



OPERATING INSTRUCTIONS & SERVICE MANUAL

Steamaster

CLEANER. BETTER. SMARTER.

Kanga 220



Kanga 600 & Kanga Max 600



Kanga 1200 & Kanga Max 1200



Kanga 1600 & Kanga Max 1600



Steammaster

CLEANER. BETTER. SMARTER.



HOUR METER

An hour meter is fitted to your portable to enable an accurate check on the operating hours of the vacuum motors and the pump.

SWITCHES

The illuminated heavy duty rocker switches are placed at the side of the machine away from any possible water contact. If the heater switch is activated all other switches (pump, vac's & waste) will not operate. To operate in normal running mode the heater switch must be in the off position. The portable is fitted with a heater switch, a pump switch, two vac motor switches and a reset button. Fully automatic machines may be fitted with a waste pump, therefore having a waste switch.



PRESSURE GAUGE

The portable is fitted with a heavy duty glycerine filled pressure gauge which is dampened to prevent vibration is fitted in the pump line and registers the amount of pressure in the line.

PRESSURE REGULATOR (UNLOADER VALVE)

The pressure regulator is situated on the front of the machine and enables easy adjustment of the working pressure (PSI) of the machine. This makes it very easy to back off pressure for things like upholstery cleaning.



DUMP VALVE (WASTE RELEASE)

The portable is fitted with a dump valve to make it easy to empty the waste in the dirty water tank. Make sure that the valve is closed before you start to work because you will have no vacuum pressure while it is open.

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1 - LOW WATER SHUT OFF FOR PUMP

All portables are fitted with a float switch which is in place to sense when the water level in the solution tank drops to low, so the pump can never run dry.

2 - HEATER (5 AMP)

All portables are fitted with a 5 amp heater to sustain water temperature while you are not working.



BOOSTER PORT

All portable units are fitted with a booster port. This port enables the use of a "Turbo Booster". The Booster is fitted with two additional two stage vacuum motors which doubles the suction power of your portable machine. For more info on the Booster see "Accessories".



AUTO FILL (AUTOMATIC'S ONLY)

The automatic portables are fitted with an auto fill feature, this means you can have your portable connected to the water source of the property you are working from and it will automatically fill the solution tank while you are working away and keep the water level at a high volume. This means no time lost to keep filling the solution tank.



WASTE PUMP VALVE (AUTOMATIC'S ONLY)

The automatic portables are fitted with a waste pump. To activate the pump turn the waste switch to the on position and open the ball valve at the front of the machine. (you should have a waste hose to screw onto the valve) When the waste reaches a set level the waste pump will automatically switch on and start pumping the waste away.

CLEANING YOUR FILTERS



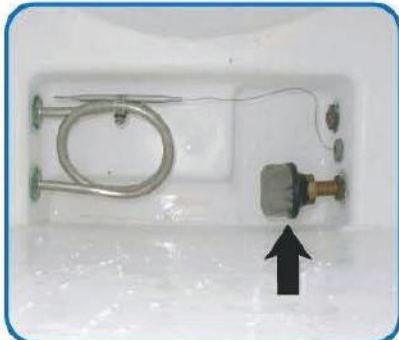
FILTER BAG (WASTE TANK)

All portable units come with a filter bag which is in place to catch all the larger pieces of dirt that are sucked up into the waste tank. This means that you will not have to filter your waste water when dumping because it is already done. After every days work you should empty the lint bag into a bin and rinse it out, if you want to keep it white you may bleach it.



RECOVERY FILTER

All portable units are fitted with a recovery filter which is designed to shut off the vacuum motors when the waste water gets to high in the tank. This filter must be cleaned on a regular basis to ensure no build up of dirt, otherwise the shut off will not engage and you will drown your vac motors.



PUMP FILTER (SOLUTION TANK)

All portable units are fitted with a small button filter in the clean water or solution tank (arrowed) this filter is in place to stop any small particles being drawn into the pump and damaging it. This filter must be unscrewed and rinsed on a regular basis to ensure no build up of dirt on it, and to ensure the life of the pump.



WASTE PUMP (AUTOMATIC'S ONLY)

If you have a fully automatic machine with a waste pump, you will have to clean the pump on a regular basis to ensure that no build up dirt forms around the part of the pump that draws water in. In order to take the pump out you need to un-hook it from the base plate, which is held in with an o-ring. You will then be able to remove the pump for cleaning. To put the pump back in you need to seat it back into the base plate and lock it in with the o-ring again.

PROPER MAINTENANCE ON YOUR FILTERS WILL ENSURE THE LIFE OF YOUR MACHINE

SERVICING YOUR VACUUM MOTORS

Your portable is fitted with two 1100 watt two stage vacuum motors, you should get at least 600 hours out of a motor, however there have been cases where a motor has lasted up to 1000 hours. It is recommended to check the length of the brushes in the motor and replace them at around 300 hours. **BEFORE SERVICING ENSURE THAT THE MACHINE IS NOT PLUGGED INTO POWER!**



The vacuum motors are wired to two separate switches number one is wired to a loom and number two is wired directly to the number two switch. Below are four steps for easy vac motor replacement. Make sure if you replace a vac motor to remember to put back the piece of PVC around the vac motor's head. This is very important to have because it protects wiring in case any water ever passes through a vac motor.



STEP 1

You will first have to take off the three springs holding the vac motor on. To do this use a hook or a screwdriver and simply lever the spring out of the catch or hole on the motor



STEP 2

Once you have taken all 3 springs off you can then disconnect the wiring, if it is vac 1 it will be wired by these bullet joiners, if it is vac two it will be wired to the switch itself.



STEP 3

Now you can take off the exhaust hose from the motor, do this by simply unscrewing the hose clamp.

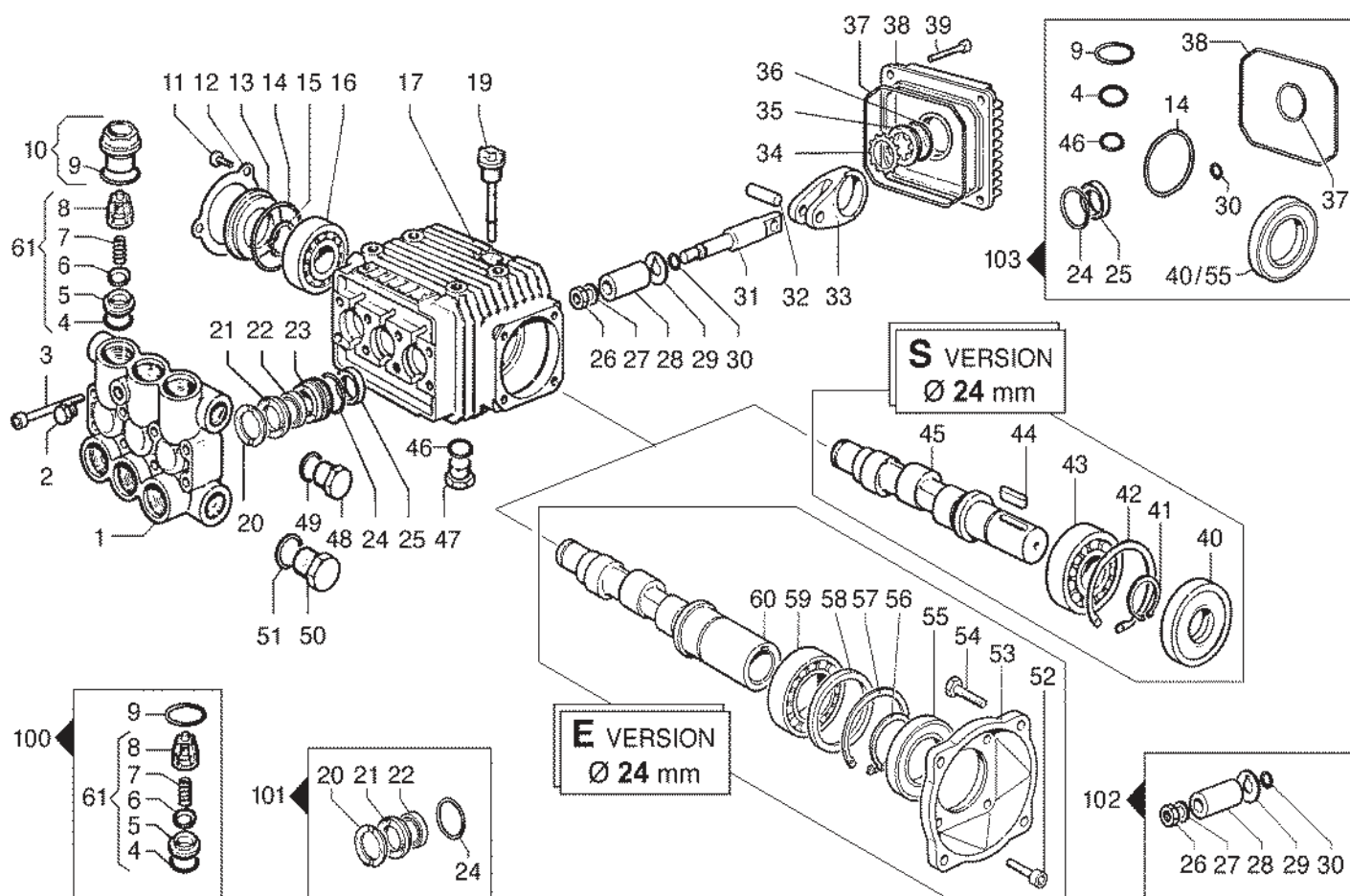


STEP 4

Now disconnect the earth lug from the vac motor.

