



# Operations Manual

## Demon Battery E Range

### **Hurricane E** **Tornado E Box** **Tornado E Mini-Bowser** **Tornado E Towed Bowser** **Tornado E Skid Mount**

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

<b>Machine Type</b>	
<b>Serial Number</b>	
<b>Working Pressure</b>	
<b>Date of Supply</b>	

Rev 1

# Manual Contents

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## Technical Specifications

### Hurricane E

Motor	24 Volt DC
Pump	XT 11/14
Pressure	1200 PSI
Flow	11 lpm
Nozzle	2504
Battery	24 V Lithium
Unloader	Minimatic 4/B
Pump Oil	10W/40

### Tornado E Box

Motor	24 Volt DC
Pump	XT 11/14
Pressure	1200 PSI
Flow	15 lpm
Nozzle	2504
Battery	24V 280 Amp lithium
Unloader	Minimatic 4/B
Pump Oil	10W/40

### Tornado E Mini-Bowser

Motor	24 Volt DC
Pump	XT 11/14
Pressure	1200 PSI
Flow	13 lpm
Nozzle	2504
Battery	24 V lithium
Unloader	ARGM 3A ID
Pump Oil	10W/40

### Tornado E Towed Bowser

Motor	24 Volt DC
Pump	XT 11/14
Pressure	1200 PSI
Flow	13 lpm
Nozzle	2504
Battery	24 V 280 Amp lithium
Unloader	ARGM 3A ID
Pump Oil	10W/40

### Tornado E Skid Mounted

Motor	24 Volt DC
Pump	XT 11/14
Pressure	1200 PSI
Flow	13 lpm
Nozzle	2504
Battery	24 V 280 Amp lithium
Unloader	ARGM 3A ID
Pump Oil	10W/40

## Kits for the Battery E Range

Machine	Hurricane E	Electron Bowser	Electron Mini-Bowser
Valve Kit	1864	1864	1864
Seal Kit	1874	1874	1874
Piston Kit	2629	2629	2629
Oil Kit	1872	1872	1872

# Preparation

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## Water Supply:

- A Ensure there is an adequate water supply either from the mains or mini bowser tank.
- 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: 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 Fully charge battery.
- B Check battery isolator is showing green.
- C To start DC Motor turn key and pull switch up.
- D Adjust pressure regulator as required to obtain working pressure if required.
- E Direct lance on to surface to be cleaned. Press the lance trigger.
- F NOTE: The high pressure water will cause the gun to "kick" make sure you have a firm grip of the gun and lance.
- G Leaving the pressure washer on by-pass for prolonged periods without operating the lance Will cause the water in the pump to heat up. This heat build up may damage the seals and Valves in the pump.
- H On completion of operation stop the DC motor.

- I Operate lance trigger
- J Release residual pressure in gun and lance by operating trigger.

## Charging

The E range is fitted with an indicator light which will glow green.

Batteries **MUST NOT** be fully discharged before re-charging to maximise life cycles of the batteries.

Failure to do this will mean the battery will be shut off by the battery management system.



## 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

## Fault Finder

FAULT	CAUSE	REMEDY
Machine stops suddenly Or will not start.	Flat Battery (Electron )	Re-charge
Sudden pressure loss.	Water supply failed. No chemical	Check water supply. Check chemical drum, close valve
Low pressure	HP nozzle worn or un- loader 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.
<b>IF IN DOUBT ASK—OUR ADVICE IS FREE AND CAN SAVE YOU MONEY</b>		

## 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 seat 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.**

# Minimum Service Schedules

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## **DAILY CHECK THE FOLLOWING**

- a. Oil level - top up as required.
- b. Battery percentage - 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.
- d. Clean water filter.
- e. Replace high pressure nozzle.

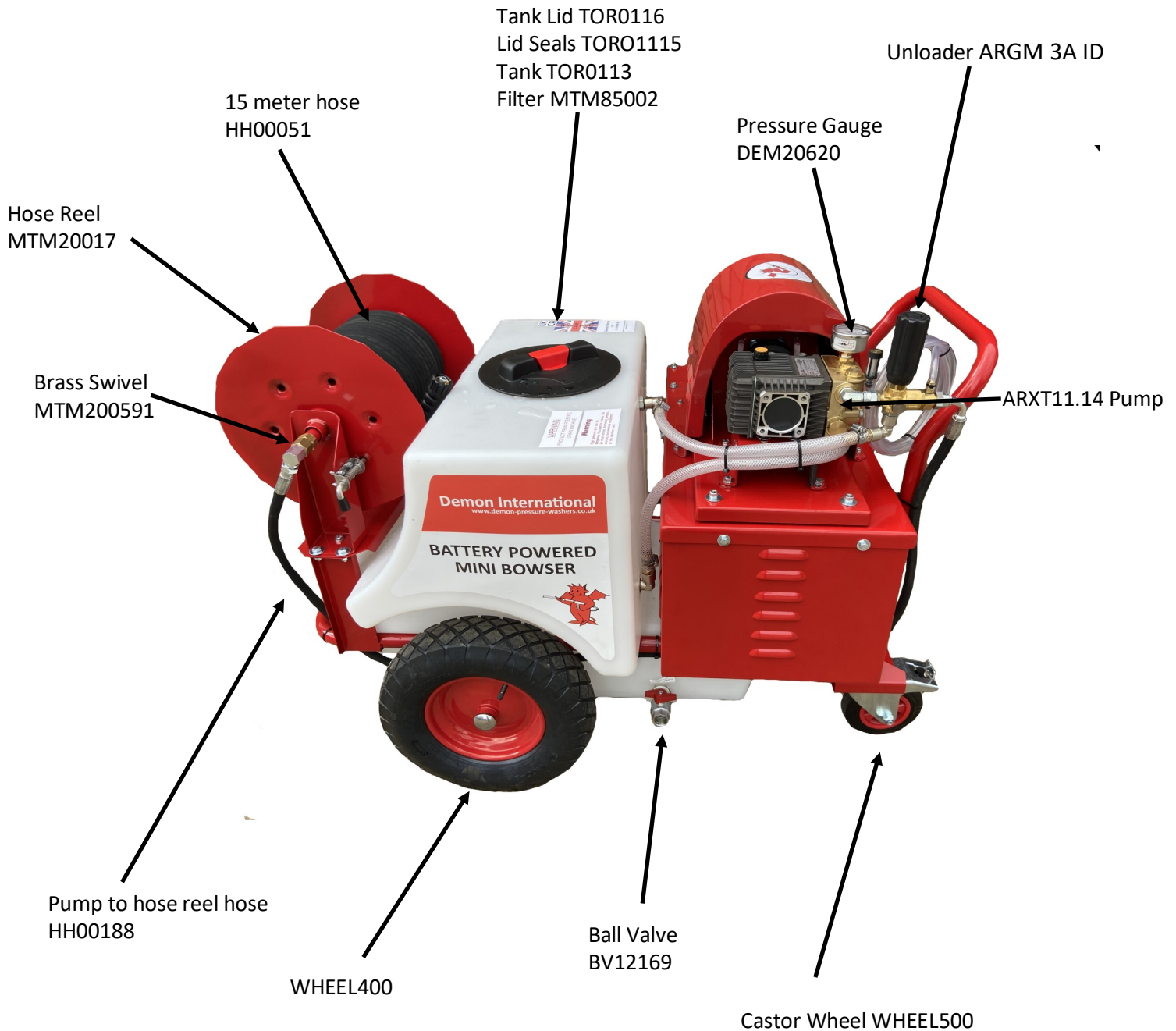
## **EVERY 1000 HOURS OR 12 MONTHS (WHICHEVER COMES FIRST)**

- 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.

