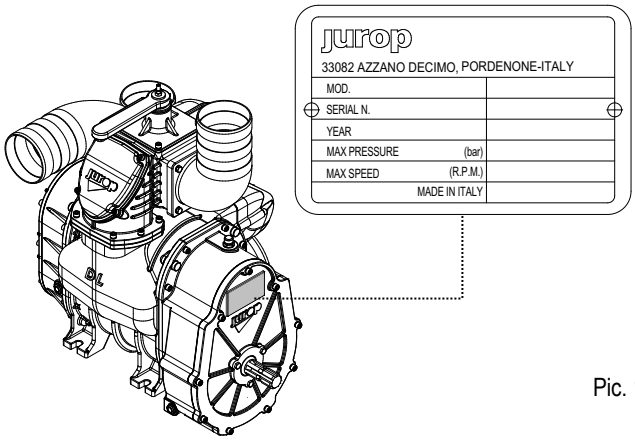
If these safety rules are not respected, the pump or system can be damaged.

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.

• Every DL pump has to be fitted with its own tag reporting the following data: Model, Serial number, Year, Max speed, Max pressure.



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)	DL 250
b) The serial number of the pump (see pump tag)	K60001
c) A description of the parts (see parts list)	MANIFOLD
d) The quantity (see parts list)	1 pz
e) The code number of the part (see parts list)	16275 005 E0

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

• DL is a lobe type pump. Pumps of the DL series can be used as vacuum pumps or as compressors of filtered air on stationary of mobile equipment for creating vacuum, for pneumatic transportation or for the suction inside a tank of liquid or solid waste. No lubricating oil is needed within the pumping chamber since the pump works without friction and consequently there is no oil mist delivered to the atmosphere. A limited maintenance is required due to the fact that there is no touch between rotors and housing; this eliminate the wear of these parts.

• This vacuum pump is designed with a new intake manifold. A non-return valve is placed in the suction part of the manifold. The main goal is to reduce the higher temperature reached from all the parts. An equal distribution of the aspirated air is guaranteed by a four-entry points. The air injected does not reduce the volumetric efficiency. The system is not available if the pump works as a compressor.

• DL silencers are designed to be installed in correspondence with the discharge and injection line (depending on the choice of model) of lobe vacuum pumps (without lubrication). All silencers are equipped with coupling flanges.

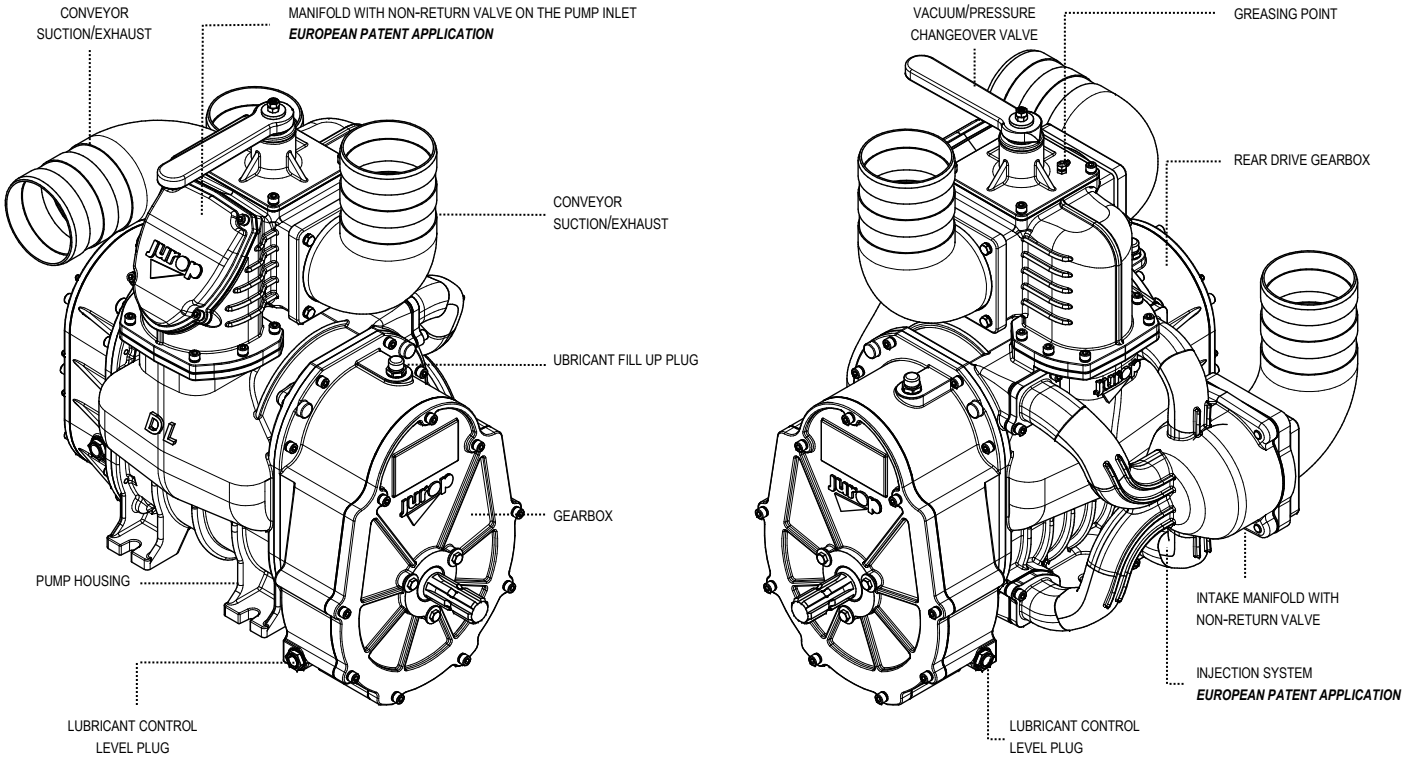
STANDARD EQUIPMENT

- Positive displacement rotary lobe type **vacuum/compressor pump** with profiled and synchronized lobes.
- **Cooling system by air injection** with **built-in non-return valve**.
- Air flow change-over valve (**4-way valve**) fitted on top of the pump.
- **Asymmetrical manifold** with check valve installed on the pump inlet.
- 3 supports.
- Drive with smooth shaft **gearbox** (clockwise or counter clockwise rotation on request) or splined (clockwise or counter clockwise).

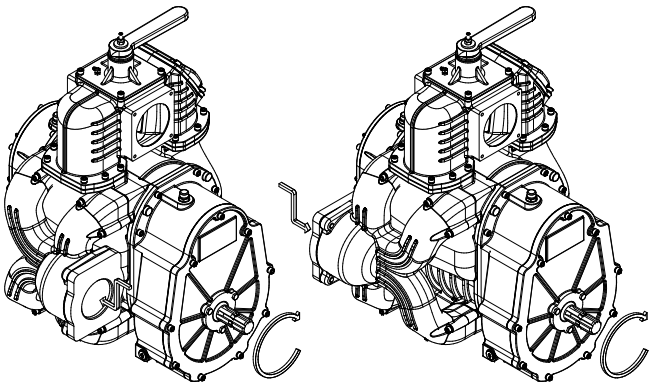
AVAILABLE ON REQUEST

- **Hydraulic motor**.
- **Pulley** for the belt drive.
- **Pneumatic actuator** for the vacuum/pressure changeover valve.
- **Hydraulic actuator** for the vacuum/pressure changeover valve.
- Pivoting suction and exhaust **conveyors** in aluminum alloy.
- **Silencers** on the suction port of the injection system and on the exhaust side of the vacuum line.
- **Warning system for over-heating** of the pump.
- **Flushing-Kit.**

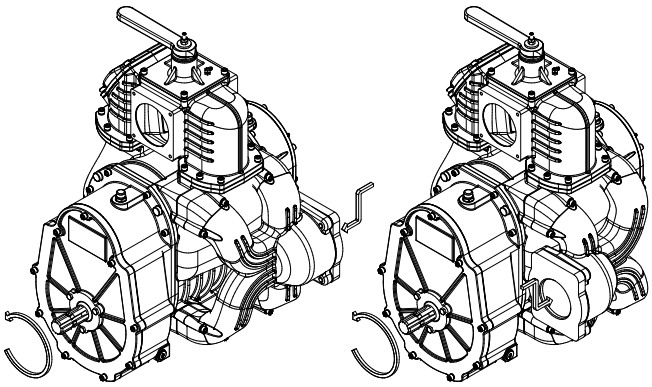
DL



2.1 Dimensions and arrangements

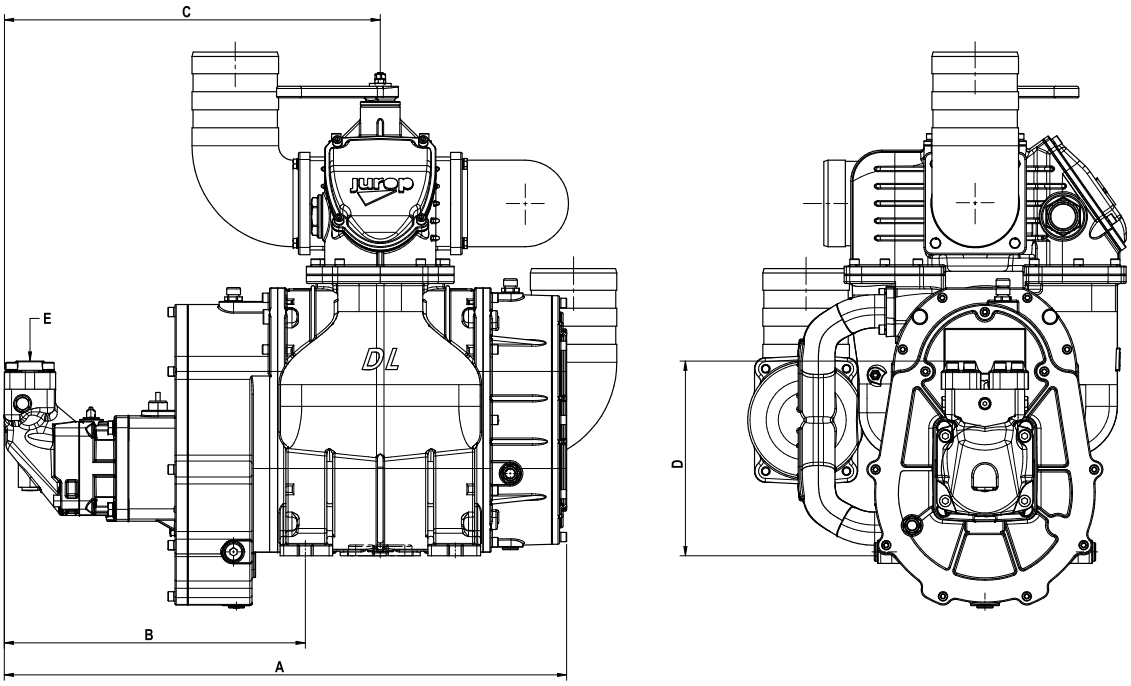


CLOCKWISE ROTATION



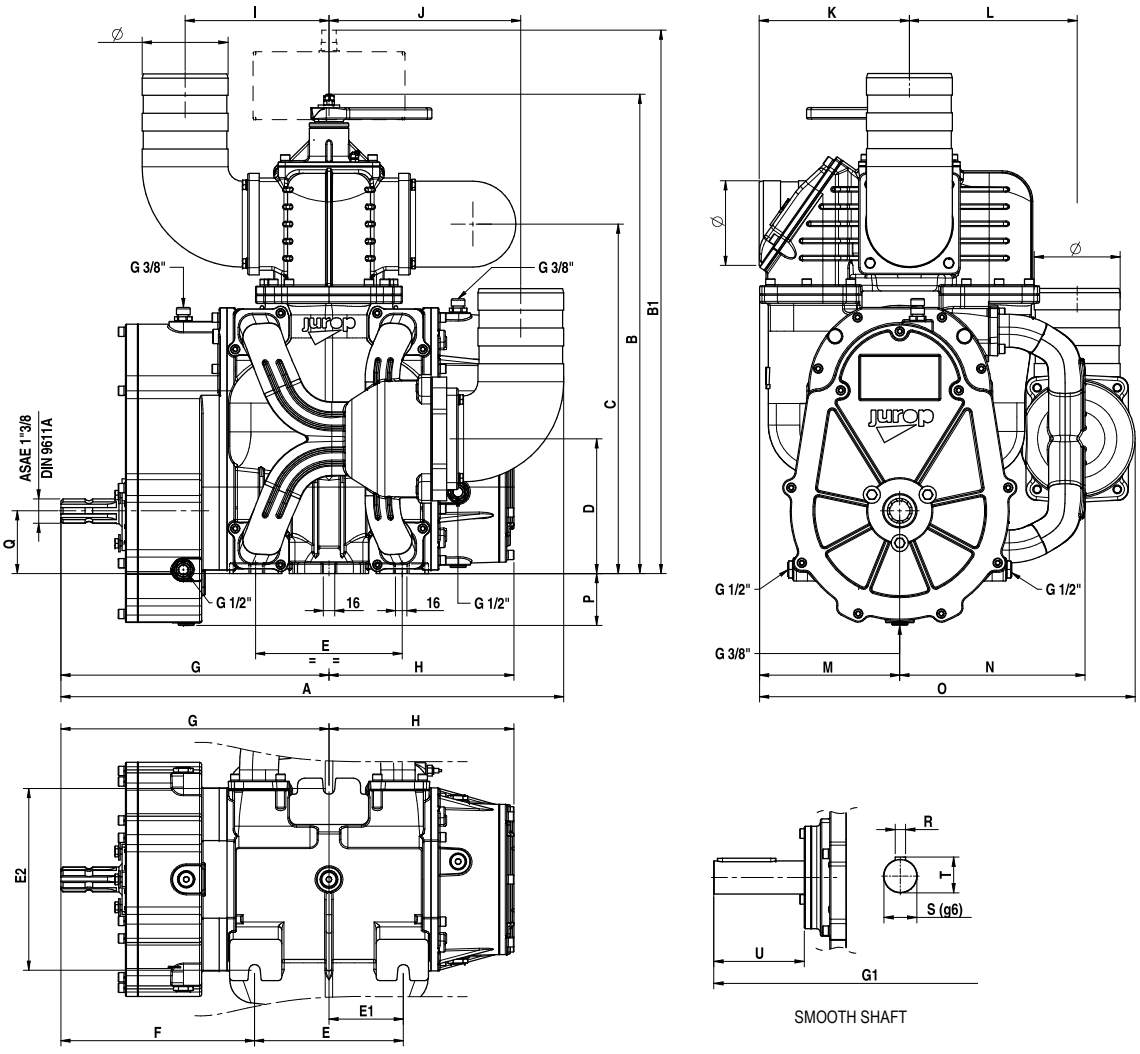
COUNTER CLOCKWISE ROTATION

HDR Transmission (Except for DL220 and DL270)



Model	A	B	C	D	E
DL 75	681	406	476	83	-
DL 95	681	406	476	83	-
DL 125	737	412	507	84	G1”1/4 - G1”
DL 150	760	452	528	195	G11/4 – G11/2
DL 180	726	418	495	270	G3/4 – G3/4
DL 250	780	418	521	270	G3/4 – G3/4
DL 300	838	423	552	270	G3/4 – G3/4

With Multiplier



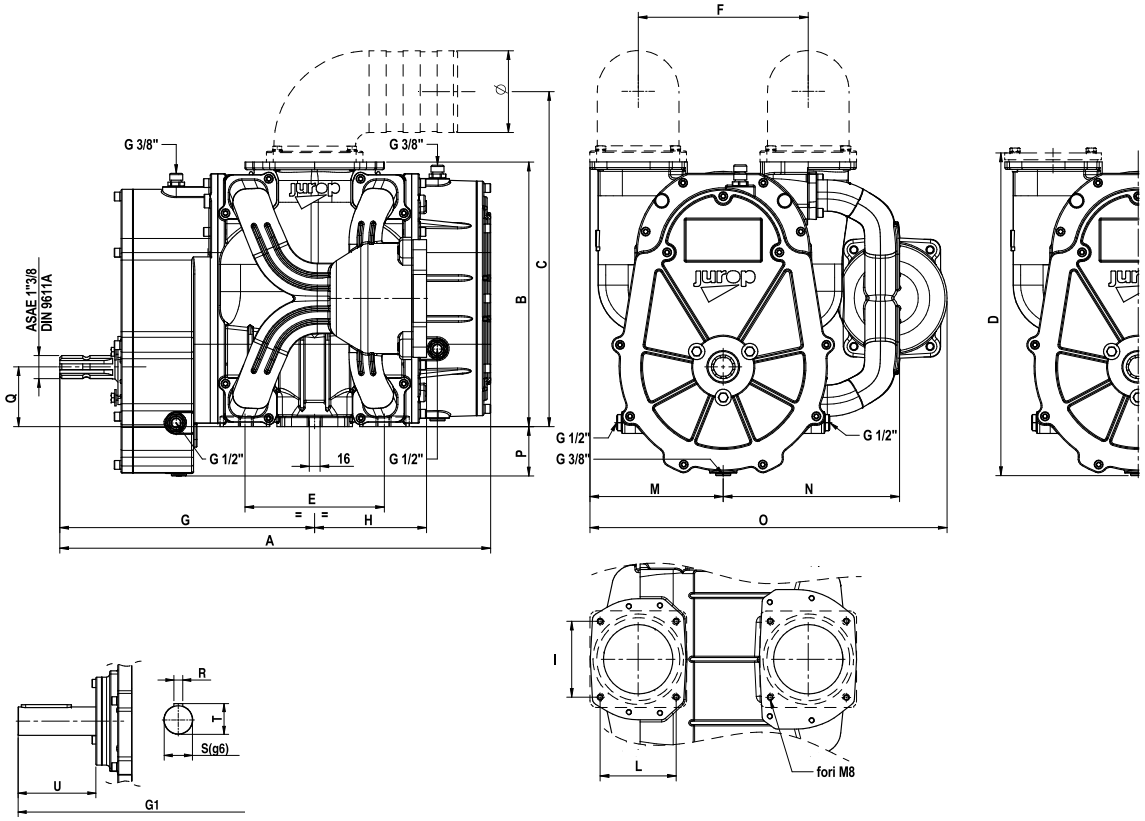
SMOOTH SHAFT

Models	A	B	B1	C	D	E	E1	E2	F	G	G1	H	I
DL 75	596	577	667	420	167	140	70	225	262	332	316	205	181
DL 95	596	577	667	420	167	140	70	225	262	332	316	205	181
DL 125	621	577	667	420	167	190	95	225	262	357	341	231	181
DL 150	626	645	732	475	188	153	77	254	269	345	393	231	175
DL 180	626	645	732	475	188	153	77	254	269	345	393	231	175
DL 220	703	670	760	489	188	208	104	254	270	373	-	258	201
DL 250	703	670	760	489	188	208	104	254	270	373	443	258	201
DL 270	730	670	760	489	188	258	129	254	271	400	-	286	201
DL 300	730	670	760	489	188	258	129	254	271	400	448	286	201

Models	J	K	L	M	N	O	P	Q	R	S	T	U	Ø
DL 75	226	176	183	161	219	415	96	62	12	40 (g6)	43	59,5	76
DL 95	226	176	183	161	219	415	96	62	12	40 (g6)	43	59,5	76
DL 125	226	176	183	161	219	415	96	62	12	40 (g6)	43	59,5	76
DL 150	231	185	222	173	251	482	72	88	14	45 (g6)	48,5	65,5	100
DL 180	231	185	222	173	251	482	72	88	14	45 (g6)	48,5	65,5	100
DL 220	268	210	234	196	259	525	72	88	-	-	-	-	120
DL 250	268	210	234	196	259	525	72	88	14	45 (g6)	48,5	95,5	120
DL 270	268	210	234	196	259	525	72	88	-	-	-	-	120
DL 300	268	210	234	196	259	525	72	88	14	45 (g6)	48,5	95,5	120

Note: DL220-270 available with splined shaft and 600rpm, only. DL250-300 available with splined shaft or smooth shaft at 1000rpm, only.

