



# AR813

Anodized  
ALUMINUM

High Pressure



140° F - Max Water Temp  
1 1/2" - Suction  
3/4" NPT - Outlet

| AR813 - 550 RPM - SEMI-HYDRAULIC THREE DIAPHRAGM PUMP |         |           |         |         |          |             |
|---|---------|-----------|---------|---------|----------|-------------|
| MODEL   | MAX GPM | MAX L/MIN | MAX PSI | MAX BAR | HP POWER | WEIGHT LBS. |
| AR813-C/C   | 21.1    | 79.9      | 725     | 50      | 9.8      | 45.2        |
| AR813-C/SP  | 21.1    | 79.9      | 725     | 50      | 9.8      | 45.2        |
| AR813-GR-CPC-GCI                                      | 21.1    | 79.9      | 725     | 50      | 9.8      | 52.0        |

GCI - Pump with a mounted control unit.



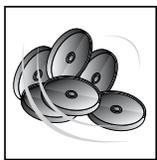
C/C Version  
1 3/8" 6 Splined Thru Shaft



C/SP Version  
SP Version with 1 3/8" Splined Thru Shaft



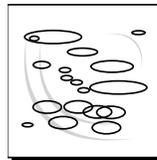
GR1-CPC-GCI Version  
Gear Reduction AR1639 with 1" Hollow Shaft, VDR50 Control Unit and 1 3/8" Splined Thru Shaft



| DIAPHRAGM KITS |             |
|----------------|-------------|
| MODEL          | DESCRIPTION |
| AR43301        | BlueFlex    |
| AR43299        | Desmopan    |
| AR43298        | NBR         |
| AR43300        | Viton       |



| VALVE KITS |             |
|------------|-------------|
| MODEL      | DESCRIPTION |
| AR1963     | Valves      |



| O-RING KITS     |             |
|-----------------|-------------|
| MODEL           | DESCRIPTION |
| AR43018 (AR713) | O-Rings     |
| AR43020 (AR813) | O-Rings     |



| OIL        |             |
|------------|-------------|
| MODEL      | DESCRIPTION |
| AR64532D   | Oil         |
| AR64532D-C | Case (6)Oil |



## Intended uses

The pump is designed and constructed for incorporation in plants and machinery (spraying machines for the protective treatment of agricultural crops and garden plants). **All other uses constitute misuse unless approved by the manufacturer's technical service**

The pump must be used in a manner appropriate to its technical data (see "Technical Data"), and must not be modified or improperly used.

## Misuses

**Do not** put the pump into service until the plant or machinery in which it is incorporated has been declared compliant with the relevant national and local legal requirements.

**Do not** use the pump in a potentially explosive atmosphere.

**Do not** use the pump for **flammable**, toxic or corrosive liquids or liquids with unsuitable density, especially **seawater, adhesives, bitumens, asphalt sealers, two-step curing compounds, concrete sealers, liquefied gases or solvents** of any kind, paints of any kind or liquids containing solids in suspension, and in all cases **do not** use with any liquid unless certain that it is compatible with the materials used in the pump circuit.

**Do not** draw in liquids at temperatures above 50°C or below 5°C.

**Do not** use the pump in drinking water supply systems.

**Do not** use the pump on products for human consumption.

**Do not** use the pump on pharmaceutical products.

**Do not** use the pump without first checking that the intake and delivery circuit pipelines are correctly secured and free from leaks.

**Do not** use the pump without the safety devices provided: guards for shafts and drive couplings and suitably rated relief valve on the delivery circuit.

**Do not** use the pump to wash or spray: people, animals or delicate items, live electrical equipment or chemicals whose characteristics are not known.

## Safety devices



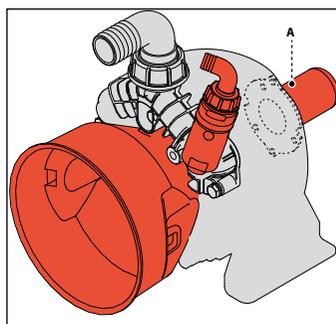
### Danger - Warning

**Never tamper with or by-pass the safety devices. Maintain all safety devices regularly to ensure they all work efficiently.**

The drawing shows the position of the safety devices mounted on the machine.

Additional safety devices must be added as necessary during the design phase (see "Installation information").

**A) Fixed guard:** provides protection against accidental contacts with the drive shaft when in operation.



## Residual risks

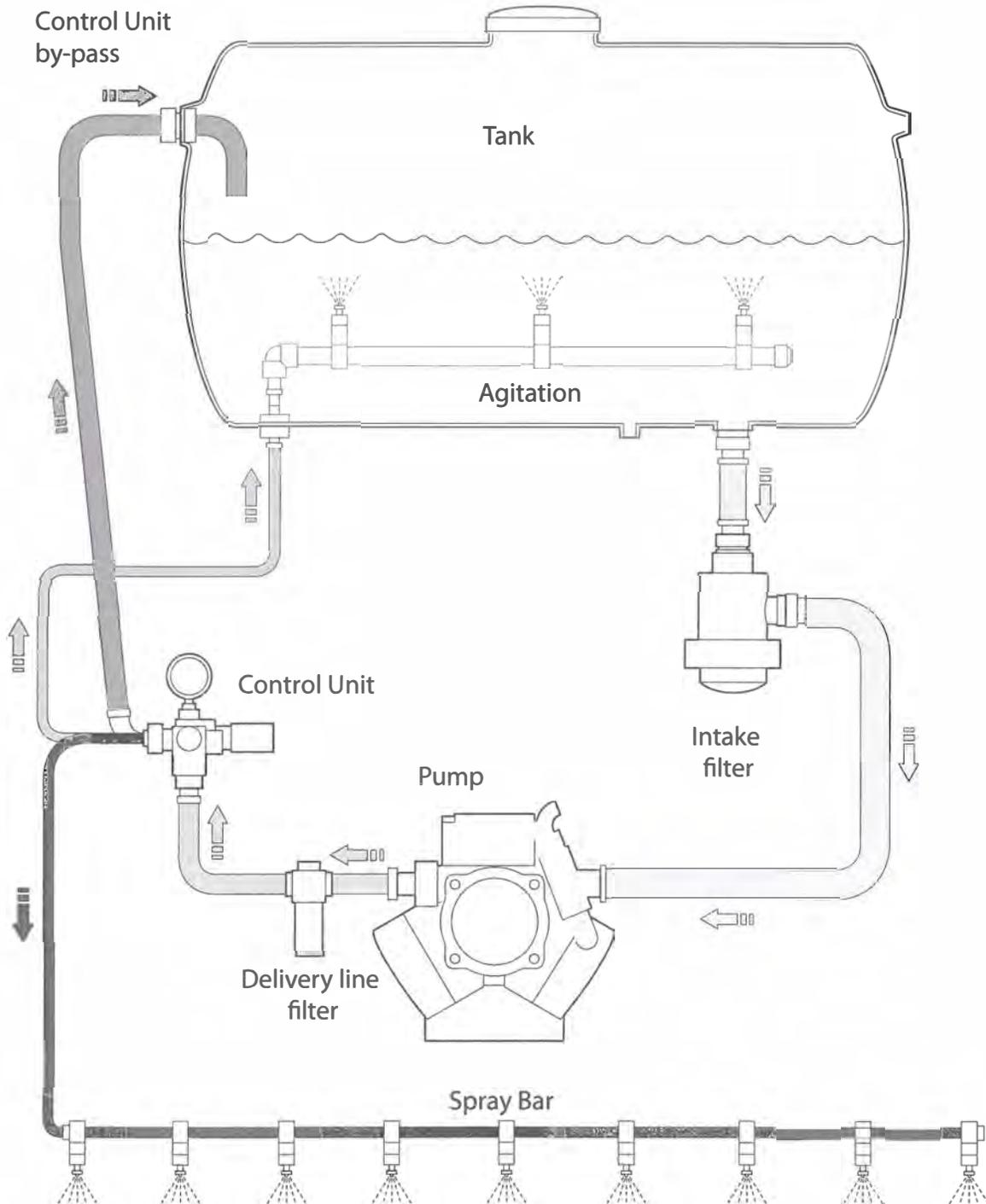
Even if the safety regulations and information provided in the manual are complied with, the residual risks described in the declaration of incorporation still apply when the pump is in operation.



