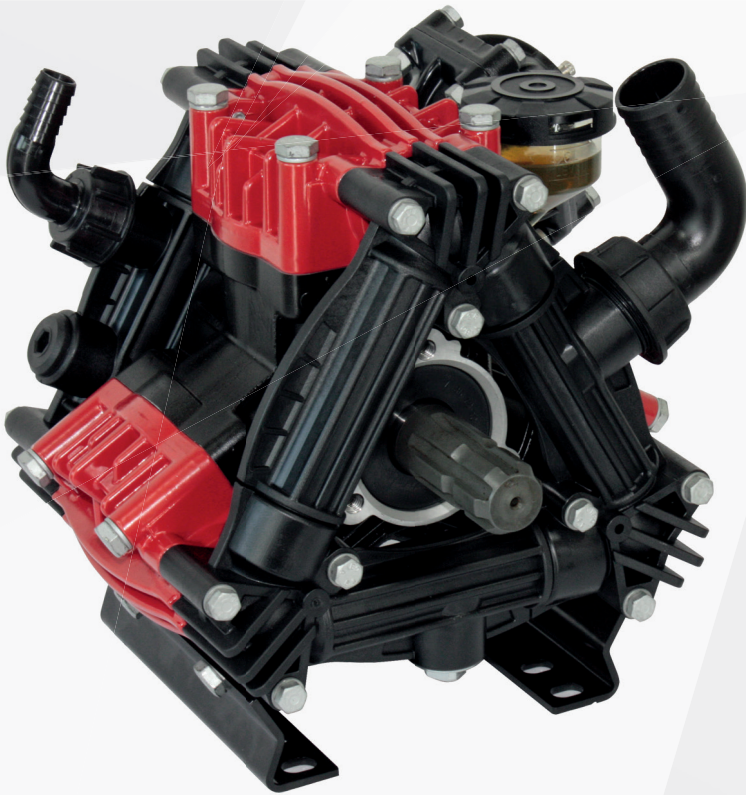


UDOR Diaphragm Pumps

Operator's & Parts Manual



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Please note: All information in this operator's manual is based on the latest product information available at the time of printing. The policy of Goldacres is one of continuous improvement and as such, Goldacres reserve the right to alter any specifications and designs without notice and without incurring any obligation regarding such changes. No part of this manual may be reproduced without written permission from Goldacres. All photographs and technical information remain the property of Goldacres.

General Information and Specs

General

Diaphragm pumps are constant displacement pumps providing a consistent flow, largely unaffected by changes to operating pressure. Diaphragm pumps have good suction capacity and can easily self prime, they can also run dry without damage. On Goldacres sprayers we supply the operator with the pump RPM and therefore the operator can be confident of the flow rate of the pump and confident the agitation to sprayer tank is consistent, even when quite large changes to operating pressures are made.

Centrifugal pumps - It is not possible to be certain of the pump flow by monitoring pump speed and the limited suction capacity of a centrifugal pump adds a further area of uncertainty to pump output. Centrifugal pumps flow rate varies considerably with pressure changes.

Maintenance - It is sometimes claimed centrifugal sprayer pumps require less maintenance than diaphragm pumps. At Goldacres we have not found this to be the case. Cast iron pumps are subject to chemical erosion. Centrifugal pumps which are run dry even for short periods can be severely damaged.

Flow Vs Pressure.

The flow output by diaphragm pumps are largely unaffected by changes to operating pressure.

For example:

UDOR 250 l/min pump @ 500rpm

0 Bar = 225.7 l/min output

10 Bar = 223.1 l/min output

Maximum achievable flow to the boom.

Goldacres design sprayers so that the flow to the boom should be approximately half the stated maximum flow of the pump - this is due to the pump also needing to supply agitation to the main tank. For example a 250 l/min pump should realistically achieve a maximum flow of approximately 125 l/min to the boom.

Goldacres Crop Cruisers are fitted with hydraulic drive diaphragm pumps.

Trailed Sprayers - Hydraulically driven pumps are becoming more common as tractors come out with more hydraulic outlets. Fitting a hydraulic drive to the pump eliminates any maintenance or safety issues that are often associated with PTO shaft drives.

The UDOR diaphragm pumps fitted to Goldacres sprayers do not require a coupling between the hydraulic motor and pump. The MI pump is fitted with a flange which will accept this motor shaft. A hydraulic drive is required for tractors fitted with 1000 RPM PTO drives. Standard diaphragm pump RPM is 540.

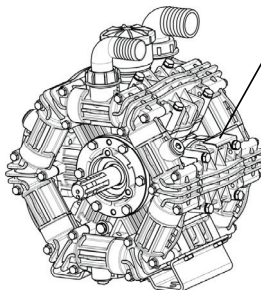
To measure pump RPM with a hydraulic drive fitted an RPM sensor is fitted on the shaft of the pump which will provide you with a readout that will be shown on your controller.

There are many factors that can change how often a pump needs to be serviced - however it is common for pumps to be serviced annually as preventative maintenance which will ensure reliability when the sprayer is in operation.

A quality multigrade engine oil should be used in the pump.

Pump Identification

The label on the pump bears the model, the code, the serial number and the main technical specifications with the maximum operational values of the product. The specimen at the side is an example of a label and its position on the Pump.



UDOR ZETA 000 TS 2C									
Model		Flow (l/min)		Pressure (bar)		Power (kW)		Speed (RPM)	
250	250	250	250	250	250	250	250	250	250
250	250	250	250	250	250	250	250	250	250
USE OIL SAE 15W40									
MADE IN ITALY									

IC - 1 "6 Spline PTO
TS2C - Through Shaft,
1 "6 Spline PTO
both sides

MI - 25.4mm Internal
hole for a Hydraulic
motor.

VA - Mounting surface
for gear box drive,
(engine Drive).

Safety Symbols



The "WARNING" symbol here at the side draws the operator's attention to situations and/or problems related to the correct operation of the Pump.



The "DANGER" symbol here at the side draws the operator's attention to situations and/or problems that could compromise the safety of people.

Introduction

The Diaphragm Pumps of UDOR, with radial piston kinematic drive, are designed and manufactured to pump or transfer water or pesticides and herbicides in water solution to be used according to the instructions of the actual producers.

They are generally driven by: electric motors, endothermic petrol or diesel engines and hydraulic motors, tractor P.T.O.. Couplings may be fulfilled by means of transmission shaft, direct flanging, reduction unit or multiplier, joints, pulleys and belts.



The Pump is supplied to be installed on a more complex machine or plant; the manufacturer of such machine or plant shall add all the information related to safety of the assembled machine/plant fulfilled.

Intended Use

The Diaphragm Pumps of UDOR are designed for use in machines or systems that transfer water or pesticides or herbicides, under pressure, such as the following for example: Sprayers, Mist Sprayers, Herbicide Spray Booms, Gardening, Civil and Industrial Washing Systems, Drain and Pipe Cleaning, Fire-fighting, Antifreeze Systems.

The temperature of the workplace shall be between: Min. 0°C (32°F) - Max. 45°C (113°F)

The Pump cannot be used submerged under any type of liquid.

Operational Restriction

The specifications of the liquid to be used are described in detail herewith: do not use for different liquids; in particular, it is NOT possible to use UDOR Pumps in the following conditions:



- In the presence of water with high salt

content, such as seawater for example.

- In workplaces where there is a corrosive or explosive atmosphere.

- In the presence of any liquid that is not compatible with the constructional material of the Pump.

- To pump paint, solvents, fuel and any flammable liquid (not suitable for ATEX workplaces).

- For foodstuffs.

- To wash people, animals, live electrical or electronic equipment.

- To wash the Pump itself.

General Warnings



- Never start the Pump under pressure.

- Constantly check the state of wear of the pipes and relevant fittings, especially those under pressure. Pipes with signs of abrasion or that do not guarantee a perfect seal shall be replaced.

- Protect rotating parts with a cover to prevent contact.



- The Pump is designed to be integrated in a machine or system, with various supply systems, which may make the noise level vary, even quite substantially. The manufacturer of such machine or system shall assess the level of noise emitted by the assembled machine or system and inform the user appropriately, also in relation to the use of suitable personal protection equipment.

Before Start Up

Liquids To Be Pumped

The Pump is designed and manufactured to transfer water or pesticides and herbicides in water solution to be used according to the instructions of the actual producers.

The liquid intake must be free from sand or other solid particles in suspension.

The liquid intake shall have viscosity and density similar to water.


The temperature of the liquid to be pumped must be between 5°C (41°F) and 38°C (100°F).

Any other use is not admitted unless authorised in writing by the Engineering

Department of UDOR.

Inlet And Outlet Of The Pump

The Inlet of the liquid to be pumped, also called intake or supply, is generally of larger diameter than the Outlet, also called delivery.

 The Inlet and Outlet CANNOT be inverted.
Inlet Conditions (Suction)


Make sure the supply line is connected correctly and that it complies with the following requisites:

- Any point of the inlet pipeline cannot be smaller than the diameter of the Pump inlet.
- Be absolutely leak-proof to avoid any air infiltration.
- Not have 90° bends near the Pump inlet.
- Not have contractions or restrictions.
- Avoid any turbulence near the Pump inlet and in the supply tank.
- If an inlet filter is used, it must allow 200% more flow than the flow required by the Pump. It must not cause any contraction or any pressure drop. The filter should grant a filtration degree between 32 and 50 Mesh and should be cleaned on a regular basis to ensure its proper functionality.
- Maximum inlet pressure admitted: 0.5 bar (7 PSI).
- Maximum negative inlet pressure admitted: -0.2 bar (-3 PSI) [-6 inch.Hg].
- Maximum offset admitted between pump and supply source underneath: 2m. (6.5ft.).

Outlet Conditions

Make sure the delivery line and all the accessories are connected correctly, secured firmly, hermetically sealed and that the pipes are sized appropriately. All pressurised pipes must be marked durably with the maximum admitted pressure, which must never be less than the maximum working pressure of the Pump, written on the Label.

Speed and Rotation Direction

 The rotation speed of the shaft of the Pump must never exceed the RPM written on the Label of the actual Pump.


The minimum RPM admitted is: maximum RPM x 0.6.

The rotation direction of the shaft of UDOR Pumps may be clockwise or anticlockwise.


Controls on System

Unloader Valve

A pressure regulator valve must be installed to avoid the pressure exceeding the maximum limit indicated on the Label of the Pump.

 Use of the Pump, even for a short period, with a pressure higher than such limit would damage the Pump itself.

The regulator valve shall be compatible with the maximum pressure, flow rate and temperature values written on the Label and in the "INLET CONDITIONS".

 Incorrect installation of the pressure regulator valve could cause serious personal injuries and damage to property as well as seriously damaging the actual Pump.

The circuit must be equipped with another safety valve to prevent the maximum pressure from being exceeded in the case of anomalies in the pressure regulator valve.

Nozzle

A deteriorated nozzle could cause a drop in pressure; in this case, do not adjust the pressure regulator valve in the attempt to increase the pressure of the system because when the delivery line closes, this would cause a boost in pressure, which could damage the Pump.

If the pressure drops, it is advisable to replace the nozzle and adjust the system's pressure again.


The flow rate of the Pump must be at least 10% higher than the flow rate that the utilities demand; the excess flow rate must be discharged.

Pulsation Dampener (Accumulator)

Before starting the Pump, verify the air pressure in the accumulator, if present.

This operation may be carried out, with the Pump off, connecting an air source to the inflation valve.

The air pressure should be checked periodically.

 Using the Pump without air in the

accumulator may cause system malfunctioning, damage the accumulator diaphragm or the whole Pump.


The accumulator's air pressure varies according to the Pump's operating pressure:

Pump	bar	2	5	10	20	30	40	50
Working Pressure	PSI	29	72	145	290	435	580	725
Accumulator	bar	1	2	4	5	6	7	8
	PSI	15	29	58	72	87	102	116

UDOR normally inflates the Pumps pulsation dampener at a pressure of 5 bar (72 PSI) approx.

Pressure Gauge

Install a gauge as near as possible to the outlet of the Pump because the maximum pressure written on the Pump's Label refers to the pressure detected in that point and not on the nozzle or on other accessories.

 All the components of the machine or of the circuit must have technical specifications compatible with the data written on the Pump's Label.

Installation, Start Up and Switching Off

Positioning

Smaller and lighter pumps can be handled by hand in compliance with current standards. Heavier pumps must be handled using a suitable lifting device. If you need to use a lifting device, use appropriate strap/s, being careful not to damage the product. The weight of the pumps is written in the table on page 10.

To safeguard the lifetime of the components subject to wear and tear such as valves and diaphragms, the pump should be installed below or at water level.

UDOR Diaphragm Pumps are, in any case, self-priming; they may be installed above the water source. In this case, the maximum allowed difference in height is 2 mt. (6.5 ft.).

If the Pump is used in a particularly dirty workplaces or is exposed to atmospheric agents, you are recommended to protect it, respecting the ventilation conditions.

Assembly

Fit the Pump on a rigid surface keeping the power take-off and support feet horizontal to ensure correct drainage in the case of leakage of water or oil. The Pump must be secured firmly on a base, which must be perfectly aligned with the transmission components. In the case of belt transmission, make sure the pulleys are aligned and check the tension of the belts.

Use appropriately sized hoses, both on the inlet and outlet of the Pump, according to the technical specifications written on the Label.

Start Up

Before starting, check the following:


- Check the oil level through the dedicated oil reservoir or inspection cap; top-up if necessary.
- Check the pressure value on the accumulator, if installed; inflate or deflate if necessary.
- The pressure regulator valve must be set at "0" pressure to favour intake.


Start and run the Pump for approximately 10 seconds until all the liquid has discharged from the delivery line. Once the intake cycle is complete, you can set the Pump at the required pressure, by adjusting the pressure regulator valve, without ever exceeding the maximum pressure written on the Pump's Label.

Switching Off and Storage

After use or if the Pump is to be put away in storage, wash it internally. You can do this by running the Pump for several minutes with clean water, then disconnect the supply line and leave the Pump to run for approximately 15 seconds so that all the water inside the pump is drained.

A few minutes devoted to the internal washing of the pump brings considerable benefits in terms of the pump's lifetime.

 Never leave liquid inside the pump. Damage to the diaphragms or to other components is often caused by liquid that is left inside the pump for a long time.

 Do not wash the Pump externally; water could get into the Pump crankcase, for

example through the seal rings of the crankshaft.



Do not throw the liquid used to wash the Pump outdoors but observe current standards.

Precautions Against Freezing

If shutdown during winter or in the case of places and seasons subject to frost, once the Pump has finished working, run it for the time required to Pump an emulsion of 50% of clean water and 50% of antifreeze fluid through it in order to prevent freezing and damage to the Pump.



