



# Clemas & Co Ltd

Industrial Cleaning Equipment  
Sales - Hire - Service

## TORNADO PRESSURE WASHER OPERATOR MANUAL



**Clemas & Co.** Unit 5 Ashchurch Business Centre, Alexandra Way, Tewkesbury,  
Gloucestershire, GL20 8NB.

**Tel:** 01684 850777

**Fax:** 01684 850707

**Email:** [info@clemas.co.uk](mailto:info@clemas.co.uk)

**Web:** [www.clemas.co.uk](http://www.clemas.co.uk)

## Technical Specifications

### **Tornado P2**

Engine	Honda GX200 6.5HP @ 3600rpm
Pump	AR XT13-15
Pressure	2200psi / 150 bar
Flow	13 lpm / 2.9gpm
HP Nozzle	15045
Gearbox	2:1 Reduction
Unloader	Minimatic 4B
Pump Oil	10W/40
Gearbox Oil	EP90
Noise	

### **Tornado P4**

Engine	Honda GX340 11HP @ 3600rpm
Pump	AR RK15-20H
Pressure	2900psi / 200 bar
Flow	15 lpm / 3.3gpm
HP Nozzle	1505
Gearbox	2:1 Reduction
Unloader	Gymatic 3B
Pump Oil	10W/40
Gearbox Oil	EP 90
Noise	

### **Tornado D1ES**

Engine	Yan L100 10 HP @ 3600rpm
Pump	AR RK15-20H
Pressure	2900psi / 200 bar
Flow	15lpm / 3.3gpm
HP Nozzle	1505
Gearbox	2:1 Reduction
Unloader	Gymatic 3B
Pump Oil	10W/40
Gearbox Oil	EP90
Noise	

### **Tornado P1 Mini Bowser**

Engine	Honda GX120
Pump	RSV 3G25D
Pressure	1500 PSI
Flow	9lpm
HP Nozzle	1504
Gearbox	None
Unloader	Integrated
Pump Oil	10W/40
Gearbox Oil	N/a
Noise	

### **Tornado P2 Mini Bowser**

Engine	Honda GX200
Pump	AR XT13-12
Pressure	2200 PSI
Flow	13 lpm
HP Nozzle	15045
Gearbox	2:1 Reduction
Unloader	ARMM4B
Pump Oil	10W/40
Gearbox Oil	EP90
Noise	

## FAULT FINDER

FAULT	CAUSE	REMEDY
Boiler will not work	Blown Fuse	Check power to electrical enclosure and 3.15 amp control fuses
Sudden pressure loss	No Water No Chemical Burst Disc Blown	Check water supply Check Chemical drum, close valve Replace Disc.
Water turns to steam during normal Use.	Partially blocked H.P. Nozzle	Clean and flush machine
Low pressure	HP Nozzle worn Unloader set wrongly	Replace Reset unloader valve
Low pressure with Noise & Vibration	Valves worn or blocked Piston seals worn Pump sucking air	Clean or replace as required Replace Check chemical valve & inlet pipe
Pump will not By-pass	Jammed non-return valve O Ring damaged	Clear blockage Replace
Water drips from pump bottom	Piston seals worn	Replace
Oil drips from pump bottom	Oil seals worn	replace
Burner will not ignite	Fuel tank empty Fuel filter blocked Fuel nozzle blocked Electrodes dirty Out of adjustment Flow switch out of adjustment	Refill Replace Clean or replace Clean or replace Reset Adjust
Oil is milky in colour	Water ingress through oil filler plug	Drain oil, rinse out with clean Paraffin then replace oil.
Flames coming out of chimney	Poor quality fuel leading to poor Combustion and then burning off excess fuel in the boiler	Maintain the fuel system more often Drain the sediment out of the tank Regularly and clean or replace Filters and nozzles more often.
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 particular 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.

- 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.

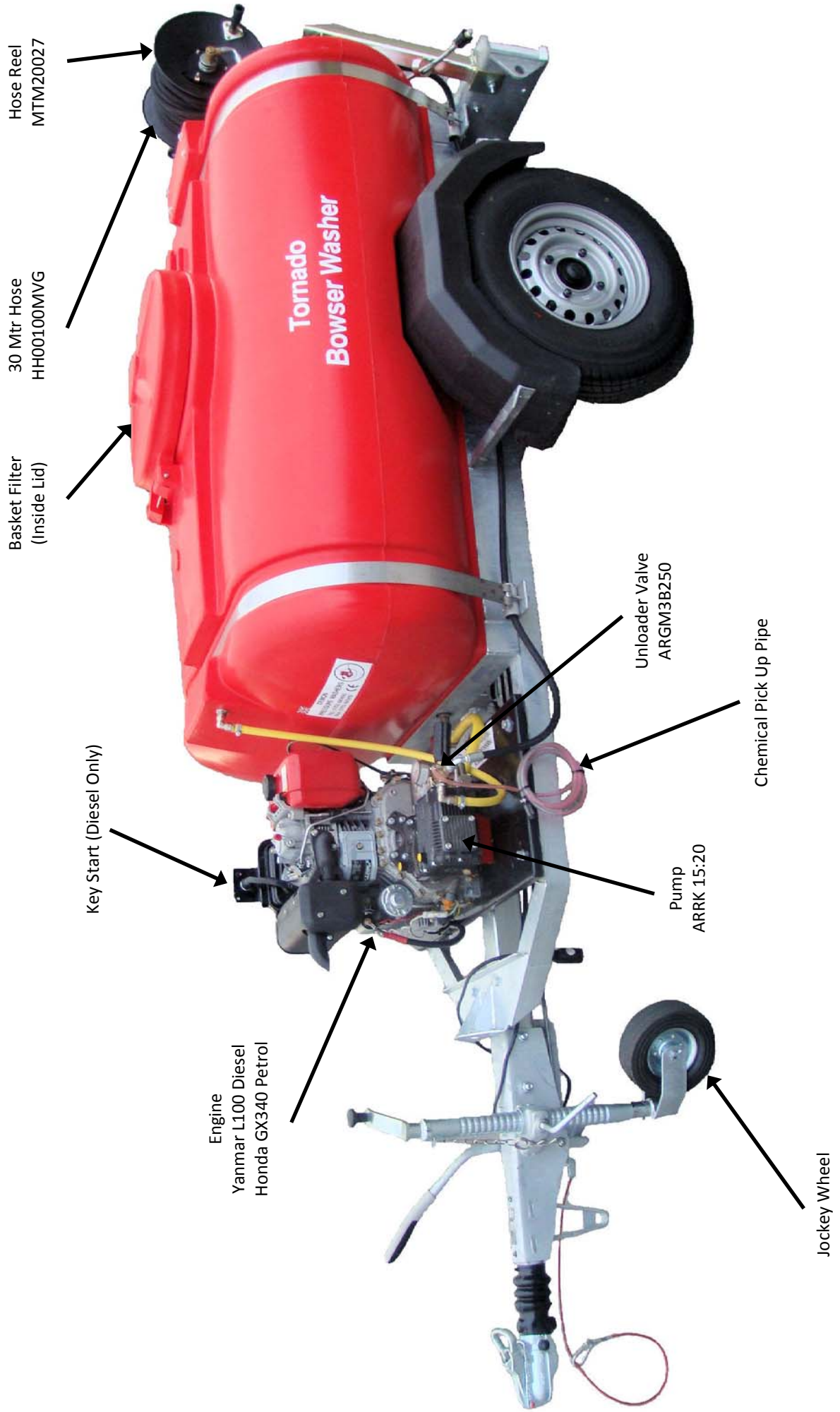
**When using Cleaning Agents:**

- 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.