Now that you have disconnected the 3 springs, the wiring, the hose clamp, and the earth lug you can remove the vacuum motor and replace it with a new one. To refit a vacuum motor simply reverse the four steps above. When replacing a vacuum motor make sure you reposition it evenly on the black foam so as to get correct suction from the unit.

1450 RPM



| N° | Cod. | Descrizione | Description | Note | Qty | Model |
|----|-----------|-------------------------|-------------------------|------------|-----|---|
| 1 | 3218 0105 | Testata Pompa Alluminio | Allum. Pump Manifold | Ø18 | 1 | 3513 E Allum. |
| | 3218 0318 | Testata Pompa Ottone | Brass Pump Manifold | Ø18 | 1 | 3513 E Brass 2520 S - 3525 S 3016 S - 3020 S 3025 S - 3513 S 3517 S |
| | 3218 0317 | Testata Pompa Ottone | Brass Pump Manifold | Ø15 | 1 | 2020 S |
| 2 | 3202 0018 | Tappo | Cap | G1/8 | 1 | |
| 3 | 3609 0108 | Vite | Screw | M6x55 | 8 | |
| 4 | 1210 0046 | Guarnizione OR | O-Ring | 2,62x17,13 | 6 | |
| 5 | 3009 0087 | Sede Valv. Aspir./Mand. | Suct./Del. Valve Seat | | 6 | |
| 6 | 3604 0017 | Valvola Aspir./Mand. | Suct./Del. Valve | | 6 | |
| 7 | 1802 0177 | Molla Valv. Asp./Mand. | Suct./Del. Valve Spring | | 6 | |
| 8 | 1205 0025 | Gabbia Valv. Asp./Mand. | Suct./Del. Valve Cage | | 6 | |
| 9 | 1210 0048 | Guarnizione OR | O-Ring | 2,62x20,24 | 6 | |
| 10 | 3202 0312 | Tappo + OR | Cap + O-Ring | | 6 | |
| 11 | 3609 0088 | Vite | Screw | M5x10 | 3 | |
| 12 | 1004 0012 | Flangia Tenuta | Crankcase Flange | | 1 | |
| 13 | 0402 0172 | Coperchio | Cover | | 1 | |
| 14 | 1210 0386 | Guarnizione OR | O-Ring | 3,53x44,04 | 1 | |
| 15 | 3019 0011 | Seeger Esterno | Outer Seeger | | 1 | |
| 16 | 0438 0066 | Cuscinetto a Sfere | Ball Bearing | 20x52x15 | 1 | 2020 S - 2520 S 3016 S - 3020 S 3513 S - 3513 E 3517 S |
| | 0438 0069 | Cuscinetto a Sfere | Ball Bearing | 20x52x15 | 1 | 3025 S - 3525 S |
| | 0403 0128 | Carter Pompa | Pump Crankcase | | 1 | |
| 19 | 3200 0051 | Asta Livello Olio | Oil Dipstick | | 1 | |
| 20 | 0009 0196 | Anello Pressione | Packing Head Ring | Ø15 | 3 | 2020 S |
| | 0009 0193 | Anello Pressione | Packing Head Ring | Ø18 | 3 | 2520 S - 3016 S 3020 S - 3025 S 3513 S - 3513 E 3517 S - 3525 S |

| N° | Cod. | Descrizione | Description | Note | Qty | Model |
|----|-----------|----------------------|-------------------|------------|-----|--|
| 21 | 1241 0065 | Guarnizione Tenuta | Packing | Ø15 | 3 | 2020 S |
| | 1241 0035 | Guarnizione Tenuta | Packing | Ø18 | 3 | 2520 S - 3016 S 3020 S - 3025 S 3513 S - 3513 E 3517 S - 3525 S |
| 22 | 1241 0030 | Guarnizione Tenuta | Packing | Ø15 | 3 | 2020 S |
| | 1241 0028 | Guarnizione Tenuta | Packing | Ø18 | 3 | 2520 S - 3016 S 3020 S - 3025 S 3513 S - 3513 E 3517 S - 3525 S |
| 23 | 0009 0198 | Anello Portaguarniz. | Packing Retainer | Ø15 | 3 | 2020 S |
| | 0009 0197 | Anello Portaguarniz. | Packing Retainer | Ø18 | 3 | 2520 S - 3016 S 3020 S - 3025 S 3513 S - 3513 E 3517 S - 3525 S |
| 24 | 1210 0223 | Guarnizione OR | O-Ring | 1,78x26,7 | 3 | |
| 25 | 0019 0095 | Anello Tenuta | Oil Seal | 15x24x5 | 3 | |
| 26 | 0600 0048 | Dado Speciale | Special Bolt | | 3 | |
| 27 | 2811 0080 | Rondella | Washer | 8,2x14x1,5 | 3 | |
| 28 | 0202 0020 | Bussola Ceramica | Ceramic Bushing | Ø15 | 3 | 2020 S |
| | 0202 0018 | Bussola Ceramica | Ceramic Bushing | Ø18 | 3 | 2520 S - 3016 S 3020 S - 3025 S 3513 S - 3513 E 3517 S - 3525 S |
| 29 | 2812 0038 | Rondella | Washer | | 3 | |
| 30 | 1210 0055 | Guarnizione OR | O-Ring | 1,78x6,07 | 3 | |
| 31 | 2409 0044 | Pistone Guida | Piston Guides | | 3 | |
| 32 | 3011 0014 | Spinotto | Gudgeon Pin | | 3 | |
| 33 | 0205 0048 | Kit Biella | Con. Rod Assembly | | 3 | 2020 S - 3513 S 3513 E |
| | 0205 0050 | Kit Biella | Con. Rod Assembly | | 3 | 2520 S - 3016 S 3020 S - 3025 S 3517 S - 3525 S |
| 34 | 3019 0033 | Seeger Esterno | Outer Seeger | Ø28 | 1 | |
| 35 | 3201 0026 | Spia Livello Olio | Oil Indicator | | 1 | |

| N° | Cod. | Descrizione | Description | Note | Qty | Model |
|----|-----------|----------------------|-----------------|-------------|-----|---|
| 36 | 1210 0333 | Guarnizione OR | O-Ring | 1,78x23,52 | 1 | |
| 37 | 1210 0621 | Guarnizione OR | O-Ring | 3,0x94 | 1 | |
| 38 | 0402 0142 | Coperchio Carter | Crankcase Cover | | 1 | |
| 39 | 3609 0041 | Vite | Screw | M6x25 | 4 | |
| 40 | 0019 0094 | Anello Tenuta | Oil Seal | 25x62x10/7 | 1 | |
| 41 | 3019 0006 | Seeger Esterno | Outer Seeger | | 1 | |
| 42 | 3020 0012 | Seeger Interno | Inner Seeger | | 1 | |
| 43 | 0438 0075 | Cuscinetto a Sfere | Ball Bearing | 25x62x17 | 1 | 2020 S - 2520 S 3016 S - 3020 S 3513 S - 3517 S |
| | 0438 0071 | Cuscinetto a Sfere | Ball Bearing | 25x62x17 | 1 | 3025 S - 3525 S |
| 44 | 1602 0045 | Linguetta | Key | 8x7x25 | 1 | |
| 45 | 0001 0290 | Albero Passante | Throughshaft | Ø24 | 1 | 2020 S - 3016 S 3020 S - 3025 S |
| | 0001 0294 | Albero Passante | Throughshaft | Ø24 | 1 | 3513 S - 3517 S 3525 S |
| | 0001 0333 | Albero Passante | Throughshaft | Ø24 | 1 | 2520 S |
| 46 | 1210 0441 | Guarnizione OR | O-Ring | 2x14 | 1 | |
| 47 | 3200 0007 | Tappo | Plug | 3/8 GAS | 1 | |
| 48 | 3200 0007 | Tappo | Plug | 3/8 GAS | 1 | |
| 49 | 2811 0084 | Rondella | Washer | 16,7x22x1,5 | 1 | |
| 50 | 3202 0015 | Tappo | Plug | G1/2 | 1 | |
| 51 | 2811 0086 | Rondella | Washer | 21,2x27x1,5 | 1 | |
| 52 | 3609 0032 | Vite | Screw | M6x20 | 4 | |
| 53 | 3016 0014 | Flangia | Flange | MEC 90 | 1 | |
| 54 | 3607 0015 | Vite Testa Esagonale | Hexagonal Screw | M8x20 | 4 | |
| 55 | 0019 0075 | Anello Tenuta Olio | Oil Seal | 35x62x7 | 1 | |
| 56 | 3019 0004 | Seeger Esterno | Outer Seeger | Ø35 | 1 | |

