



Instruction Sheet Hydraulic Hand Pump

This manual is an integrating part of the machine, and must be carefully read in full, before a completing every operation. It must be kept in case of future references, until the getting rid of the machine.

The manual is addressed to professional users, it reflects the state of the technique at the moment of the commercialization of the machine, and cannot be considered inadequate just because on the ground of new experience it will be afterwards up-to-date.

WREN CO. declines every responsibilities due to the following situations;

- improper use of the machine or its use by not professional operators;
- wrong installation;
- wrong feeding;
- absences in maintenance;
- alterations or interventions not authorized by the manufacturer;
- employment of not original parts, or not suitable for the model.

1. IMPORTANT INSTRUCTIONS ON RECEIPT

Always inspect the packages and all the material received, this to verify possible damages happened during the transport; in this case make a complaint to the transport company.

INFORMATION ABOUT THE RISKS RESULTING FROM THE OF THE PRODUCT



This is the symbol of danger. Every time you meet this symbol it means that damages more or less serious towards persons, animals and things are possible. The kind of danger and the precautions to adopt in order to contain the relative risks are every time quoted in the text following the symbol.



DANGER: EVERY TIME THIS WARNING IS IGNORED, IT EXISTS A MINOR RISK FOR PERSONS' AND ANIMALS' SECURITY AND/OR DAMAGES TO THINGS.



WARNING: EVERY TIME THIS WARNING IS IGNORED, IT EXISTS A MINOR RISK FOR PERSONS' AND ANIMALS' SECURITY AND/OR DAMAGES TO THINGS.

The user is requested to follow always and carefully these precautions. The manufacturer declines every responsibilities and wounds resulting from an improper use of the product.

2. GENERAL INSTRUCTIONS



WARNING: PLEASE REFER TO THE APPENDIX FOR THE LIST OF COMPONENTS FOR ALL KINDS OF HAND PUMPS.

RANGE OF USE

the oleodinamic lever pumps are employed, together with a proper cylinder, jack, puller etc. for lifting, lowering, thrust operations where a single actuator unit is necessary. The oleodinamic lever pumps are addressed to professional operators. The responsibility in the operator's training about their use is charged to the seller.

CONDITIONS OF USE

The oleodinamic lever pumps have been designed for being used in the following conditions of room temperature:

$$5^{\circ}\text{C} \leq t \leq 35^{\circ}\text{C}$$

TECHNICAL FEATURES

For the technical features of the lever pump, look at the data reported on the adhesive label and/or printed on the body pump, in particular:

- MODEL
- PRESSURE MAX (Bar)

Further technical information are reported on the general catalogue on current issue.

⚠ WARNING: THE LEVER PUMP TANK MUST HAVE A SUFFICIENT OIL CAPACITY IN ORDER TO FILL UP THE OLEODINAMIC CIRCUIT TO WHICH THE PUMP IS CONNECTED(GENERALLY FLEXING HOSES+CYLINDER)

⚠ DANGER: IT IS ABSOLUTELY FORBIDDEN TO FILL UP THE OIL IN THE PUMP'S TANK IN PHASE OF USE OF THE OLEODINAMIC SYSTEM!FOR EXAMPLE FOR COMPLETING THE STROKE OF A CYLINDER WHOSE WORKING UNTIL THE END OF THE STROKE NEEDS A VOLUME HIGHER TO THAT ON THE WHOLE DELIVERABLE BY THE PUMP ITSELF;IN THIS CASE WHEN THE PISTON WILL INVERT THE WAY OF STROKE AND SEND BACK THE OIL IN THE LEVER PUMP'S TANK,ITS VOLUME(OF THE TANK)WILL BE OBVIOUSLY INSUFFICIENT FOR CONTAINING THE WHOLE QUANTITY OF OIL ADMITTED IN THE OLEODINAMIC CIRCUIT, WITH CONSEQUENT POSSIBLE EXPLOSION OF IT.

⚠ WARNING: REMEMBER THAT THE OIL CONTAINED IN THE LEVER PUMP'S TANK NOT IN PRESSURE, BUT IT BECOMES SO WHEN IT IS ADMITTED IN THE OLEODINAMIC CIRCUIT.

Double or 2-speed pump's piston features two thrust sections of different diameter. When the load is not present it is the piston wider section that pushes the oil into the circuit so allowing a fast approach to the load.(1 stage at low pressure and high capacity). Under load, the same section is automatically excluded by a specific valve. Continuous pumping with the smaller section achieves the maximum pressure by making a reduced effort on the lever(2 stage at high pressure and low capacity). The filler cap is of the push-button air discharge type to depressurize the reservoir.

