Clemas & Co Ltd
Industrial Cleaning Equipment
Sales - Hire - Service

TORNADO ELECTRON MINI BOWSER PRESSURE WASHER OPERATOR MANUAL

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DEMON TORNADO MINI BOWSER RANGE

Tornado P1 Mini Bowser
Tornado P2 Mini Bowser
Tornado P4 Mini Bowser
Tornado D70 Mini Bowser
Tornado Electron Mini Bowser

Including electric start variants and bowser washers

Declaration of Conformity
(E.H.S.R.)

We, Demon International Limited of Abbots Close, Lee Mill Industrial Estate, Ivybridge, Devon, PL21 9GA, declare that this machine must be operated in accordance with the operation and safety instructions as supplied with this machine.

This machine is manufactured in accordance with the following standards and recommendations.

HSE PVB PM29 - BS5415 Part - BS5415 Section 2.4 1986

This instruction manual is relevant only to the following machine and will not be kept updated unless specifically requested by the customer. However, a n y

Machine Type	
Serial Number	
Working Pressure	
Date of Supply	

changes to the operating procedure or changes which might affect the safety of this machine will be notified to the registered owner

Technical Specifications

Tornado P1 Mini Bowser

Engine	Honda GX120
Pump	RSV 3G25D
Pressure	1500 PSI
Flow	9lpm
HP Nozzle	25045
Gearbox	None
Unloader	Integrated
Pump Oil	10W/40
Gearbox Oil	N/a
Noise	

Tornado P4 Mini Bowser

Engine	Honda GX 340 11HP 360rpm
Pump	AR RK-15.20H
Pressure	2900psi / 200Bar
Flow	15 lp, / 3.3gpm
HP Nozzle	2505
Gearbox	2:1 reduction
Unloader	Gymatic 3B ARGM3B250
Pump Oil	10W/40
Gearbox Oil	EP90

Tornado P2 Mini Bowser

Engine	Honda GX200
Pump	AR XT13-12
Pressure	2200 PSI
Flow	13 lpm
HP Nozzle	25045
Gearbox	2:1 Reduction
Unloader	ARMM4B
Pump Oil	10W/40
Gearbox Oil	EP90
Noise	

Tornado D70/ES

Engine	Yanmar L70
Pump	ARXT13.12
Pressure	2900PSI
Flow	13 lpm / 3.3gpm
HP Nozzle	2505
Gearbox	2:1 Reduction
Unloader	ARGM3B250
Pump Oil	10W/40
Gearbox Oil	EP90

Tornado Electron

Motor	24v DC	HP Nozzle	15045
Pump	ARXT11-14	Unloader	ARMM4B/C
Pressure	1200 PSI		
Flow	11 lpm	Pump Oil	10W/40
Battery	2 x 140 amp/hour AGM Sealed Batteries		

Microprocessor Controlled Automatic Battery Charger
24Volt 12.5 AMP

Important—New P2 Machines

Each new P2 machine will be set at 2000psi as opposed to 2200psi until the machine has been run for approx 2-3 hours continuously.
Once the machine has been run then the pressure can be adjusted to achieve the maximum 2200psi by turning the pressure regulating valve until its fully open.

Kits for the Tornado Mini Bowser

Machine	P1	P2	P4	Tornado D70	Tornado Electron
Valve Kit	2186	1864	1828	1864	1864
Seal Kit	2189	1874	1857	1874	1874
Piston Kit		2629	2757	2629	2629
Oil Kit	2188	1872	1855	1872	1872
Support Ring Kit			1829		
O Rings	2190				

FAULT FINDER

FAULT	CAUSE	REMEDY
Machine stops suddenly Or will not start.	Low oil Flat Battery (Electron)	• check and top up oil Re-charge
Sudden pressure loss.	Water supply failed. No chemical	Check water supply. Check chemical drum, close valve
Low pressure	HP nozzle worn or unloader set Incorrectly.	Replace HP nozzle. Set unloader to correct setting.
Low pressure with noise and vibration.	Valves worn or blocked. Piston seals worn. Pump sucking air.	Clean/replace as required. Replace. Check water supply pipe and unions.
Pump will not by-pass.	Non return valve dirty or jammed.	Clean or replace.
Water drips from pump box.	Pump seals worn.	Replace.
Oil drips from pump bottom.	Oil seal worn.	Replace.
Oil is milky in colour.	Water ingress through oil filter plug.	Rinse pump out and replace oil.

IF IN DOUBT ASK—OUR ADVICE IS FREE AND CAN SAVE YOU MONEY

MINIMUM SERVICE SCHEDULES

DAILY CHECK THE FOLLOWING

a. Oil level - top up as required.
b. Fuel tank - top up as required.
c. All hose unions for leaks- replace O rings if leaking.
d. Hose condition - cuts etc.

EVERY 500 HOURS OR SIX MONTHS (WHICHEVER COMES FIRST)

a. Drain and replace pump oil.
b. Drain and refill fuel tank.
c. Replace fuel filter.
d. Clean water filter.
e. Replace high pressure nozzle.

EVERY 1000 HOURS OR 12 MONTHS (WHICHEVER COMES FIRST)

a. Complete 500 hour service.
b. Replace pump seals.
c. Replace oil seals.
d. Check unloading pressure and safety valve pressure and adjust.

The above service schedules are intended as a guide only, actual service times and replacements parts required will vary according to the area and the usage of the machine.

OPERATING INSTRUCTIONS

SAFETY

I Water at high pressure is dangerous and can cause serious injury. This machine is to be used with great caution.

II Petrol is extremely flammable and explosive under certain conditions.

EXHAUST FUMES CONTAIN CARBON MONOXIDE – Inhalation of such fumes can KILL.

III Diesel is flammable and harmful if swallowed.

A Always refuel in an area which is adequately ventilated.

B DO NOT smoke when refueling.

C Avoid overfilling.

D Should fuel be spilt, wipe off any fuel spilt on machine or engine.

E Move the equipment away from the area where fuel has been spilt.

F DO NOT refuel when the engine is running.

G DO NOT run the engine in an area which has a hazardous or explosive atmosphere.

H Always ensure that the fuel cap is secure after refueling.

I Keep the engine at least 3 metres or more away from any other equipment or Building.

J Take care not to get fuel on your clothing. If this happens – CHANGE your clothing IMMEDIATELY.

DO NOT start an engine when clothing has been contaminated with fuel.

K Use only approved type containers for fuel. DO NOT stand them out in strong sunlight, keep them in the shade.

L Always ensure that there is a suitable type fire extinguisher available and is within easy access.

M DO NOT leave an engine running unattended, ALWAYS STOP it before leaving the area.

N NEVER point the high pressure spray jet at any person, animal, glass or other Material which may shatter.

O PREVENT any over spray from injuring other people or damaging property.

P DO NOT even try to use a pressure washer on machinery or electrical equipment that is connected in any way to the mains supply (ALL switches in the OFF position, pull out plugs, if possible remove fuses). Cover or seal electric motors and fittings to prevent entry of water. Before reconnecting electric mains supply check for water penetration.

Q DO ALL you can to keep plugs and sockets in a dry place or covered to prevent entry of water.

R ALWAYS when using this machine:-

- wear safety goggles and helmet or helmet with a visor.
- Wear waterproof clothing and gloves.
- Take paticular care with detergents and chemicals.

S NEVER attempt to disconnect any hose with pressure in it or allow the hose to be flattened or kinked.

T DO NOT use a high pressure hose from a ladder. Use a platform tower or proper scaffolding.

U Should the equipment fail to operate, DO NOT attempt to rectify or repair, but contact the nearest Service Centre for advice.

V Always rinse your pump out after using sea water.

PREPARATION

Water Supply:

A Ensure there is an adequate water supply either from the mains or a reservoir.

B Attach water supply hoses to suitable tap or immerse the suction hose with approved suction filter into the reservoir.

NOTE: ONLY CLEAN WATER SHOULD BE USED. THE PUMP MAY BE DAMAGED IF DIRTY OR CONTAMINATED WATER IS ALLOWED TO PASS THROUGH THE PUMP.

Hoses: Low pressure inlet.

For models up to 13 litres per minute use ½ " bore suction hose or feed pipe.
For models from 13 litres to 24 litres per minute use ¾" bore suction hose or feed pipe.

Hoses:High pressure outlet.

For all models use 3/8" RIT or 3/8" R2T hoses.

A Check the condition of the "O" rings in the ends of the hose.

B Attach the high pressure hose to the pump connection.

C Attach the spray gun to opposite ends of the high pressure hose.

OPERATION

A Turn on the water supply.

B Start the engine

C Direct lance on to surface to be cleaned. Press the lance trigger.

ELECTRON

D Fully charge battery 6 - 8 hours or overnight.

E To start DC Motor turn key and pull switch up.

D Adjust pressure regulator as required to obtain working pressure if required.

E NOTE;:The high pressure water will cause the gun to “kick”. Make sure you have a firm grip of gun and lance.

F On completion of operation stop the engine.

g. Operate lance trigger

h. Turn “ OFF” water supply

i. Release residual pressure in gun and lance by operating trigger.

When using Cleaning Agents:

A. Set machine up as for water.
B. Connect detergent hose to machine and place filter end into detergent.
C. On completion of work, flush through hose and gun with clean water to remove any residual detergent.

NOTE: CHEMICAL PICKUP ONLY OPERATES AT PRESSURES BELOW 250PSI.
OPEN LANCE VALVE FULLY TO OBTAIN THIS PRESSUR

Electron

The Electron is fitted with a battery monitor which will indicate the condition of the batteries. The indicator is fitted with an audible alarm which will sound when the battery charge is such as to require re-charging. The battery indicator will show the current condition of the battery by way of a gauge and percentage level. Failure to re-charge the batteries when the alarm indicates may lead to damage and life expectancy of the batteries. Batteries must be re-charged fully using the supplied intelligent 240v charger before using the Electron, after the indicator alarm has been activated.

Electrons can be fitted with a motor/battery programmable controller.
If your Electron has this facility it will monitor the battery discharge and is set to operate when the voltage falls below a pre programmed setting.
When the controller activates the motor will slow its revolutions and the pressure will drop.
At this time it is required that the Electron be re-charged.
The controller is designed to prevent low voltage damage to the battery plates.
The controller is not to be re-set other than by a qualified Demon electronics engineer.

Step by Step Operating Manual Demon Mini-Bowser

How to start the Mini-Bowser

1

Check gearbox oil and replenish as required.

2

Check pump oil and replenish as required

3

Check engine oil and replenish as required.

4

Check petrol and replenish as required.

5

Check filter inside tank is not blocked. Clean as required.