With flange (FL)



Models	A	B	C	D	E	F	G	G1	H	I	L
DL 75	537	344	448	455	140	211	332	316	122	-	109
DL 95	537	344	448	455	140	211	332	316	122	-	109
DL 125	588	344	448	455	190	211	357	341	122	-	109
DL 150	576	388	482	473	153	223	345	393	136	95	95
DL 180	576	388	482	473	153	223	345	393	136	95	95
DL 220	631	389	492	474	208	250	373	-	164	112	112
DL 250	631	389	492	474	208	250	373	443	164	112	112
DL 270	686	389	492	474	258	250	400	-	164,5	112	112
DL 300	686	389	492	474	258	250	400	448	164,5	112	112

Models	M	N	O	P	Q	R	S	T	U	Ø
DL 75	161	219	415	96	62	12	40 (g6)	43	59,5	76
DL 95	161	219	415	96	62	12	40 (g6)	43	59,5	76
DL 125	161	219	415	96	62	12	40 (g6)	43	59,5	76
DL 150	173	251	482	72	88	14	45 (g6)	48,5	65,5	100
DL 180	173	251	482	72	88	14	45 (g6)	48,5	65,5	100
DL 220	196	259	525	72	88	-	-	-	-	120
DL 250	196	259	525	72	88	14	45 (g6)	48,5	95,5	120
DL 270	196	259	525	72	88	-	-	-	-	120
DL 300	196	259	525	72	88	14	45 (g6)	48,5	95,5	120

Note: See spare part data sheet (DL Accessories) to find conveyor used code.

2.2 DL Performances

Performances		DL75	DL95	DL125	DL150	DL180	DL220	DL250	DL270	DL300
Nominal Speed	rpm	600-1000	600-1000	600-1000	600-1000	600-1000	600	1000	600	1000
Max Speed	rpm	660-1100	660-1100	660-1100	660-1100	660-1100	660	1100	660	1100
Air flow at free air condition (nominal speed)	**l/min**	**8100**	**9900**	**12400**	**15000**	**17600**	**21650**	**25000**	**26500**	**30000**
	m³/h	486	594	744	900	1056	1300	1500	1590	1800
Max. Vacuum	%	85	85	85	85	85	85	88	86	88
Power required at Max. Vacuum	kW	12	15	18	23	26	33	41	42	51
Absolute Max. Pressure	bar	2	2	2	2	2	2	2	2	2
Weight DL with smooth/splined shaft	kg	175	173	162	195	188	215	224	240	240

Flow / Power (vacuum / pressure mode)										
Model		Vacuum							Pressure	
		20 %	30 %	40 %	50 %	60 %	70 %	80 %	1,5 bar	2 bar
DL75	m³/h	440	430	405	370	310	190	35	330	260
	kW	3,4	4,7	6	7,3	8,7	10,1	12	8,7	15,3
DL95	m³/h	540	530	500	450	380	230	45	400	320
	kW	4,5	5,9	7,8	9,2	11	12,7	14,5	10	18,5
DL125	m³/h	670	660	620	560	470	290	60	500	400
	kW	6	8,1	9,8	11,6	13,2	15,2	17,5	13	23
DL150	m³/h	795	714	650	578	472	260	83	600	470
	kW	7,8	9,8	12,2	14,5	17	19,5	22,5	17	29,1
DL180	m³/h	968	897	826	738	655	490	94	680	520
	kW	9,5	12,1	14,5	17,5	20,3	23	26	20,5	34
DL220	m³/h	1200	1100	965	824	635	353	118	870	680
	kW	11	14	17,5	20,7	24	27,4	31	23,5	42
DL250	m³/h	1400	1354	1273	1157	983	660	133	1020	830
	kW	15	18	22	25,5	29,2	33,5	38	29	49
DL270	m³/h	1428	1309	1148	980	755	420	140	1035	810
	kW	16	19	23	27	30	35	39	30	50
DL300	m³/h	1670	1615	1518	1380	1173	787	158	1217	990
	kW	19	23	27	31	36	41	46	35	58,5

Note: data referred to nominal speed.

2.3 DL HDR Performances

Performances		DL75HDR	DL95HDR	DL125HDR	DL150HDR	DL180HDR	DL250HDR	DL300HDR
Nominal Speed	rpm	2400	2400	2400	2300	2300	2600	2600
Max Speed	rpm	2600	2500	2500	2500	2500	2700	2700
Air flow at free air condition (nominal speed)	**l/min**	**8100**	**9900**	**12400**	**15000**	**17600**	**25000**	**30000**
	m³/h	486	594	744	900	1056	1500	1800
Max. Vacuum	%	85	85	85	85	85	88	88
Power required at Max. Vacuum	kW	12	15	18	23	26	41	51
Absolute Max. Pressure	bar	2	2	2	2	2	2	2
Weight DL HDR	kg	190	188	208	220	209	235	250

2.4 Sound pressure level

Sound pressure level		DL75-95	DL125-150-180	DL220-250	DL270-300
Noise of the vacuum pump plus both silencers (injection & exhaust). Running conditions: nominal speed, 60 % vacuum rate, distance of 7 meter in open surroundings.	dB (A)	76	77	78	79

2.5 Usage limitations

Model	Max Speed (rpm)			P (bar rel.) Max		T (°C)
	Molt. 600 rpm	Molt. 1100 rpm	HDR	Continuous	Intermittent (**)	
DL75	660	1100	2600	0,8	1,0	160
DL95	660	1100	2500	0,8	1,0	160
DL125	660	1100	2500	0,8	1,0	160
DL150	660	1100	2500	0,8	1,0	160
DL180	660	1100	2500	0,8	1,0	160
DL220	660	-	-	0,8	1,0	160
DL250	-	1100	2700	0,8	1,0	160
DL270	660	-	-	0,8	1,0	160
DL300	-	1100	2700	0,8	1,0	160

P: Inlet absolute pressure
T: inlet air temperature
Room Temperature: -20/+40°C
P max continuos: pressure limit for continuos duty
P max intermittent: pressure limit for intermittent duty
(**): conditions not foreseen for continuous duty

2.6 Lubrication

Recommended mineral gear oil: **BLASIA ISO VG 220**.
In case this oil is not available, it is possible to refill the level with the following lubricants (Range temperature: -10°C e +40°C):

Brand	ENI	ESSO	SHELL	TOTAL	MOBIL	BP	TEXACO HAV.
ISO VG220 (oil)	BLASIA 220	SPARTAN EP 220	OMALA OIL 220	CARTER EP 220	MOBILGEAR 630	ENERGOL GR XP 220	MEROPA 220
NLGI 2 (grease)	GR MU EP2	GP GREASE NLGI 2	ALVANIA GREASE EP2	MULTIS EP2	MOBILUX EP2	GREASE LTX EP2	MULTIFAK EP 2

3. Safety and accident prevention

Attention: carefully apply these prescriptions.

3.1 General recommendations

• 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...).

• To prevent errors and hazardous situations, establish what each operator is responsible for in the different maintenance operations.

• When transporting the compressor use proper slinging. Store the compressor in stable places.

• Before each maintenance operation, stop the pump and restore the atmospheric pressure.

• Make sure that all the parts of the unit are idle and cool, before performing any maintenance operation.

• When the pump is running, some parts may reach very high temperatures (above 100°C). Use all necessary precautions to avoid contact.

• Operators working nearby must avoid prolonged exposure to the noise emitted by the aspirator, if not equipped with the proper ear-protection devices.

• Avoid accidental suction of solids: solids may be projected at high speed through the exhaust manifold and cause injures. A filter must be mounted on the suction line (Mesh 55).

• Do not start the machine if the protection devices provided for transmissions are removed. Replace damaged parts.

• Pressure relief valve: point the air flux away from the operators.

• Do not use the aspirator over its designed limits: the machine may be damage 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).

3.2 Intended use

• Pumps of the DL series can be used as vacuum pumps or as compressors of filtered air on stationary of mobile equipment for creating vacuum, for pneumatic transportation or for the suction inside a tank of liquid or solid waste. Any other use or application has to be considered not suitable for this particular machine

• Used as compressor: remove the intake manifold e close the ports adopting specific flanges.

• User have to prevent the ingress of liquids in the pump.

• This vacuum pump is not designed / suitable for handling toxic (poisonous) explosive or flammable gasses because internal components may reach high temperatures and the same can do the media which is pumped.

Avoid suction of toxic (poisonous) explosive or flammable gasses because internal components may reach high temperatures.

• Liquids or solids infiltrations 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. 2.4): it may break and transmission can be damaged.

3.3 Conveyed fluids

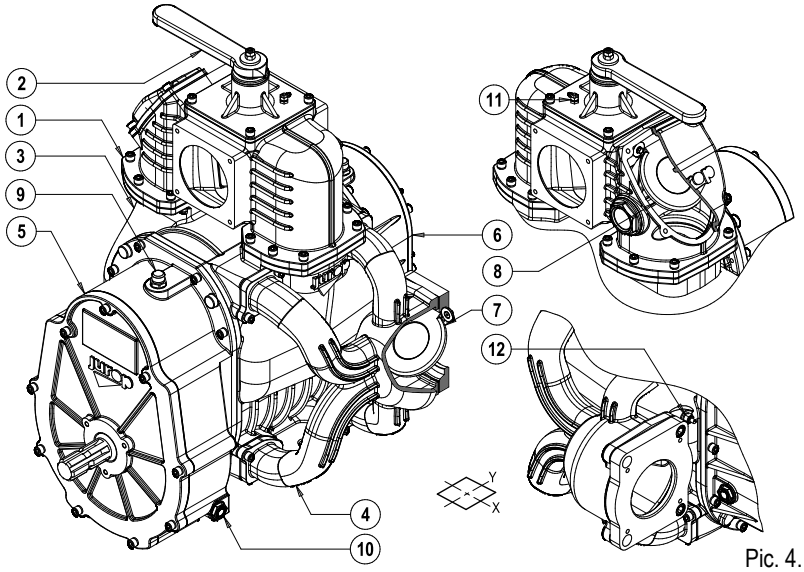
• DL pumps are suitable for conveying filtered air. Before conveying other kind of gases, verify compatibility with compressor's characteristics.

• Please contact Jurop's Technical dept. if necessary.

4. Installation

Main components legend

1. Manifold
2. Vacuum/Pressure change-over valve
3. DL housing
4. Intake manifold
5. Gearbox
6. Rear drive gearbox
7. Non-returne valve (Intake manifold)
8. Non-return valve (Manifold)
9. Lubricant fill up plug
10. Lubricant level control plug
11. Greasing point
12. Safety thermostat (optional)



Pic. 4.1

4.1 Compulsory accessories

• Compulsory accessories for a correct running of the pump:
- Silencer on the exhaust-side (Becomming the suctionside during the pressure work-cycle).
- Silencer on suction-side (filetred) for the cooling system by air injection.
- 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 compressor has its identification plate affixed on the front gearbox. 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 compressor 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 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.

• 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. (See Fig. 4.1).

• The oil level control and drainage plugs are mounted correctly during the final inspection in the factory. Do not change their position.

• The vacuum pump's rotation direction determines the room taken up by the injection system and flow direction (see the paragraph 2.1). Any changes made to rotation direction or to the assembly position must be agreed with our "Technical Assistance".

Any changes made to rotation direction or to the assembly position must be agreed with our Jurop.

• Keep suction filter clean: obstructions may lead to noticeably reduced performance.

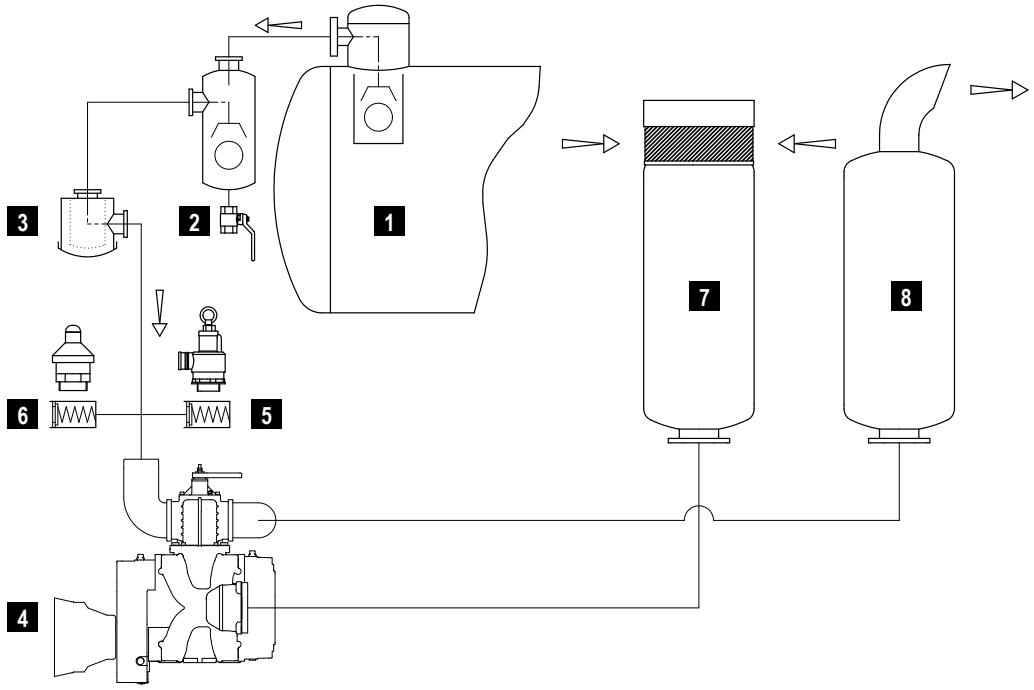
• Keep injection filter clean: obstructions may reduce the air injection cooling performance and cause overheating of the pump.

• Do not embed nor cover the pump.

• The base must not lead heat towards the machine while it is running.

4.5 Vacuum / Pressure line

• See pic. 4.2.



Pic. 4.2

Vacuum / Pressure line components			
1	Primary shutoff	**5**	Over-pressure safety relief valve
2	Secondary shutoff	**6**	Vacuum control valve
3	Suction filter	**7**	Injection silencer
4	DL Pump	**8**	Exhaust silencer

• The diameter of the vacuum and pressure line pipes must be suitable for the pump's flow rate (approximate average air speed is 15-30 m/s); in any case, it should not be smaller than the ports diameter.

• The weight or dimensions of the pipes must in no way stress the DL body. Use high temperature resistant rubber sleeves.

• Remove the port guards when mounting. The pipes and components of the whole line must be clean.

• Avoid constrictions and tight curves where they are not essential.

• The exhaust pipes can reach high temperatures. Protect those adequately from the operator reach.

• A clapet valve on suction pipe avoids rotation in the opposite direction when the pump stops:

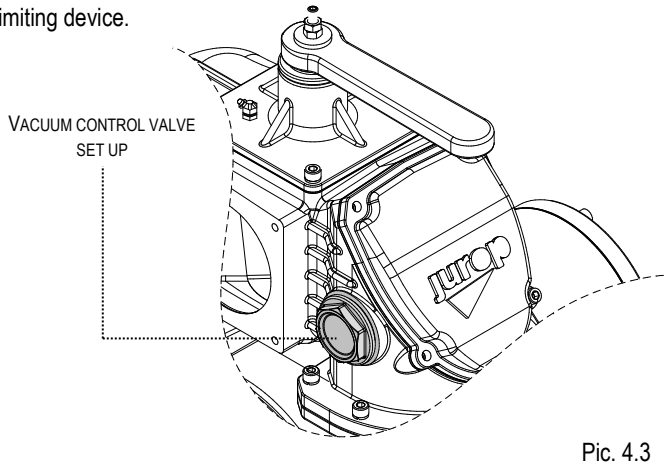
– Second shutoff valve or suction filter. Liquids and materials must never reach the compressor;

– A 4-way change-over valve to obtain alternatively vacuum or pressure in the system (this is not required if the compressor is used only for vacuum or only for pressure).