The pumps can work in a horizontal or vertical position with the pumping head downwards, and are fitted with a threaded hole for the mounting of a gauge(alternatively a gauge adaptor block can be mounted on the oil delivery outlet; both are optional extras). Upon request pumps with reservoirs different from standard, for higher working pressures or working with other fluids can be supplied. For any specific inquiry please contact our technical department.

3. OIL DELIVERY RETURN

The direction of circulation of the oil from the pump to the hydraulic circuit (delivery) and successively from the circuit to the pump (return) is regulated by the control valve mounted on the hand pump head.

(PICTURE 1 APPENDIX 2)

The pumps are fitted with a 2-way valve (by-pass) to operate single acting cylinders gravity or spring return: the pump head has one only delivery-return port. When the valve handwheel is completely screwed clockwise, repeated action of the lever will introduce oil into pressure to the circuit. By unscrewing it counter-clockwise, oil is allowed to return to the reservoir. In this case it will be useless to operate the lever as the pumped oil will immediately return to the reservoir.

4. HOW TO CHOOSE THE PUMP

How to the right choice of manual hydraulic pump, mainly depends on the following three factors:

- Oil cylinder (hydraulic jack) capacity: the manual hydraulic pump oil storage box can be an oil > (greater than) oil cylinder capacity.
- Oil cylinder type: oil cylinder into single function and double function, must be with single or double role of the manual hydraulic pump.
- Work pressure level: WREN brand include 700 Bar, 1000 Bar, 1600 Bar, 2000 Bar, 2800 Bar five pressure levels of the manual hydraulic pump totally, in the application, please choose oil cylinder pressure than the highest value (less than or equal to) one of the five kinds of pressure levels.



WARNING: IT IS RECOMMENDED TO MOUNT A GAUGE ON THE PUMP IN ORDER TO PREVENT ANY DAMAGES TO THE EQUIPMENT WHEN LIFTING LOADS WHOSE WEIGHT IS NOT KNOWN, AND ALSO TO BETTER CHECK ANY SINGLE PHASE OF THE LIFTING OPERATION.



TO ENSURE A CORRECT WORKING AND A LONG LIFE OF COMPONENTS CAREFULLY

5. CORRECT USE OF THE PUMP



WARNING: THE PUMP CAN WORK EITHER IN A HORIZONTAL OR VERTICAL POSITION PROVIDED THE HEAD IS DOWNWARDS.

(PICTURE 2 APPENDIX 2)

The pump must be placed on a stable and solid plane to prevent it from turning over during operations. The BY-PASS valve must be operated exclusively by hand.

6. AIR IN THE SYSTEM

Since air can be compressed if it enters a hydraulic system it can prove dangerous. Before putting a cylinder under load it is absolutely necessary to bleed the air from the system.

Simply follow the following directions:

(PICTURE 3 APPENDIX 2)

- pump until the piston is completely extended;
- invert the cylinder so that the piston head is placed on the bench or on the floor;
- keep the pump higher than the cylinder;
- open the valve of the pump;
- press the cylinder bottom to help the piston retract. The air will flow from the cylinder and the hose to enter the oil reservoir it can stay without causing any inconvenience.

7. OPERATION



CAUTION: HIGH PRESSURE EQUIPMENT CAN DEVELOP HIGH FORCES IN COMPARISON WITH THEIR DIMENSIONS. DO PAY THE GREATEST ATTENTION WHEN OPERATING.

Before starting any operations check the oil level inside the hand pump reservoir. Such level must usually be about 1 cm from the inlet. Add oil if necessary. Make sure the reservoir is not completely full so as to prevent the oil from overflowing from the inlet hole, since during operations increases of the oil volume might occur.

IT IS RECOMMENDED TO USE EXCLUSIVELY HYDRAULIC OIL: its viscosity and lubrication characteristics grant the maximum use efficiency and a longer life of equipment. If you need to add large quantities of oil to the pump, it is recommended that the reservoir is drained, thoroughly cleaned with kerosene and filled up with fresh oil.



CAUTION: MAKE SURE THAT ALL THE SYSTEM COMPONENTS ARE SUITABLE FOR THE REQUIRED WORKING PRESSURE.