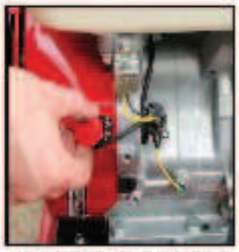
6

Fill the tank with water.

7

Attach trigger to high pressure hose.

8



Turn engine switch to 'on' position.

9

Turn fuel to 'on' position

10

If this is first use of the day then switch the choke to the 'on' position

11

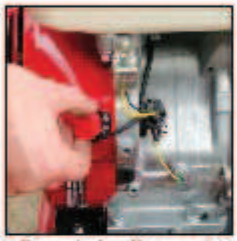
Pull the recoil to start.

Step by Step Operating Manual Demon Mini-Bowser

12

Once the machine is running gently turn the choke to 'off' position

13



To switch off turn the engine button to the 'off' position.

14

Release any pressure in hose by squeezing trigger and disconnect hoses from machine.

15

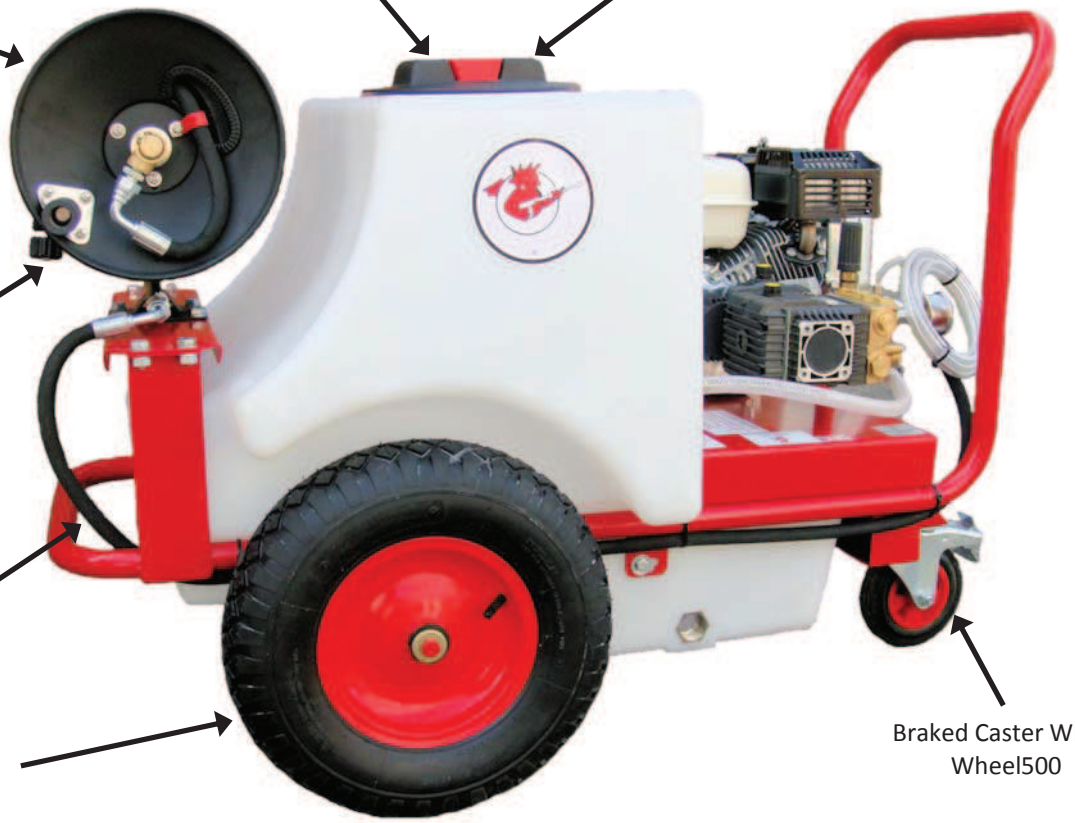
To transport – ensure fuel is to the 'off' position

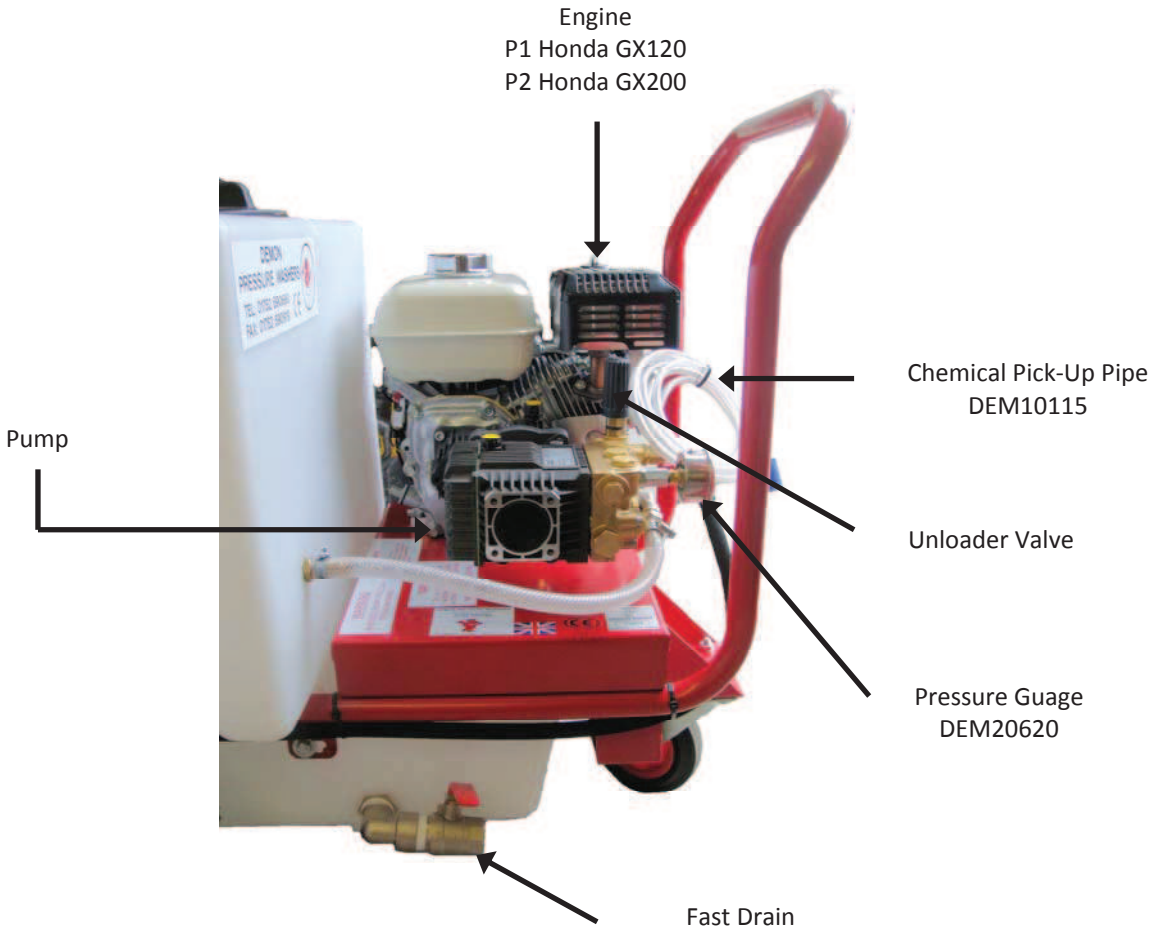
Model	Max operating Pressure	Operating Range	Nozzle
P1	1500 psi	1000-1500 psi	045
P2	2200 psi	1500-2200 psi	045

Important - New P2 machines

Each new P2 machine will be set at 2000psi as opposed to 2200psi until the machine has been run for approx 2-3 hours continuously.
Once the machine has been run then the pressure can be adjusted to achieve the maximum 2200psi by turning the pressure regulating valve until its fully open.