The Pump must not be used to Pump antifreeze fluid that is not mixed with water. In the presence of ice or very cold temperatures at the workplace, the Pump must never be started, otherwise the Pump could be seriously damaged. To start the system, the whole circuit must be completely defrosted.

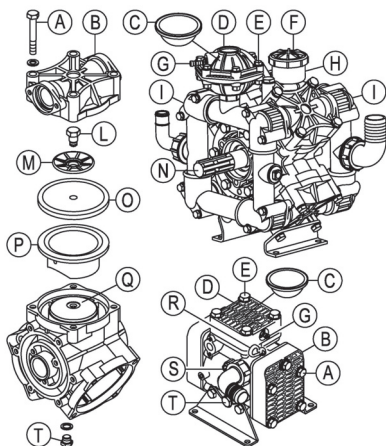
Maintenance

Routine Maintenance

If the Pump is used for light-duty purposes, the following routine maintenance jobs are advised:

- After the first 50 hours: Oil change (see section 9.2 - Lubrication)
- Every 500 hours: Oil change - Replace the diaphragms (see instructions below)
- Every 1000 hours: Replace the valves

For heavy-duty purposes, carry out the maintenance jobs more often.



1. DRAIN CRANKCASE OIL: Drain Pump crankcase by removing the oil drain plug (T) located at the bottom of the Pump, also remove the oil fill cap (F) or plug (R).

2. EXTERNAL MANIFOLD REMOVAL: If your Pump has external manifolds (I), these must be removed prior to heads (B) removal.

3. HEAD REMOVAL: Do repairs one head (B) at a time. Remove the head bolts (A), then remove the Pump head (B) which may require some "light" prying.

4. DIAPHRAGM REMOVAL: Turn crankshaft (N) to bring piston (Q) up to the top of its stroke, remove the diaphragm bolt (L) and washer (M), then remove the diaphragm (O). If necessary, take off one sleeve (P) and wash well the internal components using diesel fuel. The sleeve (P) must be re-mounted in the same position as before.

5. INSTALLING NEW DIAPHRAGMS: Clean well the threaded hole of the piston (Q). Install the diaphragm bolt (L) and washer (M) into the new diaphragm (O). Install this assembly to the piston (Q). Use Loctite 243 thread locker or equivalent on the diaphragm bolt (L). Then torque to the recommended specifications (see page 12). Now rotate crankshaft (N) to bring the piston (Q) and diaphragm (O) to the bottom of its stroke. Then seat the outside edge of the diaphragm (O) into the Pump body.

6. HEAD INSTALL: When reinstalling the Pump head (B) it is very important to make sure that the check valves are installed correctly. For each cylinder there are two valves, one valve lets the fluid flow into the head, the other valve lets the fluid flow out of the head. PAY VERY CLOSE ATTENTION TO THIS. After having correctly positioned the Pump head (B), tighten the screws (A) with the proper torque (see page 12).

7. INSTALLING PULSATION DAMPENER DIAPHRAGM: Bleed off the air in the chamber using the air-valve (G) on the dampener, then remove the cover bolts (E), cover (D) and diaphragm (C), install correctly the new diaphragm (C). Reinstall cover (D) and tighten the screws (A) with the proper torque (see page 12). Recharge dampener with air according to UDOR specifications at page 6.

8. REFILL PUMP CRANKCASE: Re-mount the oil drain plug (T). Fill Pump with SAE 15W-40 OIL to recommended mark on the oil reservoir (H) or on the sight glass (S). Rotate the crankshaft (N) while filling to eliminate air pockets. Re-mount the oil fill cap (F) or the oil fill plug (R).

9. INITIAL START UP: Start the Pump with the outlet line at "0" pressure; after about 5 minutes at "0" pressure you may increase the outlet pressure and make a few cycles of pressure on/off. This will evacuate any remaining air pockets in the crankcase. Turn Pump off and re-check oil level. Refill as necessary to proper oil level.

IMPORTANT: During initial start up, monitor the oil color. If it turns milky white, the diaphragms were not seated correctly.

Lubrication

The Pump is supplied with the correct amount of lubrication oil (see table on page 10).

Periodically check the oil level in the Pump through the oil level indicator.

Use OIL type SAE 15W-40 or equivalent. Here are some recommended types of oil:

Brand	Type
AGIP F.1	Supermotoroil 15W-40
BP	Vanellus C 15W-40
CASTROL	GTX 15W-40
ESSO	Uniflo 15W-40
MOBIL	Super M 15W-40
SHELL	Rimula R4 15W-40 / Helix Super 15W40
TOTAL	Rubia 15W-40 / Quartz 5000 15W-40

The oil is to be changed by draining it through the dedicated bottom discharge cap and strictly with the Pump stopped.

The oil level could vary during priming ; then it will stabilize when the system is pressurized. If the oil level gets lower during the first few hours of the pump's operation , it could be normal. Simply refill. If instead , the oil level changes considerably after several hours of operation, the pump's diaphragms might be damaged or there might be restrictions along the suction line.



Do Not Start The Pump If There Is No Oil In The Pump!

During maintenance, you are recommended to:

- Use and wear suitable personal protection equipment (i.e. gloves).
- Wait for the machine to cool down and to have stopped completely.



During maintenance, do not throw residues outdoors but observe current standards.

If the Pump is to be scrapped:

1. Separate the various parts depending on their type (i.e. plastic, harmful fluids, metal etc.).
2. Use public or private waste disposal systems envisaged by local law to dispose of waste.
- 3 This device could contain harmful substances: improper use or incorrect disposal could have negative effects on human health and on the environment.

Trouble Shooting

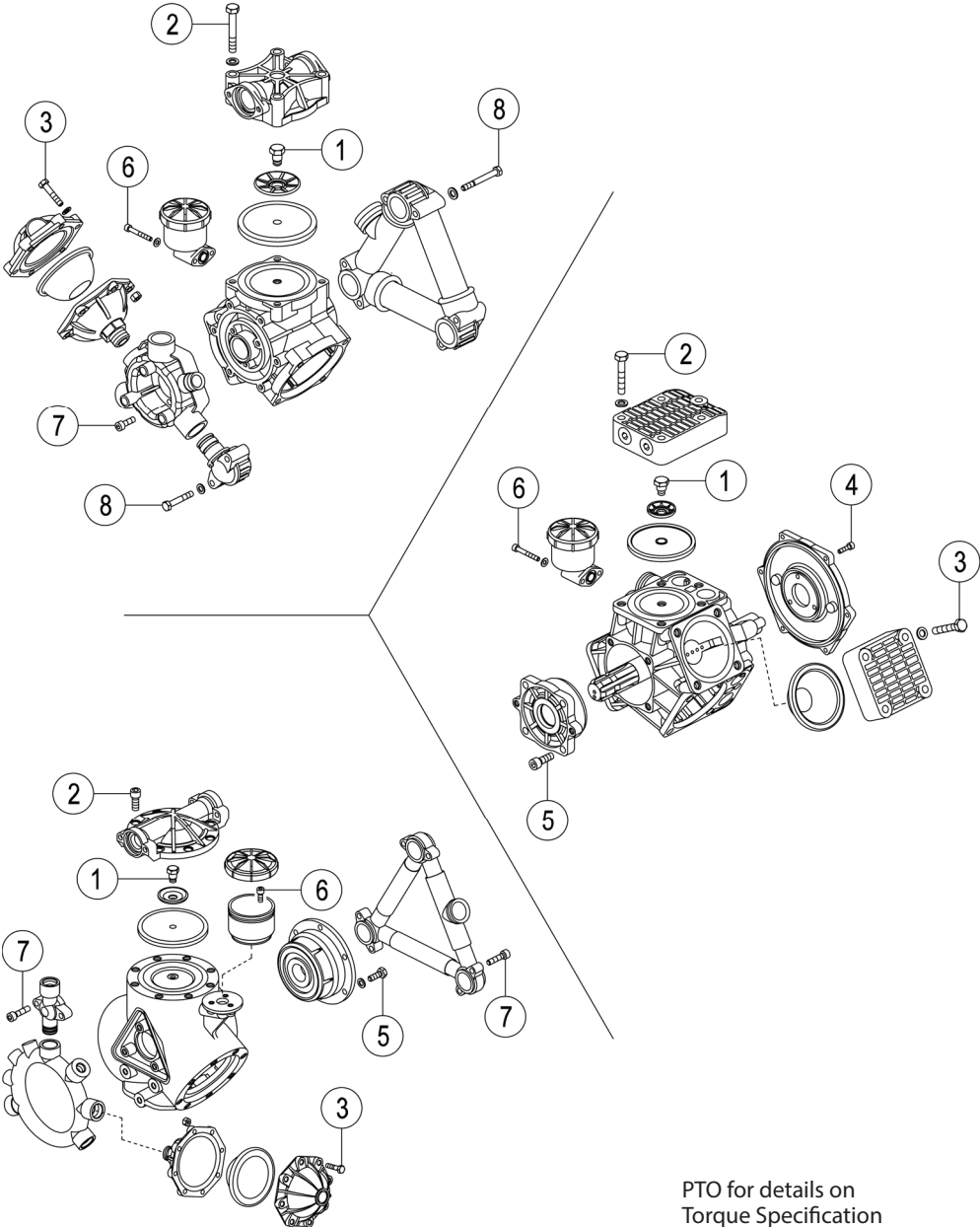
Problems	Probable Causes	Solutions
No pressure.	Insufficient strainer capacity, or dirty or plugged strainer.	Use larger capacity strainer or clean strainer.
Very little pressure.	Suction hose restriction.	Eliminate restriction.
Pressure drops below working range when relief valve is open to boom or gun.	Collapsed suction hose inside or outside tank restricting flow.	Replace collapsed hose.
	Air leak in inlet line.	Examine hoses and fittings, ensure air tight fit and no leaks.
	Pressure relief valve stuck or worn.	Repair or replace relief valve (§).
	Excessive tank foam due to low tank volume.	Refill tank.
	Nozzle volume is greater than Pump capacity.	a. Check relief valve adjustment. b. Reduce nozzle orifice size or number of nozzles used.
	One or more check valves seating improperly.	Clean or replace check valves (§).
Excessive gauge vibration.	Pulsation dampener pressure too low or too high.	Adjust pulsation dampener pressure. (see page 6) – (§).
Excessive pulsation.	Air leak in inlet line.	Examine hoses and fittings, ensure air tight fit and no leaks.
	Insufficient strainer capacity, or dirty or plugged strainer.	Use larger capacity strainer or clean strainer.
	Air not entirely evacuated from Pump cavity.	Run Pump with an open discharge to totally evacuate air.
Pump does not suck water.	Air leak in inlet line.	Examine hoses and fittings, ensure air tight fit and no leaks.
	Insufficient strainer capacity, or dirty or plugged strainer.	Use larger capacity strainer or clean strainer.
	One or more check valves seating improperly.	Clean or replace check valves (§).
Pump oil has milky color.	One or more diaphragm failures.	Replace the diaphragms (§).
The Pump oil comes out of discharge line; the oil level drops markedly.	 STOP THE PUMP IMMEDIATELY!	Diaphragm replacement instructions:
Oil plug pops out.		see pages 7-8.

(§) These operations must be carried out by qualified personnel.

Oil and Weight

Series	Recommended Oil Quantity				Pump Weight	
	Kg.	Lbs.	Lt.	Gal.	Kg.	Lbs.
ZETA 70	0,5	1.10	0,56	0.15	9	20
ZETA 85	1,02	2.25	1,14	0.30	12	26
ZETA 100	1,02	2.25	1,14	0.30	13	29
ZETA 120	1,04	2.29	1,16	0.31	18	40
ZETA 140						
ZETA 170	1,15	2.54	1,28	0.34	24	53
ZETA 200	1,15	2.54	1,28	0.34	26	57
ZETA 230	2,40	5.29	2,68	0.71	36	79
ZETA 260						
ZETA 300	2,50	5.51	2,79	0.74	38	84
RO 320	4,10	9.04	4,58	1.21	63	139
RO 400						
IOTA 20	0,18	0.40	0,20	0.05	4	9
IOTA 25						
KAPPA 15	0,10	0.22	0,11	0.03	2,5	5.5
KAPPA 25	0,26	0.57	0,29	0.08	8	18
KAPPA 32						
KAPPA 40 / DELTA 40	0,49	1.08	0,55	0.15	11	24
KAPPA 50						
KAPPA 33	0,56	1.23	0,63	0.17	11	24
KAPPA 43						
KAPPA 53						
KAPPA 55	0,62	1.37	0,69	0.18	13	29
KAPPA 65						
KAPPA 75	1,04	2.29	1,16	0.31	18	40
KAPPA 100	1,02	2.25	1,14	0.30	20	44
KAPPA 125	1,82	4.01	2,03	0.54	28	62
KAPPA 120	1,76	3.88	1,97	0.52	42	93
KAPPA 150						
OMEGA 135	1.45	3.20	1.62	0.42	28	62
OMEGA 140	2,14	4.72	2,39	0.63	40	88
OMEGA 170	2,42	5.33	2,70	0.71	45	99
BETA 110	2,14	4.72	2,39	0.63	45	99
BETA 150	2,42	5.33	2,70	0.71	52	115
BETA 200	4,50	9.92	5,03	1.33	75	165
BETA 240						

Torque Specification



PTO for details on
Torque Specification

Torque Specification

	1		2		3		4	
	Diaphragm Bolt (use Loctite® 243)		Head Bolts		Pulsation Dampener Bolts		Inlet Flange Bolts	
MOD.	N•m	lbf•ft	N•m	lbf•ft	N•m	lbf•ft	N•m	lbf•ft
ZETA 70	25	18	25	18	---	---	---	---
ZETA 85	25	18	40	30	---	---	---	---
ZETA 100	25	18	40	30	25	18	---	---
ZETA 120	30	22	40	30	25	18	---	---
ZETA 140								
ZETA 170	30	22	40	30	25	18	---	---
ZETA 200								
ZETA 230	30	22	40	30	---	---	---	---
ZETA 260								
ZETA 300								
RO 320	30	22	50	37	---	---	---	---
RO 400								
IOTA 20	14	10	25	18	25	18	---	---
IOTA 25								
KAPPA 15	14	10	14	10	14	10	---	---
KAPPA 25	25	18	40	30	40	30	---	---
KAPPA 32								
KAPPA 40 / DELTA 40	25	18	40	30	40	30	---	---
KAPPA 50								
KAPPA 33	25	18	40	30	---	---	10	7
KAPPA 43								
KAPPA 53								
KAPPA 55	25	18	40	30	40	30	10	7
KAPPA 65								
KAPPA 75	25	18	40	30	40	30	10	7
KAPPA 100	25	18	40	30	28	20	10	7
KAPPA 125	25	18	40	30	28	20	10	7
KAPPA 120	30	22	45	33	28	20	10	7
KAPPA 150								
OMEGA 135	30	22	40	30	---	---	---	---
OMEGA 140	30	22	50	37	28	20	---	---
OMEGA 170	30	22	50	37	28	20	---	---
BETA 110	30	22	50	37	28	20	---	---
BETA 150	30	22	50	37	28	20	---	---
BETA 200	30	22	50	37	---	---	---	---
BETA 240								