SPECIFIC DIRECTIONS ON THE USE OF FLEXIBLE HOSES



CAUTION: DO NOT USE FLEXIBLE HOSES FOR CARRYING OR DRAGGING PURPOSES.

Hoses must be placed on a straight line with no obstructions. Ensure that the bend radius is greater than 60mm, that no heavy load is placed over them and avoid any direct contact with sharp objects. Keep them clear of flames or heat sources.

SPECIFIC DIRECTIONS ON CONNECTIONS THROUGH NIPPLES

The threaded end connections are either 1/4 or 3/8 NPT male.

When tightening, do not use spanner extensions as damage to the threads can occur. Wrap thread with teflon tape (do not use tow as its threads can contaminate the oil of the hydraulic system).

SPECIFIC DIRECTIONS ON THE CONNECTIONS THROUGH COUPLERS

Ingress of foreign materials into the hydraulic system can cause scoring inside the cylinders or damage the valves seats so compromising their seal and the consequent success of the system operation. Therefore:

CAUTION:MAKE SURE THE COUPLINGS ARE CLEAN BEFORE CONNECTING THEM.

Dirt can prevent a correct seal and restrict the oil flow since the two seal balls do not properly repel each other.

WARNING:MANUALLY SCREW THE CONNECTING SLEEVE OF THE FEMALE COUPLING TO THE THREADED SPLGOT OF THE MALE COUPLING.

WARNING:ALWAYS SCREW THE PROTECTION CAPS ON THE TWO COUPLINGS WHEN DISCONNECTED.

WREN DECLINES ALL LIABILITY FOR DAMAGES OR UNSUCCESSFUL OPERATIONS DERIVNG FROM IMPROPER USE,OR USE OF ACCESSORIES AND/OR SPARES OTHER THAN THE ORIGINAL ONES.

FOR ANY INFORMATION OR EXPLANATION DO REFER TO OUR TECHNICAL DEPARTMENT.

WARNING:ANY MAINTENACE AND/OR REPAIRING INTERVENTIONS MUST BE CARRIED OUT BY QUALIFIED PERSONNEL.WRONG INTERVENTIONS MAY CAUSE THE LOSS OF WARRANTY!

PRESSURE REGULATION-The hand pump safety relief valves are factory set to the maximum working Pressure.By requests, this can be set to customer requirements.



WARNING:IT IS ABSOLUTELY FORBIDDEN TO SET SUCH VALVE AT A VALUE HIGHER THAN THE ONE SET IN OUR FACTORY.

8. TROUBLE SHOOTING

PROBLEM	PROBABLE REASON	REMEDY
the piston does not davnace	the pump head is downwards	put the pump with head downwards
	the pump valve is open not properly closed	eliminate the air in the circuit and restore the oil level
	there is air in the system or lack of oil in the pump	change the kind of cylinder
	the hydraulic cylinder's capacity is lower than that of the load to lift	Replace the cylinder with one of higher capacity
the position does not make full stroke or advance with jerks	there is air in the system	eliminate air from the circuit
	the piston could be bend or deformed causing it to bind with the ring nut	check and contact the circuit
	there is lack of oil in the pump	Refill the oil level in the pump
	the hydraulic cylinder's oil capacity is higher than that of the reservoir	replace the pump with one of higher capacity
the piston does not keep the load	the valve may be damaged	check-contact the service
	possible cylinder's seals leak	replace te seals
	oil leakage through the flexible hose connection	check and eventually replace them
the piston return is not complete or slowed down	the pump valve is closed	open it completely
	the coupling are not completely screwed	screw them carefully so that the balls repel each other and make the oil flow correctly
oil leadages	the return spring of the cylinder(if fitted)could be broken or loose and the internal walls of the cylinder can be worn	check-contact the service refill the correct oil level
	the seals may be broken or worn out	replace them

WARNING:FOR GRAVITY RETURN CYLINDERS IT IS NECESSARY TO MAKE TO MAKE AN EXTERNAL FORCE ON THE TOP OF THE ROD SO AS TO MAKE IT RETRACT.

WARNING:ALWAYS HELP THE PISTON RETRACT BY RPESSING ON THE RESERVOIR RELIEF VALVE ON THE FEEDING CAP IN ORDER TO DEPRESSURIZE THE SAME.

WARNING:IT IS RECOMMENDED TO KEEP IN STOCK A SPARE REPAIR KIT FOR THE PUMP.