Tornado Mini-Bowser - General Arrangement



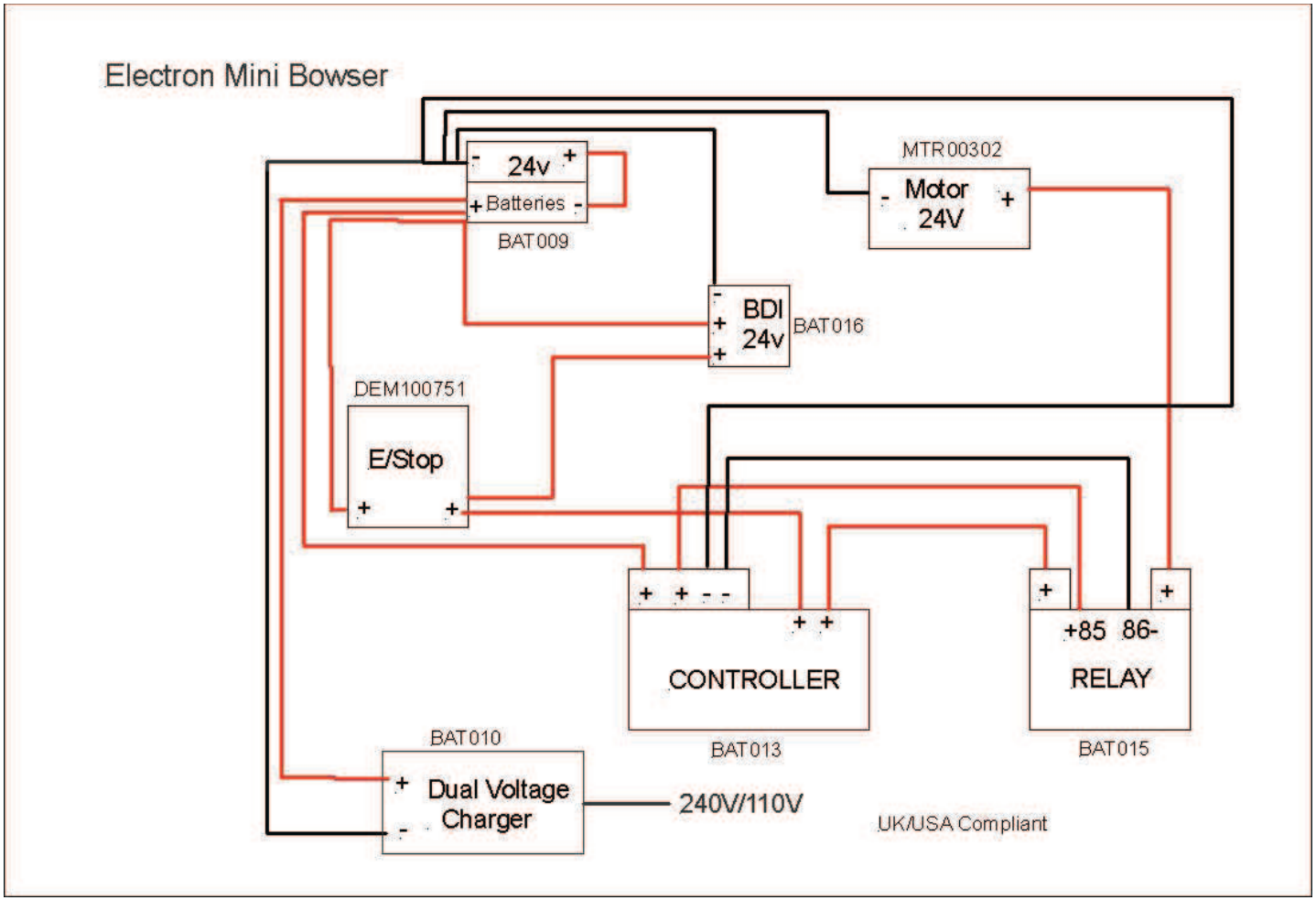


Tornado Electron - General Arrangement

Lockable Emergency
Stop DEM 100751

Battery Controller
BAT013
Relay BAT015

Dual Voltage Charger
BAT010


Electron Mini Bowser
24v
Batteries
BAT009
MTR00302
Motor
24V
BDI
24v
BAT016
DEM100751
E/Stop
CONTROLLER
BAT013
+85 86-
RELAY
BAT015
BAT010
Dual Voltage
Charger
240V/110V
UK/USA Compliant

WARRANTY

This warranty covers the cost of all replacement parts and labour charges incurred, but does not cover the cost of transport or carriage. It is the owners responsibility to return the machine to a service depot or pay the travelling expenses of a engineer to attend. Demon Internationals decision in warranty matters is final and binding.

Demon International Ltd, undertake to repair or replace at their discretion, any component which may fail due to a manufacturing fault within a period of 12months from the date of purchase, provided that any fault or damage was not sustained by;

A Lack of regular and proper maintenance, user negligence, misuse, or damage caused by ice or frost.
B The effects of contaminated fuel or water, the use of non-approved chemicals, or an in sufficient or unsuitable electrical supply.
C The effects of un-authorised modification and use.
D Compression damage to high pressure hose. (Hoses are warranted for one month only)
E Worn out items considered wear and tear.

Parts which may or may not wear out during the first year and which are considered service items which will need replacing from time to time: High pressure nozzle, lance, trigger, hoses, fuel nozzle, fuel filter, piston seals, valves, unloader seats and seals, water filter, non-return valve, chemical barbs, chemical pipes, and pump oil seals.

It is the owners responsibility to ensure the pressure washer is kept in a safe and suitable environment and any faults reported by operatives to be rectified at the earliest possible date.

It is the operators responsibility to check the pressure washer for any faults and report them immediately, and to use the pressure washer in accordance with the manufacturers specifications and guidelines.

Demon International Ltd, undertake to use the highest quality components available during manufacture, but can not be held responsible for any undue consequence arising from the use of their pressure washers.

This warranty is given the original purchaser only and is not transferable without the fully authorized and written consent of Demon International Ltd.

Warranty Procedure

End Users

If your machine develops a problem:

1. Phone Demon for advice with the model and serial number to hand.
2. Describe fully the problem as best you can.
3. If the problem cannot be resolved over the phone then the machine can be booked in for repair and if the faults are covered by the warranty the repair will be carried out free of charge.
4. If you cannot bring the machine in for repair then we will despatch an engineer. If the fault is covered by the warranty then we will not charge for labour or spares used, however the transport charge will be payable weather or not the repair is warranty.

Hire Centres and Dealers

If your machine develops a problem:

1. Phone Demon for advice with the model and serial number to hand.
2. Describe fully the problem.
3. We will advise you on the best course of action, however if parts are required you must raise a purchase order number to cover the parts. When the parts are fitted they must be returned for examination before a credit note is issued.
4. If you are unable to repair the machine then we will despatch an engineer to carry out the repair. We will need a purchase order to cover the cost of transport to and from the site and for parts and labour if the repair is not covered under the warranty.
5. If required Demon will arrange for a carrier to collect a damaged machine, if the warranty claim is valid we will pay this cost, if not it will be charged to the customer.

For parts warranty ring Demon and request a warranty claim form faxed to you. This form must accompany any returned parts.

Notes:

You will not invalidate the warranty by investigating faults and repairing them yourself providing you follow our advice. Hire Centres and Dealers are expected to carry out all repairs themselves with Demon crediting faulty parts upon receipt and inspection.

Spare parts fitted to machines are guaranteed for 1 month only or the remainder of the warranty period whichever is longer.

Nozzles - you can't get pressure without one!

How do I know which nozzle I have?

Look at this part of the nozzle and it will have a four or five digit number which gives the angle of spray as the first two digits. The next two or three numbers are the size. (i.e. 25045 is 25° spray angle with 045 size aperture.)

Pressure starts and ends at the nozzle. The volume of water pushed down the hose and forced through the small hole determines the pressure on the gauge. Try taking the nozzle out and then pulling the trigger. You get virtually no pressure registering on the gauge.

The golden rule when diagnosing a loss of pressure is **to start at the nozzle** and work back to the pump. Example: a new Typhoon is delivered to your branch and is left in the workshop for a few days until a hire comes up. The lance gets pinched to go out with one of your other pressure washers so you search around for something to use and find a lance that will do. Unfortunately it came from a petrol pressure washer and now the Typhoon will only do 1500psi. It must be Demon's fault. Get them to dash out and sort it out, must be warranty! No its the nozzle. An 055 fitted to a petrol pressure washer will only give 1500psi when used on a Typhoon. (This has happened!)

Example: I can't check that the right nozzle is fitted because the numbers are worn away. If you can't read the number then the nozzle is old a probably worn out. Fit a new one and see what pressure you get. (All the lances are now colour coded)

Model	Flow	Pressure	Nozzle	Colour
Storm 1 & 2	11 litres	1500 psi	25045	Blue
Storm Freestanding/ Wallmounted 1	11 litres	1500 psi	25045	Blue
Storm Freestanding/ Wallmounted 4	15 litres	2900 psi	2505	Red
Storm 500	15 litres	7000 psi	2505	Red
Tempest 1 & 3 Auto inc Cabinet	11 litres	1500 psi	25045	Blue
Tempest 4 Auto inc Cabinet	15 litres	2900 psi	2505	Red
Hurricane P1	11 litres	1500 psi	25045	Blue
Tornado & Hurricane P2	13 litres	2200 psi	25045	Blue
Tornado & Hurricane P4 & D1ES	15 litres	2900 psi	2505	Red
Mini-Bowser P1	11 Litres	1500 psi	25045	Blue
Mini-Bowser P2	13 Litres	2200 psi	25045	Blue
Typhoon 1, 2, P4 & Evolution Models	15 litres	2900 psi	2505	Red

Demon Technical Support 01752 - 690690

Lance and Machine Colour Codes

Part Number	Description	Storm	Wall Mounted	Hurricane	Tempest Inc Cabinet	Typhoon	Evolution	Tornado & Mini-Bowser
DEM10031B	Cold Water Lance 045 **Blue**	**Storm 1 & 2, FS1**	**WM1**	**P1 & P2**	N/A	N/A	N/A	**P1 & P2**
DEM10031R	Cold Water Lance 05 **Red**	**FS4**	**WM4**	**P4 & D1**	N/A	N/A	N/A	**P4 & D1**
DEM10032B	Hot Water Lance 045 **Blue**	N/A	N/A	N/A	**Tempest 1, 3 & 4 (13.17 pump)**	N/A	N/A	N/A
DEM10032R	Hot Water Lance 05 **Red**	N/A	N/A	N/A	**Tempest 4 (15.20 Pump)**	**Typhoon 1, 2 & P4**	**Evo1 & Evo 2**	N/A

I can't get the pressure to where it used to be – where do I start?




Well by now you should know to check the nozzle - assuming that is correct and you still have no or low pressure the golden rule is to connect the pump to the mains water supply - whichever machine you are testing start with a good mains feed.

1. With the gun and lance connected turn the tap on - can you see a leak? If so there is your problem, if water can leak out air can get in and the pump won't produce pressure - simple as that. (Leaks from underneath the pump are either worn seals or a cracked piston - strip to find out which.)
Remedy: Fix leak or replace seals or piston.

2. Check enough flow of water can get into the pump. Make sure all the filters are clean. The new Tempest hot water machines have a fine filter which will remove most solids. All Demon machines are now double filtered. Have you checked both of them?
Remedy: Strip and inspect filters.

3. There are no leak's what next? With the pump switched off pull the trigger, water will spray out. Keeping the trigger pulled switch the pump on, if the water spray does not improve the valves are the fault. Either worn out or dirty. Strip and inspect. (The high pressure hose will also vibrate on the ground.)
Remedy: Replace or clean valves.

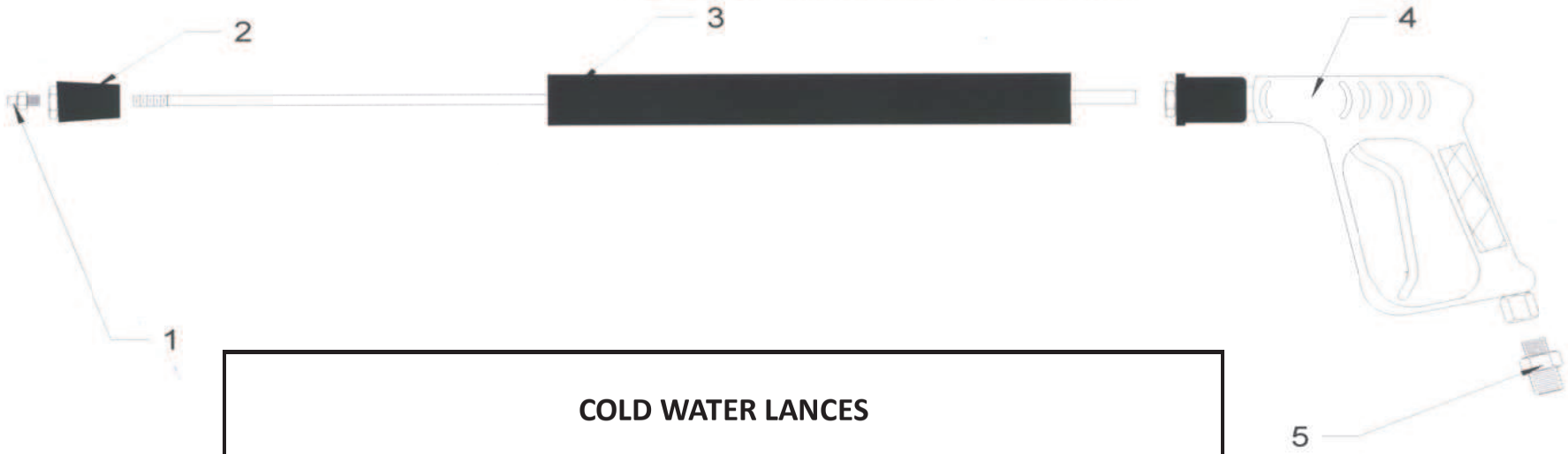
4. The valves are OK there are no leaks but it still won't get up to pressure – what next? The unloader valve piston and seal are damaged or worn allowing some of the water to circulate around the cylinder head - strip and inspect, you will see any damage.
Remedy: Strip unloader and inspect - replace damaged parts.