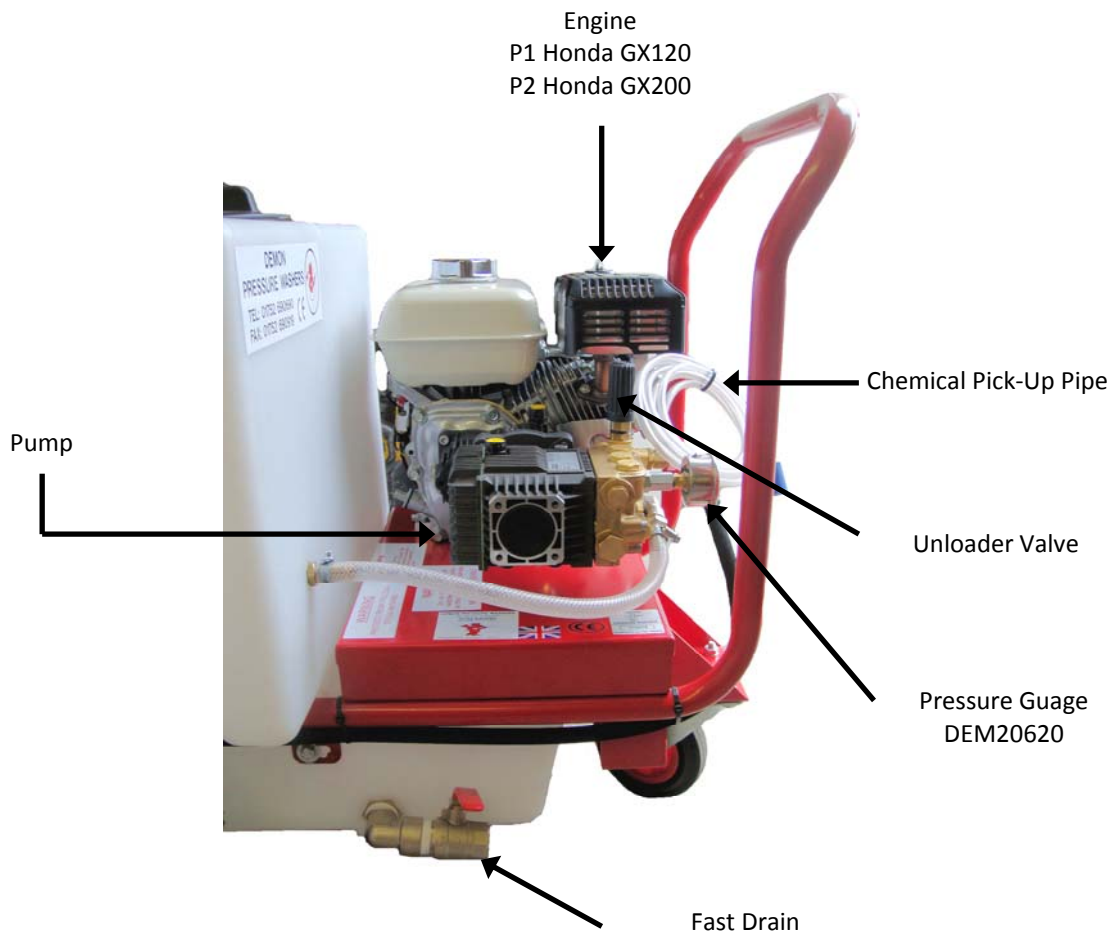
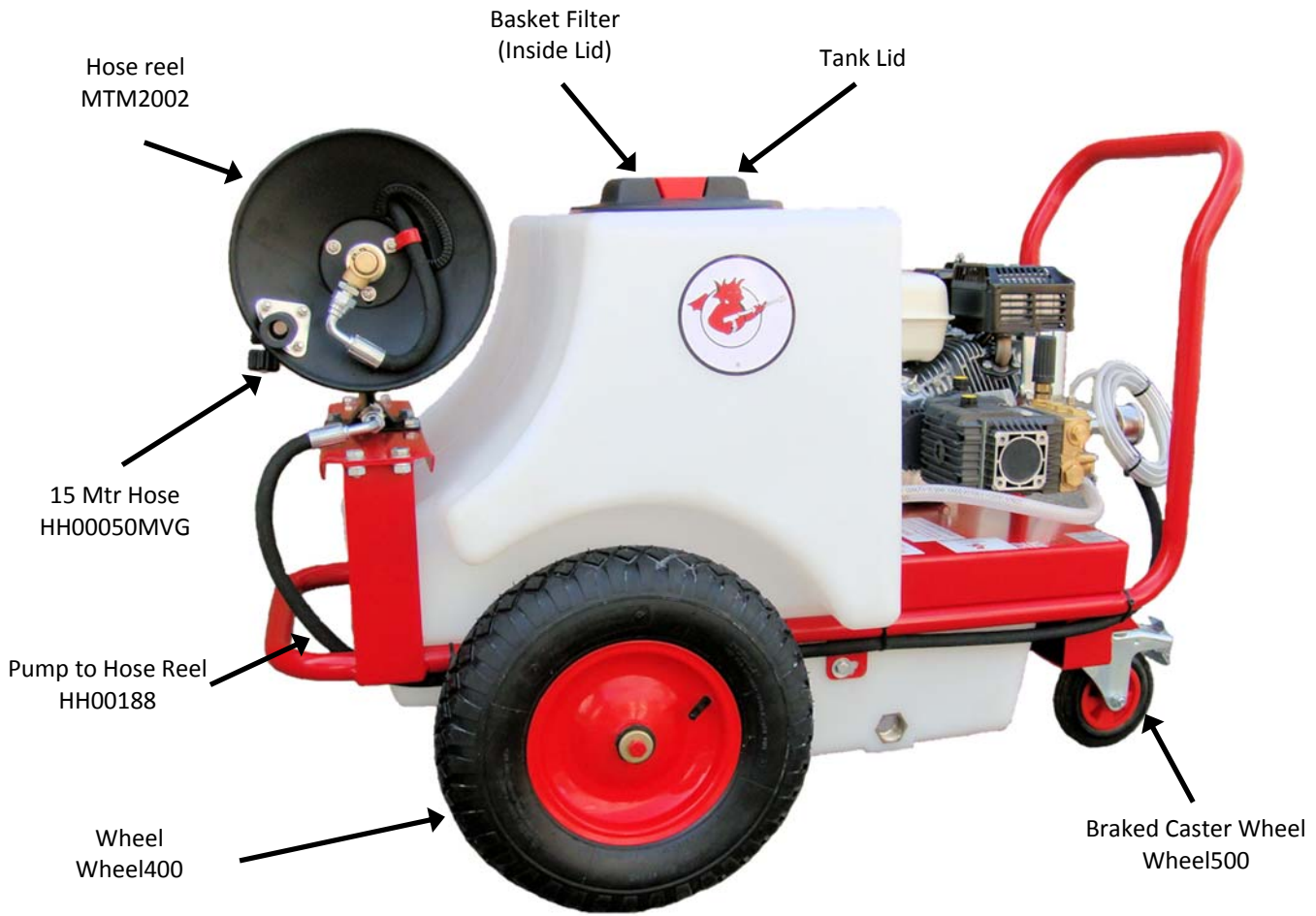
NOTE: CHEMICAL PICKUP ONLY OPERATES AT PRESSURES BELOW 250PSI.  
OPEN LANCE VALVE FULLY TO OBTAIN THIS PRESSURE.



# Tornado Bowser - General Arrangement



# Tornado Mini-Bowser - General Arrangement



## 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 insufficient or unsuitable electrical supply.
- C The effects of un-authorized 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 whether 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. 15045 is 15° 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
Typhoon 1 & Evolution Models	15 litres	2900psi	1505	Red
Tempest 1 Auto	11 litres	1500psi	15045	Blue
Tempest 3 Auto	11 litres	1500psi	15045	Blue
Storm 1	11 litres	1500psi	15045	Blue
Storm 2	11 litres	1500psi	15045	Blue
Tornado & Hurricane P2	13 litres	2200psi	15045	Red
Tornado & Hurricane P4	15 litres	2900psi	1505	Red
Tornado & Hurricane D1ES	15 litres	2900psi	1505	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
DEM10031Y	Cold Water Lance 04 Yellow	N/A	N/A	N/A	N/A	N/A	N/A	P1
DEM10031B	Cold Water Lance 045 Blue	Storm 1 & 2	WM1	P2	N/A	N/A	N/A	P2
DEM10031R	Cold Water Lance 05 Red	N/A	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	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.

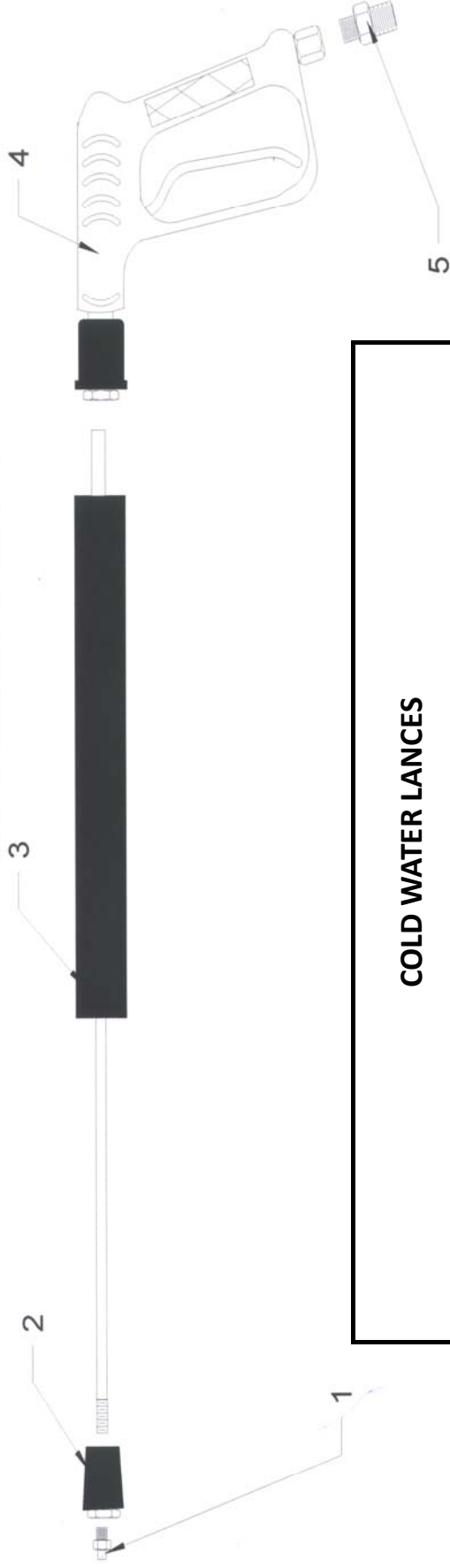
Remedy: Strip and remove the blockage.

