

OPERATION AND MAINTENANCE MANUAL

BEL-8 series Electrical Tensioner Pump



TRITORC Hydraulic

It is operating manual of BEL-8 series Electrical Tensioner Pump, please read carefully follow instructions warnings and cautions before using the tools.

Safety Guide

Electrical Tensioner Pump's safe usage requires correct operation and regular inspect, the user is always requested to follow always and carefully regular inspect.

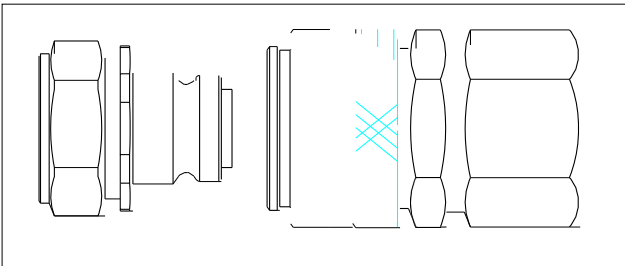
▲ precaution to avoid direct loss in economic or property.

▲ warning to avoid personal injury.

Please follow herein before!

When using, if something abnormal happens, please shut off the power immediately, and then consult TRITORC or TRITORC's agent.

1. When using, do not permit any person stand at the oil output in order to avoid personal injury and equipment damage. Please put the pump far away from the fire.
2. Make sure that the hose and quick coupler be connected before building up the pressure in order to avoid hydraulic fluid spurting out to cause personal injury.
3. The maximum operating pressure of this pump is 2000bar (29000psi), TRITORC has set up the pressure to 2000bar before selling this pump. Please do not adjust to a pressure higher than the maximum pressure which TRITORC has not set.
4. If this pump is used for operating other equipment's, make sure the maximum operating pressure of the equipment's will be less than 2000bar. Please adjust the pressure to which the equipment needs, or else the equipment would be damaged.
5. Make sure the power of the pump is shut off before repairing it.
6. If the rapid release of pressure, lifting jack in the load will fall or spring open, may cause injuries; please refer to TRITORC or TRITORC authorized agents, they will recommend you the right valve.
7. Please shut off the switch before starting power; if the switch is on, the pressure may increase.
8. Make sure the equipment be connected with ground to avoid electric shock.
9. Please do not change any part of the pump; if it must be changed, please inform TRITORC or TRITORC' s agent for help. Without allowance of TRITORC or its agent, any refit of it will be out of our warranty range.
10. Please do not fill the pump reservoir with too much oil, otherwise, the pressure of the reservoir r will increase and the oil will spill over, so the reservoir will be broken and the environment will be polluted.
11. Make sure the quick coupler is tightened; if the quick coupler is not tightened enough, the equipment will not work normally; if it is a synchronic system, the problem may cause one or several pieces of equipment out of order and the quick coupler may be broken and it may cause personal injury or equipment damage.
12. Please stand away from the position where the hydraulic oil may be spurt out; hydraulic oil may penetrate your hand and hurt you.
13. If the hydraulic oil splashed in your eyes, please immediately wash your eyes about 15 minutes with clean water, then you must go to hospital for help right now.



14. Please do not touch the pressurized hose; if the hydraulic oil splashed out, it will cause serious injury.
15. Hydraulic hose is easily spoiled fitting; you inspect the hose with eyes regularly and find no problems, but the inner side may have crack and small hole; TRITORC suggests you should change the hose regularly for.