9. INFORMATION ABOUT SECURITY AND HYDRAULIC FLUID

According to the Ministerial Decree 28-01-1992, the hydraulic fluid for hydraulic work, cod. **RP-108, ISO Vg32** used for working Wren hydraulic cylinder, is classified as **NOT** dangerous; however the following **SAFETY** information is given for a better use.

IDENTIFYING DANGERS

To persons: frequent and protracted contact with the skin may cause irritations. Accidental swallowing, followed by vomiting, can cause damage to the mucous membrane. Inhalation of fumes and vapour may cause irritation of the respiratory apparatus.

To environment: NON BIODEGRADABLE PRODUCT

FIRST AID MEASURES

INHALING: remove the person from the area of exposure, keep them relaxed, do not swallow anything, seek medical assistance.

SKIN CONTACT: immediately wash the area with abundant soap and water **EYE CONTACT:** rinse abundant running water, seek medical assistance

FIRE PREVENTION MEASURES

PERMITTED EXTINGUISHERS: carbon dioxide, anhydrous powder, alcohol-resistant foam, nebulized water.

PROHIBITED EXTINGUISHERS: do not use jets of water to avoid over boil.

ACCIDENTAL LEAKAGE

PERSONAL PRECAUTIONS: wear protective clothing

ENVIRONMENTAL PRECAUTIONS: do not allow the product to enter drains, waste canals or running water, in such cases alert the relevant authorities.

CLEANING METHODS: block the spread with earth or sand, collect the product with a hand or explosion proof pump or with suitable adsorbent material, dispose of residues in accordance with the current regulations.

HANDLING AND STORAGE

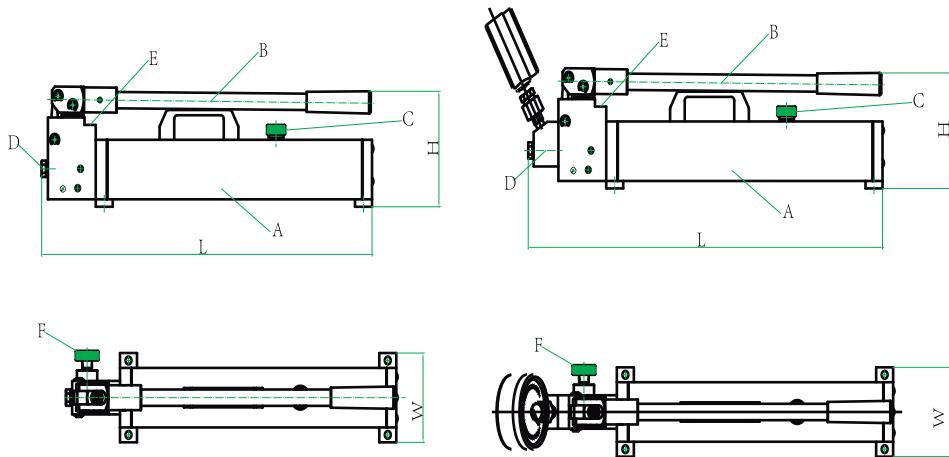
HAND PROTECTION: wear neoprene or nitrile rubber gloves.

EYE PROTECTION: wear protective glasses.

SKIN PROTECTION: wear protective overalls, changing and washing them carefully if contaminated.

STORAGE: store away from heat sources and oxidizing agents, keep in a well-ventilated place with temperatures of between +5° and +30°C