	5		6		7		8	
	Bearing Flange Bolts		Oil Cup Bolts		Manifold Bolts (Aluminium/Brass)		Manifold Bolts (Plastic)	
MOD.	N•m	lbf•ft	N•m	lbf•ft	N•m	lbf•ft	N•m	lbf•ft
ZETA 70	---	---	8	6	---	---	10	7
ZETA 85	---	---	8	6	---	---	10	7
ZETA 100	---	---	8	6	---	---		7
ZETA 120	---	---	8	6	---	---	10	7
ZETA 140								
ZETA 170	34	25	8	6	---	---	10	7
ZETA 200								
ZETA 230	34	25	8	6	---	---	10	7
ZETA 260								
ZETA 300								
RO 320	34	25	10	7	30	22	---	---
RO 400								
IOTA 20	25	18	---	---	---	---	---	---
IOTA 25								
KAPPA 15	10	7	---	---	---	---	---	---
KAPPA 25	---	---	---	---	---	---	---	---
KAPPA 32								
KAPPA 40 / DELTA 40	34	25	---	---	---	---	---	---
KAPPA 50								
KAPPA 33	---	---	8	6	---	---	---	---
KAPPA 43								
KAPPA 53								
KAPPA 55	34	25	8	6	---	---	---	---
KAPPA 65								
KAPPA 75	34	25	8	6	---	---	---	---
KAPPA 100	34	25	8	6	---	---	---	---
KAPPA 125	34	25	8	6	---	---	---	---
KAPPA 120	34	25	10	7	---	---	---	---
KAPPA 150								
OMEGA 135	34	25	10	7	30	22	---	---
OMEGA 140	34	25	10	7	30	22	---	---
OMEGA 170	34	25	10	7	30	22	---	---
BETA 110	34	25	10	7	30	22	---	---
BETA 150	34	25	10	7	30	22	---	---
BETA 200	34	25	10	7	30	22	---	---
BETA 240								

Pump

The pump is critical to the sprayers performance. Its correct operation and maintenance is essential to ensure optimal sprayer performance.

When the pump is operating, the oil should be visible in the bowl.



NEVER OVERFILL PUMP WITH OIL AS DAMAGE TO SEALS AND BOWL MAY RESULT.

The pump will perform optimally operating between 400 and 540 RPM. At lower revs excessive pulsation will occur, while pump and diaphragm damage can result at higher revs.



DO NOT OPERATE ABOVE 540 RPM.

Whilst the pump is running, frequently check the oil level and colour. A change in either colour or level indicates probable damage to diaphragm or valves. STOP THE PUMP IMMEDIATELY.

Inspect all hoses to make sure they are the correct size, fitted securely and that there is no throttling or leaking.

Prevent starting the pump under pressure.

Make sure the PTO shaft is always protected with its cover to prevent access.

Make sure the strainer in the suction filter is clean and correctly installed.

Regularly lubricate the PTO shaft according to recommendations (see 'PTO SHAFT') to prevent the shaft from binding.

Always flush pump with clean water at the end of each spraying day. Prolonged chemical contact can severely damage seals and diaphragms.

Regularly check the pump mounting bolts.

Change the pump oil after the first 50 hours of operation and then after every 300 - 350 hours. Be careful to use the correct oil (use SAE 30W40 motor oil) and do not overfill. Rotate manually (by hand) to remove air locks when filling with oil.

Do not leave water in the pump if the sprayer

is to be left in a cold environment. The water may freeze and cause damage to pump if pumping is attempted while water is frozen. Empty pump of all water (run the pump dry for 15-20 seconds) and cover pump (ie with bag) to ensure this situation does not arise. If this has not been done, and there is a possibility there may be frozen water in the pump and/or in the lines, wait until any ice has completely thawed before using pump. Need to be able to turn the pump over by hand before starting pump.



ALWAYS WEAR PROTECTIVE CLOTHING RECOMMENDED ON THE CHEMICAL LABEL PRODUCT



FLUSH PUMP WITH CLEAN WATER BEFORE DISMANTLING



REMOVE AIR FROM AIR DAMPER CHAMBER BEFORE REMOVING AIR DAMPER CHAMBER COVER

Pump Diaphragms

The pump diaphragms are a wearing component to be replaced at some stage. Life expectancy depends upon its operation and maintenance and its suitability for the task.

The main causes of premature diaphragm failure are:

Blocked or incorrectly fitted suction filter restricting flow to the pump;

Incorrect air damper chamber pressure

Running pump at speeds greater than 540 RPM

Exceeding the pressure limit of the pump

Failure to wash chemicals from the pump after use

Incompatibility of the diaphragm material and the chemical used

Insufficient lubrication of the PTO shaft or binding of the shaft which can cause a side thrust to the internal components of the pump and overheat the pump and diaphragms.

A change in oil colour indicates a pump problem. The oil should be regularly monitored when spraying so that any problem is detected as soon as possible. If the oil goes milky in colour, it is likely the diaphragm has been damaged and the spray mixture has come into contact with the oil. If the oil colour goes black (or dark grey) it is likely the pump has overheated, possibly due to the PTO shaft binding through insufficient lubrication.

Pump diaphragms should be replaced prior to diaphragm failure. For large operation, where the sprayer is used extensively, the pump should be reconditioned once a season, including replacement diaphragms, seals and valve springs.

It is wise to keep a spare repair kit (including diaphragms, seals, valve 'o' rings and springs) on hand in case of a breakdown.

To replace a side diaphragm in pump:

Flush pump with clean water to remove chemical residue, then flush with appropriate decontaminating agent (refer to chemical label for decontamination instructions)

Run pump dry for 15-20 seconds to remove water

Remove all air from air damper chamber by pushing in air valve

Remove pump from sprayer

Remove pump manifolds and pump heads

Drain oil from pump

NOTE: Carefully note the position and orientation of all the heads, manifolds and valves when disassembling pump. Failure to reassemble correctly will result in severe pump damage.

Remove diaphragms

Remove cylinder sleeves

Flush inside of pump with diesel

Visually inspect inner workings of pump

Reassemble with new diaphragms (must be correct diaphragms) once satisfied with condition of pump

Refill with oil. Rotate pump manually (by hand) to remove air locks. Do not overfill.

Air Damper Chamber

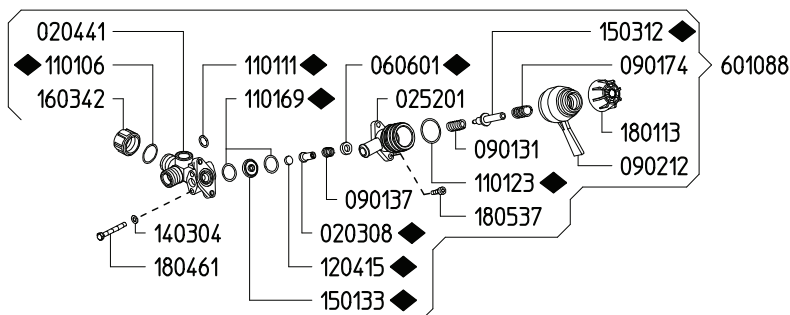
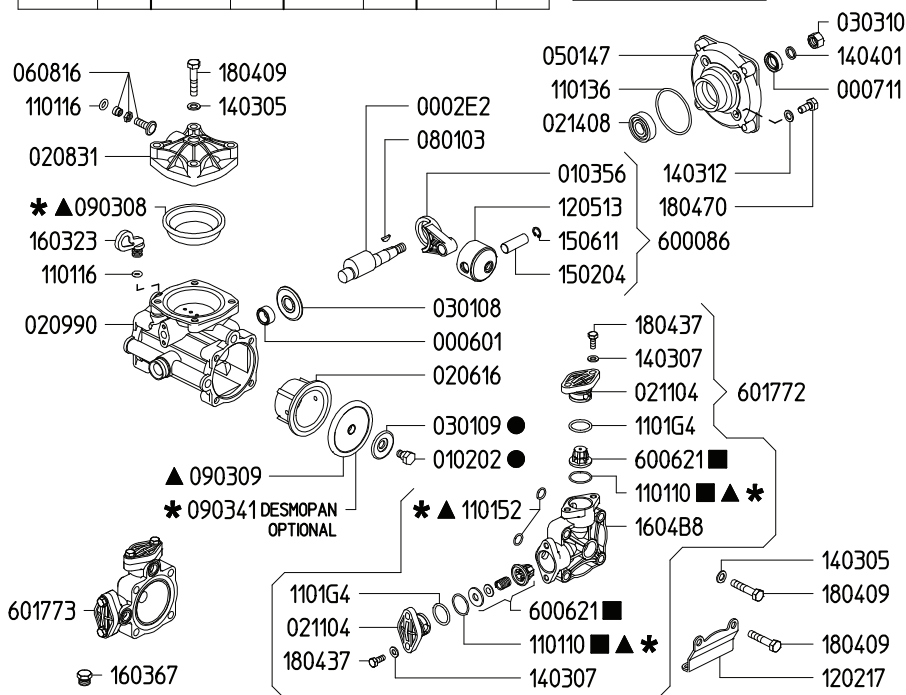
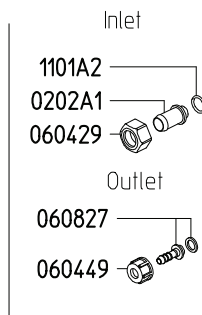


REMOVE AIR FROM AIR DAMPER CHAMBER BEFORE REMOVING AIR DAMPER CHAMBER COVER

It is essential to maintain the correct air pressure in the air damper chamber. If the pressure in the damper chamber is too great or too small there will be excessive pulsation. The correct pressure setting for the air damper chamber should be marginally less than the pump delivery pressure. To find the optimum pressure setting, with the pump not running, fill the chamber to about 100psi (690kPa). Then operate the pump at the desired speed and pressure and release pressure from the damper chamber until the pump is running relatively smoothly (ie minimum pulsation). Due to the size of the chamber, small releases of air will result in large pressure drops. Release the pressure in very small quantities and never use a hand pump or pressure gauge as these release a significant amount of pressure when disconnecting.

IOTA 20

KIT 629		KIT 536		KIT 537		KIT 539	
870001		606237		606238		606240	
✱		▲		■		●	
CODICE CODE	Q.TA' Q.TY	CODICE CODE	Q.TA' Q.TY	CODICE CODE	Q.TA' Q.TY	CODICE CODE	Q.TA' Q.TY
090308	1	090308	1	110110	4	010202	2
090341	2	090309	2	600621	4	030109	2
110110	4	110110	4				
110152	4	110152	4				



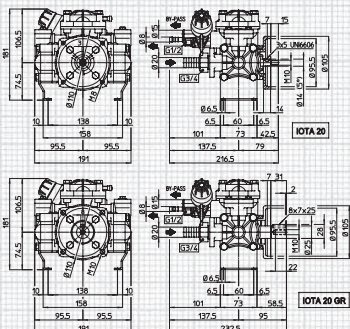
KIT 499	
870101	
◆	
CODICE CODE	Q.TA' Q.TY
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060601	1
110106	1
110111	1
110123	1
110169	2
120415	1
150133	1
150312	1

IOTA 20

IOTA 25 GR

max. 19 l/min - 5.0 GPM • 20 bar - 290 PSI • 600 RPM

max. 24 l/min - 6.3 GPM • 20 bar - 290 PSI • 600 RPM



alberi P. di F. disponibili available P.T.O. shaft

IOTA 20



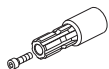
3-9-10-15

IOTA 25 GR

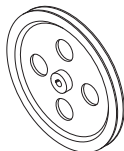


1-4-14-15

applicazioni shaft adaptors



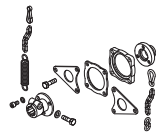
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3



4



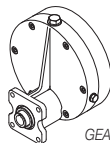
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10