# INSTALLATION INSTRUCTIONS

## Installation diagram (guideline)

The following is a simplified illustration of the typical installation layout and is purely a guideline.

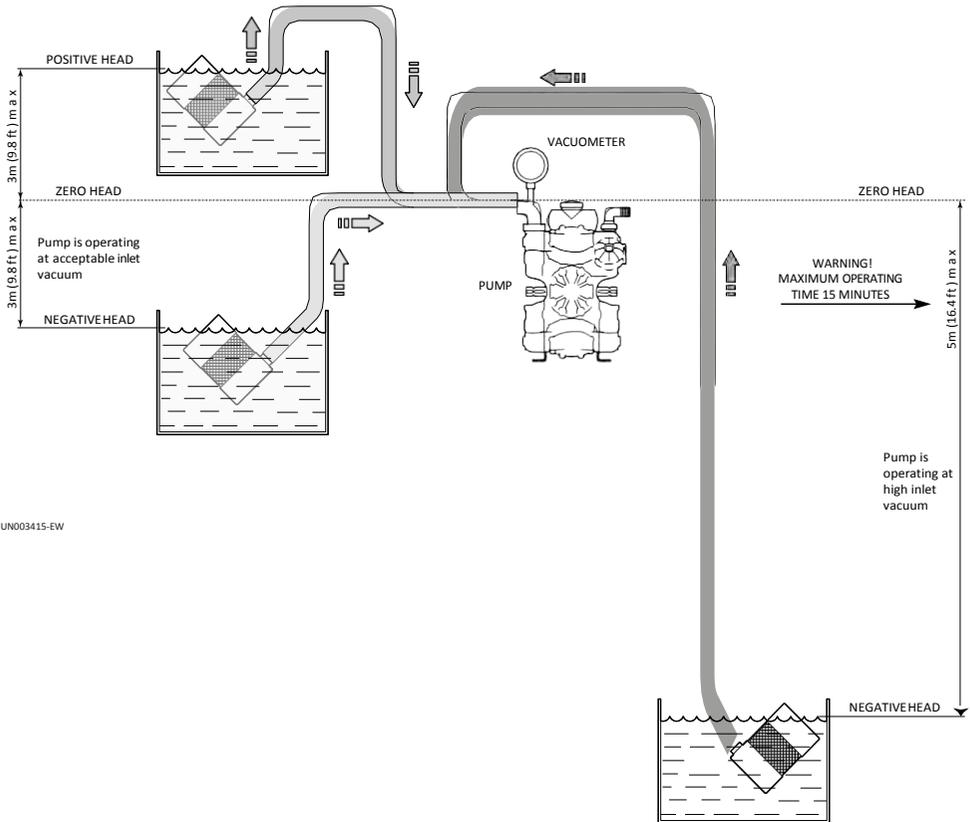


## General guidelines on water supply connection

To operate correctly, the diaphragm pump must draw in liquids from containers at atmospheric pressure.

**Do not supply the pump with pressurised liquids.**

For continuous duty, the pump should not draw in water by gravity from containers with liquid level at heights above 3 m.



UN003415-EW

For continuous duty, the pump should not draw in liquids by vacuum from containers with the liquid level more than 3 m below the pump intake fitting and the circuit must consist of hoses of length and diameter appropriate to the pump intake fitting (see "Technical Data"), free from restrictions and elbows, and with a filter of suitable capacity (see "Installation").

For occasional duty, such as filling water supply tanks, the pump can be operated at a vacuum drawing in liquids from reservoirs having the surface of the liquid up to 5 m below the pump intake fitting, for periods of no more than 15 minutes.

**Drawing in liquids from lower levels or for longer times causes cavitation in the pump circuit and reduces the lifetime of the diaphragms, valves and mechanical parts.**



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### **Safety recommendations for handling and lifting**

**Before starting the operations, organise the intended working area so that the materials can be lifted and handled in safety.**

**Unloading, loading, handling and lifting operations must be carried out by skilled, authorised, specifically trained staff.**

**During lifting and handling operations, the people not involved in the operations must remain at a safe distance.**

**For lifting, use hooks and ropes which are free from damage and appropriate for the load to be lifted.**

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### **Packaging description and unpacking**

The packaging normally consists of a cardboard box for easy, safe transport.

Depending on the quantity of goods to be shipped and the place of destination, packages may be fixed on a pallet for easier lifting and handling.

Check the weight of the item on the transport documents to allow the use of suitable lifting equipment.

When unpacking, check that all components are present and intact. If items are missing or damaged, contact the dealer or manufacturer to agree the procedures to be followed.

The packaging material must be disposed of appropriately in accordance with the relevant statutory requirements.

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### **Transport**

The pump may be shipped by a variety of means of transport (road, rail, sea or air) depending on its destination. Secure the packaging firmly to the vehicle during transport, to prevent random movement.

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### **Storage**

In the event of a lengthy period out of use, place the pump (in its packaging if possible, or otherwise protected) under cover, protected from the weather.

Do not store in places where the ambient conditions might impair the pump's operating condition over time.

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### **Safety recommendations for installation**

Take all possible precautions to allow the pump to be installed in a safe, risk-free manner.

All installation phases must be taken into consideration when designing the machinery or plant in which the pump is to be installed.

The design must consider all mounting points, the means of transmission of the energy sources, and the protective and safety devices required by the relevant regulations to prevent the risk of injury.



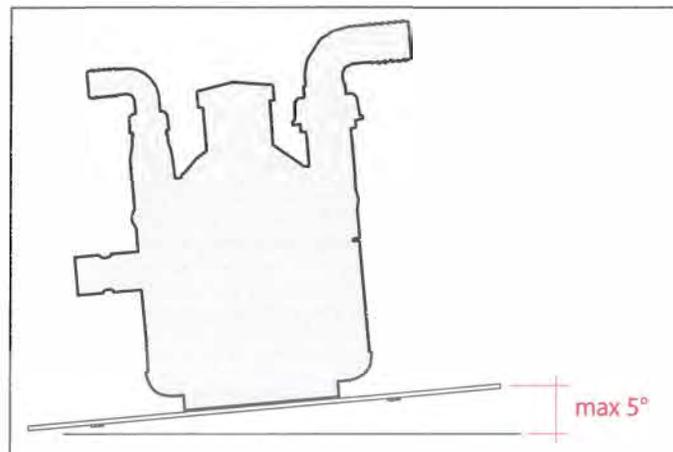
### Installation

- The crankshaft may turn in either direction.
- The water connection with the pump must be made using hoses of suitable diameter, in all case no less than that of the pump fittings, securing them to the fittings using good quality clamps. The intake hose must be coil-reinforced to prevent restrictions.
- The pump inlet must be fitted with a filter having suitable capacity for the pump delivery rate and must be designed to generate a vacuum of no more than - 7 Hg. This value can be measured by connecting a vacuum gauge to the pump intake fitting.
- The rated pressure of the outlet hose, fittings and clamps must be no less than the maximum rated pressure of the pump. Replacing the intake and outlet fittings provided on the pump by the manufacturer with smaller diameter alternatives may reduce the pump's performance and void the warranty.

### Mounting the pump

The pump must be installed on a horizontal surface with no flexible components between it and the mounting surface.

The illustration shows the maximum permitted pump installation angle beyond which proper lubrication of the crank mechanism is not ensured.



**Fix the pump** by bolting the pump base onto the machine with suitable bolts, tightening appropriately.



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### **Safety recommendations for use**

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**Before start-up, the operator must perform the necessary safety checks.**

**In the event of leaks from the pressurized pipes, stop the pump at once and fix the leak.**

**Do not operate the pump above the limits set by the manufacturer to increase its performance.**

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### **Preliminary checks**

If the pump has a pressure accumulator, check its level of inflation, see "Checking the inflation pressure".

Check the fittings of the hoses and the pump's intake and delivery circuits to prevent restrictions, the intake of air and leaks of liquid.

Check the pump tank oil level as described in the "Checking the oil level" section.

Before putting the pump into operation, check that the control unit is set for low pressure.

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### **Starting and stopping the pump**

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To start the pump, proceed as described below.

1. When starting the pump, keep the control unit in the full bypass position until the pump has primed.
2. After starting the pump, and after the pump is primed, move the control unit into the pressure regulation position.
3. During the first few hours of operation, check that the oil level in the tank remains between the minimum and maximum limits. If top-ups are required, use A/R diaphragm pump oil, AR64532D.

To stop the pump, proceed as described below.