PRECAUTION

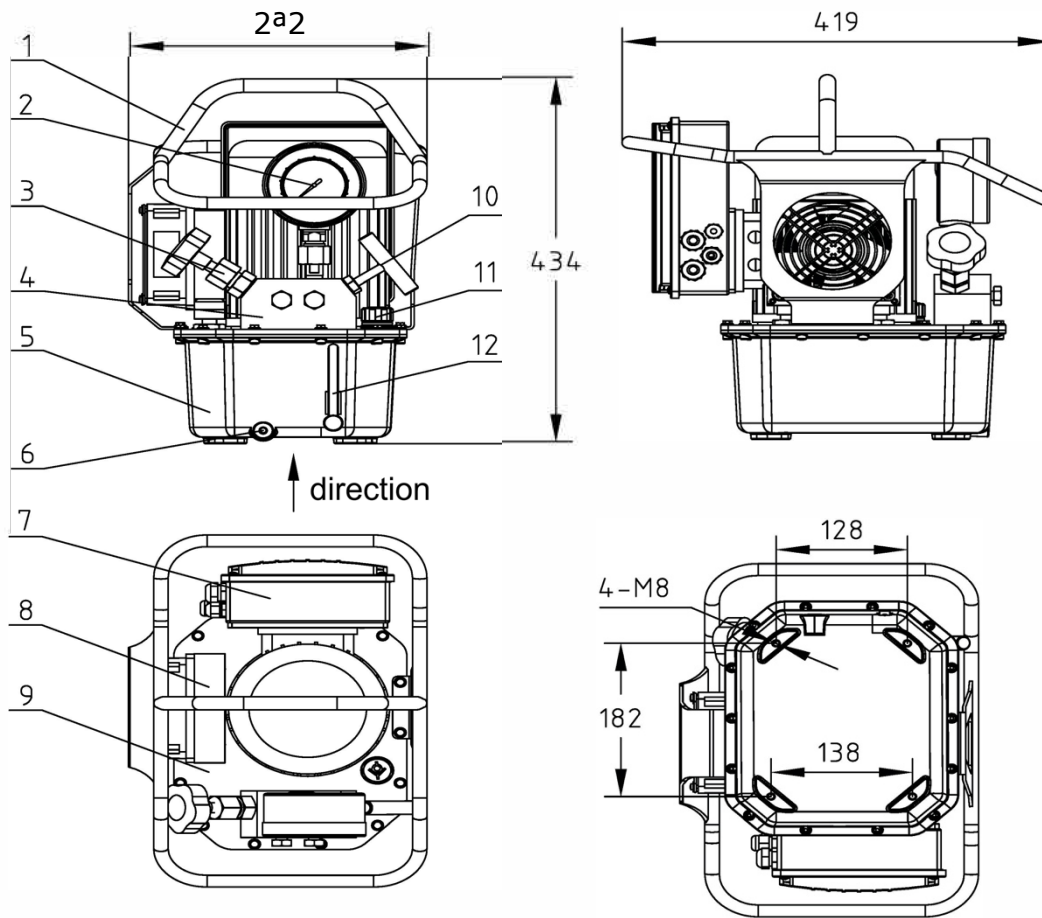
1. Only TRITORC hydraulic special oil available.
2. Do not use pressure regulate valve as relief valve.
3. The used hydraulic oil should be put away according to the antipollution ordinance.

DESCRIPTION

1. Tensioner pump is an integrated assembly; by the oil pump, control valve, oil tank, Electrical motor, coolers, instrument consisting of an independent and complete hydraulic device, has the advantages of small volume, light weight, simple structure, convenient operation, high work pressure. Pump for high, low pressure oil pump and oil supply, it can obtain the larger oil output. High pressure, low pressure pump by unloading overflow valve automatic no-load return oil, can reduce the power consumption, output pressure is 90~2000bar arbitrary regulating.
2. Hydraulic oil:46# wear-resistant hydraulic oil.
3. working environment temperature: - 10~60 C
4. Use TRITORC high-pressure hose, quick coupler. The maximum using pressure of hose is 1800bar, please use the selection and matching pressure system.
5. This pump for use of hydraulic products, please consult the TRITORC engineer.
6. Please don't use the electric hydraulic pump near flame.
7. Please do not arbitrarily adjustable pressure regulating valve, in order to avoid the high pressure caused by equipment damage and personal injury.

DESCRIPTIONS OF PARTS

1. Oil tank: working with hydraulic oil storage, to ensure the normal work of the system (must have enough oil), to provide the required pressure carrier system.
2. Motor: provide power source (based on the use of the voltage, frequency selecting motor, see specific parameters in the motor nameplate).
3. Pump protection frame: installed in the storage tank, used for carrying, protection of hydraulic pump station.
4. Electronic control box: Built-in micro electronic control system, control the entire pump.



Item	Description	Item	Description
1	Protective Frame	Y	Electrical Control Box
Z	Pressure Gauge	8	Cooler
7	Regulating Valve	a	Tank Plate
k	Valve Block	10	Check Valve
5	Oil Tank	11	Oil Filling Port
6	Oil Releasing Port	12	Oil Gauge

5. Electronic control box: Built-in micro electronic control system, control the entire pump.
6. Ventilation hole: The realization of hydraulic oil discharge tank (replacement of hydraulic oil used in oil); cover with ventilation holes, filling the oil cover, a filtering net is arranged to ensure that no impurities into the tank; tightening oil cover ensure system of air discharged smoothly.
7. Liquid level gauge: Observation of hydraulic oil to ensure that the number, provide the best use of oil; hydraulic oil below the oil standard 1/3 position, must add TRITORC pumping station hydraulic oil, or may damage the pump station.
8. Oil unloading hole: Plug G1/4", realize hydraulic oil discharge tank (replacement of hydraulic oil in use);
9. Fast joint: The realization of hydraulic oil output \ return oil function, fast connecting pipe built-in type check valve;
10. Six angle screws: Sealing connecting tank.