14

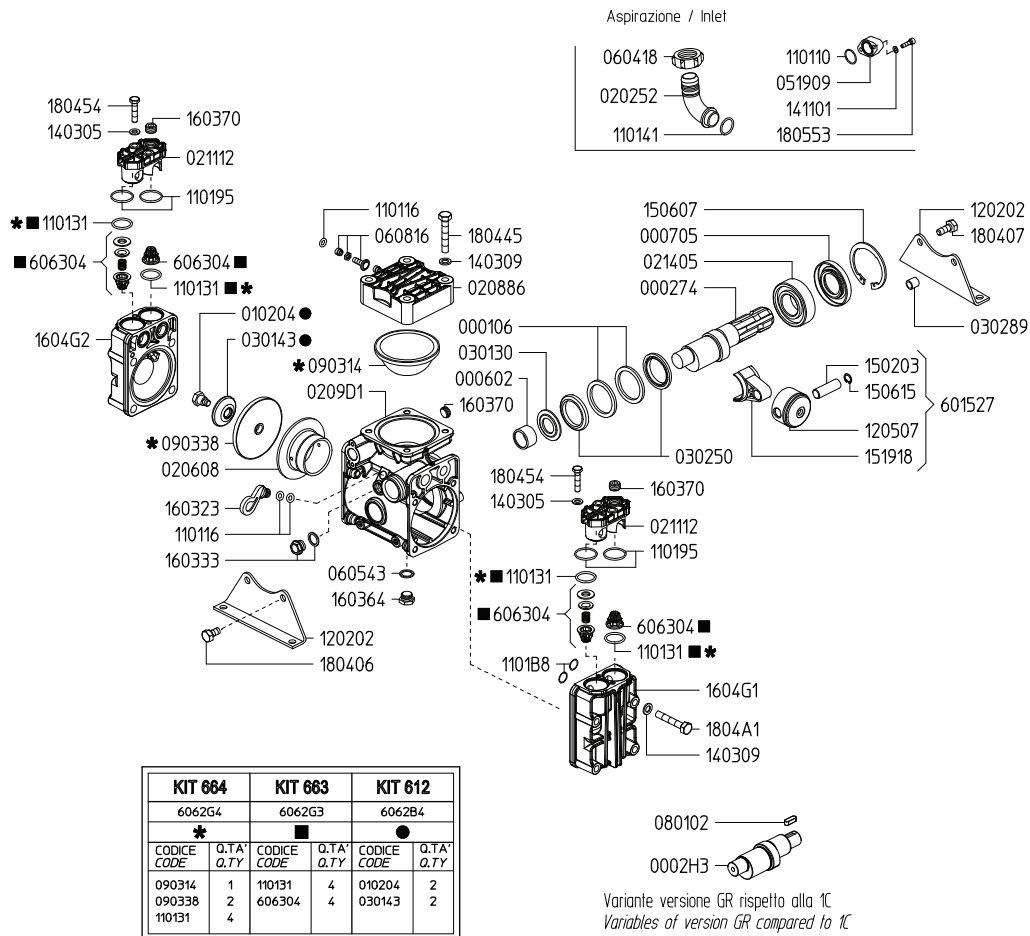


RIDUTTORI 15
Vedi pag. 42/43

GEAR REDUCTIONS 15
See page 42/43

MOD.	RPM	0 bar / 0 PSI				5 bar / 72 PSI				10 bar / 145 PSI				15 bar / 217 PSI				20 bar / 290 PSI				
IOTA 20		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Peso Weight
		l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	Kg
	450	15.9	4.9	0.2	0.1	12.6	3.3	0.3	0.2	12.2	3.2	0.3	0.3	11.9	3.1	0.5	0.3	11.7	3.1	0.6	0.5	3.7
	500	16.8	4.4	0.2	0.1	14.1	3.7	0.3	0.2	13.7	3.6	0.4	0.3	13.4	3.5	0.5	0.4	13.2	3.5	0.7	0.5	
	550	17.6	4.6	0.2	0.1	15.3	4.0	0.3	0.2	14.9	3.9	0.4	0.3	14.6	3.9	0.6	0.4	14.4	3.8	0.8	0.6	
	600	19.0	5.0	0.2	0.1	16.9	4.5	0.3	0.2	16.5	4.4	0.5	0.3	16.2	4.3	0.6	0.5	16.0	4.2	0.8	0.6	
IOTA 25 GR	450	18.5	4.9	0.2	0.1	16.8	4.4	0.3	0.2	16.4	4.3	0.5	0.3	16.1	4.3	0.6	0.5	15.9	4.2	0.8	0.6	4.0
	500	20.9	5.5	0.2	0.2	18.5	4.9	0.4	0.3	18.1	4.8	0.5	0.4	17.8	4.7	0.7	0.5	17.6	4.6	0.9	0.7	
	550	22.5	5.9	0.2	0.2	20.2	5.3	0.4	0.3	19.8	5.2	0.6	0.4	19.5	5.2	0.8	0.6	19.3	5.1	1.0	0.7	
	600	24.0	6.3	0.2	0.2	22.1	5.8	0.4	0.3	21.7	5.7	0.6	0.5	21.4	5.7	0.9	0.6	21.2	5.6	1.1	0.8	

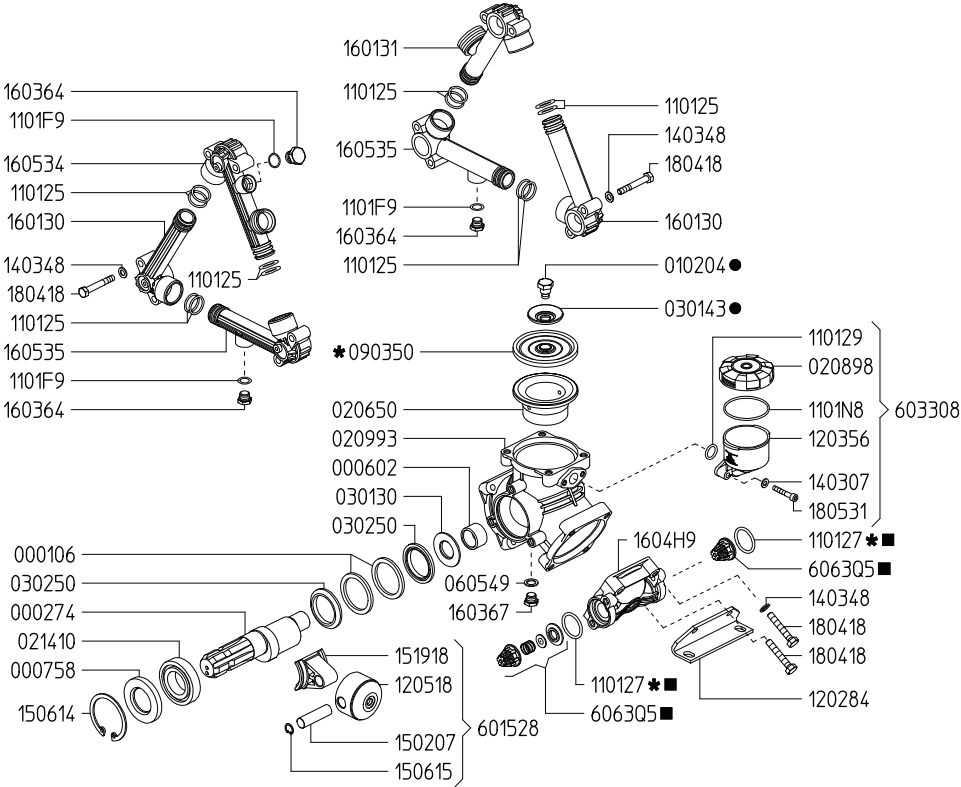
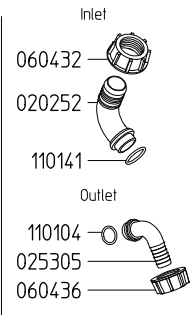
Kappa 40 / Delta 40



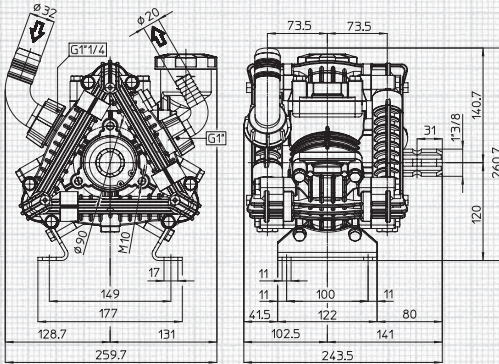
MOD.	RPM	0 bar / 0 PSI				10 bar / 145 PSI				20 bar / 290 PSI				30 bar / 435 PSI				40 bar / 580 PSI					
DELTA 40	400	Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Peso Weight	
		l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	Kg	
		37.8	10.0	0.4	0.3	26.8	7.1	0.8	0.6	26.3	6.9	1.4	1.0	25.9	6.8	2.0	1.5	25.6	6.8	2.6	1.9	11	
		45.2	10.9	0.4	0.3	30.2	8.0	0.9	0.6	29.7	7.8	1.6	1.1	29.3	7.7	2.3	1.7	29.0	7.7	3.0	2.2		
		500	44.7	11.8	0.4	0.3	33.6	8.9	1.0	0.7	33.1	8.7	1.7	1.3	32.7	8.6	2.5	1.9	32.4	8.6	3.3		2.4
DELTA 50	400	550	48.2	12.7	0.5	0.4	36.9	9.7	1.1	0.8	36.4	9.6	1.9	1.4	36.0	9.5	2.8	2.1	35.7	9.4	3.7	2.7	11
		450	41.6	11.0	0.4	0.3	31.7	8.4	0.9	0.7	31.1	8.2	1.6	1.2	30.6	8.1	2.4	1.8	30.2	8.0	3.1	2.3	
		500	46.1	12.2	0.5	0.3	36.2	9.6	1.0	0.8	35.6	9.4	1.9	1.4	35.1	9.3	2.7	2.0	34.7	9.2	3.6	2.6	
		550	50.0	13.2	0.5	0.4	40.1	10.6	1.1	0.8	39.5	10.4	2.1	1.5	39.0	10.3	3.0	2.2	38.6	10.2	4.0	2.9	
		550	53.5	14.1	0.5	0.4	43.4	11.5	1.2	0.9	42.8	11.3	2.3	1.7	42.3	11.2	3.3	2.4	42.0	11.1	4.3	3.2	

Zeta 70

KIT 616		KIT 641		KIT 547	
6062B8		6062D8		606248	
★		■		●	
CODICE CODE	Q.TA' Q.TY	CODICE CODE	Q.TA' Q.TY	CODICE CODE	Q.TA' Q.TY
090350	3	110127	6	010204	3
110127	6	606305	6	030143	3



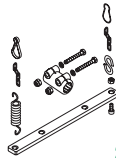
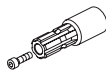
max. 70.5 l/min - 18.6 GPM • 20 bar - 290 PSI • 550 RPM

**alberi P. di F. disponibili available P.T.O. shaft**

Per le dimensioni
degli Alberi P. di F.
vedi pag. 35

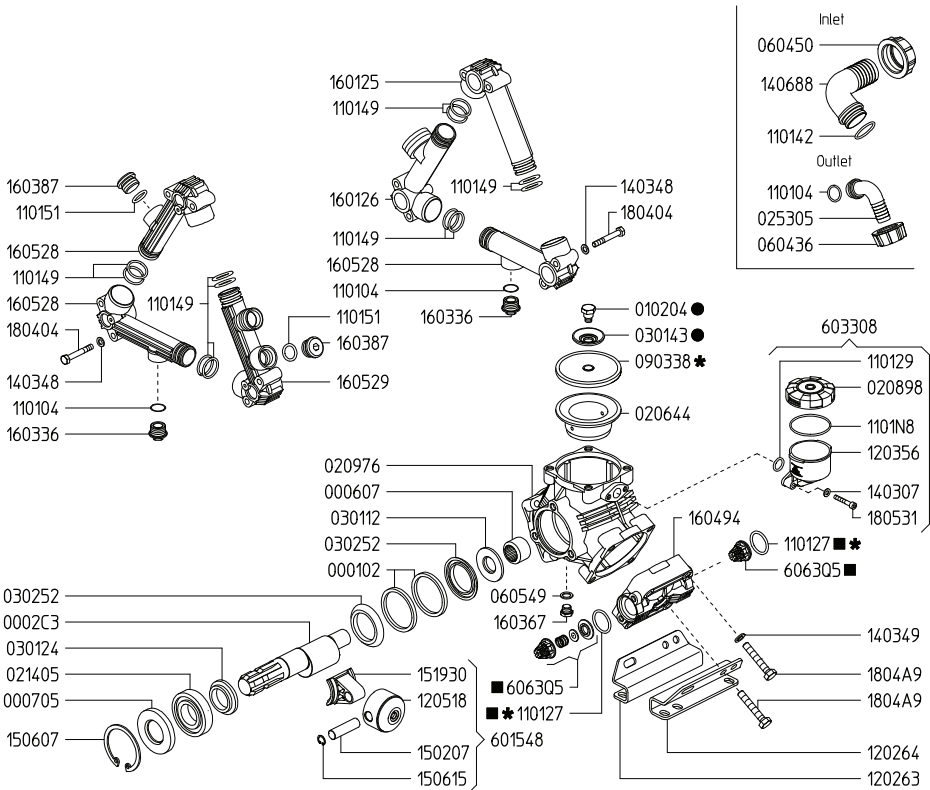
For P.T.O.
Shaft dimensions
see page 35

applicazioni shaft adaptors

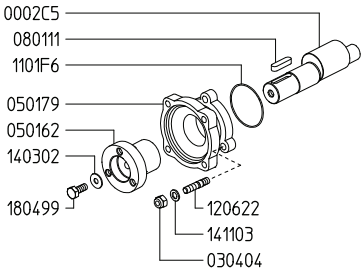


MOD.	RPM	0 bar / 0 PSI				5 bar / 72 PSI				10 bar / 145 PSI				15 bar / 217 PSI				20 bar / 290 PSI				
ZETA 70		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Peso Weight
		l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	Kg
	400	51.5	13.6	0.5	0.4	49.1	13.0	1.0	0.7	48.8	12.9	1.4	1.0	48.4	12.8	1.9	1.4	48.1	12.7	2.5	1.9	8.7
	450	57.6	15.2	0.6	0.4	55.1	14.6	1.1	0.8	54.6	14.4	1.6	1.1	54.1	14.3	2.2	1.6	53.8	14.2	2.8	2.1	
	500	63.5	16.8	0.6	0.5	61.2	16.2	1.2	0.9	60.8	16.1	1.7	1.6	60.4	16.0	2.4	1.8	60.0	15.9	3.2	2.3	
	550	70.5	18.6	0.7	0.5	66.6	17.6	1.3	1.0	66.2	17.5	1.9	1.4	65.8	17.4	2.6	1.9	65.5	17.3	3.4	2.5	

Zeta 85



KIT 587		KIT 641		KIT 547	
606297		6062D8		606248	
★		■		●	
CODICE CODE	Q.TA' Q.TY	CODICE CODE	Q.TA' Q.TY	CODICE CODE	Q.TA' Q.TY
090338	3	110127	6	010204	3
110127	6	606305	6	030143	3



Variables of version VA compared to 1C

ZETA-P 40

ZETA-P 85

ZETA-P 100

max. 44 l/min - 11.6 GPM • 20 bar - 290 PSI • 550 RPM

max. 85 l/min - 22.5 GPM • 20 bar - 290 PSI • 550 RPM

max. 98 l/min - 25.9 GPM • 20 bar - 290 PSI • 550 RPM

TESTATE a base di resina poliestere
Polyester resin-based HEADS

DISEGNO ZETA-P 40 E ZETA-P 85: VEDI PAG.10
ZETA-P 40 AND ZETA-P 85 DRAWING: SEE PAGE 10
DISEGNO ZETA-P 100: VEDI PAG.11
ZETA-P 100 DRAWING: SEE PAGE 11

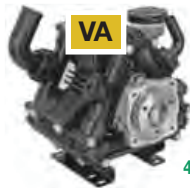
ZETA-P 40
ZETA-P 85

ZETA-P 100

alberi P. di F. disponibili available P.T.O. shaft



2-13



4-15

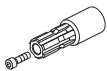


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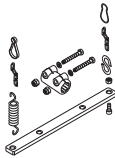
Per le dimensioni
degli Alberi P. di F.
vedi pag. 35

For P.T.O.
Shaft dimensions
see page 35

applicazioni shaft adaptors



1



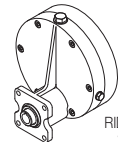
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4