| N° | Cod. | Descrizione | Description | Note | Qty | Model |
|----|-----------|-------------------------|----------------------------|----------|-----|--------|
| 57 | 3020 0012 | Seeger Interno | Inner Seeger | Ø62 | 1 | |
| 58 | 2812 0064 | Rondella Distanziale | Spacer | | 1 | |
| 59 | 0438 0015 | Cuscinetto a Sfere | Ball Bearing | 35x62x14 | 1 | |
| 60 | 0001 0343 | Albero Femmina | Hollow Shaft | Ø24 | 1 | 3513 E |
| 61 | 1220 0030 | Gruppo Valv. Asp./Mand. | Suct./Del. Valve Ass.y kit | | 6 | |

Kit Ricambi

Spare Parts Kit

| | | | | | | |
|-----|-----------|-----------------------|----------------|----------------|---|--|
| 100 | 5025 0011 | Kit Valvole | Valve Kit | | 1 | |
| 101 | 5019 0035 | Kit Guarnizioni Acqua | Water Seal Kit | Ø15 | 1 | 2020 S |
| | 5019 0037 | Kit Guarnizioni Acqua | Water Seal Kit | Ø18 | 1 | 2520 S - 3016 S 3020 S - 3025 S 3513 S - 3513 E 3517 S - 3525 S |
| 102 | 2409 0071 | Kit Pistone | Piston kit | Ø15 | 1 | 2020 S |
| | 2409 0072 | Kit Pistone | Piston kit | Ø18 | 1 | 2520 S - 3016 S 3020 S - 3025 S 3513 S - 3513 E 3517 S - 3525 S |
| 103 | 5019 0040 | Kit Guarnizioni Olio | Oil Seal Kit | Male/Solid | 1 | 2520 S - 3016 S 3020 S - 3025 S 3513 S - 3517 S 2020 S - 3525 S |
| | 5019 0041 | Kit Guarnizioni Olio | Oil Seal Kit | Femmina/Hollow | 1 | 3513 E |

PUMP MANUAL

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FOREWORD

This manual is made up of two separate parts.

The first one is directed to final user and **Skilled Engineer**, while the second is only for the **Skilled Engineer**.

By **Skilled Engineer** we mean:

- The producer of the machine (for instance of the motor pump) with built-in pump (from now on, by “machine with built-in pump” we also mean a “system with built-in pump”, like for instance in the case of a pumping station);
- A person of the Authorised Service Centre, who has been especially trained and authorised by the producer to carry out extraordinary maintenance interventions and repairs on the equipment. The interventions on the electrical parts must be carried out by a **Skilled Engineer** that is also a **Qualified Electrician**, that is to say a person who is professionally enabled and trained to check, install and repair electrical devices to the “state-of-the-art” and according to the rules valid in the country in which the device is installed.

FIRST PART

1. GENERAL INFORMATION

We congratulate with you for choosing one of our products and would like to remind you that this product has been manufactured by paying the maximum attention to operators’ safety, its work efficiency and the environmental protection.

In order to preserve these features in time, we recommend to carefully read this manual and invite you to observe what described in it.

Special attention must be paid to the reading of the text parts marked by the symbol:



because they contain important safety instructions for the pump use.

The producer refuses any responsibility for:

- lack of compliance with what contained in this manual;
- different uses of the pump than the one mentioned in the paragraph “**INTENDED USE**”;
- use contrary to specific current regulations;
- incorrect installation;
- serious failings in the recommended maintenance;
- modifications or interventions non authorised by the Producer;
- use of non-original spare parts or parts that are not specific for the pump model;
- repairs not carried out by a **Skilled Technician**.

1.1 GUARANTEE CONDITIONS

The guarantee is valid for 24 months starting from the date indicated on the fiscal sales document (fiscal bill, invoice, etc.), provided that the guarantee certificate attached to the documentation of the pump is returned to the Producer, after having been completely filled-in, within 10 days from the purchase date.

The buyer has only the right to the replacement of the parts that, according to the Producer or one of its authorised representatives, shows defects in terms of material or production, with the exclusion of any right to reimbursements of any direct or indirect damage of any nature. The labour, packaging and transport costs are to be borne by the buyer.

The product sent to the Producer for repairs in guarantee must be sent complete with any original and not tampered component, otherwise any guarantee request will be refused.

The replaced parts become a property of the Producer.

Possible failures or breaks that should take place during and after the guarantee period do not give right to the payment suspension not to further delays.

The guarantee does not include the replacement of the pump and ceases automatically when the agreed terms of payment are not respected.

The guarantee does not include:

- direct or indirect damage of any nature due to falls, incorrect use of the pump and the lack of compliance with the safety, installation, use and maintenance instructions contained in this manual;
- damage resulting from the stopping of the pump for repairs;
- all those parts subject to wear during their normal operation;
- all those parts that come out to be defective due to negligence or bad use;
- damage resulting from the use of non-original spare parts and accessories or not expressly authorised by the Producer and from repairs not carried out by a **Skilled Technician**.

Any tampering with the pump, especially with the safety and maximum pressure limiting devices, causes the guarantee cancellation and relieves the Producer from any liability.

The Producer reserves the right to carry out, at any moment, any changes he believes necessary to improve the product without being obliged to apply these changes on the previously produced devices delivered or being delivered.

What stated in this paragraph excludes any expressed or unexpressed previous condition.

1.2 ADDRESS OF THE PRODUCER

As regards the address of the Producer of the pump, refer to what reported on the “**Declaration of conformity**” at the end of the section of this manual.

1.3 USE AND PRESERVATION OF THE USE AND MAINTENANCE MANUAL

The use and maintenance manual is to be considered an integral part of pump and must be preserved carefully in a protected area that enables its possible ready reference.

The use and maintenance manual gives important notices for the safety of the operator and anyone around it, as well as for the environment.

If it gets lost or destroyed, it is possible to request a copy from your authorised dealer or from an authorised service centre.

This documentation must be enclosed with the pump if its ownership is transferred.

We have done our best in drawing up this manual. If anyway you detect mistakes, please communicate them to the Producer or to an authorised service centre.

We reserve the right to update and correct this manual at any time without previous notice.

Any reproduction, event partial, of this manual is not possible without the previous written consent of the Producer.

1.4 SYMBOL AND DEFINITIONS

1.4.1 Symbols

The symbol:



that highlights some parts of the text indicates the high possibility of damage to the person if the relevant prescriptions and indications are not followed.

The symbol:

WARNING

that highlights some parts of the text indicates the possibility to damage the pump if the relevant instructions are not followed.

The symbols:

1.4.2 Definitions

- **By-pass:** identifies that particular pump operation that takes place when, during the normal use, you must interrupt the flow rate (for instance, in case of a water cleaner when you release the lever of the water gun). Under this condition, the pumped water returns to be sucked thanks to the pressure limiting/adjusting valve.