10 Drawing For Dimension



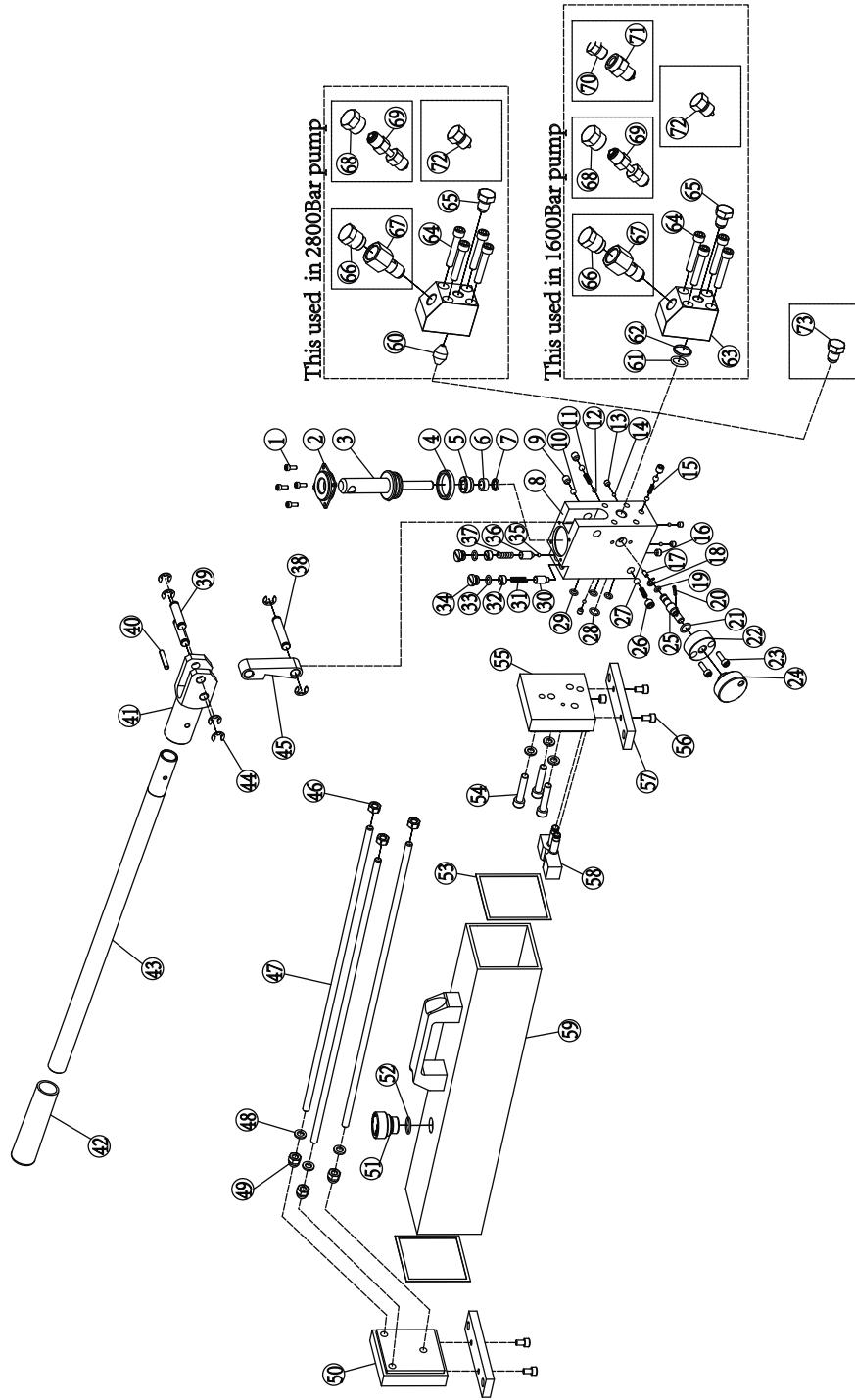
Item	Name	Quantity	Item	Name	Quantity
A	Oil Tank	1	D	Oil Output Port	1
B	Handle	1	E	Relief Valve For Max. Pressure	1
C	Oil Filling Port	1	F	Handwheel(Cut-off Valve)	1

11 Appendix 1

Technical Parameters

Model	Working pressure Low High (Mpa)	Oil Output per-stroke Low High (L)	Oil Tank volume (L)	Capacity (L)	Handle Effort (L)	Dimension L W H	Output port	Pressure gauge port	Weight (Kg)
P392 P80 P160	2.5 70	32 2.5	1.67 2.25 3.58	1.44 1.98 3.24	300	577 120 170 577 120 170 577 140 190	3/8" NPT	1/4" NPT	6.3 8 10
16P392 16P80 16P160	1.5 160	32 2.5	1.67 2.25 3.58	1.44 1.98 3.24	350	577 120 170 577 120 170 577 140 190	1/4" BSP	1/2" BSP	6.5 8.5 10.5
28P80 28P160	2.8 280	32 0.9	2.26	1.98	400	577 120 170 577 140 190	3/4" - 16UNF	1/2" BSP	8.5 10.5