13

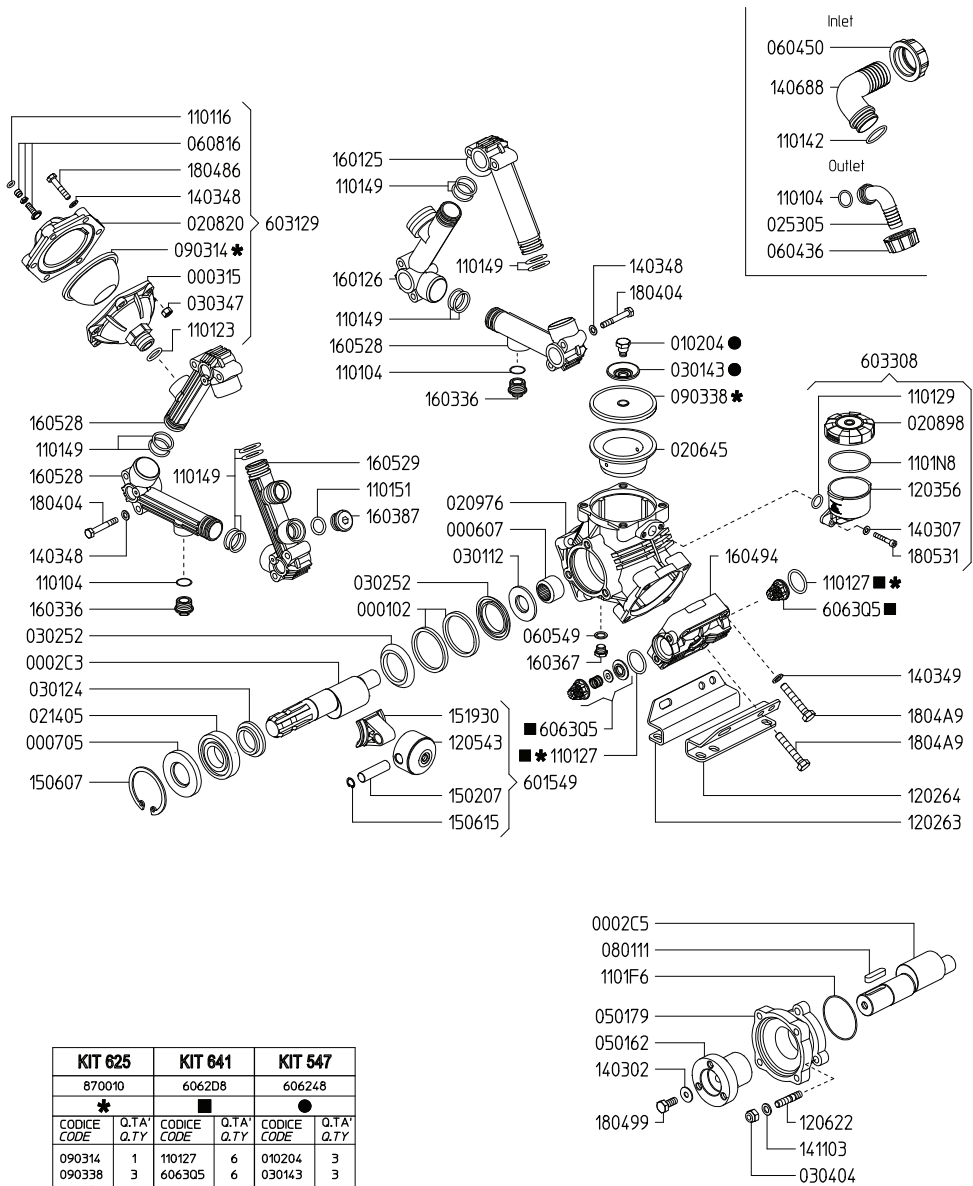


RIDUTTORI 15
Vedi pag. 42

GEAR REDUCTIONS 15
See page 42

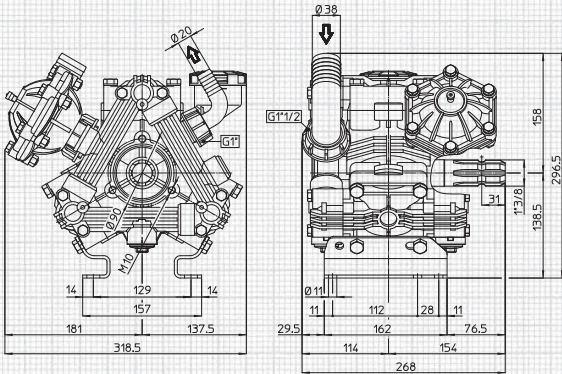
MOD.	RPM	0 bar / 0 PSI				5 bar / 72 PSI				10 bar / 145 PSI				15 bar / 217 PSI				20 bar / 290 PSI				
ZETA-P 40		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Peso Weight
		l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	Kg
	400	33.0	8.7	0.3	0.2	30.0	7.9	0.6	0.4	29.3	7.7	0.8	0.6	28.8	7.6	1.2	0.8	28.5	7.5	1.5	1.1	12
	450	36.5	9.6	0.4	0.3	33.5	8.9	0.7	0.5	32.8	8.7	0.9	0.7	32.3	8.5	1.3	0.9	32.0	8.5	1.7	1.2	
	500	40.2	10.6	0.4	0.3	37.2	9.8	0.7	0.5	36.5	9.6	1.0	0.8	36.0	9.5	1.4	1.1	35.7	9.4	1.9	1.4	
550	44.0	11.6	0.4	0.3	41.0	10.8	0.8	0.6	40.3	10.6	1.2	0.8	39.8	10.5	1.6	1.2	39.5	10.4	2.1	1.5		
ZETA-P 85	400	62.2	16.4	0.6	0.5	58.6	15.5	1.2	0.9	58.2	15.4	1.7	1.2	57.5	15.2	2.3	1.7	57.3	15.1	3.0	2.2	12
	450	69.7	18.4	0.7	0.5	65.9	17.4	1.3	1.0	65.5	17.3	1.9	1.4	64.9	17.1	2.6	1.9	64.6	17.1	3.4	2.5	
	500	77.2	20.4	0.8	0.6	73.2	19.3	1.5	1.1	72.7	19.2	2.1	1.5	72.2	19.1	2.9	2.1	71.8	19.0	3.8	2.8	
	550	84.6	22.4	0.8	0.6	80.4	21.2	1.6	1.2	79.9	21.1	2.3	1.7	79.4	21.0	3.2	2.3	79.0	20.9	4.2	3.1	
ZETA-P 100	400	72.8	19.2	0.7	0.5	69.2	18.3	1.4	1.0	68.8	18.2	2.0	1.4	68.4	18.1	2.7	2.0	68.2	18.0	3.6	2.6	13
	450	81.6	21.6	0.8	0.6	77.6	20.5	1.6	1.1	77.2	20.4	2.2	1.6	75.5	19.9	3.0	2.2	76.4	20.2	4.0	3.0	
	500	90.4	23.9	0.9	0.7	86.0	22.7	1.7	1.3	85.6	22.6	2.4	1.8	82.5	21.8	3.3	2.4	84.6	22.4	4.5	3.3	
	550	98.0	25.9	1.0	0.7	92.7	24.5	1.9	1.4	92.2	24.4	2.6	1.9	91.7	24.2	3.7	2.7	91.3	24.1	4.8	3.5	

Zeta 100



ZETA 100

max. 98 l/min - 25.9 GPM • 20 bar - 290 PSI • 550 RPM



alberi P. di F. disponibili

available P.T.O. shaft



1C

2-13



VA

4-15



TS 1C

1

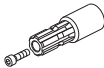
13

Per le dimensioni
degli Alberi P. di F.
vedi pag. 35

For P.T.O.
Shaft dimensions
see page 35

applicazioni

shaft adaptors



1



2

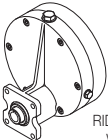


4



13

Non fornito
Not supplied

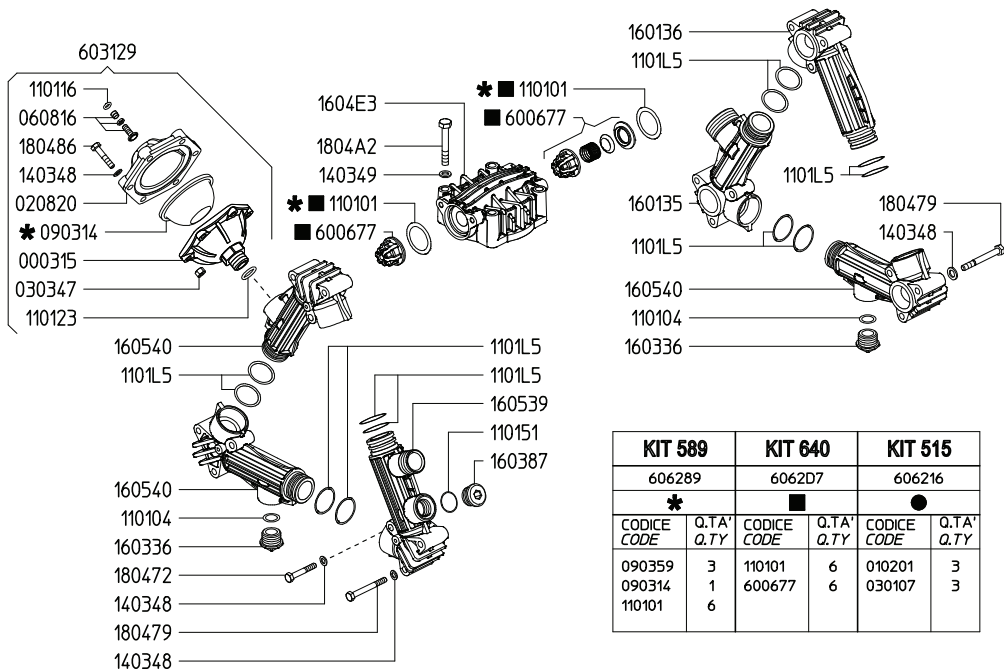


RIDUTTORI 15
Vedi pag. 42

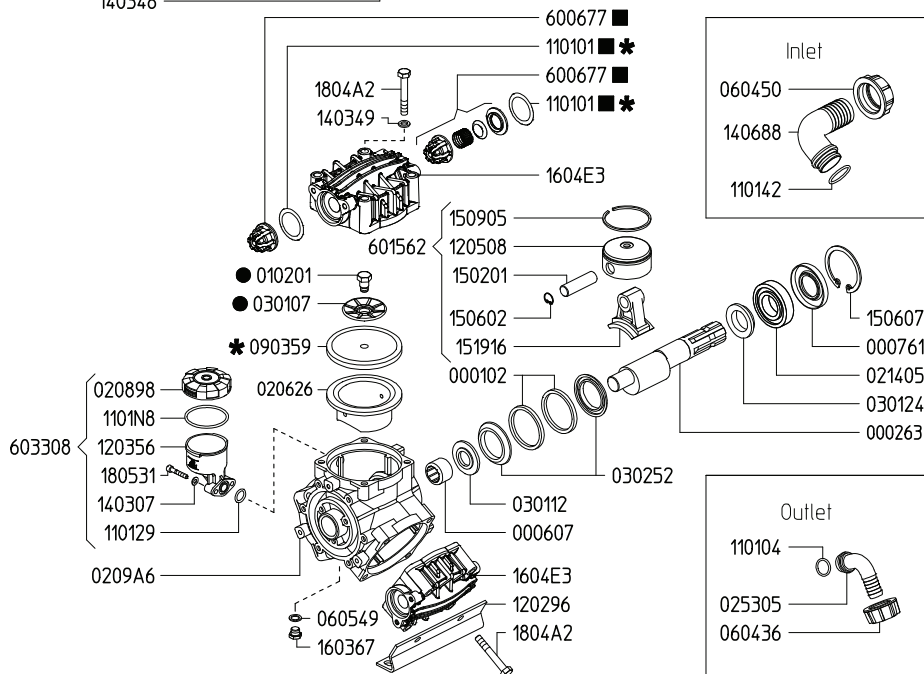
GEAR REDUCTIONS 15
See page 42

MOD.	RPM	0 bar / 0 PSI				5 bar / 72 PSI				10 bar / 145 PSI				15 bar / 217 PSI				20 bar / 290 PSI				
ZETA 100		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Peso Weight
		l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	Kg
	400	72.8	19.2	0.7	0.5	69.2	18.3	1.4	1.0	68.8	18.2	2.0	1.4	68.4	18.1	2.7	2.0	68.2	18.0	3.6	2.6	13
	450	81.6	21.6	0.8	0.6	77.6	20.5	1.6	1.1	77.2	20.4	2.2	1.6	75.5	19.9	3.0	2.2	76.4	20.2	4.0	3.0	
	500	90.4	23.9	0.9	0.7	86.0	22.7	1.7	1.3	85.6	22.6	2.4	1.8	82.5	21.8	3.3	2.4	84.6	22.4	4.5	3.3	
550	98.0	25.9	1.0	0.7	92.7	24.5	1.9	1.4	92.2	24.4	2.6	1.9	91.7	24.2	3.7	2.7	91.3	24.1	4.8	3.5		

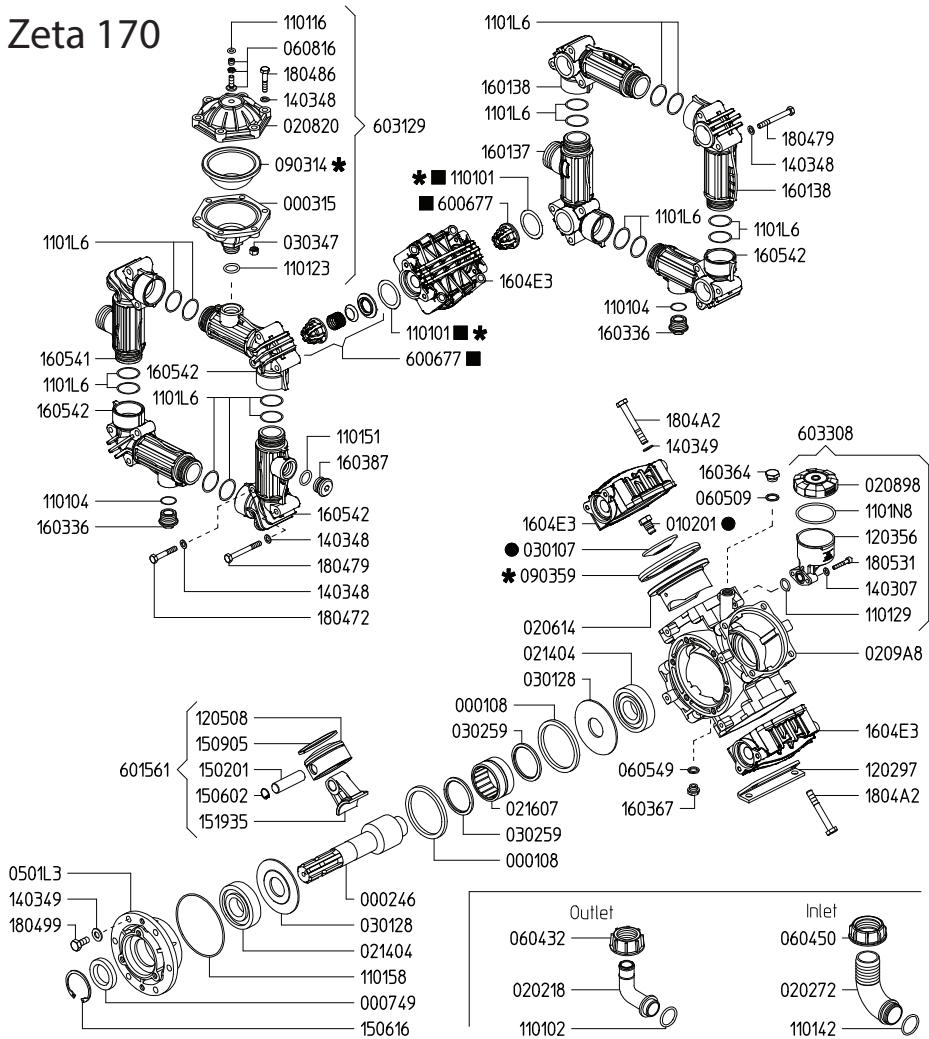
Zeta 140



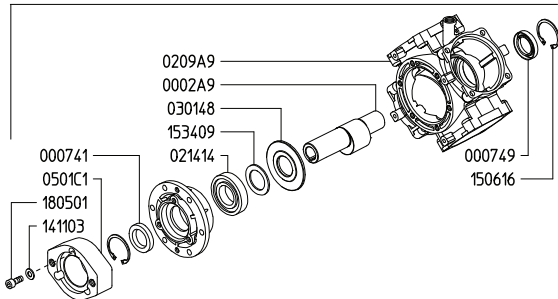
KIT 589		KIT 640		KIT 515	
606289		6062D7		606216	
*		■		●	
CODICE CODE	Q.TA' Q.TY	CODICE CODE	Q.TA' Q.TY	CODICE CODE	Q.TA' Q.TY
090359	3	110101	6	010201	3
090314	1	600677	6	030107	3
110101	6				