5. My cold water pressure washer does not feel as powerful as it used to be but the pressure gauge shows the correct pressure. What causes this? The chemical pick-up has a nozzle of 1.8mm or 2.0mm size and can get partially blocked. This will allow some but not all of the water to flow to the lance.
Remedy: Strip and remove the blockage.

6. The pressure remains high even when I let go of the trigger and the engine or motor is struggling or stalling. The non- return valve in the unloader is damaged or jammed.
Remedy: Strip and clean or replace.

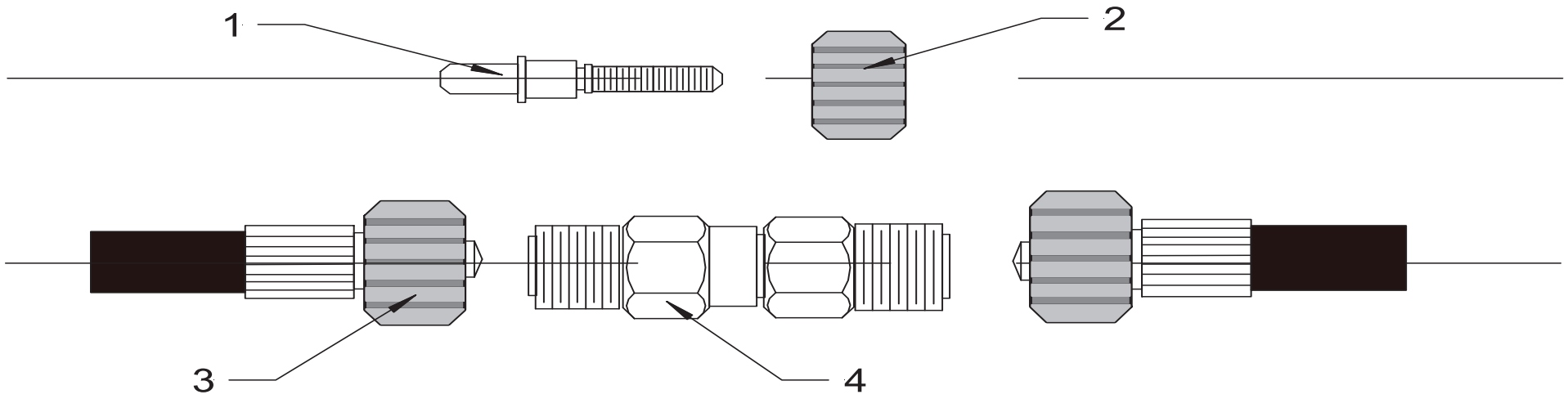
Demon Technical Support 01752 - 690690

Cold Water Lance



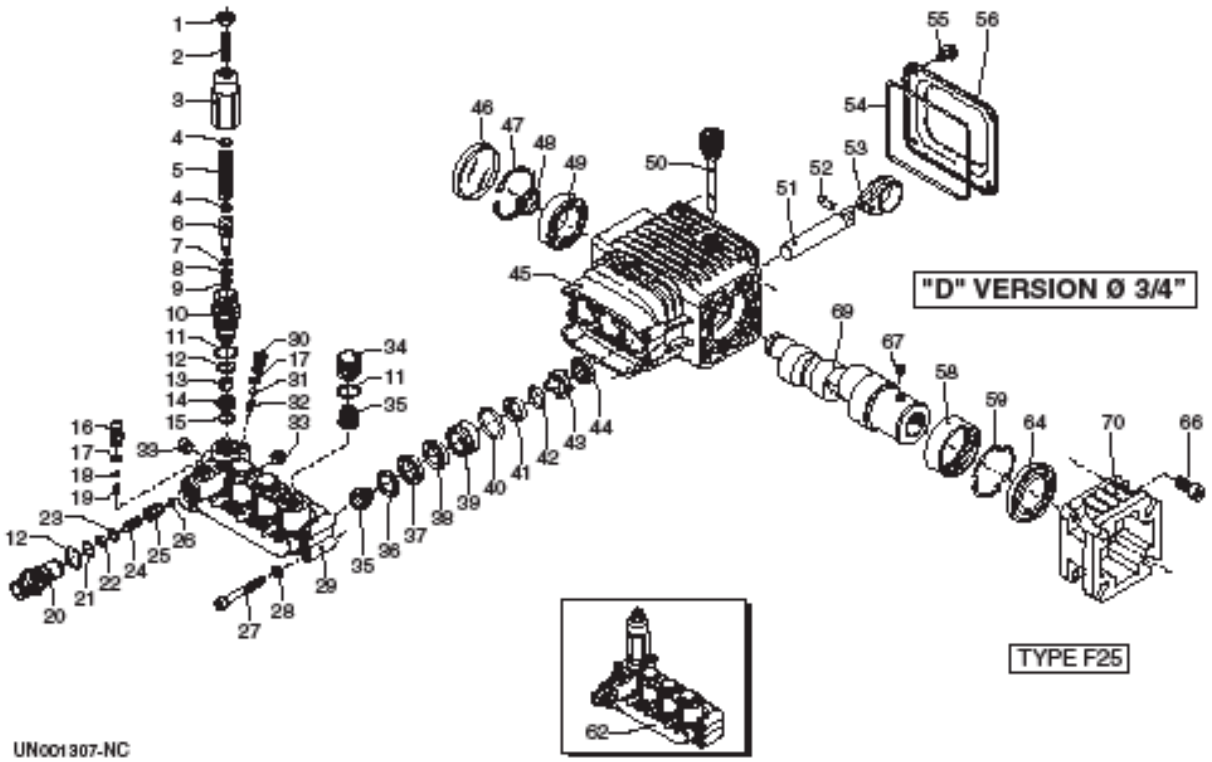
COLD WATER LANCES			
Pos	**Part No**	**Description**	**Qty**
1	N26001/1504	Nozzle P1	1
1	N26001/15045	Nozzle P2	1
1	N26001/1505	Nozzle P4 & D1ES	1
2	MTM90040	Adjustable Nozzle	1
3	DEM10031B	QR Lamce P2	1
3	DEM10031Y	QR Lance P1	1
3	DEM10031R	QR Lance P4 & D1ES	1
4	DEM10030	QR Trigger	1
5	MTM70012	MVG Coupling	1

High Pressure Hoses



1.	Hose Insert	MV00490 (items 1 & 2)
2.	Nut	
3.	High Pressure Hose	HH00030MVG
4.	Hose Joiner	MV00500
Alternative Hose Lengths		
	15 Metre	HH00050MVG
	30 Metre	HH00100MVG

RSV NOVERA D 3400 RPM ø 3/4"



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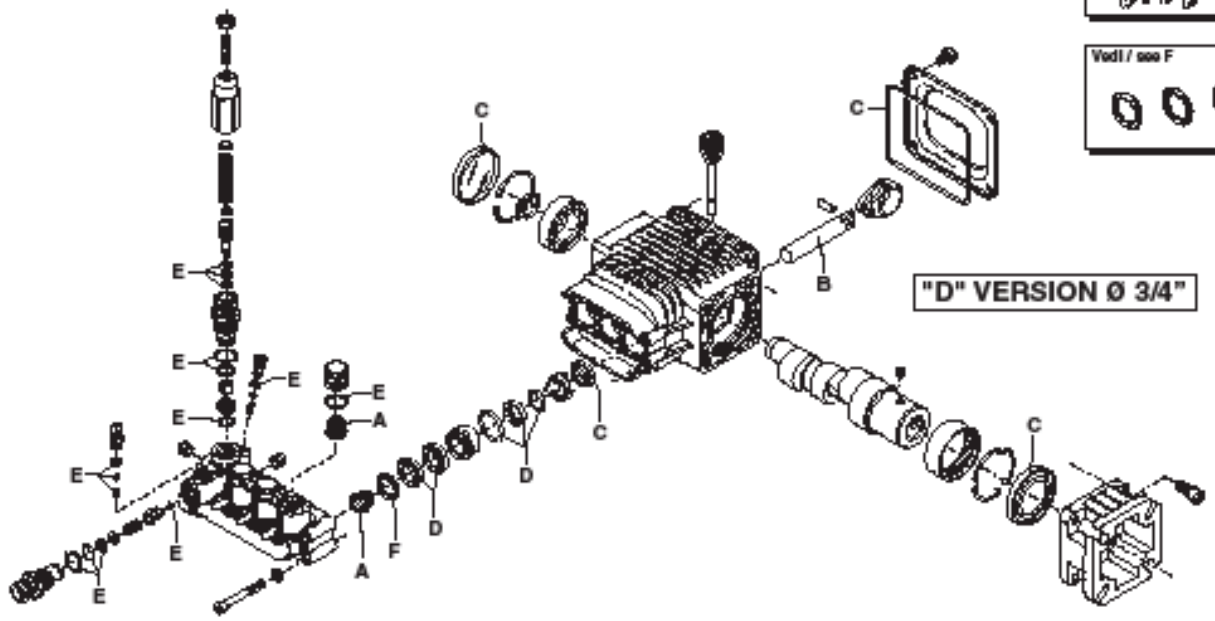
KIT RICAMBI / *PART KITS*



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RSV VERSION D 3400 RPM ø 3/4"

