Plunger Pumps

Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

Description

Plunger Pumps are designed for a wide variety of moderate pressure washing applications. They are constructed with die-cast bodies and feature a brass head. Internal components include special thick solid ceramic plungers for long life and durability. Precision cast cooling fins are anodized for maximum heat dissipation. Oversized needle bearing on the drive sides and ball bearings on the non-drive side assure proper shaft alignment and maximum life. Valve cages of special designed Ultra-Form impervious to water absorption provide positive seating and extended life. One-piece connecting rods are either a special alloy aluminum or bronze at higher pressures, oversized for strength and load disbursement. These pumps are designed for electric motor 56-C driven systems.

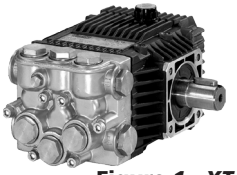


Figure *1 - XT Solid shaft*

Figure *2 - XT Hollow Shaft*

XT 1450 rpm N Version

Model	Max GPM	Max PSI
XT8.14N	2.11	2000
XT9.14N	2.37	2000
XT11.14N	2.90	2000

XTA 1750 rpm N Version

Model	Max GPM	Max PSI
XTA2G15NBA	2.11	2000
XTA2G22N	2.11	2200
XTA3G16N	3.0	1600
XTA3G19N	3.0	1900
XTA3G22N	3.0	2200

XTV 3400 rpm N Version

Model	Max GPM	Max PSI
XTV3G22N	3.0	2200

XTA 1750 rpm E Version - 5/8"

Model	Max GPM	Max PSI
XTA0.5G10EBA-F8	0.5	1000
XTA1G15E-F8	1.0	1500
XTA2G15EBA-F8	2.11	1800
XTA2G22E-F8	2.11	2200
XTA3G16EBA-F8	3.0	1600
XTA3G19E-F8	3.0	1900
XTA3G22E-F8	3.0	2200
XTA4G15EBA-F8	4.0	1500

XTV 3400 rpm E Version - 5/8"

Model	Max GPM	Max PSI
XTV0.5G10E-F8	0.5	1000
XTV2G15EBA-F8	2.11	1500
XTV2G22E-F8	2.11	2200
XTV3G16E-F8	3.0	1600
XTV3G22E-F8	3.0	2200

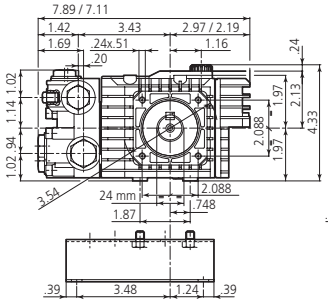
XTV 3400 rpm D Version - 3/4"

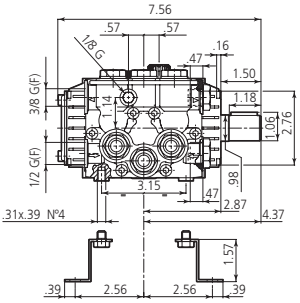
Model	Max GPM	Max PSI
XTV2G15DBA-F7	2.11	1500
XTV2G22D-F7	2.11	2200
XTV3G16D-F7	3.0	1600
XTV3G22D-F7	3.0	2200

ANNOVI REVERBERI
High Performance Pumps

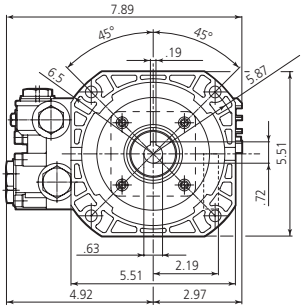
Plunger Pumps

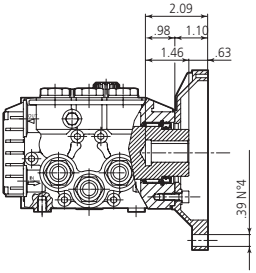
XT / XTA / XTV
N version
Solid shaft pump ø 24 mm



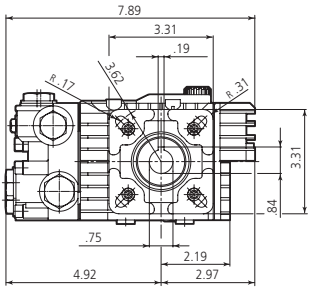


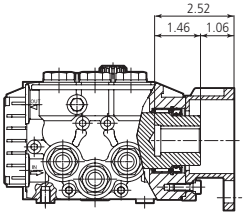
XTA / XTV
E version + F8
Hollow shaft pump ø 5/8”