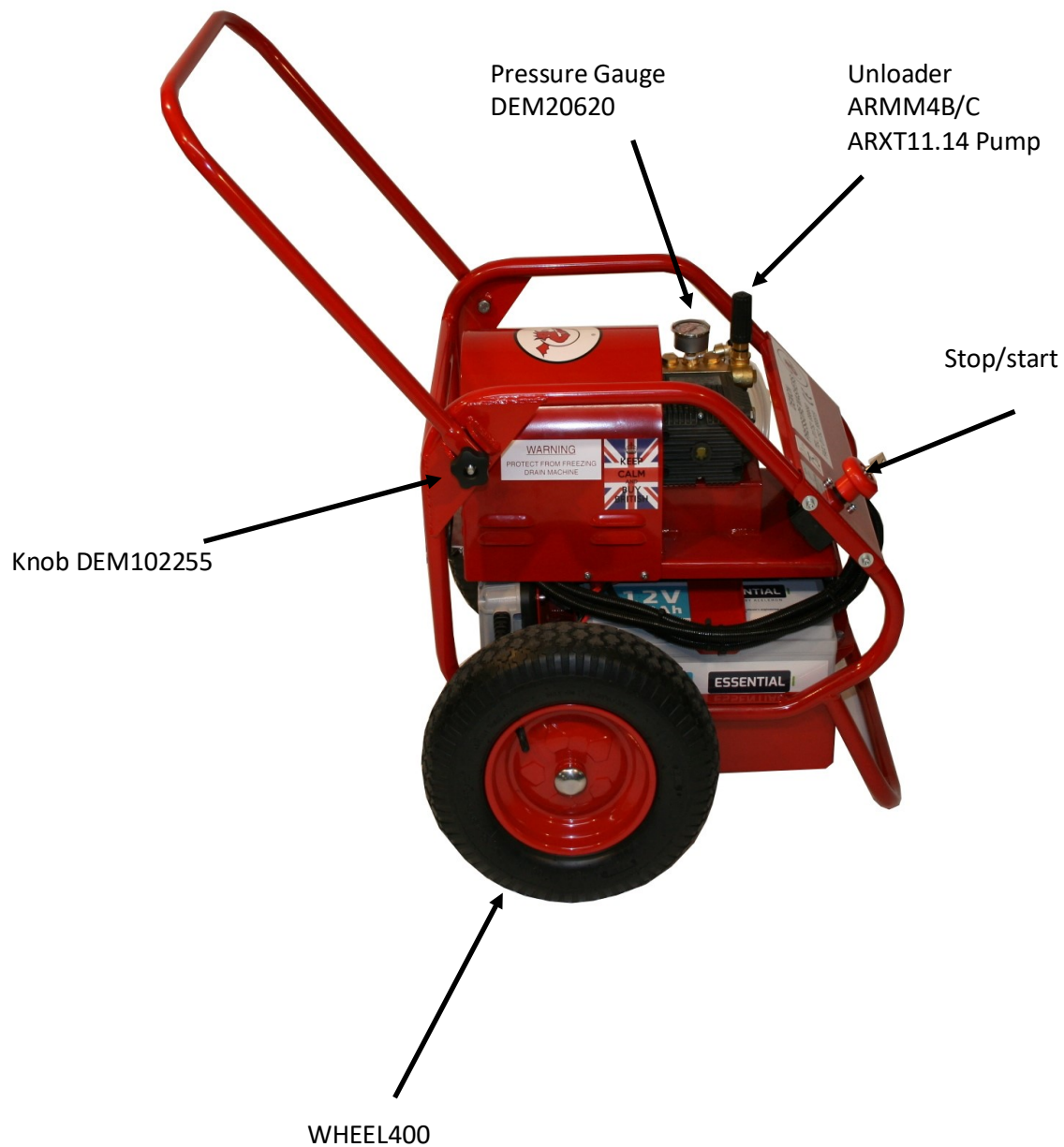


# Tornado Mini Bowser E General Arrangement

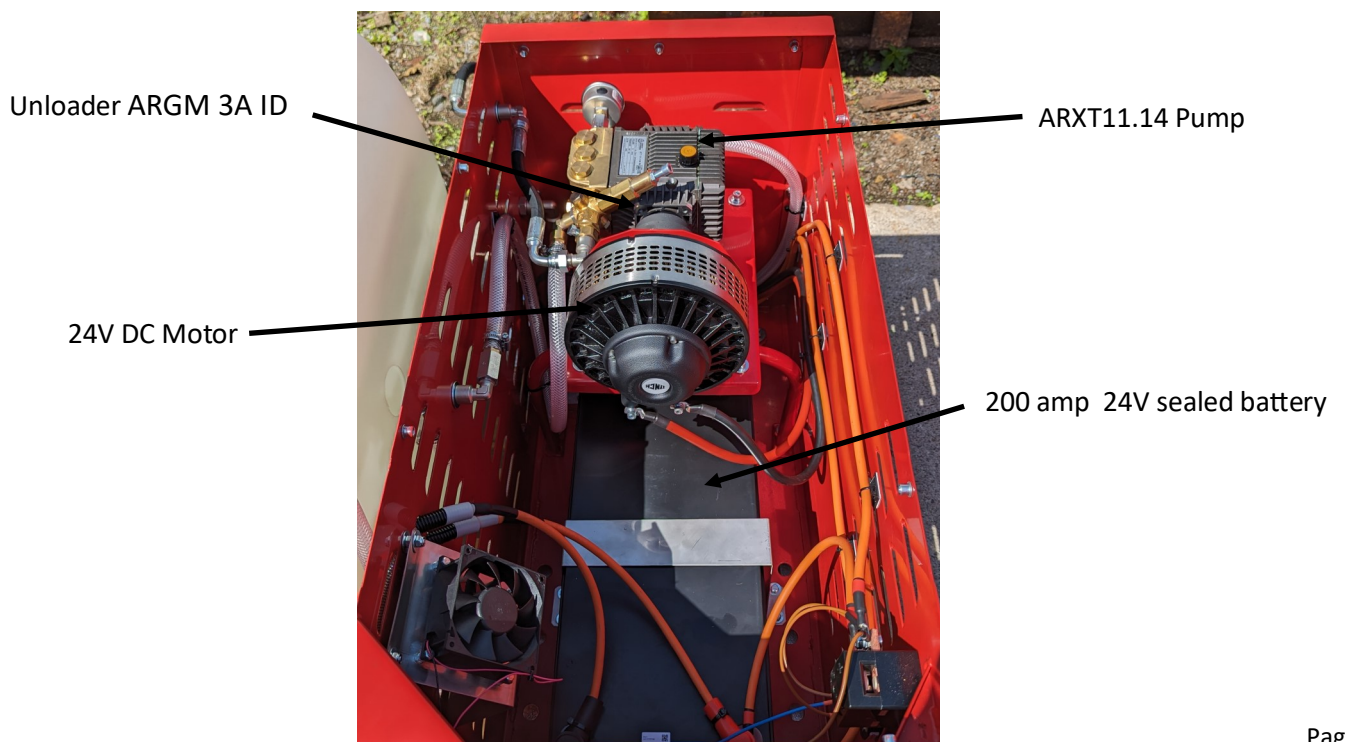
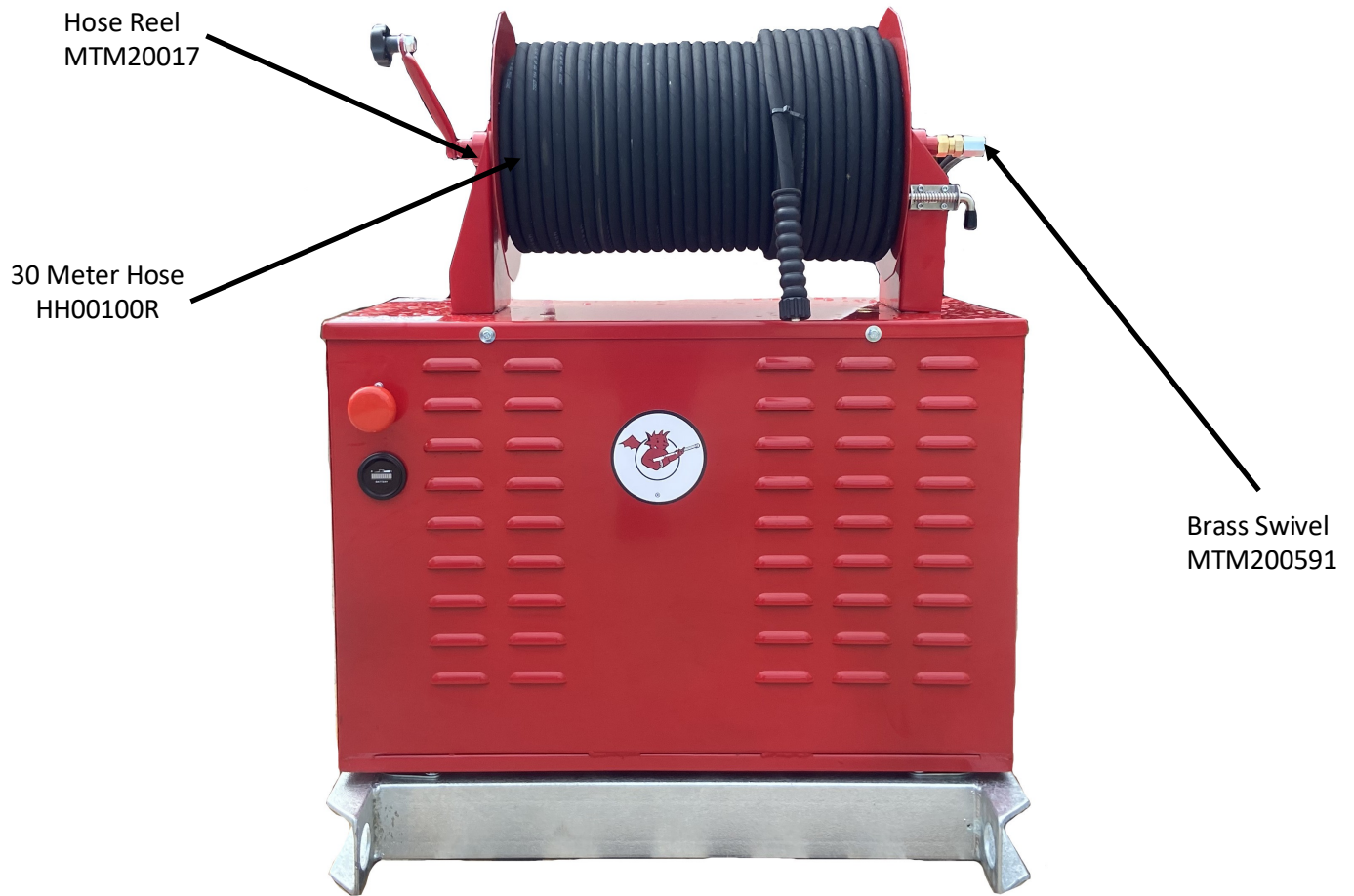