CHARACTERISTIC


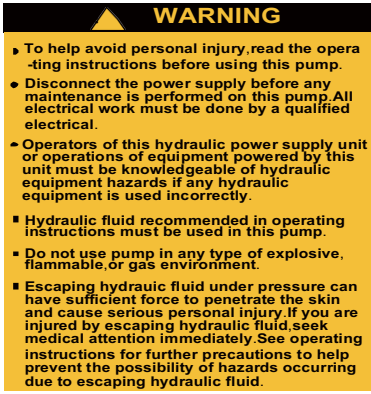
1. BEL-8 Electric Tensioner Pump is a double stage pump with 2000bar maximum operating pressure
3. Motor voltage: 220V
4. Temperature: -10~60 °C
5. Oil tank: 5.5L
6. ISO VG 46# anti-wearing hydraulic oil

WARNING!!!

1. When operating, do not permit anyone stand at the oil output, The oil output must connect other components when adjusting the pressure.
2. When using, do not overpass the max operating pressure.
3. If need to check motor tank, please shut off the pump.
4. When working, the oil back to oil reservoir may add the pressure. If open the cover plate, unnecessary injury and damage will happen.
5. Prohibit to operate without oil.
6. Keep the pump clean, clean especially the oil inlet, quick couplers.
7. Suggestion: in the condition of not using the pump always, please remember to replace the hydraulic oil.

Warning Plate

Warning plate is shown in table 1

warning table	Meaning	Affixed Position
	For Safe Operation, Please Read	The Equipment Enclosure
 <p>WARNING</p> <ul style="list-style-type: none"> • To help avoid personal injury, read the operating instructions before using this pump. • Disconnect the power supply before any maintenance is performed on this pump. All electrical work must be done by a qualified electrical. • Operators of this hydraulic power supply unit or operations of equipment powered by this unit must be knowledgeable of hydraulic equipment hazards if any hydraulic equipment is used incorrectly. • Hydraulic fluid recommended in operating instructions must be used in this pump. • Do not use pump in any type of explosive, flammable, or gas environment. • Escaping hydraulic fluid under pressure can have sufficient force to penetrate the skin and cause serious personal injury. If you are injured by escaping hydraulic fluid, seek medical attention immediately. See operating instructions for further precautions to help prevent the possibility of hazards occurring due to escaping hydraulic fluid. 	Warning Notices	The Equipment Enclosure

NOISE/VIBRATIONAND TRANSPORT INFORMTION

NOISE/VIBRATIONANDTRANSPORT INFORMATION

1. Electrical Tensioner Pump noise declaration

1.1. Noise: $\leq 65\text{db}$

2. Electrical Tensioner Pump transport information.

2.1 Handle with care.

2.2 The shipment should be vertical upward as shown in the figure 9-1.

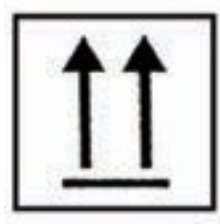


FIG 9-1

2.3 Product handling, generally using portable, car handling and lifting and moving, as shown in the figure 9-2

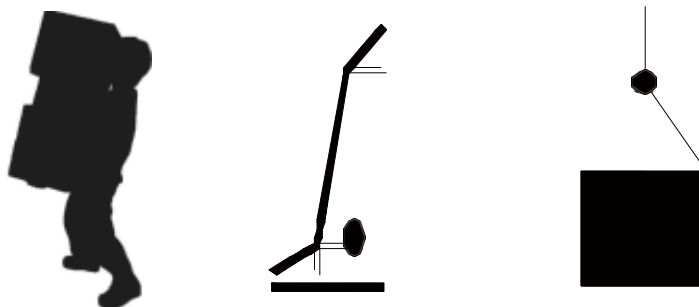


FIG 9-2

OPERATION INSTRUCTIONS

1. PREPARE

- 1.1 Use super high-pressure hose to do connect the high-pressure outlet of the pump and the high-pressure outlet of the bolt Tensioner. Insert the quick coupler till to the end, please be sure to achieve reliable connection.
- 1.2 Loosen the pressure regulating valve, then tighten the check valve to show it is working stage.