– A venting valve on the suction line, controlled by the thermostat: when the compressor is overheating, this valve will open a direct connection with the atmosphere and consequently the compressor will suck fresh air, from the outside, for a better cooling (a 2" valve size can be enough for a good cooling without losing too much vacuum rate 30%). Install a silencer filter.

• Over-pressure safety relief valve: it must be dimensioned to discharge the entire air-flow of the pump. The adjustement of this valve has to be kept inside 10% of tollerance of the pump's working pressure and in any case it has to stay inside the given value of the tank's work pressure.

• Vacuum control valve has to be fitted on the suction piping, if the tank's characteristics or the vacuum line will need this kind of vacuum-limiting device.



Pic. 4.3

• In case of operation under pressure, the rotation of 4-way valve changeover allows the intake silencer and sending air in the system. Control the rotation speed to not generate excessive pressure in outlet.

• In case of overheating working under pressure condition, opening of the safety venting valve mounted on suction line will not cool down the pump. The only possible solution is to stop the pump drive and wait for a proper cooling.

• The clapet valve, on the suction line, avoids opposite rotation of the vacuum pump when it is stopped under vacuum conditions. It is recommended to vent the vacuum tank to the atmospheric pressure in the following cases:

- Before servicing the vacuum pump or its drive system. The pressure difference between inlet/outlet ports can start the machine turning automatically;
- Before starting the machine again: otherwise it would require a higher starting torque.

Attention: when pump is stopped under load, vent the system before any maintenance operation.

• An adjustable curved pipe is installed on the outlet of the silencer, in order to prevent rain from entering and to enable positioning (during installation) of the output airflow.

• Direct the silencer discharge output away from the silencer suction inlet in order to prevent the input of hot fluids into the injection inlet.

Attention: direct the silencer discharge output away from the silencer suction inlet.

4.6 Air injection cooling system

• Operating only in the vacuum mode.

• Use only the specific air injection muffler for the DL.

• The muffler should be mounted as close as possible to the vacuum pump (1-1,5 m max) and in a position protected against debris and water:

- Avoid tight curves;
- Avoid pumping nearby heat sources;
- Check the flow direction and the clapet valve positioning (see Fig. 4.1).

• Check weekly the cleanliness of the muffler suction port. Remove all the filth that obstruct the air flow.

• An inefficient air injection could cause the vacuum pump overheating during the vacuum operation.

Attention: an inefficient air injection could cause the vacuum pump overheating during the vacuum operation.

4.7 Overheating alarm (optional)

• The vacuum pump can be equipped at the request of thermostat sensor. (See Fig. 4.1).

• The alarm (available upon request) is composed of a blinking light and a warning buzzer that have to be connected to the thermostat (sensor). It is available at 12V or 24V.

• Consider the thermostat characteristics (See Fig. 4.4).

- Voltage from 6V to 24V with CC, from 6V to 12V with AC.
- Maximum power: 3W.

• When threshold temperature is reached the alarm system is enabled and a gate valve (along vacuum line) is opened.

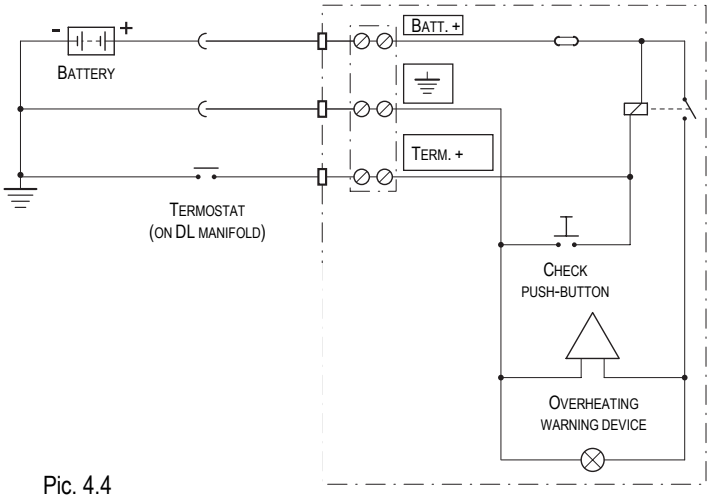
• It has to be mounted in a protected position in order to keep it free from water and other damaging media. Prepare the necessary connections for the electrical feeding.

• If the box supplied as an accessory is not used, make a check circuit as illustrated in Fig. 4.4.

• Overheating can seize the vacuum pump, causing a damage also in the drive line. Stop the pump for cooling or drive it at free ports conditions (with the suction valves fully opened) to let it cool down properly. The pump can be again operated only when the alarm is turned off after cooling.

• Check the muffler cleanliness. Obstructions may cause overheating.

Attention: overheating can seize the vacuum pump, causing a damage also in the drive line.



Pic. 4.4

4.8 Hydraulic actuator adjustment

• Extraordinary maintenance operations can require the upper cover (and that of the actuator, either manual or pneumatic) to be removed. We recommend ensuring enough space to carry out such operations.

• If the cock blocks or it moves with friction, screw up the clearance regulation nut (A). Screw up ¼ of turn each time. Block the nut rotation with the safety nut.

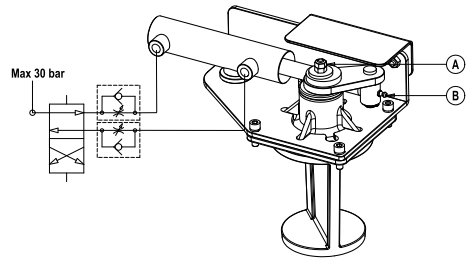
• The lubrication points (B) and the clearance regulation bolt (A) must be accessible. See Fig. 4.5.

• Lubricate with grease every 1000 cycles. Grease type NLGI 2.

• It is suggested to install 2 one-way flow controller between the hydraulic switch and the hydraulic actuator. Set the flow controllers in order to prevent hard hitting through the end of stroke. Minimum commutation time: 1 second.

• Maximum feed pressure: 30 bar.

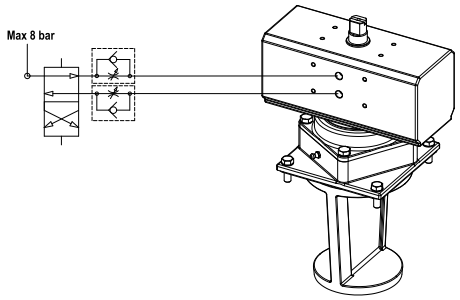
• To order spare parts see spare parts list at the end of this manual.



Pic. 4.5

4.9 Pneumatic actuator adjustment

• In the event of 4-way valves equipped with pneumatic actuator, we recommend installing two one-way flow regulators between the pneumatic "control" and the pneumatic actuator. The following figure shows a schematic view of a possible pneumatic installation.

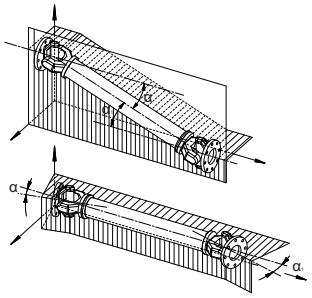


Pic. 4.6

• We recommend adjusting the two flow regulators in order for rotation to occur without knocks and with a switching time of at least one second.

4.10 Pump mounting – drive connection

A) Cardan shaft drive



Pic. 4.7

• Use telescopic cardan shafts.

• In order to achieve a uniform motion of the driven shaft, the following requirements must be met (see Fig. 4.7):

- Equal working angle α and α_1 of both couplings;
- The internal fork joints must be coplanar;
- Both driven and driving shafts must be coplanar.

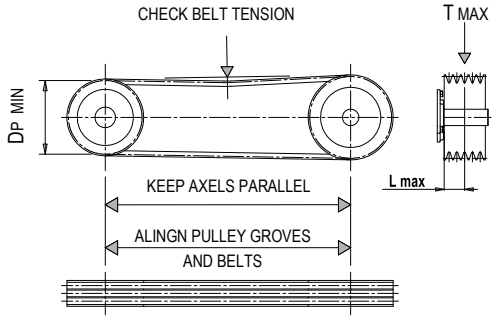
• It is also recommended working with limited articulated joint angles (max 15° at 1000 rpm and max 11° at 1100 rpm) and disengaging the transmission for those operations requiring great angles (steering or lifting).

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

• Use the protection that comes with the Julia group shaft.

Use the cardan protection supplied with the pump. The pump installation must fulfill the current EC injury prevention specifications.

B) Belt drive



Pic. 4.8

• Install a suitable pulley on the smooth shaft as close as possible to the pump in order to avoid excessive bending stress on the drive shaft.

• Apply an adequate belt tension (see list below).

• Do not use driven or driving pulleys with a pitch diameter inferior to values reported in the box below. Small pulleys require a high belt tension which may cause premature wear to the bearing or transmission damages.

• Let the air circulate freely to cool down the pump. Provide protections, which ensure adequate ventilation.

• A limited speed ratio will extend the belts life and reduce stress on the shafts. When possible prefer:

– Pulleys with a pitch diameter bigger than the one indicated;
– Engines or power take-offs with a speed similar to the one of the vacuum pump.

Model	Max Speed (rpm)	T. max (N)	L. max (mm)	Pitch Diameter (mm)	Grooves	Belts
DL 75	1000	1700	35	180	2	XPB
DL 95	1000	2100	35	180	3	XPB
DL 125	1000	2500	35	180	3	XPB
DL 150	1000	3400	35	180	3	XPB
DL 180	1000	4500	35	180	4	XPB
DL 250	1000	5800	40	180	4	XPB
DL 300	1000	6600	40	225	4	XPB

Pitch Diameter. min.: Minimum drive of pulley pitch diameter.

D) Hydraulic Drive (DL HDR)

Model	Displacement	Operating Pressure Max	Max press. draining line	Fluid	Filtration class ISO 4406	Optimal Viscosity	Max. Viscosity	T° oil Max (*)
DL 75	34,5 cc/rev	230 bar	5 bar	HLP	21/19/16	12-100 cSt	750 cSt	70 °C
DL 95	34,5 cc/rev	230 bar	5 bar	HLP	21/19/16	12-100 cSt	750 cSt	70 °C
DL 125	43,7 cc/rev	220 bar	5 bar	HLP	21/19/16	12-100 cSt	750 cSt	70 °C
DL 150	51,1 cc/rev	230 bar	5 bar	HLP	21/19/16	12-100 cSt	750 cSt	70 °C
DL 180	40,0 cc/rev	420 bar	1 bar	HLP	20/18/13	15-30 cSt	1000 cSt	80 °C
DL 250	40,0 cc/rev	420 bar	1 bar	HLP	20/18/13	15-30 cSt	1000 cSt	80 °C
DL 300	40,0 cc/rev	420 bar	1 bar	HLP	20/18/13	15-30 cSt	1000 cSt	80 °C

(*) : Oil temperature, used in the main circuit.

• **Oil flow and pressure:** to be defined according to the vacuum pump performance required, i.e. speed rotation and operating pressure).

• **Fluid**: mineral oil for hydraulic systems in compliance with HLP (DIN 51524); i.e. type A for automatic drives or API CD for motors. Recommended kinematic viscosity when working: 12-100 mm^2/s (DL150) 15-30 mm^2/s (DL180-250-300). At start up kinematic viscosity should not exceed 750 mm^2/s (DL150) 1000 mm^2/s (DL180-250-300). When working minimum viscosity should be 10 mm^2/s.

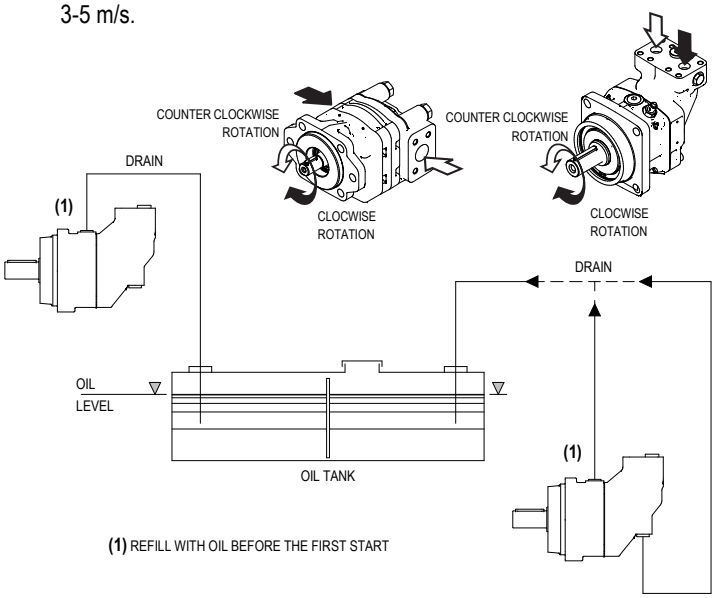
• **Filtration**: absolute filtering 10 µm type with micro fibre cartridges on the pump delivery side. Contamination class ISO 4406 21/19/16 (DN150) 20/18/13 (DN180-250-300).

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

• **Drainage**: connect this line to the oil tank to make sure the motor never operates without oil. Discharge into the tank under free surface or bend the pipe into a U-shape (vedi Fig. 4.9).

• **Distributor**: open-centre distributor in central idle position (vacuum pump off). It must be equipped with an adjustable overpressure safety valve.

• **Pipes line**: average speed through pipes under pressure must be 3-5 m/s.



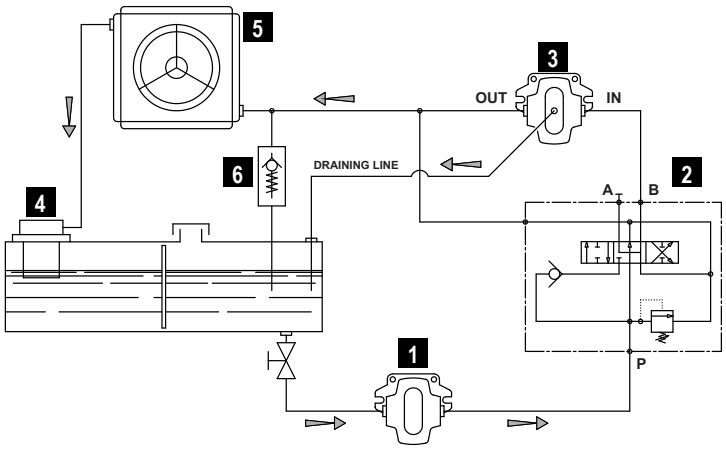
Pic. 4.9

• **Starting**: make sure the system is perfectly clean and put oil in the tank, using a filter. Also fill the motor body with oil: this is necessary to lubricate the internal bearings.

• Bleed off the circuit. Adjust the pressure limiting valve to the lowest possible value.

• Check the level of the oil in the tank.

• Increase pressure and rotation speed until the working values are reached.



1	HDR pump	**4**	Outlet filter
2	Distributor	**5**	Heat exchanger
3	HDR Motor	**6**	Safety valve

• Avoid rotation in the opposite direction to the pump stopping because that may damage the motor both with open and closed circuits (see also Section “Vacuum-Pressure Line”). Protect the hydraulic circuit against overpressures.

• On all the DL ... HDR models use the inductive rev counter sensor, available on request, to check rotation speed. Connect to an electronic rev counter, set for a max. 1.5 kHz inductive sensor adjusted for z=30 (e.g. VDO 3619 12-24V).

5. Start up

5.1 Pump starting-up

• Check the oil level in both gearboxes. If necessary fill-up with the oil type indicated in the lubrication chart.

• Check that all protection and safety devices as well as the overheating alarm are correctly installed.

• Check that no obstacles obstruct the vacuum and pressure line or the air injection cooling system.

• Check rotation direction: open all system valves and start running at slow speed.

• Rotation in the wrong direction is not allowed; pump may be damaged.

Attention: rotation in the wrong direction is not allowed; pump may be damaged.

• Close the valves and increase operating pressure or vacuum rate.

• Check that the overheating warning system is properly working by means of the “check push button”.

• Check efficiency of the system that controls the check valve and the pneumatic actuator on the vacuum/pressure change-over valve (if installed).

• Check rotation speed which should be no higher than the maximum value indicated in paragraph 2.2 e 2.3.

• Check the proper functioning of the safety valves on the vacuum line.

5.2 Operating precautions

• The manufacturer declines all responsibility for damages caused if these installation, operating and maintenance instructions are disregarded.

• The pumps and change-over valve lever get hot during use. Do not touch them with your bare hands: danger of burns. Operate the change-over valve lever wearing protective gloves.

• Direct the silencer discharge away from operators and from the intake duct of the vehicle engine. Direct the silencer discharge output away from the silencer suction inlet in order to prevent the input of hot fluids into the injection inlet.

• The overheating alarm warns the operator that the pump has reached the maximum allowed temperature. It is recommended:

1. If possible, it is suggested to have the pump rotating at “free air condition” (vacuum rate: 0 %) in order to speed up the cooling process. If necessary stop the pump and wait for the temperature reduction.
2. To start running the pump again only when temperature at exhaust is below acceptable values.
3. If the alarm triggers often during normal use, it is necessary to check the conditions of use (temperature, pressures, speed) and the conditions of the system using the check push-button (Fig. 4.4).

• 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.

1. 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.
2. Use one of the openings placed in the vacuum line (closet on the pump) to suck some water mixed with detergent.
3. 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.
4. The detergent mix stays suspended in the pump inside, before being expelled through the exhaust silencer.
5. 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 lo west 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.
6. 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.

Dispose of used oil in accordance with the current regulations.

• Do not convey the exceeding flow outlet towards the suction port.

• Control the air flow by adjusting the rotation speed: do not use the safety relief valve to discharge the exceeding flow.

• Do not squeeze the hoses/pipes.

• When stopping the pump, avoid rotation in the opposite direction. In fact, the difference in pressure between delivery and suction ports can make the rotors turning. Use non-return valves on the line.

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

6. Maintenance

6.1. Ordinary maintenance

• 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.