# Hurricane - E General Arrangement

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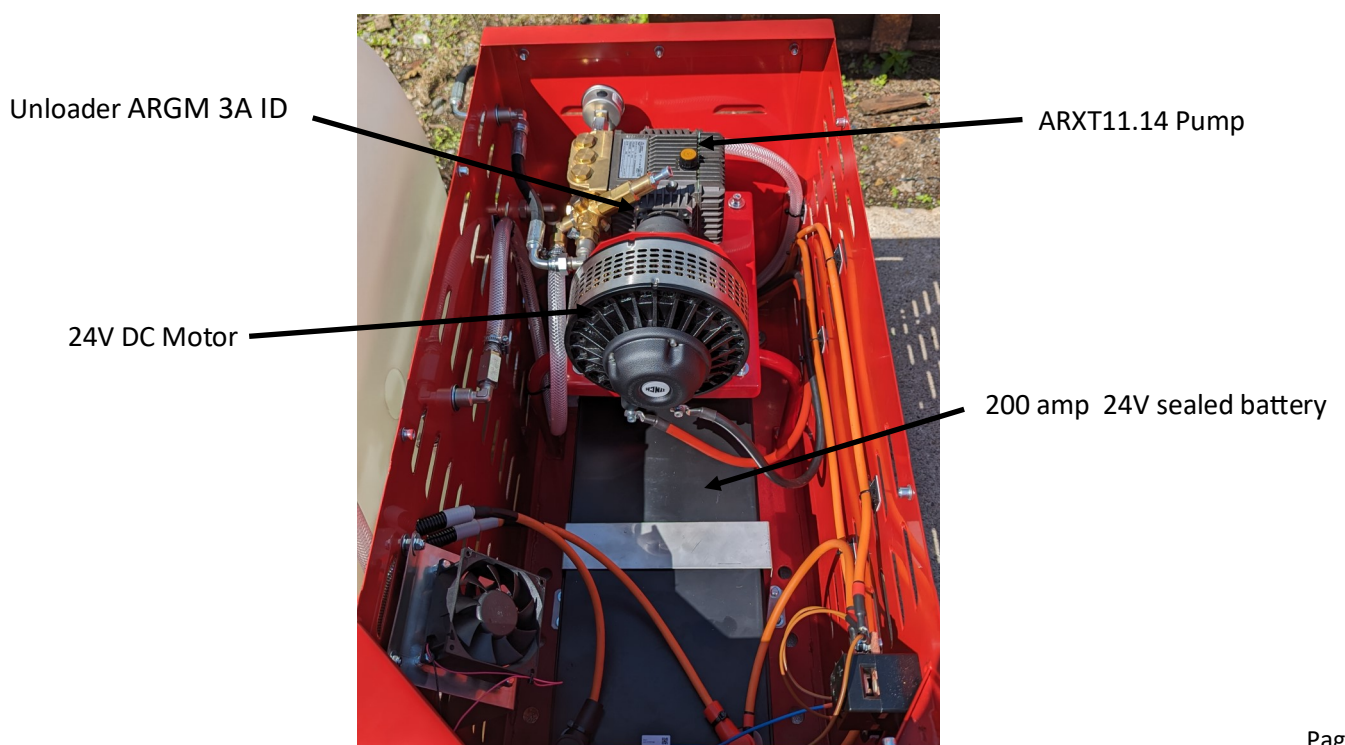
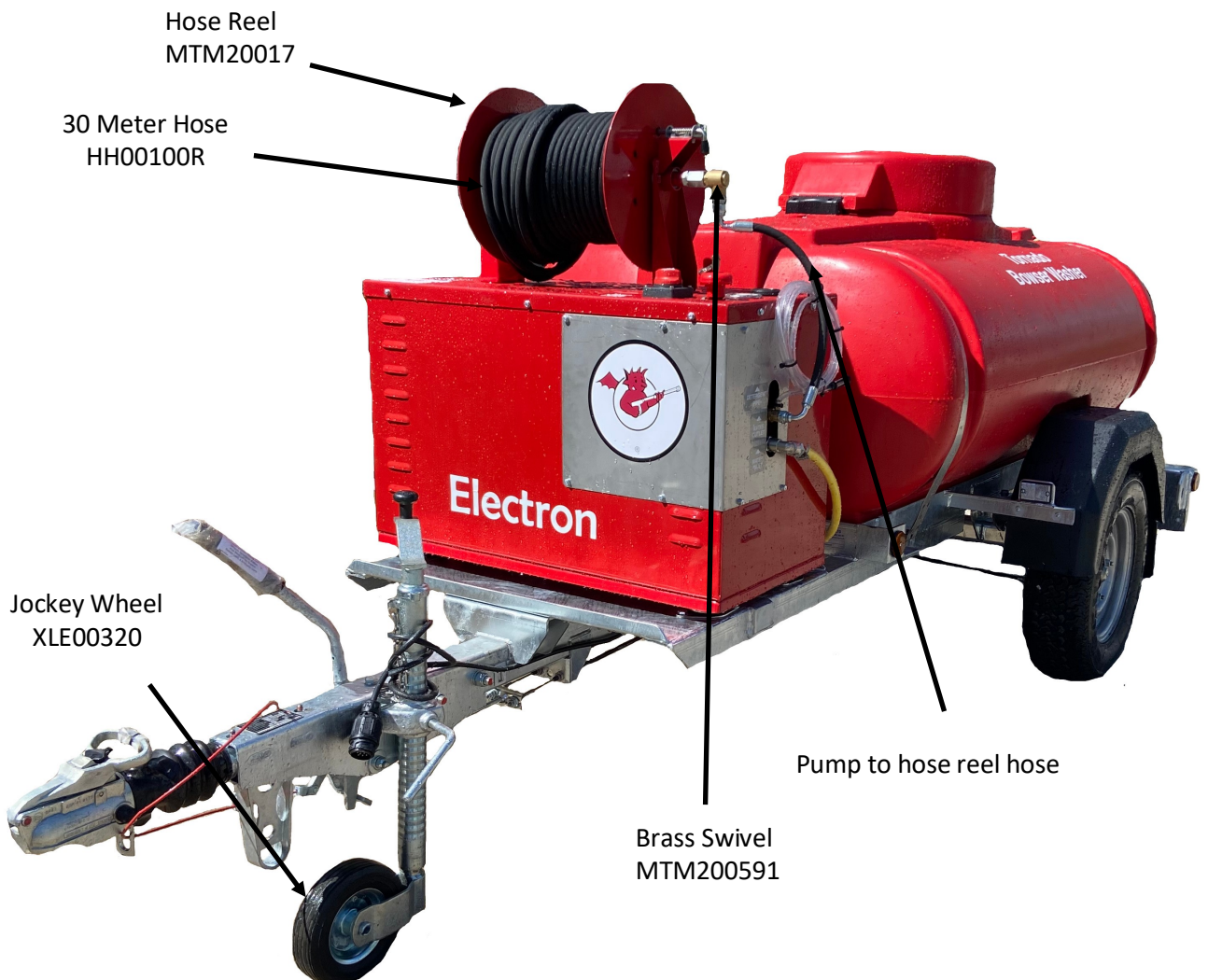