2. FEATURES AND TECHNICAL DATA

| | series LW • LW-K | series ZW • ZW-K | series FM | series HW | series TW • SW | series AX |
|----------------------------------|--|----------------------------|----------------------------|-----------------------------|------------------------------|---------------------------|
| MECHANICAL CONNECTION | | | | | | |
| Max. absorbed power | 1,1÷4,0 kW 1,5÷5,4 CV | 3,7÷8,2 kW 5,0÷11,1 CV | 3,7÷7,7 kW 5,0÷10,5 CV | 7,1÷10,5 kW 9,7÷14,3 CV | 5,5÷15,1 kW 7,5÷20,5 CV | 1,0÷6,3 kW 1,4÷8,6 CV |
| Max. rotation speed | See the following table | | | | | |
| PUMP OIL | AGIP ROTRA MULTI THT (2) | | | | | |
| Type | | | | | | |
| Quantity in weight (Kg - lb) | 0,28 - 0,62 | 0,28 - 0,62 | 0,50 - 1,1 | 0,50 - 1,1 | 0,97 - 2,14 | 0,16 - 0,35 |
| Quantity in volume (l - US gal) | 0,32 - 0,08 | 0,32 - 0,08 | 0,56 - 0,15 | 0,56 - 0,15 | 1,09 - 0,29 | 0,18 - 0,05 |
| HYDRAULIC CONNECTION | | | | | | |
| Max water temperature (°C - °F) | 60 - 140 | | | | | 60 - 140 |
| Min. water temperature (°C - °F) | 5 - 41 | | | | | 5 - 41 |
| Max. water pressure (bar - psi) | 8 - 116 | | | | | 8 - 116 |
| Max. priming depth (m - ft.) | 1 - 3,33 (1000, 1450 e 1750 RPM) 0,5 - 1,7 (2800 e 3400 RPM) | | | | | 1 - 3,3 |
| Min. water flow rate | 1,3 x max. flow rate | | | | | |
| PERFORMANCES | | | | | | |
| Max. flow rate | See the following table | | | | | |
| Max. pressure | See the following table | | | | | |
| Sound pressure level | Lower than 70 dB (A) | | | | | |
| WEIGHT (1) | 4,7÷7,2 kg 10,4÷15,9 lb | 7,2÷7,9 kg 15,9÷17,4 lb | 8,3÷9,2 kg 18,3÷20,3 lb | 9,8÷10,0 kg 21,6÷22,0 lb | 17,0÷20,0 kg 37,0÷44,0 lb | 4,1÷6,0 kg 9,0÷13,2 lb |

The features or the technical data are only for reference. The Producer reserves the right to carry out any necessary changes to the device.

(1) According to the specific model

(2) Corresponding oils:

| | | |
|--|--------------------|----------------------|
| U.T.T.O. (Universal Tractor Transmission Oil) | API GL - 4 | JOHN DEERE J20A |
| Massey - Ferguson M-1135 | FORD M2C - 86 B | Esso TORQUE FLUID 62 |
| Mobil MOBILFLUID 422 | FORD M2C - 134 B/C | Shell DONAX TD |

The first letters of the pump model initials make it possible to identify the specific model (LW, FW, ZW, HW, TW, SW, AX); the third letter allows you to determine the maximum rotation speed according to the following table:

| THIRD LETTER | RPM |
|--------------|------|
| N | 1000 |
| Assente | 1450 |
| S | 1750 |
| R | 2800 |
| D | 3400 |

For instance: TWN 5636 (1000 RPM), LW 2020 (1450 RPM), HWD 4040 (3400 RPM).

The presence of letter K, preceded by a hyphen, means that the pump (LW-K, ZW-K) is equipped with an already built-in pressure limiting/adjusting valve (for instance: LWR-K 2020, ZW-K 4022): This rule cannot be applied to the AX models, because they are all already equipped with a built-in pressure limiting/adjusting valve.

The numbers of the model initials make it possible to determine the maximum flow rate and pressure.

With the first two figures (if the number is made up of four figures) or with the first three figures (if the number is made up of five figures) you can establish the maximum flow rate according to the following table:

| |
|--|
| Maximum flow rate in l/min. = first two (or three) figures x 0,378 |
| Maximum flow rate in US gpm = first two (or three) figures : 10 |

For instance: TW 10522 ($105 \times 0.378 = 39.7$ l/min.), LW 2015 ($20:10 = 2$ US gpm).

With the last two figures you can determine the maximum pressure according to the following table:

| |
|---|
| Maximum pressure in bar= last two figures x 6,9 |
| Maximum pressure in psi=last two figures x 100 |

For instance: TW 10522 ($22 \times 6.9 = 151.8$ bar), LW 2015 ($15 \times 100 = 1500$ psi).

2.1 IDENTIFICATION OF COMPONENTS

| | | | |
|----|------------------------------|----|-----------------------------|
| 1 | Suction connector | 11 | Support for motor flange |
| 2 | Pump head | 12 | Pump shaft |
| 3 | Suction valve plug | 13 | Oil discharge plug |
| 4 | Connector for pressure gauge | 14 | Detergent suction connector |
| 5 | Delivery connector | 15 | Pressure adjusting knob |
| 6 | Delivery valve plug | 16 | Detergent adjusting knob |
| 7 | Identification plate | 17 | Oil plug without vent |
| 8 | Oil plug with vent | 18 | Pump foot |
| 9 | Pump case | 19 | Connector for safety valve |
| 10 | Oil level light | 20 | Connector for thermal valve |

Please refer to figures 1 and 2 at the beginning of the manual

2.2 SAFETY DEVICES



CAUTION

- *The machine with the built-in pump must be always equipped with a pressure limiting/adjusting valve.*
- *If the machine with the built-in pump is equipped with a safety valve, in case it is activated very often, immediately interrupt the use of the machine with the built-in pump and have it checked by a **Specialised Engineer**.*

Pressure limiting/adjusting valve

Mounted as standard on LW-K, ZW-K, AX and available as optional accessory for the other models.

It is a valve that makes it possible to adjust the working pressure and that allows the pump fluid to reflow towards the by-pass duct, thus avoiding the onset of dangerous pressures, when you interrupt the flow rate or when you try to set pressure values above the maximum allowed ones.

CAUTION

- *The pressure limiting/adjusting valve is calibrated by the Producer or Builder of the machine with the built-in pump. Never operate on the pressure limiting/adjusting valve not to alter the calibration: operate on it only by using the knob (15).*

2.3 IDENTIFICATION PLATE

CAUTION

- *If during the use the identification plate is worn, apply to the dealer or to an authorised service centre to reset it.*

The identification plate (7) contains the serial number and the pump model with a suitable code hinting to the main technical features of the pump (see also the paragraph “FEATURES AND TECHNICAL DATA”).

3. INTENDED USE

CAUTION

- *The pump is only intended for pumping:*
 - *high-pressure water in washing machines (water cleaners);*
 - *water not for food use.*
- *The pump is not intended for distributing:*
 - *non-filtered water or water with dirt;*
 - *detergents, paints and chemical substances both in their pure state and in water solution;*
 - *sea water or high salt concentration water;*
 - *fuels and lubricants of any kind and type;*
 - *flammable fluids or liquefied gases;*
 - *food liquids;*
 - *water with temperature higher than 60°C or lower than 5°C;*
- *The pump must be never used to wash: persons, animals, electrical devices under voltage, delicate objects, the pump itself or the machine it is part of.*
- *The accessories (standard and optional) and the detergents used with the pump must be of the type authorised by the Producer.*
- *The pump is not suitable for the use in rooms that show particular conditions such as, for instance, corrosive or explosive atmospheres.*
- *For the use on vehicles, boats or aircraft, apply to the technical service of the Producer because some added prescription can be necessary.*
Any other use is improper.
The Producer cannot be hold liable for possible damage resulting from unintended or wrong uses.

4. OPERATION

4.1 PRELIMINARY ACTIVITIES

CAUTION

- *The pump cannot be commissioned if the machine on which it is built-in does not conform with the safety requirements established by the European Directives. This conformity is*

guaranteed by the presence of the CE marking and by the Declaration of Conformity of the producer of the machine with the built-in pump.

- *Before commissioning the machine, carefully read the indications of this manual and the instructions of the machine with the built-in pump. In particular, make sure that you have well understood the operation of the pump and of the machine with the built-in pump as far as the fluid sensing operations are concerned.*
 - *Carry out the preliminary checks recommended by the producer of the machine with the built-in pump.*
 - *Check that all delivery pipes are closed or connected to users in closed position (for instance water gun)*
 - *Make sure that the pump moving parts are suitable protected and that they cannot be accessed by unauthorised personnel.*
 - *Do not use the pump in case:*
 - *the pump has undergone strong hurts;*
 - *there are gas oil leaks;*
 - *there are visible water leaks.*
- In these cases have the pump be checked by a **Skilled Engineer**.*
- *Have a **Specialised Engineer** make the scheduled checks as per the extraordinary maintenance.*

WARNING

- In case of use at very low temperatures, make sure that there is no ice inside the pump.
 - Carry out the scheduled checks of the ordinary maintenance with special reference to the ones relating to oil.
- b) Replace the oil plug without vent (17) with the oil plug with vent (8). This operation could have already been carried out by the Producer of the machine with the built-in pump.
- c) With pump at a standstill, check that the oil level corresponds to the middle of the oil level light (10). The oil level can be also checked (apart from the AX models) by unscrewing the plug with vent (8): the correct level must be included between the two notches on the rod. Remember that the oil level must be always checked with pump at a standstill and completely cooled down.