Pos.	Cod. *Part n°*	Denominazione	*Description*	Q.tà *Q.ty*	Note Vedi / *See*
1	1980300	Dado M 6	Nut	1	
2	2760420	Grano M 6X12	Grub screw	1	
3	1980540	Inserto manopola	Handle insert	1	
4	1980220	Piattello molla	Plate spring	2	
5	2760410	Molla	Spring	1	
6	2760400	Pistone valvola	Valve piston	1	
7	2260100	OR Ø 6,02x2,62	O-Ring	1	
8	660190	OR Ø 6,07x1,78	O-Ring	1	
9	2760210	Anello antiestrusione	Ring	1	
10	2760050	Guida pistone	Piston guide	1	
11	1200690	OR Ø 15,6x1,78	O-Ring	4	
12	394280	OR Ø 12,42x1,78	O-Ring	2	
13	2260070	Otturatore by pass	By-pass jet	1	
14	2760090	Sede	Seat	1	
15	770140	OR Ø 11,11x1,78	O-Ring	1	
16	1982520	Portagomma	Hose tail	1	
17	480480	OR Ø 4,48x1,78	O-Ring	2	
18	1250280	Sfera	Ball	1	
19	1560520	Molla	Spring	1	
20	2760230	Iniettore detergente	Detergent injector	1	
21	2760270	OR Ø 12x1	O-Ring	1	
22	1470210	OR Ø 9x1	O-Ring	1	
23	2760120	Inserto iniettore	Injector insert	1	
24	2760200	Molla	Spring	1	
25	2760130	Otturatore	Jet	1	
26	1460430	OR Ø 4x2,5	O-Ring	1	
27	801080	Vite TCEI M 6x50	Screw	8	
28	1381550	Rondella	Washer	8	
29	2760020	Testa	Head	1	
30	2760140	Tappo ez-start	Ez-start plug	1	
31	1982240	Sfera	Ball	1	
32	1981800	Molla	Spring	1	
33	2760260	Tappo 1/4" G conico	Plug	2	
34	2760180	Tappo valvola	Plug	3	
35	2769050	Valvola completa	Complete valve	6	
36	2760220	Anello appoggio	Support ring	3	
37	1342761	Guarnizione	Gasket	3	
38	1981580	Anello antiestrusione	Ring	1	
39	1981570	Guida pistone	Piston guide	3	
40	770260	OR Ø 23,52x1,78	O-Ring	3	
41	1260440	Guarnizione	Gasket	3	
42	640070	OR Ø 13,95x2,62	O-Ring	3	
43	2760310	Distanziale	Spacer	3	
44	1260460	Anello tenuta	Seal	3	
45	2760010	Corpo pompa	Pump body	1	
46	1266740	Cappellotto chiusura	Cap	1	
47	1260790	Anello seeger Øi 52	Circlip	1	
48	1780550	Anello elastico	Snap ring	1	
49	2760340	Cuscinetto	Bearing	1	
50	880130	Tappo olio	Oil cap	1	
51	2760040	Pistone	Piston	3	
52	1780050	Spinotto	Piston pin	3	
53	1780040	Biella alluminio	Alluminium con rod	3	
54	2760280	OR Ø 101,27x2,62	O-Ring	1	
55	802190	Vite TE M 6x12	Screw	4	
56	2760110	Coperchio posteriore	Rear cover	1	
58	2760350	Cuscinetto	Bearing	1	
59	1321080	Anello elastico	Snap ring	1	
62	2769200	Prem. testa pompa	Pump head pre-ass.	1	
64	480671	Anello tenuta	Seal	1	
66	180030	Vite TCEI M 8x20	Screw	4	
67	820440	Grano M 6	Grub screw	1	
69	1780590	Albero ecc. cavo	Hollow shaft	1	○
	1780600	Albero ecc. cavo	Hollow shaft	1	●
70	1780580	Flangia mot.scoppio	Gas engine flange	1	Type F 25

KIT RICAMBI
PART KITS

A=KIT 2186 valvole *valves*		B=KIT 2187 ø 15 pistoni *pistons*		C=KIT 2188 tenute olio *oil seals*		D=KIT 2189 ø 15 tenute acqua *water seals*	
pos.	Q.ty	pos.	Q.ty	pos.	Q.ty	pos.	Q.ty
35	6	51	3	44	3	37	3
				46	1	38	3
				54	1	40	3
				64	1	41	3
						42	3

E=KIT 2190 OR *O-Rings*				F=KIT 2191 ø 15 anelli appoggio *support rings*			
pos.	Q.ty	pos.	Q.ty	pos.	Q.ty	pos.	Q.ty
7	1	17	2	36	3		
8	1	18	1				
9	1	19	1				
11	4	21	1				
12	2	22	1				
15	1	26	1				

LEGENDA :