# Tornado E Battery General Arrangement

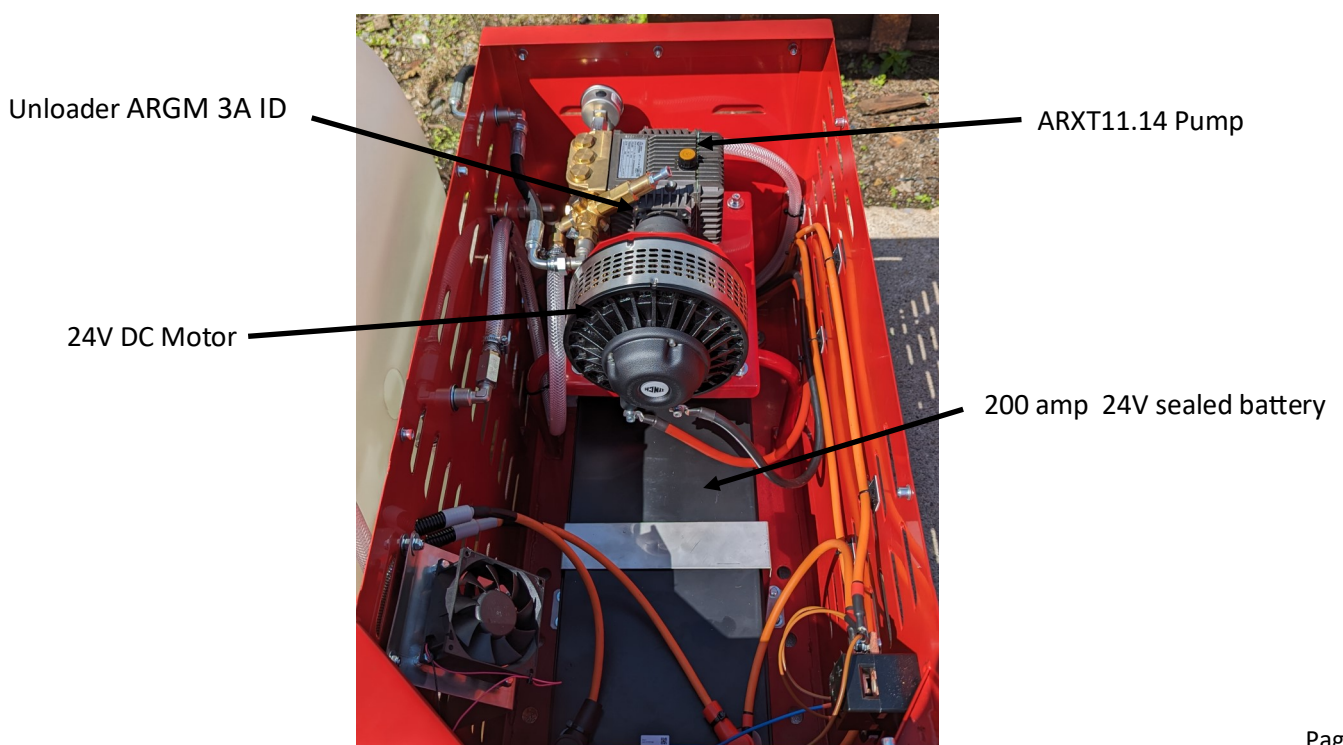
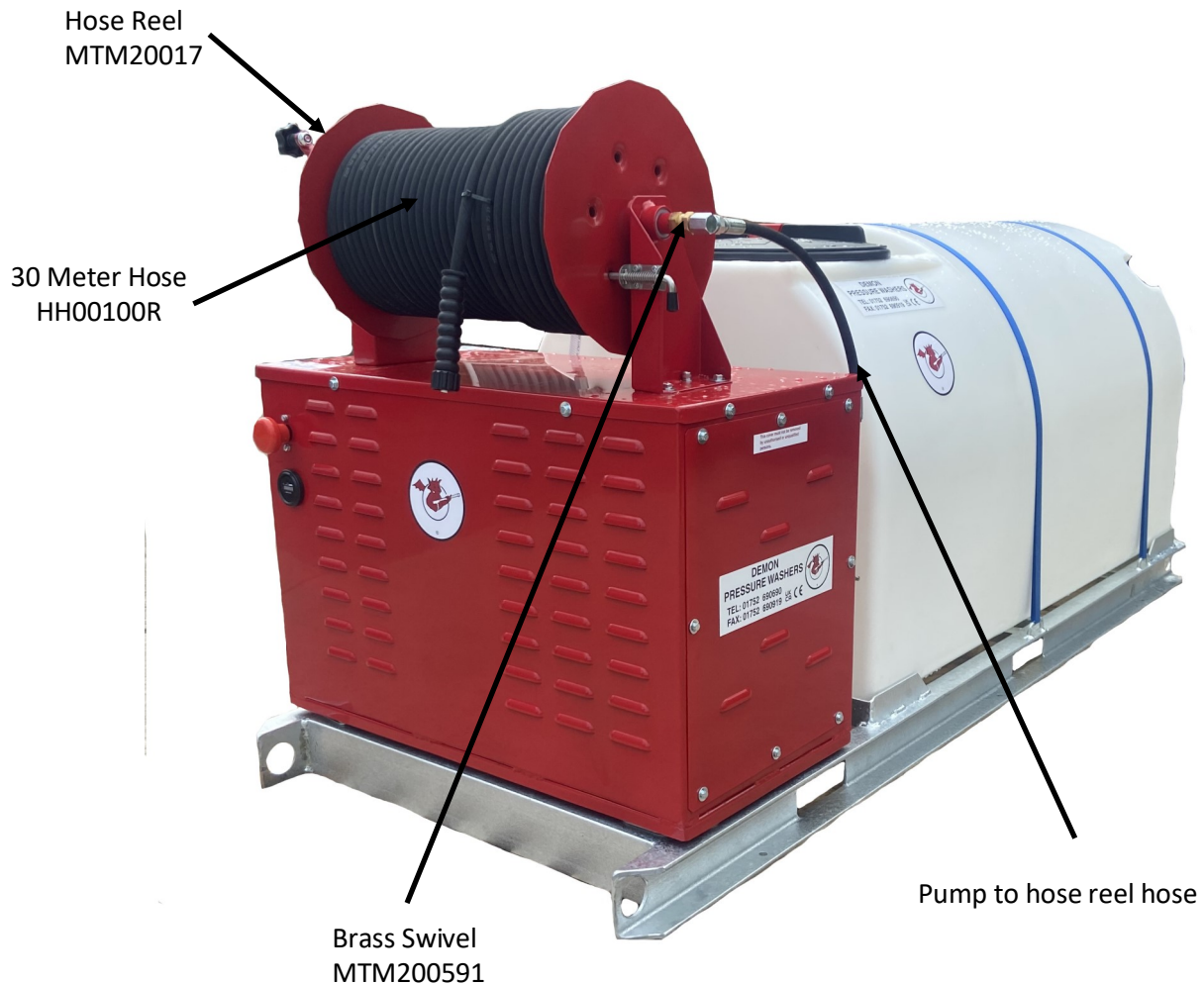