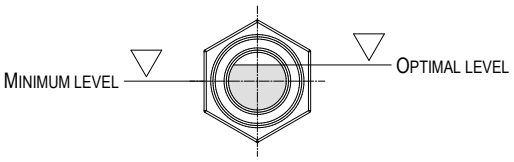
Operating condition	Maintenance Area	Check	8H	50H	500H	1000H
OPERATING	Vacuum Line	Check safety valve (non-return valve)	■			
		Operating pressure	■			
	Transmission / Pump	Rotation speed	■			
		Sound pressure level (also HDR motor)	■			
STANDSTILL	Vacuum Line	Suctions filters	■			
		4-way changeover valve: check and lubricate		■		
		Sewage emptying	■			
	Pump	Check oil level (gearboxes)	■			
		Change oil in front gearbox (*)			■	
		Change oil in rear gearbox (*)			■	
		Pump's inner washing (**)				
		Pump's inner washing with Flushing-Kit	■			
	Overall	Greasing		■		
		Check cardan shaft drive				■
		Chack transmission pulley				■

(*)The first oil change must be done inside 500 hours operation. Following changes every 5000 hours or 12 months. In order to choose the most suitable oil, see paragraph 2.6.

(**) 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.

Check oil level (front / rear gearboxes)

• Check the oil level in both gearboxes (front/rear) when the pump is still and cold. Oil sight, refill and drainage are showed in Fig. 4.1.



• The oil level must not drop below minimum: internal components may rapidly wear.

• The wearing of the internal lip seals will cause the level of oil in the boxes to drop. We strongly recommend that you often check the oil level - every day or at the latest every week - because frequent oil refilling indicates wearing of seals.

• Use synthetic gear oils: **"Mineral oil BLASIA ISO VG 220".**

• In case this oil is not available, it is possible to refill the level with lubricants reported at paragraph 2.6.

• It is recommended to refill the oil level always with the same type: avoid mixing of various oil types.

• Check and change also the washer mounted with the discharge plug.

Dispose of used oil in accordance with the current regulations.

Model	Front gearbox	Rear gearbox
DL 75-…-125	0,75 l	0,40 l
DL 150-…-300	0,80 l	0,80 l
DL HDR	1,60 l	0,80 l

• Do not run the pump with insufficient lubrication: that may cause seals and internal transmission members to wear quickly and/or the compressor to stop with possible breakdown of the drive system.

• Follow installer's instructions for the checking and servicing of vacuum-pressure line components (filters, safety valves, seals, etc.) drive members (belts, hydraulic drive system, etc.) controlling and adjusting devices (revolution counters, sensors, etc.).

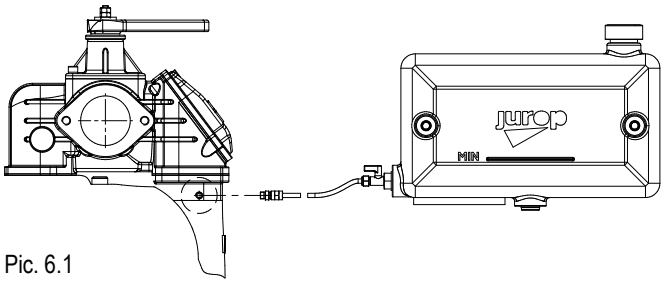
Attention: follow installer's instructions for the checking and servicing of vacuum-pressure line components, drive members, controlling and adjusting devices.

Flushing Kit

• The flush kit is a specific tool for the maintenance of JUROP vacuum pumps. The regular use of the kit helps reducing the repair costs of the pump and increase its life span.

• It's recommended to use the flush kit every week, possibly at the end of the working week or at any time the need arises. Use instructions:

1. Before doing this operation wait for the pump to cool down. Attach the flush kit to the blower (Pic. 6.1).
2. Turn the pump on at a moderate speed.
3. Open the ball valve in order to let the flushing fluid out. We suggest some product like Henkel Bonderite C-NE 5225: 5% concentration in water.
4. Flush about 0,2 litre before turning the ball valve off.
5. Keep the blower running for one minute from the closing of the valve, letting the fluid drain out the pump.
6. Stop the blower.
7. Drain the flushing liquid and dispose of it according to local regulations.



Pic. 6.1

• To order spare parts see spare parts list at the end of this manual.

6.2 Extraordinary maintenance

• Except for the cases described below, extraordinary maintenance on a DL must be carried out by specialized personnel only; otherwise the guarantee will be invalidated.

• Before starting any extraordinary maintenance operation, be sure the pump stands still and follow the safety prescriptions as described in Cap. "Safety and accident prevention".

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

Rotors and pump's body cleaning

• Necessary to eliminate hard formations.
• Remove the pipes from the suction and exhaust ports.
• Clean the inside surface of the body and rotors with solvents and scrape without scratching.

Checking the clapet valve on the injection

• Check it periodically to avoid the accidental suction of solid particles inside the vacuum pump.
• Once every 3 years: change the clapet and related screws and washers.
• Once a year: change the O rings.

Cleaning the seals venting plugs

• Remove the seals venting plugs and clean them with a solvent.
• Do not use compressed air and/or solvents in the seals venting ducts in the pump benches. Internal seals can be damaged.

Do not use compressed air and/or solvents in the seals venting ducts in the pump benches. Internal seals can be damaged.

Every 10.000 working hours: general overhauling

• In case of particularly hard formations, general overhaul of the pump is recommended: rotors wash-up, seals check, replacement of bearing and sealing ring, and lubricant replacement. The servicing operations which require the pump to be completely disassembled must be performed at a Service Centre authorised by Jurop.

The servicing operations which require the pump to be completely disassembled must be performed at a Service Centre authorised by Jurop.

7. Malfunctions: troubleshooting

PROBLEMS

Reduced performances

Cause	Solution
• The vacuum/pressure change-over valve is in the neutral position	• Move the lever to the end of stroke. Adjust change over position
• O-rings worn off	• Change
• The shutoff valves or seals on the tank are worn off	• Change
• The pipes connecting to the tank are leaking or clogged	• Change any damaged pipe
• The float valve or suction filter clogged	• Remove and clean
• Components on the vacuum line are under dimensioned	• Check dimensions for maximum performance
• Safety valves and vacuum control valve are no longer adjusted	• Check correct adjustment

Overheating

Cause	Solution
• Rotation speed is too high	• Reduce speed
• Rotation speed is too slow	• Possible only for short periods of time. Set to nominal speed
• Extended operation with a high rate of vacuum	• Either reduce the rate of vacuum or operating times
• Filters are dirty	• Clean the filters
• The air injection cooling system is not working efficiently	• Check correct assembly and operation
• The diameter of the vacuum and exhaust line is not big enough	• Check pipe lines dimensions

Other problems

Cause	Solution
• The vacuum/pressure change-over valve has difficulty in turning	• Adjust change over position and grease if necessary
• The gears are noisy	• Check the level of oil in the gear boxes
• Frequent refilling up of oil in the gear boxes (no external leaks)	• The O-rings are worn. Change them

8. Scrapping

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

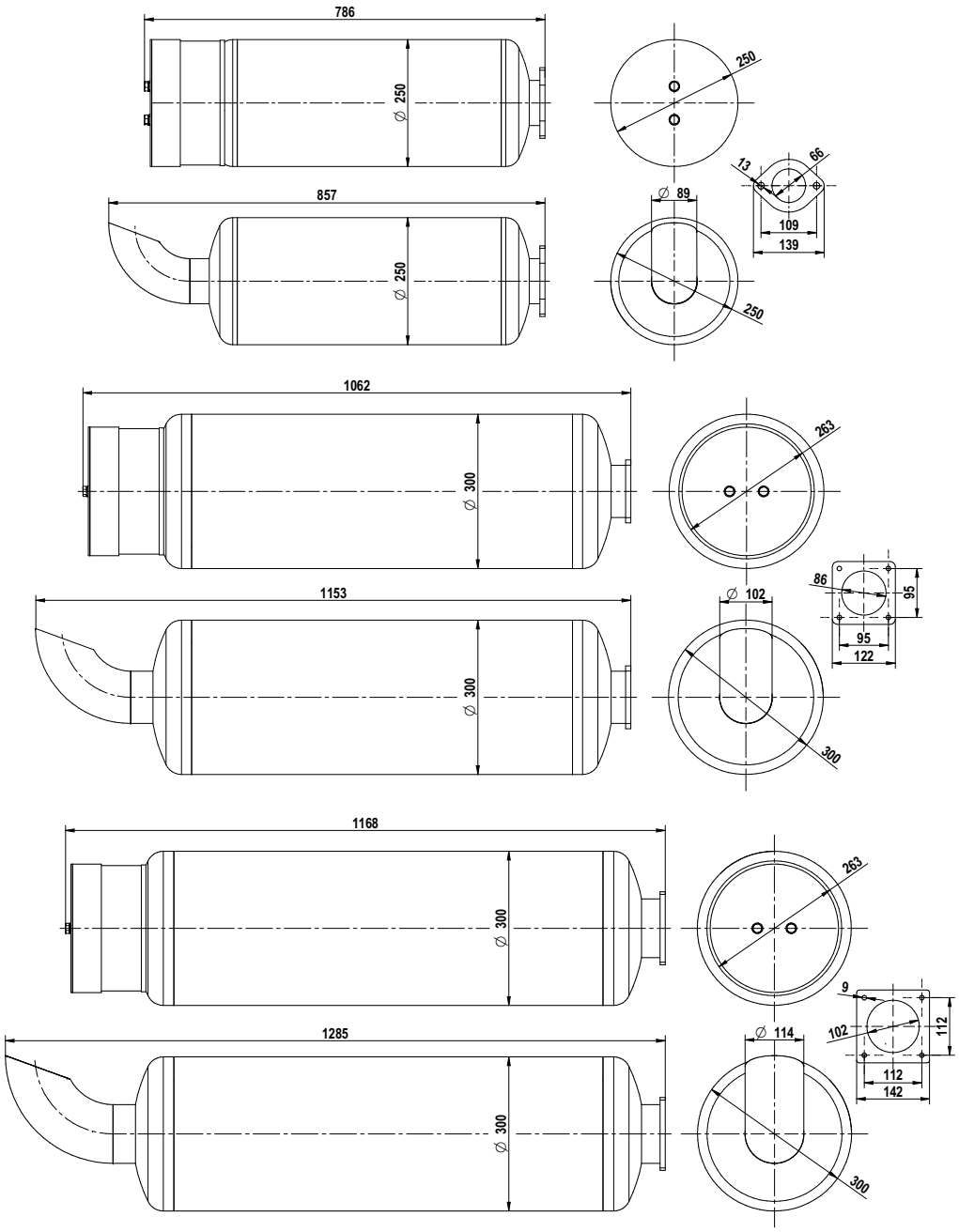
Do not dispose of in the environment. Dispose of in compliance with the standards in force.

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

Material	DL 75	DL 95	DL 125	DL 150	DL 180	DL 220	DL 250	DL 270	DL 300
Cast Iron	84 %	84 %	85 %	82 %	81 %	83 %	83 %	85 %	85 %
Steel	12 %	12 %	12 %	14 %	14 %	13 %	13 %	12 %	12 %
Alluminum	2,6 %	2,7 %	2,5 %	2,9 %	3 %	2,9 %	2,9 %	2,6 %	2,6 %
Bronze	0,1 %	0,1 %	0,1 %	0,1 %	0,1 %	0,0 %	0,0 %	0,0 %	0,0 %
Rubber	0,1 %	0,1 %	0,1 %	0,1 %	0,1 %	0,1 %	0,1 %	0,1 %	0,1 %
Oil	0,8 %	0,8 %	0,7 %	0,8 %	0,9 %	0,8 %	0,8 %	0,7 %	0,7 %
Seals	0,1 %	0,1 %	0,1 %	0,1 %	0,1 %	0,1 %	0,1 %	0,1 %	0,1 %
Plastic	0,3 %	0,3 %	0,3 %	0,2 %	0,2 %	0,2 %	0,2 %	0,2 %	0,2 %

9. Accessories

Injection / Exhaust silencers



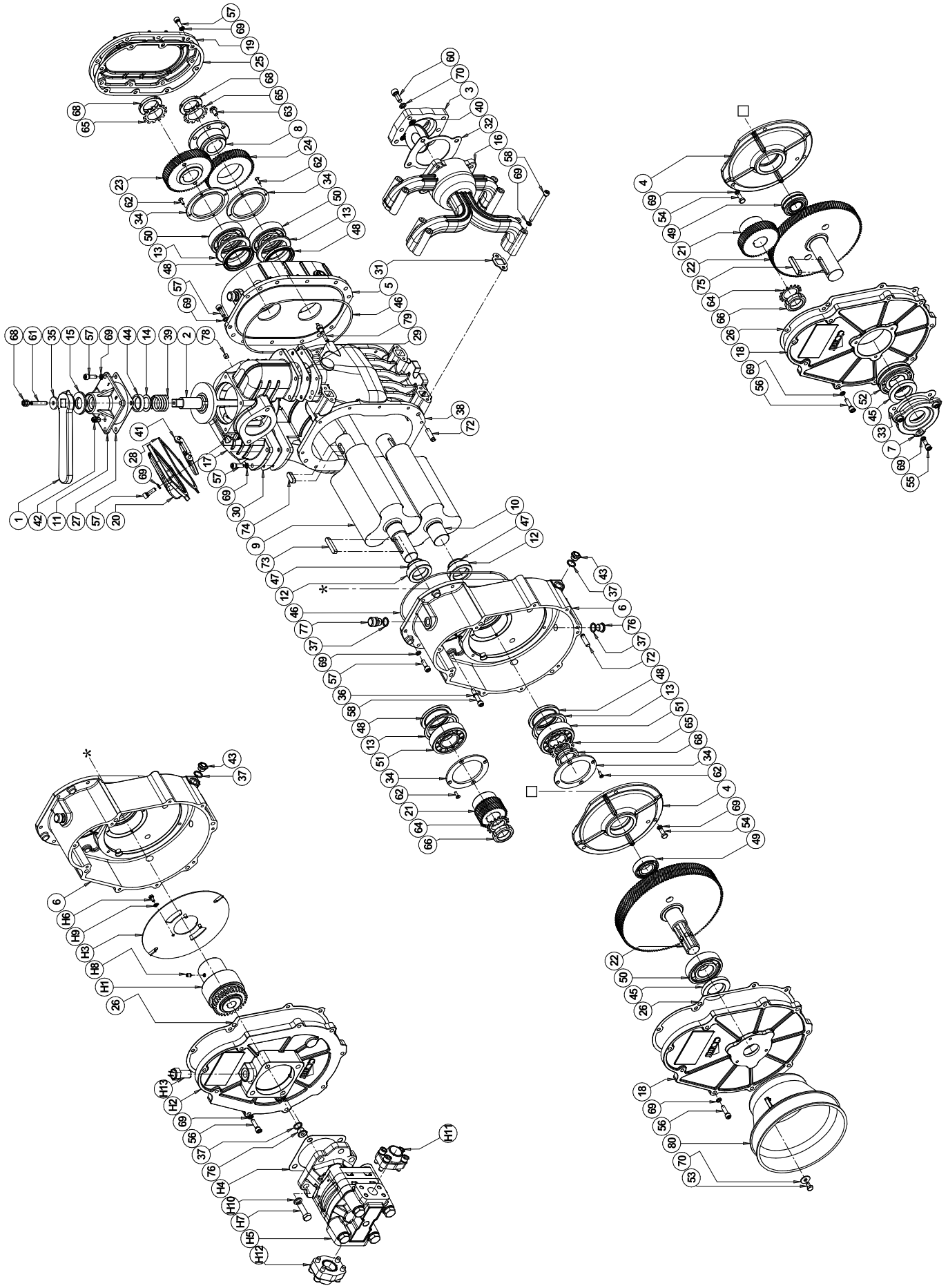
MODEL	DL 75-95-125		DL 150-180		DL 220-250-270-300	
TYPE	INJECTION	EXHAUST	INJECTION	EXHAUST	INJECTION	EXHAUST
CODE IRON VERSION	1445004700	1547004900	1445004010	1547005000	1445004310	1547005100
CODE STAINLESS STEEL VERSION	1445005100	1547005200	1445005210	1547005300	1445004600	1547005400

Note: Direct the silencer discharge output away from the silencer suction inlet in order to prevent the input of hot fluids into the injection inlet.

