

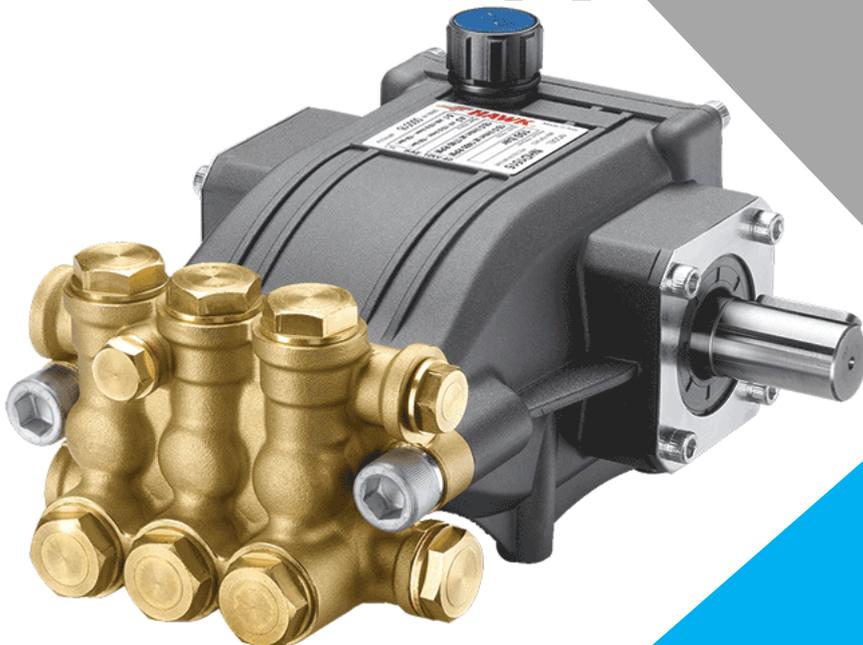
INSTRUCTIONS MANUAL

NHD 1212 R & NHD 1415 R

Positive Displacement Reciprocating
High Pressure Triplex Plunger Pump

APPLICATIONS:

1. SURFACE CLEANING
2. SAND BLASTING
3. HYDRO TEST
4. SEWER JETTING
5. FIRE FIGHTING



PressureJetTM
EXPLORE THE WATER POWER

PRESSUREJET SYSTEMS PVT. LTD.,
62/13, PHASE-1, G.I.D.C. VATVA,
AHMEDABAD - 382445. GUJARAT, INDIA.

CONTACT: - 079-2583-5598

WEBSITE: - www.pressurejet.com

Dear Customer,

We would like to congratulate you on the purchase of your new high pressure system and thank you for your confidence in our product.

Your choice has fallen on an absolute quality product.

PressureJet high pressure systems are characterized by convenient and compact design as well as their high suitability for industrial use.

In order to facilitate handling of the high pressure system, the following pages are intended to further explain its use.

Thanks

PressureJet Systems Pvt. Ltd.

PressureJet

TABLE OF CONTENT

Section 1 – General Information

1.1	<u>Introductions</u>	7
1.2	<u>Aim and Content</u>	7

Section 2 – Safety

2.1	<u>Safety Message icons</u>	8
2.2	<u>Important Safety Instruction</u>	9
2.3	<u>Unpacking and Transport</u>	10
2.4	<u>Safety During Lifting and Handling</u>	10
2.5	<u>General Safety</u>	11

Section 3 – Installation and Commissioning

3.1	<u>Pump Model Identification</u>	12
3.2	<u>Installation of vent cap</u>	12
3.3	<u>Oil grade chart</u>	13
3.4	<u>Positioning</u>	13
3.5	<u>Direction of rotation</u>	14
3.6	<u>Dimension drawing of the pump</u>	14
3.7	<u>Line Diagram for installation</u>	15
3.8	<u>Inlet line connection</u>	17
	A. <u>Water Quality</u>	17
	B. <u>Inlet Line connections size</u>	18
	C. <u>Inlet Pipping Connection</u>	19
	D. <u>Bypass Line Connection</u>	23
3.9	<u>Electric Motor and Starter Connection Chart</u>	24
3.10	<u>Discharge Line</u>	25
3.11	<u>Quick Start</u>	26
3.12	<u>Safety During Installation and Commissioning</u>	26
3.13	<u>Cavitation</u>	27

Section 4 – Operating (application wise)

4.1	<u>Safety During Operating, Maintenance and Repairing</u>	29
4.2	<u>Surface Cleaning application</u>	30
4.3	<u>Sand Blasting application</u>	33

4.4	<u>Hydro Test application</u>	39
4.5	<u>Sewer Jetting application</u>	41
4.6	<u>Fire Fighting application</u>	44
4.7	<u>Safety Valve operation</u>	47

Section 5 – Technical Details

5.1	<u>Hose Friction Loss Chart</u>	48
-----	---------------------------------	----

Section 6 – Accessories

6.1	<u>Unloader Valve VB-130</u>	49
	A. <u>Installation</u>	49
	B. <u>Operation</u>	50
	C. <u>Discharge System and Water Adduction</u>	50
	D. <u>Regulation</u>	50
	E. <u>Technical Details</u>	51
	F. <u>Maintenance</u>	52
	G. <u>Trouble Shooting chart</u>	52
	H. <u>Exploded View</u>	53
6.2	<u>Safety Valve VS-140</u>	54
	A. <u>Installation</u>	54
	B. <u>Operation</u>	54
	C. <u>Pressure Adjusting / Setting</u>	55
	D. <u>Regulation</u>	55
	E. <u>Technical Details</u>	55
	F. <u>Maintenance</u>	56
	G. <u>Trouble Shooting Chart</u>	57
	H. <u>Exploded View</u>	57
6.3	<u>Spray Trigger Gun RL16</u>	58
	A. <u>Installation</u>	58
	B. <u>Operation</u>	59
	C. <u>Regulation</u>	59
	D. <u>Technical Details</u>	59
	E. <u>Maintenance</u>	60
	F. <u>Trouble Shooting</u>	60
	G. <u>Exploded View</u>	61
6.4	<u>Nozzles</u>	62
	6.4.1 <u>Variable Angel Nozzle (VAN)</u>	62
	A. <u>Dimensions</u>	62
	B. <u>Exploded View</u>	63
	6.4.2 <u>Rotating Nozzle UR-16</u>	63

	A. <u>Dimensions</u>	64
	B. <u>Exploded View</u>	64
6.4.3	<u>Conventional Nozzle</u>	65
6.5	<u>Strainer</u>	65
6.6	<u>Pressure regulating valve VS-160</u>	66
	A. <u>Installation</u>	66
	B. <u>Operation</u>	66
	C. <u>Pressure adjustment setting</u>	67
	D. <u>Regulation</u>	67
	E. <u>Technical Details</u>	68
	F. <u>Maintenance</u>	69
	G. <u>Trouble Shooting chart</u>	69
	H. <u>Exploded View</u>	70
6.7	<u>Sandblaster TS2-05</u>	71

Section 7 – Troubleshooting

7.1	<u>Do not get pressure as per pump specification</u>	73
7.2	<u>Do not get flow as per pump specification</u>	74
7.3	<u>Motor overheats</u>	76
7.4	<u>Loud knocking noise in crankcase</u>	76
7.5	<u>Suction and Discharge Line Vibration</u>	77
7.6	<u>Oil Leakage</u>	77
7.7	<u>Water leakage from pump head</u>	78
7.8	<u>High temperature in crankcase</u>	78
7.9	<u>Water in oil mix</u>	79
7.10	<u>Pressure gauge fluctuates</u>	79
7.11	<u>Short bearing life</u>	80
7.12	<u>Short valve life</u>	80
7.13	<u>Short plunger life</u>	80
7.14	<u>Catastrophic failures such as broken shaft, bent rod etc...</u>	81
7.15	<u>Stud failure</u>	81
7.16	<u>Water leakage from safety valve</u>	82
7.17	<u>Cavitation</u>	82

Section 8 – Maintenance

8.1	<u>Servicing the valve assembly</u>	84
8.2	<u>Servicing the packing seals</u>	89
8.3	<u>Servicing the plungers</u>	90
8.4	<u>Plunger oil seal assembly</u>	92
8.5	<u>Pump head to drive end installation</u>	93

8.6	<u>Torque chart of pump screw and plug</u>	94
8.7	<u>Preventive Maintenance</u>	95
8.8	<u>Life of Wear parts & Ordering Spares parts</u>	96
8.9	<u>Repairing Pump at our Factory</u>	96

Section 9 – Exploded View

9.1	<u>NHD-12.120</u>	97
9.2	<u>NHD-14.140</u>	101

PressureJet Overview

105

Client List

107

PressureJet

Section – 1: General Information

1.1 Introduction of pump

High pressure plunger pumps are designed for high pressure industrial applications. We are constructed of die cast bodies and feature a forged brass head, internal components include special solid ceramic plungers for long life and durability. Precision cast cooling fins are anodized for maximum heat dissipation. Oversized needle bearings on the drive side, and ball on the non-drive side together with the precision supports assure positive alignment and centering in relation to the crankcase. Valve cages of ultra-form provide positive seating and extended life, especially designed for high pressure application. Ball bearings on both sides of solid shaft drive pumps. Connecting rods are special alloy aluminum- based material oversized for maximum strength and load distribution.

1.2 Aim and content

These operating instructions manual provide all the information concerning the installation, use, maintenance, storage and all stages of the life cycle of the high-pressure pumps to be observed by any persons involved in its assembly/end user in order to prevent possible risks.

Operators and qualified technicians must read the instructions in this publication with due care before starting any operation on the equipment.

Read this manual carefully before using your high pressure system. It contains necessary information for correct installation, use and maintenance and practical trouble shooting suggestions.

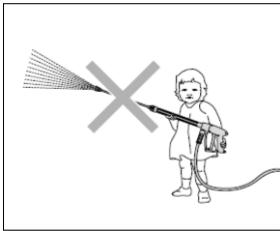
Section – 2: safety & Unpacking

2.1 Safety Icons

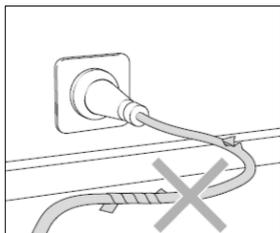
Symbol	Messages
	A warning or note regarding key features or useful information. Pay maximum attention to the text boxes indicated by these symbols.
	This symbol, always indicates an important safety instruction. You must read, understand and follow the instruction precisely. Failure to follow such an instruction can result in extreme danger to person and damage to property.
	Never point high pressure discharge jet at a person, any part of the body or animals.
	Do not enter hands during jet.
	Require Safety Shoes during operation of high pressure unit.
	Always wear safety suite during operating of high pressure unit.
	Wear Helmet
	Must read this instructions. It will help you to do a better use of your system.
	Do not operate high pressure pump while repairing.
	Do not touch pump body while using it. Max. Water temperature is 55 ⁰ C.

	<p style="text-align: center;">Flammable!</p> <p>The pump is designed to pump non-flammable or non-explosive fluids. These pumps are intended to pump clean filtered water only. Do not operate in or around an explosive environment.</p>
	<p>The high pressure equipment is designed to be used with PressureJet authorized parts ONLY. If you use this equipment with parts that do not comply with minimum specifications, the user assumes all risks and liabilities.</p>
	<p>The unit may not be connected directly to the public drinking water supply network.</p>
	<p>Always follow the pressure relief procedure, before cleaning or servicing any part or component of the system. Never try to stop or deflect leaks with your hand or body.</p>

2.2 Important Safety Instruction

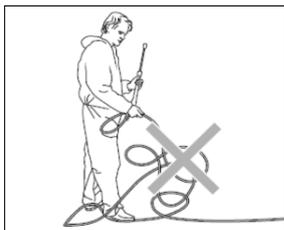


Never allow children or untrained persons to use the High Pressure Pump.



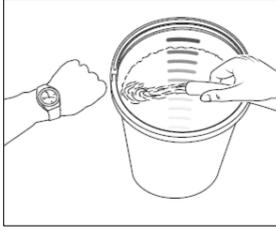
Only use power cables which are in perfect working order!

Do not damage or improperly repair cables (tearing, squeezing...)



Never pull the high pressure hose if it has formed bends or "nooses"!

Never pull the hose over sharp edges!



An insufficient amount of water available, **cavitation** (water-gas mixture) arises inside the pump, which is normally noticed too late or even not at all. The pump will be destroyed. Please check the available quantity of water by filling a bucket with liter scale for one minute.

2.3 Unpacking and Transport

The packing used for PressureJet pumps and systems was designed specifically to prevent damage caused by impact or vibration during transport or handling.

Each pump and systems is packed so that it is protected from stress and impact, and will not be damaged during transport. Based on the amount of goods to be shipped and the final place of destination, the packed pumps or systems can be placed on a pallet to facilitate lifting and handling.

When unpacking, check the parts are intact and they are the correct amount. If any parts are damaged or missing, contact immediately to PressureJet systems Pvt Ltd.

2.4 Safety during lifting and handling



Only authorized qualified personnel who have received specific training may undertake unloading, loading, handling and lifting operations.

All equipment used for lifting and transport, including accessories (such as hooks, ropes and chains), must be a suitable capacity and checked regularly according to legal standards.

2.5 General Safety

The misuse of pumps and high pressure units as well as the non-compliance of installation and maintenance instructions may reason serious injury to people and / or damage to property the staff responsible for the construction and use of high pressure equipment must possess the necessary skills, be aware with the characteristics of the equipment's components and take all possible precautions in order to secure maximum safety in all operating conditions In order to protect the safety of installers and operators, there must be no omissions when taking the applicable reasonable precautions in order to protect the safety of installers and operators.

PressureJet

Section – 3: Installation and Commissioning

3.1 Pump Model Identification

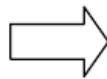
 EXPLORE THE WATER POWER		
MODEL		Pump Model No.
CAPACITY	l/min	Flow rate of pump.
PRESSURE	kg/cm ²	Maximum Pressure capacity
STROKE RATE	S.P.M	Pump Stroke length
SR. No.		Pump serial number
Pressurejet Systems Pvt. Ltd. 62/13, phase-1, G.I.D.C., Vatva, Ahmedabad-45. India Phone: +91-79-25835598 / 25830762 / 25893863 www.pressurejet.com sales@pressurejet.com		

3.2 Installation of vent cap



SOSTITUIRE IL TAPPO CIECO CON IL TAPPO LIVELLO OLIO COLORE GIALLO PRIMA DELLA MESSA IN MOTO DELLA POMPA
scaricare il manuale pompe su www.hawkpumps.com/download

REPLACE PLUG WITH YELLOW OIL DIP STICK BEFORE OPERATING PUMP
download pump manual at www.hawkpumps.com/download



The yellow label* is attached to the plug on the top of the pump body.

*the label on the plug is the same colour as the plug and so may vary depending on the model of pump.

Remove Shipping Oil cap



Install vent cap



Don't run pump without vent cap because during running pump, pump creates vapor in crankcase and vapor exits from the vent cap so vent cap is necessary for vapor exits. Oil vapor may damage oil seals

3.3 Oil Grade Chart

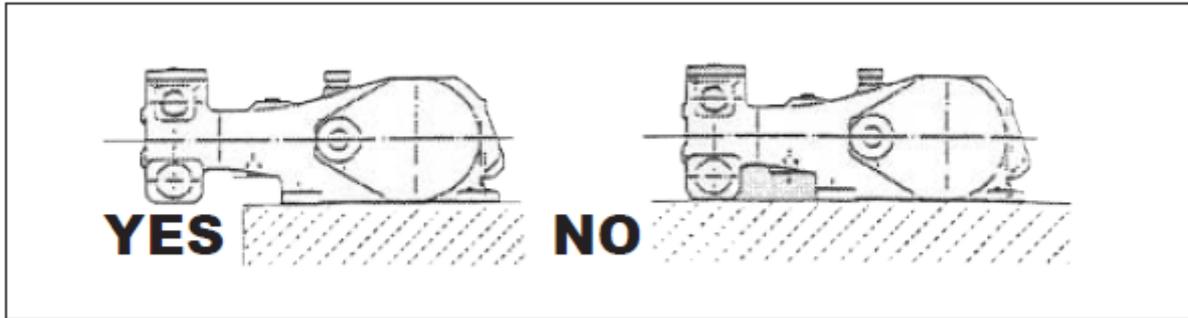
Model	Oil Grade	Capacity
NHD 12.120	SAE 10W-40	0.4 ltr.
NHD 14.150	SAE 10W-40	0.4 ltr.

Note: **First Time Oil Change – 50 hours**
Oil Subsequent Change – 500 hours
Top-up oil in pump at certain time interval to maintain oil level.
When oil gets milky, immediately stop pump and change oil and plunger seals.

3.4 Positioning

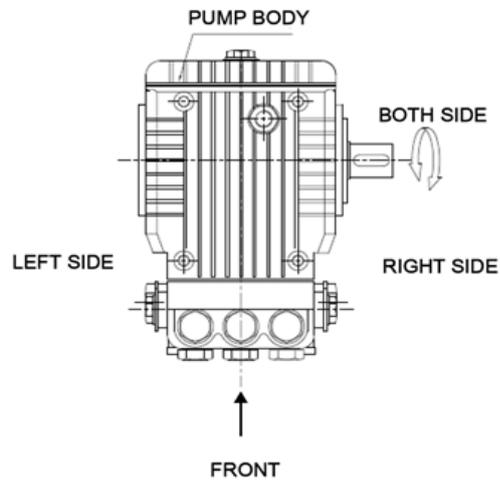
The pump must be mounted to on rigid and flat base using the four threaded feet in the crankcase. Be sure maximum pump inclination during operation does not exceed 5° in order to guarantee the correct splash lubrication.

The base must not permit any misalignment or flexing of the pump / transmission coupling.

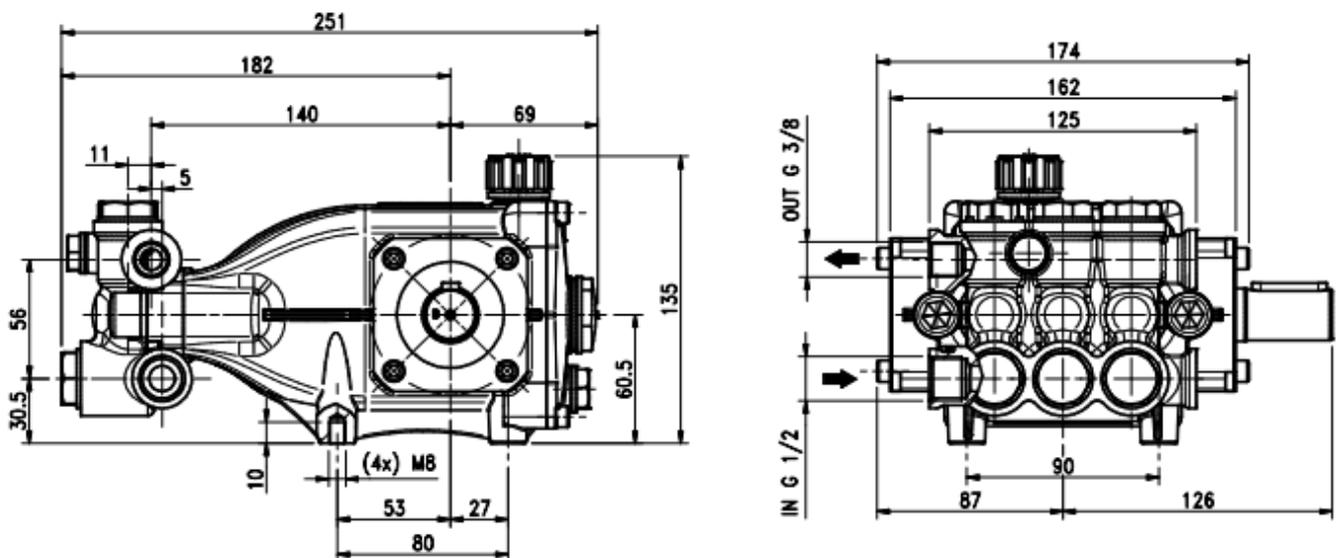


3.5 Direction of Rotation

Both Side Rotation with Shaft Projecting.