# E Bowser General Arrangement



## E Skid Mounted General Arrangement



## Charging

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When the machine requires charging please follow the instructions below.

1. Switch off the pressure washer.
2. Release the pressure in the lance.
3. Plug in the mains lead to 13 amp supply.
4. Charger should start automatically

# Warranty

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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.

The 3 Year Structural Warranty refers to all Demon fabricated structural parts, but this does exclude the Boiler coil.

# Warranty Procedure

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## 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.

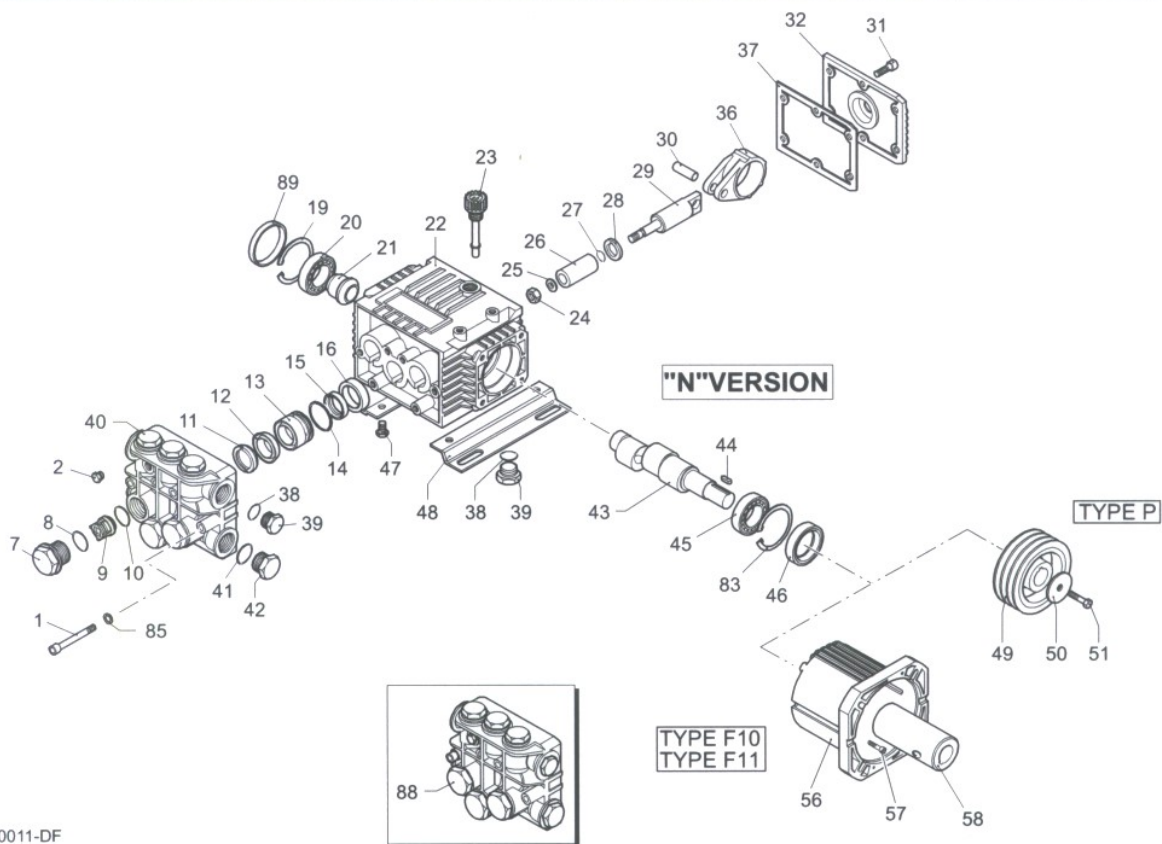
**Spare parts fitted to machines are guaranteed for 1 month only or the remainder of the warranty period whichever is longer.**