Overheating alarm box

MODEL	12V	24V
CODE	1406601400	1406601500

DL 75-95-125



DL 75

Pos.	Code	Description	Q.ty
1	1605500100	HANDLE	1
2	1608503100	DL CONVEYOR	1
3	16100151E0	FLANGE	1
4	1610511100	FLANGE (SPLINED SHAFT)	1
	1610511300	FLAGE (SMOOTH SHAFT)	1
5	1610511600	REAR FLANGE	1
6	1610511700	FRONT FLANGE	1
7	1610512400	FRONT FLANGE (SMOOTH SHAFT)	1
8	1611001100	SHAFT	1
9	1621504400	DRIVING LOBE	1
10	1621504500	DRIVEN LOBE	1
11	1623100800	COVER	1
12	1624025800	BUSHING	4
13	1624025900	SEAL SPACER	4
14	162409YKB0	SPACER	1
15	1624202300	SPACER	1
16	16271015E0	INTAKE MANIFOLD	1
17	16275008E0	MANIFOLD	1
18	1640002500	FRONT COVER (SPLINED SHAFT)	1
	1640501000	FRONT COVER (SMOOTH SHAFT)	1
19	1640101900	REAR COVER	1
20	16401098E0	COVER CLAPET VALVE	1
21	1651008100	GEAR Z32 - 600 RPM DL75-95-125	1
	1651008200	GEAR Z47 - 1000 RPM DL75-95-125	1
22	1651008300	GEAR 1"3/8 - 600 RPM	1
	1651008500	GEAR (SMOOTH SHAFT)- 1000 RPM	
23	1651009400	GEAR	1
24	1651009500	GEAR	1
25	1680611700	GASKET (REAR FLANGE)	1
26	1680612100	GASKET (FRONT FLANGE)	1
27	1680700200	GASKET	1
28	16807020E0	GASKET	1
29	16807021E0	GASKET	1
30	16807022E0	GASKET	1
31	16807023E0	GASKET	4
32	16807024E0	GASKET	1
33	1680708800	GASKET	1
34	1681007500	BEARING PLATE	4
35	1685002800	WASHER FE 30X8,5 SP.4	1
36	16851001E0	WASHER 8X13X1,5	6
37	1685100200	WASHER 17X22X1,5	9
38	16875023E0	DL75 HOUSING	1
39	1691000000	SPRING	1
40	18930002E0	CLAPET DN80 INOX OR FKM INT. INJ	1
41	18930009E0	CLAPET DN100 INOX OR FKM ASP.	1
42	4022100107	GREASER 45øM 10X1	1
43	4022104501	PLUG 3/8"	4
44	4022200030	SEAL 41X27X10 GP NBR	1
45	4022200040	SEAL 72X40X10 ASSE BR	1
46	4022200311	O-RING 4975 VITON	2
47	4022200316	O-RING 2137	4
48	4022202804	SEAL BABSL 80X60X7 VITON	4
49	4023100017	BEARING 6206/C3 (SPLINED SHAFT)	1
	4023105002	BEARING 2206 E/CM (SMOOTH SHAFT)	1
50	4023100039	BEARING 6308/C3	3
51	4023110031	BEARING NU 308 ECJ/C3	2
52	4023105006	BEARING 21308 E/C3 (SMOOTH SHAFT)	1
53	4026102802	SCREW TE M8X12 GALV.	3
54	4026102806	SCREW TE M8X20 GALV.	3
55	4026121405	SCREW TCEI M8X20 (SMOOTH SHAFT)	3
56	4026121406	SCREW TCEI M8X30 GALV.	9
57	4026121407	SCREW TCEI M8X25 GALV.	38
58	4026121410	SCREW TCEI M8X45 GALV.	6
59	4026121413	SCREW TCEI M8X90 GALV.	8
60	4026121808	SCREW TCEI M10X25 GALV.	4
61	4026135414	SCREW M8X45 ZINC.	1
62	4026155505	SCREW TSPEI M5X16	16
63	40261D4C10	SCREW TE FLANG M8X20	6
64	4026306307	WASHER 35X1,5	1
65	4026306308	WASHER 40X1,5	3
66	4026306507	WASHER M35X1,5 SELF-BLOCKING	1
67	4026306508	WASHER M40X1,5 SELF-BLOCKING	3
68	4026308005	NUT M 8 ESAG.ZINC.5588	2
69	4026350505	WASHER GROWER 8 GALV.	58
70	4026350506	WASHER GROWER 10 GALV.	4
71	4026356002	WASHER 8X24	3
72	4026401806	PIN 10X36	8
73	4026500909	COTTER10X8X50	1
74	4026501001	COTTER 12X8X32	2
75	4026501006	COTTER 12X8X56	1
76	4026701602	PLUG 3/8 FE GALV.	3
77	4026910102	PLUG	2
78	4026910601	PLUG 1/8'	1
79	4028250201	TERMOSTAT 170øC 6-24V (OPTIONAL)	1
80	4029602806	CARDAN SHAFT PROTECTION	1
	18920037E0	GASKET KIT DL 75-95-125	1
		DL 75 HDR	
H1	1470105000	JOINT HDR	1
H2	1640002700	FRONT COVER HDR	1
H3	1647000200	DISC	1
H4	1680612000	GASKET HDR	1
H5	4024107023	HDR MOTOR	1
H6	4026102702	SCREW TE M6X12 GALV.	3
H7	4026103004	SCREW TE M12X40 GALV.	4
H8	4026136005	SCREW M8X12	1
H9	4026350705	WASHER GROWER 6 GALV.	3
H10	4026350709	WASHER GROWER 12 GALV.	4
H11	4026711002	FLANGE ASF 102G 1" C/OR C/VITI	1
H12	4026711003	FLANGE ASF 104G 1"1/4 C/OR C/VITI	1
H13	4028321601	RPM SENSOR	1

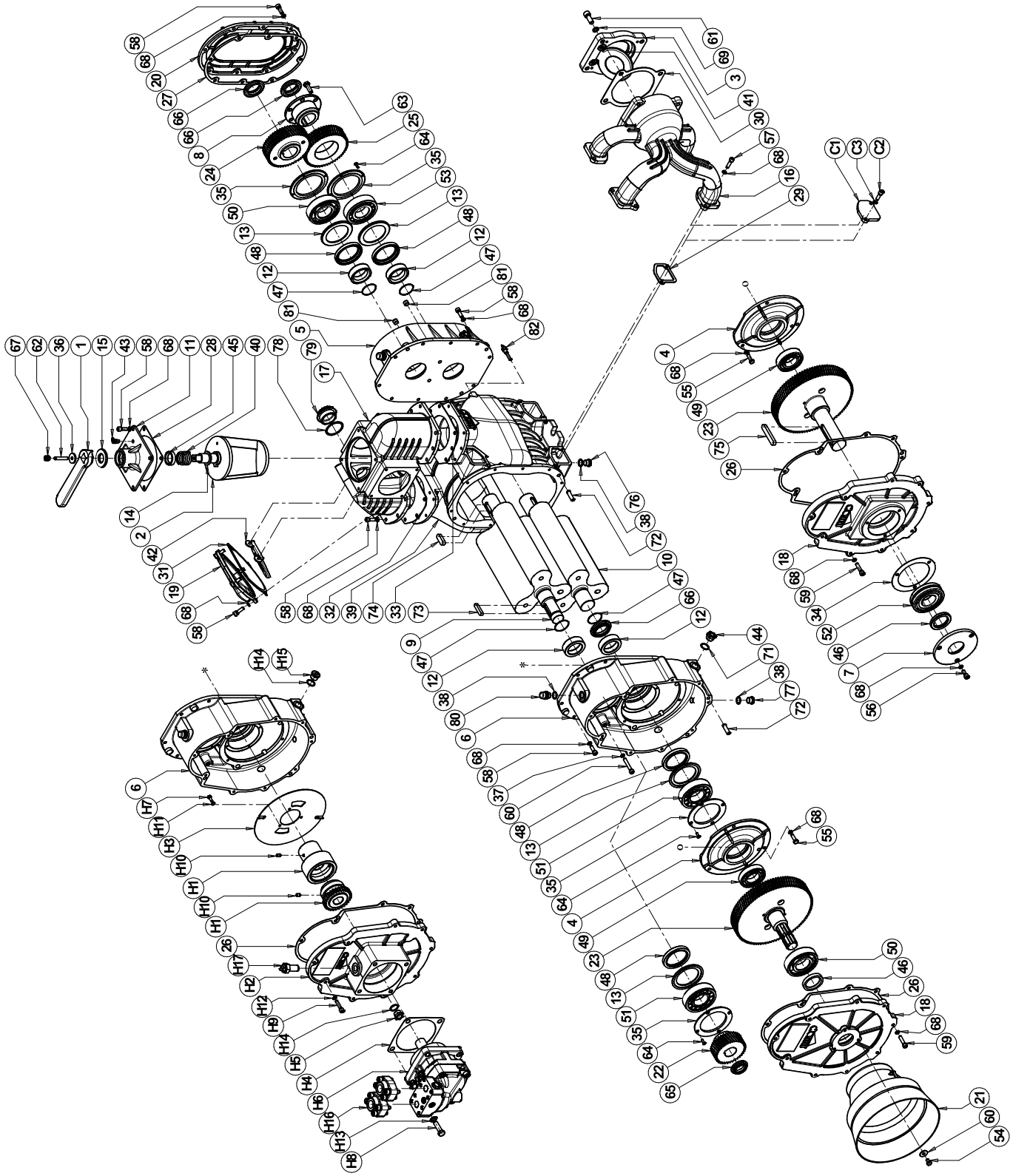
DL 95

Pos.	Code	Description	Q.ty
1	1605500100	HANDLE	1
2	1608503100	DL CONVEYOR	1
3	16100151E0	FLANGE	1
4	1610511100	FLANGE (SPLINED SHAFT)	1
	1610511300	FLAGE (SMOOTH SHAFT)	1
5	1610511600	REAR FLANGE	1
6	1610511700	FRONT FLANGE	1
7	1610512400	FRONT FLANGE (SMOOTH SHAFT)	1
8	1611001100	SHAFT	1
9	1621505000	DRIVING LOBE	1
10	1621505100	DRIVEN LOBE	1
11	1623100800	COVER	1
12	1624025800	BUSHING	4
13	1624025900	SEAL SPACER	4
14	162409YKB0	SPACER	1
15	1624202300	SPACER	1
16	16271015E0	INTAKE MANIFOLD	1
17	16275008E0	MANIFOLD	1
18	1640002500	FRONT COVER (SPLINED SHAFT)	1
	1640501000	FRONT COVER (SMOOTH SHAFT)	1
19	1640101900	REAR COVER	1
20	16401098E0	COVER CLAPET VALVE	1
21	1651008100	GEAR Z32 - 600 RPM DL75-95-125	1
	1651008200	GEAR Z47 - 1000 RPM DL75-95-125	1
22	1651008300	GEAR 1"3/8 - 600 RPM	1
	1651008500	GEAR (SMOOTH SHAFT)- 1000 RPM	
23	1651009400	GEAR	1
24	1651009500	GEAR	1
25	1680611700	GASKET (REAR FLANGE)	1
26	1680612100	GASKET (FRONT FLANGE)	1
27	1680700200	GASKET	1
28	16807020E0	GASKET	1
29	16807021E0	GASKET	1
30	16807022E0	GASKET	1
31	16807023E0	GASKET	4
32	16807024E0	GASKET	1
33	1680708800	GASKET	1
34	1681007500	BEARING PLATE	4
35	1685002800	WASHER FE 30X8,5 SP.4	1
36	16851001E0	WASHER 8X13X1,5	6
37	1685100200	WASHER 17X22X1,5	9
38	16875024E0	DL95 HOUSING	1
39	1691000000	SPRING	1
40	18930002E0	CLAPET DN80 INOX OR FKM INT. INJ	1
41	18930009E0	CLAPET DN100 INOX OR FKM ASP.	1
42	4022100107	GREASER 45øM 10X1	1
43	4022104501	PLUG 3/8"	4
44	4022200030	SEAL 41X27X10 GP NBR	1
45	4022200040	SEAL 72X40X10 ASSE BR	1
46	4022200311	O-RING 4975 VITON	2
47	4022200316	O-RING 2137	4
48	4022202804	SEAL BABSL 80X60X7 VITON	4
49	4023100017	BEARING 6206/C3 (SPLINED SHAFT)	1
	4023105002	BEARING 2206 E/CM (SMOOTH SHAFT)	1
50	4023100039	BEARING 6308/C3	3
51	4023110031	BEARING NU 308 ECJ/C3	2
52	4023105006	BEARING 21308 E/C3 (SMOOTH SHAFT)	1
53	4026102802	SCREW TE M8X12 GALV.	3
54	4026102806	SCREW TE M8X20 GALV.	3
55	4026121405	SCREW TCEI M8X20 (SMOOTH SHAFT)	3
56	4026121406	SCREW TCEI M8X30 GALV.	9
57	4026121407	SCREW TCEI M8X25 GALV.	38
58	4026121410	SCREW TCEI M8X45 GALV.	6
59	4026121413	SCREW TCEI M8X90 GALV.	8
60	4026121808	SCREW TCEI M10X25 GALV.	4
61	4026135414	SCREW M8X45 ZINC.	1
62	4026155505	SCREW TSPEI M5X16	16
63	40261D4C10	SCREW TE FLANG M8X20	6
64	4026306307	WASHER 35X1,5	1
65	4026306308	WASHER 40X1,5	3
66	4026306507	WASHER M35X1,5 SELF-BLOCKING	1
67	4026306508	WASHER M40X1,5 SELF-BLOCKING	3
68	4026308005	NUT M 8 ESAG.ZINC.5588	2
69	4026350505	WASHER GROWER 8 GALV.	58
70	4026350506	WASHER GROWER 10 GALV.	4
71	4026356002	WASHER 8X24	3
72	4026401806	PIN 10X36	8
73	4026500909	COTTER10X8X50	1
74	4026501001	COTTER 12X8X32	2
75	4026501006	COTTER 12X8X56	1
76	4026701602	PLUG 3/8 FE GALV.	3
77	4026910102	PLUG	2
78	4026910601	PLUG 1/8'	1
79	4028250201	TERMOSTAT 170øC 6-24V (OPTIONAL)	1
80	4029602806	CARDAN SHAFT PROTECTION	1
	18920037E0	GASKET KIT DL 75-95-125	1
		DL 95 HDR	
H1	1470105000	JOINT HDR	1
H2	1640002700	FRONT COVER HDR	1
H3	1647000200	DISC	1
H4	1680612000	GASKET HDR	1
H5	4024107023	HDR MOTOR	1
H6	4026102702	SCREW TE M6X12 GALV.	3
H7	4026103004	SCREW TE M12X40 GALV.	4
H8	4026136005	SCREW M8X12	1
H9	4026350705	WASHER GROWER 6 GALV.	3
H10	4026350709	WASHER GROWER 12 GALV.	4
H11	4026711002	FLANGE ASF 102G 1" C/OR C/VITI	1
H12	4026711003	FLANGE ASF 104G 1"1/4 C/OR C/VITI	1
H13	4028321601	RPM SENSOR	1

DL 125

Pos.	Code	Description	Q.ty
1	1605500100	HANDLE	1
2	1608503100	DL CONVEYOR	1
3	16100151E0	FLANGE	1
4	1610511100	FLANGE (SPLINED SHAFT)	1
	1610511300	FLAGE (SMOOTH SHAFT)	1
5	1610511600	REAR FLANGE	1
6	1610511700	FRONT FLANGE	1
7	1610512400	FRONT FLANGE (SMOOTH SHAFT)	1
8	1611001100	SHAFT	1
9	1621505200	DRIVING LOBE	1
10	1621505300	DRIVEN LOBE	1
11	1623100800	COVER	1
12	1624025800	BUSHING	4
13	1624025900	SEAL SPACER	4
14	162409YKB0	SPACER	1
15	1624202300	SPACER	1
16	16271015E0	INTAKE MANIFOLD	1
17	16275008E0	MANIFOLD	1
18	1640002500	FRONT COVER (SPLINED SHAFT)	1
	1640501000	FRONT COVER (SMOOTH SHAFT)	1
19	1640101900	REAR COVER	1
20	16401098E0	COVER CLAPET VALVE	1
21	1651008100	GEAR Z32 - 600 RPM DL75-95-125	1
	1651008200	GEAR Z47 - 1000 RPM DL75-95-125	1
22	1651008300	GEAR 1"3/8 - 600 RPM	1
	1651008500	GEAR (SMOOTH SHAFT)- 1000 RPM	
23	1651009400	GEAR	1
24	1651009500	GEAR	1
25	1680611700	GASKET (REAR FLANGE)	1
26	1680612100	GASKET (FRONT FLANGE)	1
27	1680700200	GASKET	1
28	16807020E0	GASKET	1
29	16807021E0	GASKET	1
30	16807022E0	GASKET	1
31	16807023E0	GASKET	4
32	16807024E0	GASKET	1
33	1680708800	GASKET	1
34	1681007500	BEARING PLATE	4
35	1685002800	WASHER FE 30X8,5 SP.4	1
36	16851001E0	WASHER 8X13X1,5	6
37	1685100200	WASHER 17X22X1,5	9
38	16875025E0	DL125 HOUSING	1
39	1691000000	SPRING	1
40	18930002E0	CLAPET DN80 INOX OR FKM INT. INJ	1
41	18930009E0	CLAPET DN100 INOX OR FKM ASP.	1
42	4022100107	GREASER 45øM 10X1	1
43	4022104501	PLUG 3/8"	4
44	4022200030	SEAL 41X27X10 GP NBR	1
45	4022200040	SEAL 72X40X10 ASSE BR	1
46	4022200311	O-RING 4975 VITON	2
47	4022200316	O-RING 2137	4
48	4022202804	SEAL BABSL 80X60X7 VITON	4
49	4023100017	BEARING 6206/C3 (SPLINED SHAFT)	1
	4023105002	BEARING 2206 E/CM (SMOOTH SHAFT)	1
50	4023100039	BEARING 6308/C3	3
51	4023110031	BEARING NU 308 ECJ/C3	2
52	4023105006	BEARING 21308 E/C3 (SMOOTH SHAFT)	1
53	4026102802	SCREW TE M8X12 GALV.	3
54	4026102806	SCREW TE M8X20 GALV.	3
55	4026121405	SCREW TCEI M8X20 (SMOOTH SHAFT)	3
56	4026121406	SCREW TCEI M8X30 GALV.	9
57	4026121407	SCREW TCEI M8X25 GALV.	38
58	4026121410	SCREW TCEI M8X45 GALV.	6
59	4026121413	SCREW TCEI M8X90 GALV.	8
60	4026121808	SCREW TCEI M10X25 GALV.	4
61	4026135414	SCREW M8X45 ZINC.	1
62	4026155505	SCREW TSPEI M5X16	16
63	40261D4C10	SCREW TE FLANG M8X20	6
64	4026306307	WASHER 35X1,5	1
65	4026306308	WASHER 40X1,5	3
66	4026306507	WASHER M35X1,5 SELF-BLOCKING	1
67	4026306508	WASHER M40X1,5 SELF-BLOCKING	3
68	4026308005	NUT M 8 ESAG.ZINC.5588	2
69	4026350505	WASHER GROWER 8 GALV.	58
70	4026350506	WASHER GROWER 10 GALV.	4
71	4026356002	WASHER 8X24	3
72	4026401806	PIN 10X36	8
73	4026500909	COTTER10X8X50	1
74	4026501001	COTTER 12X8X32	2
75	4026501006	COTTER 12X8X56	1
76	4026701602	PLUG 3/8 FE GALV.	3
77	4026910102	PLUG	2
78	4026910601	PLUG 1/8'	1
79	4028250201	TERMOSTAT 170øC 6-24V (OPTIONAL)	1
80	4029602806	CARDAN SHAFT PROTECTION	1
	18920037E0	GASKET KIT DL 75-95-125	1
		DL 125 HDR	
H1	1470105000	JOINT HDR	1
H2	1640002700	FRONT COVER HDR	1
H3	1647000200	DISC	1
H4	1680612000	GASKET HDR	1
H5	4024107023	HDR MOTOR	1
H6	4026102702	SCREW TE M6X12 GALV.	3
H7	4026103004	SCREW TE M12X40 GALV.	4
H8	4026136005	SCREW M8X12	1
H9	4026350705	WASHER GROWER 6 GALV.	3
H10	4026350709	WASHER GROWER 12 GALV.	4
H11	4026711002	FLANGE ASF 102G 1" C/OR C/VITI	1
H12	4026711003	FLANGE ASF 104G 1"1/4 C/OR C/VITI	1
H13	4028321601	RPM SENSOR	1