1. Reduce the pressure by moving the control unit lever in the full bypass position.
2. Stop the pump.



## Safety recommendations for maintenance



### Caution - Take Care

Before doing any maintenance work, depressurise the water system and isolate the pump from all energy sources.

When the jobs are done, before restarting the pump, check that no tools, rags or other materials have been left close to moving parts or in hazardous zones.

Replace any excessively worn components with original parts and use the lubricants recommended by the manufacturer.

| Scheduled maintenance table |   |                          |  |
|-----------------------------|---|--------------------------|--|
| Frequency                   | Component   | Procedure                | Reference                                  |
| Every working day           | Filter  | Inspect filter cartridge | See "Inspecting the filter"                |
|                             | Pump  | Checking the oil level   | See "Checking the oil level"               |
|                             | Connection of pump to power source (pulley, belt, coupling) | Inspection               | -  |
|                             | Pump  | Inspect mounting         | See "Inspecting the pump mounting"         |
|                             | Pipes and connections                                       | Inspection               | See "Inspecting the connections and pipes" |
| Every 100 working hours     | Pressure accumulator (if installed)                         | Check inflation pressure | See "Checking the inflation pressure"      |
|                             | Reduction gear (if installed)                               | Check oil                | See "Checking the oil level"               |

Dispose of the worn-out components and lubricants in accordance with the relevant statutory requirements.

Carry out the routine maintenance procedures specified by the manufacturer to keep the pump safe and performing well.



## Table of lubricants

The pump is delivered complete with high-performance 30 weight, non-detergent oil suitable for the intended ambient conditions (see "Environmental operating limits").

## Inspecting the pump mounting

Check that the pump's fixing screws have not become loose.

If necessary, tighten them with the driving torque stated in the installation design.

## Inspecting the connections and pipes

### - *Inspect the connections for leaks.*

Leaks can normally be dealt with by tightening the connections properly.

If leaks from the intake pipeline connections are noticed, the seals must be repaired.

### - *Inspect the hoses.*

If the pipes show signs of aging, breakage, swelling, rubbing, etc., they must be replaced.

## Inspecting the Inlet Filter

### - *Inspect the inlet filter cartridge.*

If the cartridge is fouled, wash it thoroughly to remove the dirt.

If the cartridge is torn or cracked, it must be replaced.

## Checking the oil level

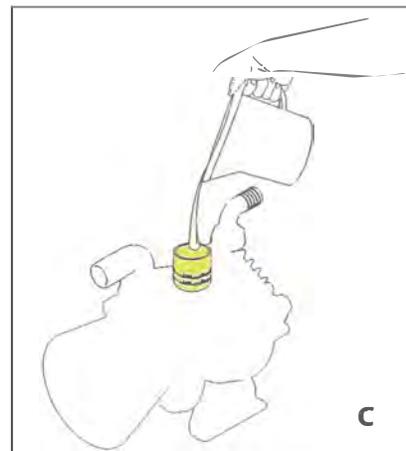
- Check the oil with the pump level, ensuring that it has been running for at least 5 minutes in normal working conditions.
- If the oil level is not visible or completely full, add or remove oil to restore this level and check, still with the pump running, that the oil level does not vary so much that it leaks from the cap or is no longer visible in the tank.
- If necessary, top up with oil with A/R Premium Diaphragm Pump oil P/N 64532D.
- Check the oil level regularly, as it may vary significantly with the operating conditions.

To top up with oil proceed as described below.

- 1) Unscrew the cap and pour in oil.
- 2) Screw the cap back into place.



A/R Pump Oil  
P/N AR64532D





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### Pump Storage

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It is important to comply with the recommendations for storage in the operator's manual of the machine into which the pump is incorporated.

For the pump itself, at the end of pumping operations it is essential to flush out the pump by pumping clean water. After this, open the pump inlet to air and leave the pump in operation until the pump is completely empty. Following this simple procedure at the end of every operating session will prevent the retention inside the pump of products which are often corrosive and may damage its wetted parts over the long-term.

If the pump is in storage during the winter in locations with severe weather conditions, it is very important to flush out the internal circuit as described above and then fill the pump with A/R Pump Saver, AR64511. Then take care to drain the liquid from the system and the pump.

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### Putting the pump back into service

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Before putting the pump back into service after storage, check the oil level and the tightness of the mounting screws.

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### Scrapping the pump

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Used units must be disposed of in compliance with local legislation.



**A/R Pump Saver**  
**P/N 64511**  
**Protects Pumps from**  
**Freezing Conditions**



## TROUBLESHOOTING

The information provided is intended to provide guidance how to deal with malfunctions which may occur during use.

Some of these procedures may be carried out by skilled staff, while others have to be performed at specialised service centres since they require the use of specific equipment as well as detailed knowledge of repair operations.