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**

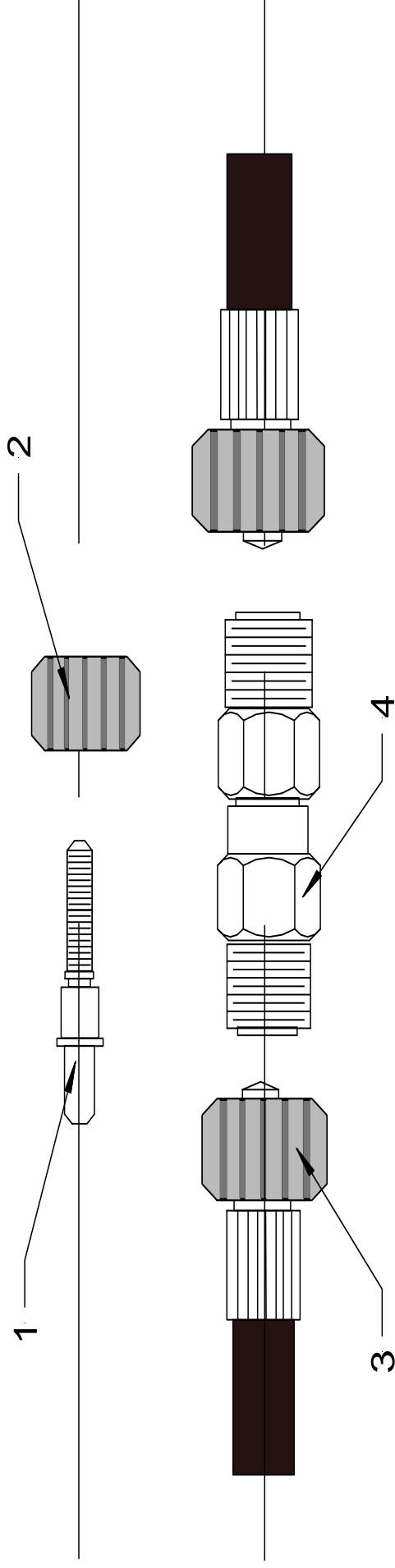
# Cold Water Lance



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

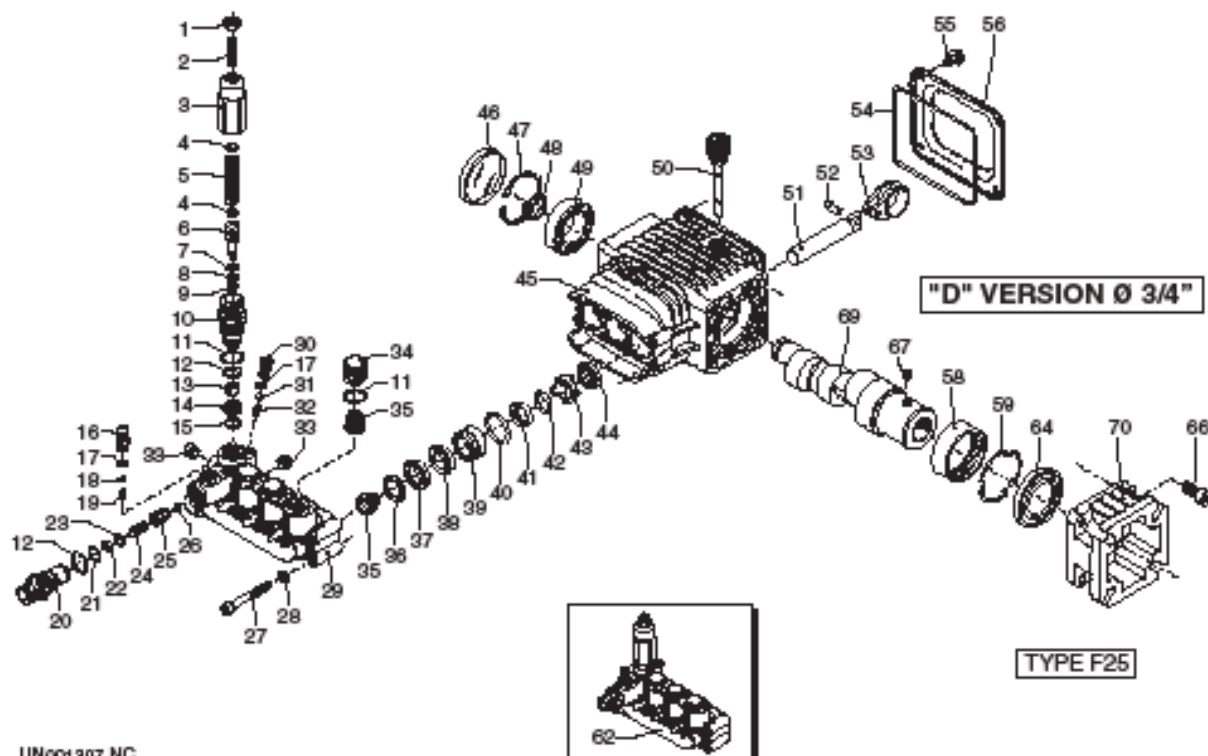


1.	Hose Insert	MV00490 (items 1 & 2)
2.	Nut	
3.	High Pressure Hose	HH00030MVG
4.	Hose Joiner	MV00500
<b>Alternative Hose Lengths</b>		
	15 Metre	HH00050MVG
	30 Metre	HH00100MVG