For possible filling, refer to the types of lubricants reported in the paragraph “**FEATURES AND TECHNICAL DATA**”.

- d) By referring to the use and maintenance manual of the machine with the built-in pump, check the cleaning of the suction filter.

4.1.1 HYDRAULIC CONNECTION

CAUTION

- *If the pump must be connected to the hydraulic network, follow the prescriptions in force in the country where the machine is installed.*

For the hydraulic connections, refer to fig. 3 that shows a general scheme of a possible machine with built-in pump, for instance like the table below:

| | |
|----------|-----------------------------------|
| A | Pump |
| B | Pressure limiting/adjusting valve |
| C | Suction circuit |
| D | Delivery circuit |
| E | Water gun |
| F | Motor |
| G | Lance pipe |
| H | Nozzle holding head |

WARNING

- The pressure of the supplied water must not be higher than 8 bar/116 psi.
- Do not operate the pump with priming depth higher than 1 m/3.3 ft (AX and pumps at 1000, 1450 and 1750 RPM) or higher than 0.5 m/1.7 ft (pumps at 2800 and 3400 RPM).
- when sucking, the pump must have a filter of suitable size. In case of doubts, apply to a **Skilled Engineer**. Check that the filter is always perfectly clean;
- The suction pipes must have an inner diameter not lower than the pump suction connector and must have a rated pressure equal to 10 bar/145 psi.
- The delivery pipes must have an inner diameter that is suitable for the pump flow rate and must have a rated pressure not lower than the pump maximum pressure.
- Do not feed the pump with water having a temperature higher than 60° C/140° F or lower than 5° C/41° F.
- do not run the pump for long without water supply;
- do not supply the pump with sea or dirty water. Otherwise, run the pump for some minutes with clean water.

4.2 STANDARD OPERATION (HIGH PRESSURE)

CAUTION

- *Using the pump requires care and attention. Never entrust it to others without ascertaining under your own responsibility that they have read the manuals and know how to use the pump. The pump must not be used by children or not trained personnel.*
- *Observe the safety instructions contained in the use and maintenance manual of the machine with the built-in pump with special attention to the possible use of individual protection devices (safety goggles, hear muffs, masks, etc.).*
- *Observe the safety instructions contained in the use and maintenance manual of the possible optional accessories that are used.*
- *Carry out the operations concerning commissioning recommended by the producer of the machine with the built-in pump.*
- *Special attention must be paid to the use of the pump in rooms where there are moving vehicles that can squash or possibly damage: delivery pipe, water gun and lance.*
- *During the operation, always keep checked the pump and aloof from children's reach. Pay special attention to the use of the pumps in nurseries and hospitals because in these places there can be children, elders or disabled people without aid.*
- *Before starting the pump, wear clothes that guarantee a suitable protection from wrong manoeuvres with the water jet under pressure. Do not use the pump near persons if they do not use protective cloths.*
- *The high-pressure jets can be dangerous if they are not used correctly. Do not direct the jet towards persons, animals, electrical devices under voltage or towards the pump itself.*
- *During the use, firmly grasp the possible water gun, because when you activate the lever you undergo the reaction force of the high-pressure jet.*
- *Do not direct the high-pressure jet against yourself or other persons to clean cloths or shoes.*
- *Do not direct the high-pressure jet towards materials containing asbestos or other substances which are damaging for the health.*
- *Pay special care to what is described in the paragraph «OPERATION WITH DETERGENT».*
- *The machine operation in closed rooms is forbidden if the built-in pump is activated by an explosion engine.*
- *Do not approach the pump moving parts, even if they are suitable protected.*

- *Do not remove the protections of the moving parts.*
- *Do not operate on pipes containing fluids under pressure.*
- *Do not carry out maintenance on the pump if it is working.*
- *Observe the instruction of chapter “**INTENDED USE**”.*
- *Do not change in any way the pump installation conditions and in particular do not change its fixing and hydraulic connections.*
- *Do not deactivate or tamper with the controls, the safety devices and the pressure limiting/adjusting valve.*
- *The working pressure must never overcome the maximum value that is intended for the pump (see also the paragraph “**TECHNICAL FEATURES**”.*
- *The connection to the mains of the machine with the built-in pump must be carried out by a Skilled Engineer according to the standard which are valid in the relevant country.*

To carry out correctly what described below, refer also to the use and maintenance manual of the machine with the built-in pump.

- Set the delivery pressure to zero, by keeping the delivery circuit opened. In case of a water cleaner, for instance, you just need to press the lever of the water gun.*
- Operate the pump to allow its priming.*
- If there is the possibility to adjust the delivery pressure, set the wished value. In the LW-K, ZW-K and AX models, the pressure adjustment can be obtained by operating on the knob (15): by rotating it in clockwise direction the pressure increases and by rotating it in counter-clockwise direction it decreases.*

CAUTION

- *Never operate on the pressure limiting/adjusting valve not to alter the calibration: operate on it only by using the knob (15).*

CAUTION

- To allow a fast pump priming, operate as per point a) each time the pump is emptied from the fluid.
- In the models LW-K, ZW-K and AX and in all those applications where the by-pass of the pressure limiting/adjusting valve is connected to the pump suction, do not keep the flow rate side closed for more than five minutes in order to avoid that the water recirculating in the pump head overheats with the subsequent gasket damaging.

4.3 OPERATION WITH DETERGENT

CAUTION

- *Use only the detergents recommended by the Producer of the machine with the built-in pump.
In particular, never suck fluids containing solvents, petrol, thinners, acetone and combustible oil, because the sprayed product is highly flammable, explosive and toxic.*
- *Carefully read all the prescriptions and warnings on the label of the detergents supplied with the pump in order to take the suitable measure not to generate dangers for you and for the environment.*
- *Preserve the detergents in a safe place that cannot be reached by children.
In case of contact with the eyes, was immediately with water and apply to a doctor by bringing with you the detergent package.*

In case of ingestion, do not induce vomiting and immediately apply to a doctor by bringing with you the detergent package.

The possibility to suck detergent is intended as standard only for the models LW-K, ZW-K and AX.

For the detergent use modes, refer to the instructions on the label on the detergent package by observing the doses.

To carry out correctly what described below, refer also to the use and maintenance manual of the machine with the built-in pump.

- a) Set the pump pressure below 30 bar/435 psi (for instance, in case of a water cleaner, this can be obtained by activating the low-pressure operation on a lance with the suitable nozzle holder).
- b) If there is the possibility to adjust the detergent suction, operate on the knob (16): by screwing it you decrease the delivery of the sucked detergent and by unscrewing it you increase it.

WARNING

- To avoid fouling and/or deposits, after the detergent use it is a good habit to wash the passage ducts by sucking some water.

5. STOPPING



CAUTION

- *Carry out the operations relating to stopping recommended by the producer of the machine with the built-in pump.*

No part of the pump must be moving and no pipe must have fluid under pressure.

- a) Stop the pump and close the water supply.
- b) Eliminate the delivery pressure as described in point a) of paragraph «**STANDARD OPERATION (HIGH PRESSURE)**».

6. CLEANING AND DECOMMISSIONIN, MAINTENANCE



CAUTION

- *Any cleaning and maintenance intervention must be carried out only after the operations described in paragraph «**STOPPING**», that is to say **with no moving part, with no pipe full of fluid under pressure and with the machine with the built-in pump completely cooled down. In particular, you must remember, if applicable, to:***

- *always disconnect the power supply;*
- *always remove the plug contract (petrol engines) or to remove the ignition key (diesel engines).*

- *Carry out the cleaning, decommissioning and maintenance operations recommended by the Producer of the machine with the built-in pump.*

6.1 CLEANING AND DECOMMISSIONING

Follow the operations described in paragraph «**STOPPING**» and observe what described in the use and maintenance manual of the machine with the built-in pump.

CAUTION

- By referring to the use and maintenance manual of the machine with the built-in pump, after the use, always empty completely the fluid pump.

- **The pump is sensitive to frost.**

In case of very low temperatures, in order to avoid the formation of ice inside the pump, it is possible to activate, before activating the «STOPPING» procedure, to suck an anti-frost product for cars after referring to a **Specialised Engineer**, because the fluid could damage the gaskets and afterwards to empty it completely.