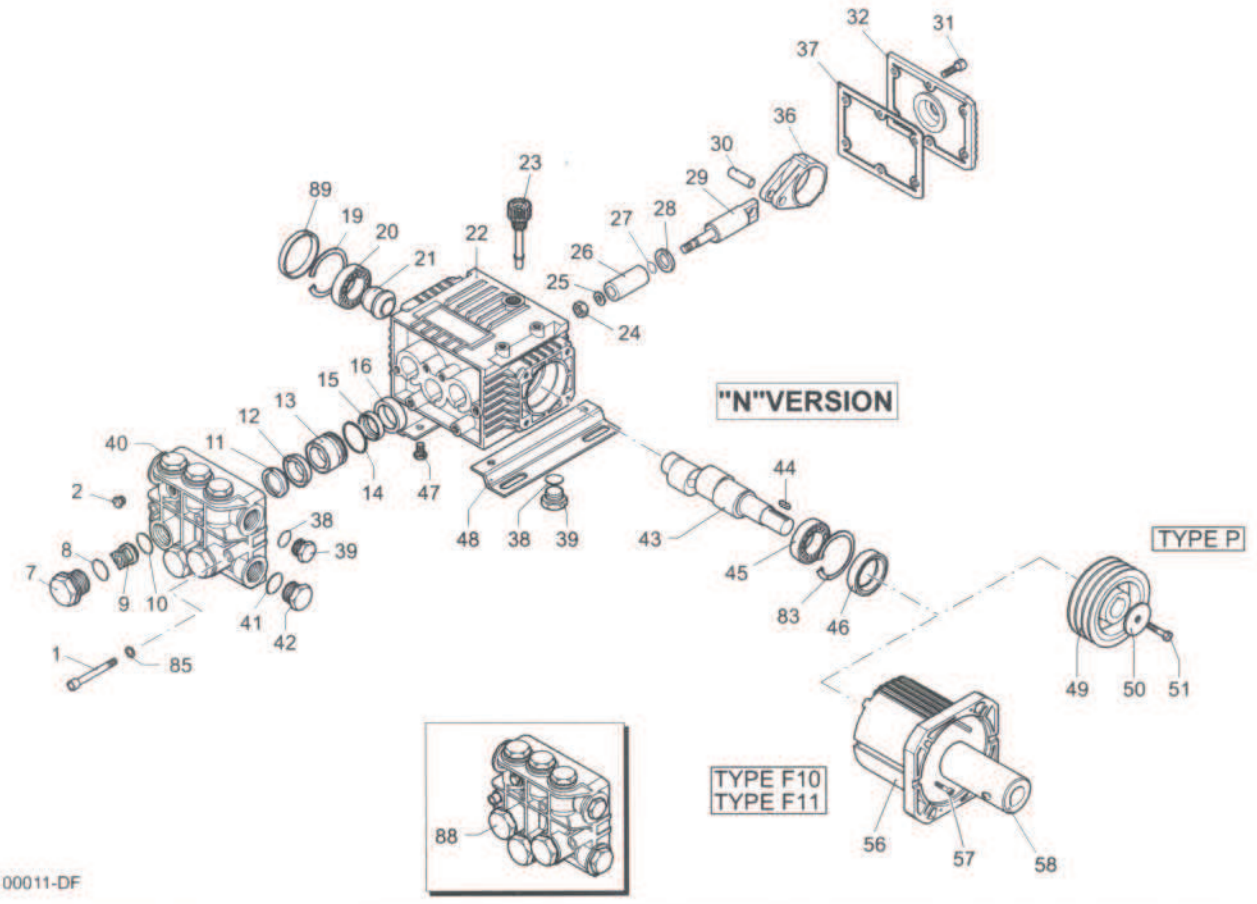
Ø 15

○ Per / *For* RSV 2.5 G25

Ø 15

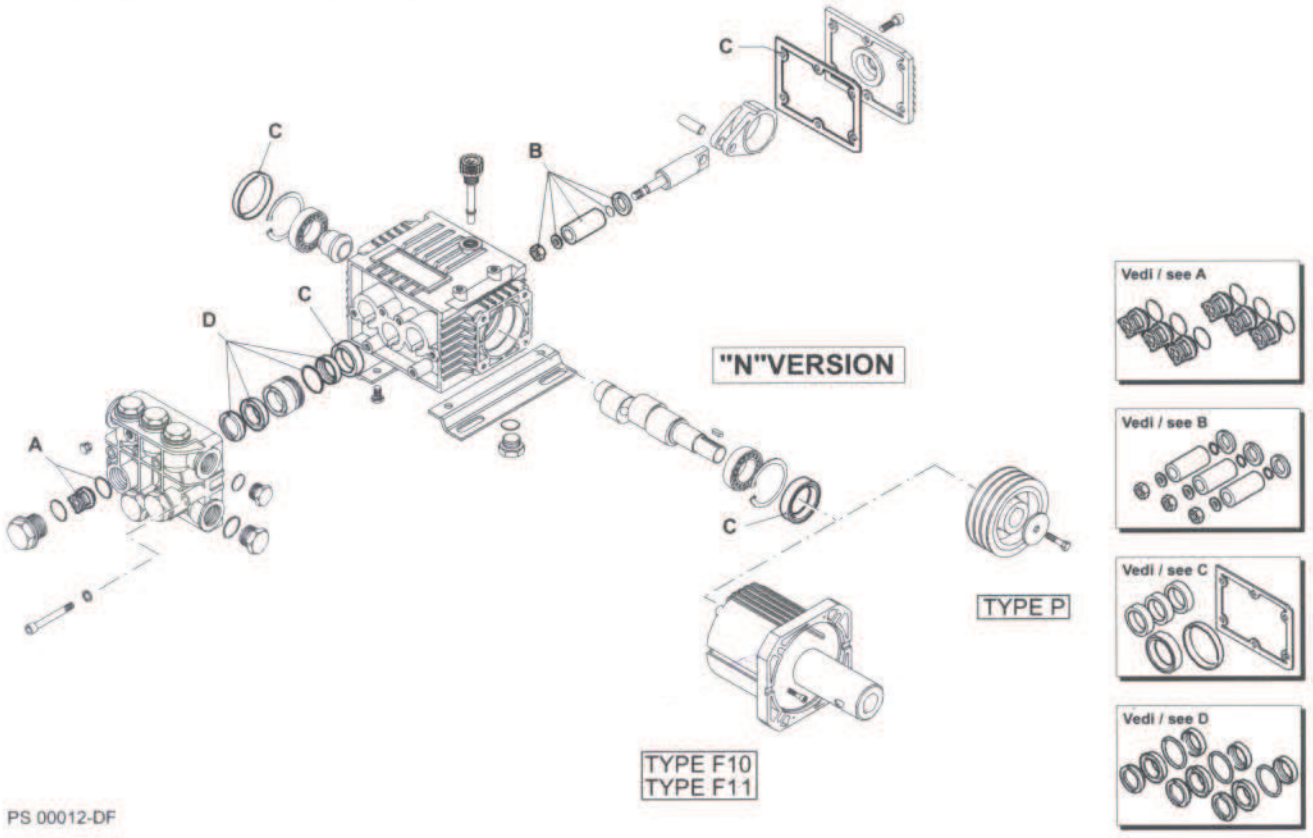
● Per / *For* RSV 3 G25

XT VERSION N 1450 RPM



PS 00011-DF

KIT RICAMBI / *PART KITS*



PS 00012-DF

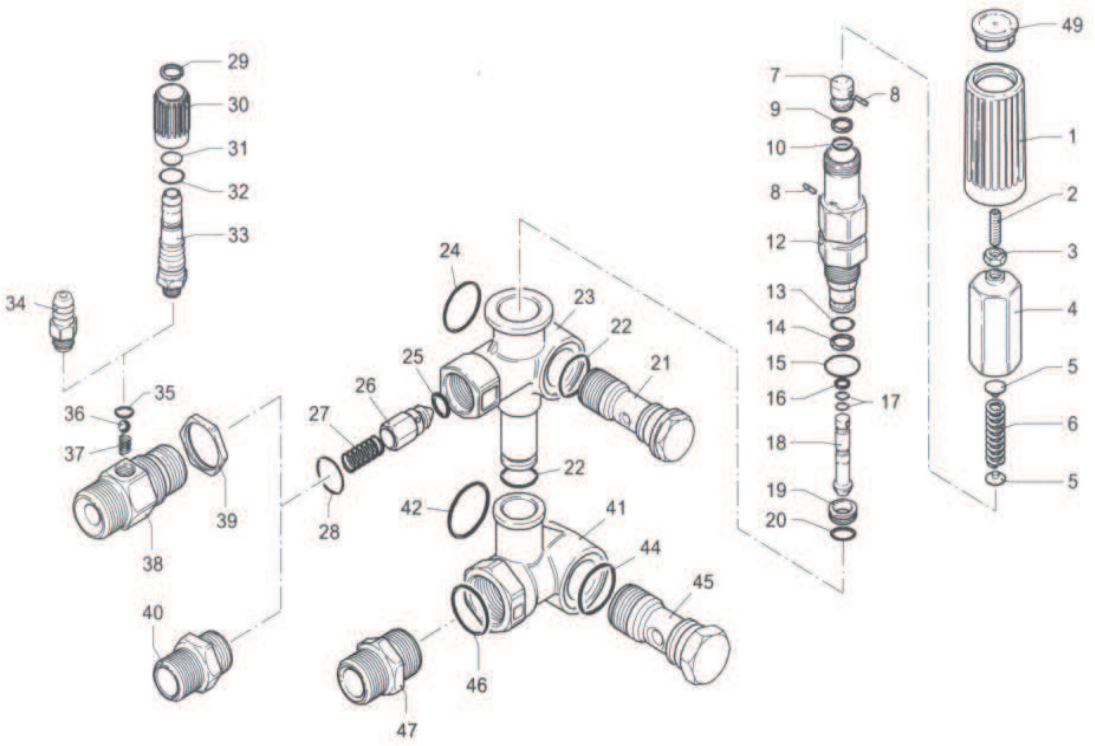
XT 1450

Pos	Code No	Description	Qty	Pos	Code No	Description	Qty
1	AR1322730	Screw	6	40	AR1320020	Pump Head	1
2	AR620301	Plug	1	41	AR180101	O Ring	1
7	AR1260162	Plug	6	42	AR820361	Plug	1
8	AR960160	O Ring	6	43	AR1260200	Crankshaft	1
9	AR1269050	Complete Valve	6	43	AR1320260	Crankshaft	1
10	AR880830	O Ring	6	44	AR1380520	Key	1
11	AR1320340	Support Ring	3	45	AR1320370	Bearing	1
12	AR1260220	Gasket	3	46	AR1260750	Seal	1
13	AR1320351	Piston Guide	3	47	AR1260470	Screw	4
14	AR1260420	O Ring	3	48	AR1263890	Base	2
15	AR1260450	Gasket	3	83	AR1260790	Circlip	1
16	AR1260460	Seal	3	85	AR1381550	Washer	6
19	AR1260790	Circlip	1	88	AR1269222	Pump Head pre-ass	1
20	AR1320370	Bearing	1	89	AR1266740	Cap	1
21	AR1320330	Bushing	1				
22	AR1320010	Pump Housing	1				
23	AR880130	Oil Plug	1				
24	AR1260110	Nut	3				
25	AR1260100	Washer	3				
26	AR1260210	Piston	3				
27	AR480480	O Ring	3				
28	AR1260091	Spacer	3				
29	AR1260070	Guiding Piston	3				
30	AR1260080	Piston Pin	3				
31	AR1260760	Screw	6				
32	AR1269101	Complete Cover	1				
32	AR1320910	Complete Cover	1				
36	AR1260060	Con Road	3				
36	AR1320140	Con Road	3				
37	AR1260040	Gasket	1				
38	AR740290	O Ring	2				
39	AR1980740	Plug	2				

ARKIT1864		ARKIT2629		ARKIT1872	
Valve Kit		Piston Kit		Oil Seal Kit	
Pos	Qty	Pos	Qty	Pos	Qty
9	6	24	3	16	3
10	6	25	3	37	1
		26	3	46	1
		27	3	89	1
		28	3		

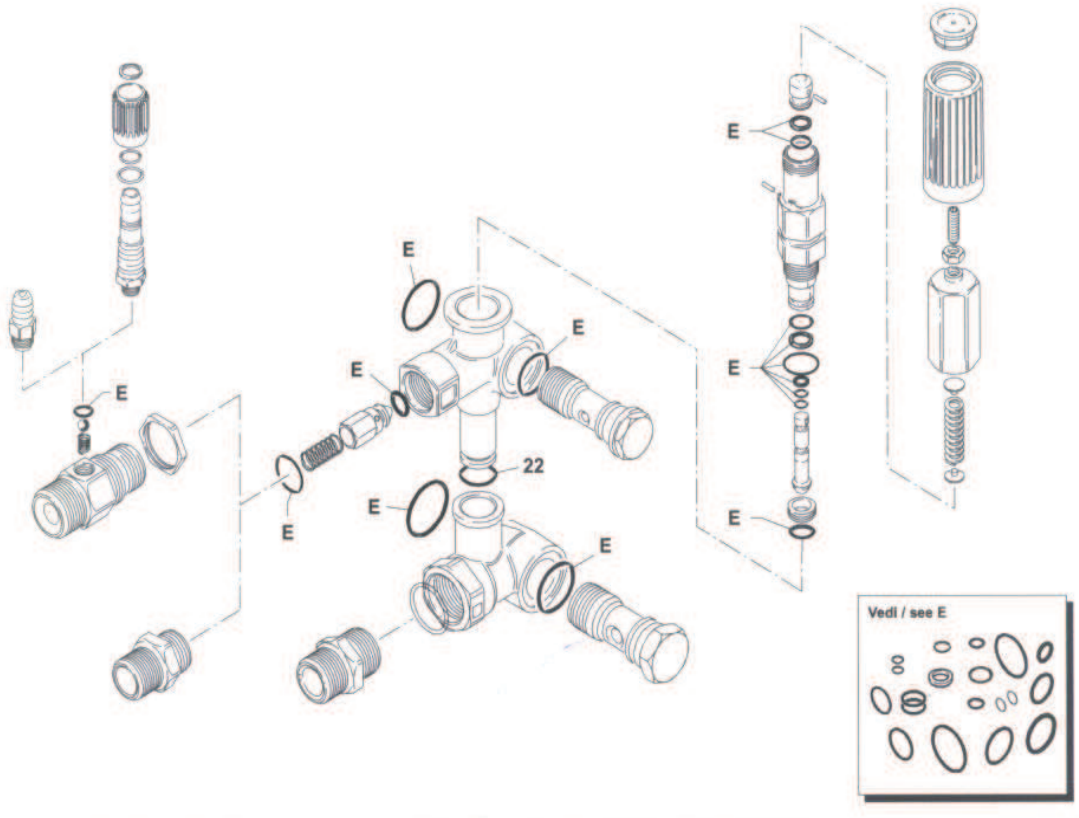
ARKIT1874	
Water Seals	
11	3
12	3
14	3
15	3

MINIMATIC 4/B



UN000186-HF

KIT RICAMBI / *PART KITS*



UN000187-HF

MINIMATIC 4/B

Pos.	Cod. *Part n°*	Denominazione	*Description*	Q.tà *Q.ty*	Note Vedi / *See*
1	1981780	Manopola	Handle	1	
2	1540560	Grano M6x20	Grub	1	
3	1980300	Dado M6	Nut	1	
4	1980390	Inserto manopola	Knob insert	1	
5	1980220	Piattello molla	Spring plate	2	
6	1271070	Molla	Spring	1	
7	1080041	Pistone superiore	Upper piston	1	
8	1080070	Spina	Pin	2	
9	1080401	Anello antiest.	Back-up ring	1	
10	1080250	OR Ø 7,66x1,78	O-Ring	1	
12	1980210	Guida pistone	Piston Guide	1	
13	740290	OR Ø 14x1,78	O-Ring	1	
14	800560	OR Ø 8,73x1,78	O-Ring	1	
15	880830	OR Ø 15,54x2,62	O-Ring	1	
16	1271170	Anello antiest.	Back-up ring	1	
17	1080190	OR Ø 2,90x1,78	O-Ring	2	
18	1271160	Pistone inferiore	Lower piston	1	
19	1980200	Sede valvola	Valve seat	1	
20	1470210	OR Ø 9x1	O-Ring	1	
21	1540270	Vite 3/8" G	Thread screw	1	Ottone/Brass
	1540430	Vite 3/8" G Inox	Thread screw	1	Inox/Steel
22	390080	OR Ø 11,91x2,62	O-Ring	2	
23	1540510	Corpo valvola	Valve housing	1	
24	1140450	OR Ø 20,24x2,62	O-Ring	1	
25	1460430	OR Ø 4x2,5	O-Ring	1	
26	1540170	Otturatore	Jet	1	
27	1080091	Molla	Spring	1	
28	394280	OR Ø 12,42x1,78	O-Ring	1	
29	1560660	Anello	Ring	1	▲
30	1560680	Manopola reg.det.	Detergent reg. knob	1	▲
31	480560	OR Ø 6,75x1,78	O-Ring	1	▲
32	800560	OR Ø 8,73x1,78	O-Ring	1	▲
33	1560650	Portagomma	Hose tail	1	▲
34	1560490	Portagomma	Hose tail	1	■
35	480480	OR Ø 4,48x1,78	O-Ring	1	■ ▲
36	1250280	Sfera	Ball	1	■ ▲
37	1560520	Molla	Spring	1	■ ▲
38	1540570	Raccordo 3/8" G	Fitting 3/8" G	1	Ø 2 ■ ▲
	1540580	Raccordo 3/8" G	Fitting 3/8" G	1	Ø 2,3 ■ ▲
	1540610	Raccordo 3/8" NPT	Fitting 3/8" NPT	1	Ø 2 ■ ▲
	1540620	Raccordo 3/8" NPT	Fitting 3/8" NPT	1	Ø 2,3 ■ ▲
39	1540300	Controdado	Nut	1	■ ▲