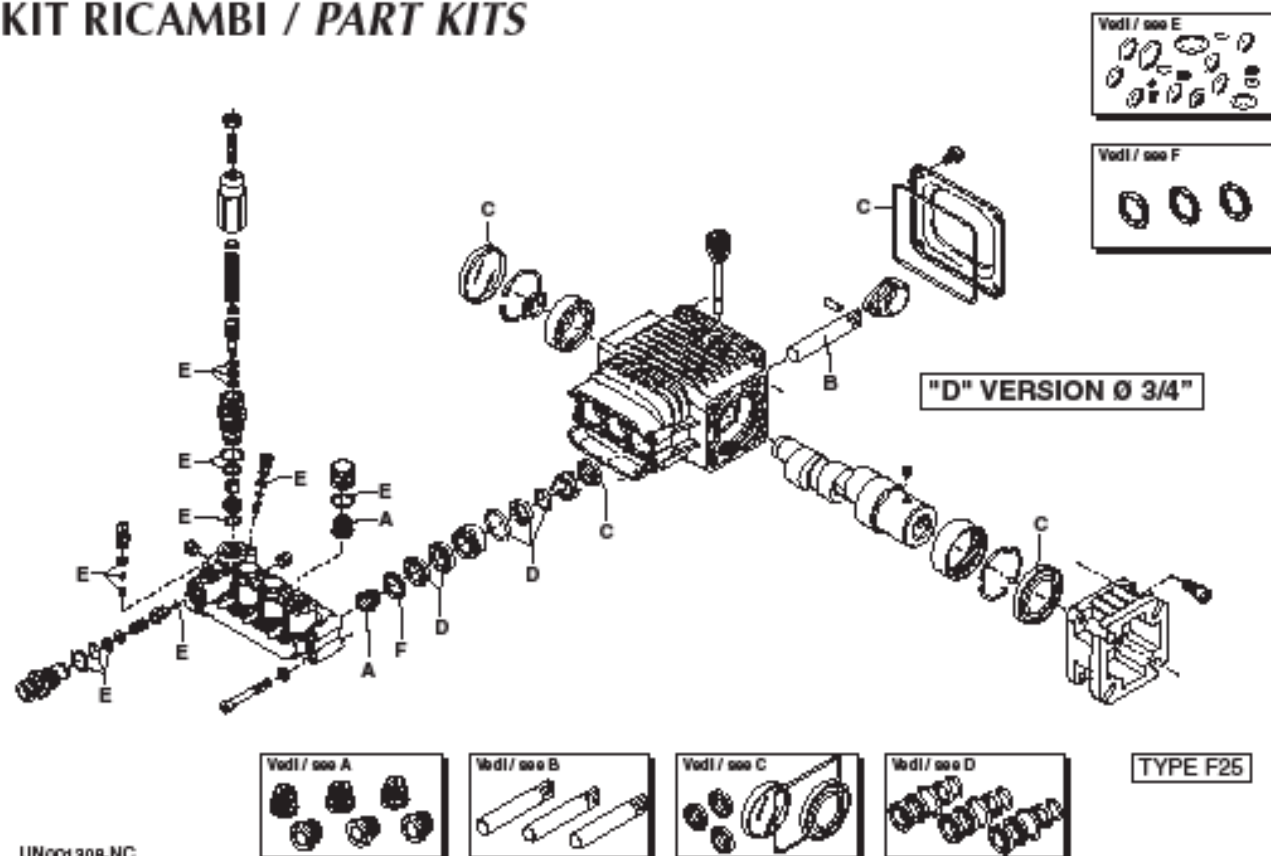
# RSV

# NOZZLE ID 3400 RPM

# Ø 3/4"



## KIT RICAMBI / PART KITS



# RSV

VERSION

# D

# 3400

RPM

# Ø 3/4"



Pos.	Cod. Part n°	Denominazione	Description	Q.tà Q.ty	Note Vedi / See	Pos.	Cod. Part n°	Denominazione	Description	Q.tà Q.ty	Note Vedi / See
1	1980300	Dado M 6	Nut	1		43	2760310	Distanziale	Spacer	3	
2	2760420	Grano M 6X12	Grub screw	1		44	1260460	Anello tenuta	Seal	3	
3	1980540	Inserto manopola	Handle insert	1		45	2760010	Corpo pompa	Pump body	1	
4	1980220	Piattello molla	Plate spring	2		46	1266740	Cappellotto chiusura	Cap	1	
5	2760410	Molla	Spring	1		47	1260790	Anello seeger Øi 52	Cirdlip	1	
6	2760400	Pistone valvola	Valve piston	1		48	1780550	Anello elastico	Snap ring	1	
7	2260100	OR Ø 6,02x2,62	O-Ring	1		49	2760340	Cuscinetto	Bearing	1	
8	660190	OR Ø 6,07x1,78	O-Ring	1		50	880130	Tappo olio	Oil cap	1	
9	2760210	Anello antiestrusione	Ring	1		51	2760040	Pistone	Piston	3	
10	2760050	Guida pistone	Piston guide	1		52	1780050	Spinotto	Piston pin	3	
11	1200690	OR Ø 15,6x1,78	O-Ring	4		53	1780040	Biella alluminio	Alluminium con rod	3	
12	394280	OR Ø 12,42x1,78	O-Ring	2		54	2760280	OR Ø 101,27x2,62	O-Ring	1	
13	2260070	Otturatore by pass	By-pass jet	1		55	802190	Vite TE M 6x12	Screw	4	
14	2760090	Sede	Seat	1		56	2760110	Coperchio posteriore	Rear cover	1	
15	770140	OR Ø 11,11x1,78	O-Ring	1		58	2760350	Cuscinetto	Bearing	1	
16	1982520	Portagomma	Hose tail	1		59	1321080	Anello elastico	Snap ring	1	
17	480480	OR Ø 4,48x1,78	O-Ring	2		62	2769200	Prem. testa pompa	Pump head pre-ass.	1	
18	1250280	Sfera	Ball	1		64	480671	Anello tenuta	Seal	1	
19	1560520	Molla	Spring	1		66	180030	Vite TCEI M 8x20	Screw	4	
20	2760230	Iniettore detergente	Detergent injector	1		67	820440	Grano M 6	Grub screw	1	
21	2760270	OR Ø 12x1	O-Ring	1		69	1780590	Albero ecc. cavo	Hollow shaft	1	○
22	1470210	OR Ø 9x1	O-Ring	1			1780600	Albero ecc. cavo	Hollow shaft	1	●
23	2760120	Inserto iniettore	Injector insert	1		70	1780580	Flangia mot.scoppio	Gas engine flange	1	Type F 25
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							