In case of very low temperatures, if it was not possible to protect the pump as described above, before restarting it, bring it in a warm environment for a short time that is enough to melt the possible ice inside it.

The lacked observance of these simples prescriptions can bring about a serious pump damage.

CAUTION

- *The anti-frost liquid must be duly disposed of and not dispersed in the environment.*

NOTE

After a long pause of use, a slight water dripping under the pump can take place. This dropping disappears normally after some working hours. If it persists, apply to a **Specialised Engineer**.

6.2 ORDINARY MAINTENANCE

Carry out the operations described in the paragraph “STOPPING” and observe what indicated in the table below.

| MAINTENANCE INTERVENTION | INTERVENTION |
|--------------------------|---|
| At each use. | <ul style="list-style-type: none">• Check oil level and state. |
| Every 50 hours. | <ul style="list-style-type: none">• Check the integrity of the suction circuit.• Check and possibly clean the suction filter.• Check the pump fixing to the motor to which it is connected and/or to the structure of the machine in which it is built in. <p>If the pump fixing is poor, do not absolutely use the machine and apply to a Skilled Engineer (1).</p> |

(1) The check must be more frequent is the pump works in the presence of strong vibrations (tracked tractors, explosion engines, etc.)

WARNING

- During the operation, the pump must not be too noisy and under it there must not be visible water or oil dropping.
Should this occur, have the machine checked by a **Skilled Engineer**.

6.3 EXTRAORDINARY MAINTENANCE

CAUTION

- *The extraordinary maintenance interventions must be carried out only by a **Skilled Engineer**.*
- *To guarantee the pump safety, only use original spare parts supplied by the Producer or approved by this latter.*
- *The used oil must be duly disposed of and not dispersed in the environment.*

For the extraordinary maintenance, observe what is reported in the following table.

WARNING

- The data reported on the table are only for reference. More frequent interventions can be necessary in case of particularly hard work.

| MAINTENANCE INTERVENTION | INTERVENTION |
|-------------------------------------|--|
| Every 500 hours (200 hours for AX). | Oil change (1). Check the delivery suction valves Check of pump screw tightening Check of the maximum pressure limiting/adjusting valve (only LW-K, ZW-K and AX). |

(1) The first oil change can be normally carried out after 50 hours.

(2) The check must be more frequent if the pump works in the presence of strong vibrations.

7. DISMANTLING AND DISPOSAL

The dismantling of the pump must be carried out only by qualified personnel and in conformity with the laws which are valid in the country where the pump is installed.

8. TROUBLESHOOTING

CAUTION

- *Before performing any intervention, carry out the operation described on paragraph “**STOPPING**”. If you cannot reset the correct operation of the pump by means of the information contained in the following table, apply to a **Skilled Engineer**.*

| PROBLEMS | CAUSES | SOLUTIONS |
|--|--|---|
| The pump does not prime | Air suction Delivery side closed (for instance, in case of water cleaner, water gun in closed position) | Chek the integrity of the suction circuit Set the delivery pression to zero (for instance, in case of a water cleaner, press the lever of the water gun) |
| The pump does not reach the maximum pressure | The pressure limiting/adjusting valve is set for a value that is lower than the maximum one. The water supply is not enough or you are priming from an excessive depth. Unsuitable use (for instance, nozzle worn or too big) The use is set for the operation with detergent suction (low pressure). | Set the correct pressure value (in the models LW-K, ZW-K and AX rotate the knob (15) in clockwise direction) Check that the flow rate of the hydraulic network or the priming depth conform with what described in paragraph "Features and technical data". Reset the use Reset the use for the operation at high pressure. |
| Irregular pressure and flow rate (buttons) | Air suction The water inlet filter is dirty The water supply is not enough or you are priming from an excessive depth. The pump has not completed its priming. Clogged use (for instance, clogged nozzle). | Check the integrity of the suction circuit Clean the filter Check that the flow rate of the hydraulic network or the priming depth conform with what described in paragraph "Features and technical data". Have the pump be primed according to what described in paragraph "Standard operation (high pressure)". Reset the use |
| High noise | Suction circuit with necks Temperature of the feeding water too high. | Check the suction circuit. Supply the pump with water below 60° C/140° F. |
| Low detergent suction | The use is not set for the detergent suction operation (low pressure). The detergent batching device is closed or set for a low suction. The used detergent is too dense. | Set this function by referring to the use and maintenance manual on which the pump is installed. Rotate the detergent adjusting knob (16) in counter-clockwise direction. Observe the uses and the dilutions indicated on the plate of the used detergent. |

SECOND PART

(only for the **Skilled Engineer**)

CAUTION

- *This parts of the manual is only for the **Skilled Engineer** and is not directed to the pump user.*

1. UNPACKING

CAUTION

- *During the unpacking operations, it is necessary to wear gloves and safety goggles in order to avoid damage to hands and eyes.*
- *The packaging elements (plastic bags, clamps, etc.) must be never left at children's reach because they are a source of possible dangers.*
- *The disposal of the packaging components must be carried out in compliance with the standard which are valid in the countries where the pump has been installed.
Especially plastic bags and plastic materials must not be abandoned in the environment, because they damage it.*

- *After having unpacked the pump, it is necessary to make sure that the device is integer by paying attention that the identification plate is present and readable.
In case of doubts, do not absolutely use the pump, but apply to the dealer.*

1.1 STANDARD EQUIPMENT

Make sure that the package of the purchased product contains the following elements:

- oil plug with vent (8);
- use and maintenance manual;
- guarantee certificate.

In case of problems, apply to the dealer or an authorised service centre.

CAUTION

- *This instruction manual and the guarantee certificate must always accompany the pump and be put at the disposal of the final user.*

2. INSTALLATION

CAUTION

- *The **Skilled Engineer** must observe the installation instructions of this manual, especially the motor features (electric motor or explosion engine) to be connected to the pump must conform with the performance and the construction features of the pump (power, rotation speed, flange, etc.) that are reported in the documentation.*
- *The machine with the built-in pump must be built in order to guarantee the conformity with the safety requirements established by the European Directives. This conformity is guaranteed by the presence of the **CE** marking and by the Declaration of Conformity of the producer of the machine with the built-in pump.*
- *The pump must be installed and work horizontally.*
- *The pump must be fixed in a stable way.*
- *As it is a positive-displacement pump, it must be equipped with a pressure limiting/adjusting valve (this valve is built-in in the pump models LW-K, ZW-K and AX).*

2.1 OPTIONAL ACCESSORIES

CAUTION

- *Unsuitable optional accessories can influence negatively the pump operation and can make it become dangerous. Use only original optional accessories recommended by the producer.*
- *As for the general prescriptions, the safety warning, the installation and the maintenance of the optional accessories, refer to the documentation that accompanies them.*

It is possible to integrate the pump standard equipment with the following accessory range:

- pressure limiting/adjusting valve;
- safety valve;
- thermal valve;
- suction filter;
- suction connector of various shapes and dimensions;
- pressure gauge;
- etc.

For further information, apply to your dealer.

2.2 APPLICATIONS

CAUTION

- *Protect the moving parts with suitable guards. Pay special attention to the pulley applications.*
- *The pump must not work at a rotation speed that is higher than the one indicated on the relevant plate (see also what described in paragraph “FEATURES AND TECHNICAL DATA”.*
- *The pump must be fixed firmly to the motor flange or on a stable base by means of the (optional) feet.*

| | Male shaft Ø 24 mm | Female shaft Ø 24 mm | Female shaft Ø 5/8" | Female shaft Ø 3/4" | Female shaft Ø 18 mm | Female shaft Ø 20 mm | Female shaft Ø 28 mm | Female shaft Ø 1" 1/8 | Female shaft Ø 25 mm | Female shaft Ø 1" | Hydraulic motor |
|-------|-----------------------|-------------------------|------------------------|------------------------|-------------------------|-------------------------|-------------------------|--------------------------|-------------------------|----------------------|-----------------|
| LW | • | • | | | | | | | | | |
| LW-K | • | • | | | | | | | | | |
| LWS | • | | • | | • | • | | | | | |
| LWS-K | • | | • | | | | | | | | |
| LWR | • | • | | | | | | | | | |
| LWR-K | • | • | | | | | | | | | |
| LWD | • | | • | • | • | • | | | | | |
| LWD-K | • | | • | • | | | | | | | • |
| FW | • | | | | | | • | | | | |
| FWS | • | | | | | | | • | • | | |
| FWD | | | | | | | | • | | • | |
| ZWD | | | | • | | | | | | • | |
| ZW-K | • | | | | | | | | | | |
| ZWD-K | | | | | | | | | | • | |
| HW | • | | | | | | | | | | |
| HWS | • | | | | | | | | | | |
| HWD | | | | | | | | | | • | |
| TWN | • | | | | | | | | | | |
| TW | • | | | | | | | | | | |
| TWS | • | | | | | | | | | | |
| AXD | | | • | • | | | | | | • | • |
| SW | • | | | | | | | | | | |
| SWS | • | | | | | | | | | | |

The various available applications for the pumps described in this manual are summarised in the following table.