2. ADJUSTING THE HIGH PRESSURE

- 2.1 Put through the current source, turn the circuit breaker of the electrical box shell to “on” position.
- 2.2 Hold on the resettable buttons on the line switch, adjust the pressure regulating valve on the pump, to set the desired pressure; then loosen the resettable buttons on the line switch, Release cut-off valve to show the pressure gauge pointer to zero, retighten the cut-off valve; pressed the resettable button, observe the pressure gauge pointer, repeat the above steps, until transferred to the required pressure, lock the nut, complete the process of the pressure regulation.

3. OPERATION

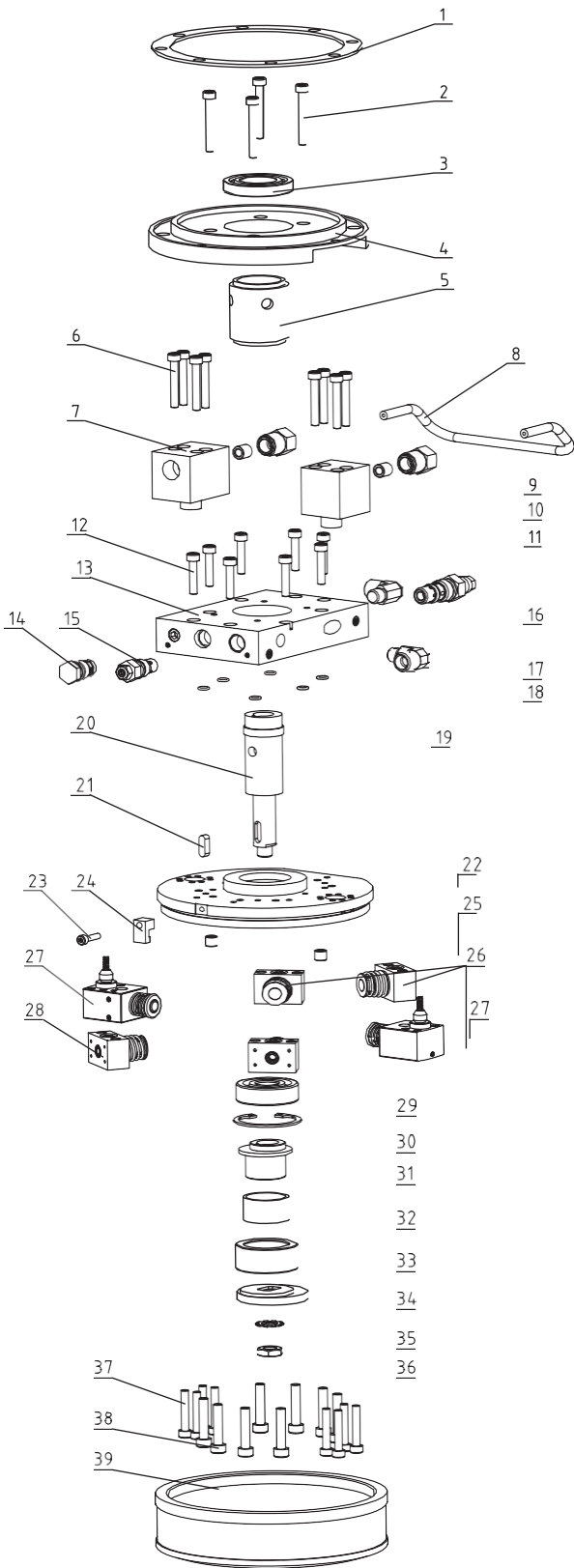
- 3.1 Press on the wire control switch self-locking button, the pump will output the pressure, hydraulic bolt tensioner will start to work; when the pressure is close to the set value, release the self-locking button, Press the self-resettable button on the control switch; to make the pressure reaches the desired pressure.
- 3.2 When the working pressure is same as the set required pressure, press the self-locking on the wire control switch, when gauge pointer stability, read the pump output pressure as the setting pressure, you may release the button.
- 3.3 Release cut-off valve so the pressure gauge will drop to zero, retighten the cut-off valve; Repeating above steps until the whole process is over.
- 3.4 After the end of the operation, loosen the valve venting in the hose and the pressure in the hydraulic machinery, remove the high-pressure hose, cover the dustproof cap; turn off the source, turn the circuit breaker of the electrical box shell to the “off” position.