## KIT RICAMBI PART KITS

## LEGENDA :

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

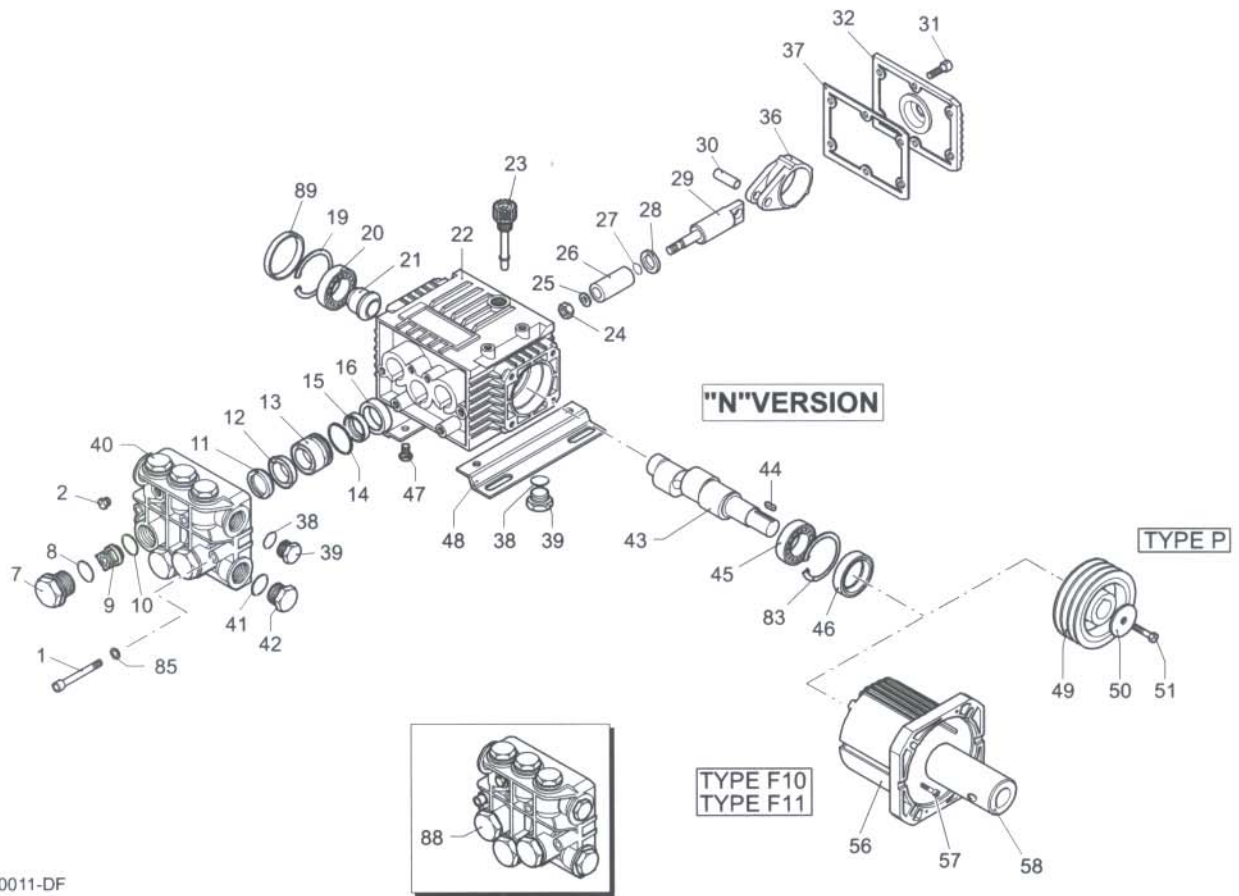
Ø 15  
○ Per / For  
RSV 2.5 G25

Ø 15  
● Per / For  
RSV 3 G25

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				

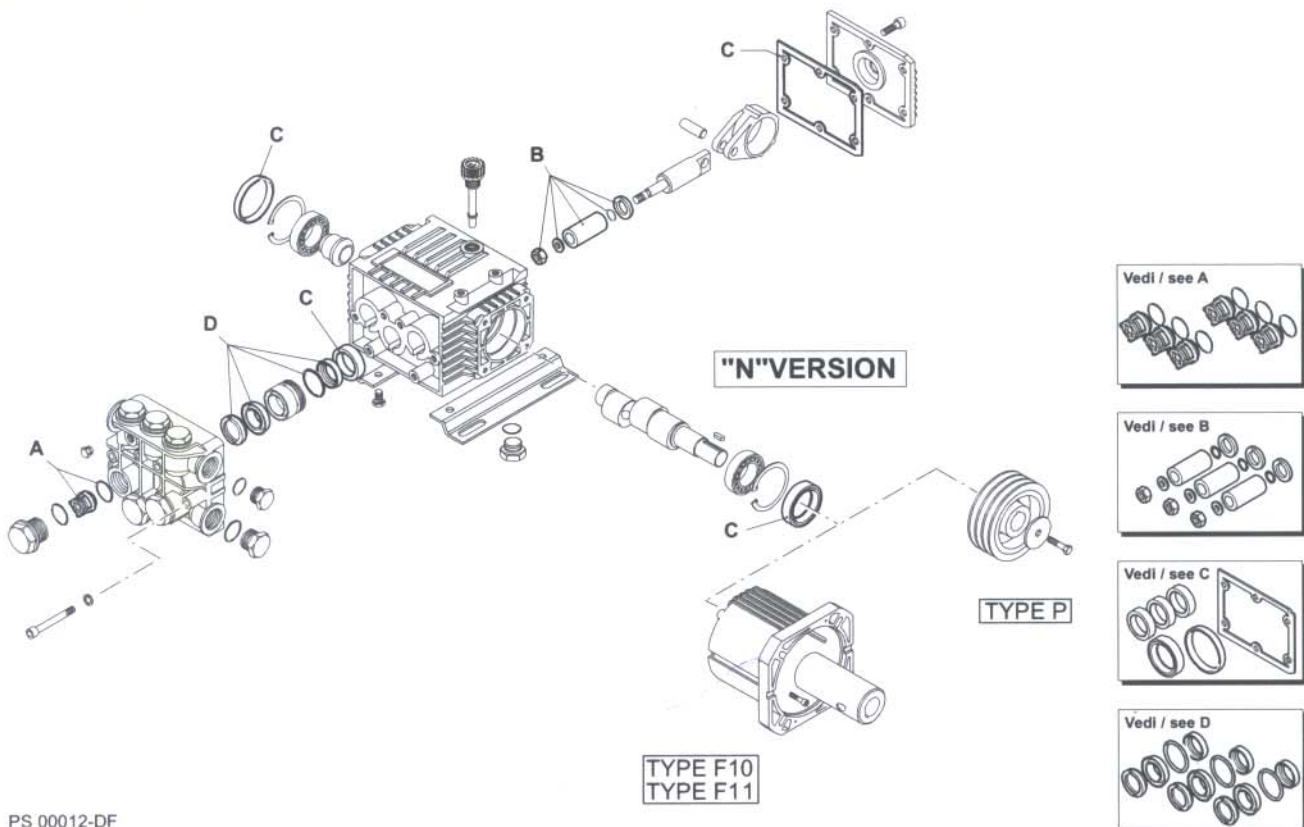
# XT

VERSION **N** 1450 RPM



PS 00011-DF

## KIT RICAMBI / PART KITS



PS 00012-DF

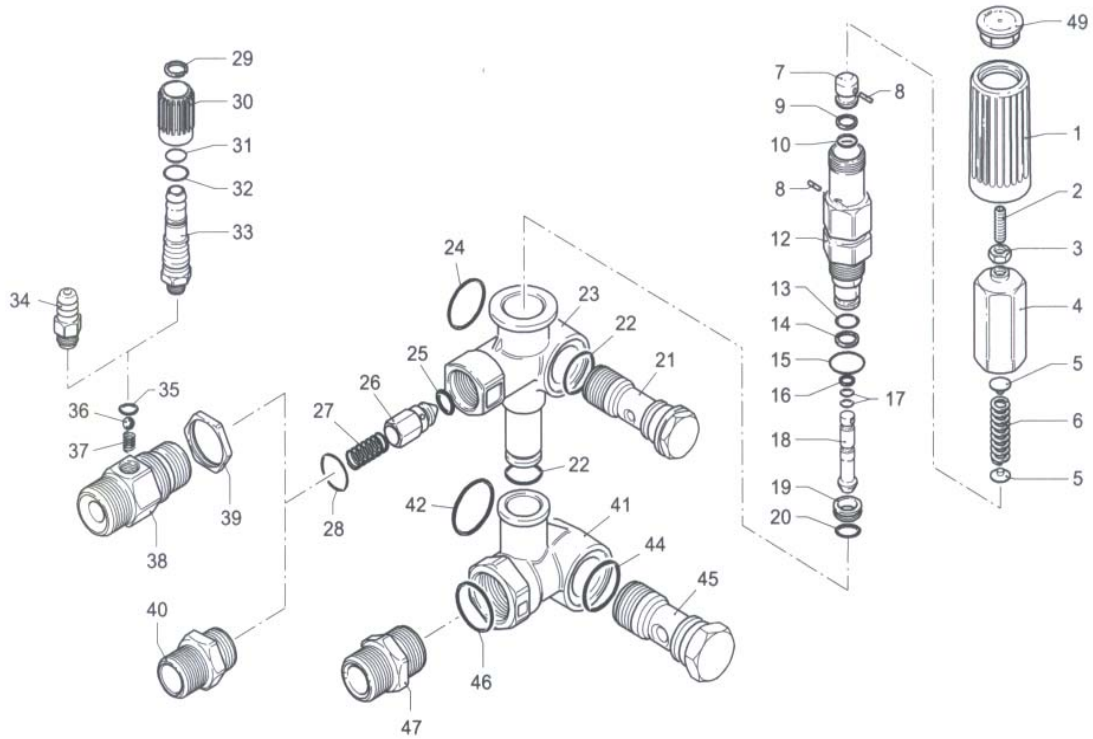
## XT 1450

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		

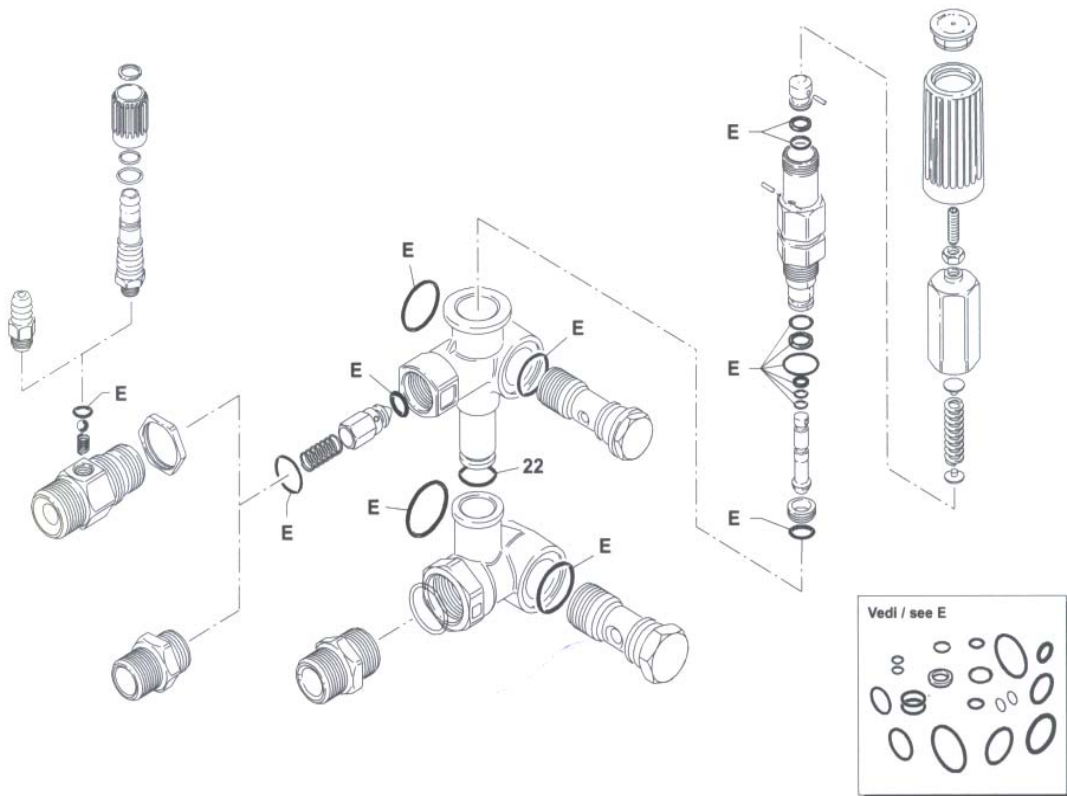
ARKIT1874	
Water Seals	
11	3
12	3
14	3
15	3

# 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	Pos.	Cod. Part n°	Denominazione	Description	Q.tà Q.ty	Note Vedi / See
1	1981780	Manopola	Handle	1		40	1540180	Niples 3/8" G	Adaptor 3/8" G	1	●
2	1540560	Grano M6x20	Grub	1		41	1540500	Niples 3/8" NPT	Adaptor 3/8" NPT	1	●
3	1980300	Dado M6	Nut	1			1540280	Corpo by-pass	By-pass housing	1	3/8" G
4	1980390	Inserito manopola	Knob insert	1			1540480	Corpo by-pass	By-pass housing	1	3/8" NPT
5	1980220	Piattello molla	Spring plate	2		42	1540630	OR Ø 23,47x2,62	O-Ring	1	
6	1271070	Molla	Spring	1		44	880270	OR Ø 17,17x1,78	O-Ring	1	
7	1080041	Pistone superiore	Upper piston	1		45	1540260	Vite 1/2" G	Thread screw	1	
8	1080070	Spina	Pin	2		46	480440	OR Ø 17,13x2,62	O-Ring	1	Optional
9	1080401	Anello antiest.	Back-up ring	1		47	1540050	Raccordo	Fitting	1	Optional
10	1080250	OR Ø 7,66x1,78	O-Ring	1		49	1981770	Tappo manopola	Knob plug	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	■▲						
	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 ■▲						
38	1540300	Controdado	Nut	1	■▲						