DL 150-180-220-250-270-300



DL 150

Pos.	Code	Description	Q.ty
1	1605500100	HANDLE PN12500-R430-PNR142-DL	1
2	1608502500	DL CONVEYOR	1
3	16100066E0	FLANGE	1
4	1610509500	FLANGE (SPLINED SHAFT)	1
	1610511400	FLAGE (SMOOTH SHAFT)	1
5	1610509600	REAR FLANGE	1
6	1610509700	FRONT FLANGE	1
7	1610512300	FRONT FLANGE (SMOOTH SHAFT)	1
8	1611001000	SHAFT	1
9	1621504200	DRIVING LOBE	1
10	1621504300	DRIVEN LOBE	1
11	1623100700	COVER	1
12	1624020100	BUSHING	4
13	1624021100	SEAL SPACER	4
14	162409YKB0	SPACER	1
15	1624202300	SPACER	1
16	16271012E0	INTAKE MANIFOLD	1
17	16275006E0	MANIFOLD	1
18	1640001600	FRONT COVER (SPLINED SHAFT)	1
	1640500900	FRONT COVER (SMOOTH SHAFT)	1
19	16401008E0	COVER CLAPET VALVE	1
20	1640101800	REAR COVER	1
21	4029602807	CARDAN SHAFT PROTECTION	1
22	1651005800	GEAR Z27 – 600 RPM DL150-180	1
	1651005900	GEAR Z 40 - 1000 RPM DL150-180	1
23	1651006000	GEAR 1"3/8 Z 103-600 RPM	1
	1651006100	GEAR 1"3/8 Z 90-1000 RPM DL180	1
	1651009300	GEAR (SMOOTH SHAFT) 1000 RPM	1
24	1651009000	GEAR	1
25	1651009100	GEAR	1
26	1680610300	GASKET (FRONT FLANGE)	1
27	1680610400	GASKET (REAR FLANGE)	1
28	1680707800	GASKET	1
29	16807012E0	GASKET	4
30	16807013E0	GASKET	1
31	16807011E0	GASKET	1
32	16807009E0	GASKET	1
33	16807010E0	GASKET	1
34	1680708700	GASKET	1
35	1681007300	BEARING PLATE	4
36	1685002800	WASHER FE 30X8,5 SP.4 ZINCATA	1
37	16851001E0	WASHER 8X13X1,5	6
38	1685100200	WASHER 17X22X1,5	9
39	16875014E0	DL HOUSING	1
40	1691000000	SPRING	1
41	18930007E0	CLAPET DN110 INOX OR FKM INT. INJ	1
42	18930008E0	CLAPET DN110 INOX OR FKM ASP.	1
43	4022100107	GREASER 45øM 10X1	1
44	4022104502	OIL LEVEL PLUG 1/2"	4
45	4022200030	SEAL 41X27X10 GP NBR	1
46	4022200036	SEAL 62X45X10 ASSE BR	1
	4022200044	SEAL 65X45X8 (SMOOTH SHAFT)	1
47	4022200313	O RING 2162 VITON	4
48	4022202805	BABSL 85X65X10 VITON	4
49	4023100031	BEARING 6208/C3	1
	4023105004	BEARING 21307 CC/C3 (SMOOTH SHAFT)	1
50	4023100047	BEARING 6309/C3	2
51	4023110051	BEARING NU 309 ECJ/C3	2
52	4023105008	BEARING 21309 E/C3 (SMOOTH SHAFT)	1
53	4023116051	BEARING NUP 309 ECJ/C3	1
54	4026102802	SCREW TE M8X12 GALV.	3
55	4026102807	SCREW TE M8X25 GALV.	3
56	4026121405	SCREW TCEI M8X20 GALV.	3
57	4026121417	SCREW TCEI M8X80 GALV.	8
58	4026121407	SCREW TCEI M8X25 GALV.	42
59	4026121408	SCREW TCEI M8X35 GALV.	9
60	4026121411	SCREW TCEI M8X50 GALV.	6
61	4026121709	SCREW TCEI M12X30 GALV.	4
62	4026135414	SCREW M8X45	1
63	40261D1C10	SCREW TE M10X30	6
64	4026155505	SCREW TSPEI M5X16 ZINC.	16
65	402630RB03	WASHER M35X1,5 SELF-BLOCKING	1
66	402630RB05	WASHER M45X1,5 SELF-BLOCKING	3
67	4026308005	NUT M8 HEX. GALV	2
68	4026350505	WASHER GROWER 8 GALV.	68
69	4026350508	WASHER GROWER 12 GALV.	4
70	4026356002	WASHER 8X24	3
71	4026359003	WASHER 21,5X26X1,5 ALUM.	4
72	4026401806	PIN 10X36	10
73	4026500908	COTTER 10X8X45	1
74	4026501601	COTTER 14X9X40	2
75	4026501603	COTTER 14X9X50 (SMOOTH SHAFT)	1
76	4026701602	PLUG 3/8	1
77	4026701620	MAGNETIC PLUG G3/8	2
78	4026702708	WASHER COPPER 1"1/2	1
79	4026904005	PLUG 1"1/2	1
80	4026910102	PLUG	2
81	4026910602	PLUG G1/4	2
82	4028250201	TERMOSTAT 170øC 6-24V (OPTIONAL)	1
	18920008E0	GASKET KIT DL 150-180	1
		DL 150 HDR	
H1	1470105100	JOINT HDR	1
H2	1640002600	FRONT COVER HDR	1
H3	1647000200	DISC	1
H4	1680611900	GASKET HDR	1
H5	4022104502	OIL LEVEL PLUG 1/2"	1
H6	4024107026	HDR MOTOR	1
H7	4026102704	SCREW TE 8,8 M6X16 GALV.	3
H8	4026103004	SCREW TE 8,8 M12X40 GALV.	4
H9	4026120407	SCREW TCEI 8,8 M8X35	9
H10	4026136005	SCREW 12,9 M8X12	2
H11	4026350403	WASHER GROWER M6	3
H12	4026350505	WASHER GROWER 8 GALV.	9
H13	4026350709	WASHER GROWER 12 GALV.	4
H14	4026359003	WASHER 21,5X26X1,5 ALUM.	3
H15	4026701603	PLUG 1/2	2
H16	4026711003	FLANGE ASF 104G 1"1/4	1
	4026711004	FLANGE AFS 106G 1"1/2	1
H17	4028321601	RPM SENSOR	1
		DL 150 COMPRESSOR E VACUM MAX 50%	
C1	16100071E0	FLANGE	4
C2	4026121407	SCREW TCEI M8X25 GALV.	8
C3	4026350505	WASHER GROWER 8 GALV.	8

DL 180

Pos.	Code	Description	Q.ty
1	1605500100	HANDLE PN12500-R430-PNR142-DL	1
2	1608502500	DL CONVEYOR	1
3	16100066E0	FLANGE	1
4	1610509500	FLANGE (SPLINED SHAFT)	1
	1610511400	FLAGE (SMOOTH SHAFT)	1
5	1610509600	REAR FLANGE	1
6	1610509700	FRONT FLANGE	1
7	1610512300	FRONT FLANGE (SMOOTH SHAFT)	1
8	1611001000	SHAFT	1
9	1621503800	DRIVING LOBE	1
10	1621503900	DRIVEN LOBE	1
11	1623100700	COVER	1
12	1624020100	BUSHING	4
13	1624021100	SEAL SPACER	4
14	162409YKB0	SPACER	1
15	1624202300	SPACER	1
16	16271012E0	INTAKE MANIFOLD	1
17	16275006E0	MANIFOLD	1
18	1640001600	FRONT COVER (SPLINED SHAFT)	1
	1640500900	FRONT COVER (SMOOTH SHAFT)	1
19	16401008E0	COVER CLAPET VALVE	1
20	1640101800	REAR COVER	1
21	4029602807	CARDAN SHAFT PROTECTION	1
22	1651005800	GEAR Z27 – 600 RPM DL150-180	1
	1651005900	GEAR Z 40 - 1000 RPM DL150-180	1
23	1651006000	GEAR 1"3/8 Z 103-600 RPM	1
	1651006100	GEAR 1"3/8 Z 90-1000 RPM DL180	1
	1651009300	GEAR 1000 RPM	1
24	1651009000	GEAR	1
25	1651009100	GEAR	1
26	1680610300	GASKET (FRONT FLANGE)	1
27	1680610400	GASKET (REAR FLANGE)	1
28	1680707800	GASKET	1
29	16807012E0	GASKET	4
30	16807013E0	GASKET	1
31	16807011E0	GASKET	1
32	16807009E0	GASKET	1
33	16807010E0	GASKET	1
34	1680708700	GASKET	1
35	1681007300	BEARING PLATE	4
36	1685002800	WASHER FE 30X8,5 SP.4 ZINCATA	1
37	16851001E0	WASHER 8X13X1,5	6
38	1685100200	WASHER 17X22X1,5	9
39	16875013E0	DL HOUSING	1
40	1691000000	SPRING	1
41	18930007E0	CLAPET DN110 INOX OR FKM INT. INJ	1
42	18930008E0	CLAPET DN110 INOX OR FKM ASP.	1
43	4022100107	GREASER 45øM 10X1	1
44	4022104502	OIL LEVEL PLUG 1/2"	4
45	4022200030	SEAL 41X27X10 GP NBR	1
46	4022200036	SEAL 62X45X10 ASSE BR	1
	4022200044	SEAL 65X45X8 (SMOOTH SHAFT)	1
47	4022200313	O RING 2162 VITON	4
48	4022202805	BABSL 85X65X10 VITON	4
49	4023100031	BEARING 6208/C3	1
	4023105004	BEARING 21307 CC/C3 (SMOOTH SHAFT)	1
50	4023100047	BEARING 6309/C3	2
51	4023110051	BEARING NU 309 ECJ/C3	2
52	4023105008	BEARING 21309 E/C3 (SMOOTH SHAFT)	1
53	4023116051	BEARING NUP 309 ECJ/C3	1
54	4026102802	SCREW TE M8X12 GALV.	3
55	4026102807	SCREW TE M8X25 GALV.	3
56	4026121405	SCREW TCEI M8X20 GALV.	3
57	4026121417	SCREW TCEI M8X80 GALV.	8
58	4026121407	SCREW TCEI M8X25 GALV.	42
59	4026121408	SCREW TCEI M8X35 GALV.	9
60	4026121411	SCREW TCEI M8X50 GALV.	6
61	4026121709	SCREW TCEI M12X30 GALV.	4
62	4026135414	SCREW M8X45	1
63	40261D1C10	SCREW TE M10X30	6
64	4026155505	SCREW TSPEI M5X16 ZINC.	16
65	402630RB03	WASHER M35X1,5 SELF-BLOCKING	1
66	402630RB05	WASHER M45X1,5 SELF-BLOCKING	3
67	4026308005	NUT M8 HEX. GALV	2
68	4026350505	WASHER GROWER 8 GALV.	68
69	4026350508	WASHER GROWER 12 GALV.	4
70	4026356002	WASHER 8X24	3
71	4026359003	WASHER 21,5X26X1,5 ALUM.	4
72	4026401806	PIN 10X36	10
73	4026500908	COTTER 10X8X45	1
74	4026501601	COTTER 14X9X40	2
75	4026501603	COTTER 14X9X50 (SMOOTH SHAFT)	1
76	4026701602	PLUG 3/8	1
77	4026701620	MAGNETIC PLUG G3/8	2
78	4026702708	WASHER COPPER 1"1/2	1
79	4026904005	PLUG 1"1/2	1
80	4026910102	PLUG	2
81	4026910602	PLUG G1/4	2
82	4028250201	TERMOSTAT 170øC 6-24V (OPTIONAL)	1
	18920008E0	GASKET KIT DL 150-180	1
		DL 180 HDR	
H1	1470105200	JOINT HDR	1
H2	1640002400	FRONT COVER HDR	1
H3	1647000200	DISC	1
H4	1680611900	GASKET HDR	1
H5	4022104502	OIL LEVEL PLUG 1/2"	1
H6	4024107801	HDR MOTOR	1
H7	4026102704	SCREW TE 8,8 M6X16 GALV.	3
H8	4026103004	SCREW TE 8,8 M12X40 GALV.	4
H9	4026120407	SCREW TCEI 8,8 M8X35	9
H10	4026136005	SCREW 12,9 M8X12	2
H11	4026350403	WASHER GROWER M6	3
H12	4026350505	WASHER GROWER 8 GALV.	9
H13	4026350709	WASHER GROWER 12 GALV.	4
H14	4026359003	WASHER 21,5X26X1,5 ALUM.	3
H15	4026701603	PLUG 1/2	2
H16	4026711252	FLANGE SAE6000 3/4" AFS402GM	2
H17	4028321601	RPM SENSOR	1
		DL 180 COMPRESSOR E VACUM MAX 50%	
C1	16100071E0	FLANGE	4
C2	4026121407	SCREW TCEI M8X25 GALV.	8
C3	4026350505	WASHER GROWER 8 GALV.	8

DL 220

Pos.	Code	Description	Q.ty
1	1605500100	HANDLE PN12500-R430-PNR142-DL	1
2	1608502600	DL COVEYOR	1
3	16100040E0	FLANGE	1
4	1610509500	FLANGE (SPLINED SHAFT)	1
	1610511400	FLANGE (SMOOTH SHAFT)	1
5	1610509600	REAR FLANGE	1
6	1610509700	FRONT FLANGE	1
7	1610512300	FRONT FLANGE (SMOOTH SHAFT)	1
8	1611001000	SHAFT	1
9	1621504000	DRIVING LOBE	1
10	1621504100	DRIVEN LOBE	1
11	1623100600	COVER	1
12	1624020100	BUSHING	4
13	1624021100	SEAL SPACER	4
14	162409YKB0	SPACER	1
15	1624202300	SPACER	1
16	16271010E0	INTAKE MANIFOLD	1
17	16275005E0	MANIFOLD	1
18	1640001600	FRONT COVER (SPLINED SHAFT)	1
	1640500900	FRONT COVER (SMOOTH SHAFT)	1
19	16401004E0	COVER CLAPET VALVE	1
20	1640101800	REAR COVER	1
21	16426CR1B0	CARDAN SHAFT PROTECTION	1
22	1651007400	GEAR Z 27 – 600RPM DL220	1
23	1651007300	GEAR 1"3/8 Z 103-600RPM DL220	1
24	1651009000	GEAR.	1
25	1651009100	GEAR.	1
26	1680610300	GASKET (FRONT FLANGE)	1
27	1680610400	GASKET (REAR FLANGE)	1
28	1680612200	GASKET	1
29	16807004E0	GAKET INTAKE MANIFOLS	4
30	16807005E0	GASKET CLAPET VALVE	1
31	16807006E0	GASKET COVER CLAPET VALVE	1
32	16807007E0	GASKET (SUCTION)	1
33	16807008E0	GASKET (EXHAUST)	1
34	1680708700	GASKET (FRONT FLANGE SMOOTH SHAFT)	1
35	1681007300	BEARING PLATE	4
36	1685002800	WASHER 30X8,5 SP.4 GALV.	1
37	16851001E0	WASHER 8X13X1,5 COPPER	6
38	1685100200	WASHER 17X22X1,5 ALUMINUM	9
39	16875010E0	DL HOUSING	1
40	1691000000	SPRING	1
41	18930004E0	CLAPET DN125 INOX OR FKM INT. INJ	1
42	18930006E0	CLAPET DN125 INOX OR FKM ASP.	1
43	4022100107	GREASER 45øM 10X1	1
44	4022104502	OIL LEVEL PLUG 1/2"	4
45	4022200030	SEAL 41X27X10 GP NBR	1
46	4022200036	SEAL 62X45X10 (SPLINED SHAFT)	1
	4022200044	SEAL 65X45X8 (SMOOTH SHAFT)	1
47	4022200313	SEAL OR 2162 VITON	4
48	4022202805	SEAL 85X65X10 VITON	4
49	4023100031	BEARING 6208/C3	1
	4023105004	BEARING 21307 CC/C3 (SMOOTH SHAFT)	1
50	4023100047	BEARING 6309/C3	2
51	4023110051	BEARING NU 309 ECJ/C3	2
52	4023105008	BEARING 21309 E/C3 (SMOOTH SHAFT)	1
53	4023116051	BEARING NUP 309 ECJ/C3	1
54	4026102802	SCREW TE M8X12 GALV.	3
55	4026102807	SCREW TE M8X25 GALV.	3
56	4026121405	SCREW TCEI M8X20 GALV.	3
57	4026121406	SCREW TCEI M8X30 GALV.	8
58	4026121407	SCREW TCEI M8X25 GALV.	42
59	4026121408	SCREW TCEI M8X35 GALV.	9
60	4026121411	SCREW TCEI M8X50 GALV.	6
61	4026121709	SCREW TCEI M12X30 GALV.	4
62	4026135415	SCREW M8X50	1
63	40261D1C10	SCREW TE M10X25	6
64	4026155505	SCREW TSPEI M5X16 GALV.	16
65	402630RB03	WASHER M35X1,5 SELF-BLOCKING	1
66	402630RB05	WASHER M45X1,5 SELF-BLOCKING	3
67	4026308005	NUT M8 HEX. GALV	2
68	4026350505	WASHER GROWER 8 GALV.	68
69	4026350508	WASHER GROWER 12 GALV.	4
70	4026356002	WASHER 8X24	3
71	4026359003	WASHER 21,5X26X1,5 ALUM.	4
72	4026401806	PIN 10X36	10
73	4026500908	COTTER 10X8X45	1
74	4026501601	COTTER 14X9X40	2
75	4026501607	COTTER 14X9X80 (SMOOTH SHAFT)	1
76	4026701602	PLUG 3/8	1
77	4026701620	MAGNETIC PLUG G3/8	2
78	4026702708	WASHER COPPER 1"1/2	1
79	4026904005	PLUG 1"1/2	1
80	4026910102	PLUG	2
81	4026910602	PLUG G1/4	2
82	4028250201	TERMOSTAT 170øC 6-24V (OPTIONAL)	1
	18920007E0	GASKET KIT DL 220-250	1
		DL 220 COMPRESSOR AND VACUM MAX 50%	
C1	16100044E0	FLANGE	4
C2	4026121407	SCREW TCEI M8X25 GALV.	8
C3	4026350505	WASHER GROWER 8 GALV.	8