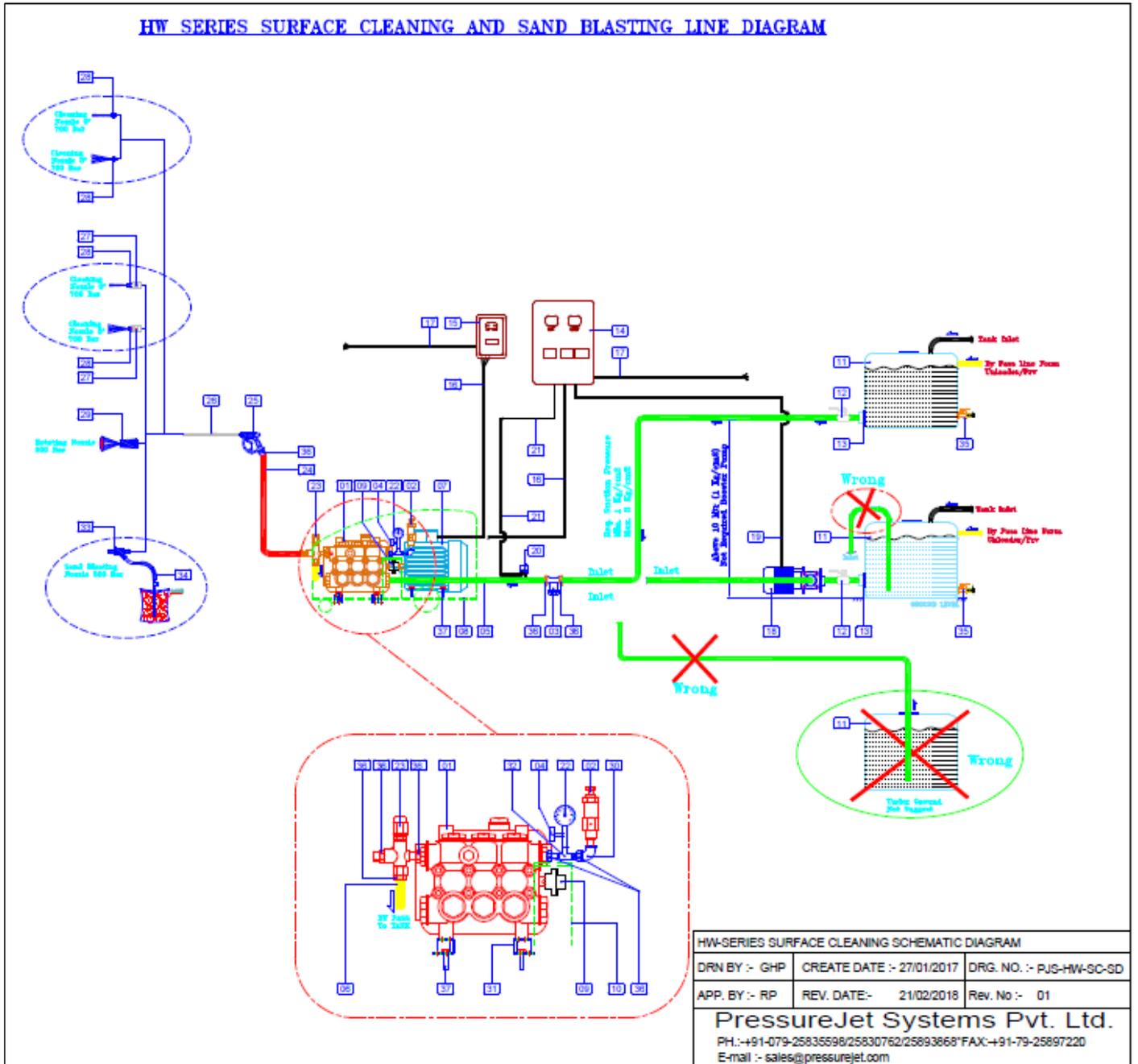


3.6 Dimension Drawing of the pump



Model No.	Length	Width	Height	Base (Length)	Base (Width)
NHD-12.120 & NHD-14.150	251 mm	213 mm	135 mm	80 mm	90 mm

3.7 Line Diagram for Installation



Note: **Green line is Suction line**

Red line is high pressure discharge line

Yellow line is by pass line

- Item list**

S.N	Item	Qty.
1	Bare pump	1
2	Safety Valve	1
3	T-Strainer for positive Suction	1
4	Needle Valve	1
5	Suction hose	1
6	By pass hose	1
7	Electric motor / (diesel engine, battery / Flange)	1
8	Base Frame / Trolley with Cover / Trolley with Tank	1
9	Coupling	1
10	Coupling Guard	1
11	Water Tank	1
12	Ball valve For suction	1
13	Water Tank Connectors for plastic tank	2
14	Control panel	1
15	Dol (up to 15 Hp) & Star delta starter (above 20 Hp)	1
16	Flexible Cable (3 Core Up to 15 Hp panel to motor) (6 Core Above 15 Hp panel to Motor)	1-10
17	4 Core flexible cable for control panel / starter to main switch	1-100
18	Booster Pump flow 2 times higher from HP pump and 20 mtr head	1
19	3 Core Flexible Cable for pressure switch	1-10
20	Pressure switch for Suction (install pressure switch if pressure min 1 kg/cm ²)	1-10
21	2 Core flexible cable for pressure switch	1
22	Pressure gauge	1
23	Unloader valve	1
24	High Pressure Rubber Hose	1
25	Spray Trigger Gun	1
26	Rigid Lance	1
27	Lance Adaptor only for Con. 0° to 5° Nozzle	1
28	Cleaning Nozzle	1
29	Rotating Nozzle	1
30	Elbow	1

31	Pump Rail	1 Pair
32	Tee	1
33	Sand Blasting Nozzle	1
34	High Pressure Water sand blasting Hose	
35	Drain valve	1
36	Hydraulic Adaptor	
37	Bolt	

3.8 Inlet Line Connection

A. Water Quality

- Maximum hardness of water should be 110 ppm.
- pH value of water must be between 6.5 to 8.5.
- Water temperature should be 5°C to 60°C (up to 500 bar)
- Ambient water temperature range is 2°C to 43°C
-  The maximum inlet water temperature is 60° C.
- The water should not be mixed with any type of liquid or chemical (chlorine, soap, etc....)
- Only clean, fresh water can be used in the pump. Recirculated water not to be used.
- The iron content should be in the water less than 0.1 ppm.
- The silica level in water should be less than 15 ppm.
- Water turbidity should be maximum 5 NTU (Nephelometric Turbidity Unit).
 - Note: as per below photo “A” type of water must require for pump.
 - Measurement of water:
 - A) 5 NTU
 - B).50-NTU
 - C). 500-NTU

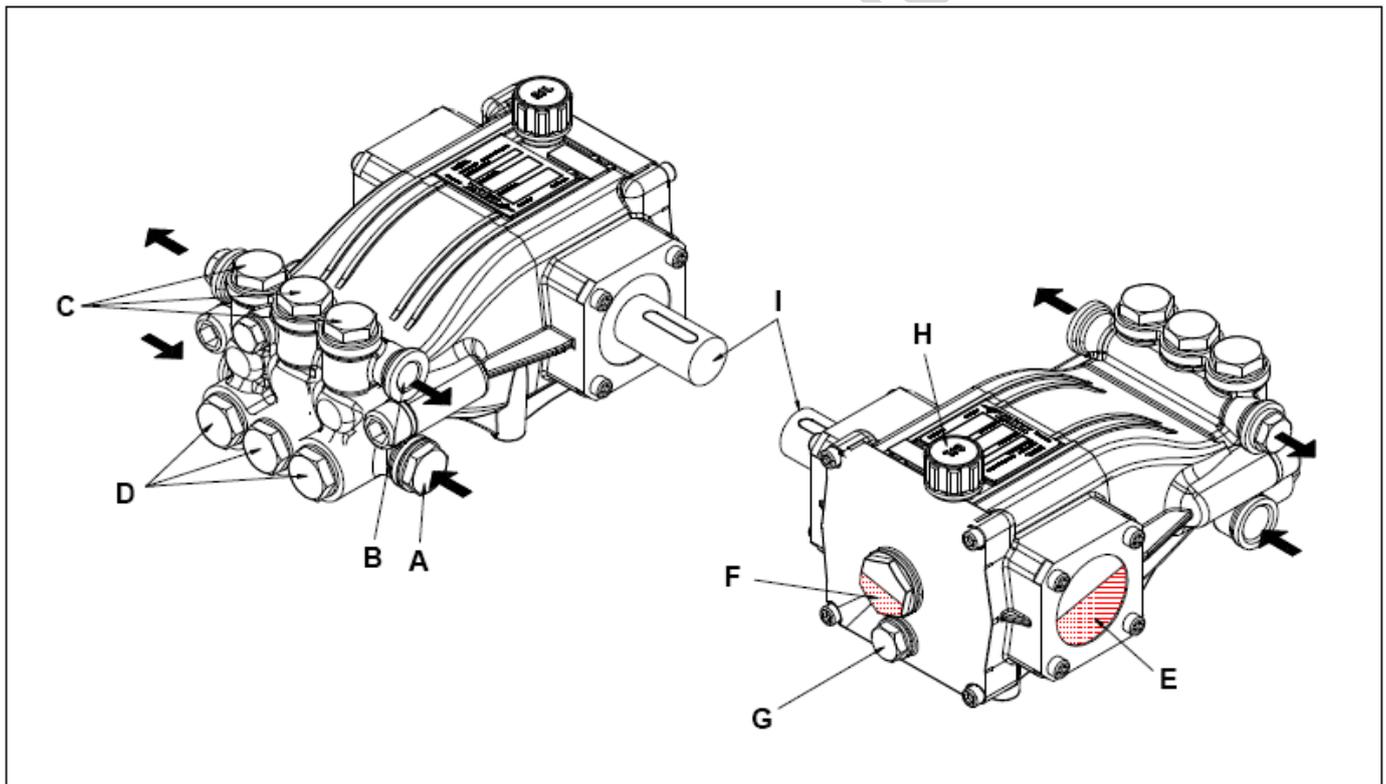


A

B

C

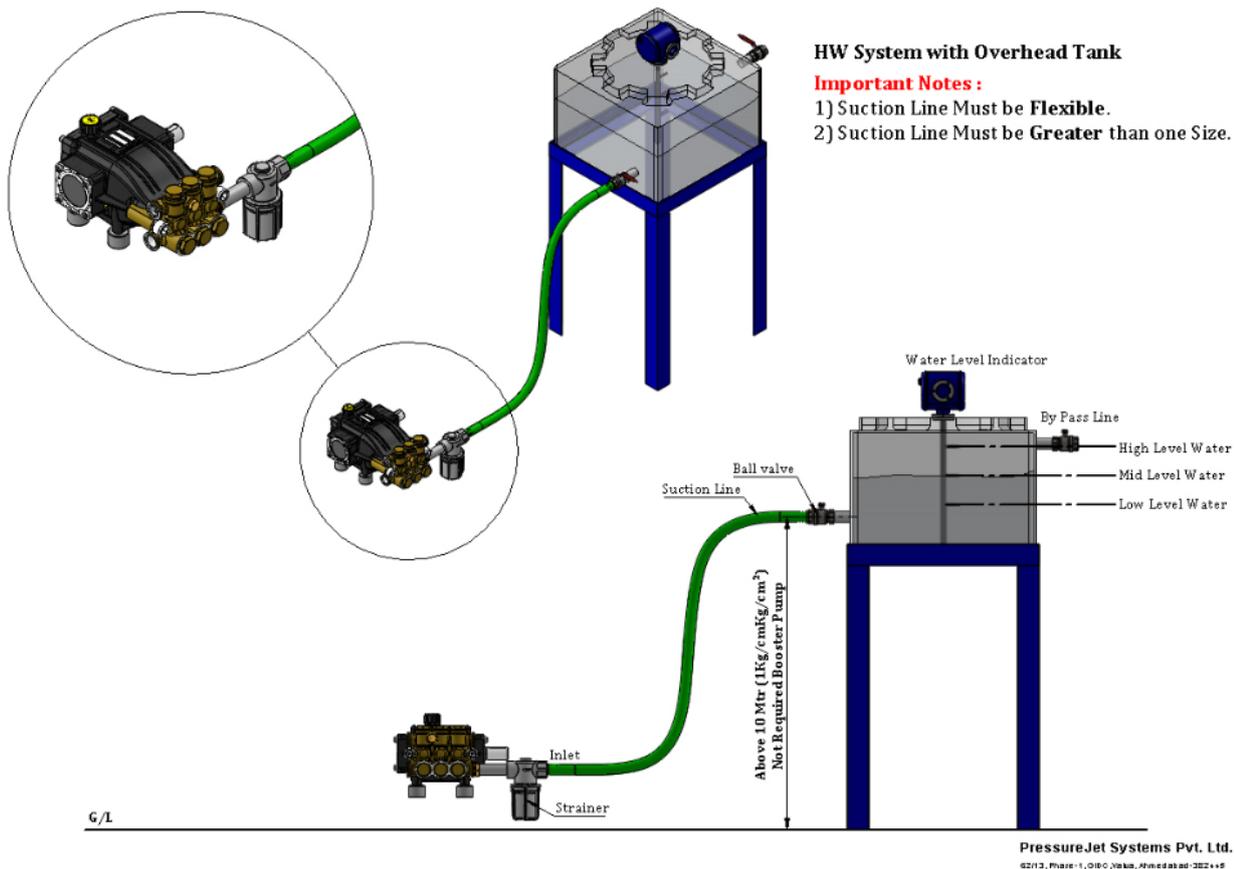
B. Inlet piping connections size



Model No.	Inlet Fix Pipe size	Inlet Flexible Hose	Outlet Fix Pipe Size (Seamless)	Outlet Flexible Hose
NHD 12.120	G.I 1/2" nb Class B	Yarn braded 3/4" flexible	M.S 3/8" nb Sch.40	H.P. hose 3/8" nb R1
NHD 14.140	G.I 1/2" nb Class B	Yarn braded 3/4" flexible	M.S 3/8" nb Sch.40	H.P. hose 3/8" nb R1

C. Inlet piping connections

- ✓ The pump life is considerably influenced by the effectiveness of the suction line, which must have the following characteristics.



- Refer above 3D drawing for “**How to do connection of inlet / suction piping**”.
- Proper suction pipe line is must required for high pressure reciprocating pump.
- A water tank must be overhead for suction pipe line. Because suction pressure must be require minimum 1 bar and maximum 3 bar, and a tank capacity must be five times higher than maximum flowrate of the pump. Water tank must be on **height at least 10 meter**.
- “**Water level switch**” should be installed in water tank for maintain of water level in water tank. Make sure that, there are arrangement of continuous water supply to suction water tank and as well as pump too.

- Suction hose pipe must be a flexible, in suction line not allow to use rigid pipe. as well as not allow to assemble with adapters, elbow and tee. Suction hose pipe must be “**Low pressure**” and “**Flexible**”



If water supply stop to pump, then it can be produce air in suction line and air can be produce cavitation in pump so **cavitation** can be damage pump and internal parts.

High pressure hose and rigid hose not allow in suction line. Because it can be produce vibration in discharge line and it is affect to life of pump.

- Ball valve should be assemble between water tank and suction hose, and it should be open during while running pump.
- Suction line must be connect from the bottom of the water tank, direct line from top of the tank is not allow in installation. Because we must require “**positive flooded suction**”

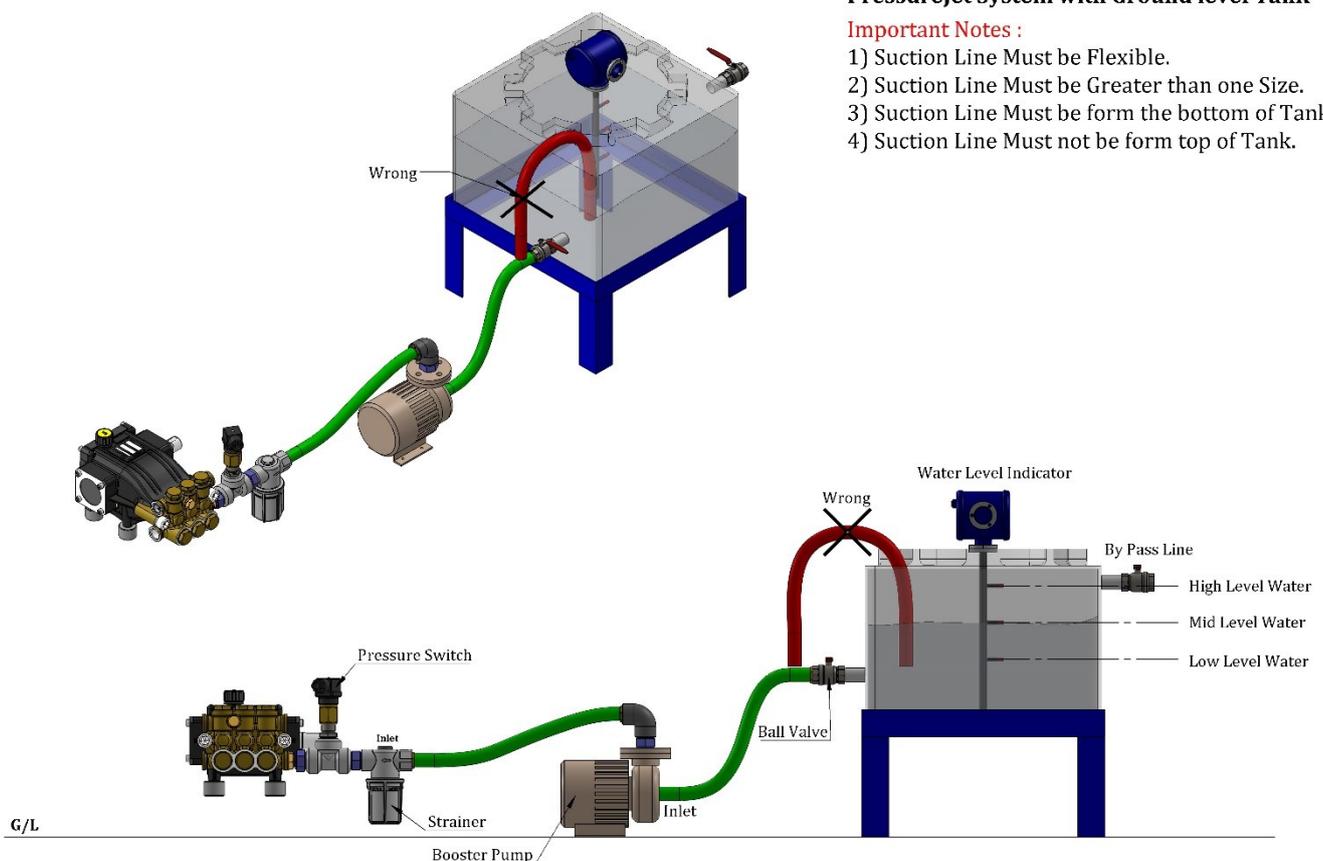


Direct hose from top of the water tank not allow. It can be produce air and **cavitation** in the pump.

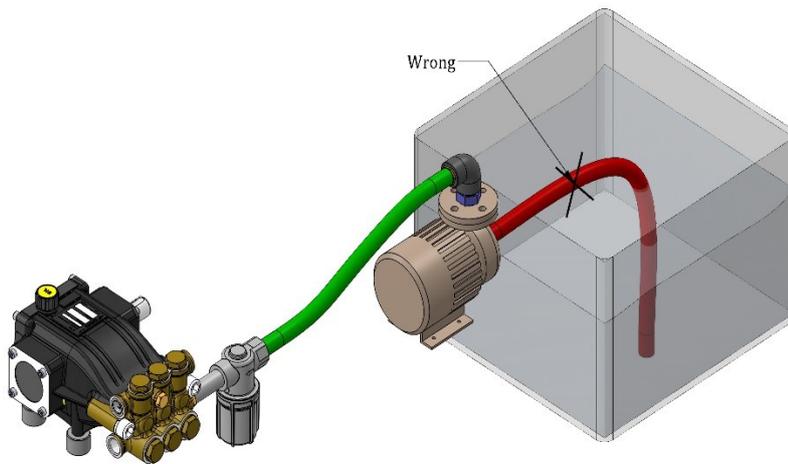
PressureJet System with Ground level Tank

Important Notes :

- 1) Suction Line Must be Flexible.
- 2) Suction Line Must be Greater than one Size.
- 3) Suction Line Must be form the bottom of Tank.
- 4) Suction Line Must not be form top of Tank.



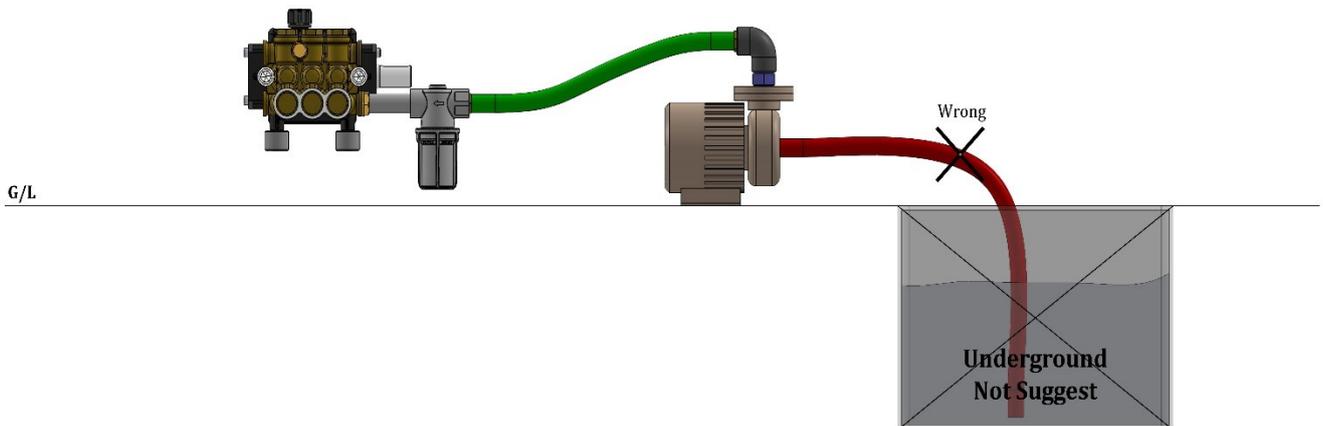
- If on site not available overhead tank or minimum 1 bar suction pressure, in this conditions “Booster pump” must be require for suction pressure.
- In this condition water tank mounted 1-2 meter above from pump level and assemble booster pump for proper suction pressure.
- When booster pump assemble for suction pressure in this condition “Pressure switch” must require. Pressure switch is safety of pump, when pump do not get certain suction pressure at that time pressure switch will off the pump so pump will not run dry.



PressureJet System with Underground Tank

Important Notes :

- 1) Suction Line Must be **Flexible**.
- 2) Suction Line Must be **Greater** than one Size.