XTV
D version + F7
Hollow shaft pump ø 3/4”





SPRAY NOZZLE CHART

Nozzle #	1000 PSI	1200 PSI	1400 PSI	1600 PSI	1800 PSI	2000 PSI	2200 PSI	2400 PSI	2600 PSI	2800 PSI	3000 PSI	3200 PSI	3400 PSI	3600 PSI	3700 PSI	4000 PSI	4200 PSI	4400 PSI	4600 PSI	4800 PSI	5000 PSI
2.0	1.00	1.10	1.18	1.26	1.34	1.41	1.48	1.55	1.61	1.67	1.73	1.79	1.84	1.90	1.92	2.00	2.05	2.10	2.14	2.19	2.40
2.25	1.13	1.23	1.33	1.42	1.51	1.59	1.67	1.74	1.81	1.88	1.95	2.01	2.07	2.13	2.16	2.25	2.31	2.36	2.41	2.46	2.52
2.5	1.25	1.37	1.48	1.58	1.68	1.77	1.85	1.94	2.02	2.09	2.17	2.24	2.30	2.37	2.40	2.50	2.56	2.62	2.68	2.74	2.80
2.75	1.38	1.51	1.63	1.74	1.84	1.94	2.04	2.13	2.22	2.30	2.38	2.46	2.54	2.61	2.64	2.75	2.82	2.88	2.95	3.01	3.07
3.0	1.50	1.64	1.77	1.90	2.01	2.12	2.22	2.32	2.42	2.51	2.60	2.68	2.77	2.85	2.89	3.00	3.07	3.15	3.22	3.29	3.35
3.25	1.63	1.78	1.92	2.06	2.18	2.30	2.41	2.52	2.62	2.72	2.81	2.91	3.00	3.08	3.13	3.25	3.33	3.41	3.49	3.56	3.63
3.5	1.75	1.92	2.07	2.21	2.35	2.47	2.60	2.71	2.82	2.93	3.03	3.13	3.23	3.32	3.37	3.50	3.59	3.67	3.75	3.83	3.91
4.0	2.00	2.19	2.37	2.53	2.68	2.83	2.97	3.10	3.22	3.35	3.46	3.58	3.69	3.79	3.85	4.00	4.10	4.20	4.29	4.38	4.47
4.5	2.25	2.46	2.66	2.85	3.02	3.18	3.34	3.49	3.63	3.76	3.90	4.02	4.15	4.27	4.33	4.50	4.61	4.72	4.83	4.93	5.03
5.0	2.50	2.74	2.96	3.16	3.35	3.54	3.71	3.87	4.03	4.18	4.33	4.47	4.61	4.74	4.81	5.00	5.12	5.24	5.36	5.48	5.59
5.5	2.75	3.01	3.25	3.48	3.69	3.89	4.08	4.26	4.43	4.60	4.76	4.92	5.07	5.22	5.29	5.50	5.64	5.77	5.90	6.02	6.15
6.0	3.00	3.29	3.55	3.79	4.02	4.24	4.45	4.65	4.84	5.02	5.20	5.37	5.53	5.69	5.77	6.00	6.15	6.29	6.43	6.57	6.71
6.5	3.25	3.56	3.85	4.11	4.36	4.60	4.82	5.03	5.24	5.44	5.63	5.81	5.99	6.17	6.25	6.50	6.66	6.82	6.97	7.12	7.27
7.0	3.50	3.83	4.14	4.43	4.70	4.95	5.19	5.42	5.64	5.86	6.06	6.26	6.45	6.64	6.73	7.00	7.17	7.34	7.51	7.67	7.83
7.5	3.75	4.11	4.44	4.74	5.03	5.30	5.56	5.81	6.05	6.27	6.50	6.71	6.91	7.12	7.21	7.50	7.69	7.87	8.04	8.22	8.39
8.0	4.00	4.38	4.73	5.06	5.37	5.66	5.93	6.20	6.45	6.69	6.93	7.16	7.38	7.59	7.69	8.00	8.20	8.39	8.58	8.76	8.94
8.5	4.25	4.66	5.03	5.38	5.70	6.01	6.30	6.58	6.85	7.11	7.36	7.60	7.84	8.06	8.18	8.50	8.71	8.91	9.12	9.31	9.50
9.0	4.50	4.93	5.32	5.69	6.04	6.36	6.67	6.97	7.26	7.53	7.79	8.05	8.30	8.54	8.66	9.00	9.22	9.44	9.65	9.86	10.06
9.5	4.75	5.20	5.62	6.01	6.37	6.72	7.05	7.36	7.66	7.95	8.23	8.50	8.76	9.01	9.14	9.50	9.73	9.96	10.19	10.41	10.62
10.0	5.00	5.48	5.92	6.32	6.71	7.07	7.42	7.75	8.06	8.37	8.66	8.94	9.22	9.49	9.62	10.00	10.25	10.49	10.72	10.95	11.18
11.0	5.50	6.02	6.51	6.96	7.38	7.78	8.16	8.52	8.87	9.20	9.53	9.84	10.14	10.44	10.58	11.00	11.27	11.54	11.80	12.05	12.30
12.0	6.00	6.57	7.10	7.59	8.05	8.49	8.90	9.30	9.67	10.04	10.39	10.73	11.06	11.38	11.54	12.00	12.30	12.59	12.87	13.15	13.42
12.5	6.25	6.85	7.40	7.91	8.39	8.84	9.27	9.68	10.08	10.46	10.83	11.18	11.52	11.86	12.02	12.50	12.81	13.11	13.40	13.69	13.98
13.0	6.50	7.12	7.69	8.22	8.72	9.19	9.64	10.07	10.48	10.88	11.26	11.63	11.99	12.33	12.50	13.00	13.32	13.63	13.94	14.24	14.53