DL 250

Pos.	Code	Description	Q.ty
1	1605500100	HANDLE PN12500-R430-PNR142-DL	1
2	1608502600	DL COVEYOR	1
3	16100040E0	FLANGE	1
4	1610509500	FLANGE (SPLINED SHAFT)	1
	1610511400	FLANGE (SMOOTH SHAFT)	1
5	1610509600	REAR FLANGE	1
6	1610509700	FRONT FLANGE	1
7	1610512300	FRONT FLANGE (SMOOTH SHAFT)	1
8	1611001000	SHAFT	1
9	1621504000	DRIVING LOBE	1
10	1621504100	DRIVEN LOBE	1
11	1623100600	COVER	1
12	1624020100	BUSHING	4
13	1624021100	SEAL SPACER	4
14	162409YKB0	SPACER	1
15	1624202300	SPACER	1
16	16271010E0	INTAKE MANIFOLD	1
17	16275005E0	MANIFOLD	1
18	1640001600	FRONT COVER (SPLINED SHAFT)	1
	1640500900	FRONT COVER (SMOOTH SHAFT)	1
19	16401004E0	COVER CLAPET VALVE	1
20	1640101800	REAR COVER	1
21	16426CR1B0	CARDAN SHAFT PROTECTION	1
22	1651007700	GEAR Z 36 – 1000RPM DL250	1
23	1651007800	GEAR 1"3/8 Z 94-1000RPM DL250	1
	1651009200	GEAR Z94-1000RPM	1
24	1651009000	GEAR.	1
25	1651009100	GEAR.	1
26	1680610300	GASKET (FRONT FLANGE)	1
27	1680610400	GASKET (REAR FLANGE)	1
28	1680612200	GASKET	1
29	16807004E0	GAKET INTAKE MANIFOLS	4
30	16807005E0	GASKET CLAPET VALVE	1
31	16807006E0	GASKET COVER CLAPET VALVE	1
32	16807007E0	GASKET (SUCTION)	1
33	16807008E0	GASKET (EXHAUST)	1
34	1680708700	GASKET (FRONT FLANGE SMOOTH SHAFT)	1
35	1681007300	BEARING PLATE	4
36	1685002800	WASHER 30X8,5 SP.4 GALV.	1
37	16851001E0	WASHER 8X13X1,5 COPPER	6
38	1685100200	WASHER 17X22X1,5 ALUMINUM	9
39	16875010E0	DL HOUSING	1
40	1691000000	SPRING	1
41	18930004E0	CLAPET DN125 INOX OR FKM INT. INJ	1
42	18930006E0	CLAPET DN125 INOX OR FKM ASP.	1
43	4022100107	GREASER 45øM 10X1	1
44	4022104502	OIL LEVEL PLUG 1/2"	4
45	4022200030	SEAL 41X27X10 GP NBR	1
46	4022200036	SEAL 62X45X10 (SPLINED SHAFT)	1
	4022200044	SEAL 65X45X8 (SMOOTH SHAFT)	1
47	4022200313	SEAL OR 2162 VITON	4
48	4022202805	SEAL 85X65X10 VITON	4
49	4023100031	BEARING 6208/C3	1
	4023105004	BEARING 21307 CC/C3 (SMOOTH SHAFT)	1
50	4023100047	BEARING 6309/C3	2
51	4023110051	BEARING NU 309 ECJ/C3	2
52	4023105008	BEARING 21309 E/C3 (SMOOTH SHAFT)	1
53	4023116051	BEARING NUP 309 ECJ/C3	1
54	4026102802	SCREW TE M8X12 GALV.	3
55	4026102807	SCREW TE M8X25 GALV.	3
56	4026121405	SCREW TCEI M8X20 GALV.	3
57	4026121406	SCREW TCEI M8X30 GALV.	8
58	4026121407	SCREW TCEI M8X25 GALV.	42
59	4026121408	SCREW TCEI M8X35 GALV.	9
60	4026121411	SCREW TCEI M8X50 GALV.	6
61	4026121709	SCREW TCEI M12X30 GALV.	4
62	4026135415	SCREW M8X50	1
63	40261D1C10	SCREW TE M10X25	6
64	4026155505	SCREW TSPEI M5X16 GALV.	16
65	402630RB03	WASHER M35X1,5 SELF-BLOCKING	1
66	402630RB05	WASHER M45X1,5 SELF-BLOCKING	3
67	4026308005	NUT M8 HEX. GALV	2
68	4026350505	WASHER GROWER 8 GALV.	68
69	4026350508	WASHER GROWER 12 GALV.	4
70	4026356002	WASHER 8X24	3
71	4026359003	WASHER 21,5X26X1,5 ALUM.	4
72	4026401806	PIN 10X36	10
73	4026500908	COTTER 10X8X45	1
74	4026501601	COTTER 14X9X40	2
75	4026501607	COTTER 14X9X80 (SMOOTH SHAFT)	1
76	4026701602	PLUG 3/8	1
77	4026701620	MAGNETIC PLUG G3/8	2
78	4026702708	WASHER COPPER 1"1/2	1
79	4026904005	PLUG 1"1/2	1
80	4026910102	PLUG	2
81	4026910602	PLUG G1/4	2
82	4028250201	TERMOSTAT 170øC 6-24V (OPTIONAL)	1
	18920007E0	GASKET KIT DL 220-250	1
		DL 250 HDR	
H1	1470105200	JOINT HDR	1
H2	1640002400	COPERCHIO ANTERIORE HDR	1
H3	1647000200	DISC	1
H4	1680611900	GASKET HDR	1
H5	4022104502	OIL LEVEL PLUG 1/2"	1
H6	4024107801	HDR MOTOR	1
H7	4026102704	SCREW TE 8,8 M6X16 GALV.	3
H8	4026103004	SCREW TE 8,8 M12X40 GALV.	4
H9	4026120407	SCREW TCEI 8,8 M8X35	9
H10	4026136005	SCREW 12,9 M8X12	2
H11	4026350403	WASHER GROWER M6	3
H12	4026350505	WASHER GROWER 8 GALV.	9
H13	4026350709	WASHER GROWER 12 GALV.	4
H14	4026359003	WASHER 21,5X26X1,5 ALUM.	3
H15	4026701603	PLUG 1/2	2
H16	4026711252	FLANGE SAE6000 3/4" AFS402GM	2
H17	4028321601	RPM SENSOR	1
		DL 250 COMPRESSOR AND VACUM MAX 50%	
C1	16100044E0	FLANGE	4
C2	4026121407	SCREW TCEI M8X25 GALV.	8
C3	4026350505	WASHER GROWER 8 GALV.	8

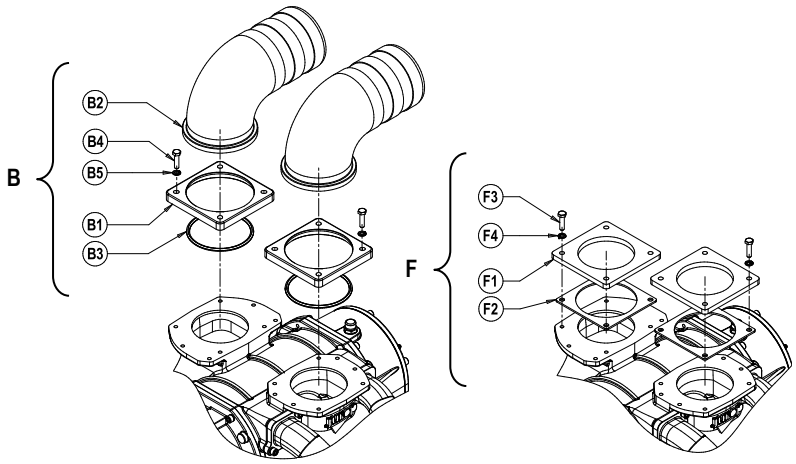
DL 270

Pos.	Code	Description	Q.ty
1	1605500100	HANDLE PN12500-R430-PNR142-DL	1
2	1608502600	DL COVEYOR	1
3	16100040E0	FLANGE	1
4	1610509500	FLANGE (SPLINED SHAFT)	1
	1610511400	FLANGE (SMOOTH SHAFT)	1
5	1610509600	REAR FLANGE	1
6	1610509700	FRONT FLANGE	1
7	1610512300	FRONT FLANGE (SMOOTH SHAFT)	1
8	1611001000	SHAFT	1
9	16215031E0	DRIVING LOBE	1
10	16215032E0	DRIVEN LOBE	1
11	1623100600	COVER	1
12	1624020100	BUSHING	4
13	1624021100	SEAL SPACER	4
14	162409YKB0	SPACER	1
15	1624202300	SPACER	1
16	16271010E0	INTAKE MANIFOLD	1
17	16275005E0	MANIFOLD	1
18	1640001600	FRONT COVER (SPLINED SHAFT)	1
	1640500900	FRONT COVER (SMOOTH SHAFT)	1
19	16401004E0	COVER CLAPET VALVE	1
20	1640101800	REAR COVER	1
21	4029602807	CARDAN SHAFT PROTECTION	1
22	1651007400	GEAR Z 27 – 600RPM DL220	1
23	1651007300	GEAR 1"3/8 Z 103-600RPM DL220	1
24	1651009000	GEAR.	1
25	1651009100	GEAR.	1
26	1680610300	GASKET (FRONT FLANGE)	1
27	1680610400	GASKET (REAR FLANGE)	1
28	1680612200	GASKET	1
29	16807004E0	GAKET INTAKE MANIFOLS	4
30	16807005E0	GASKET CLAPET VALVE	1
31	16807006E0	GASKET COVER CLAPET VALVE	1
32	16807007E0	GASKET (SUCTION)	1
33	16807008E0	GASKET (EXHAUST)	1
34	1680708700	GASKET (FRONT FLANGE SMOOTH SHAFT)	1
35	1681007300	BEARING PLATE	4
36	1685002800	WASHER 30X8,5 SP.4 GALV.	1
37	16851001E0	WASHER 8X13X1,5 COPPER	6
38	1685100200	WASHER 17X22X1,5 ALUMINUM	9
39	16875021E0	DL HOUSING	1
40	1691000000	SPRING	1
41	18930004E0	CLAPET DN125 INOX OR FKM INT. INJ	1
42	18930006E0	CLAPET DN125 INOX OR FKM ASP.	1
43	4022100107	GREASER 45øM 10X1	1
44	4022104502	OIL LEVEL PLUG 1/2"	4
45	4022200030	SEAL 41X27X10 GP NBR	1
46	4022200036	SEAL 62X45X10 (SPLINED SHAFT)	1
	4022200044	SEAL 65X45X8 (SMOOTH SHAFT)	1
47	4022200313	SEAL OR 2162 VITON	4
48	4022202805	SEAL 85X65X10 VITON	4
49	4023100031	BEARING 6208/C3	1
	4023105004	BEARING 21307 CC/C3 (SMOOTH SHAFT)	1
50	4023100047	BEARING 6309/C3	2
51	4023110051	BEARING NU 309 ECJ/C3	2
52	4023105008	BEARING 21309 E/C3 (SMOOTH SHAFT)	1
53	4023116051	BEARING NUP 309 ECJ/C3	1
54	4026102802	SCREW TE M8X12 GALV.	3
55	4026102807	SCREW TE M8X25 GALV.	3
56	4026121405	SCREW TCEI M8X20 GALV.	3
57	4026121406	SCREW TCEI M8X30 GALV.	8
58	4026121407	SCREW TCEI M8X25 GALV.	42
59	4026121408	SCREW TCEI M8X35 GALV.	9
60	4026121411	SCREW TCEI M8X50 GALV.	6
61	4026121709	SCREW TCEI M12X30 GALV.	4
62	4026135414	SCREW M8X45	1
63	40261D1C10	SCREW TE M10X25	6
64	4026155505	SCREW TSPEI M5X16 GALV.	16
65	402630RB03	WASHER M35X1,5 SELF-BLOCKING	1
66	402630RB05	WASHER M45X1,5 SELF-BLOCKING	3
67	4026308005	NUT M8 HEX. GALV	2
68	4026350505	WASHER GROWER 8 GALV.	68
69	4026350508	WASHER GROWER 12 GALV.	4
70	4026356002	WASHER 8X24	3
71	4026359003	WASHER 21,5X26X1,5 ALUM.	4
72	4026401806	PIN 10X36	10
73	4026500908	COTTER 10X8X45	1
74	4026501601	COTTER 14X9X40	2
75	4026501607	COTTER 14X9X80 (SMOOTH SHAFT)	1
76	4026701602	PLUG 3/8	1
77	4026701620	MAGNETIC PLUG G3/8	2
78	4026702708	WASHER COPPER 1"1/2	1
79	4026904005	PLUG 1"1/2	1
80	4026910102	PLUG	2
81	4026910602	PLUG G1/4	2
82	4028250201	TERMOSTAT 170øC 6-24V (OPTIONAL)	1
	18920007E0	GASKET KIT DL 220-250	1
		DL 270 COMPRESSOR AND VACUM MAX 50%	
C1	16100044E0	FLANGE	4
C2	4026121407	SCREW TCEI M8X25 GALV.	8
C3	4026350505	WASHER GROWER 8 GALV.	8

DL 300

Pos.	Code	Description	Q.ty
1	1605500100	HANDLE PN12500-R430-PNR142-DL	1
2	1608502600	DL COVEYOR	1
3	16100040E0	FLANGE	1
4	1610509500	FLANGE (SPLINED SHAFT)	1
	1610511400	FLANGE (SMOOTH SHAFT)	1
5	1610509600	REAR FLANGE	1
6	1610509700	FRONT FLANGE	1
7	1610512300	FRONT FLANGE (SMOOTH SHAFT)	1
8	1611001000	SHAFT	1
9	16215031E0	DRIVING LOBE	1
10	16215032E0	DRIVEN LOBE	1
11	1623100600	COVER	1
12	1624020100	BUSHING	4
13	1624021100	SEAL SPACER	4
14	162409YKB0	SPACER	1
15	1624202300	SPACER	1
16	16271010E0	INTAKE MANIFOLD	1
17	16275005E0	MANIFOLD	1
18	1640001600	FRONT COVER (SPLINED SHAFT)	1
	1640500900	FRONT COVER (SMOOTH SHAFT)	1
19	16401004E0	COVER CLAPET VALVE	1
20	1640101800	REAR COVER	1
21	4029602807	CARDAN SHAFT PROTECTION	1
22	1651007700	GEAR Z 36 – 1000RPM DL250	1
23	1651007800	GEAR 1"3/8 Z 94-1000RPM DL250	1
	1651009200	GEAR Z94-1000RPM	1
24	1651009000	GEAR.	1
25	1651009100	GEAR.	1
26	1680610300	GASKET (FRONT FLANGE)	1
27	1680610400	GASKET (REAR FLANGE)	1
28	1680612200	GASKET	1
29	16807004E0	GAKET INTAKE MANIFOLS	4
30	16807005E0	GASKET CLAPET VALVE	1
31	16807006E0	GASKET COVER CLAPET VALVE	1
32	16807007E0	GASKET (SUCTION)	1
33	16807008E0	GASKET (EXHAUST)	1
34	1680708700	GASKET (FRONT FLANGE SMOOTH SHAFT)	1
35	1681007300	BEARING PLATE	4
36	1685002800	WASHER 30X8,5 SP.4 GALV.	1
37	16851001E0	WASHER 8X13X1,5 COPPER	6
38	1685100200	WASHER 17X22X1,5 ALUMINUM	9
39	16875021E0	DL HOUSING	1
40	1691000000	SPRING	1
41	18930004E0	CLAPET DN125 INOX OR FKM INT. INJ	1
42	18930006E0	CLAPET DN125 INOX OR FKM ASP.	1
43	4022100107	GREASER 45øM 10X1	1
44	4022104502	OIL LEVEL PLUG 1/2"	4
45	4022200030	SEAL 41X27X10 GP NBR	1
46	4022200036	SEAL 62X45X10 (SPLINED SHAFT)	1
	4022200044	SEAL 65X45X8 (SMOOTH SHAFT)	1
47	4022200313	SEAL OR 2162 VITON	4
48	4022202805	SEAL 85X65X10 VITON	4
49	4023100031	BEARING 6208/C3	1
	4023105004	BEARING 21307 CC/C3 (SMOOTH SHAFT)	1
50	4023100047	BEARING 6309/C3	2
51	4023110051	BEARING NU 309 ECJ/C3	2
52	4023105008	BEARING 21309 E/C3 (SMOOTH SHAFT)	1
53	4023116051	BEARING NUP 309 ECJ/C3	1
54	4026102802	SCREW TE M8X12 GALV.	3
55	4026102807	SCREW TE M8X25 GALV.	3
56	4026121405	SCREW TCEI M8X20 GALV.	3
57	4026121406	SCREW TCEI M8X30 GALV.	8
58	4026121407	SCREW TCEI M8X25 GALV.	42
59	4026121408	SCREW TCEI M8X35 GALV.	9
60	4026121411	SCREW TCEI M8X50 GALV.	6
61	4026121709	SCREW TCEI M12X30 GALV.	4
62	4026135414	SCREW M8X45	1
63	40261D1C10	SCREW TE M10X25	6
64	4026155505	SCREW TSPEI M5X16 GALV.	16
65	402630RB03	WASHER M35X1,5 SELF-BLOCKING	1
66	402630RB05	WASHER M45X1,5 SELF-BLOCKING	3
67	4026308005	NUT M8 HEX. GALV	2
68	4026350505	WASHER GROWER 8 GALV.	68
69	4026350508	WASHER GROWER 12 GALV.	4
70	4026356002	WASHER 8X24	3
71	4026359003	WASHER 21,5X26X1,5 ALUM.	4
72	4026401806	PIN 10X36	10
73	4026500908	COTTER 10X8X45	1
74	4026501601	COTTER 14X9X40	2
75	4026501607	COTTER 14X9X80 (SMOOTH SHAFT)	1
76	4026701602	PLUG 3/8	1
77	4026701620	MAGNETIC PLUG G3/8	2
78	4026702708	WASHER COPPER 1"1/2	1
79	4026904005	PLUG 1"1/2	1
80	4026910102	PLUG	2
81	4026910602	PLUG G1/4	2
82	4028250201	TERMOSTAT 170øC 6-24V (OPTIONAL)	1
	18920007E0	GASKET KIT DL 220-250	1
		DL 300 HDR	
H1	1470105200	JOINT HDR	1
H2	1640002400	COPERCHIO ANTERIORE HDR	1
H3	1647000200	DISC	1
H4	1680611900	GASKET HDR	1
H5	4022104502	OIL LEVEL PLUG 1/2"	1
H6	4024107801	HDR MOTOR	1
H7	4026102704	SCREW TE 8,8 M6X16 GALV.	3
H8	4026103004	SCREW TE 8,8 M12X40 GALV.	4
H9	4026120407	SCREW TCEI 8,8 M8X35	9
H10	4026136005	SCREW 12,9 M8X12	2
H11	4026350403	WASHER GROWER M6	3
H12	4026350505	WASHER GROWER 8 GALV.	9
H13	4026350709	WASHER GROWER 12 GALV.	4
H14	4026359003	WASHER 21,5X26X1,5 ALUM.	3
H15	4026701603	PLUG 1/2	2
H16	4026711252	FLANGE SAE6000 3/4" AFS402GM	2
H17	4028321601	RPM SENSOR	1
		DL 300 COMPRESSOR AND VACUM MAX 50%	
C1	16100044E0	FLANGE	4
C2	4026121407	SCREW TCEI M8X25 GALV.	8
C3	4026350505	WASHER GROWER 8 GALV.	8