G/L

PressureJet Systems Pvt. Ltd.
62/13, Phase-1, GIDC, Vatva, Ahmedabad-382445

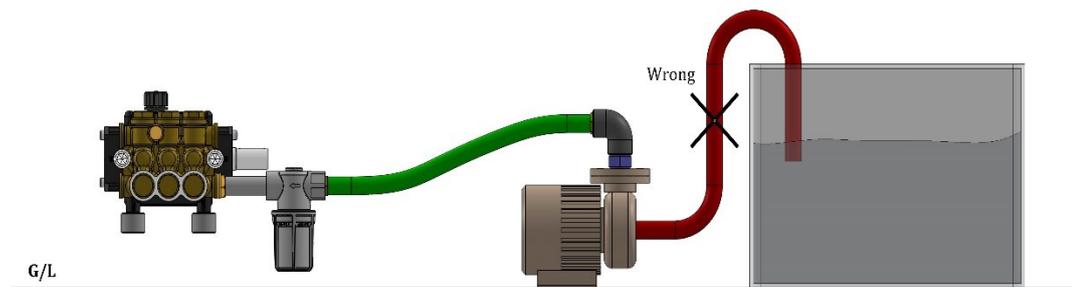
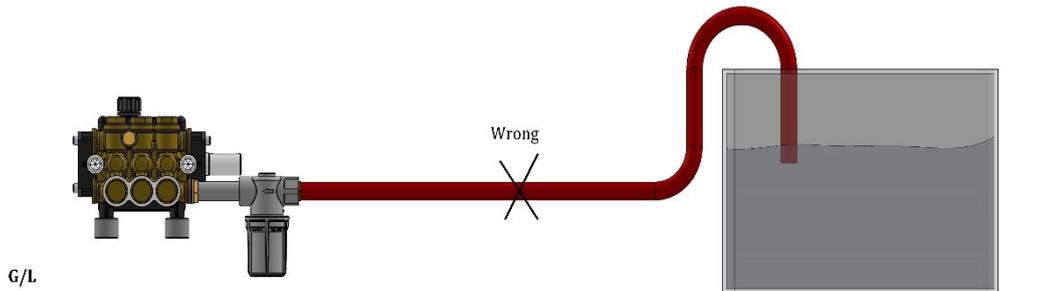
- An underground tank is not allow for suction connection.



Negative suction is not allow for suction. Negative connection cannot take proper suction from the underground tank and pump can be run dry in this condition and without proper suction pump can be breakdown.

PressureJet System with Underground Tank
Important Notes :

- 1) Suction Line Must be Flexible.
- 2) Suction Line Must be Greater than one Size.
- 3) Suction Line Must not be form top of Tank.

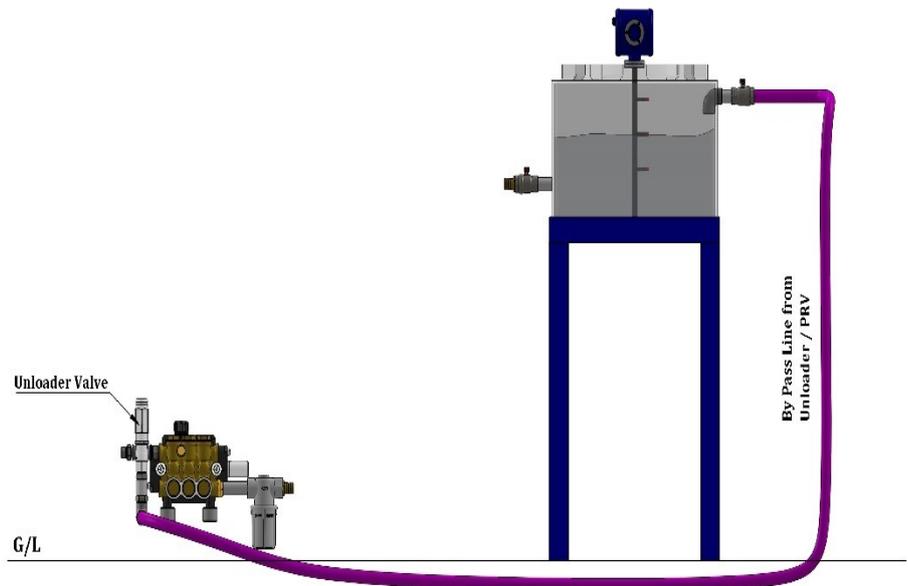


D. Bypass line connection

PressureJet System with Underground Tank

Important Notes :

- 1) Suction Line Must be Flexible.
- 2) Suction Line Must be Greater than one Size.
- 3) Do Not Connect By Pass Line with Suction Line.

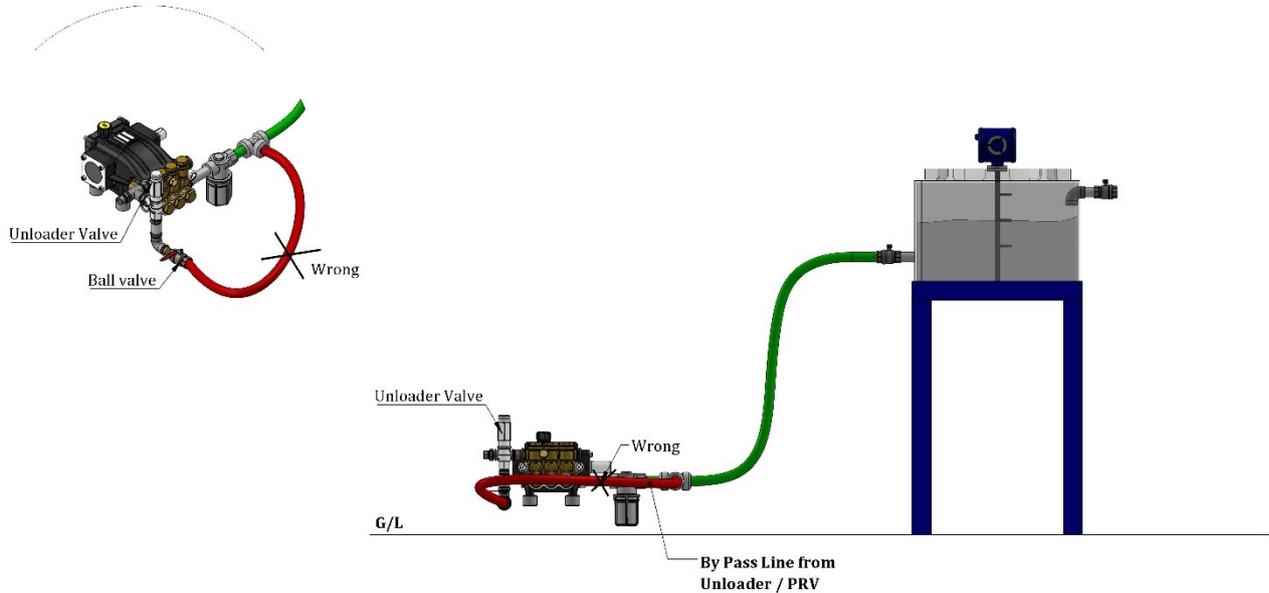


PressureJet Systems Pvt. Ltd.
62/13, Phase-1, GIDC, Vahra, Ahmedabad-382445

PressureJet System with Underground Tank

Important Notes :

- 1) Suction Line Must be Flexible.
- 2) Suction Line Must be Greater than one Size.
- 3) Do Not Connect By Pass Line with Suction Line.

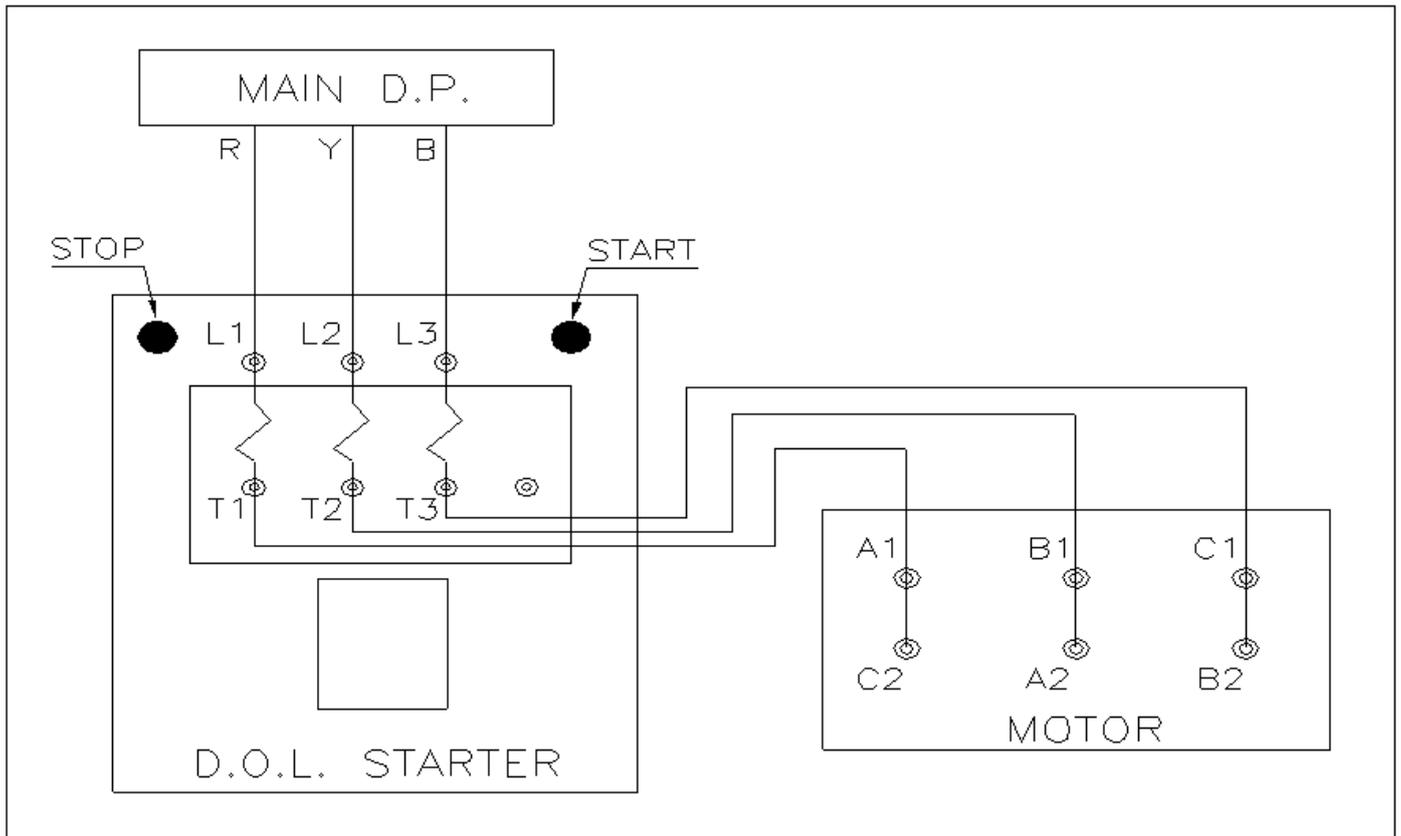


PressureJet Systems Pvt. Ltd.
62/13, Phase-1, GIDC, Vatva, Ahmedabad-382445

- Bypass line should be fitted to suction water tank and do not fit ball valve or plug in bypass line.
- Bypass line not assemble with direct to suction line.

3.9 Electric Motor and Starter Connection Chart

Motor HP (1450 RPM)	Motor Amp.	Cable in sq. mm	Starter	
			Type	Relay Range
2	3.2	1.5	DOL – MK - 1	2.5 – 4
3	4.5	1.5	DOL – MK - 1	4 – 6.5
4	6.1	1.5	DOL – MK - 1	6 – 10
5	7.4	1.5	DOL – MK - 1	6 – 10
7.5	10.5	1.5	DOL – MK - 1	9 – 14



3.10 Discharge Line

To ensure the discharge lines is correctly installed:

- The discharge hose must be flexible.
- Install a suitable safety valve on the discharge line.
- Use only high pressure hoses and fitting that exceed the working pressure of the system.
- Use glycerin filled pressure gauges.

3.11 Quick Start

- Always use a pressure gauge, when operating pump. The pressure must not exceed from specified rated pressure of pump or pump could be damaged causing leakage, resulting in injury to personnel in locality.
- A security valve should be installed in any delivery line and should be sized to discharge or by-pass the entire pump flow rate.
- Do not adjust relief valve to maintain more pressure than their specifications state. This could result in relief valve or pump casing bursting due to excess pressure. Personnel in general area could be physically harmed.
- Do not put a valve between the pump and relief valve. If the pump will be started with this valve closed, this could put excessive pressure on the pump, which could cause the pump case to burst and might injure personnel or other equipment in area.
- Electric components and wirings should be provided with an adequate degree of protection, able to protect them against spray coming from any direction. They should also be suitable for working in wet environment.
- High pressure hose and any other accessory under pressure, should be sized in accordance with the maximum unit working pressure and must always work within the safety margins indicated by the hose / accessory manufacturer.
- High pressure hose ends should be fastened to a steady body in order to prevent them from dangerous sweeping around, should they burst or come off their end fittings.
- Proper safety guards should be provided to adequately cover transmission joints, pulley, belts, auxiliary drivers etc.
- Do not modify pump to function beyond its specifications.

3.12 Safety during installation and commissioning

The area and environment that the high pressure system installed / operates in must be clearly spacing and allow to only authorized staffs. The area should be restricted and defined. The staff in charge of doing the work should first experience working environment direct

preparing and also preparing on the dangers emerging from high pressure framework harms or imperfections. Preceding beginning up the system, the operators are required to check.

- The system has the correct power supply.
- The electrical parts are correctly and adequately protected and work efficiently.
- The high pressure hoses and hose fittings do not express signs of wear and tear or extreme wear.

Any defect, damage or reasonable doubt that might produce before or during the operation must be reported and verified by qualified staff. Is this happen, the system must be stopped immediately and the pressure goes down to zero.

3.13 Cavitation

- Proper design of the pump inlet supply is critical to the success of any pumping system. The supply can be gravity suction, or pressure fed depending on the pump selected. Improper supply to the pump will cause cavitation. Cavitation is the formation and collapse of gaseous pockets (cavities) in a liquid.
- Cavitation occurs when a lack of liquid to the inlet causes vaporization in the low pressure chamber of the pump. When a vapor bubble is re-pressurized it quickly collapses supersonically and the shock wave erodes the surface it is on. This release of energy is created by the collapsing cavities, causes pitting and corrosion of metallic or ceramic components. This process will create pump noise. The noise will be less pronounced when the pump is in bypass due to lower pressure changes.



- Cavitation will decrease pump outlet flow and pressure as well because the pump doesn't fully prime with liquid. Instead, the pump is attempting to pump a combination of liquid and vapor. Cavitation will cause shorter seal life, rough valves, and manifolds. The short seal life is caused by the lack of lubrication (water is a lubricant in this situation) increasing wear.
- Another indication of cavitation is a decrease in the pumps flow rate. Because the pump doesn't prime fully, the system pressure and flow becomes erratic (pump is trying to pump air).

- A number of system conditions impact the risk of cavitation. If viscosity is too high, the pump will not prime (fill) completely causing cavitation. Pressurejet Pumps recommends the viscosity not exceed 500cp (Centipoise) (2500 SUS).
- Restrictions to flow and pressure exist in any pumping system. Use of restrictive plumbing (i.e., small diameter plumbing, elbows) at the pump inlet can cause a loss of flow on the suction side of the pump causing pump cavitation. Inlet plumbing should be a minimum of one size larger than the pump inlet fitting (i.e., ¾" inlet fitting requires a 1" flexible reinforced hose for suction feed applications). Friction will also cause a loss of fluid pressure in the downstream pump components and plumbing. Vibration can also be stopped by dividing the inlet and outlet of the pump using hoses. Avoid hard plumbing the pump to a piping system.

PressureJet

Section – 4: Operating (application wise)

4.1 Safety during operation, maintenance and repairing

- Only trained person or engineers or technician should operation, maintenance, inspection and repair of high pressure water unit. The owner of the pump or unit are responsible for certify that all person are fully trained and aware with high pressure unit.
- Before start works check all safety and shut down instruction. Before starting works on diesel engine driven units disconnect the battery cables and In case of e-motor driven unit cut-off or unplug main plug and before restarting the unit follow the instruction given in the selection installation.



Unauthorized design modifications are forbidden. The manufacturer cannot be held responsible for any costs ascending from the fitting of unauthorized spares parts or accessories

4.2 Surface Cleaning application

- This application consists like vehicle cleaning, vessel cleaning, floor cleaning, dust removal and many other “general cleanings”.
 - For cleaning applications mainly used different accessories like trigger operated gun, an unloader valve, safety valve and nozzles.
- ✓ We wish that before starting pump you have read suction line connections carefully and check all connections.
- ✓ Assemble discharge high pressure hose with unloader discharge connection and assemble trigger operated gun with high pressure discharge hose. **“During assembly with unloader valve and trigger gun use blue tube for thread safety if threads are from SS materials so during assembly no need to use Teflon tape because of swivel connections are available in discharge hose.”**
- ✓ After assembly high pressure discharge hose, assemble suitable nozzle to trigger operated gun or rigid lance.
- ✓ Open the suction line. **(Suction hose size must be minimum ¾ inch, flexible and low pressure).**
- ✓ Make sure that after opening suction line, water must meet to the pump, you check it by plastic suction strainer or in discharge line.
- ✓ Before start pump make sure that “air is relieved from the pump”. Air can be relieved from discharge line or from suction strainer.



Do not start pump before relieve air, if air blocked in suction line it can be produced cavitation in pump and can damage internal parts and pump.

- ✓ After removed air from pump, start high pressure pump.



Make sure that before starting pump “unloader valve” must be open. It should not be tight or under pressure.

- ✓ Whenever pump will start and unloader valve will open, all water passes in by pass hose.



By pass line should not fitted with suction line or do not fit ball valve or plug in by-pass line.

By pass line must be open or assemble to suction water tank. (Click [HERE](#) for by pass line assembly).

- ✓ Now keep the trigger operated gun in front of the job or equipment which will be cleaned.



Never point high pressure discharge jet on any human and animal. Do not enter hand during jet.

- ✓ Now press trigger gun and increase pressure as per requirement or as maximum capacity of pump by using “unloader valve”. **Without press trigger operated gun, pressure will not increase so trigger must press during increase or decreases discharge pressure.**

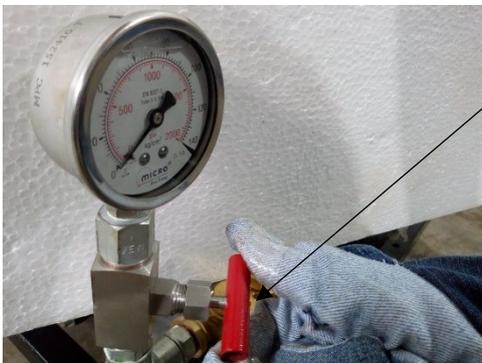


Press Trigger Gun during increase Pressure using PRV or Unloader Valve.

Increase pressure gradually



- ✓ During increase pressure gradually, pressure gauge shows actual pressure in pump and during increase pressure check the needle valve.



Needle valve must be open during increase pressure.

Pressure shows in pressure gauge.



- ✓ When the pump gets maximum pressure, the water in the bypass is stopped.



- Check pressure gauge must be zero before taking pressure.
- Make sure during increase the pressure trigger gun must be press.
- Make sure that during increase pressure “Needle valve” must be open.
Needle valve will open “anti-clock wise”.

✚ Check accessories technical data, part list and troubleshooting chart, maintenance and other data for all accessories.

Accessories	NHD 1212R	NHD 1415R
Unloader valve	Click HERE	Click HERE
Safety Valve	Click HERE	Click HERE
Spray Trigger Gun	Click HERE	Click HERE
Nozzles	Click HERE	Click HERE

PressureJet

4.3 Sand Blasting application

- This application consists paint removal from surface and sand blasting. In this application 20-40 mesh sand uses for cleaning.
 - For Sand blasting cleaning applications mainly used different accessories like trigger operated gun, an unloader valve, safety valve and nozzles and one additional accessories like “**sand blasting unit**”.
- ✓ We wish that before starting pump you have read suction line connections carefully and check all connections and points as per check list.
- ✓ Assemble and fit discharge high pressure hose with unloader discharge connection and assemble trigger operated gun with high pressure discharge hose. **“During assembly with unloader valve and trigger gun use blue tube for thread safety, if threads are from SS materials then during assembly no need to use Teflon tape because of swivel connections available in discharge hose.”**
- ✓ After assembly of hose and gun, assemble sand blasting unit with trigger operated gun. Check below photos for assembly of sand blasting unit. See below photos as per sequence. **“Check sand blasting video on our exclusive video channel on you tube: <https://www.youtube.com/watch?v=aqPiF49DZu4> ”.**



Image: 1



Image: 2



Image: 3



Image: 4

- ✓ Run the sand suction hose on top of the lance. If sand suction hose is under the lance during operation water can run down the sand suction hose getting the sand wet and it will not flow through the head. Eventually the hose will plug and the assembly will need to be cleaned and dried before using. Several pieces of electrical tape can be used to hold the hose in place. Silica sand is recommended.

SANDBLASTER EQUIPMENT	
 Medium Duty Sandblaster	<p style="text-align: center;">Medium Duty Sand Blasters Machine use up to 3,500 PSI @ 4.0 GPM. The kit is assembled and ready to operate</p> <ul style="list-style-type: none"> • 20 FT Hose • Metal Probe • Sand Blast Head • Steel Orifice • Carbide Nozzle

- ✓ Open the suction line. **(Suction hose size must be minimum ¾ inch, flexible and low pressure).**
- ✓ Make sure that after opening suction line, water must meet to the pump, you check it by plastic suction strainer or in discharge line.
- ✓ Before start pump make sure that “air is relive from the pump”. Air can be relived from discharge line or from suction strainer.



Do not start pump before relive air, if air blocked in suction line it can be produced cavitation in pump and can damage internal parts and pump.