# 11.14 Pump for All Battery Machines Complete Pump: ARXT11.14

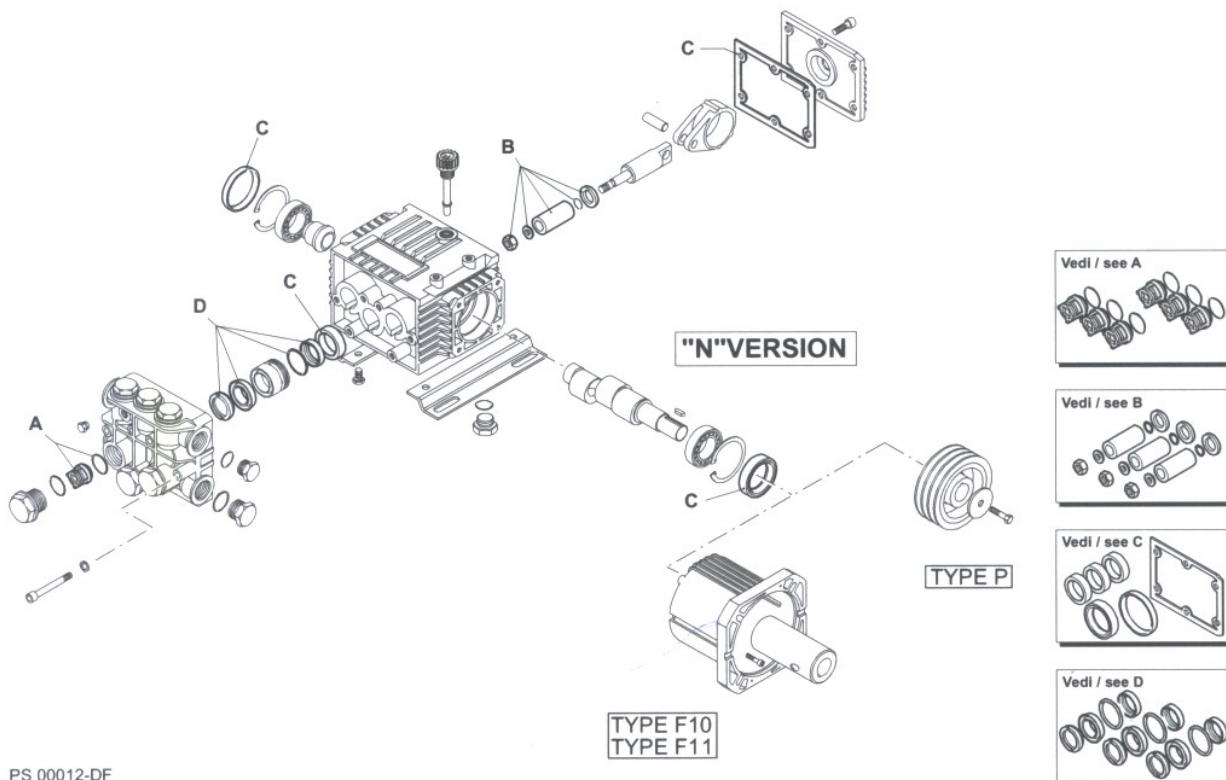
XT

VERSION **N** 1450 RPM



PS 00011-DF

## KIT RICAMBI / PART KITS



PS 00012-DF

# **11.14 Pump for All Battery Machines** **Complete Pump: ARXT11.14**

XT 1450							
Pos	Code No	Description	Qty	Pos	Code No	Description	Qty
1	AR680570	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		

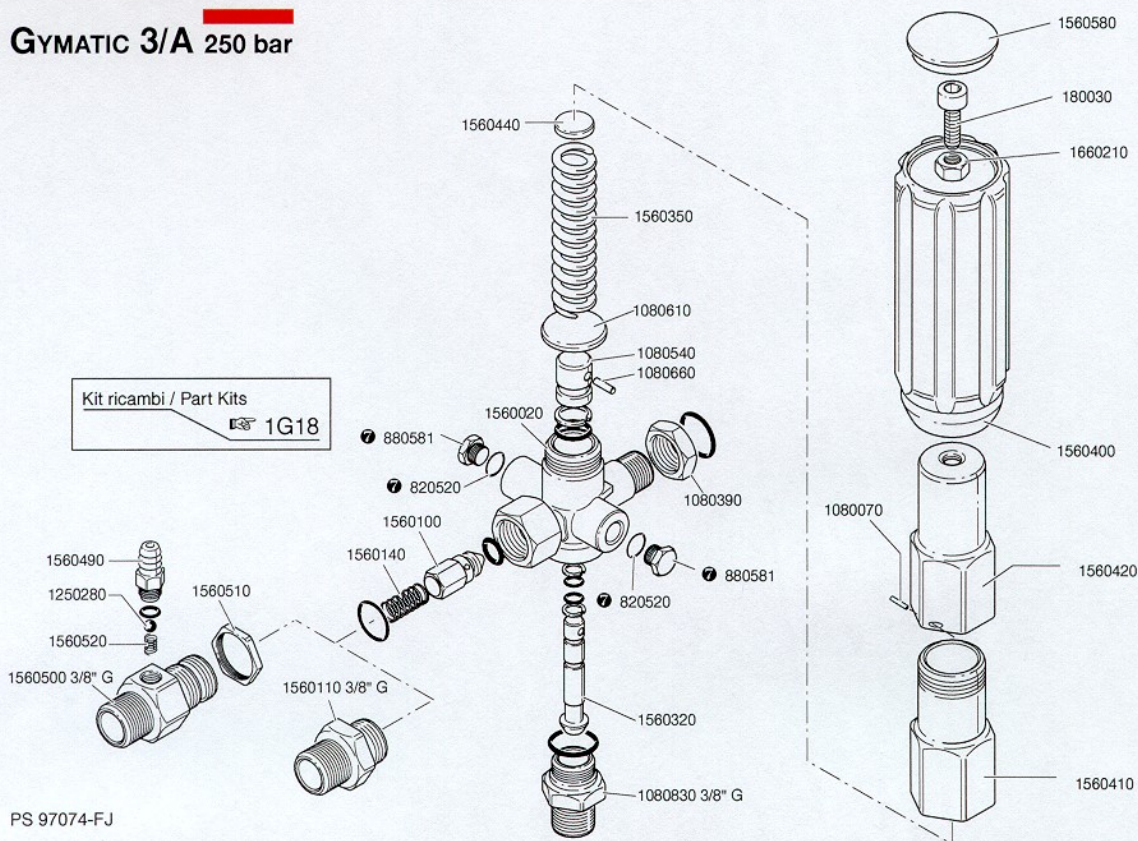
ARKIT1874	
Water Seals	
11	3
12	3
14	3
15	3



# Unloader for All Tornado Battery Machines Complete Unloader: ARGM3AID



## GYMATIC 3/A 250 bar

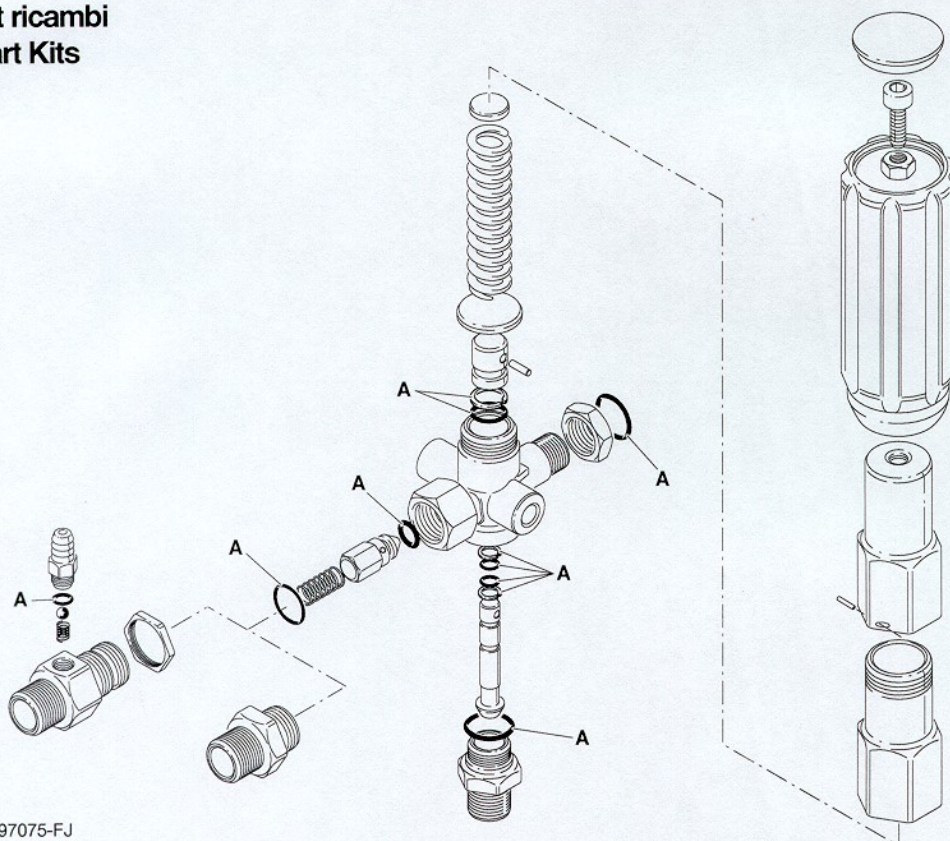


PS 97074-FJ

⚙ A richiesta / Optional

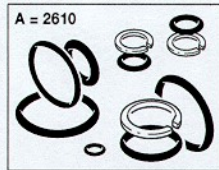
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## Kit ricambi Part Kits