REMARK: For initial work or repair, please run the motor for several times, this will help remove the air from the high-pressure pump, then normal operation can be used upon the normal oil.

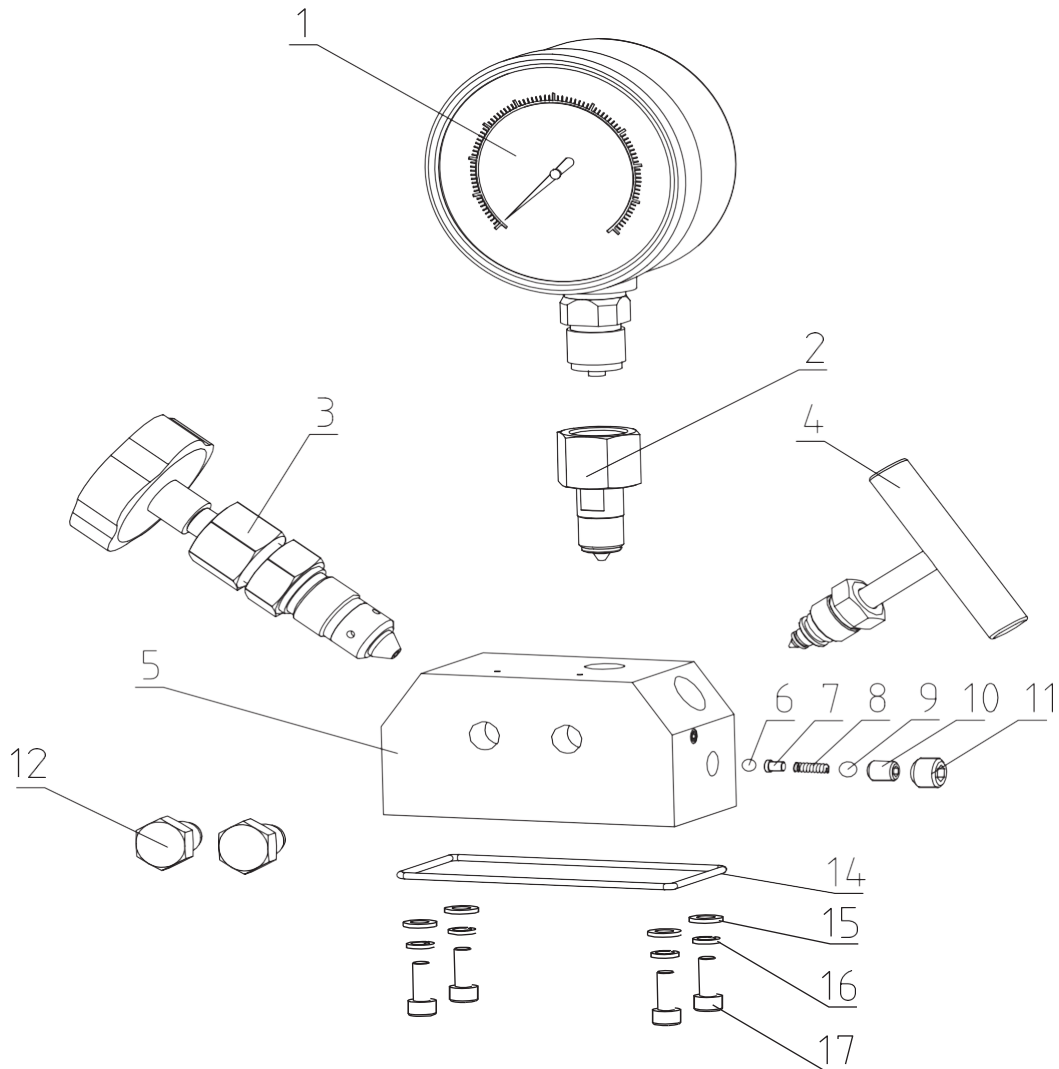
TROUBLE SHOOTING GUIDE OF HYDRAULIC PUMP