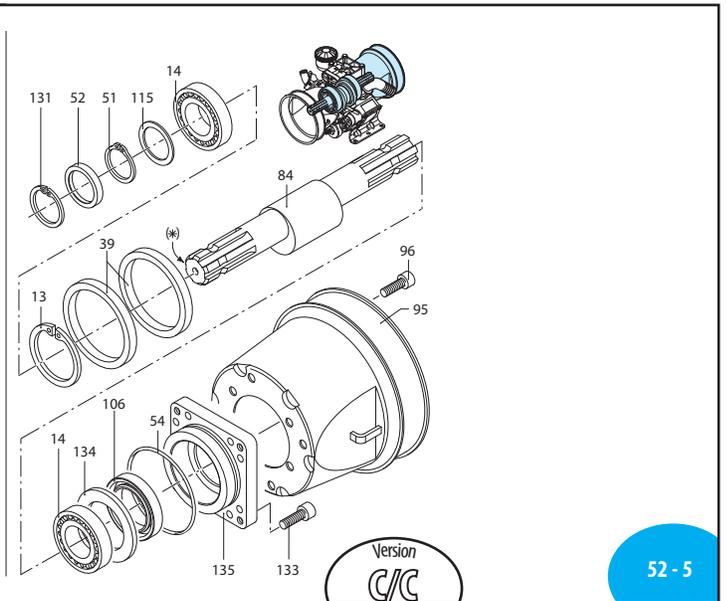
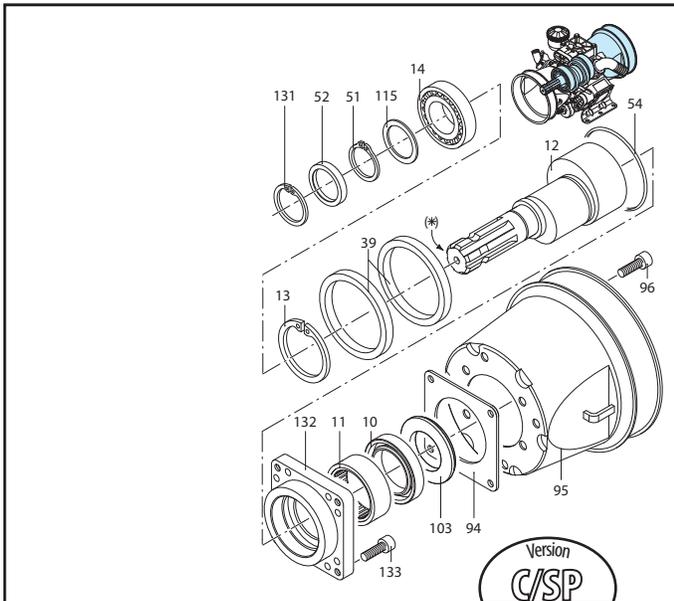
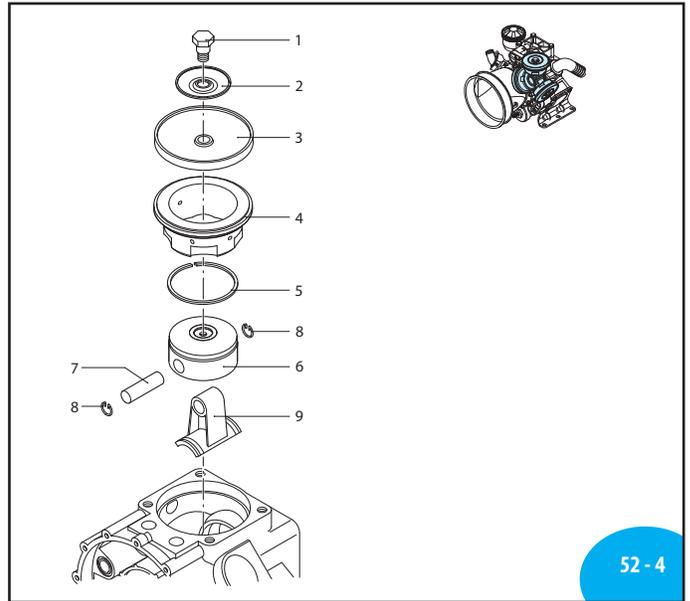
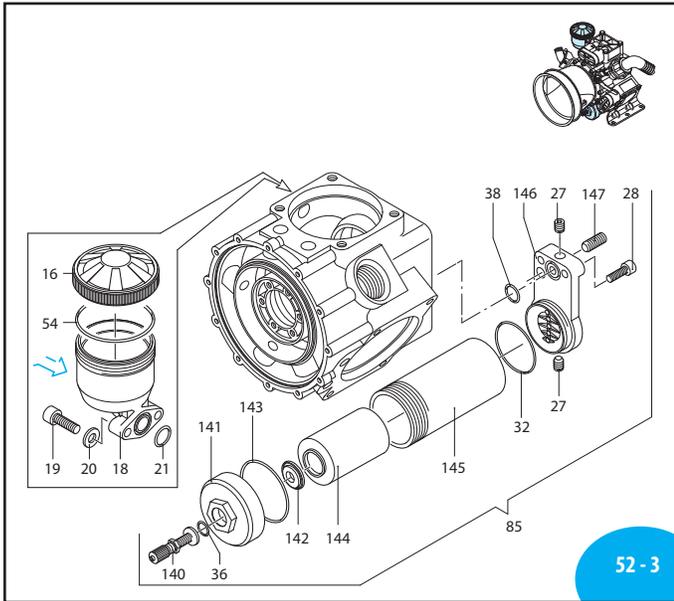
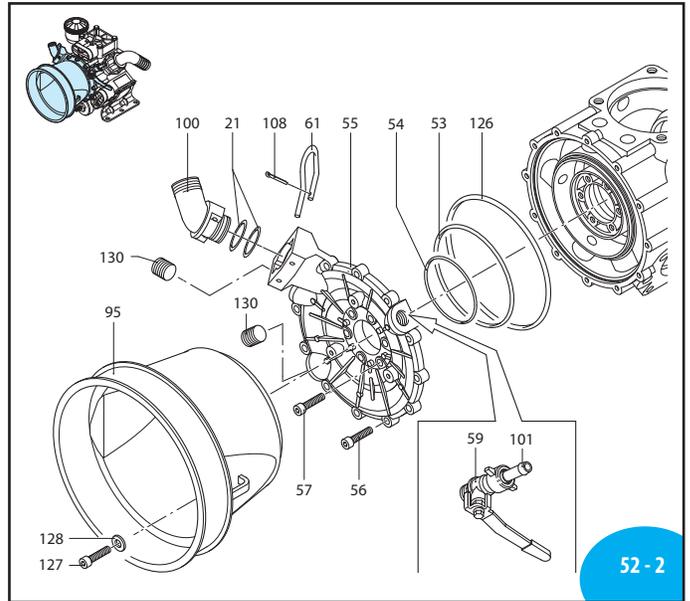
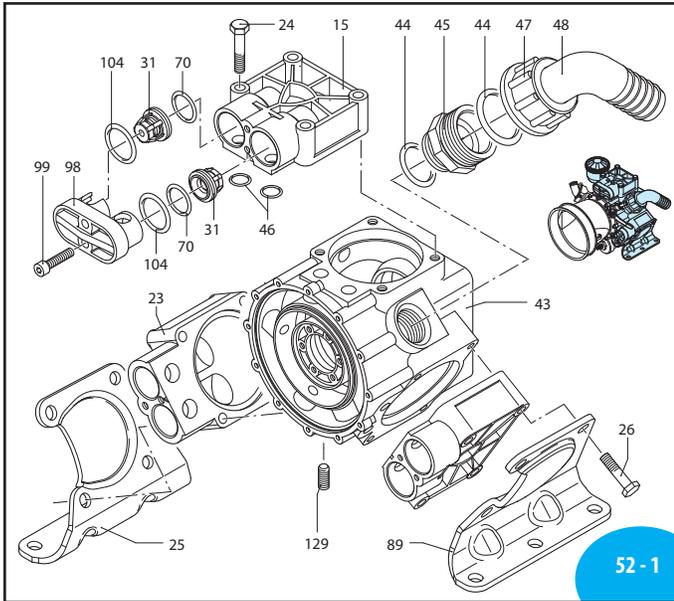
| Problem   | Cause   | Remedy  |
|---|---|---|
| The pump does not prime properly.                                       | Intake circuit not airtight.                        | Tighten, repair or replace hoses and fittings as necessary.   |
|   | Control unit switching lever on "Pressure" setting. | Move control switching lever to "By-pass" setting.  |
| The pump does not require the required pressure.                        | Seat and plate of intake and delivery valves worn.  | Replace the worn valves.(1)   |
|   | Nozzles worn or too large in diameter.              | Replace the worn nozzles. Use nozzles of suitable diameter.   |
|   | Restriction in intake circuit.                      | Remove the restriction from the circuit.  |
|   | Intake filter fouled.                               | Clean the filter cartridge.   |
| Pressure gauge needle wobbles, pressure pulsating.                      | Intake circuit not airtight.                        | Clean or replace the intake and delivery valves. (1)  |
|   | Residual air left inside pump.                      | Discharge the air by opening a ball valve/central unit connected to the delivery side with the pump in operation. |
|   | Valve plate stuck to its seat.                      | Tighten, repair or replace hoses and fittings as necessary.   |
|   | Pressure accumulator deflated                       | Inflate accumulator to the correct pressure.  |
| Uneven flow of liquid to nozzles.                                       | Pressure accumulator deflated                       | Inflate accumulator to the correct pressure.  |
| Increase in noise and simultaneous drop in oil level (pump cavitation). | Restriction in intake circuit.                      | Remove the restriction from the circuit.  |
|   | Intake filter fouled.                               | Clean the filter cartridge.   |
|   | Pump drawing in liquid from too low a level.        | See "Pump Intake Conditions" section.   |



## TROUBLESHOOTING

| Problem  | Cause                              | Remedy   |
|--|------------------------------------|--|
| Oil on pump body or base.  | Oil seal on pump shaft worn.       | Replace the worn oil seal.                               |
|  | Oil pressure inside pump too high. | Restore correct oil level in tank.                       |
| Pump using too much oil (oil flowing from delivery port) or oil whitish in color (water/oil emulsion in tank). | One or more diaphragms ruptured.   | <b>Stop the pump at once.</b> Replace the diaphragms (1) |

# A.R. NORTH AMERICA AR 813



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# AR 813

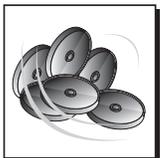
|       |       |       |            |
|-------|-------|-------|------------|
|       | C/C   | C/SP  | GR-CPC-GCI |
| AR813 | 31749 | 31750 | 31752      |