PS 97075-FJ

A = 2610



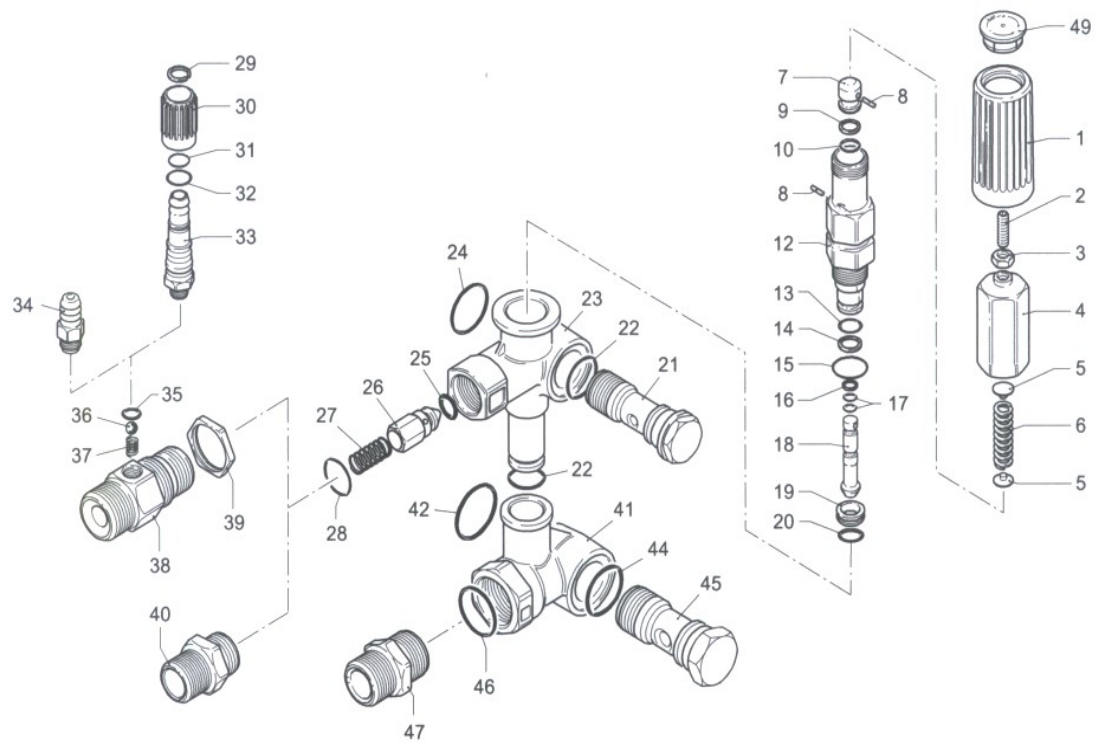
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**Unloader for All Tornado Battery Machines**  
**Complete Unloader: ARGM3AID**

<b>GYMATIC 3/A</b>		
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	ARKIT2611	O Rings

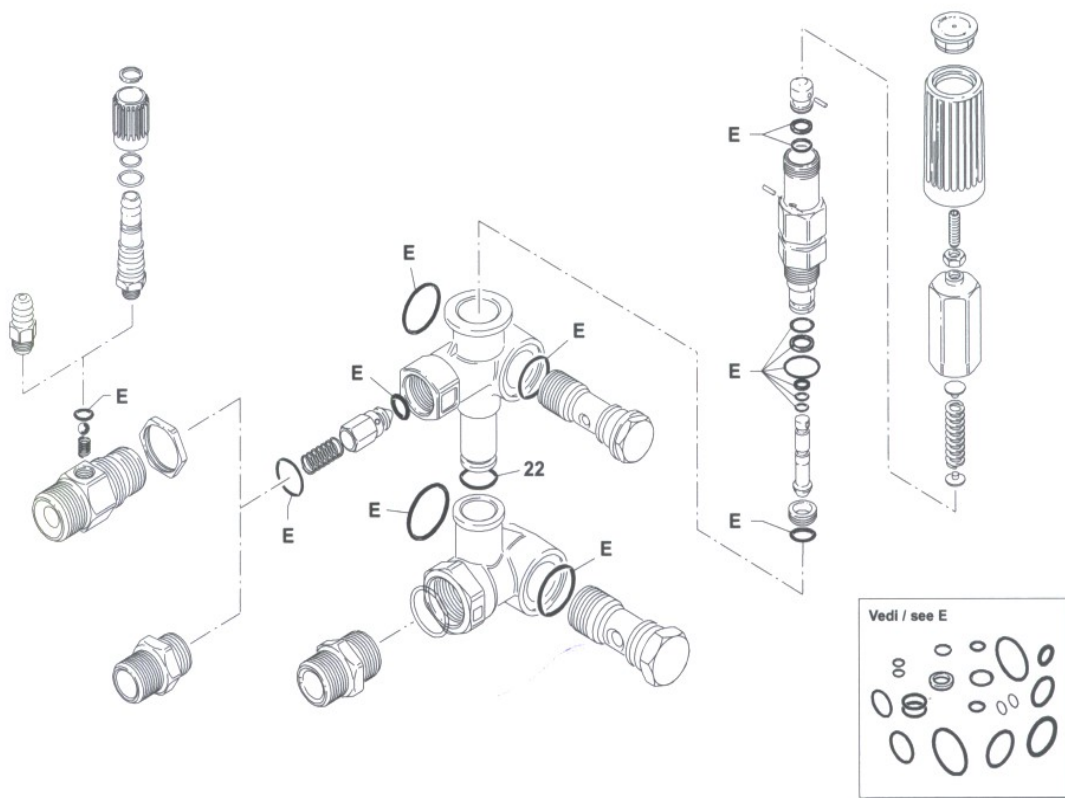


# MINIMATIC 4/B



UN000186-HF

## KIT RICAMBI / PART KITS



UN000187-HF

**Unloader for Hurricane Battery Machines  
Complete Unloader: ARMM4B/C**

# 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			1540500	Niples 3/8" NPT	Adaptor 3/8" NPT	1	●
3	1980300	Dado M6	Nut	1		41	1540280	Corpo by-pass	By-pass housing	1	3/8" G
4	1980390	Inserto 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	■▲						
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	■▲						