Gallons Per Minute

Plunger Pumps

Formulas

Nozzles:

Impact Force (lbs.) = .0526 x GPM x √PSI

Nozzle # = GPM x $\frac{4000}{\sqrt{PSI}}$

GPM= Nozzle # x $\frac{PSI}{\sqrt{4000}}$

PSI = $(GPM/Nozzle\ \#)^2$ x 4000

Horse Power:

$\frac{GPM \times PSI}{1714}$ = Hydraulic HP

$\frac{GPM \times PSI}{1457}$ = EBHP

$\frac{EBHP \times 1457}{PSI}$ = GPM

$\frac{EBHP \times 1457}{GPM}$ = PSI

HP loss due to altitude = 3% per 1000 FT above sea level

Pump Speed and Flow:

$\frac{Rated\ GPM}{Rated\ RPM} = \frac{Desired\ GPM}{Desired\ RPM}$

$\frac{Motor\ Pulley\ Ø}{Pump\ RPM} = \frac{Pump\ Pulley\ Ø}{Motor\ RPM}$

Conversions

Gallons x 3.785412 = Liters

Gallons x 128 = Oz.

PSI x .06896 = Bar

Bar x 14.5038 = PSI

1 inches = 25.4 millimeters

Liters x .2642 = Gallons (US)

Ft. Lbs. x 1.356 = Newton Meters

Inch Lbs. x .11298 = Newton Meters

Newton Meters x .737562 = Ft. Lbs. (force)

Newton Meters x 8.85 = In. Lbs. (force)

Temperature = 1.8(C° + 17.78) = F°,.555(F° - 32) = C°

1 U.S. Gallon of freshwater = 8.33 lbs.

1 PSI = 2.31 feet of water

1 PSI = 2.04 inches of mercury

1 Foot of water = .433 PSI

1 Foot of water = .885 inches of mercury

1 Meter of water = 3.28 feet of water

Kilograms x 2.2 = Lbs.

General Safety Information

⚠WARNINGS

Electric Drive Pumps

Your power supply must conform to the system requirements.

The motor must be grounded. Use GFCI plugs and receivers.

Do not handle the pump/motor with wet hands.

Only use power cords that are in good condition.

Never pull the unit by the power cord.

Never spray or clean the unit with water

Failure to follow these warnings may result in personal injury or damage to property.