| Pos | Code    | Description                       | Qty | Note      |
|-----|---------|-----------------------------------|-----|-----------|
| 1   | 580361  | Hub pin                           | 3   | T265*     |
| 2   | 1040180 | Retaining washer                  | 3   |           |
| }   | 1040080 | Diaphragm                         | 3   | Desmopan  |
|     | 1040083 | Diaphragm                         | 3   | BlueFlex™ |
|     | 1040081 | Diaphragm                         | 3   | NBR       |
|     | 1500080 | Sleeve                            | 3   |           |
| 5   | 650190  | Piston ring                       | 3   |           |
| 6   | 1040120 | Piston Ø 63                       | 3   |           |
| 7   | 1040070 | Pin                               | 3   |           |
| 8   | 1040270 | Ring circlip Øi 15                | 6   |           |
| 9   | 1800050 | Connecting-rod                    | 3   |           |
| 10  | 1400150 | Ring seal                         | 1   |           |
| 11  | 650200  | Bearing                           | 1   |           |
| 12  | 1800200 | Shaft C/SP m-34                   | 1   |           |
| 13  | 161050  | Ring circlip Øi 72                | 1   |           |
| 14  | 161060  | Bearing                           | 2   |           |
| 15  | 1040551 | Head marked DX                    | 2   |           |
| 16  | 1800060 | Plug black                        | 1   |           |
| 18  | 680031  | Oil sight glass                   | 1   |           |
| 19  | 680350  | Bolt TCEI M8x35                   | 2   | T90*      |
| 20  | 380241  | Washer                            | 2   |           |
| 21  | 390180  | O-ring Ø 18.72x2.62               | 3   |           |
| 23  | 1040552 | Head sx                           | 1   |           |
| 24  | 1480040 | Bolt TE M12x60                    | 4   | T445*     |
| 25  | 1800440 | Base                              | 1   |           |
| 26  | 750060  | Bolt TE M12x65                    | 8   | T445*     |
| 27  | 1040470 | Bolt M10x8                        | 2   | SS T90*   |
| 28  | 320360  | Bolt TCEI M8x22                   | 2   | T180*     |
| 31  | 1409050 | Valve                             | 6   |           |
| 32  | 540360  | O-ring Ø 44.12x2.62               | 1   |           |
| 36  | 650542  | Gasket                            | 1   |           |
| 38  | 640070  | O-ring Ø 13.95x2.62               | 1   |           |
| 39  | 1040340 | Ring connecting rod               | 2   |           |
| 43  | 1800140 | Pump body                         | 1   |           |
| 44  | 250310  | O-ring Ø 36.14x2.62               | 2   |           |
| 45  | 540530  | Fitting 1"1/4 G-1"3/4 G M-M       | 1   |           |
| 46  | 960160  | O-ring Ø 17.86x2.62               | 6   | (a)       |
|     | 770571  | O-ring Ø 18.77x1.78               | 6   | (b) Viton |
| 47  | 540540  | Ring nut 1" 3/4 G                 | 1   |           |
| 48  | 540550  | Elbow 1 1/2"                      | 1   |           |
| 51  | 1040570 | Ring circlip Øe 35                | 1   |           |
| 52  | 1040050 | Ring seal                         | 1   |           |
| 53  | 1800161 | O-ring Ø 113.97x2.62              | 1   | Viton     |
| 54  | 1040060 | O-ring Ø 72.69x2.62               | 3   |           |
| 55  | 1800150 | Manifold asp./manifold            | 1   |           |
| 56  | 1040370 | Bolt TCEI M6x22                   | 12  | T90*      |
| 57  | 780060  | Bolt TCEI M6x25                   | 6   | T90*      |
| 59  | 130491  | Ball valve 3/8" G - 1/2" G M-M DX | 1   |           |
| 61  | 1040690 | Fork                              | 1   |           |

| Pos | Code    | Description           | Qty | Note     |
|-----|---------|-----------------------|-----|----------|
| 70  | 620030  | O-ring Ø 25.80x3.53   | 6   |          |
| 84  | 1800180 | Shaft C/C m-W         | 1   |          |
| 85  | 1536    | Air chamber           | 1   |          |
| 89  | 1800430 | Base                  | 1   |          |
| 94  | 1400140 | Flange                | 1   |          |
| 95  | 1500350 | Shield                | 2   | Ø 199 mm |
|     | 1500470 | Shield                | 2   | Ø 239 mm |
| 96  | 820670  | Bolt TCEI M10x16      | 4   | T90*     |
| 98  | 1300190 | Plug                  | 3   |          |
| 99  | 620610  | Bolt TCEI M8x30       | 6   | T445*    |
| 100 | 1040760 | Fitting 3/4" G M      | 1   |          |
| 101 | 110131  | Ring nut 1/2"         | 1   |          |
| 103 | 1400110 | Ring                  | 1   |          |
| 104 | 540361  | O-ring Ø 33.14x2.62   | 6   |          |
| 106 | 160740  | Ring seal             | 1   |          |
| 108 | 1040950 | Split pin             | 1   |          |
| 115 | 1040850 | Spacer                | 1   |          |
| 126 | 1400120 | O-ring Ø 145.72x2.62  | 1   |          |
| 127 | 1343510 | Bolt TCEI M6x14       | 3   | T90*     |
| 128 | 881710  | Washer                | 3   |          |
| 129 | 1040260 | Bolt M10x25           | 1   | T90*     |
| 130 | 1800240 | Bolt                  | 2   | T90*     |
| 131 | 1460490 | Ring circlip Øi 47    | 1   |          |
| 132 | 1800210 | Flange                | 1   |          |
| 133 | 180030  | Bolt TCEI M8x20       | 8   | T90*     |
| 134 | 1800230 | Spacer                | 1   |          |
| 135 | 1800220 | Flange                | 1   |          |
| 136 | 1800190 | Shaft C/F m-Q         | 1   |          |
| 137 | 230310  | Bearing               | 1   |          |
| 138 | 200150  | Ring seal             | 1   |          |
| 139 | 1800120 | Flange                | 1   |          |
| 140 | 1800350 | Air valve             | 1   |          |
| 141 | 1800270 | Cover                 | 1   |          |
| 142 | 1800311 | Retaining washer      | 1   |          |
| 143 | 650560  | O-ring Ø 56.82x2.62   | 1   |          |
| 144 | 1800300 | Diaphragm air chamber | 1   |          |
| 145 | 1800280 | Hose barb             | 1   |          |
| 146 | 1800290 | Fitting               | 1   |          |
| 147 | 1040260 | Bolt M10x25           | 1   | T90*     |

(a) From serial number N° 1802013001  
(b) Up to serial number N° 1801913999  
\* Torque: in-lbs +/- 10%

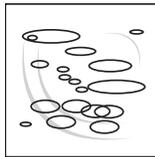
High pressure



| <b>AR 43298</b><br>Buna diaphragms      |     |
|---|-----|
| <b>AR 43301</b><br>BlueFlex™ diaphragms |     |
| <b>AR 43299</b><br>Desmopan diaphragms  |     |
| <b>AR 43300</b><br>Viton diaphragms     |     |
| Pos.                                    | Qty |
| 3                                       | 3   |
| 32                                      | 1   |
| 38                                      | 1   |
| 46                                      | 6   |
| 144                                     | 1   |



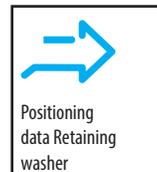
| <b>AR 1963</b><br>Valves |     |
|--------------------------|-----|
| Pos.                     | Qty |
| 31                       | 6   |
| 70                       | 6   |



| <b>AR 43020 (a) / AR 43018 (b)</b><br>O-Rings |     |      |     |
|---|-----|------|-----|
| Pos.  | Qty | Pos. | Qty |
| 21  | 3   | 126  | 1   |
| 32  | 1   | 143  | 1   |
| 38  | 1   |      |     |
| 44  | 2   |      |     |
| 46  | 6   |      |     |
| 53  | 1   |      |     |
| 54  | 3   |      |     |
| 70  | 6   |      |     |
| 104   | 6   |      |     |
| 110   | 1   |      |     |



| <b>Suggested oil</b>            |    |
|---------------------------------|----|
| Type                            | Oz |
| AR64532D                        | 32 |
| Crankcase Oil<br>Capacity 37 oz |    |



# A.R. NORTH AMERICA

## AR 1639 : Gear Reduction

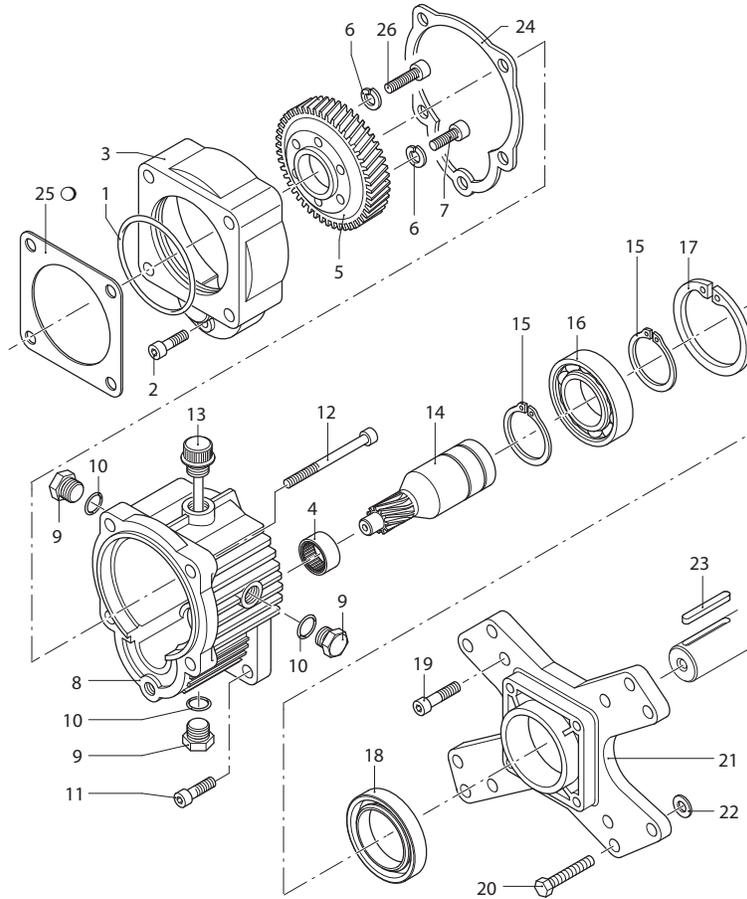
Use on engines:

**AR50- AR503:**  
B&S Vanguard 10  
Kohler CH270  
Honda GX270  
Subaru EX27

**AR713 - AR813:**  
B&S Vanguard 13  
Kohler CH440  
Honda GX340 - GX 390  
Subaru EX40

**AR1064:**  
B&S Vanguard 18  
Honda GX630  
Subaru EH65

Ø 1" Straight Keyed Shaft



91 - 1

| Pos | Cod.    | Description    | Q.ty           | Note   |
|-----|---------|----------------|----------------|--|
| 1   | 620561  | O-ring         | Ø 78x2,5       | 1 <input checked="" type="checkbox"/>              |
| 2   | 180030  | Bolt           | TCEI M8x20     | 1 <b>T220*</b>                                     |
| 3   | 621000  | Adapter Flange |                | 1  |
| 4   | 620990  | Bearing        |                | 1  |
| 5   | 651620  | Gear           | Z=64           | 1  |
| 6   | 200231  | Washer         |                | 6  |
| 7   | 620470  | Bolt           | TCEI M10x20    | 3 <b>T180*</b>                                     |
| 8   | 620960  | Body           |                | 1 <input checked="" type="checkbox"/>              |
| 9   | 1980740 | Plug           | 3/8" G         | 3 Brass <b>T180*</b>                               |
| 10  | 740290  | O-ring         | Ø 14x1,78      | 3  |
| 11  | 881940  | Bolt           | TCEI M8x25     | 4 <b>T220*</b>                                     |
| 12  | 621010  | Bolt           | TCEI M10x75    | 4 <input checked="" type="checkbox"/> <b>T220*</b> |
| 13  | 1140370 | Plug           |                | 1  |
| 14  | 651610  | Pinion         | Z=11           | 1  |
| 15  | 320240  | Ring           | circlip Øe 40  | 2  |
| 16  | 961780  | Bearing        |                | 1  |
| 17  | 961790  | Ring           | circlip Øi 68  | 1  |
| 18  | 961800  | Oil seal       |                | 1 <input checked="" type="checkbox"/>              |
| 19  | 651000  | Bolt           | 5/16"x24UNFx1" | 4 Geomet <b>T220*</b>                              |
| 20  | 961900  | Bolt           | 3/8"           | 4 See <input type="checkbox"/> <b>T220*</b>        |
| 21  | 1320940 | Flange         |                | 1  |
| 22  | 961770  | Spacer         |                | 4 See <input type="checkbox"/>                     |
| 23  | 650990  | Key            |                | 1  |
| 24  | 620950  | Gasket         |                | 1 <input checked="" type="checkbox"/>              |
| 25  | 650270  | Gasket         |                | 1 For AR 50 <input checked="" type="checkbox"/>    |
| 26  | 160671  | Bolt           | TCEI M10x25    | 3 <b>T180*</b>                                     |



**Suggested Oil**

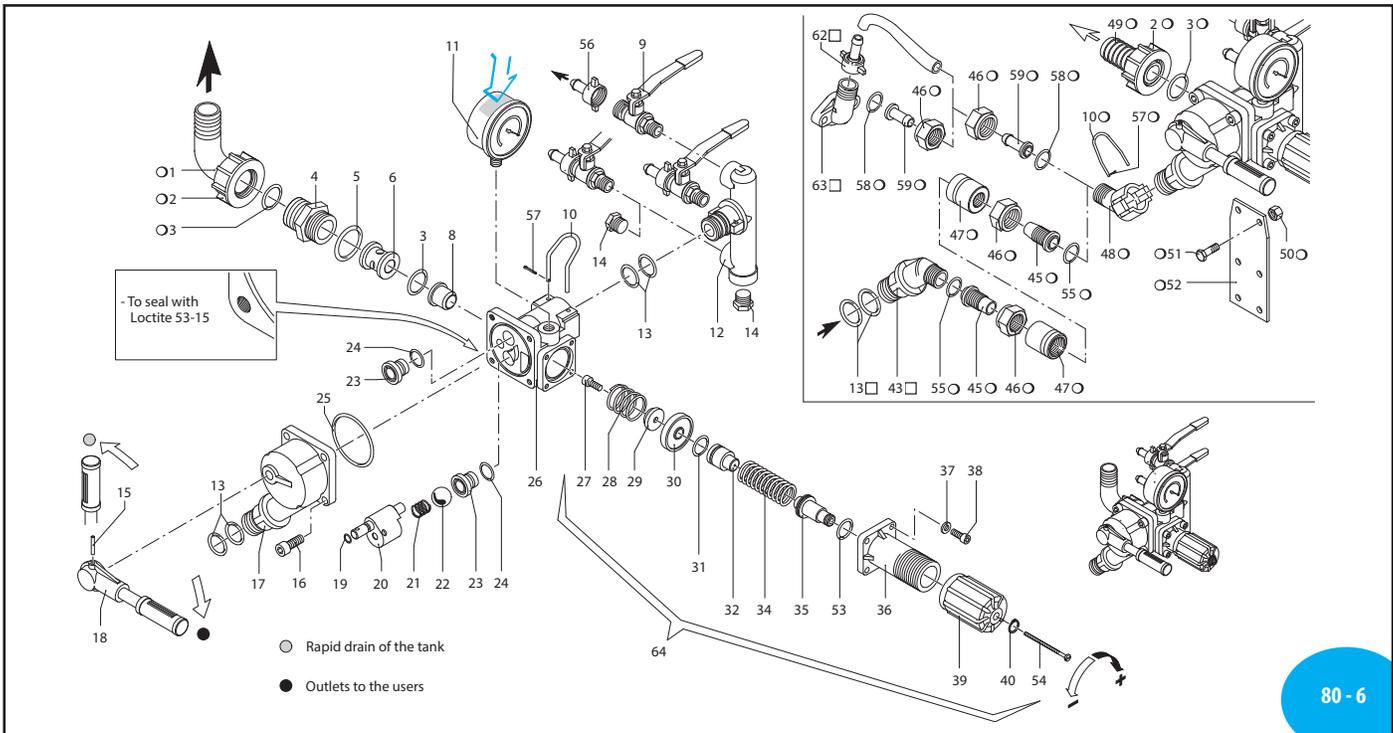
**Type**

90 W Gear Lube

For gas engine with 1" shaft, flange SAE J609a  
 Not part of reduction gear box -  Italian engines only