## KIT RICAMBI PART KITS

## LEGENDA :

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				

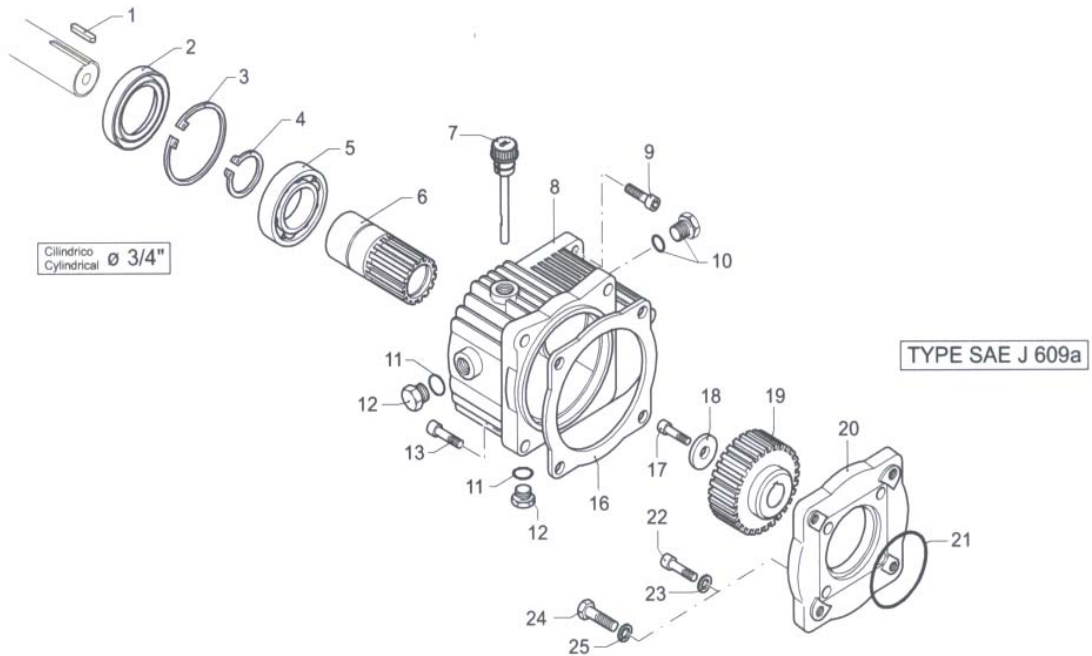
● Per / For  
MINIMATIC 4/B

■ Per / For  
MINIMATIC 4/B+ID

▲ Per / For  
MINIMATIC 4/B+IDR

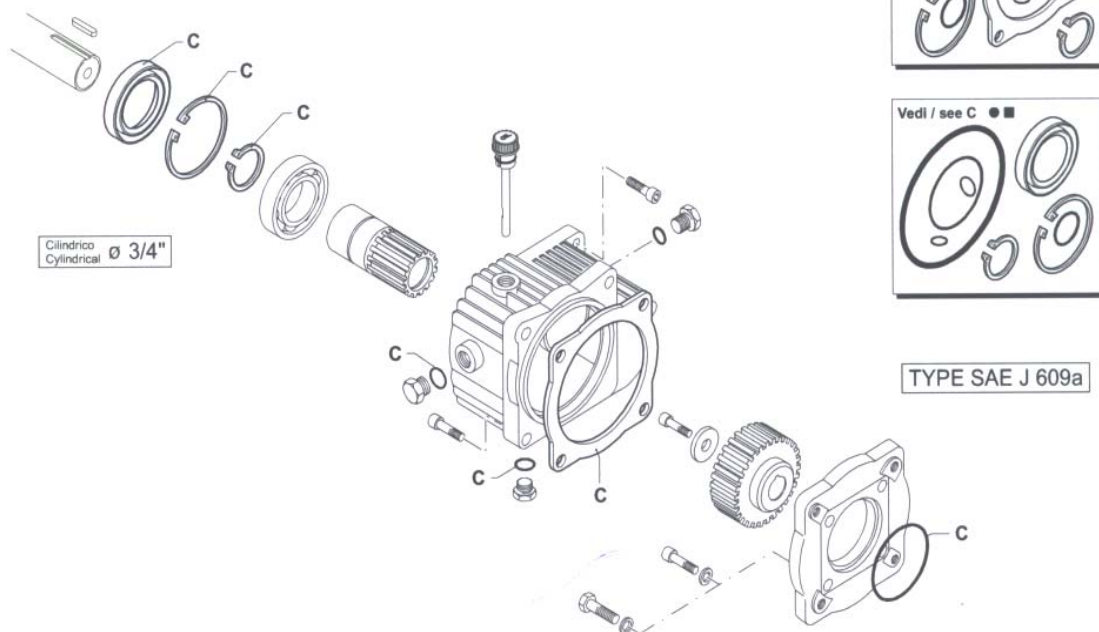
pos.	Q.ty	pos.	Q.ty	pos.	Q.ty	pos.	Q.ty

# 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	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	● ■						

## KIT RICAMBI PART KITS

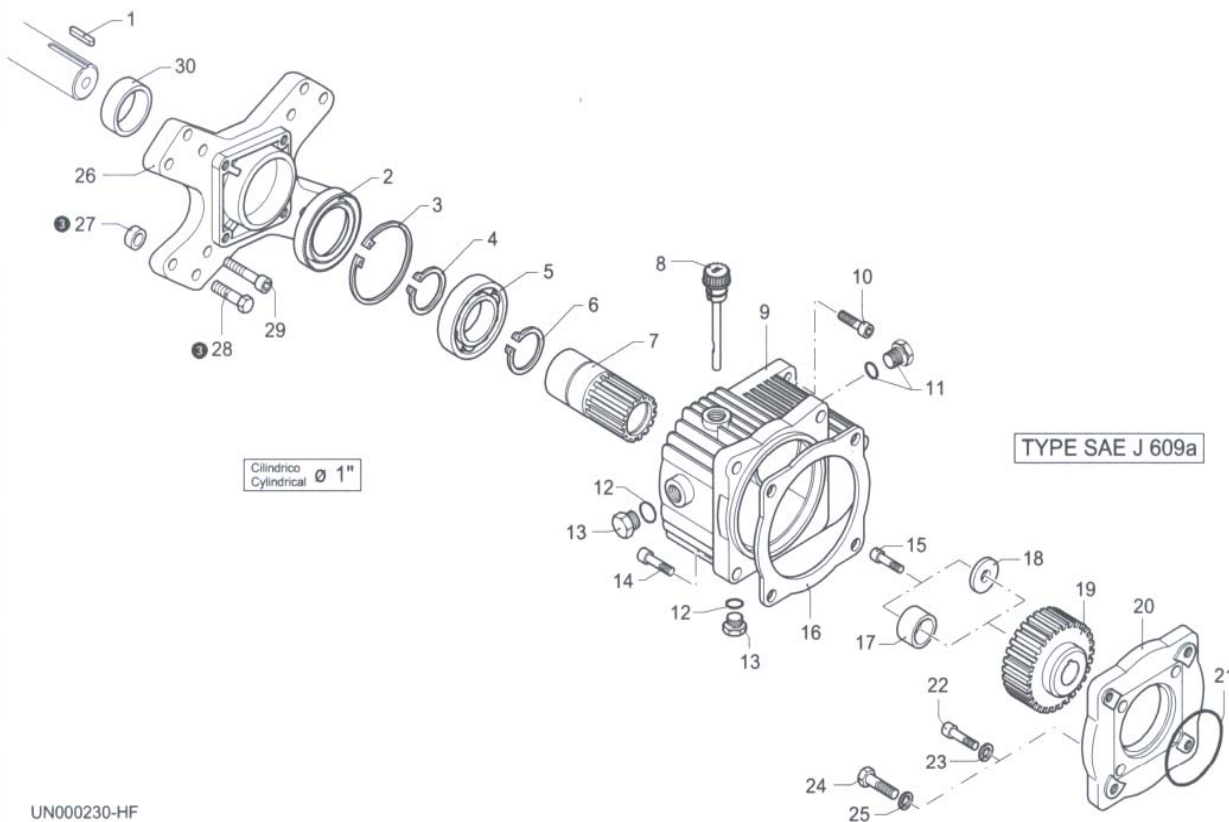
## LEGENDA :

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				

○ 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
--	--	--

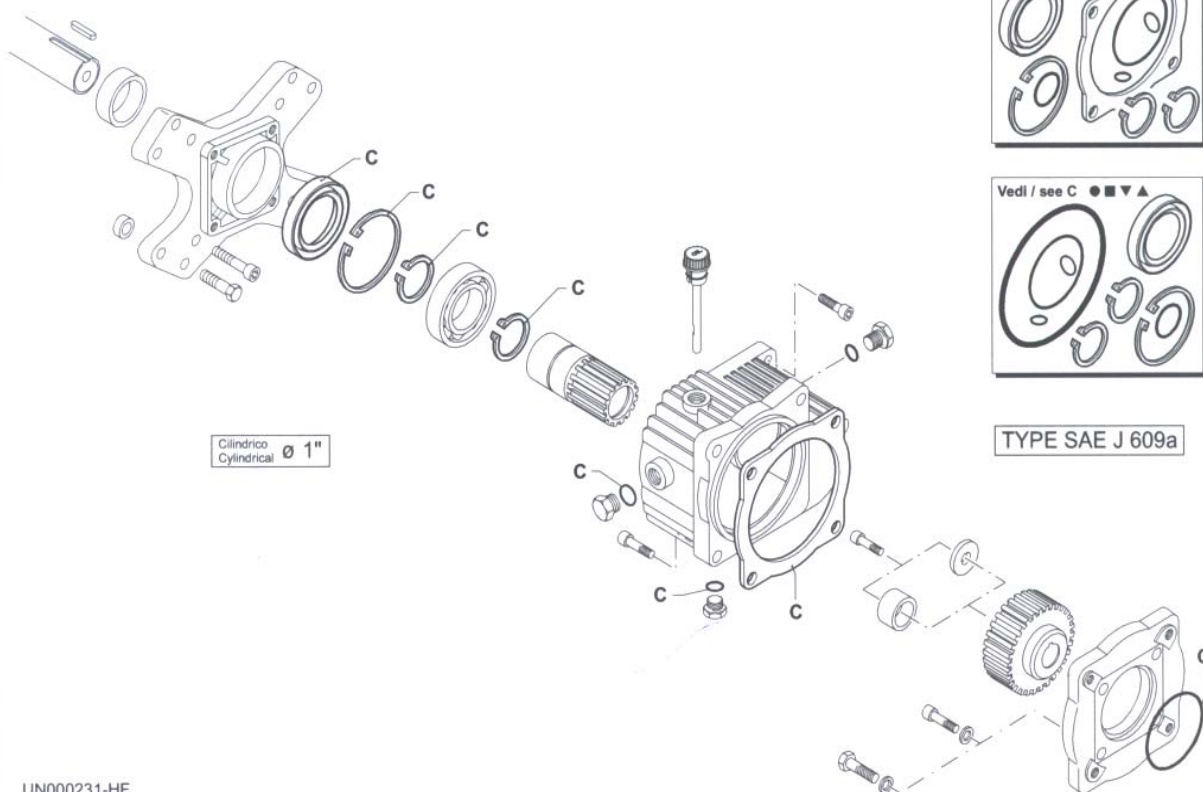
pos.	Q.ty	pos.	Q.ty	pos.	Q.ty	pos.	Q.ty

# 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	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	③						
28	961900	Vite TE 3/8"	Screw	4	③						
29	651000	Vite TCEI 5/16"	Screw	4							
30	1382540	Distanziale	Spacer	1	● ■ ▼ ▲						