The pump can't be started	The voltage isn't suitable	Confirming whether the voltage is suitable for the pump's need
	The power hasn't been connected	Checked the input air, switch and distribution box and so on, and connect the air.
The system has no pressure	The quick coupler hasn't been connected to the correct position	Take down and reinstall it
	No oil in the oil reservoir	Fill in oil
	Not enough oil in the oil reservoir	Fill in oil
	If the system has a throttle and hand single-direction valve, please check if the valve is open	Open the throttle and hand single-direction valve, and make sure the system is a circle
After reinstalling the quick coupler, the system has no pressure	The quick coupler can't be connected to the correct position, which causes no pressure in the system	Take down the quick coupler, check if the boll is elastic with a rod, if it can't move, please knock it with a hammer to eliminate the mist hydraulic oil
Leakage in the quick coupler	The o ring and escape have worn out	Replace the quick coupler
The pressure can't reach to the set pressure	The relief valve is adjusted too low	Check with the gauge, and adjust the relief valve to the system set pressure
	Oil is mixed with water	Change oil
	Not enough oil in the reservoir	Fill in oil
	Suck in air to the system	Repeat operating the system with no load for several times to eliminate the air
	The throttle and hand single-direction valve haven't been tightened	Locking valve
	The throttle and hand single-direction valve haven't been adjusted to the correct position	Adjust to the correct position
	The throttle and hand single-direction valve have broken	Replace the valve
	There is foreign matter in the oil	Wash the pump valve and change clean oil
When using under static pressure, the pressure reduces slowly	The seal is out of control, please check all the seal	Replace the seal
Pump during operation with strong noise	Radial plunger pump bearing damage	Replace the radial plunger

Part List with drawing for Pump body

		
Item	Name	Q††
1	Seal Gasket	1
2	Screw	4
3	Bearing	1
4	Connect Flange	1
5	Body Sleeve	1
6	Screw	8
7	Block for High Pressure	1
8	Pipe	1
9	Pipe Fitting	1
10	Connect Fitting	1
11	Connector 2 (high pressure)	1
12	Screw 2	8
13	Pump head (low pressure)	1
14	Checking valve	1
15	Regulating valve	1
16	Relief valve (low pressure)	1
17	Fitting	1
18	Fitting	1
19	O ring	1
20	Bearing	1
21	Sleeve	1
22	Pump head (high pressure)	1
23	Screw	1
24	Filter press	1
25	Retaining ring	1
26	Piston 1	3
27	High pressure piston	2
28	Piston 2	1
29	Deep groove ball bearing ²	1
30	Retaining ring	1
31	Eccentric Sleeve	1
32	Copper Sleeve	1
33	Bearing outer ring	1
34	Eccentric Block	1
35	Multi-tooth Gasket	1
36	Nut	1
37	Screw 4	8
38	Screw 5	8
39	Filter Cover	1