- ✓ After removed air from pump, start high pressure pump.



Make sure that before starting pump “unloader valve” must be open. It should not be tight or under pressure.

- ✓ Whenever pump will start and unloader valve open, all water passes in by pass hose.

By pass line should not fitted with suction line or do not fit ball valve or plug in by-pass line.



By pass line must be open or assemble to suction water tank. (Click [HERE](#) for by pass line assembly).

- ✓ Now keep the trigger operated gun in front of the job or equipment which will be cleaned.



Never point high pressure discharge jet on any human and animal. Do not enter hand during jet.



Always test spray on a scrap of similar material first! The high pressure spray could damage the surface if the sandblaster is held too close.

- ✓ Now press trigger gun and increase pressure as per requirement or maximum pump capacity by using “unloader valve”. Without press trigger operated gun pressure will not increase so trigger must press during increase or decreases discharge pressure.



Press Trigger Gun during increase Pressure using PRV or Unloader Valve.

Increase pressure gradually



- ✓ During increase pressure gradually, pressure gauge shows actual pressure in pump and during increase pressure check the needle valve, which assembled below pressure gauge and **needle valve must be always open.**



Needle valve must be open during increase pressure.

Pressure shows in pressure gauge.



- ✓ When the pump gets maximum pressure, the water in the bypass is stopped.



- **Check pressure gauge must be zero before taking pressure.**
- **Make sure during increase the pressure trigger gun must be press.**
- **Make sure that during increase pressure “Needle valve” must be open.**
Needle valve will open “anti-clock wise”.

- ✓ To check the distance you will need to hold the spray nozzle from the surface, start to spray at the scrap of material from a distance of several feet. Gradually move closer, checking frequently to see if the high pressures spray is damaging the surface.
- ✓ See the application below for the type of sand recommended for your work surface.
- ✓ Always point the nozzle downward when not spraying. This prevents water from entering the sand supply. If water does get into the sand supply hose, remove the probe from the sand, hold the gun trigger open, and let the hose air dry. **Always be sure the sand hose is dry before using.**

- ✓ Keep the sand covered to prevent the overspray from wetting the sand. Do not allow small pieces of the sand bag to fall into the sand supply. A smaller piece could prevent the flow of sand.

❖ Sand Data

- **Paint Removal:** Read about paint removal with a pressure washer and sandblaster attachment.
- **Sand Mesh:** Sand mesh refers to the size of mesh through which a particular grade of sand will pass. A "16/50" mesh means that normally, most of these particles will pass through a No. 16 mesh and a very small percentage will pass through a No. 50 sieve.
- **Round Sand:** This refers to the round edge of the grain of sand. River is a good example of sand worn to its size by water.
- **Angular Sand:** This refers to the grain of sand which has triangular-shaped edges. Crushed rock or sand is usually this type.
- **Blasting Angle and Distance:** This blasting angle can affect the nozzle distance. Always maintain the recommended blasting angle and the proper distance from your work surface for the best sandblasting performance.

Removal of	Sand mesh	Sand type	Blasting angle
Paint from metal	20 / 40	Round silica	0 - 30
Paint from masonry	20 / 40	Round silica	0 – 20
Rubber base paint from masonry	10 / 35	Angular	0 – 15
Paint from wood (coarse, rough cut effect)	40 / 60	Round	1 – 10
Paint from wood (smoother, driftwood effect)	20 / 40	Round	1 – 10
Metal scale	20 / 40	Round	0 – 15
Rust	16 / 50	Angular	0 - 25

❖ Adjustable Sand Intake

- ✓ By experimenting with different settings, you can determine which setting is most economical for the job. See below for approximate sand usage per minute at each setting.

Setting Number	Hole Dia.	Sand injection Rate (pound per minute)
1	1/4"	4.2

✚ Check accessories technical data, part list and troubleshooting chart, maintenance and other data for all accessories.

Accessories	NHD 1212R	NHD 1415R
Unloader valve	Click HERE	Click HERE
Safety Valve	Click HERE	Click HERE
Spray Trigger Gun	Click HERE	Click HERE
Nozzles	Click HERE	Click HERE

PressureJet

4.4 Hydro Test application

- This application consists hydro test for tubes, hoses, valves, boiler, etc.
- For hydro test applications mainly used different accessories like hose pipe, pressure regulating valve, safety valve, ball valves, Non return valve.
- ✓ We wish that before starting pump you have read suction line connections carefully and check all connections and points as per check list.
- ✓ Assemble and fit discharge high pressure hose with non-return valve, which non-return valve assembled with ball valve and ball valve assembled with pressure regulating valve. **“During assembly of discharge hose to non-return valve, use blue tube for thread safety if threads are from SS materials and during assembly no need to use Teflon tape because of swivel connections available in discharge hose.”**
- ✓ After assembly high pressure discharge hose, assemble another closing of hose to your equipment for hydro test.
- ✓ Open the suction line. **(Suction hose size must be minimum ¾ inch, flexible and low pressure).**
- ✓ Make sure that after opening suction line, water must meets to the pump, you check it by plastic suction strainer or in discharge line.
- ✓ Before start pump make sure that “air is relived from the pump”. Air can be relived from discharge line or from suction strainer.



Do not start pump before relive air, if air blocked in suction line it can be produced cavitation in pump and can damage internal parts and pump.

- ✓ After removed air from pump, start high pressure pump.



Make sure that before starting pump “pressure regulating valve” must be open. It should not be tight or under pressure.

- ✓ Whenever pump will start at that time pressure regulating valve must open, all water passes in by pass hose.



By pass line should not fitted with suction line or do not fit ball valve or plug in by-pass line.

By pass line must be open or assemble to suction water tank. (Click [HERE](#) for by pass line assembly).

- ✓ Now let the fill equipment with water for hydro test by using high pressure PressureJet pump or feed pump.
- ✓ After being filled with water and removal of air, close ball valve or plug at the end of the equipment and start to take pressure.
- ✓ Increase pressure gradually by using “pressure regulating valve”.
- ✓ During increase pressure gradually, pressure gauge shows actual pressure in pump and during increase pressure check the needle valve, which assembled below pressure gauge and **needle valve must be always open**.
- ✓ When maximum pressure will be taken in pump at that time the water in the bypass is stopped.



- **Check pressure gauge must be zero before taking pressure.**
- **Make sure that during increase pressure “Needle valve” must be open. Needle valve will open “anti-clock wise”.**

- ✓ After taking certain pressure or require pressure, you can switch off the pump and close the ball valve.
- ✓ Pressure can maintain in equipment because of we assembled non-return valve and ball valve in discharge connection. Non-return valve will helps you to maintain pressure in equipment and stop water to coming back so pressure will maintain as it is in equipment. And save electricity for pump.
- ✚ **Check accessories technical data, part list and troubleshooting chart, maintenance and other data for all accessories.**

Accessories	NHD 1212R	NHD 1415R
Pressure regulating valve	Click HERE	Click HERE
Safety Valve	Click HERE	Click HERE

4.5 Sewer Jetting application

- For sewer jetting applications mainly used different accessories like hose pipe, pressure regulating valve, safety valve, nozzles.
- ✓ We wish that before starting pump you have read suction line connections carefully and check all connections and points as per check list.
- ✓ Assemble and fit discharge high pressure hose with pressure regulating valve, **“During assembly of discharge hose to pressure valve, use blue tube for thread safety if threads are from SS materials, and during assembly no need to use Teflon tape because of swivel connections available in discharge hose.”**
- ✓ After assembly high pressure discharge hose, assemble nozzles to discharge hose.
- ✓ Open the suction line. **(Suction hose size must be minimum ¾ inch, flexible and low pressure).**
- ✓ Make sure that after opening suction line, water must meet to the pump, you check it by plastic suction strainer or in discharge line.
- ✓ Before start pump make sure that “air is relieved from the pump”. Air can be relieved from discharge line or from suction strainer.



Do not start pump before relieve air, if air blocked in suction line it can be produced cavitation in pump and can damage internal parts and pump.

- ✓ After removed air from pump, start high pressure pump.



Make sure that before starting pump “pressure regulating valve” must be open. It should not be tight or under pressure.

- ✓ Whenever pump will start and pressure regulating valve should open, all water passes in by pass hose.

By pass line should not fitted with suction line or do not fit ball valve or plug in by-pass line.



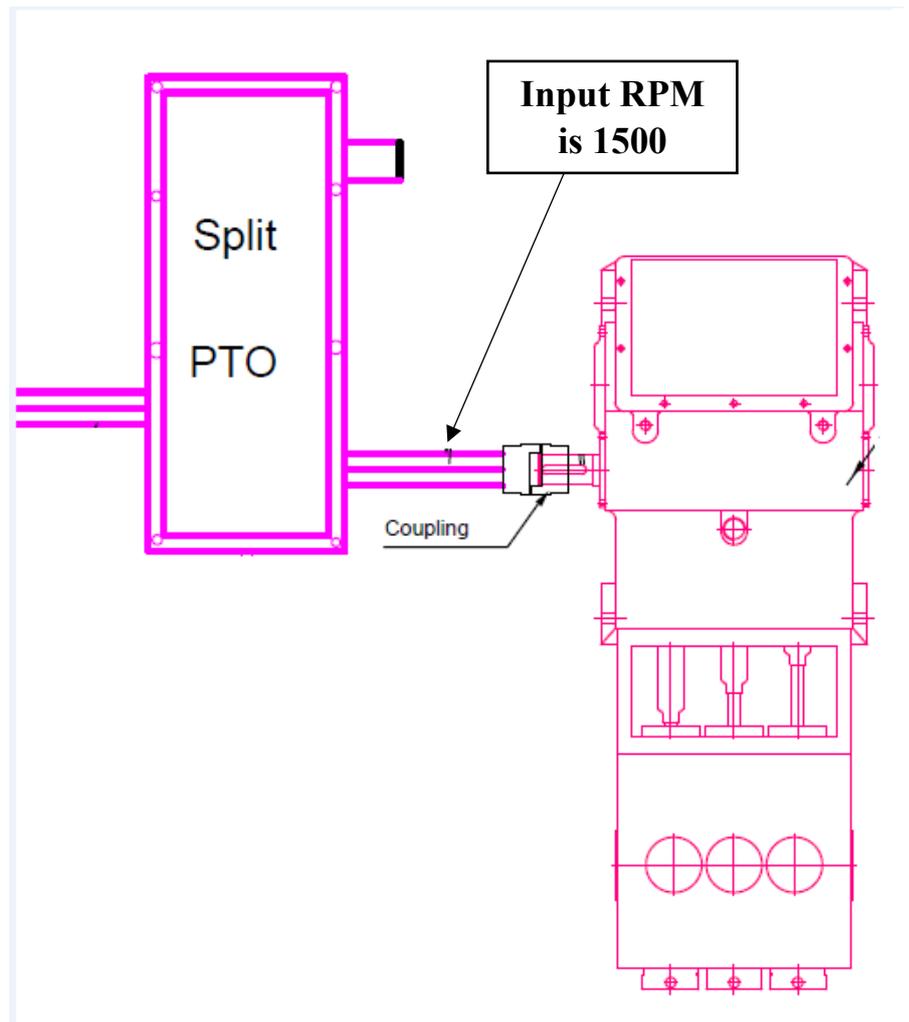
By pass line must be open or assemble to suction water tank. (Click [HERE](#) for by pass line assembly).

- ✓ Before taking pressure check RPM. 1500 RPM must require for pump.



1500 RPM must
require for
PressureJet make
pump.

More than 1500 rpm
can be damaged
pump.



- ✓ Increase pressure gradually by using “pressure regulating valve”.
- ✓ During increase pressure gradually, pressure gauge shows actual pressure in pump and during increase pressure check the needle valve, which assembled below pressure gauge and **needle valve must be always open**.
- ✓ When maximum pressure will be taken in pump at that time the water in the bypass is stopped.



- Check pressure gauge must be zero before taking pressure.
- Make sure that during increase pressure “Needle valve” must be open.
Needle valve will open “anti-clock wise”.

✚ Check accessories technical data, part list and troubleshooting chart, maintenance and other data for all accessories.

Accessories	NHD 1212R	NHD 1415R
Pressure regulating valve	Click HERE	Click HERE
Safety Valve	Click HERE	Click HERE

PressureJet

4.6 Fire Fighting

- For Fire Fighting applications mainly used different accessories like trigger operated gun, pressure regulating valve, safety valve and nozzles.
- ✓ We wish that before starting pump you have read suction line connections carefully and check all connections and points as per check list.
- ✓ Assemble and fit discharge high pressure hose with pressure regulating valve discharge connection and assemble trigger operated gun with high pressure discharge hose. **“During assembly with pressure regulating valve and trigger gun use blue tube for thread safety if threads are from SS materials and during assembly no need to use Teflon tape because of swivel connections available in discharge hose.”**
- ✓ After assembly high pressure discharge hose, assemble suitable nozzle to trigger operated gun or rigid lance.
- ✓ Open the suction line. **(Suction hose size must be minimum ¾ inch, flexible and low pressure).**
- ✓ Make sure that after opening suction line, water must meet to the pump, you check it by plastic suction strainer or in discharge line.
- ✓ Before start pump make sure that “air is relieved from the pump”. Air can be relieved from discharge line or from suction strainer.



Do not start pump before relieve air, if air blocked in suction line it can be produced cavitation in pump and can damage internal parts and pump.

- ✓ After removed air from pump, start high pressure pump.



Make sure that before starting pump “unloader valve” must be open. It should not be tight or under pressure.

- ✓ Whenever pump will start and at that time pressure regulating valve should be open, all water passes in by pass hose.

By pass line should not fitted with suction line or do not fit ball valve or plug in by-pass line.



By pass line must be open or assemble to suction water tank. (Click [HERE](#) for by pass line assembly).

- ✓ Now keep the trigger operated gun in front of the flame.



Never point high pressure discharge jet on any human and animal. Do not enter hand during jet.

- ✓ Now press trigger gun and increase pressure as per requirement or maximum pump capacity by using “pressure regulating valve”. Without press trigger operated gun pressure will not increase so trigger must press during increase or decreases discharge pressure.

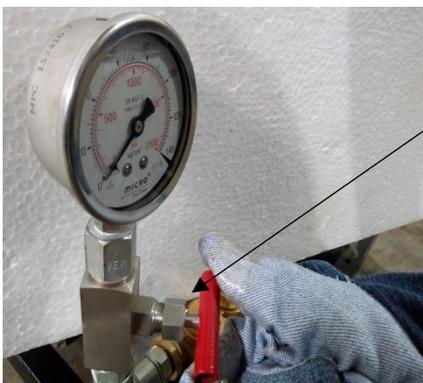


Press Trigger Gun during increase Pressure using PRV or Unloader Valve.

Increase pressure gradually



- ✓ During increase pressure gradually, pressure gauge shows actual pressure in pump and during increase pressure check the needle valve, which assembled below pressure gauge and **needle valve must be always open.**



Needle valve must be open during increase pressure.

Pressure shows in pressure gauge.



✓ When the pump gets maximum pressure, the water in the bypass is stopped.



- Check pressure gauge must be zero before taking pressure.
- Make sure during increase the pressure trigger gun must be press.
- Make sure that during increase pressure “Needle valve” must be open.
Needle valve will open “anti-clock wise”.

✚ Check accessories technical data, part list and troubleshooting chart, maintenance and other data for all accessories.

Accessories	NHD 1212R	NHD 1415R
Pressure regulating Valve	Click HERE	Click HERE
Safety Valve	Click HERE	Click HERE
Spray Trigger Gun	Click HERE	Click HERE
Nozzles	Click HERE	Click HERE

4.7 Safety Valve Operation



Do not modify in safety valve. Safety valve was set at certain safety pressure. Safety valve open only, when pressure raised above sated pressure of pump.

Safety valve open (Water release from safety valve)



Do not enter hands during jetting. It can be injured.



And never point high pressure discharge line jet or trigger operated gun at a person or animal or at any part of human body. It can be damaged part of human body.



Require safety shoes, safety suite and helmet require during operate the high pressure system.

CAUTION

Safety Shoes Required.



Section – 5: Technical Details

5.1 Hose Friction Loss Chart

Water Flow (Ltr / min)	PRESSURE DROP IN PSI PER 100 FT OF HOSE WITH TYPICAL WATER FLOW RATES						
	Hose Inside diameter, Inches						
	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
2	16	5	2				
4	54	20	7	2			
8	180	60	25	6	2		
12	380	120	50	13	4	2	
16		220	90	24	7	3	
20		320	130	34	10	4	
23			220	52	16	7	1
31			300	80	25	10	2
39			450	120	38	14	3
58			900	250	80	30	7
77			1600	400	121	50	12
97				650	200	76	19
116					250	96	24
154					410	162	42
193					600	235	62
231						370	93
308							308
385							385

Section – 6: Accessories

6.1 Unloader Valve VB-130

- Pressure regulating or unloader valve, equipped with double connection for both inlet and discharge. Possibility of different pressure settings by a choice of 2 spring models. At gun shut off, the water flow is bypassed at reduced pressure.
 - ✓ Returning action of the piston by means of powerful springs, for positive working and a reliable pressure adjustment
 - ✓ Multiple connections for easy installation
 - ✓ Hexagonal shaped check valve to avoid jamming
 - ✓ Possibility to fit a venture injector, on delivery, for chemicals.
 - ✓ Version with knob, fitted with locknut for min. and max. Pressure regulation.
 - ✓ Sturdy steel and brass construction.
 - ✓ Adjustable locknut to control the max pressure.
 - ✓ Plastic knob, upon request.

A. Installation

- This product is to be utilized with clean fresh water, for use involving different or corrosive liquids, contact the PressureJet Technical department. Appropriate filtration should be installed when using unclean liquids. Choose the valve in line with the data of nominal running (system rated pressure, max flow and max temperature). In any case, the pressure of the machine should not exceed the permissible pressure rate imprinted on the valve.
- This accessory, on a system that produces hot water, must be fitted in front of the heat generator. This product is bound to be incorporated on a finished machine. On a system that generates hot water, anticipate the fitting of accessories that limit the accidental increase of fluid temperature.
- Always install a safety valve that protects the pressurized inlet channel.
- Choose a correct nozzle size, which allows a regular discharge on bypass, at least 5% of the total flow of the system in order to achieve a constant pressure value and avoid troublesome pressure spikes at closure. If the nozzle wears out, the pressure drops

- On installation of a new nozzle, re-adjust the system to the original pressure setting.

B. Operation

- The valve regulates the max pressure of the system through a piston, which acts on a ball correctly positioned, that closes the bypass opening. A check valve cuts out the delivery section, the pressure of which controls the drive of the piston.
- Each regulation should be made when the system is operational and the nozzle open.

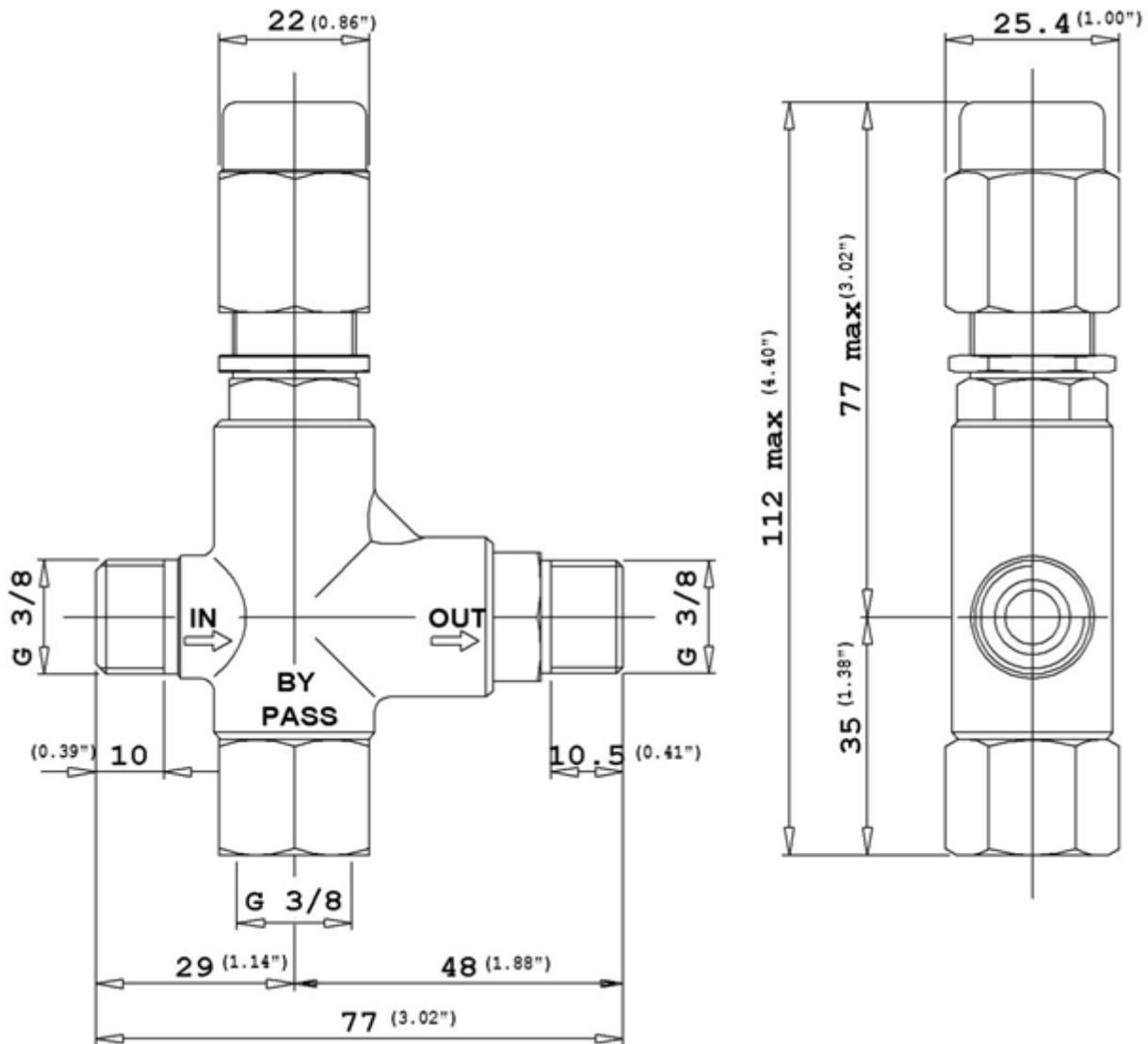
C. Discharge system and water adduction

- The bypass line should be returned into a tank with deflectors. By using a direct pump recycle, with elevated pressure intake, it is necessary to install a pressure reducer in order to have an even flow supply and to protect the circuit intake. When the system is opened and closed frequently, it is recommended to install a thermal protector valve in order to eliminate excessive temperature build-up.