Apply always to the dealer or to the Producer to identify the correct application. The pump applications must be carried out by following the good rules of mechanics. The Technical Service supplied by the Producer is at the installer disposal for any necessary information.

The pump can rotate both in clockwise and in counter-clockwise direction.

2.3 HYDRAULIC CONNECTION

Follow the connection prescriptions already explained in paragraph 4.1.1 in the first part. In particular, the sizes of the suction circuit must be suitable not to determine on the suction pump connector:

- a pressure value higher than 8 bar /116 psi;
- a vacuum value higher than 0.15 bar /2,18 psi (AX and pumps at 1000, 1450 and 1750 RPM) or higher than 0.1 bar / 1,45 psi (pumps at 2800 and 3400 RPM).

When sucking, the pump must have always a filter with suitable sizes.

On the models LW, ZW, FW, HW, TW and SW there are suction and delivery connectors both on the right and left side of the head.

2.4 PRESSURE LIMITING/ADJUSTING VALVE

In the models where it is already built-in (LW-K, ZW-K, AX), it is adjusted by the producer so that it reaches the maximum allowed pressure for the pump by using the nozzle selection indicated in the following table.

Remember that the data in the table are only for reference and can change according to the system where the pump is installed.

2.4.1 Recalibration of the pressure limiting/adjusting valve



CAUTION

- *The working pressure must never overcome the maximum level scheduled for the pump (see also paragraph “FEATURES AND TECHNICAL DATA”).*

To recalibrate the valve, operate as follows (refer to fig. 4):

- remove the plastic knob by pulling it towards you;
- loose the socket head screw (m);
- rotate the stopping ring nut (1) in counter-clockwise direction in order to partially unscrew it;
- set the wished pressure by operating on the hexagon knob (n) (rotating it in clockwise direction, the pressure increases, while rotating it in counter-clockwise direction the pressure decreases);
- rotate the stopping ring nut (1) in clockwise direction in order to fix it;
- tighten the socket head screw (m).

| | | | | | | | | | | | | | | | | | | |
|-----------|-----------|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|
| | | 48 | 55 | 69 | 90 | 103 | 110 | 117 | 131 | 138 | 152 | 160 | 172 | 180 | 207 | 248 | 276 | bar |
| | | 700 | 800 | 1000 | 1300 | 1500 | 1600 | 1700 | 1900 | 2000 | 2200 | 2300 | 2500 | 2600 | 3000 | 3600 | 4000 | psi |
| 7,5 | 2,0 | | | 045 | | 035 | | | | 03 | | | | | | | | |
| 11,3 | 3,0 | | | 07 | | 055 | 05 | | 045 | 04 | | | 035 | | | | | |
| 13,2 | 3,5 | | 075 | | 06 | | | 055 | | | 045 | | 04 | | 03 | | | |
| 15,2 | 4,0 | 085 | | | | 065 | | | | 055 | 055 | | | | 045 | 04 | 035 | |
| 17,5 | 4,5 | | | | | | | 075 | | | | | 055 | | 055 | | 045 | |
| 18,0 | 5,0 | | | | | | | | | | | 06 | | | 055 | | 05 | |
| 21,0 | 5,5 | | | | 095 | | | | | 075 | 075 | | 07 | 07 | | | | |
| 22,4 | 6,0 | | | | | | | | | 08 | | | | | | | | |
| I/ min | US gpm | | | | | | | | | | | | | | | | | |

3. EXTRAORDINARY MAINTENANCE

Observe what described in paragraph 6.3 of the first part.

The torque wrench settings to be used are indicated in the following table (refer to fig. 4).

| | | Torque wrench setting Nm (lb.ft) | | | | | Fluid to be applied on the thread |
|----------|---|----------------------------------|-----------|-----------|-----------|-----------|-----------------------------------|
| | Description | LW LW-Z ZW ZW-K | FW | HW | TW SW | AX | |
| a | Head screw | 10 (7,4) | 25 (18,4) | 25 (18,4) | 45 (33,2) | 25 (18,4) | - |
| b | Valve plugs (aluminium head) | 40 (29,5) | | | | 35 (25,8) | Loctite 243 |
| | Valve plugs (brass head) | 50 (36,9) | 50 (36,9) | 80 (59,0) | 80 (59,0) | 45 (33,2) | Loctite 243 |
| c | Cover screw | 4 (3,0) | 9 (6,6) | 9 (6,6) | 25 (18,4) | | - |
| d | Connecting rod screws (if present) | | 9 (6,6) | | | | - |
| e | Case cover screws | 9 (6,6) | 4 (3,0) | 4 (3,0) | 9 (6,6) | | - |
| f | PTO flange screws | 9 (6,6) | 25 (18,4) | 25 (18,4) | 25 (18,4) | | - |
| g | Pistons nuts | 6 (4,4) | 10 (7,4) | 10 (7,4) | 15 (11,1) | | Loctite 243 |
| h | Excenter shaft screw | | | | | 25 (18,4) | Loctite 243 |
| i | Case screws | | | | | 25 (18,4) | - |



TROUBLE SHOOTING

Because all Steammaster equipment has been designed for maximum efficiency, the possibility of failure and consequent down-time is strictly limited. The following notes may help you in the unlikely event that you have trouble;

LACK OF VACUUM

- Check if the ball in the recovery filter hasn't been stuck in up position.
- Make sure the dump or waste valve at the front of the portable is fully closed.
- Make sure that the Booster port flap is down.
- Make sure your dome is seated properly.
- Make sure both vacuum motors are operating.
- Make sure heater switch is in off position.
- Check that the wand or upholstery tool is not blocked.

LACK OF PRESSURE

- Make sure the filter in the clean water tank is not blocked.
- Make sure there is enough water in the clean water tank to lift the float switch.
- Make sure the pressure adjust valve is closed and not bleeding.
- Jet's are too large in the wand or upholstery tool you are using.
- Look under machine to see that there are no leaks from the pump itself or hoses connected to it.

WASTE PUMP NOT WORKING

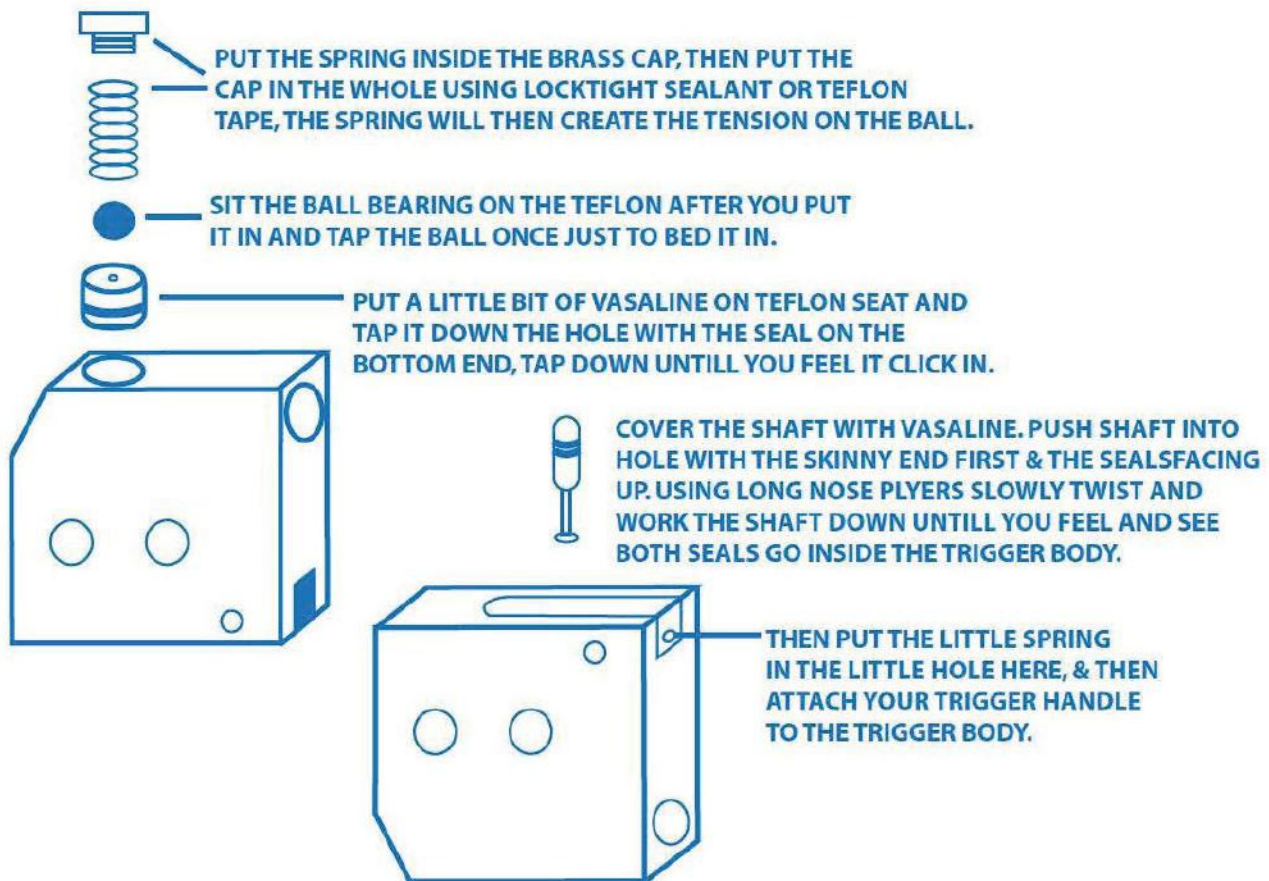
- Make sure the waste switch is on and the ball valve is open.
- You can take the pump out just like you do when cleaning the pump filter bag and remove the blue magnetic float switch on the side of the pump by levering it open with a flathead screwdriver and rinse out any muck. (make sure to put the float back in the right way up.)