Pos.	Cod. *Part n°*	Denominazione	*Description*	Q.tà *Q.ty*	Note Vedi / *See*
40	1540180	Niples 3/8" G	Adaptor 3/8" G	1	●
	1540500	Niples 3/8" NPT	Adaptor 3/8" NPT	1	●
41	1540280	Corpo by-pass	By-pass housing	1	3/8" G
	1540480	Corpo by-pass	By-pass housing	1	3/8" NPT
42	1540630	OR Ø 23,47x2,62	O-Ring	1	
44	880270	OR Ø 17,17x1,78	O-Ring	1	
45	1540260	Vite 1/2" G	Thread screw	1	
46	480440	OR Ø 17,13x2,62	O-Ring	1	Optional
47	1540050	Raccordo	Fitting	1	Optional
49	1981770	Tappo manopola	Knob plug	1	

KIT RICAMBI
PART KITS

E=KIT 2812
OR
O-Rings

pos.	Q.ty	pos.	Q.ty	pos.	Q.ty	pos.	Q.ty
9	1	17	2	35	1		
10	1	20	1	42	1		
13	1	22	2	44	1		
14	1	24	1				
15	1	25	1				
16	1	28	1				

pos.	Q.ty	pos.	Q.ty	pos.	Q.ty	pos.	Q.ty

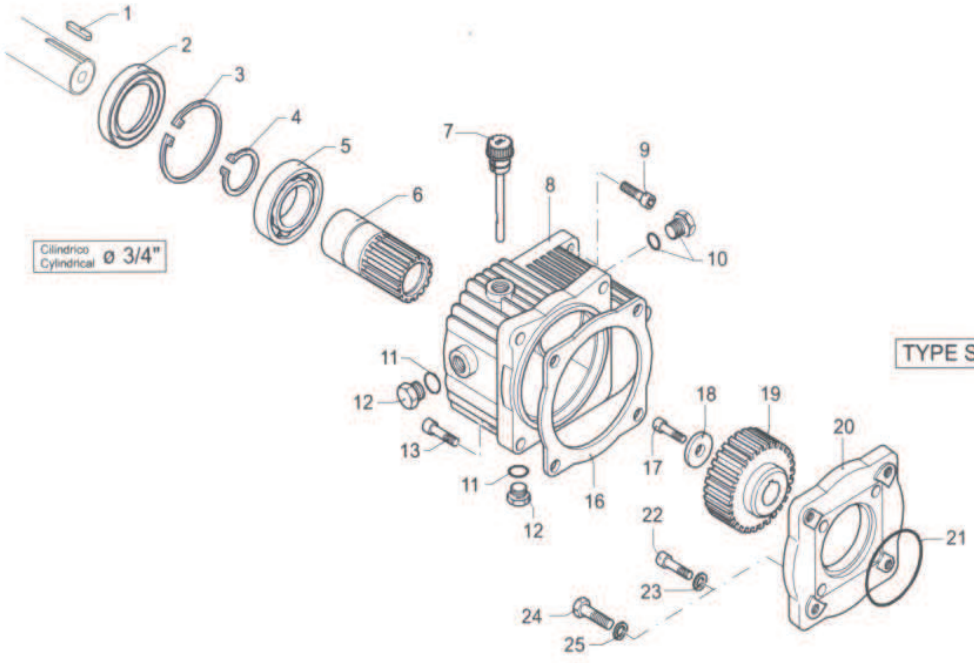
LEGENDA :

● *Per / For* MINIMATIC 4/B

■ *Per / For* MINIMATIC 4/B+ID

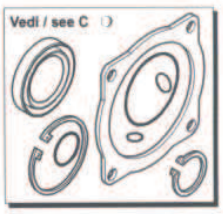
▲ *Per / For* MINIMATIC 4/B+IDR

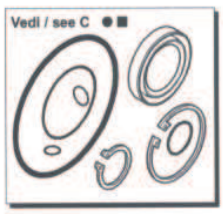
CR RIDUTTORE - GEAR BOX

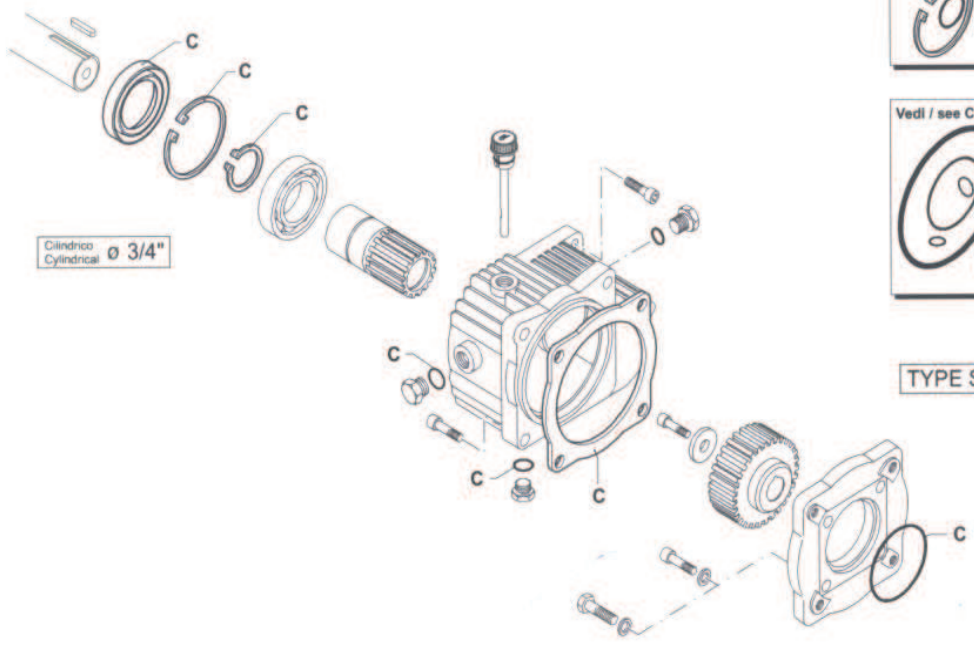


UN000228-HF

KIT RICAMBI / *PART KITS*







UN000229-HF

CR RIDUTTORE - GEAR BOX

Pos.	Cod. *Part n°*	Denominazione	*Description*	Q.tà *Q.ty*	Note Vedi / *See*
1	881090	Linguetta	Key	1	
2	961800	Anello tenuta	Seal	1	
3	961790	Seeger Øi 68	Circlip	1	
4	320240	Seeger Øe 40	Circlip	1	
5	961781	Cuscinetto	Bearing	1	
6	1322920	Pignone Ø 3/4"	Pinion	1	Z=23 ● ❍
	1322930	Pignone Ø 3/4"	Pinion	1	Z=21 ■
7	1140370	Tappo olio + OR	Oil plug + O-ring	1	
8	1320910	Scatola riduttore	Gear box	1	
9	651000	Vite TCEI 5/16"	Screw	4	
10	1980290	Tappo 3/8"	Plug	1	
11	740290	OR Ø 14x1,78	O-Ring	2	
12	1980740	Tappo 3/8"G	Plug	2	Ottone/Brass
13	160671	Vite TCEI M 10x25	Screw	4	
16	1320990	Guarnizione scatola	Gasket	1	❍
	1520590	OR Ø 107,67x1,78	O-Ring	1	● ■
17	880280	Vite TCEI M 6x18	Screw	1	
18	780230	Rondella Tenuta	Washer	1	
19	1322940	Ruota dentata	Gear	1	Z=45 ❍
	1321230	Ruota dentata	Gear	1	Z=45 ●
	1320960	Ruota dentata	Gear	1	Z=47 ■
20	1320920	Flangia riduttore	Flange	1	❍
	1320930	Flangia riduttore	Flange	1	● ■
21	650920	OR Ø 53,65x2,62	O-Ring	1	❍
	640030	OR Ø 60x2,62	O-Ring	1	● ■
22	780330	Vite TCEI M 6x20	Screw	4	❍
23	1341020	Rondella 6x10x1	Washer	4	❍
24	180430	Vite TE M 8x20	Screw	4	● ■ XM-XMA
	390450	Vite TE M 8x30	Screw	4	● ■ XRC-XRCA
25	1260100	Rondella 8x13x0,50	Washer	4	● ■