\*Torque: in-lbs +/- 10%

# A.R. NORTH AMERICA VDR 50



| Pos | Code    | Description                       | Qty | Note           |
|-----|---------|-----------------------------------|-----|----------------|
| 1   | 550370  | Elbow Ø 25                        | 1   |                |
| 2   | 550242  | Ring nut 1" G                     | 1   |                |
| 3   | 550350  | O-ring Ø 23.81x2.62               | 2   |                |
| 4   | 1040780 | Fitting 1" G M-M                  | 1   |                |
| 5   | 550040  | O-ring Ø 26.65x2.62               | 1   |                |
| 6   | 1040670 | Spacer                            | 1   |                |
| 8   | 1040660 | Seat                              | 1   | SS             |
| 9   | 130491  | Ball valve 3/8" G - 1/2" G M-M DX | 3   |                |
| 10  | 1040690 | Fork                              | 2   |                |
| 11  | 550545  | Pressure gauge                    | 1   | 0-1150 PSI     |
|     | 1151010 | Pressure gauge                    |     | 0-725-1150 PSI |
| 12  | 1040680 | Body                              | 1   |                |
| 13  | 390180  | O-ring Ø 18.72x2.62               | 6   |                |
| 14  | 130171  | Plug 3/8" G                       | 2   | T180*          |
| 15  | 1040820 | Pin                               | 1   |                |
| 16  | 108030  | Screw TCEI M8x20                  | 4   | T180*          |
| 17  | 1040720 | Body distributor                  | 1   |                |
| 18  | 1040730 | Knob                              | 1   |                |
| 19  | 1080200 | O-ring Ø 5.6x2.2                  | 1   |                |
| 20  | 1040700 | Hub pin                           | 1   |                |
| 21  | 850680  | Spring                            | 1   |                |
| 22  | 850660  | Ball                              | 1   | SS             |
| 23  | 850650  | Seat                              | 2   |                |
| 24  | 740290  | O-ring Ø 14x1.78                  | 2   |                |
| 25  | 1040710 | O-ring Ø 56x2                     | 1   |                |
| 26  | 1040600 | Body                              | 1   |                |
| 27  | 680560  | Screw TCEI M6x16                  | 1   | SST90*         |
| 28  | 1040650 | Spring                            | 1   |                |
| 29  | 1040640 | Valve                             | 1   | SS             |
| 30  | 1040630 | Diaphragm                         | 1   | Desmopan       |
|     | 1040631 | Diaphragm                         | 1   | NBR            |
| 31  | 880833  | O-ring Ø 15.54x2.62               | 1   | 90 Sh          |
| 32  | 1040622 | Piston                            | 1   |                |
| 34  | 1040830 | Spring                            | 1   |                |
| 35  | 394770  | Hub pin                           | 1   |                |
| 36  | 1040610 | Body spring guide                 | 1   |                |
| 37  | 550331  | Washer                            | 4   |                |
| 38  | 1040370 | Screw TCEI M6x22                  | 4   | T35*           |
| 39  | 394790  | Knob                              | 1   |                |
| 40  | 480550  | Ring circlip øe 12                | 1   |                |
| 43  | 1040760 | Fitting 3/4" G M                  | 1   |                |
| 45  | 1040810 | Hose tail Ø 13x24                 | 2   |                |
|     | 850780  | Hose tail Ø 19x34                 | 2   |                |

| Pos | Code    | Description               | Qty | Note     |
|-----|---------|---------------------------|-----|----------|
| 46  | 1040790 | Ring nut 3/4" G           | 2   | For ø 13 |
|     | 850790  | Ring nut 3/4" G           | 2   | For ø 19 |
| 47  | 1040800 | Ring nut                  | 2   | For ø 13 |
|     | 850770  | Ring nut                  | 2   | For ø 19 |
| 48  | 1040770 | Fitting                   | 1   |          |
| 49  | 550210  | Pipe Ø 25                 | 1   |          |
| 50  | 390270  | Nut M8                    | 2   | T180*    |
| 51  | 180370  | Screw TE M8x25            | 2   | T180*    |
| 52  | 850690  | Bracket                   | 1   |          |
| 53  | 770130  | O-ring Ø 20.35x1.78       | 1   |          |
| 54  | 1150650 | Screw TCTC M3x60          | 1   | T45*     |
| 55  | 960160  | O-ring Ø 17.86x2.62       | 2   |          |
| 56  | 110131  | Ring nut / HB 1/2" x 3/8" | 3   |          |
| 56  | 110130  | Ring nut / HB 1/2" x 1/2" | 3   | Optional |
| 57  | 1040950 | Split pin                 | 2   |          |
| 58  | 880830  | O-ring Ø 15.54x2.62       | 2   |          |
| 59  | 1150580 | Hose tail Ø 13            | 2   |          |
| 62  | 110130  | Ring nut 1/2"             | 1   |          |
| 63  | 450145  | Flange                    | 1   |          |
| 64  | 1362    | Valve kit adjustment      | 1   |          |

○ Not part of VDR 50  
□ Part of pump

\* Torque: in-lbs +/- 10%

| AR 1955<br>O-Rings |     |
|--------------------|-----|
| Pos.               | Qty |
| 3                  | 2   |
| 5                  | 1   |
| 13                 | 4   |
| 19                 | 1   |
| 24                 | 2   |
| 25                 | 1   |
| 31                 | 1   |
| 53                 | 1   |
| 55                 | 2   |

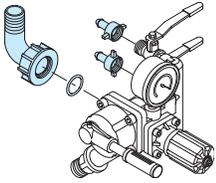
| AR 1956<br>Maintenance repair N° 1 |     |      |     |
|------------------------------------|-----|------|-----|
| Pos.                               | Qty | Pos. | Qty |
| 3                                  | 2   | 24   | 2   |
| 5                                  | 1   | 25   | 1   |
| 10                                 | 2   | 28   | 1   |
| 13                                 | 4   | 29   | 1   |
| 15                                 | 1   | 30   | 1   |
| 19                                 | 1   | 31   | 1   |
| 21                                 | 1   | 39   | 1   |
| 22                                 | 1   | 53   | 1   |
| 23                                 | 2   | 57   | 2   |

| AR 2484<br>Mant. rep. N° 2 |     |
|----------------------------|-----|
| Pos.                       | Qty |
| 3                          | 2   |
| 5                          | 1   |
| 8                          | 1   |
| 27                         | 1   |
| 29                         | 1   |
| 30                         | 1   |
| 31                         | 1   |

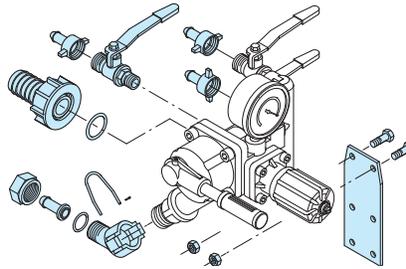
# VDR 50

## Kit For VDR 50

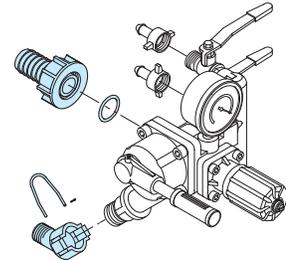
KIT 978 "I"



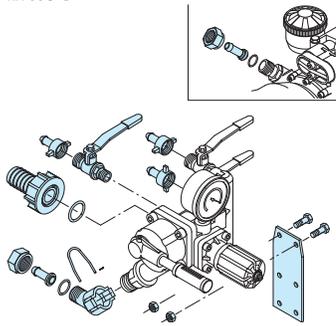
KIT 991 "S"



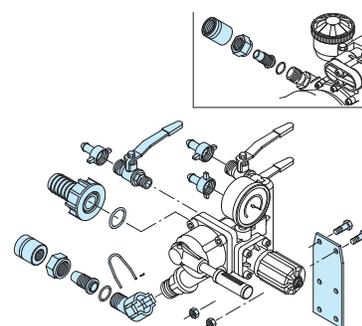
KIT 946 "I" - "S"



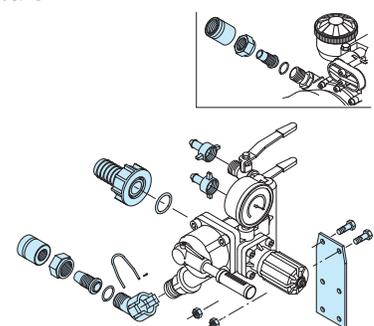
KIT 998 "S"



KIT 986 "S"



KIT 987 "S"

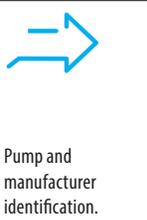


## Build-in control unit and remote control

**AR 978 "I"**  
Build in control

| Pos. | Qty | Pos. | Qty |
|------|-----|------|-----|
| 1    | 1   |      |     |
| 2    | 1   |      |     |
| 3    | 1   |      |     |
| 56   | 2   |      |     |

For AR 713 - AR 813 - AR 1064



**AR 991 "S"**  
Remote control

| Pos. | Qty | Pos. | Qty |
|------|-----|------|-----|
| 2    | 1   | 56   | 3   |
| 3    | 1   | 57   | 1   |
| 9    | 1   | 58   | 1   |
| 10   | 1   | 59   | 1   |
| 46   | 1   |      |     |
| 48   | 1   |      |     |
| 49   | 1   |      |     |
| 50   | 2   |      |     |
| 51   | 2   |      |     |
| 52   | 1   |      |     |