## 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

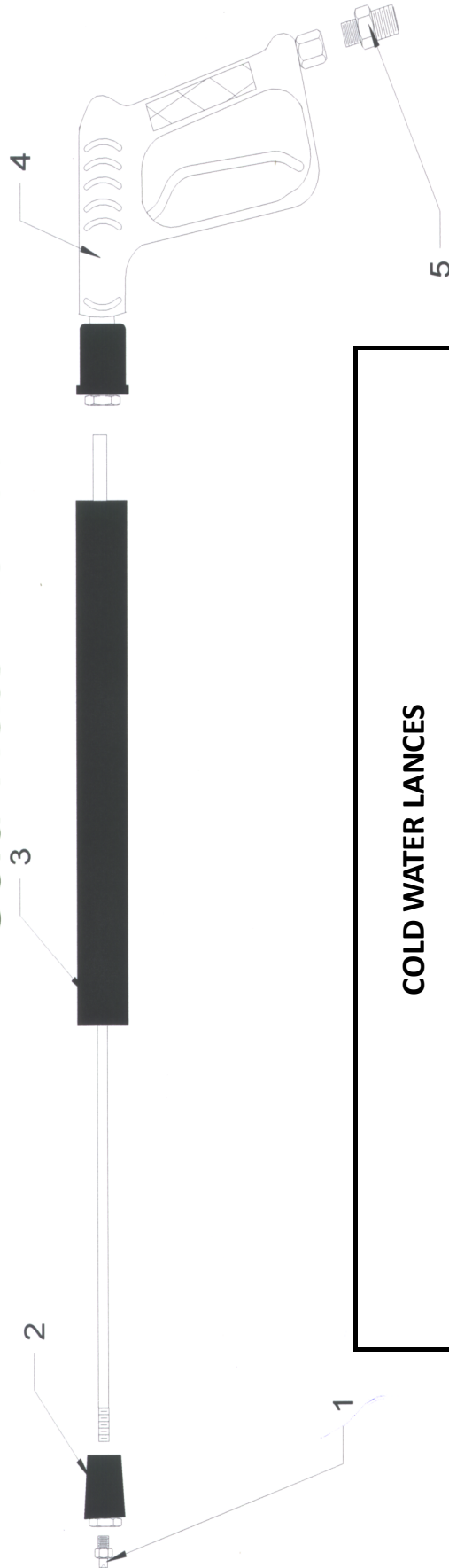
## LEGENDA :

● Per / For  
MINIMATIC 4/B

■ Per / For  
MINIMATIC 4/B+ID

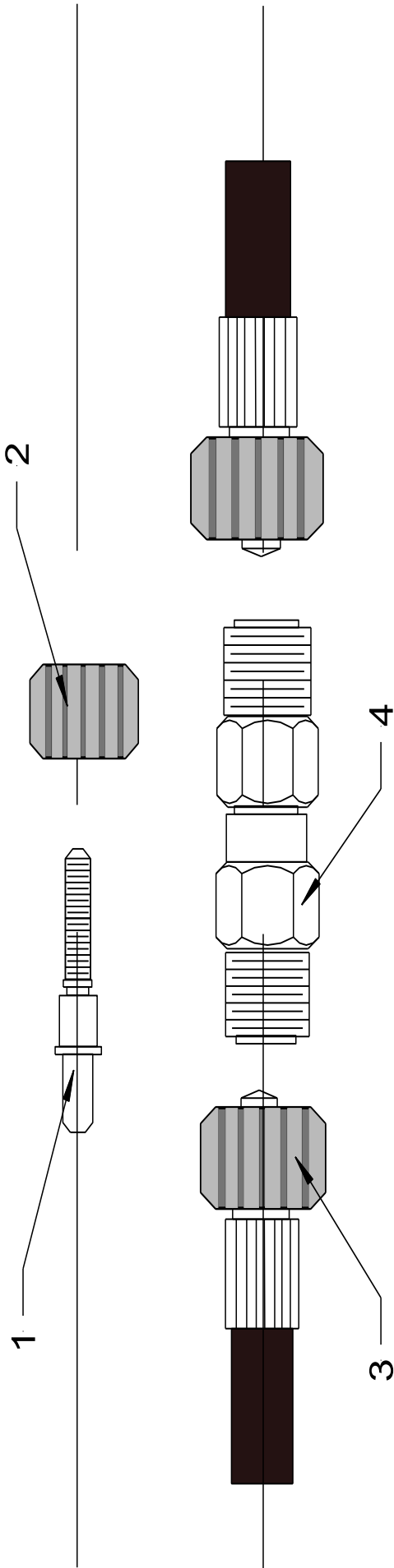
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MINIMATIC 4/B+IDR

# Cold Water Lance



COLD WATER LANCES				
Pos	Part No	Description	Qty	
1	N26001/15045	Nozzle	1	
2	MTM90040	Adjustable Nozzle	1	
3	DEM10031B	QR Lamce	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	DEM10032B
4.	Hose Joiner	MV00500
Alternative Hose Lengths		
	15 Metre	HH00050MVG
	30 Metre	HH00100MVG



# EC Declaration of Conformity

We **Demon International Ltd**  
Of **Abbots Close, Lee Mill Industrial Estate, Ivybridge, Devon PL21 9GA**

Declare that:

Equipment **High Pressure Water Jet Machines**

Model name/number

Serial number

Conforms to the relevant safety and health related requirements of the appropriate EC Directives. This declaration shall cease to be valid if modifications are made to the machine without our approval.

In accordance with the following EU Directives:

**73/23/EEC**      **The Low Voltage Directive** – and its amending directives  
**89/336/EEC**      **The Electromagnetic Compatibility Directive** – and its amending directives  
**98/37/EEC**      **The Machinery Directive** – and its amending directives  
**2000/14/EC**      **Noise Directive**

Harmonised Standards Applied:

**EN 292-1 & EN292-2 (now ISO:12100), EN 60335-2-79, EN55014-1, EN55014-2, EN 61000-3-2**

Applied national standards and technical specifications:

**DS EN 60335-2-79**

Applied conformity evaluation method

**Appendix V**

Sound power level dB(A):

	<b>Tornado Mini-Bowser E</b>	<b>Hurricane E</b>	<b>Tornado Bowser E</b>
<b>Measured</b>	<b>68</b>	<b>68</b>	<b>68</b>
<b>Guaranteed</b>	<b>68</b>	<b>68</b>	<b>68</b>

**HAV – All triggers and lances have vibration levels below 2.5 m/s/s<sup>2</sup>**

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all essential requirements of the Directives.

Signed:  **Martyn Walke**      Authority: *Technical Director*      Date:

**Technical Documentation Address:** Abbots Close, Lee Mill Industrial Estate, Ivybridge, Devon PL21 9GA

# UKCA Declaration of Conformity

We **Demon International Ltd**  
Of **Abbots Close, Lee Mill Industrial Estate, Ivybridge, Devon PL21 9GA**

Declare that:

**Equipment: Industrial Pressure Washer**

**Model name/number:**

**Serial number:**

**Conforms to the relevant safety and health related requirements of the appropriate UK Legislation. This declaration shall cease to be valid if modifications are made to the machine without our approval.**

**In accordance with the following UK Legislation:**

**The Electrical Equipment (Safety) Regulations 2016 – and its amended directives**

**Electromagnetic Compatibility Regulations 2016 – and its amended directives**

**Supply of Machinery (Safety) Regulations 2008 – and its amended directives**

**Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001 – and its amended directives**

**Harmonised Standards Applied:**

**British Standards Institution (BSI)**

**Sound power level dB(A):**

	<b>Tornado Mini-Bowser E</b>	<b>Hurricane E</b>	<b>Tornado Bowser E</b>
<b>Measured</b>	<b>68</b>	<b>68</b>	<b>68</b>
<b>Guaranteed</b>	<b>68</b>	<b>68</b>	<b>68</b>

**HAV – All triggers and lances have vibration levels below 2.5 m/s/s<sup>2</sup>**

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all essential requirements of the UK Legislation.

Signed: 

**Authority:** *Technical Director*

**Date:**