Zeta 170



KIT 626		KIT 638		KIT 523	
870009		6062D5		606224	
✱		■		●	
CODE CODE	Q.TA Q.TY	CODE CODE	Q.TA Q.TY	CODE CODE	Q.TA Q.TY
090359	4	110101	8	010201	4
090314	1	600677	8	030107	4
110101	8				



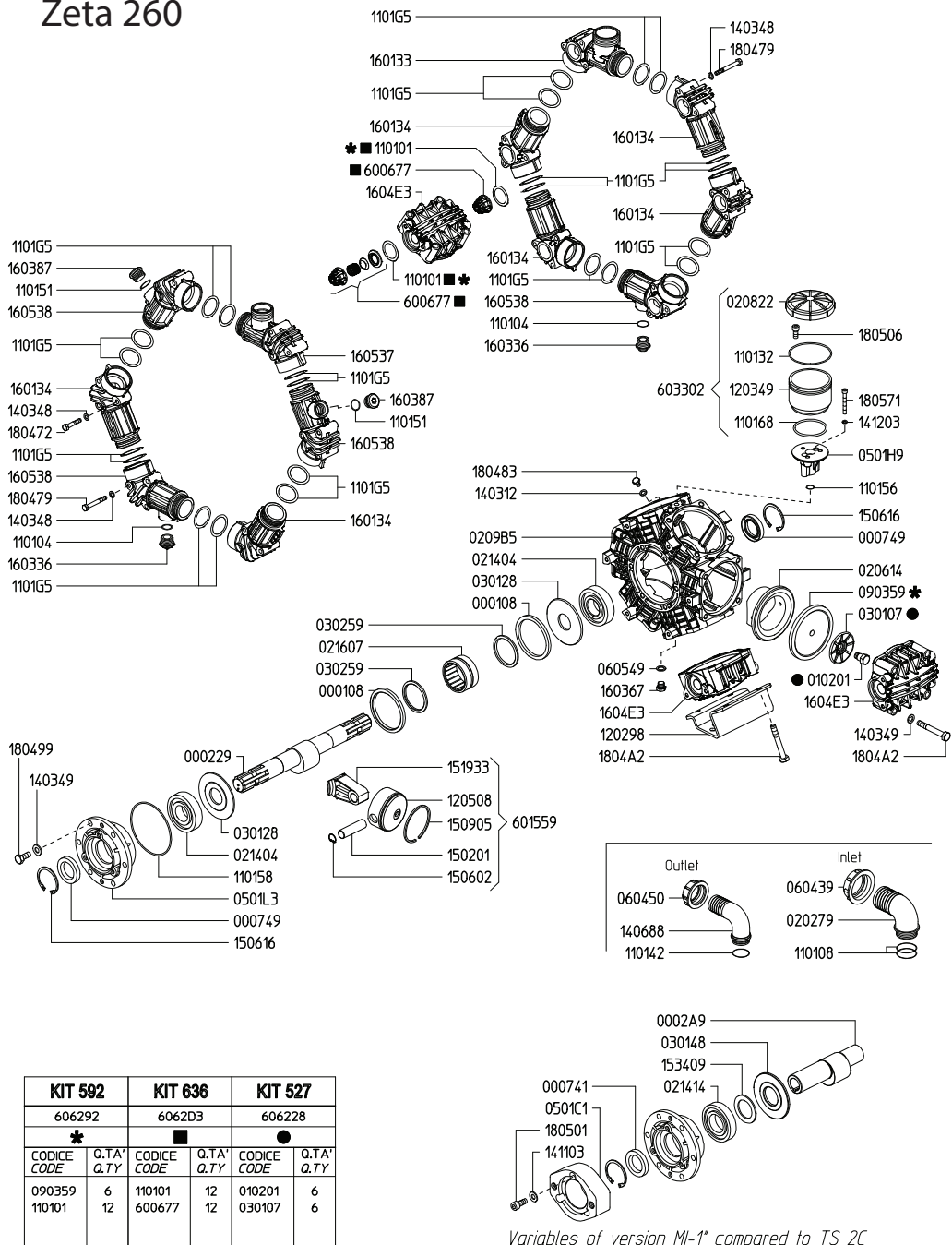
Variables of version MI-1* compared to 1C

max. 198 l/min - 52 GPM • 20 bar - 290 PSI • 550 RPM



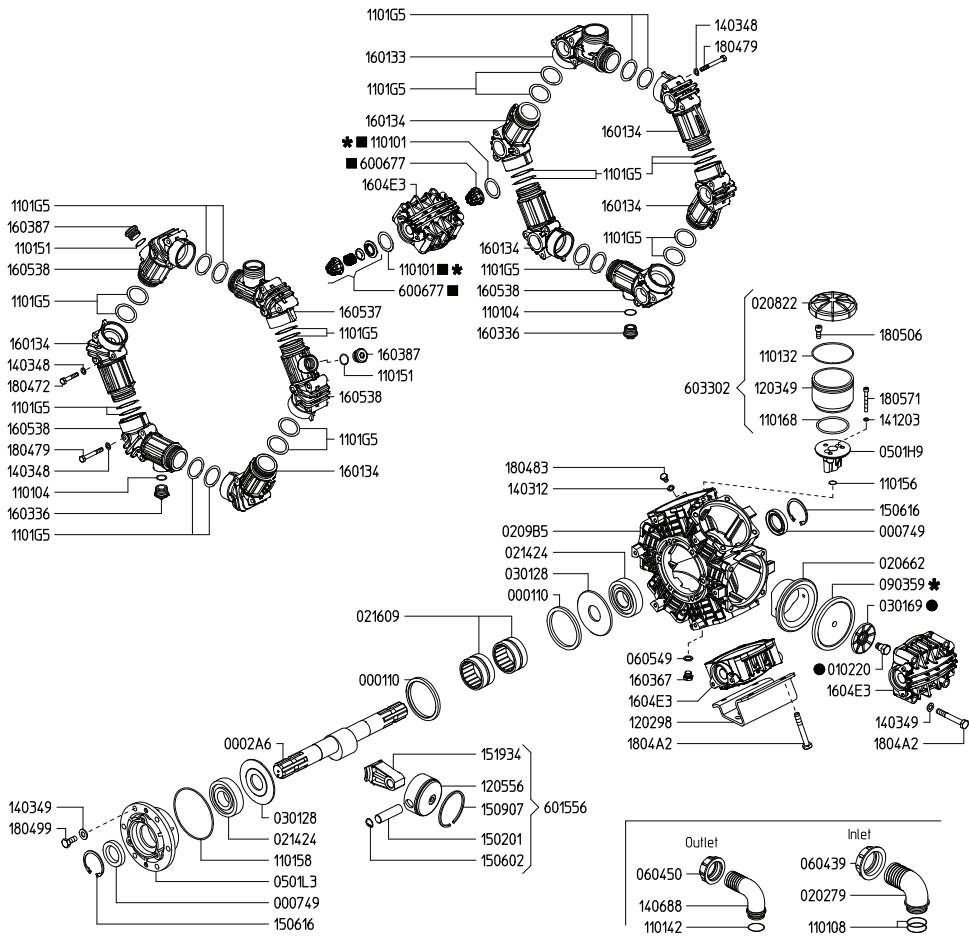
MOD.	RPM	0 bar / 0 PSI				5 bar / 72 PSI				10 bar / 145 PSI				15 bar / 217 PSI				20 bar / 290 PSI				Peso Weight
		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		
ZETA 170		l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	Kg
	400	125.9	33.3	1.3	0.9	121.0	32.0	1.6	1.1	120.3	31.8	3.1	2.3	119.6	31.6	4.6	3.4	118.9	31.4	6.1	4.5	24
	450	140.6	37.1	1.4	1.0	135.7	35.9	1.7	1.3	135.0	35.7	3.5	2.5	134.3	35.5	5.2	3.8	133.6	35.3	6.9	5.0	
	500	155.3	41.0	1.6	1.1	150.4	39.7	1.9	1.4	149.7	39.6	3.8	2.8	149.0	39.4	5.7	4.2	148.3	39.2	7.6	5.6	
	550	170.0	44.9	1.7	1.2	165.1	43.6	2.1	1.6	164.4	43.4	4.2	3.1	163.7	43.2	6.3	4.6	163.0	43.1	8.4	6.1	
ZETA 200	400	145.8	38.5	1.5	1.1	140.9	37.2	1.8	1.3	140.2	37.0	3.6	2.6	139.5	36.9	5.4	3.9	138.8	36.7	7.1	5.2	26
	450	163.2	43.1	1.6	1.2	158.3	41.8	2.0	1.5	157.6	41.6	4.0	3.0	156.9	41.5	6.0	4.4	156.2	41.3	8.0	5.9	
	500	180.6	47.7	1.8	1.3	175.7	46.4	2.3	1.7	175.0	46.2	4.5	3.3	174.3	46.1	6.7	4.9	173.6	45.9	8.9	6.5	
	550	198.0	52.3	2.0	1.5	193.1	51.0	2.5	1.8	192.4	50.8	4.9	3.6	191.7	50.6	7.4	5.4	191.0	50.5	9.8	7.2	

Zeta 260

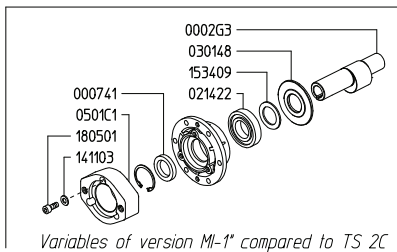


MOD.	RPM	0 bar / 0 PSI				5 bar / 72 PSI				10 bar / 145 PSI				15 bar / 217 PSI				20 bar / 290 PSI					
ZETA	230	Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Portata Flow rate		Potenza Power		Peso Weight	
		l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	l/min	GPM	HP	kW	Kg	
	400	169.5	44.8	1.7	1.2	164.1	43.4	2.1	1.5	162.8	43.4	4.2	3.1	161.6	42.7	6.2	4.6	160.5	42.4	8.2	6.0	36	
	450	189.0	49.9	1.9	1.4	183.6	48.5	2.4	1.8	182.3	48.2	4.7	3.4	181.1	47.8	7.0	5.1	180.0	47.6	9.2	6.8		
	500	208.5	55.1	2.1	1.5	203.1	53.7	2.6	1.9	201.6	53.3	5.2	3.8	200.6	53.0	7.7	5.7	199.5	52.7	10.2	7.5		
	550	228.0	60.2	2.3	1.7	222.6	58.8	2.9	2.1	221.3	58.5	5.7	4.2	220.1	58.2	8.5	6.2	219.0	57.9	11.2	8.3		
ZETA	260	400	190.9	50.4	1.9	1.4	185.5	49.0	2.4	1.7	184.2	48.7	4.7	3.5	183.0	48.3	7.0	5.2	181.9	48.1	9.3	6.9	36
	450	212.6	56.2	2.1	1.6	207.2	54.7	2.7	2.0	205.9	54.4	5.3	3.9	204.7	54.1	7.9	5.8	203.6	53.8	10.4	7.7		
	500	234.3	61.9	2.3	1.7	228.9	60.5	2.9	2.2	227.6	60.1	5.8	4.3	226.4	59.8	8.7	6.4	225.3	59.5	11.6	8.5		
	550	256.0	67.6	2.6	1.9	250.6	66.2	3.2	2.4	249.3	65.9	6.4	4.7	248.1	65.5	9.5	7.0	247.0	65.3	12.7	9.3		
ZETA	300	400	215.5	56.9	2.2	1.6	213.3	56.4	2.7	2.0	212.2	56.1	5.4	4.0	211.1	55.8	8.1	6.0	210.0	55.5	10.8	7.9	38
	450	242.0	63.9	2.4	1.8	239.3	63.2	3.1	2.3	238.2	62.9	6.1	4.5	237.1	62.6	9.1	6.7	236.0	62.4	12.1	8.9		
	500	268.5	70.9	2.7	2.0	265.3	70.1	3.4	2.5	264.2	69.8	6.8	5.0	263.1	69.5	10.1	7.4	262.0	69.2	13.4	9.9		
	550	295.0	77.9	3.0	2.2	291.3	77.0	3.7	2.7	290.2	76.7	7.4	5.5	289.1	76.4	11.1	8.2	288.0	76.1	14.8	10.9		

Zeta 300



KIT 592		KIT 636		KIT 637	
606292		6062D3		6062D4	
✱		■		●	
CODICE CODE	Q.TA' Q.TY	CODICE CODE	Q.TA' Q.TY	CODICE CODE	Q.TA' Q.TY
090359	6	110101	12	010220	6
110101	12	600677	12	030169	6



UDOR Diaphragm Pump Spare Part Kits

Diaphragm kits consist of side diaphragms and air diaphragm where applicable.

Suits Pump	Type	Part No.
Kappa 40	Diaphragm kit	GA5023870-SK
Zeta 85	Diaphragm kit	GA5077797
Zeta 100	Diaphragm kit	KIT-ZETA100D
RO121/130	Diaphragm kit	GA5077789
Zeta 140	Diaphragm kit	GA5077789
RO160	Diaphragm kit	GA5077791
Zeta 170	Diaphragm kit	GA5077791
RO250	Diaphragm kit	GA5077793
Zeta 260	Diaphragm kit	GA5077793
Zeta 300	Diaphragm kit	GA5077793

Complete Kits

Includes side diaphragms, air diaphragm where applicable, valves, o rings and oil seals.