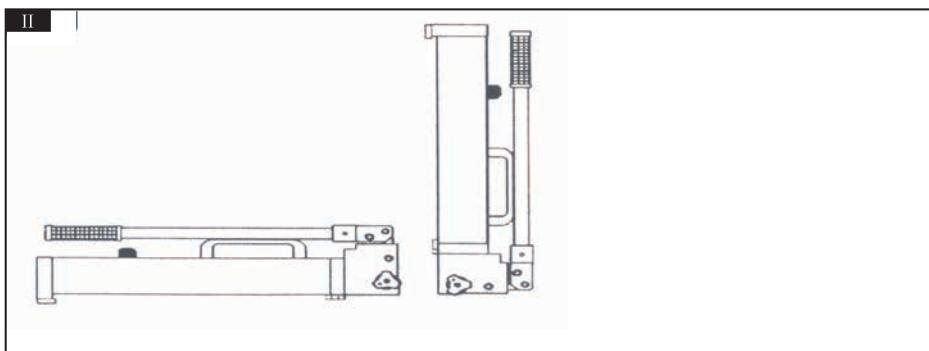
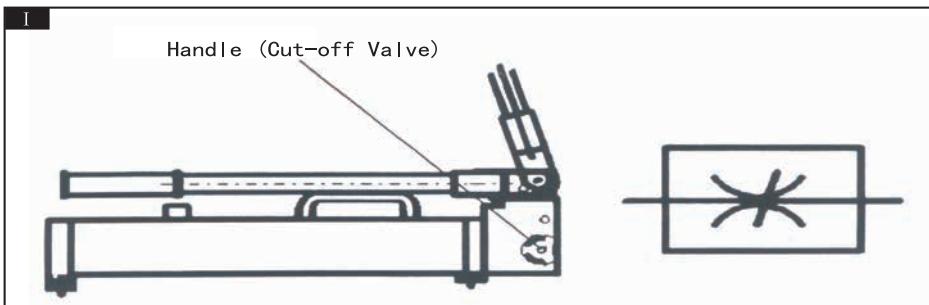
12 The pump explosion figure



13 Parts List For Exploded Drawing

Number	Name	Quantity	Number	Name	Quantity
1	Screws M4×10	4	38	Long Pin	1
2	Dust Adapter	1	39	Short Pin	2
3	Piston Rod	1	40	Roll Pin 5×30	1
4	U-ring	1	41	Handle Seat	1
5	pressure cover	1	42	Handle	1
6	Fix Cap	1	43	Handle Connecting	1
7	Seal	1	44	Metal Circle 8	6
8	Pump Body	1	45	Linkage	1
9	Screws M8×8	3	46	Nut M8	3
10	Steel Ball Φ 6.35	3	47	Pole For Pull	3
11	Spring 1	2	48	combination Block M8	6
12	Steel Ball Φ 5	2	49	Cover Nut 8	3
13	Screws M6×6	4	50	Cap In Back	1
14	Steel Ball Φ 4	4	51	Oil Cap	1
15	Spring 2	1	52	O-ring 17.18×1.78	1
16	Screw Plug NPT1/16	1	53	Seal Block	2
17	Valve Needle	1	54	Screws M8×40	3
18	Metal Circle 6	1	55	Cap In Front	1
19	O-ring 5×1.8	1	56	Screws M6×10	4
20	Roll Pin 3×16	1	57	Plate For Cap	2
21	O-ring 10.82×1.78	1	58	Oil Filter	1
22	Relief Valve	1	59	Oil Tank	1
23	Screws M5×15	2	60	Seal head	1
24	Handwheel (Cut-off Valve)	1	61	O-ring 15.54×2.62	1
25	Handle	1	62	Backup Ring	1
26	Plug R1/8	2	63	Gauge Adapter	1
27	Steel Ball Φ 7.14	1	64	Screws M8×45	4
28	O-ring 9.5×1.8	1	65	Screw Plug 1	1
29	O-ring 6.7×1.8	3	66	Screw Plug 2	1
30	Spring Seat 1	1	67	Connector For Gauge (G1/2)	1
31	Regulation Spring For Low Pressure	1	68	Screw Plug 3	1
32	Adjustment Screw	2	69	Connector For Gauge (M16×1.5)	1
33	O-ring 8.5×1.8	2	70	Screw Plug 4	1
34	Screw	2	71	Connector For Gauge (NPT1/4)	1
35	Steel Ball Φ 4	1	72	Screw Plug 5	1
36	Spring Seat 2	1	73	Screw Plug 6	1
37	Regulation Spring For High Pressure	1			

14 Appendix 2





For prompt service,
contact your Authorized
WREN Agent

All Wren products are guaranteed against defects in workmanship and materials for as long as you own them. Under this guarantee, free repair or replacement will be made to your satisfaction.

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