Part List with drawing for Valve Block

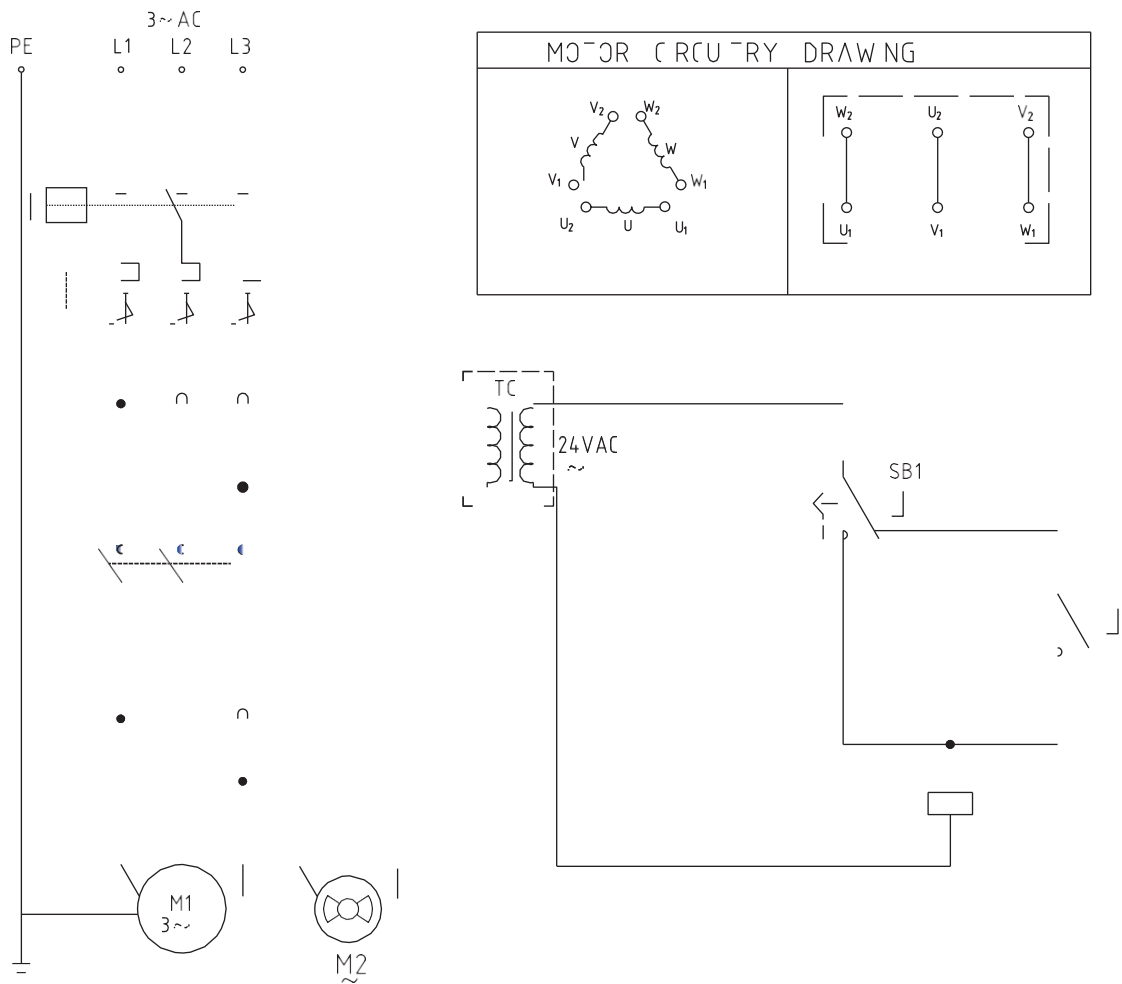


Item	DESCRIPTION	Quantity	Item	DESCRIPTION	Quantity
1	Gauge	1	10	SCREW 1	1
2	Gauge adaptor	1	11	SCREW 2	1
3	Regulating valve	1	12	Plug	2
4	Needle valve	1	13	O ring	1
5	CONNECTOR	1	14	Flat gasket	4
6	Steel ball 5	1	15	Spring gasket	4
7	EJECTOR PIN	1	16	SCREW	4
8	Spring	1			
9	Steel ball 6.3±	1			

work components control components	M1 Motor	M2 Fan	SB1	SB2	symbol	Description
Self locking SB (+)	+	+		O	C _{urn}	working capacitence
Self locking SB1 (-)	-	-		O	C _s ⁻	start capacitence
Self retract SB2 (+)	+	+	-		QF	breaker
Self retract SB2 (-)	-	-	-		FR	relay
Remark: + mean› connect and work - mean› break and stop O mean› no connection, does not work					SB1	remote control button 1
					SB2	remote control button 1
					M1	motor
					M2	fan
						circuit board