D. Regulations

- The accessory hereby described bears the CE marking in accordance with the Norms and Directives applied on the declaration of conformity.
- For a correct utilization, follow the directions described in this manual and re-print them on the Use and maintenance manual of the machine.
- Make sure that you are given the Original Conformity Declaration for the accessory chosen. The present manual is valid for unloader valves.

E. Technical Details



COD 60.0300.00

Rated Pressure in bar	Permissible Pressure in bar	Minimum adjustable pressure in bar	Trapped pressure at Circuit Closure in %	Pressure drop to reset bypass in %	Inlet – Outlet Bypass
160	180	16	18%	12%	3/8" M

- The valve has been designed for a continuous use at a water temperature of 60°C. It can resist for short periods at a maximum temperature of 90°C.
- This is the maximum pressure increase implemented in the circuit for the intervention of the valve and to bring all the fluid in bypass (percentage figures of the pressure set up)

- This is the pressure reduction necessary in comparison to the setup, in order that the valve brings back pressure in the circuit.

F. Maintenance

- Maintenance has to be carried out by Specialized Technicians.
- Every 400 working hours (approximately 10,000 cycles), check and lubricate the seals with water resistant grease.
- every 800 working hours (approximately 20,000 cycles), control the wear of the seals and internal parts and if necessary, replace with original parts taking care during installation and to lubricate with water resistant grease.



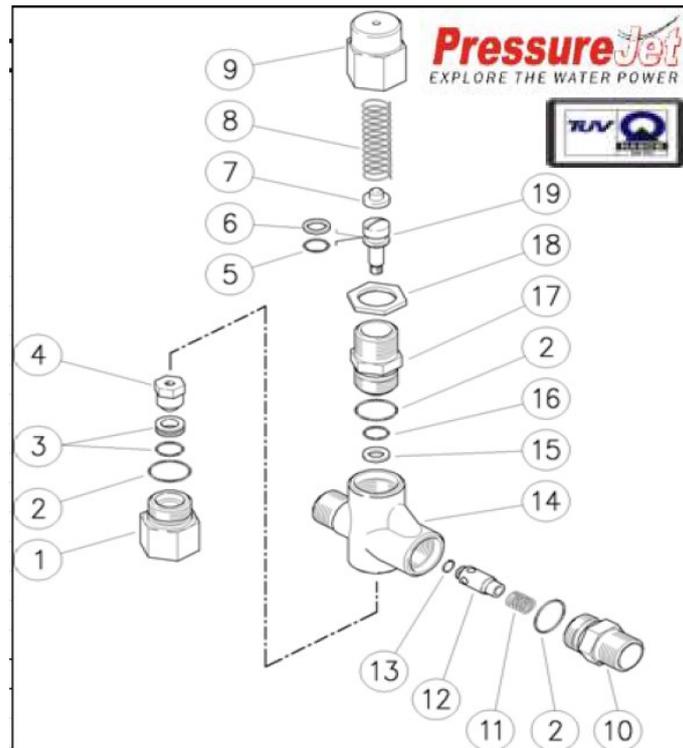
Reassemble the valve in the correct manner paying special attention to the Nuts by fastening them with a drop of a strong glue.

The manufacturer is not to be considered responsible for damage as a result from incorrect fitting and Maintenance.

G. Trouble Shooting

Problems	Possible Causes	Corrective Actions
Frequent unloader recycles	Damaged check valve O ring	Replace
	Leaking connections	Check and renew
	Restricted bypass	Clean or adjust
Unloader dose not getting pressure	Unloader not properly sized	Change spring or type of valve
	Piston O rings worn out	Replace
	Material matter between seat and shutter	Clean the seat
	Worn out nozzle	Replace
Pressure peaks	There is not a min of 5% of total flow in bypass.	Reset unloader valve
	Excessive flow in bypass	Change type of valve or adjust passages
	Spring totally compressed	Loosen knob and change Nozzle
Unloader does not bypass at low Pressure	Jammed check valve	Clean or replace
	Check valve O ring worn out	Replace
	Material matter on check valve	Clean

H. Exploded View



S.N	Item Code	Description	Kit	Qty.
1	60.0306.31	60.0306.31 Bypass coupl., 3/8F Bsp brass *		1
2	10.3066.00	10.3066.00 O-ring, 1,78x15,6 mm *	(J)(O)	3
3	60.0314.20	60.0314.20 Seat, 7mm + O-ring, 1mm NBR85	J	1
4	60.0333.21	60.0333.21 Rest, M5 brass + ball, 11/32" Sst.	J	1
5	10.3055.00	10.3055.00 O-ring, 1,78x7,66 mm *	(J)(O)	1
6	10.4008.00	10.4008.00 Back-up ring, opn. 8x11x1,2 mm	J	1
7	60.0310.51	60.0310.51 Spring seat, Sst.		1
8	60.0313.61	60.0313.61 Spring, 3x12.3x41 mm		1
9	60.0304.31	60.0304.31 Valve regulating knob, brass		1
10	60.0305.31	60.0305.31 Delivery coupl., 3/8M Bsp c/sunk, brass		1
11	60.0312.51	60.0312.51 Spring, 0.6x8.4x11 mm Sst.		1
12	60.0308.51	60.0308.51 Check valve, Sst.		1
13	10.3125.00	10.3125.00 O-ring, 2,5x4 mm *	J	1
14	60.0301.35	60.0301.35 Valve housing, 3/8M Bsp brass ***		1
15	10.4006.00	10.4006.00 Back-up ring, 8,6x6x1,2 mm	J	1
16	10.3051.01	10.3051.01 O-ring, 1,78x6,07 mm *	J	1
17	60.0303.31	60.0303.31 Piston holder, brass		1
18	60.0317.31	60.0317.31 Locknut, M18x1 brass		1
19	60.0331.99	60.0331.99 Piston, M5 Sst.+or+p/back		1
S.N	Item Code	Description	Kit	Qty.
1	60.0398.24	60.0398.24 Spares Kit – VB130, 10 x 1 pcs.		1

6.2 Safety Valve VS-140

- Central body in Brass.
- Ball Seal made of polyacetalic.
- Moving parts totally protected.
- Secure sealing to avoid leakage.
- External discharge to emphasize the intervention.

A. Installation

- This product is to be utilized with clean fresh water for use involving different or corrosive liquids, contact the PressureJet Technical department. Choose the valve in line with the data of nominal running (system rated pressure, max flow and max temperature). In any case, the pressure of the machine should not exceed the permissible pressure rate improved on the valve, in line with these indications, avoids pressure spikes while the machine is in operation.
- This accessory, on a system that produces hot water, must be fitted in front of the heat generator.
- Utilize connection fittings in compliance to the dimensions and performance of the valve. Avoid restriction of the passage diameters which can be the cause of malfunctions, pressure reduction and duration.



These valves are not pre-adjusted. Wrong or excessive screwing of the adjustment nut will compress the spring totally and JAM THE VALVE COMPLETELY.

B. Operation

- The valve inlet is on the opposite side of the screw adjustment, the discharge port is lateral. Keep this in mind when positioning the valve in relation to the jet discharge. To re-set the working pressure, it is necessary to stop the pump in order to allow the shutter to close, check the reason of the valve intervention and then re-start the pump. After various interventions, it may be necessary to replace the ball in order to maintain perfect sealing.

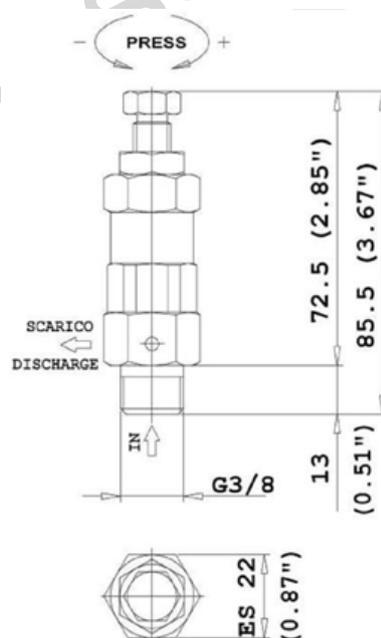
C. Pressure Adjusting / Setting

- The adjustment has to be made in such a way that the pressure setting is not superior to the system working pressure and its accessories; this prevents the arisal of numerous pressure increases in hot water systems and static pressure (gun shut off).

D. REGULATIONS

- The accessory hereby described bears the CE marking in accordance with the Norms and Directives applied on the Declaration of conformity.
- For a correct utilization, follow the directions described in this manual and re-print them on the Use and maintenance manual of the machine.
- Make sure that you are given the Original Conformity Declaration for the accessory chosen. The present manual is valid for all unloader valves

E. Technical Details



Rated pressure in bar	Permissible Pressure in Bar	Minimum Adjust Pressure in Bar	Residual discharge pressure in bar	Pressure increase in bar	Max. flow rate	Inlet connection
140	180	100	49	15	24	3/8" M

- The valve has been designed for a continuous use at a water temperature of 40°C. It can resist for short periods at a maximum temperature of 60°C.

F. Maintenance

- Maintenance has to be carried out by Specialized Technicians.
- Every 400 working hours (approximately 10,000 cycles), check and lubricate the seals with water resistant grease.
- every 800 working hours (approximately 20,000 cycles), control the wear of the seals and internal parts and if necessary, replace with original parts taking care during installation and to lubricate with water resistant grease.

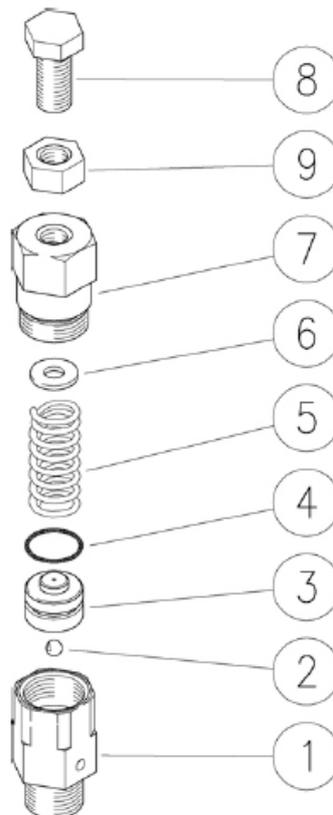


- **Reassemble the valve in the correct manner paying special attention to the set valve as described in the paragraph Pressure adjustment / setting.**
- **The manufacturer is not to be considered responsible for damage as a result from incorrect fitting and Maintenance.**
- **Technical data, descriptions and illustrations are indicative and liable to modification without notice**
- Pressure increase is the increase of pressure needed into the valve for discharge the max. Flow when utilized at rated pressure.

G. Trouble Shooting

Problems	Possible Causes	Corrective Actions
Valve Cycles	Air inside the system	Flush out Air
	Seat Worn out	Replace
	Clogged circuit	Clean or widen passages
The valve does not reach pressure	Improper Nozzle size	Replace
	Seat Worn out	Replace
	Damaged nozzle	Replace
Pressure Spikes	Clogged nozzle	Clean
	Spring totally compressed	Repeat adjustment & replace nozzle
Water leaking at discharge	Damaged seat	Seat

H. Exploded View



S.N	Item Code	Description	Qty.
1	60.1551.31	3/8" BSP Main Body	01
2	14.7411.00	3/16" Ball	01
3	60.1553.31	Pin	01
4	10.3064.01	O – Ring 1.78X 14mm	01
5	60.1554.51	Spring (140 Bar)	01
6	14.3570.00	Sst Washer 6 X 14mm	01
7	60.1552.31	Spring Guide	01
8	60.1555.51	Bolt M 10X 25	01
9	11.4627.50	Sst M 10 Nut	01

6.3 Spray Trigger Gun RL16

- Guns suitable for use up to 160 bar rated pressure centrifugal pumps.
- No fluid passage upon trigger release.
- Front hose fitting on handle.
- Covered by shockproof plastic semi-housings.
- PTFE seat and Sst ball.
- Internal structure in brass and Sst.
- Ergonomic construction.
- Minimum fatigue for trigger opening.

A. Installation

- This product is to be utilized with clean fresh water, for use involving different or corrosive liquids, contact the pressure jet technical department. Appropriate filtration should be installed when using unclean liquids. Choose the gun in line with the data of nominal running (system rated pressure, max flow and max temperature). In any case, the pressure of the machine should not exceed the permissible pressure rate imprinted on the gun.
- Always fit a safety valve to protect the delivery conduct when the latter is under pressure.
- Choose a suitable nozzle and adjust the valve mounted in the front of the gun, thus obtaining a constant supply and avoiding unpleasant pressure spike when closing the system. If the nozzle wears out, the pressure falls. When you install a new nozzle, adjust the system back to the original pressure.

B. Operation

- The gun opens and closes a high pressure conduct by means of a piston acting on a seat; the return is controlled by a spring which releases the trigger.

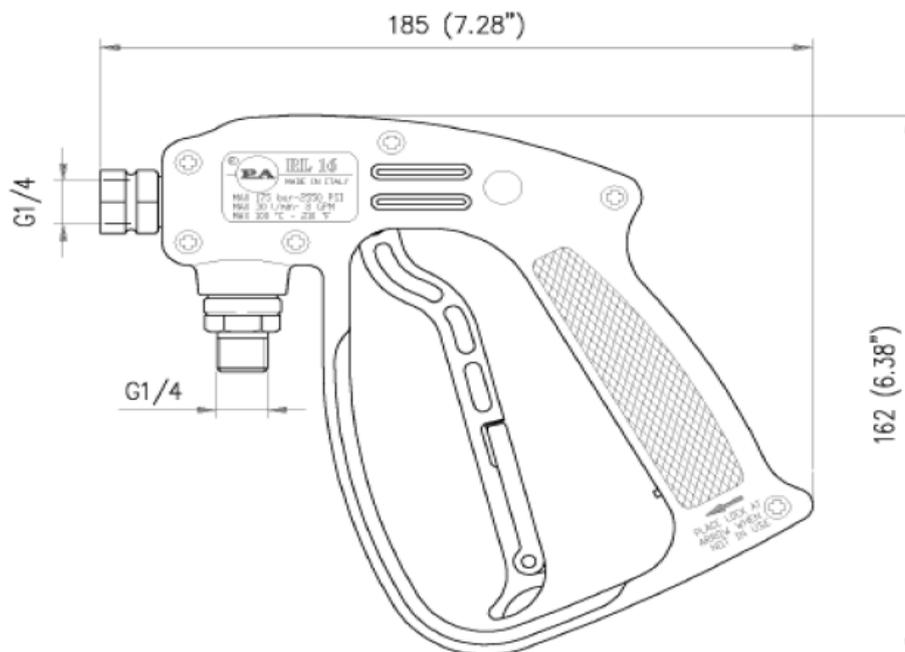


During pump activation always set the gun with its safety latch connected in order to prevent accidental openings.

C. Regulations

- For a correct utilization, follow the directions described in this manual and re-print them on the Use and maintenance manual of the machine.
- The present manual is valid for all the guns named RL 16.

D. Technical Details



Rated Pressure in bar	Permissible Pressure in bar	Max. Flow rate in Ltr/Min	Max. Temperature in °C	Inlet – Outlet Bypass
160	175	30	18%	3/8" M

- The gun has been designed for continuous use, at a water temperature of 60°C (140°F). It can resist at the max temperature of 100°C (210°F) for short periods only, as, when the gun shuts off, the heater continues to transmit the heat to the water, thus increasing both temperature and pressure up to high, dangerous values.
- Using the gun at a water temperature higher than 60°C involves for the operator the use of adequate safety devices, such as gloves, glasses, etc.

E. Maintenance

- Maintenance has to be carried out by Specialized Technicians.
- Every 400 working hours (approximately 10,000 cycles), check and lubricate the seals with water resistant grease.
- every 800 working hours (approximately 20,000 cycles), control the wear of the seals and internal parts and if necessary, replace with original parts taking care during installation and to lubricate with water resistant grease.

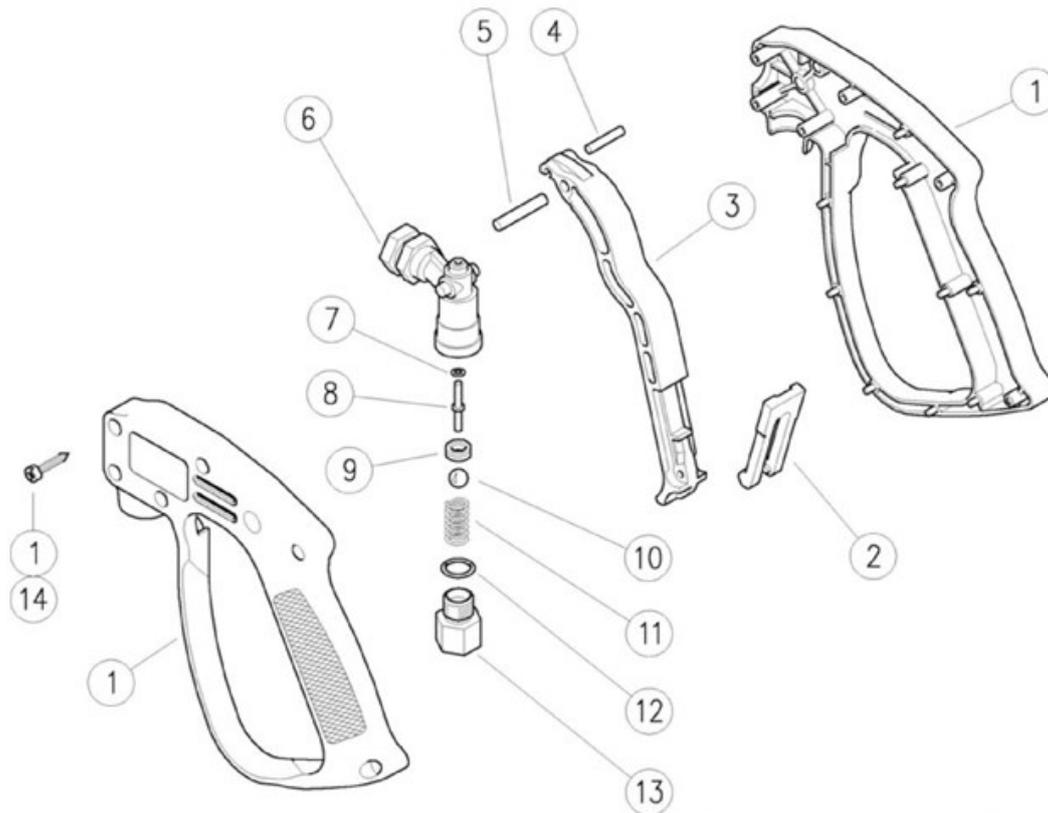


- **Reassemble the gun restoring the original conditions.**
- **The manufacturer is not to be considered responsible for damage as a result from incorrect fitting and Maintenance.**
- **Technical data, descriptions and illustrations are indicative and liable to modification without notice**

F. Trouble Shooting

Problems	Possible Causes	Corrective Actions
Leakage from the nozzle	Presence of impurities	Clean
	Gun seat worn out	Replace the seat
Leaking seals	Seals worn out	Replace seal
Difficult trigger opening	High pressure inside circuit	Check the bypass valve and adjust it, if necessary

G. Exploded View



S.N	Item Code	Description	Qty.	Kit
1	30.0014.24	Casing-kit -RL16 +screws	01	
2	30.1514.84	Safety latch, PA yellow	01	
3	30.0018.84	Trigger -RL16-20, PA black	01	
4	30.0020.51	Parallel pin, 4x16 mm Sst.	01	
5	30.0509.31	Parallel pin, 5x24, 5 mm brass	01	
6	30.0017.35	Housing -RL16-20, 1/4F Bsp brass	01	
7	10.3036.10	O-ring, 1,78x2,9 mm Vi 70	01	✓
8	30.0019.51	Piston, 3 mm Sst.	01	✓
9	30.0021.84	Seat, 5,5x10, 5x4, 2 mm PA black	01	✓
10	14.7448.20	Ball, 5/16" Sst.	01	✓
11	30.0001.51	Spring, 1,4x7, 8x13, 5 mm Sst.	01	
12	10.3058.02	O-ring, 1,78x10, 82 mm Ni 85	01	
13	30.0103.31	Nipple, 1/4M-3/8F Bsp brass	01	
14	16.3077.00	S/tapping screw, DIN7981 3,5x18 mm	06	