For AR 30 - AR 50

**KIT 946 "S"**  
Remote control

| Pos. | Qty | Pos. | Qty |
|------|-----|------|-----|
| 2    | 1   | 2    | 1   |
| 3    | 1   | 3    | 1   |
| 10   | 1   | 10   | 1   |
| 48   | 1   | 48   | 1   |
| 49   | 1   | 49   | 1   |
| 57   | 1   | 57   | 1   |

For AR 503 - AR 713  
AR 813 - AR 1064  
AR 903 - AR 1053  
AR 1203  
BHA/BHS/BHP 130

For AR 903  
AR 1053 - AR 1203  
BHS 90 - 105 - 120

**AR 998 "S"**  
Remote control

| Pos. | Qty | Pos. | Qty |
|------|-----|------|-----|
| 2    | 1   | 50   | 2   |
| 3    | 1   | 51   | 2   |
| 9    | 1   | 52   | 1   |
| 1    | 1   | 56   | 3   |
| 46   | 2   | 57   | 1   |
| 48   | 1   | 58   | 2   |
| 49   | 1   | 59   | 2   |

For AR 503 - AR 903 - AR 1053 - AR 1203  
AR 713 - AR 813 - AR 1064 - AR 1265  
BHA/BHS/BHP 130

**AR 986 "S"**  
Remote control  $\varnothing 13 \times 24 \text{ mm}$

| Pos. | Qty | Pos. | Qty |
|------|-----|------|-----|
| 2    | 1   | 49   | 1   |
| 3    | 1   | 50   | 2   |
| 9    | 1   | 51   | 2   |
| 10   | 1   | 52   | 1   |
| 45   | 2   | 55   | 2   |
| 46   | 2   | 56   | 3   |
| 47   | 2   | 57   | 1   |
| 48   | 1   |      |     |

For AR 503 - AR 713 - AR 813

**AR 987 "S"**  
Remote control  $\varnothing 19 \times 34 \text{ mm}$

| Pos. | Qty | Pos. | Qty |
|------|-----|------|-----|
| 2    | 1   | 49   | 1   |
| 3    | 1   | 50   | 2   |
| 10   | 1   | 51   | 2   |
| 45   | 2   | 52   | 1   |
| 46   | 2   | 55   | 2   |
| 47   | 2   | 56   | 2   |
| 48   | 1   | 57   | 1   |

For AR 903 - AR 1053 - AR 1203  
AR 1064 - BHA/BHS/BHP 130



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**AR33261**

*Medium & High Pressure Pumps*



## **New and Improved Gearbox for 8-18 HP Gas Engines**



- Eliminates Gas Engine Shaft and Key Wear
- Easy to Service
- Runs Cooler for Longer Life
- Mounts Medium & High Pressure Diaphragm Pumps to Gas Engines with 1" Shaft
  - AR50
  - AR503
  - AR813
  - AR1064



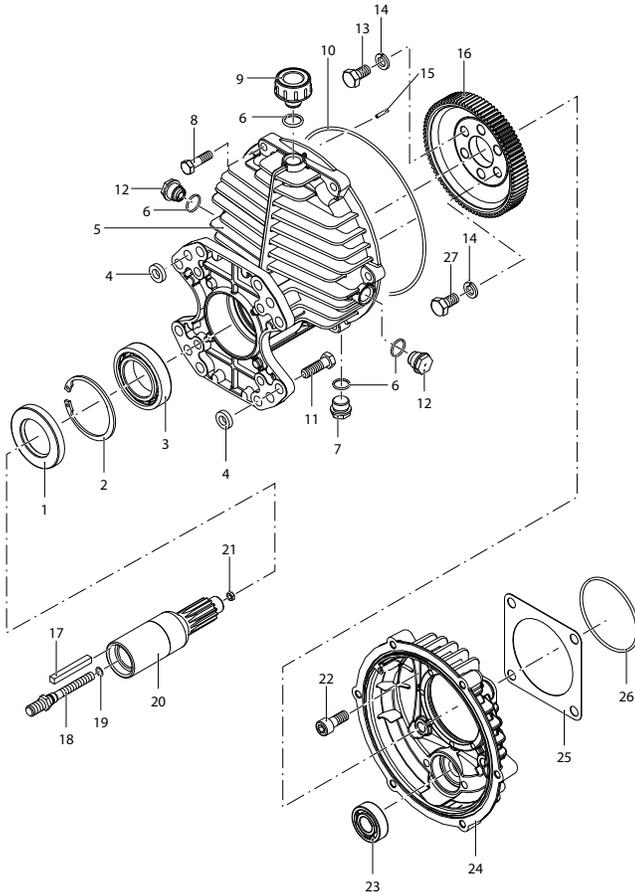
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For: AR50 - AR503-AR813-AR1064

∅ 1" Straight Keyed Shaft



| Pos | Cod.    | Description | Q.ty               | Note    |
|-----|---------|-------------|--------------------|---------|
| 1   | 961800  | Seal        | 1                  |         |
| 2   | 961790  | Ring        | ∅i68               | 1       |
| 3   | 961780  | Bearing     |                    | 1       |
| 4   | 961770  | Spacer      |                    | 4       |
| 5   | 2960090 | Body        |                    | 1       |
| 6   | 740290  | O-ring      | ∅ 14x1.78          | 4       |
| 7   | 1980740 | Plug        | 3/8" G brass       | 1       |
| 8   | 390450  | Bolt        | M8x30              | 6 T177* |
| 9   | 2960070 | Plug        |                    | 1       |
| 10  | 2960060 | O-ring      | ∅ 177.47x2.62      | 1       |
| 11  | 961900  | Bolt        | 3/8" 16 UNC 1-1/4" | 4       |
|     | 1382050 | Bolt        | 5/16" 24 UNF 1"    | 4       |
| 12  | 1980290 | Sight glass | 3/8" G             | 2       |
| 13  | 620340  | Bolt        | M10x20             | 3 T221* |
| 14  | 200231  | Washer      |                    | 6       |
| 15  | 2960080 | Pin         |                    | 2       |
| 16  | 2960030 | Gear        | Z=85               | 1       |
| 17  | 650990  | Key         |                    | 1       |
| 18  | 2960110 | Hub pin     | M8-7/16-20 UNF     | 1       |
|     | 2960130 | Hub pin     | M8-7/16-24 UNF     | 1       |
|     | 2960140 | Hub pin     | M8-M8              | 1       |
| 19  | 1121160 | O-ring      | ∅ 6.86x1.78        | 3       |
| 20  | 2960100 | Pinion      | Z=14 (1")          | 1       |
| 21  | 1660210 | Nut         | M8                 | 1 T177* |
| 22  | 160671  | Bolt        | M10x25             | 4 T221* |
| 23  | 1220260 | Bearing     |                    | 1       |
| 24  | 2960010 | Cover       |                    | 1       |
| 25  | 650270  | Gasket      |                    | 1       |
| 26  | 620561  | O-ring      | ∅ 78x2.5           | 1       |
| 27  | 160670  | Bolt        | M10x24             | 3 T221* |



**Suggested Oil**

| Type           |
|----------------|
| 90 W Gear Lube |

For gas engine with ∅ 1" shaft, flange SAE J609a

\*Torque: in/lbs +/- 10%

### Assembly Instructions

1. Apply anti-sieze to the engine shaft.
2. Add key (17) to the gas engine shaft.
3. Screw the stud bolt (18) into the threaded end of the gas engine shaft. Assemble the o-ring (19) in the groove of the stud bolt.
4. Slide the pinion onto gas engine shaft. Tighten nut (21) onto the stud bolt to toque specified on parts list.
5. Mount the gearbox body (5) to the gas engine using bolts (11) and spacers (4) being careful not to damage the oil seal (1.) Grease added to the internal diameter of the bearing (3) will aid in assembly.
6. Insert the o-ring (26) into the flange (24), assemble the flange (22) to the pump, using the bolts (22) and gasket (25) as shown.
7. Assemble the driven gear (16) to the pump flanged shaft using bolts (13 & 27) and washers (14.)
8. Assemble the pump with flange onto the engine flange assembly using the o-ring (10) in the groove.
9. Install oil site glasses. Fill with 14 oz. of 90W gear lube to the sight glass level. Install vent cap ((9) with o-ring (6).
10. Rotate the engine with the recoil starter to check for correct assembly with no binding.