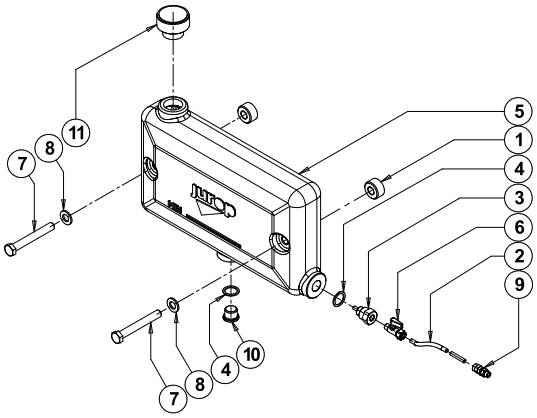
DL – Version with flange



Pos.	Code	Description	Q.ty
B	**1852109000**	**KIT SUCTION CONVEYOR DL75-125**	
B1	1610100000	FLANGE	2
B2	1627100500	CONVEYOR Ø76	2
B3	4022200307	O-RING 6287 VITON	2
B4	4026103002	SCREW TE M12X30 GALV.	4
B5	4026350709	WASHER GROWER 12 GALV.	4
B	**1852104000**	**KIT SUCTION CONVEYOR DL150-180**	
B1	1610101100	FLANGE	2
B2	1627102400	CONVEYOR Ø100	2
B3	4022200310	O-RING 6362 VITON	2
B4	4026102808	SCREW TE M8X30 GALV.	8
B5	4026350706	WASHER GROWER 8 GALV.	8
B	**1852104300**	**KIT SUCTION CONVEYOR DL220…300**	
B1	1610101200	FLANGE	2
B2	1627102900	CONVEYOR D.120	2
B3	4022200314	O-RING 193 VITON	2
B4	4026102808	SCREW TE 8,8 M8X30 GALV.	8
B5	4026350706	WASHER GROWER M8 GALV.	8

Pos.	Code	Description	Q.ty
F	**1852111600**	**VERSION WITH FLANGE DL 75-125**	
F		**VERSION WITH FLANGE DL150-180**	
F1	16100070E0	FLANGE	2
F2	1680711200	GASKET	2
F3	4026102808	SCREW TE M8X30 GALV.	8
F4	4026350706	SCREW GROWER M8 GALV.	8
F		**VERSION WITH FLANGE DL220…300**	
F1	1610040000	FLANGE	2
F2	168079XIB0	GASKET	2
F3	4026102808	SCREW TE M8X30 GALV.	8
F4	4026350706	SCREW GROWER M8 GALV.	8

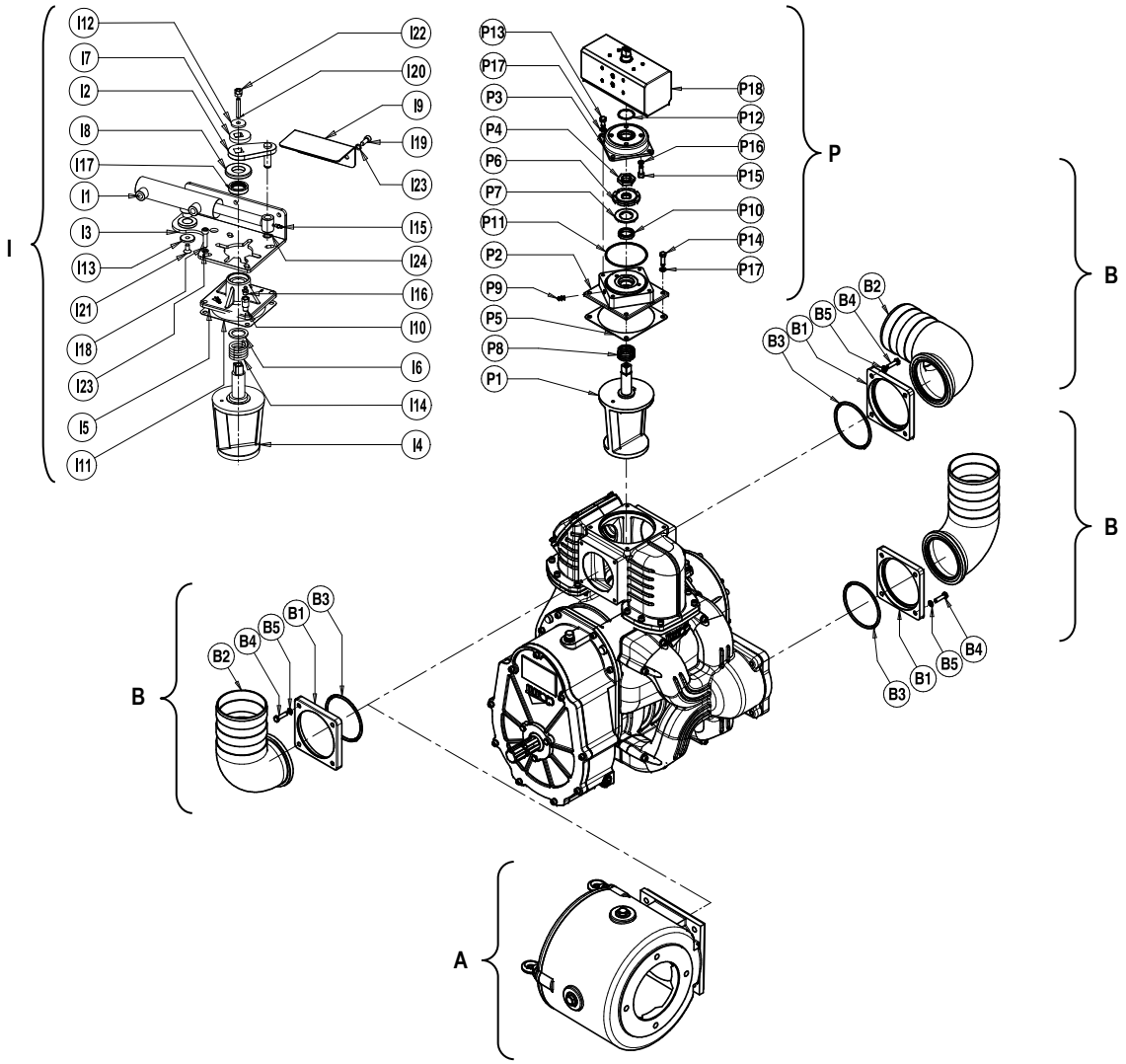
DL – Flushing kit



Pos.	Code	Description	Q.ty
1	1624042800	SPACER	2
2	16636009E0	PIPE RILSAN 4X6 L1500MM	1
3	1673001000	FILTER LINK	1
4	1685100300	WASHER DI 20	2
5	1687600000	SIDE OIL TANK	1
6	4024405400	VALVE G1/8	1

Pos.	Code	Description	Q.ty
7	4026103013	SCREW TE M12X90 GALV.	2
8	4026357007	WASHER M12 GALV.	2
9	4026702004	CONNECTION DIR 6X1/8	1
10	4026904503	PLUG M20X1,5	1
11	4026910103	PLASTIC VENT 1"	1

DL SERIES- ACCESSORIES



DL 75-...-300 Accessories

Pos.	Code	Description	Q.ty
A	**185219N7B0**	**SUCTION UNIT WITH FILTER DL75-95-125**	
	185212L4B0	**SUCTION UNIT WITH FILTER DL15-180**	
	1445003200	**AIR FILTER DL220-...-300**	
B	**1852109000**	**KIT SUCTION CONVEYOR DL75-125**	
B1	1610100000	FLANGE	2
B2	1627100500	CONVEYOR Ø76	2
B3	4022200307	O-RING 6287 VITON	2
B4	4026103002	SCREW TE M12X30 GALV.	4
B5	4026350709	WASHER GROWER 12 GALV.	4
B	**1852104000**	**KIT SUCTION CONVEYOR DL150-180**	
B1	1610101100	FLANGE	2
B2	1627102400	CONVEYOR Ø100	2
B3	4022200310	SEAL OR 6362 VITON	2
B4	4026102808	SCREW TE 8,8 M8X30 GALV.	8
B5	4026350706	WASHER GROWER M8 GALV.	8
B	**1852104300**	**KIT SUCTION CONVEYOR DL220...300**	
B1	1610101200	FLANGE	2
B2	1627102900	CONVEYOR D.120	2
B3	4022200314	SEAL OR 193 VITON	2
B4	4026102808	SCREW TE 8,8 M8X30 GALV.	8
B5	4026350706	WASHER GROWER M8 GALV.	8

Pos.	Code	Description	Q.ty
P	**143028B7B0**	**KIT PNEUMATIC ACTUATOR DL75-95-125**	
P1	160858KNB0	PNEUMATIC MANIFOLD	1
P2	161258B4B0	SCATOLA ATT. PNEU.	1
P3	1640580QB0	COVER	1
P4	167007ZAB0	NUT	1
P5	1680700200	GASKET	1
P6	168409PQB0	WASHER	1
P7	168529TFB0	SPACER	1
P8	1691000200	SPRING	1
P9	4022100100	GREASER M6X1	1
P10	4022200005	SEAL 37X27X7	1
P11	4022200330	OR SEAL 3375	1
P12	4022200331	OR SEAL 2137	1
P13	4026102804	SCREW TE M8X16	4
P14	4026107110	SCREW TE M8X25	4
P15	4026120403	SCREW TCEI M8X20	4
P16	4026350505	WASHER GROWER 8 GALV.	4
P17	4026350909	WASHER M8	8
P18	4027100405	PNEUMATIC ACTUATOR	1

DL 75-…-300 Accessories

Pos.	Code	Description	Q.ty
P	**143028GZB0**	**KIT PNEUMATIC ACTUATOR DL150-180**	
P1	160858KBB0	PNEUMATIC MANIFOLD	1
P2	161258H0B0	SCATOLA ATT. PNEU.	1
P3	1640580QB0	COVER	1
P4	167007ZAB0	NUT	1
P5	1680707800	GASKET	1
P6	168409PQB0	WASHER	1
P7	168529TFB0	SPACER	1
P8	1691000200	SPRING	1
P9	4022100100	GREASER M6X1	1
P10	4022200005	SEAL 37X27X7	1
P11	4022200330	OR SEAL 3375	1
P12	4022200331	OR SEAL 2137	1
P13	4026102804	SCREW TE M8X16	4
P14	4026107110	SCREW TE M8X25	4
P15	4026120403	SCREW TCEI M8X20	4
P16	4026350505	WASHER GROWER 8 GALV.	4
P17	4026350909	WASHER M8	8
P18	4027100405	PNEUMATIC MANIFOLD	1
P	**143028LKB0**	**KIT PNEUMATIC ACTUATOR DL220-…-300**	
P1	160858LLB0	PNEUMATIC MANIFOLD	1
P2	161258L9B0	SCATOLA ATT. PNEU.	1
P3	1640580QB0	COVER	1
P4	167007ZAB0	NUT	1
P5	1680612200	GASKET	1
P6	168409PQB0	WASHER	1
P7	168529TFB0	SPACER	1
P8	1691000200	SPRING	1
P9	4022100100	GREASER M6X1	1
P10	4022200005	SEAL 37X27X7	1
P11	4022200330	OR SEAL 3375	1
P12	4022200331	OR SEAL 2137	1
P13	4026102804	SCREW TE M8X16	4
P14	4026107110	SCREW TE M8X25	4
P15	4026120403	SCREW TCEI M8X20	4
P16	4026350505	WASHER GROWER 8 GALV.	4
P17	4026350909	WASHER M8	8
P18	4027100405	PNEUMATIC ACTUATOR	1
I	**143029K2B0**	**KIT HYDRAULIC ACTUATOR DL75-95-125**	
I1	143027T6B0	CILINDER	1
I2	150206XXB0	LEVER	1
I3	151309JVB0	BASE	1
I4	1608503200	MANIFOLD	1
I5	1623100800	COVER	1
I6	-	-	
I7	16240A0IB0	SPACER	1
I8	1624202300	SPACER	1
I9	164206XYB0	ACTUATOR PROTECTION	1
I10	-	-	
I11	1680700200	GASKET	1
I12	1685002800	WASHER 30X8,5 GALV.	1
I13	168509U0B0	WASHER	1
I14	1691000000	SPRING	1
I15	4022100100	GREASER M6X1	1
I16	4022100107	GREASER 45ø M10X1	1
I17	4022200030	SEAL 41X27X10	1
I18	4026120405	SCREW TCEI M8X25	4
I19	4026121405	SCREW TCEI M8X20 GALV.	2
I20	4026135414	SCREW M8X45	1
I21	4026155705	SCREW TSPEI M8X16	1
I22	4026308005	NUT M8 HEXAG. GALV.	4
I23	4026350505	WASHER GROWER 8 GALV.	6
I24	4026510012	ELASTIC SEAL E14	1
I	**143029KRB0**	**KIT HYDRAULIC ACTUATOR DL150-180**	
I1	143027T6B0	CILINDER	1
I2	15020A10B0	LEVER	1
I3	1513007TJB0	BASE	1
I4	1608502900	MANIFOLD	1
I5	1623100700	COVER	1
I6	162409YKB0	SPACER	1
I7	1624043400	SPACER	1
I8	1624202300	SPACER	1
I9	164206XYB0	ACTUATOR PROTECTION	1
I10	1673009700	GREASER LINK	1
I11	1680707800	GASKET	1
I12	1685002800	WASHER 30X8,5 GALV.	1
I13	168509U0B0	WASHER	1
I14	1691000000	SPRING	1
I15	4022100100	GREASER M6X1	1
I16	4022100107	GREASER 45ø M10X1	1
I17	4022200030	SEAL 41X27X10	1
I18	4026120405	SCREW TCEI M8X25	4
I19	4026121405	SCREW TCEI M8X20 GALV.	2
I20	4026135414	SCREW M8X45	1
I21	4026155705	SCREW TSPEI M8X16	1
I22	4026308005	NUT M8 HEXAG. GALV.	4
I23	4026350505	WASHER GROWER 8 GALV.	6
I24	4026510012	ELASTIC SEAL E14	1
I	**143029KIB0**	**KIT HYDRAULIC ACTUATOR DL220-…-300**	
I1	143027T6B0	CILINDER	1
I2	150206XXB0	LEVER	1
I3	151309KCB0	BASE	1
I4	1608503000	MANIFOLD	1
I5	1623100600	COVER	1
I6	162409YKB0	SPACER	1
I7	16240A0IB0	SPACER	1
I8	1624202300	SPACER	1
I9	164206XYB0	ACTUATOR PROTECTION	1
I10	1673009700	GREASER LINK	1
I11	1680612200	GASKET	1
I12	1685002800	WASHER 30X8,5 GALV.	1
I13	168509U0B0	WASHER	1
I14	1691000000	SPRING	1
I15	4022100100	GREASER M6X1	1
I16	4022100107	GREASER 45ø M10X1	1
I17	4022200030	SEAL 41X27X10	1
I18	4026120405	SCREW TCEI M8X25	4
I19	4026121405	SCREW TCEI M8X20 GALV.	2
I20	4026135414	SCREW M8X45	1
I21	4026155705	SCREW TSPEI M8X16	1
I22	4026308005	NUT M8 HEXAG. GALV.	4
I23	4026350505	WASHER GROWER 8 GALV.	6
I24	4026510012	ELASTIC SEAL E14	1

Model	Issue date	Revision No.	Revision date	Filled out by	Viewed by
DL	15-10-2014	06	28-02-2017	U.T.	A.T.

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