Kit	Item Code	Description
K1	30.0002.24	Repair kit -RL16, 5x1pcs

6.4 Nozzle

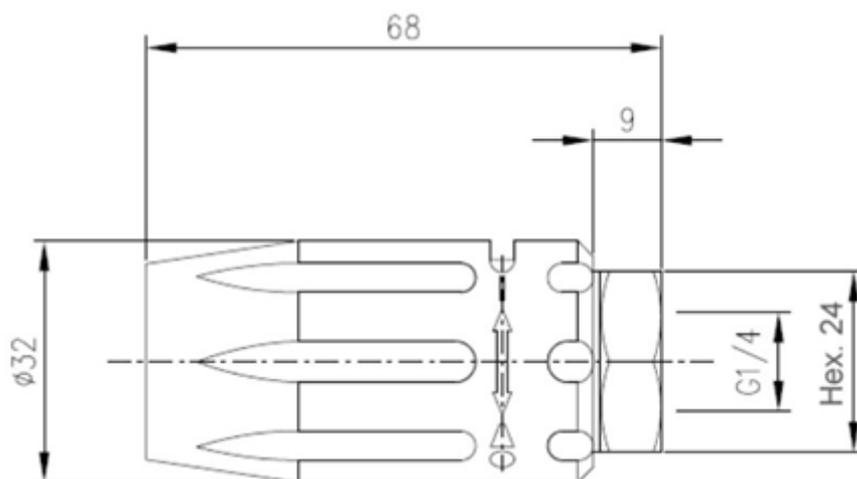
6.4.1 Variable Angle Nozzle (VAN)

Nozzle	Code	Flow rate LPM	Pressure in kg/cm2	Description
25.0900.13	04	8.5	80	25.0900.13 Van-04 van.angle nzl 1/4F Bsp,d.yellow
25.0900.16	06	14	105	25.0900.16 Van-06 van.angle nzl 1/4F Bsp,d.green
25.0900.50	05	14	140	25.0900.50 Van-05 van.angle nzl 1/4F Bsp,l.purple

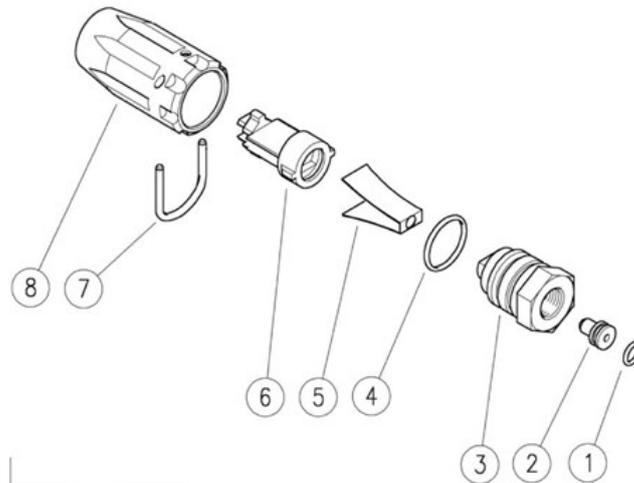
Rated pressure	250 bar
Permissible pressure	280 bar
Max flow rate	40 LPM
Max working temperature	90°C
Nozzle	04-045-05-055-06-08



A. Dimensions



B. Exploded View



S.N	Item Code	Description	Qty.
1	10.3052.00	O-ring, 1,78x6,75 mm	1
2	25.0913.23	Nozzle, 04 Sst. + nozzle hold. (1)	1
	25.0917.23	Nozzle, 05 Sst. + nozzle hold. (3)	1
	25.0916.51	Nozzle, 06 Sst. + nozzle hold. (2)	1
3	25.0904.31	Nozzle case	1
4	10.3072.00	O-ring, 1,78x20,35 mm	1
5	25.1020.53	Sst deflector	1
6	25.0952.84	Deflector housing	1
7	40.5001.51	Retainer, Sst.	1
8	25.0901.84	Nozzle knob, black	1

6.4.2 Rotating Nozzle : UR-16

- Strong Brass Structure
- Highly Shock- Resistant Ceramic Seat and Nozzle.
- High Absorption of Accidental Knocks Thanks to The “YELLOW” Plastic Protection.
- Can be used in any Position Thanks to The System Equipped with Internal Spring Eliminating the Clearance between Seat and Nozzle.

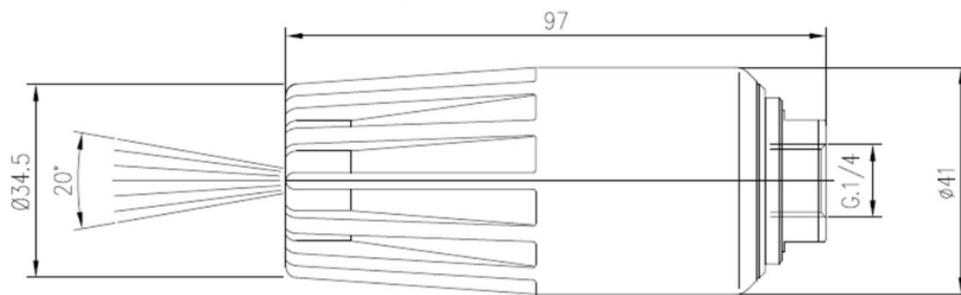
Rated pressure	160 bar
Min. Operating pressure	30 bar
Min. Flow	3.1 LPM
Max. Flow	23 LPM

Min. Working temperature	5°C
Max. Working temperature	100°C
Weight	0.41 Kg

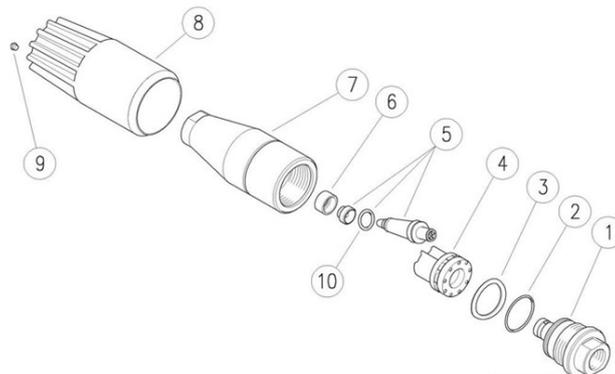


Code	Capacity Size
25.1680.50	05

A. Dimensions



B. Exploded View



S.N	Item Code	Description	Qty.
1	25.1634.31	Coupling, 1/4 F Bsp	1
2	10.3072.01	O-ring, 1,78x20, 35 mm Ni 85	1
3	25.1626.63	Washer, 14,8x23x0, 1mm Sst.	1
4	25.1631.22	Turbine	1
5	25.1638.24	Spares kit -UR16 .05	1
6	25.1624.85	Seal, 7,2x12x6 mm PTFE	1
7	25.1622.31	Housing	1
8	25.1681.85	Knob -UR16, yellow	1
9	15.2000.40	Stud	1
10	10.3230.01	O-ring, 3,53x7, 52 mm Ni 85	1

6.4.3 Conventional nozzle

0° Conventional Nozzle



New



Damage

5° Conventional Nozzle



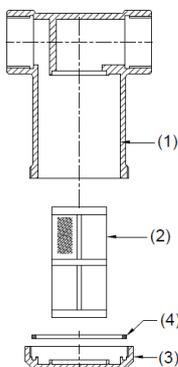
New



Damage

6.5 Strainer

- 1/2" T type Strainer.



S.N	Description	Code	Qty.
1	1/2"-T strainer body	1/2t-sb	1
2	1/2"-Filter mash	1/2fm	1
3	1/2"-Strainer cap	1/2sc	1
4	'O' ring- id42x3	Or423	1

6.6 Pressure regulating valve VS-160

- Central body in Brass.
- Internal components in SST.
- Moving parts totally protected.
- Discharge through integrated hose barb.
- Secure intervention discharging all the flow.
- Prompt and effective damping against pressure spikes.

A. Installation

- This product is to be utilized with clean fresh water, for use involving different or corrosive liquids, contact the pressure jet Technical department. Choose the valve in line with the data of nominal running (system rated pressure, max flow and max temperature). In any case, the pressure of the machine should not exceed the permissible pressure rate imprinted on the valve. When in use as pressure regulator, adopt a nozzle that allows a bypass of at least 5% of the total flow, bearing in mind that a worn out nozzle causes pressure loss. The valve, assembled in line with these indications, avoids pressure spikes whilst the machine is in operation.
- This accessory, on a system that produces hot water, must be fitted in front of the heat generator.
- Utilize connection fittings in compliance to the dimensions and performance of the valve. Avoid restriction of the passage diameters which can be the cause of malfunctions, pressure reduction and duration.
- As a PRV: in the case when frequently combined with unloader valves and low pressure in the pump, it has to be fitted in the section that remains pressurized when the gun is shut off.

B. Operation

- The valve inlet is on the side, the discharge is opposite the adjustment knob .The discharge should be returned to a tank. If, on the contrary, the pump is fed directly from the water mains, it is advisable to install a pressure reducing valve, before the pump, to avoid dangerous

pressure spikes which could badly damage manifolds and suction valves. In case of extended conditions of bypass directed to the suction side of the pump, it is recommended to install a thermal valve to avoid dangerous water temperature build-up.

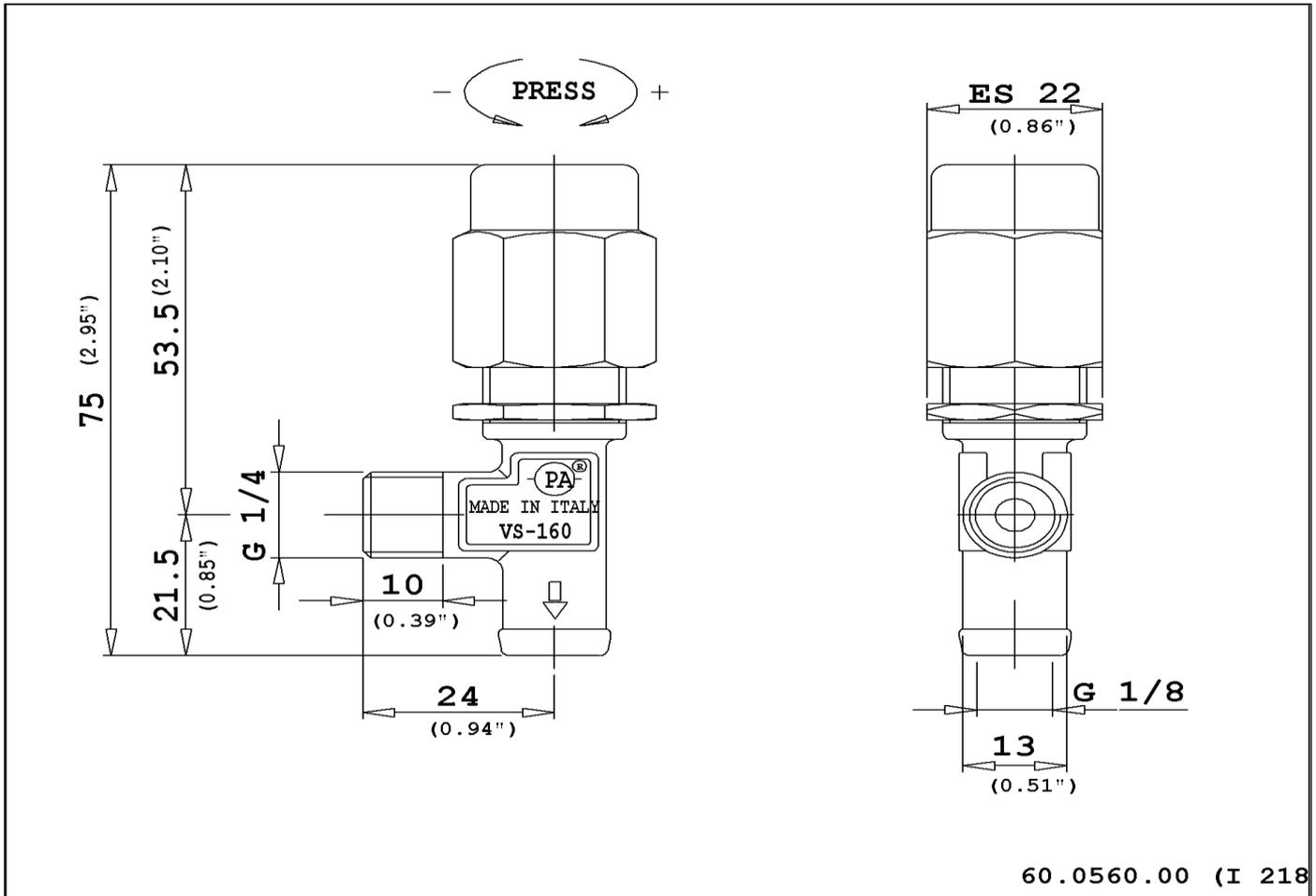
C. Pressure Adjustment Setting

- As a PRV: the adjustment has to be made in such a way that the pressure setting is not superior to the system working pressure and its accessories; this prevents the arisal of numerous pressure increases in systems and static pressure (gun shut off). In order not to exceed the fixed pressure, it is advised to lock the nut against the knob touching them with paint to avoid loosening or tampering.

D. Regulations

- The accessory hereby described bears the CE marking in accordance with the Norms and Directives applied on the Declaration of conformity.
- For a correct utilization, follow the directions described in this manual and re-print them on the Use and maintenance manual of the machine.
- Make sure that you are given the Original Conformity Declaration for the accessory chosen. The present manual is valid for all unloader valves named VS160.

E. Technical Details



Rated Pressure in bar	Permissible Pressure in bar	Minimum adjustable pressure in bar	Pressure increase as a VS – as a VRP in bar		Inlet	Bypass	Weight in gram
140	160	14	20	9	G 1/4M	G 1/8F D13 mm	135

- The valve has been designed for a continuous use at a water temperature of 60°C. It can resist for short periods at a maximum temperature of 90°C
- Pressure increase = is the increase of pressure needed into the valve for discharging the max. Flow when utilized at rated pressure.

F. Maintenance

- Maintenance has to be carried out by Specialized Technicians.
- Every 400 working hours (approximately 10,000 cycles), check and lubricate the seals with water resistant grease.
- every 800 working hours (approximately 20,000 cycles), control the wear of the seals and internal parts and if necessary, replace with original pressure jet parts taking care during installation and to lubricate with water resistant grease.

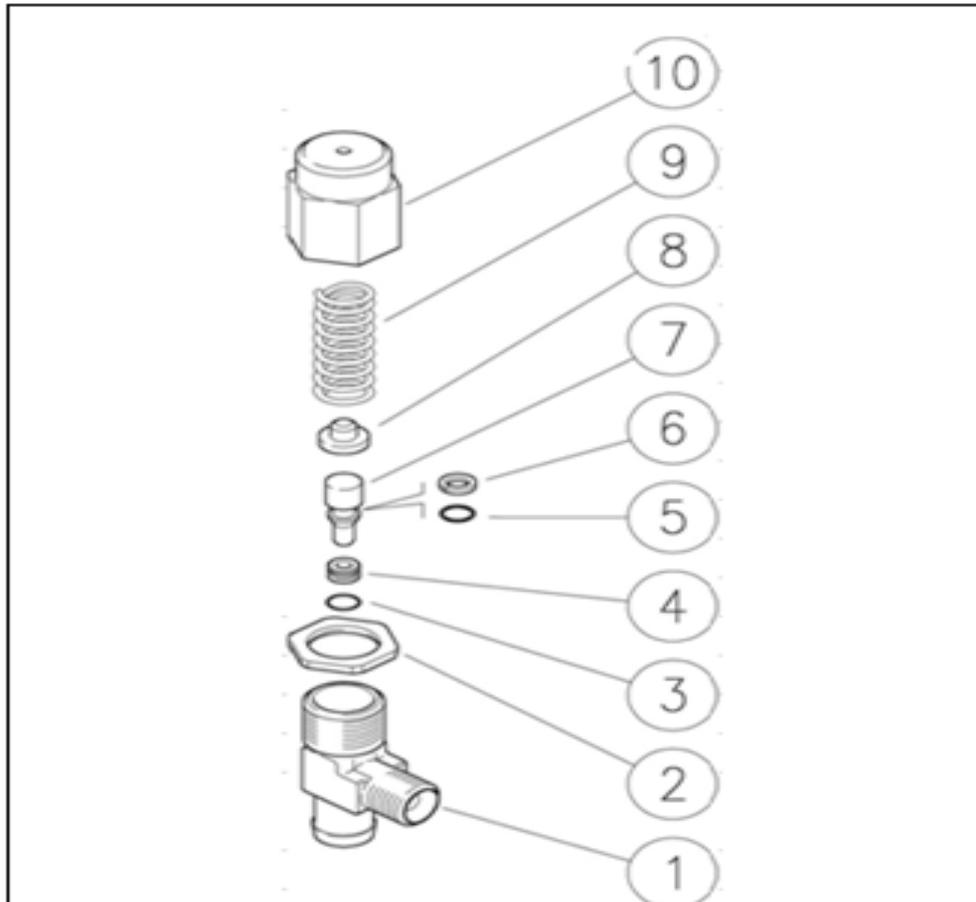


Reassemble the valve in the correct manner paying special attention how to set the valve as described in the paragraph PRESSURE ADJUSTMENT/SETTING.

G. Trouble Shooting

Problems	Possible Causes	Corrective Actions
Valve cycles	Air inside the system	Flush out air
	Worn out seals	Replace
	Clogged circuit	Clean or widen passages
The valve does not reach pressure	Improper nozzle size	Modify
	Seat/shutter/ball worn out	Replace
	Damaged nozzle	Replace
Pressure drop	Worn out nozzle	Replace
	Pump gaskets worn out	Replace
	Valve seat worn out	Replace
	Air inside the system	Flush out air
Pressure spikes	There is not a min.5% of total flow in bypass	Re-adjust PRV
	Clogged nozzle	Clean and Repeat adjustment and replace nozzle
Water leakage from bypass	O-ring seat damaged	Replace
	Damaged seat	Replace

H. Exploded View

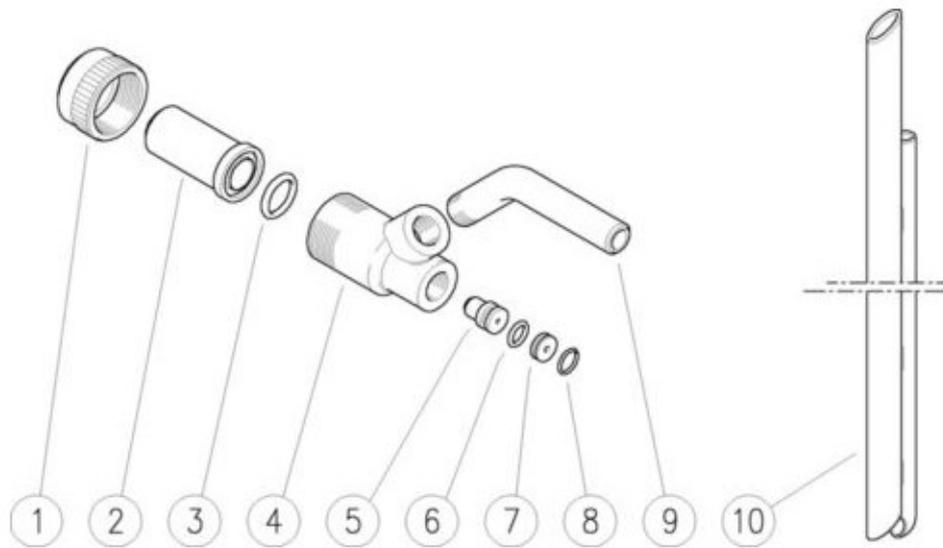


S.N	Item Code	Description	Kit	Qty.
1	C.IP.PA-60.0561.35	60.0561.35 Valve housing – VS160-30, brass		1
2	C.IP.PA-60.0317.31	60.0317.31 Locknut, M18 x 1. Brass		1
3	C.IP.PA-10.3002.01	10.3002.01 O-ring, 1x5 mm Ni 85	P	1
4	C.IP.PA-60.0564.51	60.0564.51 Seat, 3,3x7x4 mm Sst.	P	1
5	C.IP.PA-10.3049.01	10.3049.01 O-ring, 1,78x5,28 mm	P	1
6	C.IP.PA-10.4002.52	10.4002.52 Back-up ring, 5x8x1,5 mm	P	1
7	C.IP.PA-60.0562.51	60.0562.51 Piston, 8mm Sst.		1
8	C.IP.PA-60.0310.61	60.0310.61 Spring guide, z.pl.		1
9	C.IP.PA-60.0563.61	60.0563.61 Spring, 3x12,6x33 mm z.pl.		1
10	C.IP.PA-60.0304.31	60.0304.31 Valve regulating knob, brass		1

Item Code	Description	KIT	QTY
VS-160	C.IP.PA-60.0566.24 60.0566.24 Spares kit -VS160-30, 4x1pcs	P	1

6.7 Sandblaster TS2-05

✚ Sandblaster unit use for we sand blasting application. A maximum working pressure of sand blasting unit is 140 bar.



S.N	Item Code	Description	Qty.	Kit
1	25.0003.31	Hand nut M27 x 1.5, brass	1	
2	25.0032.23	Conveyor Nozzle, 4 mm	1	
3	10.3178.00	O-ring, 2.62 x 13.1 mm	1	✓
4	25.0030.23	Sandblaster Housing – TS2	1	
5	25.0007.51	Nozzle, 03d 10.5 x 15 mm sst (25.0020.12)	1	
5	25.0008.51	Nozzle, 04d 10.5 x 15 mm sst (25.0020.14)	1	
5	25.0009.51	Nozzle, 045d 10.5 x 15 mm sst (25.0020.15)	1	
5	25.0014.51	Nozzle, 5d 10.5 x 15 mm sst (25.0020.16)	1	
6	10.3052.00	O-ring, 1.78 x 6.75 mm	1	✓
7	25.0085.31	Nozzle insert	1	✓

8	10.3003.00	O-ring, 1 x 8 mm	1	✓
9	25.0005.66	13 mm hose barb – ¼ bsp z.pl	1	
10	25.0013.21	Sand probe +13 mm hose barb	1	
K1	25.0021.24	Spares kit – sandblast. 4 x 10 pcs.		