PUMP MOTOR OVERLOAD

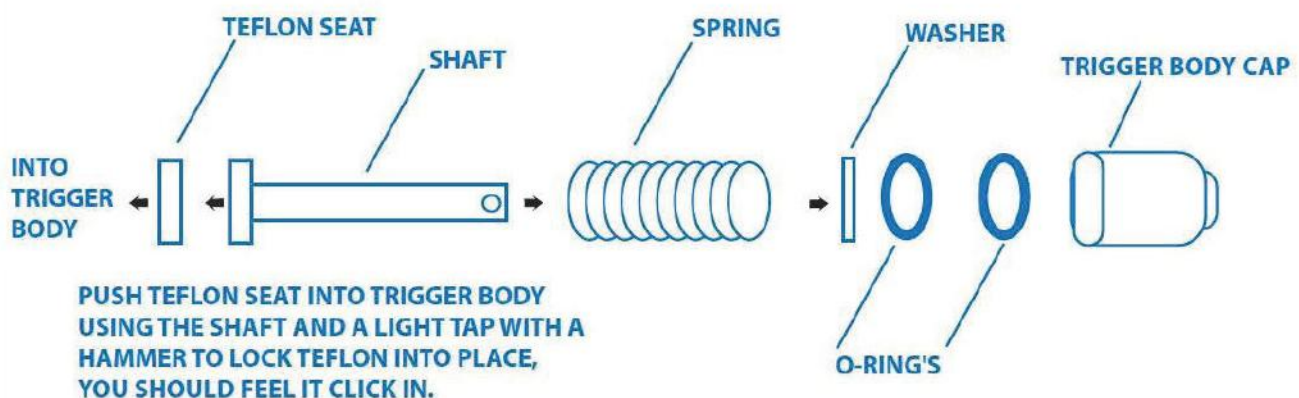
To prevent damage, the pump motor has a safety overload switch which is located on the switch panel.

- To reset simply press the reset switch once.
- It may be necessary to wait for the motor to cool down before the reset can be active.

REPLACING A STEAMASTER TRIGGER SEAL KIT



REPLACING A VAPOUR TECH SEAL KIT





STEAMASTER USER GUIDE

- * PRE VACUUM CARPET AND INSPECT FOR STAINS AND MARKS. (DO NOT USE PORTABLE TO VACUUM CARPETS)
- * PLUG POWER LEAD IN TO YOUR MACHINE AND INTO A WALL POWER POINT.
- * FILL SOLUTION TANK WITH WARM WATER AND TURN ON HEATER TO GET YOUR SOLUTION TO A GOOD OPERATING TEMPERATURE.
- * PRE SPRAY THE CARPET WITH CHEMICAL BY USING A PRE SPRAY GUN OR PUMP UP SPRAYER.
- * ATTACH VAC HOSE TO PVC PIPE ON PORTABLE DOME AND THE OTHER END TO YOUR WAND. ATTACH SOLUTION HOSE TO CONNECTION UNDERNEATH WAND AND TO CONNECTION ON FRONT OF MACHINE. AND SET UP AUTOMATIC WASTE AND FILL HOSES IF YOUR MACHINE IS AUTOMATIC.
- * TURN OFF HEATER SWITCH AND TURN ON VACS AND PUMP SWITCHES ON YOUR MACHINE. (FOR SAFETY PURPOSES MACHINE WILL NOT WORK IF HEATER IS ON EXCEPT ON HP MODELS)
- * PROCEED AND COMPLETE CLEANING.
- * TURN OFF ALL SWITCHES ON MACHINE & WALL POWER POINT AND DISCONNECT POWER CHORD FROM UNIT.
- * REMOVE ALL HOSES FROM PORTABLE.
- * WHEEL MACHINE OUTSIDE AND DISPOSE OF WATER BY LIFTING THE DUMP VALVE (IF MANUAL)
- * CLEAN ANY LINT OR DIRT FROM YOUR FILTER BASKET AND HOSE OUT WASTE TANK. ALSO CLEAN THE SMALL FILTER BUTTON FOUND ON THE INSIDE OF YOUR SOLUTION TANK AS THIS IS YOUR PUMP INLET.

RECOMMENDED OPERATING PRESSURE

- * FOR UPHOLSTERY CLEANING = MAXIMUM 300 PSI
- * FOR CARPET CLEANING = MAXIMUM 500 PSI
- * FOR TILE AND GROUT CLEANING = MAXIMUM 1200 PSI



12 YEAR CONDITIONAL WARRANTY

Steammaster (Aust) Pty Ltd warrants the Fibreglass Body and Sub Frame against faulty workmanship or failure for a period of 12 years from date of purchase. Any defect must be notified to the Company in writing immediately and the equipment must not be used until such defect is rectified. The customer must wear all freight costs. This warranty shall not apply where the equipment has been abused or damaged by misuse or negligent handling and does not include cracking of gel coat, only structural defaults.

Steammaster (Aust) Pty Ltd warrants all items supplied by it to be free from defects in material or workmanship. In the event of a defect being disclosed in any item within 1 year of receipt by the customer, the Company will, if satisfied on its examination that failure was due to defective material or workmanship, repair or replace the defective item, provided the purchaser gives the Company immediate written notice of such alleged defects. All accessories furnished by Steammaster (Aust) Pty Ltd but manufactured by others, bears only that manufacturer's standard warranty. All defective items shall become the property of the Company when replaced by the Company. All freight costs must be worn by the customer.

Vacuum and Solution Hoses carry a 6 month warranty against faulty workmanship but kinks, cuts or damage caused by over heating of the solution hose shall be worn by the customer. This warranty shall not apply to any hose end connections. All freight costs must be worn by the customer.

CONDITIONS

1. No warranty on equipment or parts exposed to freezing temperatures, due to improper enclosed protection or improper heating.
2. No warranty on neglect of greasing or lubricating of pump.
3. No warranty when using harmful chemicals eg Acid rinse's ect.
4. No warranty on abuse or damages to cabinet or panels.
5. This warranty does not extend to any item which in the judgement of the Company shall have been repaired, altered, abused, neglected or used in any way so as to affect adversely its stability or reliability.
6. It is agreed that in the event of breach of any warranty, liability of the seller shall be limited to repairing or replacing the non conforming goods.
7. The foregoing warranty is in lieu of and excludes all other warranties and conditions expressed or implied whether under common law, statute or otherwise, and every form of liability for loss or damage, direct or consequential, or for any accident resulting from defective material, faulty workmanship or otherwise is expressly excluded.
8. Items excluded by the warranty shall be normal service items that will need to be replaced from time to time eg. vacuum motors and brushes, bearing, pump seals, etc.