Pos.	Cod. *Part n°*	Denominazione	*Description*	Q.tà *Q.ty*	Note Vedi / *See*

KIT RICAMBI
PART KITS

C=KIT 2793 ❍ tenute olio *oil seals*		C=KIT 2525 ● ■ tenute olio *oil seals*					
pos.	Q.ty	pos.	Q.ty	pos.	Q.ty	pos.	Q.ty
2	1	2	1				
3	1	3	1				
4	1	4	1				
11	2	11	2				
16	1	16	1				
21	1	21	1				

pos.	Q.ty	pos.	Q.ty	pos.	Q.ty	pos.	Q.ty

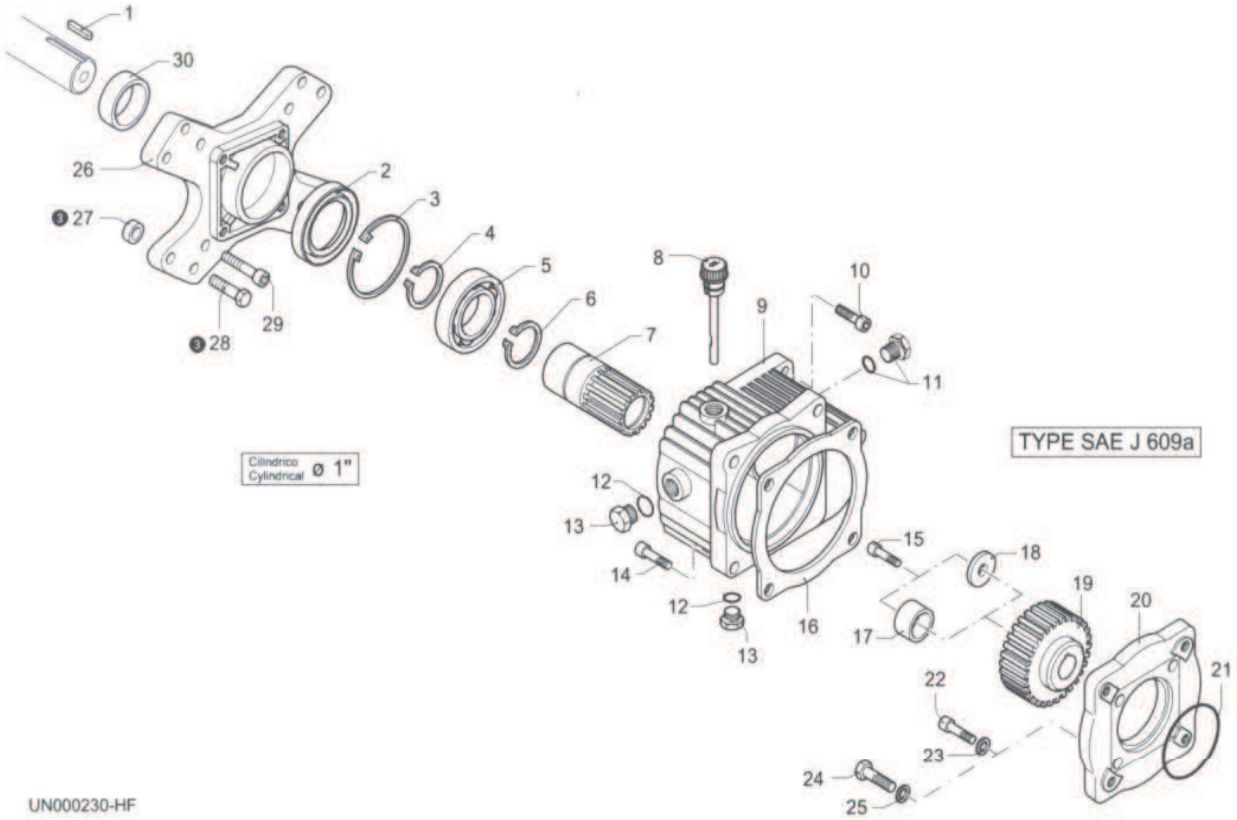
LEGENDA :

❍ Per / *For* cod. **1694** 1:2 XT/XTA series

● Per / *For* cod. **1692** 1:2 XM/XMA series XRC/XRCAseries

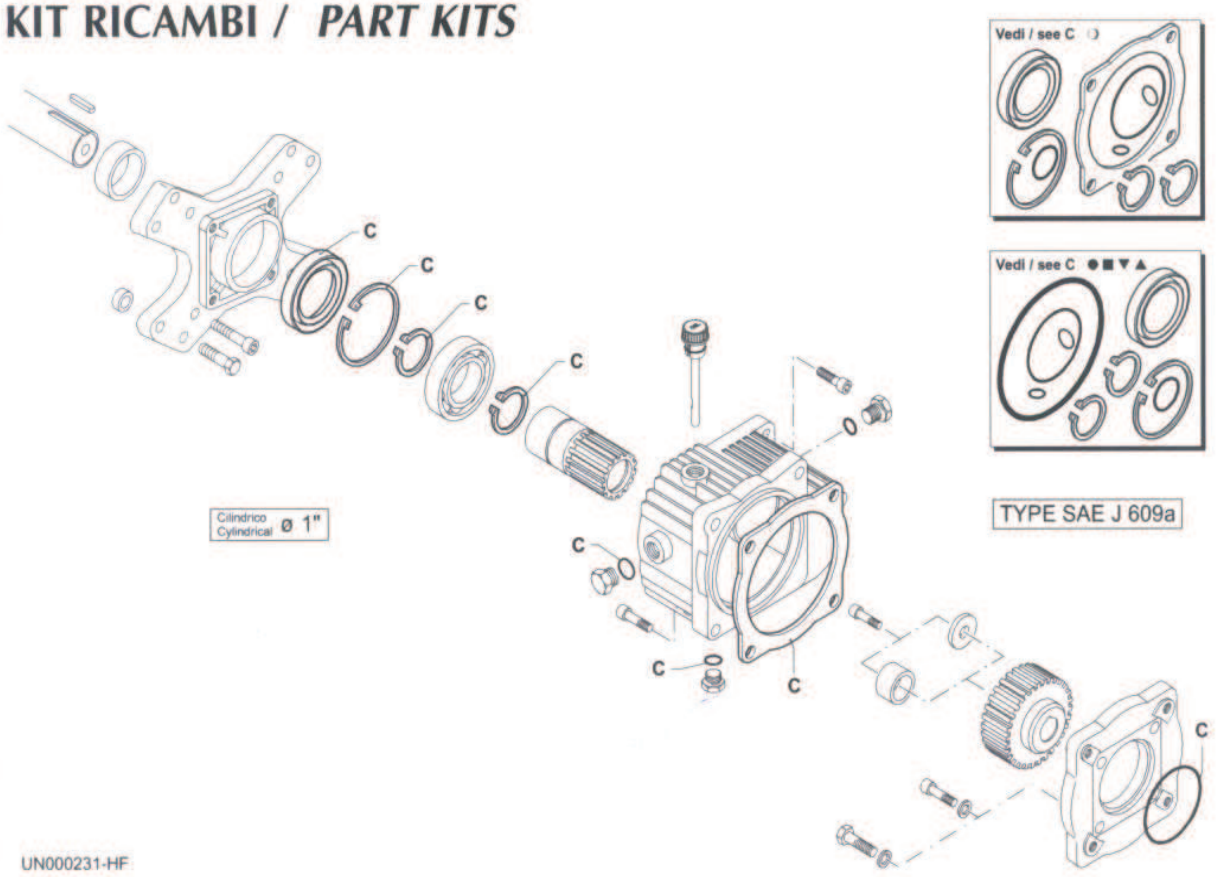
■ Per / *For* cod. **1691** 1:2 XM series XRC series

CR RIDUTTORE - GEAR BOX



UN000230-HF

KIT RICAMBI / *PART KITS*



UN000231-HF

CR RIDUTTORE - GEAR BOX

Pos.	Cod. *Part n°*	Denominazione	*Description*	Q.tà *Q.ty*	Note Vedi / *See*
1	1382510	Chiavetta (8 HP)	Key	1	❍●■▼▲
	881090	Linguetta (9-18 HP)	Key	1	●■▼▲
2	961800	Anello tenuta	Seal	1	
3	961790	Seeger Øi 68	Circlip	1	
4	320240	Seeger Øe 40	Circlip	1	
5	961781	Cuscinetto	Bearing	1	
6	320240	Seeger Øe 40	Circlip	1	■▲
7	1382420	Pignone Ø 1" Z=23	Pinion	1	❍●▼
	1382430	Pignone Ø 1" Z=21	Pinion	1	■▲
8	1140370	Tappo olio + OR	Oil plug + O-ring	1	
9	1320910	Scatola riduttore	Gear box	1	
10	881940	Vite TCEI M 8x25	Screw	4	
11	1980290	Tappo 3/8"	Plug	1	
12	740290	OR Ø 14x1,78	O-Ring	2	
13	1980740	Tappo 3/8"G	Plug	2	Ottone/Brass
14	160671	Vite TCEI M 10x25	Screw	4	
15	880280	Vite TCEI M 6x18	Screw	1	
16	1320990	Guarnizione scatola	Gasket	1	❍
	1520590	OR Ø 107,67x1,78	O-Ring	1	●■▼▲
17	1940500	Distanziale	Spacer	1	▼▲
18	780230	Rondella Tenuta	Washer	1	❍●■
19	1322940	Ruota dentata Z=45	Gear	1	❍
	1321230	Ruota dentata Z=45	Gear	1	●▼
	1320960	Ruota dentata Z=47	Gear	1	■▲
20	1320920	Flangia riduttore	Flange	1	❍
	1320930	Flangia riduttore	Flange	1	●■▼▲
21	650920	OR Ø 53,65x2,62	O-Ring	1	❍
	640030	OR Ø 60x2,62	O-Ring	1	●■▼▲
22	780330	Vite TCEI M 6x20	Screw	4	❍
23	1341020	Rondella 6x10x1	Washer	4	❍
24	180430	Vite TE M 8x20	Screw	4	●■ (XM)
	390450	Vite TE M 8x30	Screw	4	●■▼▲
25	1260100	Rondella 8x13x0,50	Washer	4	●■▼▲
26	1320940	Flangia motore	Motor flange	1	
27	961770	Distanziale	Spacer	4	❸
28	961900	Vite TE 3/8"	Screw	4	❸
29	651000	Vite TCEI 5/16"	Screw	4	
30	1382540	Distanziale	Spacer	1	●■▼▲

Pos.	Cod. *Part n°*	Denominazione	*Description*	Q.tà *Q.ty*	Note Vedi / *See*

❸ Per motori italiani / Italian engines only

KIT RICAMBI
PART KITS

C=KIT 2793 ❍ tenute olio *oil seals*				C=KIT 2525 ●■▼▲ tenute olio *oil seals*			
pos.	Q.ty	pos.	Q.ty	pos.	Q.ty	pos.	Q.ty
2	1	21	1	2	1	21	1
3	1			3	1		
4	1			4	1		
6	1			6	1		
12	2			12	2		
16	1			16	1		

pos.	Q.ty	pos.	Q.ty	pos.	Q.ty	pos.	Q.ty

LEGENDA :

● Per / *For* cod. **1690** 1:2 XM/XMA series XRC/XRCAseries

❍ Per / *For* cod. **1693** 1:2,24 XT/XTA series

■ Per / *For* cod. **1689** 1:2,24 XM series XRC series

▼ Per / *For* cod. **1697** 1:2 XW/XWA series

▲ Per / *For* cod. **1698** 1:2,24 XW series