PressureJet

Section – 7: Troubleshooting

7.1 Do not get pressure as per pump specification

For New Installation	
Causes	Solution
Ball valve partially closed.	Open ball valve
Wrong nozzle selection*	Use proper nozzle or consult PressureJet for nozzle selection
Improper inlet piping size	Inlet plumbing should be a minimum of one size larger than the pump inlet fitting
Insufficient inlet suction pressure	Check and ensure that supply tank is above 10 m from pump bottom or use booster pump.
Booster pump not run	Check booster pump connections.
Wrong direction of booster pump	Change booster pump wiring and then check direction.
Inlet hose leakage from connection	Tighten inlet hose connection. If hose connection cracked/worn then replace.
High pressure hose leakage from connection	Tighten high pressure hose connection. If hose connection cracked/worn then replace.
Air in suction line	Remove air from suction line.
Suction strainer clogged	Clean suction strainer
Bypass water from unloader valve	Set adjusting screw of unloader valve for increase pressure.
Bypass water from PRV	Set adjusting screw of PRV for increase pressure.

For Old Installation	
Causes	Solution
Ball valve partially closed.	Open ball valve
Wrong nozzle selection	Use proper nozzle or consult PressureJet for nozzle selection
Improper inlet piping size	Inlet plumbing should be a minimum of one size larger than the pump inlet fitting
Insufficient inlet suction pressure	Check and ensure that supply tank is above 10 m from pump bottom or use booster pump.
Booster pump not run	Check booster pump connections.
Wrong direction of booster pump	Change booster pump wiring and then check direction.

Inlet hose leakage from connection	Tighten inlet hose connection. If hose connection cracked/worn then replace.
High pressure hose leakage from connection	Tighten high pressure hose connection. If hose connection cracked/worn then replace.
Air in suction line	Remove air from suction line.
Suction strainer clogged	Clean suction strainer
Bypass water from unloader valve	Set adjusting screw of unloader valve for increase pressure.
Bypass water from PRV	Set adjusting screw of PRV for increase pressure.
Unloader valve adjust but pressure not increase	Inspect unloader valve seat, spindle, O-ring and gasket. Replace if worn out.
PRV adjust but pressure not increase	Inspect PRV seat, spindle, O-ring and gasket. Replace if worn out.
Nozzle blocked.	Clean nozzle.
Worn out nozzle	Replace nozzle.
Valves blocked by foreign particles	Inspect valve assembly for foreign particles and remove.
Worn out seats or valves	Replace valve kits include the retainer, spring, valve seat and necessary O-rings
Worn out plunger seal	Replace seal and necessary O-rings
Worn out plunger	Replace plunger.
Bypass water from FOV when press**	Inspect FOV valve seat, spindle, O-ring and gasket. Replace if worn out.

Note: Without (start *) causes are applicable for all applications and started causes applicable for as per below application.

* (Surface cleaning, sand blasting application)

** (Tube cleaning application)

7.2 Do not get flow as per pump specification

For New Installation	
Causes	Solution
Ball valve partially closed.	Open ball valve
Improper inlet piping size	Inlet plumbing should be a minimum of one size larger than the pump inlet fitting
Insufficient inlet suction pressure	Check and ensure that supply tank is above 10 m from pump bottom or use booster pump.

Booster pump not run	Check booster pump.
Wrong direction of booster pump	Change booster pump direction
Inlet hose leakage from connection	Tighten inlet hose connection. If hose connection cracked/worn then replace.
High pressure hose leakage from connection	Tighten high pressure hose connection. If hose connection cracked/worn then replace.
Air in suction line	Remove air from suction line.
Suction strainer clogged	Clean suction strainer
Bypass water from unloader valve	Set adjusting screw of unloader valve for increase pressure.
Bypass water from PRV	Set adjusting screw of PRV for increase pressure.

For Old Installation	
Causes	Solution
Ball valve partially closed.	Open ball valve
Improper inlet piping size	Inlet plumbing should be a minimum of one size larger than the pump inlet fitting
Insufficient inlet suction pressure	Check and ensure that supply tank is above 10 m from pump bottom or use booster pump.
Booster pump not run	Check booster pump.
Wrong direction of booster pump	Change booster pump direction
Inlet hose leakage from connection	Tighten inlet hose connection. If hose connection cracked/worn then replace.
High pressure hose leakage from connection	Tighten high pressure hose connection. If hose connection cracked/worn then replace.
Air in suction line	Remove air from suction line.
Suction strainer clogged	Clean suction strainer
Bypass water from unloader valve	Set adjusting screw of unloader valve for increase pressure.
Bypass water from PRV	Set adjusting screw of PRV for increase pressure.
Unloader valve adjust but pressure not increase	Inspect unloader valve seat, spindle, O-ring and gasket. Replace if worn out.
PRV adjust but pressure not increase	Inspect PRV seat, spindle, O-ring and gasket. Replace if worn out.
Valves blocked by foreign particles	Inspect valve assembly for foreign particles and remove.
Worn out seats or valves	Replace valve kits include the retainer, spring, valve seat and necessary O-rings
Worn out plunger seal	Replace seal and necessary O-rings

Worn out plunger	Replace plunger.
Bypass water from FOV when press**	Set adjusting screw of PRV for increase pressure

Note: Without (start *) causes are applicable for all applications and started causes applicable for as per below application.

** (Tube cleaning application)

7.3 Motor overheats

For new & old Installation	
Causes	Solution
Nozzle blocked.	Clean nozzle.
High voltage	Check power supply and correct
Incorrect supply connection of R,Y,B.	Check supply connection of R, Y, B and correct.
Pressure increase than rated pressure	Decrease pressure.
Pressure gauge defect	Replace

7.4 Loud knocking noise in crankcase

For New Installation	
Causes	Solution
Improper main bearing clearance	Check and adjust clearance.

For Old Installation	
Causes	Solution
Improper main bearing clearance	Check and adjust clearance.
Loose connecting rods bolts	Replace
Worn out bearings	Replace
Worn out connecting rod	Replace
Worn out crosshead pin	Replace

Worn out crankshaft	Replace
---------------------	---------

7.5 Suction & Discharge Line Vibration

For New Installation	
Causes	Solution
Ball valve partially closed.	Open ball valve
Improper inlet piping size	Inlet plumbing should be a minimum of one size larger than the pump inlet fitting.
Air in suction line	Remove air from suction line.
Suction strainer clogged	Clean suction strainer

For Old Installation	
Causes	Solution
Ball valve partially closed.	Open ball valve
Improper inlet piping size	Inlet plumbing should be a minimum of one size larger than the pump inlet fitting.
Air in suction line	Remove air from suction line.
Suction strainer clogged	Clean suction strainer
Worn out seats or valves	Replace valve kits include the retainer, spring, valve seat and necessary O-rings
Worn out plunger seal	Replace seal and necessary O-rings
Worn out plunger	Replace plunger.

7.6 Oil Leakage

For New Installation	
Causes	Solution
Loose drain plug	Tighten drain plug
Loose Bearing cover	Tighten Bearing cover

For Old Installation	
Causes	Solution

Loose drain plug	Tighten drain plug
Loose Bearing cover	Tighten Bearing cover
Worn out drain plug O-ring	Replace
Worn out Bearing seal	Replace
Worn out crankcase oil seals	Replace
Worn out crankshaft oil seals	Replace

7.7 Water leakage from pump head

For New Installation	
Causes	Solution
Manufacturing problem	Manufacturing problem

For Old Installation	
Causes	Solution
Worn out plunger seal	Replace seal and necessary O-rings
Worn out plunger	Replace plunger.
Worn out valve plug O-ring	Replace

7.8 High temperature in crankcase

For New Installation	
Causes	Solution
Wrong oil	Use recommended oil
Low oil level	Fill oil above min level

For Old Installation	
Causes	Solution
Wrong oil	Use recommended oil
Low oil level	Fill oil above min level
Contaminated oil or milky oil	Change oil

7.9 Water in oil mix

For New Installation	
Causes	Solution
Manufacturing problem	Manufacturing problem

For Old Installation	
Causes	Solution
Worn out plunger seal	Replace seal and necessary O-rings
Worn out piston rod oil seal	Replace

7.10 Pressure gauge fluctuates

For New Installation	
Causes	Solution
Valves blocked by foreign particles	Inspect valve assembly for foreign particles and remove.

For Old Installation	
Causes	Solution
Valves blocked by foreign particles	Inspect valve assembly for foreign particles and remove.
Worn out seats or valves	Replace valve kits include the retainer, spring, valve seat and necessary O-rings
Leakage in gun *	Replace
Worn out plunger seal **	Replace seal and necessary O-rings

Note: without (start *) causes are applicable for all applications and started causes applicable for as per below application.

* (Surface cleaning, sand blasting application)

** (Tube cleaning application)

7.11 Short bearing life

For New Installation	
Causes	Solution
Pump-motor coupling problem	Check condition of the key Flexible coupling.

For Old Installation	
Causes	Solution
Pump-motor coupling problem	Check condition of the key Flexible coupling.
Pressure increase than rated pressure	Decrease pressure.
Oil has not been changed regularly	Change oil regularly.

7.12 Short valve life

For New Installation	
Causes	Solution
Manufacturing problem	Manufacturing problem

For Old Installation	
Causes	Solution
Abrasives in pumped fluid	Filter pumped liquid
Corrosion	Treated pumped fluid or replace

7.13 Short valve life

For New Installation	
Causes	Solution
Manufacturing problem	Manufacturing problem

For Old Installation	
Causes	Solution
Abrasives in pumped fluid	Filter pumped liquid
Excessive plunger friction	Lubricate with recommended oil
Metal parts or particles wearing plunger	Check plunger alignment. Check packing for foreign particles and remove.

7.14 Catastrophic failures such as broken shaft, bent rod etc....

For New Installation	
Causes	Solution
Low oil level	Fill oil above min level
Pump overloaded	Reduce pressure to rated pressure
Frozen fluid in cylinder	Don't start pump when pumped fluid is below freezing temperature

For Old Installation	
Causes	Solution
Low oil level	Fill oil above min level
Pump overloaded	Reduce pressure to rated pressure
Frozen fluid in cylinder	Don't start pump when pumped fluid is below freezing temperature
Worn out bearings	Replace
Contaminated oil or milky oil	Change oil
Start-up against closed discharge valve	Ensure valve is open before starting

7.15 Stud failure

For New Installation	
Causes	Solution
Manufacturing problem	Manufacturing problem

For Old Installation	
Causes	Solution
Corrosion	Treated pumped fluid or replace
Improper nut torquing	Fit nut with proper torque

7.16 Water leakage from safety valve

For New Installation	
Causes	Solution
Improper setting	Safety valve setting properly.
PRV or unloader valve setting too high	Loose PRV or unloader valve
By-pass blocked by solid plug	Connect hose to by-pass line.
Safety valve blocked by foreign particles	Inspect and clean

For Old Installation	
Causes	Solution
Improper setting	Safety valve setting properly.
PRV or unloader valve setting too high	Loose PRV or unloader valve
By-pass blocked by solid plug	Connect hose to by-pass line.
Safety valve blocked by foreign particles	Inspect and clean
Worn out valve/seat.	Replace

7.17 Water leakage from safety valve

Causes	Solution
Inadequate inlet line size	Increase line size to match the pump inlet port or one size larger
Water hammering liquid acceleration/deacceleration	Install Captive Acceleration Tube (C.A.T.) at pump inlet
	Move pump closer to liquid supply
	Add pulsation dampener

Rigid inlet plumbing	Use flexible wire reinforced hose at inlet and discharge pump port to absorb pulsation and pressure spikes
Excessive elbows in inlet plumbing	Keep elbows to a minimum and less than 90°
Excessive liquid temperature	Use thermo valve in bypass line
	Do not exceed pump temperature specifications
	Substitute closed loop with dual baffled holding tank
	Size tank for frequent or high volume bypass (6-10 times system GPM)
	Pressure feed high temperature liquids
Air leaks in plumbing	Properly ventilate cabinets and rooms
	Check all connections
Agitation in supply tank	Use PTFE thread tape or pipe thread sealant
	Size tank according to pump output - Minimum 6-10 times system GPM
High viscosity liquids	Baffle tank to purge air from liquid and separate inlet from discharge
	Verify viscosity against pump specifications before operation (<500 CPS/2500 SSU)
	Elevate liquid temperature enough to reduce viscosity
	Lower RPM of pump
	Pressure feed pump
Clogged filters	Increase inlet line size
	Clean filters regularly
	Use clear filters to monitor build up
	Use adequate mesh size for liquid and pump specifications (80 mesh recommended for fresh water)

Section – 8: Maintenance

8.1 Servicing the Valve assembly

- The inlet and discharge valves in this series pumps are all the same. The valves are located under the six 21 mm hex plugs. The inlet valves are located on the lower row and the discharge valves are located on the top row of the pump head.
- Tools required: 21 mm socket, ratchet, needle nose, pliers, mechanics pick and torque wrench.



Take your Pump and put on the safe surface. Your pump should not be fall from the height.



To remove the valve plug, using the 24 mm hex wrench.



After removing the valve plug inspect the O-ring for cuts or any damage. (New O-ring is included with the valve kit.)



To remove the valve assembly, Use needle nose pliers grasping the top of the spring retainer, pull the valve outside.



While removing the valve assembly, the O-ring may remaining in the manifold. Using small picker screw driver retain to the manifold to remove, Inspect the O-ring for cuts and nets or any damage.



If the valves is going to be reused, serviced or inspected, the assembly can be dismantled.

Start by inserting flat tip screw driver through the spring retainer just above the valve and press to create small gap between the valve retainer and valve seat and press flat tip screw driver between the gaps and twist to separate completely.



Inspect spring retainer for cracks, excusable wear or damage.

(If there is a damage on spring retainer order valve kit to the PressureJet and replace that.)

Inspect spring for proper tension or any damage.

Inspect tapper surface of the valve for wear, pitting or any damage.

Inspect tapper surface of the valve seat for wear, pitting or any damage.

(Pitting in the valve or valve seat is an indication of cavitation.)





To reassemble the valve assembly

Place the valve seat on a flat surface with taper surface of valve seat facing up.



Place valve on the valve seat with taper surface of valve facing down.



Place the spring on a valve.



And then place spring retainer on spring and press to assemble whole assembly.



Replace the O-ring and lubricate before installing into the manifold.



Install the O-ring into the manifold.



Install valve assembly into manifold and pressing at the place.



Lubricate the O-ring and reinstall valve plug.

Note: - Use torque wrench to tighten the valve plug.

Torque: - 98 Nm



Use 10 mm LN Key to open the manifold. To service or repair the seals it is compulsory to open the manifold.



To create separation between the manifold and crankcase, rotate the crankshaft and there is a gap between the manifold and crankcase.



Once separation has been made, use one flat tip screw driver to separate manifold to the crankcase



After the separation, place manifold on flat surface with seals facing up.



To check, service or replace the seal, Use flat tip screw driver and gently remove the seal.



Separate the seal and low pressure seal and check for any damage or cuts on that.

8.2 Servicing the Packing Seals



To service or replace the power end seals



Use 2 flat screw drivers and pull that seal outside.



Check seals for any damage or cuts on it.



In power end seal there are 3 parts

1. Low pressure seal
2. O-ring
3. Seal

Check all parts for any damage or cuts.

8.3 Servicing the Plungers

- If the plungers are not damaged they do not require any servicing.
- Tools required: 13 mm socket, ratchet, mechanics picks, taper blade gasket scraper, thread sealant and torque wrench
- **NOTE:** Be very careful when working with the plungers. They are made from ceramic which is brittle and can be damaged. Any time you remove a plunger it is recommended to replace the slinger washer, O-ring and top plunger washer. The washers are a cushion for the ceramic plunger and compress when first used and the O-ring will take a set to create a seal and usually will not spring back to its original shape. By not replacing these parts, you run the risk of breaking a plunger or having a water leak.



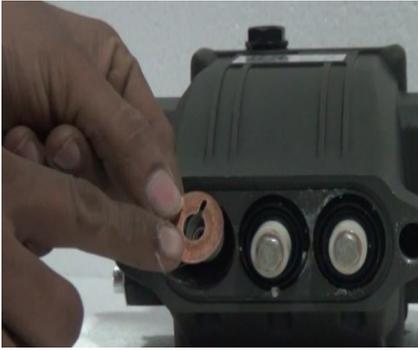
Using a 12 mm wrench to loose plunger bolt and remove plunger bolt from the plunger.



Remove whole screw from the plunger with copper washer.



Remove plunger and check for any damage or cracks or cuts.



Remove copper spacer after plunger removal.



Remove Oil seal after removal of copper spacer.
Note: - If you find any trouble shooting procedure to remove oil seal, you cannot reuse that oil seal twice. You have to replace the oil seal, otherwise crankcase oil will be mix with discharge water



For assemble the plunger

First of all install copper spacer after oils seal.

Then install plunger with outer spacer.

Then install the plunger screw with copper washer and tighten with torque wrench.

Torque specification is 6.2 Nm.



8.4 Plunger Oil Seal Assembly

- Reassemble the new oil seals in the crankcase by pushing each seal in with the spring loaded lip facing upward or downward the case



Install the oil seal. To install the oil seal use proper tool, use plastic hammer to place it completely.



To install the seal of power end on plunger, first of all place the O-ring on seal.

8.5 Pump head to drive end installation

❖ Power End seal



To install the seal of power end on plunger, first of all place the O-ring on seal.

Then place the low pressure seal in the seal.

And install that power end seal into the power end.

❖ Place Seal of a Manifold



To install the seal in manifold. Install low pressure seal first into a hole of manifold.

Then install the seal into a hole of manifold. And press it for proper installation.

❖ **Manifold Tighten**



Then install a manifold and tighten it through their bolts.

Tighten bolts with torque wrench. Torque specification is 24 Nm.

8.6 Torque Chart of Pump Screw and Plug

Description	Screw Type	Code No.	Torque		
			NM	Lfb. Ft	Lbf. in
Plunger Nut	Nut M8	1260110	9	7	80
Valve Plug	M 22 x 1.5P	820361	50	37	440
Manifold Screw	M 6 x 60	1322730	15	11	132
Flange Screw	M 8 x 20		24.5	18	216
Cover Screw	M 6 x 16	1200430	10	7	88
Inlet Caps	½" Brass	820361	30	22	265
Outlet Caps	3/8" Brass	1980740	20	15	176

Description	Screw Type	Code No.	Loc Tite		
			Type	Our use	Wait time
Plunger Nut	Nut M8	1260110	270	105	6 Hr.
Valve Plug	M 22 x 1.5P	820361	270	105	6 Hr
Manifold Screw	M 6 x 60	1322730	270	105	6 Hr
Flange Screw	M 8 x 20	-	270	105	6 Hr
Cover Screw	M 6 x 16	1200430	270	105	6 Hr
Inlet Caps	½" Brass	820361	270	105	6 Hr
Outlet Caps	3/8" Brass	1980740	270	105	6 Hr

8.7 Preventive Maintenance

Check	Daily	Weekly	50 Hrs.	400 Hrs.	500 Hrs.	1000 Hrs.
Clean Filter / Strainer	✓					
Check Oil Level / Quality	✓					
Check Oil Leakage	✓					
Check Water Leakage	✓					
Check inlet Plumbing and fittings		✓				
Initial Oil Change			✓			
Oil Change					✓	
Seal Change						✓
Valve Change						✓
Accessories Checking						✓
Change Unloader Kit / PRV				✓		
Change Safety Valve Kit				✓		
Change Gun kit				✓		

8.8 Life of Wear Parts & Ordering Spares parts

- We understand very well the concern about the approximate life of wear parts. However, the life of wear parts is solely depends upon the maintenance of pump, quality of water, installation etc.
- Since it is not possible to control all these parameters, we can neither commit nor mention the life of wear parts. However you may please click on below chart for recommended spares list, which is self-explanatory.