③ 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. 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

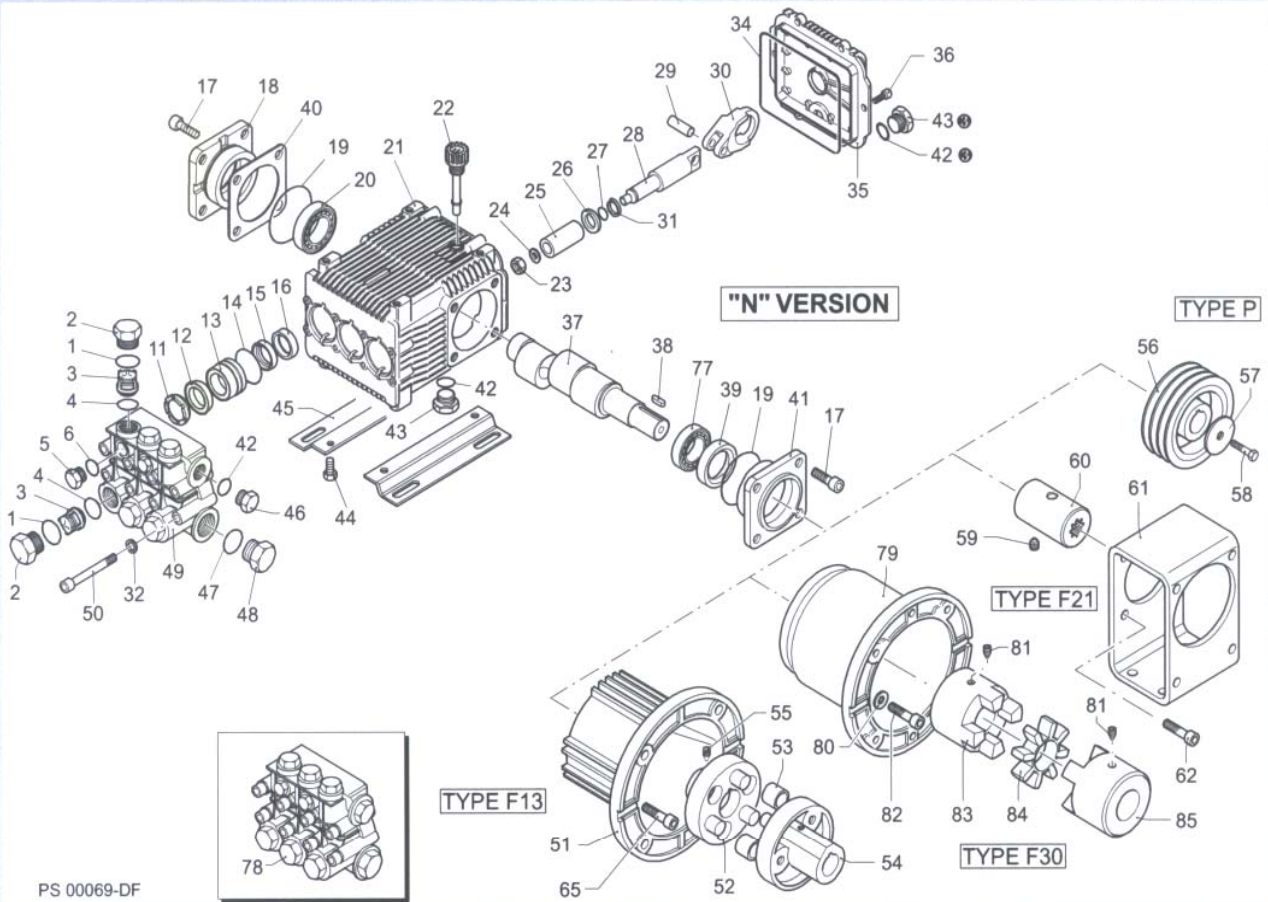
○ Per / For  
COD. 1693  
1:2,24  
XT/XTA series