Suits Pump	Type	Part No.
IOTA20	Complete kit	GA5023875-SK
Kappa 40	Complete kit	GA5077781
Zeta 85	Complete kit	GA5077796
Zeta100	Complete kit	GA5077787
RO121/130	Complete kit	GA5077788
Zeta 140	Complete kit	GA5077788
RO160	Complete kit	GA5077790
Zeta 170	Complete kit	GA5077790
RO250	Complete kit	GA5077792
Zeta 260	Complete kit	GA5077792
Zeta 300	Complete kit	GA5077792

All pump kits come with parts break down of pump and fitting instructions.

Zeta pump kit contents

GA Number	Contents
GA5077788	Zeta 140 Complete Kit 3 x 090359 1 x 090314 6 x 600677 6 x GA5020060 1 x 000761 1 x 110158 1 x 110179
GA5077789	Zeta 140 Diaphragm Kit 3 x 090359 1 x 090314
GA5077790	Zeta 170 Complete Kit 4 x 090359 1 x 090314 8 x 600677 8 x GA5020060 1 x 000749 1 x 110158
GA5077791	Zeta 170 Diaphragm Kit 4 x 090359 1 x 090314
GA5077792	Zeta 260 complete Kit 6 x 090359 12 x 600677 12 x GA5020060 1 x 000749 1 x 110158 1 x 000741
GA5077793	Zeta 260 Diaphragm kits 6 x 090359
GA5077792	Zeta 300 Complete Kit 6 x 090359 12 x 600677 12 x GA5020060 1 x 000749 1 x 110158 1 x 000741
GA5077793	Zeta 300 Diaphragm Kit 6 x 090359

Safety

General

The following pages outline important safety information. At Goldacres safety is a high priority. These safety and warning instructions **MUST** be followed to ensure the safe operation of your Goldacres equipment.

Explanation of key terms used in this operator's manual are:

DANGER - You will be killed or seriously hurt if you don't follow instructions

WARNING - You can be seriously hurt if you don't follow instructions

CAUTION - You can be hurt if you don't follow instructions

NOTE - Is used to notify people of installation, operation or maintenance information that is important but not hazard related.

The Operator

All operators of this equipment should be adequately trained in the safe operation of this equipment. It is important that all operator's have read and fully understand the operators manual prior to using this equipment.

All new operators should be trained in an area without bystanders or obstructions and become familiar with the sprayer prior to operation.

Safety Precautions

DANGER

- Cut hazard. Sharp edges. Contact may result in injury. Always keep body, head and hands away from sharp edges.

WARNINGS

- Any unauthorised modifications to this equipment may affect its function and create a serious safety risk.
- Never attempt to clean parts or nozzles, by blowing with mouth.
- Never attempt to siphon chemicals, or substances, by sucking.

- It is imperative that the vehicle manufacturer's specifications be checked and all instructions for use when transporting, or towing, be adhered to at all times.
- Water weighs 1kg per litre, however conversion factors must be used when spraying liquids that are heavier or lighter than water. Example: liquid urea has a density of 1.28 kg/L and will therefore be significantly heavier than water if the tank is filled completely.
- Ensure equipment is securely fastened, or attached, to the vehicle at all times.

CAUTIONS

- A supply of fresh water should be with the equipment at all times.
- Do not use this machine in ambient temperatures exceeding 40 degrees Celsius.

NOTES

- Always read and understand the operator's manual prior to operation of this equipment.
- It is the responsibility of the operator to ensure that there are no decals missing from the equipment and that any damaged or missing decals are replaced prior to operation.
- Goldacres equipment ordered or operated, outside the guideline limitations may not be warranted by Goldacres for successful performance. Operators working outside these limitations do so at their own risk, unless specific advice has been sought from and provided by Goldacres in writing.
- Inspect the equipment thoroughly for damage and wear before operation.
- Do not operate the equipment while under the influence of any drugs, alcohol or if excessively tired.
- Make sure that the equipment complies with all relevant road regulations when transporting.
- After reading the operator's manual if there is any thing that you do not understand please contact your Goldacres dealer or Goldacres.

Personal Protective Equipment (PPE)

Always wear close fitting clothing and safety equipment designed for the job.

Chemicals can be harmful to humans, appropriate PPE should be used when handling chemicals. Always refer to the chemical manufacturers label for guidelines on the appropriate PPE to use with the chemicals you are using.

Airborne Particles

- Always stand well clear of equipment during operation.
- Any spray drift is dangerous and may be hazardous to humans.

Goldacres also suggest that you read and understand the following Australian standards:

- Australian Standard for Chemical protective clothing AS3765
- Australian Standard for Respiratory protection devices AS1715

Fluids under pressure

Do not disconnect any hoses, nozzles or filters while equipment is operating. Disconnecting these components while under pressure may result in uncontrolled fluid discharge which may be hazardous.

When the repair is complete ensure that all fittings and lines are secured before re-applying pressure.

Warranty

How to make a warranty claim

In the event of a fault or breakdown with your product, that you believe to be a warranty issue, the following steps must be taken.

1. Ensure that you have read the Operator's Manual and gone through the troubleshooting procedure.
2. If you continue to experience problems then please contact Goldacres on 03 5342 6399. The operator will advise the method of warranty service for your product.

Warranty exclusions

Machines must be registered for warranty before a warranty can be requested. All information on delivery and installation must have been submitted before a claim can be requested. If follow up inspections are required these must have been carried out before warranty is requested as well.

Goldacres 12 month standard warranty

Some common exclusions:

- Pump diaphragms
- Pump Seals
- Pump check valves
- Pump o-rings
- Damaged items.
- Items controlled by or fitted to Non Genuine parts or devices

Goldacres Warranty Statement

This warranty is the only warranty applicable to Goldacres new products (Products) and to the maximum extent as permitted by law, is expressly in lieu of any other conditions or warranties expressed or implied in relation to the Product.

In Australia, Goldacres Products come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

This Warranty gives you additional protection for your Goldacres product and identifies a preferred approach to resolving warranty claims which will be the quickest and simplest for all parties subject to the exclusions, terms and conditions below.

Goldacres warrants its authorized Dealers who in turn warrants the original purchaser (Owner) that each new Goldacres Product will be free from proven defect in materials and workmanship for twelve (12) months from the date of delivery to the first owner according to conditions outlined herein.

Subject only to legislative obligations to the contrary, Goldacres shall not be liable for incidental or consequential damage resulting from ownership or use of a Product.

Goldacres does not authorize any person to create for it any other obligation or liability in connection with these products.

The repair of the defective Product qualifying under this warranty will be performed without charge for labour and parts by any authorized Goldacres service outlet within a reasonable time following the delivery of the Product, at the cost of the owner, to the service outlet / place of business advised

Goldacres in its absolute discretion may choose to pay the cost of replacement or repair of the product.

If the Product will be repaired or replaced, using parts as supplied by Goldacres, repair may include, at Goldacres discretion, the replacement of parts with functionally equivalent remanufactured, reconditioned or new parts.

Goldacres may request failed parts to be returned to the factory.

Conditions of Warranty Coverage

The warranty covers only conditions resulting directly from defects in workmanship or materials used under normal use and service conditions.

The Warranty is not transferable.

The owner is responsible for the performance of regular maintenance and service as specified in the owner's / operators manual applicable to the product. Failure to follow regular maintenance as advised may

invalidate the warranty.

The owner must provide the Goldacres Dealer with prompt written notice of the defect (within 14 days of it occurring) and allow reasonable time for repair and/or replacement.

Goldacres warranty cover excludes:

- Claims resulting from misuse, use of incompatible chemical or fluids, exceeding the Product's specifications including overloading, impact damage, negligence, accidental damage or failure to perform recommended service or service intervals or use the Product with good care.
- Failure due to faulty or inadequate electrical sources of power. 12 volt power sources must be checked for suitability to operate the product.
- The time taken to remove and re-install warranted parts, products or components fitted to other than Goldacres brand products will not be covered by Goldacres Warranty. Only labour and parts directly attributable to the repair of the Goldacres unit is covered.
- The cleaning of parts or products before or after the warranty repair. Cleaning time is considered a customer expense.
- Any Goldacres Product which has been repaired by other than an authorized Goldacres dealer in a way which, in the sole and absolute judgment of Goldacres, adversely affects its performance or reliability.
- The replacement of maintenance items such as diaphragms, batteries, belts, etc.
- Loss of time, inconvenience, loss of use of the product, liability to third parties or any other consequential damages including damage to crops, profits or revenue, other commercial losses inconvenience or cost of rental or replacement equipment.
- Incidental costs associated with a warranty repair including any travel costs, out of hours labour charges, transportation costs, freight costs or any communications costs.
- Goldacres products purchased at auction or in used condition.

Procedure for claiming:

Claims must be made through a Goldacres Dealer. To make a claim under this Warranty, you should

- Contact your local Goldacres Dealer,
- Phone 1300 301 853 to locate a Goldacres Dealer.

Owners returning products to a Goldacres Dealer will require the original Dealer tax invoice, a copy of the tax invoice or delivery docket and any instruction manuals, information booklets or guides that were shipped with the Product.

Terms and Conditions

Interpretation

1. In terms and conditions:
 - (1) "Goldacres" means Goldacres Trading Pty. Ltd. A.C.N. 061 306 732 trading as Goldacres Agricultural Equipment (its successors and assigns) which is the seller of the Goods;
 - (2) "Purchaser" means the purchaser of the Goods;
 - (3) "Goods" means the products and, if any, the services sold or provided by Goldacres to the Purchaser;
 - (4) "GST Act" and "GST" are given the meanings referred to in a New Tax System (Goods and Services Tax) Act 1999.
 - (5) "PPSA" means the Personal Property Securities Act 2009 (Cth) (as amended);
 - (6) Nothing in these terms and conditions shall be applied so as to exclude, restrict or modify or have the effect of excluding, restricting or modifying, any condition, warranty, guarantee, right or remedy implied by law (including the Competition and Consumer Act 2010) and which by law cannot be excluded, restricted or modified.

General

2. (1) The Goods and all other products or services provided by Goldacres are provided subject to these terms and conditions. These terms and conditions and any terms and conditions incorporated herein by virtue of clause 3 hereto shall prevail over all other terms and conditions of the Purchaser or otherwise to the extent of any inconsistency.

- (2) These terms and conditions may not be modified or amended without the expressed written consent of Goldacres endorsed by the Managing Director of Goldacres Trading P/L.

Additional Terms and Conditions

3. From time to time Goldacres may provide additional or extended warranties in respect of certain goods and/or services. Where such additional or extended warranties are provided to a Purchaser in writing they will be incorporated into these terms and conditions provided that in the event of any inconsistency between these terms and conditions and the terms of any additional or extended warranty, the provisions of the additional or extended warranty shall prevail.

Goldacres quotations.

4. Unless previously withdrawn, Goldacres quotations are open for acceptance within the period stated therein or, when no period is stated, with 14 days only of the quotation date. Goldacres reserves the right to refuse any order based on any quotation within 7 days of receipt of the order.

Packing

5. The cost of any special packing and packing materials used in relation to the Goods shall be at the Purchaser's expense notwithstanding that such cost may have been omitted from any quotation.

Shortage

6. The Purchaser waives any claim for shortage of any Goods delivered if a claim in respect thereof has not been lodged with Goldacres within (7) seven days from the date of receipt of the Goods by the Purchaser.

Specifications, etc Catalogues, etc Quantities

7. All specifications, (including but not limited to: drawings, particulars of weights, volumes, capacities, dimensions, load factors) are approximate only and any deviation shall not be taken to vitiate any contract with Goldacres or form any claim against Goldacres. The descriptions, illustrations, and performances contained in catalogues, price lists and other advertising matter do not form part of the contract of sale of the Goods. Where specifications, drawings or other particulars are supplied by the Purchaser, Goldacres' price is made on estimates of quantities required. Should there be any adjustments in quantities above or below the quantities estimated by Goldacres and set out in a quotation, then any such increase or decrease shall be adjusted on a unit rate basis according to unit prices set out in the quotation.

Performance Capacities, Chemicals, Liquids, Application Methods, Environmental Effects

8. Any performance, volumes, and/or capacity figures given by Goldacres are estimates only. Goldacres shall be under no liability for damages for failure to obtain such figures unless specifically guaranteed in writing and any such written guarantee shall be subject to the recognised tolerances applicable to such figures. The suitability of chemicals and other liquids for any application and the application methods and the environmental effects shall be the sole decision and responsibility of the Purchaser and the user of the Goods. Goldacres gives no warranty as to the suitability of any chemicals or other liquids for any application, nor the application methods nor the environmental effects, which may result from the use of the Goods. Goldacres shall be under no liability for damages arising out of the use of any chemicals, liquids, or mixtures in the Goods nor for any application, nor for the application methods nor for the environmental effects, which may result from the use of the Goods.

Delivery/Service Times

9. The delivery times and service times made known to the Purchaser are estimates only and Goldacres shall not be liable for late delivery, non-delivery or delay and under no circumstances shall Goldacres be liable for any loss, damage or delay occasioned by the Purchaser or its customers arising from the late or non-delivery or late installation of the Goods.

Loss or damage in transit

10. Goldacres is not responsible for any loss or damage to Goods in transit. Goldacres shall render the Purchaser such assistance as may be necessary to press claims on carriers provided that the Purchaser shall have notified Goldacres and the carriers immediately the loss or damage is discovered on receipt of Goods and shall lodge a claim on the carrier within three days of the date of receipt of the Goods. Insurance of Goods in transit is the responsibility of the Purchaser.