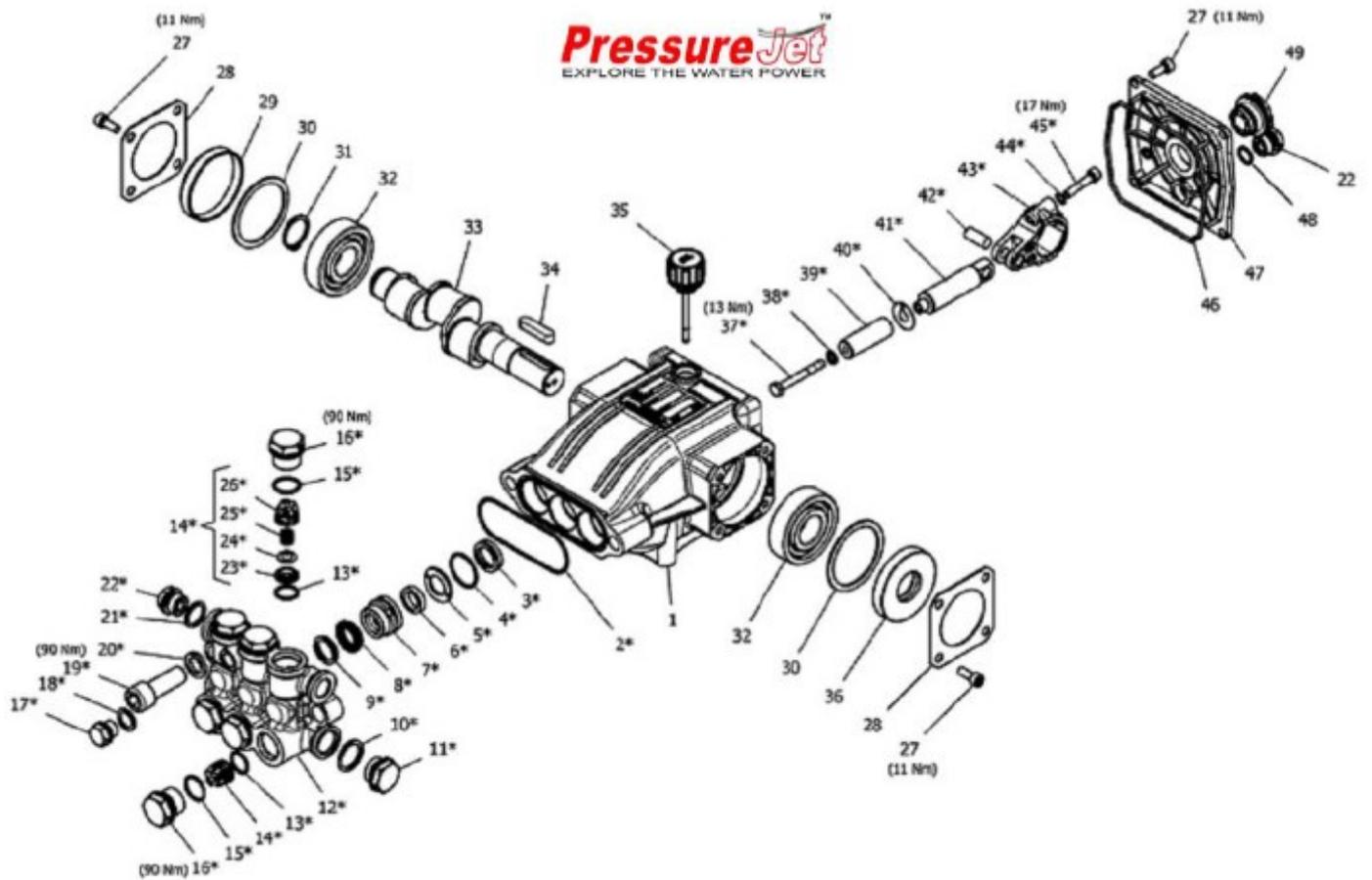
Model	Check Recommended Spares list
NHD 1212 R	Click HERE
NHD 1415 R	Click HERE

8.9 Repairing Pump at our Factory

- We are maximum providing quick service on customer site but if any breakdown or service does not possible on customer site, then we suggest to customer for send pump at our company. We have highly qualified R&D team and latest machineries for inspection and analysis. We always provide fast service with minimum cost and with good suggestion and training to our valuable customers.

Section – 9: Exploded View

9.1 NHD 12.120



S.N	Item Code	Description	Qty.	Available in kit	Available in loose
1	C.IP.HW-020235	020235 Crankcase (NHD)	1	×	✓
2	C.IP.HW-060528 (C.IP.HW-060508)	060528 O Ring 1.78x72.75 for Crankcase (NHD) (060508 O Ring 1.78x72.75 for Crankcase (NHD))	1	×	✓
3	-	000105 Plunger Oil Seal 26x18x6 (NHD)	3	✓	X
4	C.IP.HW-060510	060510 O Ring 1.78x26.7 for Plunger Oil Seal (NHD)	3	✓	✓
5	-	140062 Pressure ring washer dia. 16	3	✓	×

6	-	000288 "U" seal, dia. 16 mm	3	✓	x
7	-	120174 Pressure ring dia. 16 mm	3	✓	x
8	-	000289 "V" seal, dia. 16 mm	3	✓	x
9	-	030094 Support ring dia. 16 mm	1	✓	x
10	C.FT.CW-12-21.2-28.3-1.5	Copper Washer-1/2" NB (Id-21.2 x Od-28.3 x 1.5mm)	1	x	✓
11	C.SP.12-BR	Solid Plug-1/2" BSP (Brass)	1	x	✓
12	C.IP.HW-160255	160255 Manifold Housing (NHD)	1	x	✓
13	C.IP.HW-060161	060161 O Ring 2062 - 1.78x15.60 for Valve Kit (NHD)	6	✓	✓
14	-	360460 Valve Assembly	6	✓	x
15	C.IP.HW-060122	060122 O Ring 2075 - 2.62x18.77 for Valve Kit (NHD)	6	✓	✓
16	C.IP.HW-160147	160147 Valve Plug (NHD)	6	x	✓
17	C.SP.14-BR	Solid Plug-1/4" BSP (Brass)	1	x	✓
18	C.FT.CW-14-14-18-1.5	Copper (CU) Washer-1/4" NB (Id-14 X Od-18 X 1.5mm)	1	x	✓
19	C.IP.HW-180147	180147 Manifold Stud Bolt M14x40 (NHD)	2	x	✓
20	C.FT.SW-16G14-MS	MS Spring Washer Flat 14mm	2	x	✓
21	C.FT.CW-38-17-22-1.5	Copper Washer-3/8" NB (Id-17 x Od-22 x 1.5mm)	1	x	✓
22	C.SP.38-BR	Solid Plug-3/8" BSP (Brass)	2	x	✓
23	-	150322 Valve seat	6	✓	X

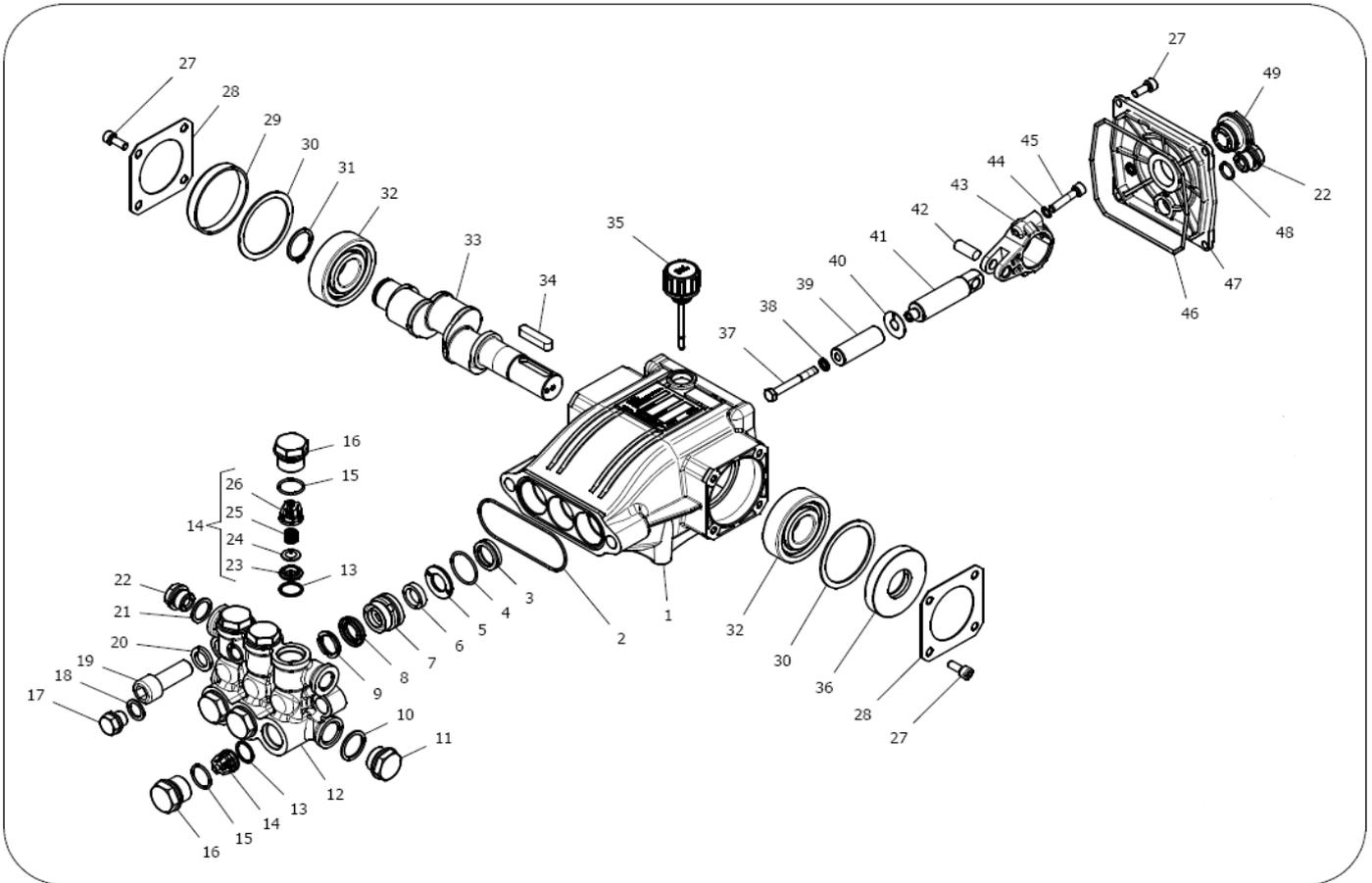
24	-	120200 Valve plate	6	✓	×
25	-	090030 Valve spring	6	✓	×
26	-	060407 Valve cage	6	✓	×
27	C.FT.CS-616-HT	HT Cap Screw M6X16	12	×	✓
28	C.IP.HW-020318	020318 Bearing Cover (NHD)	2	×	✓
29	C.IP.HW-020502	020502 Bearing Seal (NHD)	1	×	✓
30	C.IP.HW-030127	030127 Crankshaft Seal Spacer (NHD)	2	×	✓
31	C.IP.HW-150003	150003 Snap Ring dia. 25 mm for Bearing (NHD)	1	×	✓
32	C.BR.DGGBB-6305-ZZ	Deep Groove Ball Bearing-6305ZZ	2	×	✓
33	C.IP.HW-000692	000692 Single-Ended Shaft (NHD12)	1	×	✓
34	C.PK.8-7-35	Parallel Key 8X7X35mm	1	×	✓
35	C.IP.HW-160015	160015 Oil Dip Stick (NHD,NPM,NMT)	1	×	✓
36	C.IP.HW-000110	000110 Crankshaft Seal 25x62x10 (NHD)	1	×	✓
37	C.FT.HB-650-HT	HT Hex Bolt M-6X50	3	✓	✓
38	-	140010 Copper spacer	3	✓	×
39	-	120045 Plunger dia. 16 mm	3	✓	×
40	C.IP.HW-140027	140027 Copper Spacer for Plunger (NHD)	3	✓	✓
41	C.IP.HW-000340	000340 Plunger Rod (NHD)	3	×	✓

42	C.IP.HW-150204	150204 Connecting Rod Pin (NHD)	3	x	✓
43	C.IP.HW-010008	010008 Connecting Rod (NHD)	3	x	✓
44	C.FT.SW-16G6-MS	MS Spring Washer Flat 6mm	6	x	✓
45	C.FT.CS-630-HT	HT Cap Screw M-6X30	6	x	✓
46	C.IP.HW-060513	060513 O Ring 2.62x111.62 for Crankcase Cover (NHD)	1	x	✓
47	C.IP.HW-020367	020367 Crankcase Cover (NHD)	1	x	✓
48	C.IP.HW-060114	060114 O Ring-1.78x14 for Drain Plug (NHD,NPM,NMT,NLT,XLT,XXT,PX)	1	x	✓
49	C.OI.34	Oil Level Indicator-3/4" BSP	1	x	✓

Repair Kit (Recommended Spares List)

Item No.	Kit Code	Kit Name	Qty.	Available in Kit	Available in Loose
4-6-8-9	C.IP.HW-260189	260189 Plunger Seals 16 mm (NHD)	1	✓	x
4-5-6-7-8-9	C.IP.HW-260231	260231 Complete Seals Packing 16 mm (NHD12)	1	✓	x
37- 38- 39- 40	C.IP.HW-260190	260190 Plunger 16 mm (NHD)	3	✓	x
13-14-15	C.IP.HW-260012	260012 Complete Valve (NHD)	6	✓	x
3	C.IP.HW-260826	260826 Plunger Oil Seal 26x18x6 (NHD)	1	✓	x

9.2 NHD 14.140



S.N	Item Code	Description	Qty.	Available in kit	Available in loose
1	C.IP.HW-020235	020235 Crankcase	1	×	✓
2	C.IP.HW-060508	060508 O-ring Ø 1.78*72.75	1	×	✓
3	C.IP.HW-000105	000105 Plunger oil seal	3	✓	×
4	C.IP.HW-060510	060510 O-ring Ø 1.78*26.7	3	✓	×
5	C.IP.HW-140062	140062 Pressure ring washer dia. 16	3	✓	×
6	C.IP.HW-000288	000288 "U" seal, dia. 16 mm	3	✓	×
7	C.IP.HW-120180	120180 Pressure ring dia. 16 mm	3	✓	×
8	C.IP.HW-000289	000289 "V" seal, dia. 16 mm	3	✓	×

9	C.IP.HW-030094	030094 Support ring dia. 16 mm	1	✓	×
10	C.FT.CW-12-21.2-28.3-1.5	Copper Washer-1/2" NB (Id-21.2 x Od-28.3 x 1.5mm)	1	×	✓
11	C.SP.12-BR	Solid Plug-1/2" BSP (Brass)	1	×	✓
12	C.IP.HW-160255	160255 Manifold housing	1	×	✓
13	C.IP.HW-060161	060161 "O" Ring Ø1.78x15.6	6	✓	×
14	C.IP.HW-360460	360460 Valve Assembly	6	✓	×
15	C.IP.HW-060122	060122 "O" Ring Ø1,78x18.77	6	✓	×
16	C.IP.HW-160147	160147 Valve plug	6	×	✓
17	C.SP.14-BR	Solid Plug-1/4" BSP (Brass)	1	×	✓
18	C.FT.CW-14-14-18-1.5	Copper (CU) Washer-1/4" NB (Id-14 X Od-18 X 1.5mm)	1	×	✓
19	C.IP.HW-180147	180147 Manifold stud bolt M14x40	2	×	✓
20	C.IP.HW-140302	140302 Lock washer	2	×	✓
21	C.FT.CW-38-17-22-1.5	Copper Washer-3/8" NB (Id-17 x Od-22 x 1.5mm)	1	×	✓
22	C.SP.38-BR	Solid Plug-3/8" BSP (Brass)	2	×	✓
23	C.IP.HW-150322	150322 Valve seat	6	✓	×
24	C.IP.HW-120200	120200 Valve plate	6	✓	×
25	C.IP.HW-090030	090030 Valve spring	6	✓	×
26	C.IP.HW-060407	060407 Valve cage	6	✓	×
27	C.FT.CS-616-HT	HT Cap Screw M-6X16	12	×	✓
28	C.IP.HW-020318	020318 Bearing cover	2	×	✓
29	C.IP.HW-020502	020502 Bearing seal	1	×	✓
30	C.IP.HW-030127	030127 Crankshaft seal spacer	2	×	✓
31	C.IP.HW-150003	150003 Snap ring dia. 25 mm	1	×	✓

32	C.BR.DGBB-6305-ZZ	Deep Groove Ball Bearing-6305ZZ	2	×	✓
33	C.IP.HW-000688	000688 Single-ended shaft	1	×	✓
34	C.IP.HW-020604	020604 Crankshaft key	1	×	✓
35	C.IP.HW-160016	160016 Oil dip stick	1	×	✓
36	C.IP.HW-000110	000110 Crankshaft seal	1	×	✓
37	C.FT.HB-650-HT	HT Hex Bolt M-6X50	3	✓	×
38	C.IP.HW-140813	140813 Bonded Seal	3	✓	×
39	C.IP.HW-120045	120045 Plunger dia. 16 mm	3	✓	×
40	C.IP.HW-140027	140027 Copper spacer	3	✓	×
41	C.IP.HW-000340	000340 Plunger Rod	3	×	✓
42	C.IP.HW-150204	150204 Connecting rod pin	3	×	In Sr No. 43
43	C.IP.HW-010008	010008 Connecting rod	3	✓	×
44	C.FT.SW-16G6-MS	MS Spring Washer Flat 6mm	6	×	In Sr No. 43
45	C.IP.HW-180132	180132 Connecting rod screw	6	×	In Sr No. 43
46	C.IP.HW-060513	060513 "O" Ring Ø2.62x111.62	1	×	✓
47	C.IP.HW-020367	020367 Crankcase cover	1	×	✓
48	C.IP.HW-060114	060114 "O" Ring Ø1.78x14	1	×	✓
49	C.IP.HW-070005	070005 Sight glass G3/4	1	×	✓

Repair Kit (Recommended Spares List)

Item No.	Kit Code	Kit Name	Qty.	Available in Kit	Available in Loose
4-6-8-9	C.IP.HW-260189	260189 Plunger Seals 16 mm(1 Set Consists of 3 Nos. of Spares for 3 Plungers)	1	✓	×
4-5-6-7-8-9	C.IP.HW-260188	260188 Complete Seals Packing dia. 16 mm(1 set for each Plunger)	3	✓	×
37-38-39-40	C.IP.HW-260190	260190 Plunger dia. 16 mm(1 set for each Plunger)	3	✓	×
13-14-15	C.IP.HW-260012	260012 Complete Valve	6	✓	×
3	C.IP.HW-260826	260826 Plunger oil Seals	1	✓	×

PressureJet

PressureJet Overview

OPEN CHALLENGE

Not ONE Indian manufacturer can match the following BASIC USPs of PressureJet!!!

1. We test each model for **500 hours** of rigorous, continuous duty performance before it is introduced in the market. All our pumps undergo rigorous, continuous test at full test parameters for **500 hours**, to ensure trouble free and a long life of our pumps in the field. PressureJet can produce proof of such tests, no other manufacturer can! More than **90% manufacturers** do not have a test bench where they can take such test!!

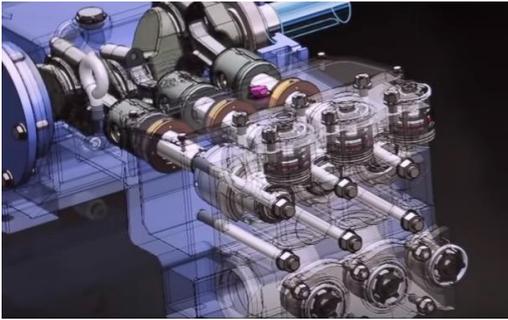


2. Thoroughly check each component of DIFFERENT pumps and accessories, using over **257 quality checking instruments including CMM**. No other manufacturer can claim to have such variety of Quality checking instruments, which are essential to ensure technically correct products.

3. PressureJet implemented **Oracle EBS 12.1.3**. There are innumerable features which many other software do not have. One of the features is: 80% Purchase Orders for items that go in your pump are sent automatically. Less human intervention means faster processes, correct and timely purchases, and reduced employee cost. This is the reason why PressureJet is very competitive in spite of being No. 1 in Quality.



4. Incorporate **“BLIND QUALITY CONTROL”** feature that prohibits inspection team access to data on quality checks. **Ensures 100% quality** deliverance for client, reduces overall costs.



5. Use Work Stations with licensed 3-D Solid Work Software. Increases accuracy through better designs, reduces costs through increased productivity and guaranteed lab test design parameters, which saves unbelievable resource cost on the account of Trial and Error.

6. Assemble your pump in a **totally dust-free environment** to which ensures a long life of your pump. In case the assembled pump has tiny dust particles, you can't even imagine that how much it will cost you in the long run



7. PressureJet is probably the only Indian High PressureJet Pump manufacturer that carries a million-dollar inventory. For this reason, you don't need to worry about in-time delivery of spares when you exhaust your inventory!!!



8. Use state-of-the-art Atlas Copco make **electric torque wrench** to tighten all bolts in your pump. Ensures perfect fitting of all parts of your pump. This ensures long life of parts. This is one of the reasons, PressureJet is the only supplier which insists customer to opt for **24 hours continues duty test**, before finalizing the order and committing your major investment. No other High PressureJet Pump manufacturer in the world uses this highly sophisticated, latest tool.

9. **Provide online access to view the pump performance during Inspection.** Enables you to view the actual performance of your pump through IP cameras in real-time.



Client List

S.N	Company name	location
1	Bharat Heavy Electric Ltd. (BHEL)	Hardwar
2	N.T.P.C Ltd.	Kawas
3	Gujrat Electric Board	Dhuvaran , Utran
4	High Energy Materials Research Lab.	Maharashtra
5	Central Railway	Rajasthan
6	Ordnance Factories	Andhra Pradesh
7	I.O.C.L.	Uttar Pradesh
8	Jyothy Laboratories Ltd.	Tamilnadu
9	Larsen & Tubro Ltd.	Mumbai
10	Reliance Industries Ltd.	Gujarat
11	KHS Machinery Pvt. Ltd.	Ahmedabad
12	Godrej & Boyce Mfg. Ltd.	Ahmedabad
13	Kirloskar Oil Engines Ltd.	Maharashtra
14	Samsung Eng. India Pvt. Ltd.	Delhi
15	Thermax Ltd.	Raigad
16	The ACC Ltd.	Tamilnadu
17	Ultratech Cement Ltd.	Chhattisgarh
18	Sandvik Asia Ltd.	Gujarat
19	Welspun Gujarat Stahl Rohren Ltd.	Gujarat
20	Grasim Ind. Ltd.	Andhra Pradesh
21	Nestle India Ltd.	Goa
22	Healing Cross Pharma. Pvt. Ltd.	Union Territory
23	Divis Laboratories Ltd.	Andhra Pradesh
24	I S G E C Ltd.	Haryana

Please visit for more client list: <http://pressurejet.com/pages/531/Client-List.aspx>



 +91 82380 31988 (Service Department)
+91-79-25830762/ 25893868

 sales@pressurejet.com

 www.pressurejet.com

 **PRESSUREJET SYSTEMS PVT. LTD.**
62/13, Phase-1, Vatva GIDC