# RK

VERSION

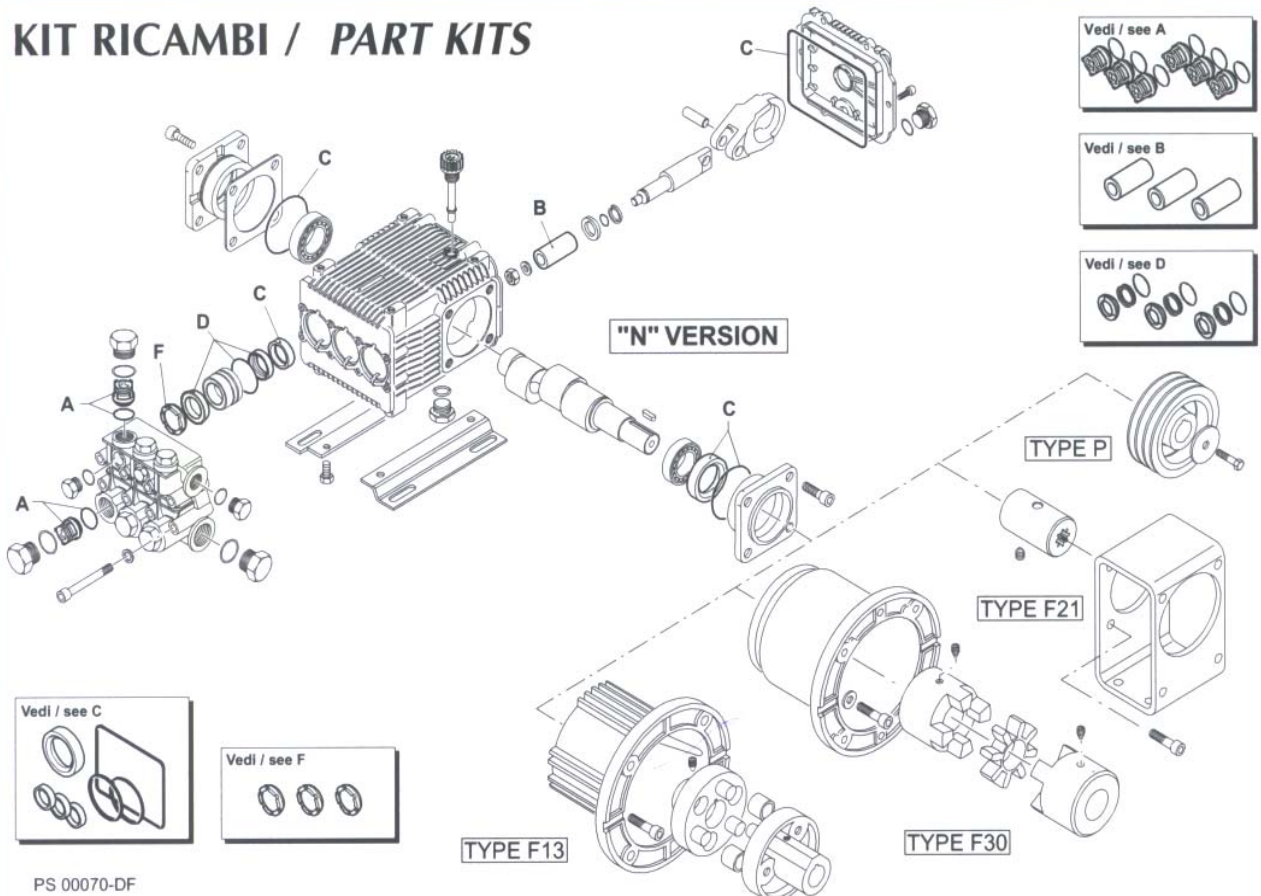
# N 1450

RPM



PS 00069-DF

## KIT RICAMBI / PART KITS



PS 00070-DF

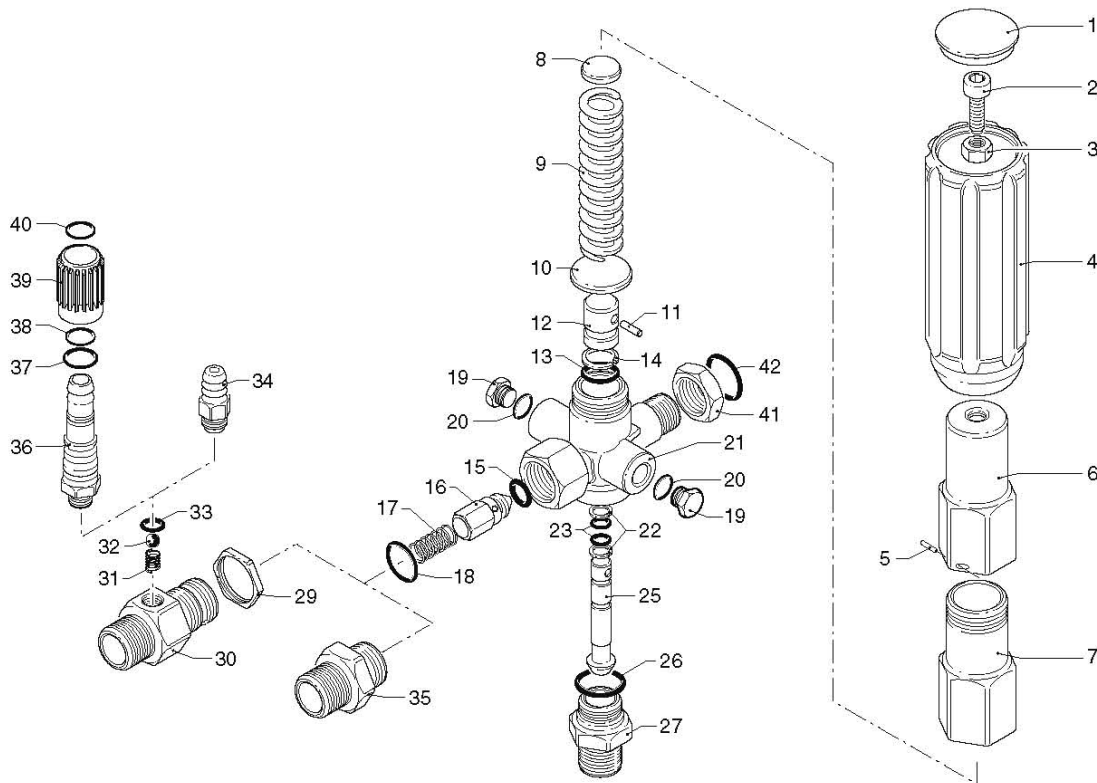
**RK MODEL: 15.20H**

Pos	Part No	Description	Qty	Pos	Part No	Description	Qty
1	AR960160	O Ring	6	36	AR1343510	Screw	6
2	AR960090	Plug	6	40	AR1380120	0.10mm shim	1+3
2	AR1380740	Plug	6	40	AR1380130	0.20mm shim	1+3
3	AR1389051	Complete Valve	6	40	AR1380530	0.25mm shim	1+3
4	AR880830	O Ring	6	40	AR1382810	0.05mm shim	1+3
5	AR880581	Plug	2	42	AR740290	O ring	3
6	AR820510	O Ring	2	43	AR1980740	3/8 G plug	2
11	AR960110	Support Ring	3	44	AR1260470	Screw	4
12	AR880320	Gasket	3	45	AR1380141	Base	2
13	AR1380090	Piston Guide	3	46	AR1980740	3/8 G Plug	1
14	AR961240	O Ring	3	46	AR1981180	3/8 G Plug	1
15	AR880330	Gasket	3	47	AR180101	O Ring	1
16	AR138130	Seal	3	48	AR820361	Plug	1
17	AR850370	Screw	8	48	AR960870	Plug	1
18	AR1380050	Closed Bearing sup	1	49	AR1381070	Pump head	1
19	AR640030	O Ring	1	50	AR820150	Screw	8
20	AR2280240	Bearing	1	60	AR1380320	Bearing	1
21	AR1382770	Pump Housing	1	61	AR621170	Seal	1
22	AR880130	Oil Cap	1	62	AR1380220	O Ring	1
23	AR962010	Nut	3	63	AR1380210	Shaft cover	1
24	AR962000	Washer	3	66	AR2280180	Hollow Shaft 28mm	1
24	AR1380940	Ceramic Piston	3	66	AR2280170	Hollow Shaft 028mm	1
26	AR1380950	Spacer	3	66	AR2280160	Hollow Shaft 028mm	1
27	AR600180	O ring	3	66	AR2280150	Hollow Shaft 028mm	1
28	AR1380920	Guiding Piston	3	67	AR1380370	El Motor flange	1
29	AR1380060	Piston Pin	3	76	AR620610	Screw	4
30	AR1383050	Aluminium con-rod	3	78	AR1389272	Pump head Ass	1
31	AR1080401	Ring	3	86	AR1260250	Oil Indicator	1
32	AR1381850	Washer	8	87	AR1260430	Snap Ring	1
34	AR1780510	O Ring	1	88	AR1780690	Disc	1
35	AR1789010	Complete cover	1	89	AR1140450	O Ring	1

Valve Kit		Piston Kit		Oil Seal Kit	
ARKIT2864		ARKIT2757		ARKIT1856	
Pos	Qty	Pos	Qty	Pos	Qty
3	6	25	3	16	3
4	6			19	1
				34	1
				61	1
				62	1

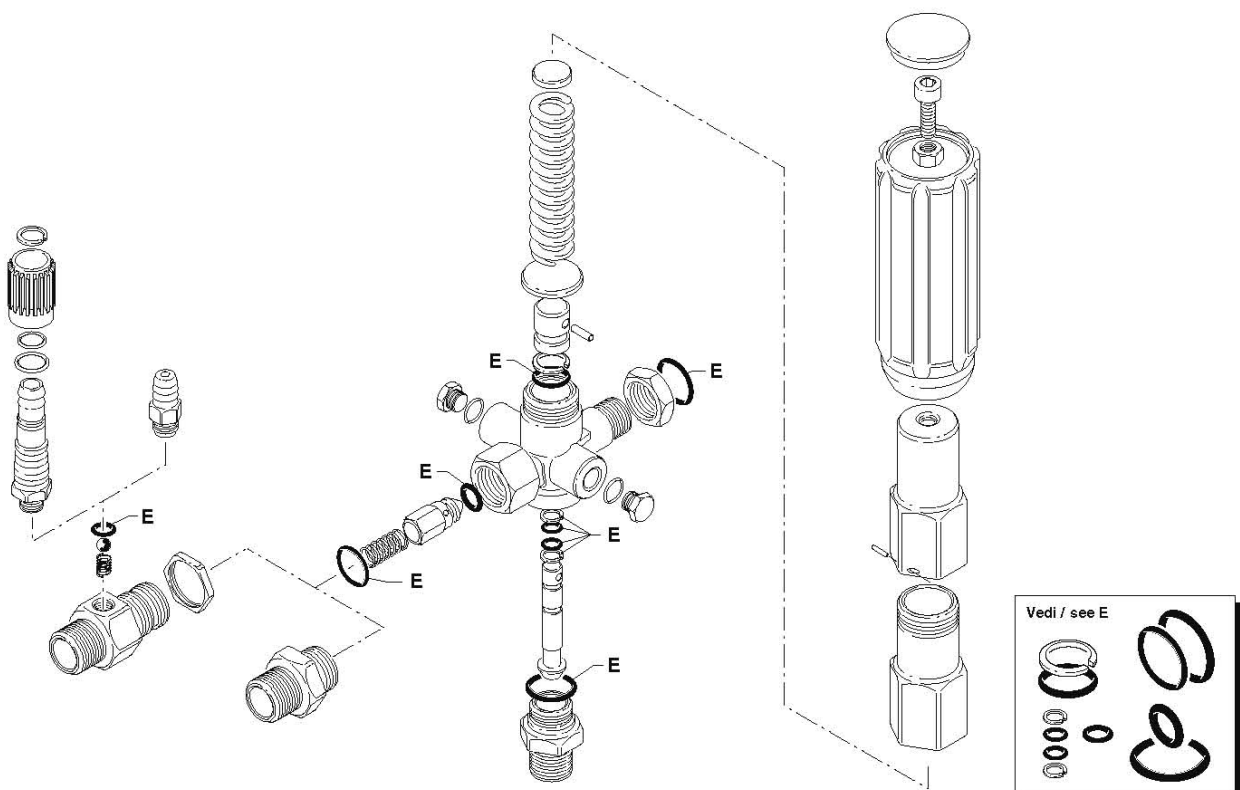
Water Seal		Support Ring	
ARKIT1857		ARKIT1829	
Pos	Qty	Pos	Qty
12	3	11	3
14	3		
15	3		

# GYMATIC 3/A



UN002259-IA

## KIT RICAMBI / PART KITS



UN002260-IA

### GYMATIC 3/A

Pos	Part Number	Description
1	AR1560580	Knob plug
2	AR180030	Screw
3	AR1660210	Nut
4	AR1560400	Handle
5	AR1080070	Pin
6	AR1560420	Adjusting screw
7	AR1560410	Spring guide
8	AR1560440	Plate
9	AR1560350	Spring
10	AR1080610	Spring plate
11	AR1080660	Pin
12	AR1080540	Upper piston
16	AR1560100	Jet
17	AR1560140	Spring
19	AR880581	Plug
20	AR820510	O ring
21	AR1560020	Valve housing
25	AR1560320	Lower piston
27	AR1080831	By pass adjuster
29	AR1560510	Nut
30	AR1560500	Fitting <sup>3</sup> / <sub>8</sub>
30	AR1560530	Fitting <sup>3</sup> / <sub>8</sub>
30	AR1560540	Fitting <sup>3</sup> / <sub>8</sub>
31	AR1560520	Spring
32	AR1250280	Ball
34	AR1560490	Hose tail
35	AR1560110	Adaptor <sup>3</sup> / <sub>8</sub>
35	AR1560111	Adaptor <sup>3</sup> / <sub>8</sub>
36	AR1560650	Hose tail
37	AR800560	O ring
38	AR480560	O ring
39	AR1560670	Detergent reg knob
40	AR1560660	Ring
41	AR1080390	Nut
13,14,15,18,22,23,26,33, 42	ARKIT2610	O Rings