Limit of Liability

11. (1) Goldacres liability for Goods manufactured by it is limited to:
 - (a) where the law implies consumer guarantees into these terms and conditions pursuant to Part 3.2 Division 1 of Schedule 2 to the Competition and Consumer Act 2010 (Cth) ("consumer guarantees") which cannot be excluded and Goldacres breaches a consumer guarantee, the loss and damage the Purchaser is entitled to at law which cannot be excluded by these terms and conditions;

and, in all other cases

- (b) making good any defects by repairing the same or at Goldacres option by replacement within a period not exceeding either 1000 hours or twelve calendar months, whichever comes first, after the Goods have been dispatched provided that:
 - (i) the defects have arisen solely from faulty materials or workmanship;
 - (ii) the Goods have not received maltreatment inattention or interference;
 - (iii) accessories of any kind used by the Purchaser are manufactured or approved by Goldacres;
 - (iv) where applicable, the seals on the Goods remain unbroken;
 - (v) there has been no improper adjustment, calibration or operation;
 - (vi) the use of accessories including consumables, hardware or software (not manufactured by Goldacres) has been approved in writing by Goldacres;
 - (vii) no contamination or leakage has been caused or induced;
 - (viii) any modification to the Goods have been authorised in writing by Goldacres;
 - (ix) there has been no inadequate or incorrect use, storage, handling or application of the Goods;
 - (x) there has been no use or operation of the Goods outside of the physical, electrical or environmental specifications of the Goods;
 - (xi) there has been no inadequate or incorrect site preparations;
 - (xii) there has been no inadequate or improper maintenance of the Goods;
 - (xiii) it has not been caused by fair wear and tear; and
 - (xiv) firstly the Goods have been thoroughly inspected and any damage (from whatever cause) to the Goods (and in particular – the structure, welding, seams, bolts, booms) has been repaired prior to the Goods being operated, used or driven or moved and on each occasion the tanks are filled; and
 - (xv) there has been no failure to comply with the requirements of all present or future laws or regulations relating to the Goods and/or the use and/or the operation of the Goods; and there has been no failure to maintain a record of hours of operation (which record shall contain full details of all inspections, repairs and maintenance) and produce same to Goldacres at the time of the claim;
 - (xvii) the defective Goods or any damaged part of the Goods are promptly returned free of cost to Goldacres or a representative of Goldacres;
 - (xviii) all warranty related repairs have been carried out with the prior authorisation of Goldacres;
- (2) If Goods or any part thereof are not manufactured by Goldacres, in particular engines, engine accessories, transmissions, transfer cases, differentials, tyres, tubes, batteries, radios and UHF's, the guarantee of the manufacturer thereof shall be accepted by the Purchaser and is the only guarantee given to the Purchaser in respect of the Goods or that part provided always that this clause does not seek to exclude the consumer guarantees;
- (3) In the case of hydraulic systems, Goldacres shall replace defective parts in accordance with clause 11(1) of these conditions, provided that the failure of the part was not related to contamination within the system. Goldacres shall not be liable for labour in the case of repairing hydraulic system defects;
- (4) Goldacres will not accept liability for damage attributed to fair wear and tear including but not limited to fair wear and tear to nozzles, chains, belts, filters, brake pads, polyethylene bushes and liquid pump valves, valve O-rings, diaphragms and seals;
- (5) Goldacres shall not be liable for and the Purchaser releases Goldacres from any claims in respect of faulty or defective design of any Goods supplied unless such a design has been wholly prepared by Goldacres and the responsibility for any claim has been specifically accepted by Goldacres in writing and in any event Goldacres liability hereunder shall be strictly limited to the replacement of defective parts in accordance with paragraph 11(1) of these conditions provided always that this clause does not seek to exclude the consumer guarantees;
- (6) Except as provided herein, all express and implied warranties, guarantees and conditions under statute or general law as to the merchantability, description, quality, suitability or fitness of the Goods for any purpose or as to design, assembly, installation, materials or workmanship or otherwise are hereby expressly excluded and Goldacres shall not be liable for physical or financial injury, loss or damage or for consequential loss or damage of any kind arising out of the supply, layout, assembly, installation or operation of the Goods or arising out of Goldacres negligence or in any other way whatsoever;
- (7) The benefit of any warranty provided under these terms and conditions shall only be available to the Purchaser and shall not be transferable by the Purchaser;
- (8) The warranties provided under these terms and conditions do not extend to second hand or used Goods that may be sold by Goldacres.
12. Goldacres liability for breach of a consumer guarantee is hereby limited (in the case of goods and services not used for personal, domestic or household purposes) to:
 - (1) in the case of Goods, any one or more of the following:
 - (a) the replacement of the Goods or the supply of equivalent Goods;
 - (b) the repair of the Goods;
 - (c) the payment of the cost of replacing the Goods or acquiring the equivalent Goods;
 - (d) the payment of having the Goods repaired; or
 - (2) in the case of services;
 - (a) the supplying of the services again; or
 - (b) the payment of the cost of having the services supplied again.

Prices

13. (1) Unless otherwise stated in writing by Goldacres, all prices quoted by Goldacres are inclusive of GST for supplies within Australia and exclusive of GST for exports outside of Australia. Prices quoted are those ruling at the time of quotation or the date the price is given and are based on rates of freight, insurance, customs, duties, taxes, exchange, shipping expenses, sorting and stacking charges, cartage, cost of materials and other charges affecting the cost of production ruling on that date and any alterations thereto either before acceptance of or during currency of the contract shall be to the Purchaser's account.
- (2) For the purpose of 38-185 of the GST Act, the day upon which the seller gives the invoice for the supply shall be the date of the invoice.

Payment

14. (1) The purchase price in relation to the Goods and the cost of the service shall be payable without deduction and or set off and payment thereof shall be made on or before the

thirteenth day of the month following the delivery of the Goods or performance of the services unless other terms of payment are expressly stated in writing.

(2) A decreasing or increasing adjustment and or the issuing of an adjustment note, pursuant to Division 21 and Division 29-C of the GST Act, shall not, in any way, constitute a release, waiver, and or forgiveness of the debt incurred by the Purchaser.

Interest on overdue payments

15. If Goldacres is not paid for any Goods or services on the due date specified in this agreement without prejudice to any other right or remedy, all outstanding money shall bear interest at the rate set, pursuant to the Penalty Interest Rates Act, Victoria, 1986, as such money, together with interest shall be recoverable forthwith from the Purchaser.

Rights in relation to Goods.

16. (1) At all times until the Debts have been paid in full the Purchaser shall be responsible for any loss or damage occasioned to the supplied Goods however occasioned on a strict liability basis and shall indemnify Goldacres against any such loss or damage and shall insure and keep insured the Goods in the name of both the purchaser and Goldacres against such loss or damage to the full extent of the purchase price and shall provide a copy of such Insurance Policy to Goldacres.

(2) The Purchaser shall have the right to resell Goods but only as fiduciary agent and trustee for Goldacres by way of bona fide sale at full market value and in the ordinary course of its business.

(3) Until all the Debts have been paid in full:

(a) the Purchaser shall take custody of the Goods as trustee, fiduciary agent and bailee for Goldacres;

(b) the Purchaser shall keep the Goods separate from any other goods and properly marked, stored, protected and insured;

(c) the Purchaser must hold all of the money it receives ("Proceeds");

(i) from the sale of any property into which Goods supplied have been incorporated; and

(ii) from the sale of Goods or provision of services including the Goods supplied by the Goldacres as bailee, fiduciary agent and trustee for Goldacres, but the Purchaser need not hold on trust any money exceeding the amount of the Debts at the time the money is received.

(d) The Purchaser expressly acknowledges that it is bound by the fiduciary obligation created in the preceding paragraph and acknowledges that:

(i) it must hold the Proceeds on trust for Goldacres;

(ii) it must place the whole of the Proceeds in an account separate from its own moneys (the "Proceeds Account");

(iii) it must maintain the Proceeds Account separate from its own moneys at all times.

(iv) it must maintain proper records for the Proceeds Account.

(v) it must not assign or encumber any book debts arising from sales made in circumstances set out in clauses 16(c)(i) and (ii) or do any other act in derogation of Goldacres' legal or beneficial interests; and

(vi) it must account to Goldacres on demand for all moneys standing to the credit of such account.

(e) For the purposes of identification of different consignments of Goods purchased from Goldacres and receipt of Proceeds, the Purchaser agrees that the principle of "Last In, First Out" shall be applied to any Items that cannot be distinguished.

(f) Goldacres may trace the Proceeds in equity.

(4) Goldacres may at any time, without notice to the Purchaser and without prejudice to any other rights which it may have against the Purchaser, terminate any contract connected with the Goods and the bailment referred to in clause 16(3) and enter upon any premises owned or occupied by the Purchaser where Goldacres reasonably believes the Goods may be stored, and repossess the Goods without liability for any damaged caused, and subsequently dispose of the Goods at Goldacres's discretion if:

(a) the Debts are not paid in accordance with these terms and conditions or any other contract or arrangement between Goldacres and the Purchaser; or

(b) Goldacres receives notice of or reasonably believes that:

(i) a third person may attempt to levy execution against the Goods; or

(ii) the Purchaser is insolvent (within the meaning of the Corporations Act 2001) or bankrupt; or

(iii) the Purchaser has entered into any arrangement or composition with its creditors, gone into liquidation, or has appointed a receiver, a receiver and manager or administrator.

(5) If after repossession under clause 16(4) Goldacres sells the Goods, Goldacres shall account to the Purchaser for any proceeds of sale (less expenses of repossession and sale) that exceeds the amount of the outstanding Debts.

(6) If any Goods belonging to Goldacres are disposed of by the Purchaser or an insurance claim is made in respect of them, Goldacres shall be entitled to trace the sale or insurance proceeds, which proceeds shall be held by the Purchaser in a separate bank account on trust for Goldacres.

(7) The Purchaser agrees and acknowledges that in the event it sells Goods to a third party on account, it will include in its terms and conditions of sale a provision under which the Purchaser retains title to the Goods until such time that the total amount due in respect of the Goods and all monies owing to the Purchaser have been paid in full by that third party debtor. The Purchaser also agrees and acknowledges that in these instances, it will register its PMSI in accordance with the PPSA in respect of its security interest in the Goods.

PPSA provisions

17. (1) The Purchaser acknowledges that these terms and conditions constitute a security agreement for the purposes of section 20 of the PPSA and that a security interest exists in all Goods (and any associated Proceeds from their sale) previously supplied by Goldacres to the Purchaser (if any) and in all in future Goods (and any associated Proceeds from their sale) that may be supplied to the Purchaser by Goldacres.

(2) The Purchaser acknowledges that Goldacres has a first ranking purchase money security interest ("PMSI") (as defined in section 14 of the PPSA) in the Goods and the Purchaser must not jeopardise such ranking (whether by act or omission).

(3) The Purchaser acknowledges that it has received value as at the date of first delivery of the Goods and has not agreed to postpone the time for attachment of the security interest (as defined in the PPSA) granted to Goldacres under these terms and conditions.

(4) The Purchaser will execute documents and do such further acts as may be required by Goldacres to register the security interest granted to Goldacres under these terms and conditions under the PPSA.

(5) Until ownership of the Goods passes, the Purchaser must not give to Goldacres a written demand or allow any other person to give Goldacres a written demand requiring Goldacres to register a financing change statement under the PPSA in respect of Goldacres's interest in the Goods.

(6) The Purchaser must indemnify Goldacres and on demand reimburse Goldacres for all costs and expenses incurred by Goldacres in respect of these terms and conditions including but not limited to Goldacres registering its security interest in the Goods, lodging, discharging or amending any financing statement or financing change statement, or otherwise complying with the PPSA.

(7) The Purchaser agrees (other than as provided in these terms and conditions) not to sell, lease, mortgage, deal with, dispose of or create or attempt to create any other security interest in or affecting the Goods unless and until the Purchaser's Debts have been satisfied.

(8) The Purchaser waives its rights under the following provisions of Chapter 4 of the PPSA: to receive a notice on enforcement action against liquid assets (section 121(4)),

(b) to receive a notice to seize collateral (section 123);

(c) to receive a notice of disposal of Goods by Goldacres purchasing the Goods (section 129);

(d) to receive a notice to dispose of Goods (section 130);

(e) to receive a statement of account following disposal of Goods (section 132(2));

(f) to receive a statement of account if no disposal of Goods for each 6 month period (section 132(4));

(g) to receive notice of any proposal of Goldacres to retain Goods (section 135(2));

(h) to object to any proposal of Goldacres to either retain or dispose of Goods (section 137(2));

(i) to redeem the Goods (section 142);

(j) to reinstate the security agreement (section 143);

(k) to receive a notice of any verification statement (section 157(1) and section 157(3));

(9) The rights Goldacres may have under the PPSA are supplementary and in addition to those set out in these terms and conditions and do not derogate from the rights and remedies of Goldacres under these terms and conditions or under any other statute or under general law.

(10) The Purchaser must give 10 business days prior written notice of any proposed change in the Purchaser's name or other identifying characteristics and details.

Purchaser's property

18. Any property of the Purchaser under Goldacres's custody or control shall be entirely at the Purchaser's risk as regards loss or damage caused to the property or by it.

Storage

19. Goldacres reserves the right to make a reasonable charge for storage if delivery instructions are not provided by the Purchaser within (14) fourteen days of a request by Goldacres for such information.

Returned Goods

20. Goldacres shall not be under any obligation to accept Goods returned by the Purchaser and will do so only on terms to be agreed in writing in each individual case.

Goods sold

21. All Goods to be supplied by Goldacres shall be described on the purchase order agreed by Goldacres and the Purchaser and the description on such purchase order modified as so agreed shall prevail over other descriptions including any Purchaser's specification or enquiry.

Cancellation

22. No order may be cancelled except with the consent in writing and on terms, which will indemnify Goldacres against all losses.

No waiver

23. The failure of any party to enforce the provisions of these terms and conditions or to exercise any rights expressed in these terms and conditions shall not be a waiver of such provisions or rights and shall not affect the enforcement of this agreement. The exercise by any party of any of its rights expressed in this agreement shall not preclude or prejudice such party from exercising the same or any other rights it may have irrespective of any previous action taken by that party.

Force Majeure

24. If by reason of any fact, circumstance, matter or thing beyond the reasonable control of Goldacres is unable to perform in whole or in part any obligation under these terms and conditions then Goldacres shall be relieved of that obligation under these terms and conditions to the extent and for the period that it is so unable to perform and shall not be liable to the Purchaser in respect of such inability.

Passing of risk

25. Risk in the Goods shall pass to the Purchaser upon delivery of the Goods to the Purchaser or collection of the Goods by the Purchaser's agent or carrier as the case may be.

Exclusion of liability

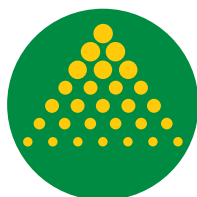
26. To the extent permitted by law Goldacres shall not be liable to the Purchaser in contract or in tort arising out of, or in connection with, or relating to, the performance of the Goods or any breach of these conditions or any fact, matter or thing relating to the Goods or error (whether or not it is negligent or a breach of contract) in information supplied to the Purchaser or a user before or after the date of the Purchaser's or user's use of the Goods and Goldacres shall be under no liability for damages arising out of the use of any chemicals, liquids, or mixtures in the Goods, nor for any application, not for the application methods nor for the environmental effects, which may result therefrom or from the use of the Goods.

Exclusion of representations and arrangements

27. To the extent permitted by law the terms and conditions supersede and exclude all prior and other discussions, representations (contractual or otherwise) and arrangements relating to the supply of the Goods or any part thereof including, but without limiting the generality of the foregoing, those relating to the performance of the Goods or any part thereof or the results that ought to be expected from using the Goods.

Place of contract

28. The contract for sale of the Goods and the provision of the services is made in the State of Victoria and the Purchaser agrees to submit all disputes arising with Goldacres to the courts of such State and any court competent to hear appeals therefrom.



GOLDACRES

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