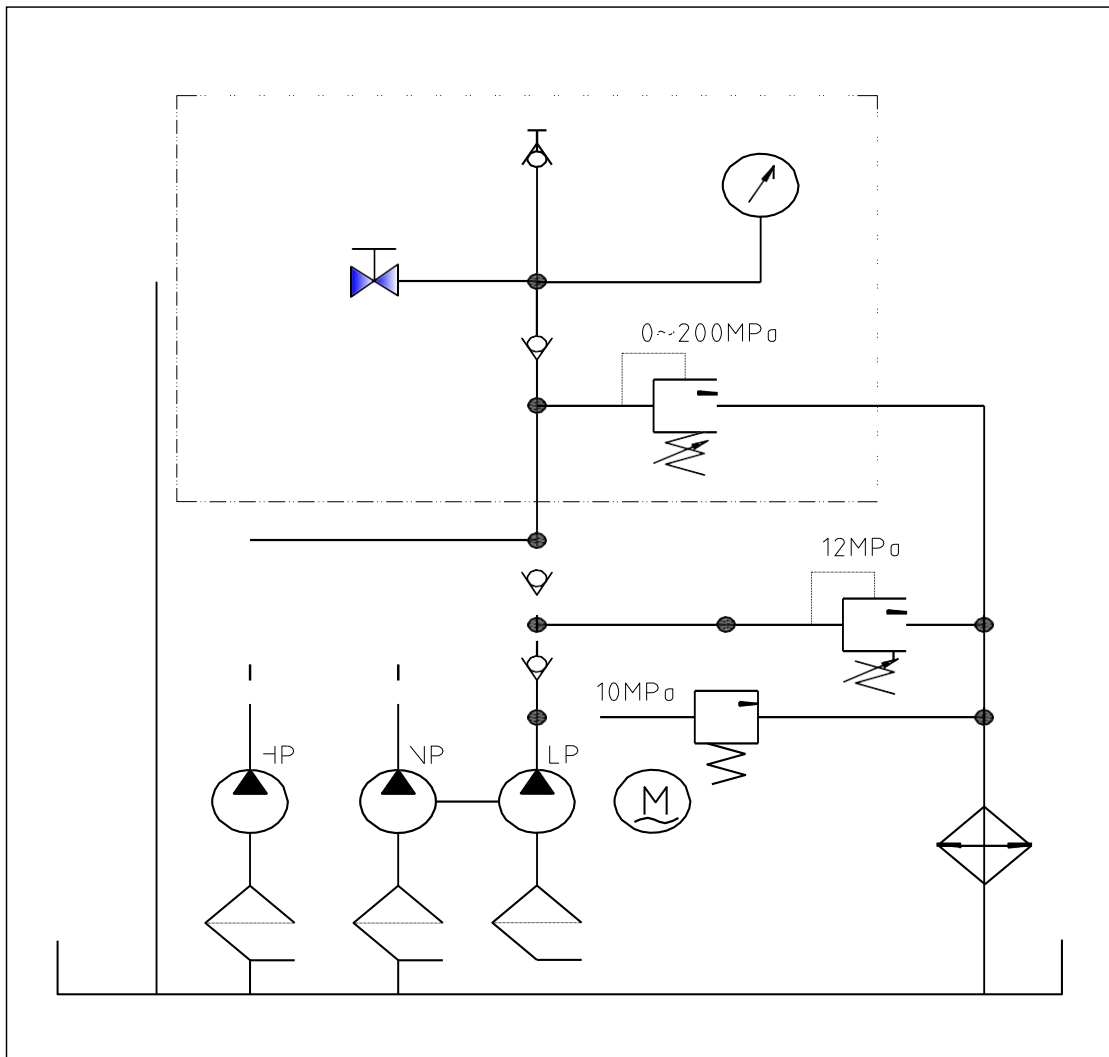
Electronic Principium (three Phase 220V)

ELECTRICAL PRINCIPLE DRAWING D14



Work Components	M1 Motor	SB1	SB2	Symbol	Description
Control Components	M1 Motor	SB1	SB2	QF	Breaker
Self locking SB1(+)			O	TC	transformer
Self locking SB1(-)	-		O	SB1	remote control button 1
Self retract SB2(+)		-		SB2	remote control button 2
Self retract SB2(-)	-	-		∇Λ	high flow relay
Remark: + mean > onnext and work - mean > break and > top O mean > no > onnextion, doe > not work				M1	motor
				M2	fan

Hydraulic Principium

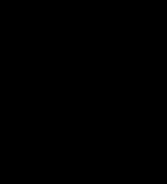


Warning for using high pressure hose

1. Please use TRITORC's JH series high pressure hoses.
2. The minimum bending radius: $R > 120\text{mm}$. Too small bending radius will destroy the high-pressure hoses.
3. The maximum operating pressure is 1800bar, it is forbidden to overpass the pressure.
4. Do not tighten hoses excessively. Over tightening can cause to premature thread failure or high-pressure fittings to split at a pressure lower than their rated capacities.
5. Do not use the hose to remove attached equipment. Stress can damage the hose, causing personal injury.
6. Do not subject the hose to potential hazard such as fire, sharp surfaces, extreme heat or cold or heavy impact. Do not kink, twist, or bend the hose so tightly that oil flowing in the hose is blocked or reduced. Periodically inspect the hose for wearing, because any of these conditions can damage the hose.
7. Should any hydraulic hose rupture, burst, or need to be disconnected, immediately shut off the pump. Never attempt to grasp a leaking pressurized hose with your hands. The force of escaping hydraulic fluid could cause serious injury.

Parameter Chart

Model	Tank Capacity (L)	Control Valve	Motor (V/Hz)	Power (Kw)	Flow Rate (L/min)	Oil Port	Max Pressure
BEL-8 A	5.5	BV	220V/50HZ	1.1	4.2 – 0.30	G1/4	200
BEL-8 B	5.5	BV	220V/60HZ	0.9	4.2 – 0.30	G1/4	200
BEL-8 C	5.5	BV	115V/50HZ	1.1	4.2 – 0.30	G1/4	200
BEL-8 D	5.5	BV	115V/60HZ	0.9	4.2 – 0.30	G1/4	200



All TRITORC 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.