Special Features

Wet End

Manifold: ***Forged Brass:*** Strength and no porosity equals long life. Higher hydrostatic pressures, safety, performance. ***Inlet and Discharge Ports***: Heavy bosses for added

Plunger Pumps

Special Features (continued)

strength. ***Offset Discharge Ports:*** High efficiency, smooth flow. ***Bolts:*** Six Bolts, 6mm, grade 12.9.

Valves: Ultra Form Cages: Durability, strength and long life. ***Poppets, Seat and Spring:*** 303 and 400 series stainless steel. ***Valve Caps:*** Machined brass – greater strength.

Packing and Plungers: High Pressure Packing: "V" style (D-1) Buna-N (cotton duct weave base) strong and tightens under load. ***Low Pressure Seals:*** "U" cup double lip Buna-N. Good positive seal. ***Support Guides:*** Machined brass one-piece construction to assure proper plunger alignment and to maximize packing and seal life. ***Plungers:*** Are a special aluminum oxide blend, solid ceramic for long life, strong durability and more resilient.

Drive End

Bearings: Oversized for maximum life and load disbursement, two ball bearings on the solid shaft series and a needle bearing on the drive side and ball on the non-drive side for the hollow shaft series. Each bearing is held in position on the crankshaft and crankcase by snap rings. This assures positive alignment and centering of the connecting rods and crankshaft in relation to the crankcase, it also eliminates the crankshaft from floating.

Crankcase: Precision die-cast, large cooling fins and anodized (for maximum heat dissipation).

Rear Cover: Precision die-cast, precision punched gasket sealed and bayonet style sight glass for positive sealing and locking (no threads to loosen).

Plunger Rods: Stainless steel construction for strength (no plating to scrape off). O-ring plunger sealing system.

Rod Pins: Precision ground and hardened steel, oversized for load disbursement.

Connection Rods: One piece special alloy aluminum based and bronze, oversized for maximum strength, load disbursement, and life. Heavy pin area construction, for added load strength.

Crankshaft: Forged one-piece, precision ground and hardened for extremely long life and durability.

Oil Seals and O-rings: All are constructed of Buna-N rubber. The O-rings have stainless steel garder springs to assure constant tension on the sealing surface.

Oil Capacity: Flat cover 8 oz. and extended cover 10 oz.

Extra Features

Dyno Proven: All pumps are dyno tested to assure the theoretical design meets the actual design.

Valve Design: Each pump series has a valve design that optimizes its highest efficiency.

Hot Water: High temperature kits are available to 180° F. Refer to breakdown.

Plunger Pumps

Special Features (continued)

Wet End Repair: Very simple no special tools are required.

Mounting Bolt Pattern: Same on the top and bottom of the crankcase for simple drive side change.

Design: Using advanced fluid handling design programs. Overall pump efficiency is increased.

Installation

Direct Drive Electric

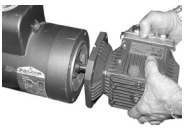


Figure 2

1. Install the shaft key into the keyway and apply a light coating of anti-seize on the motor shaft. (See Figure 2 & 3)

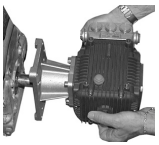


Figure 3

2. Align the key way and push the pump completely onto the motor.
3. Install all four (4) bolts and tighten evenly.

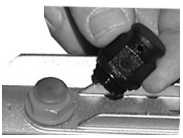


Figure 4

4. Remove the red shipping oil cap and install the black crankcase vent cap. (See Figure 4)
5. Install the appropriate unloader valve and other accessories.
6. Install the appropriate water inlet and discharge fittings.
7. Connect the water supply hose and high-pressure discharge hose/spray gun.
8. Turn on the water supply.
9. Open the spray gun to purge the system of any air.
10. Start the motor.
11. Adjust the unloader valve.

Winter or Long Time Storage

1. Drain all of the water out of the pump.
2. Run a 50% solution of a RV or non-toxic/biodegradable antifreeze through the pump.
3. Flush the pump with fresh water before the next use.
4. In freezing conditions failure to do this may cause internal pump damage.
5. For long periods of storage in non-freezing areas the solution will keep the seals and O-rings lubricated.

Service Pumps

Servicing the Valves

The inlet and discharge valves in this series pumps are all the same. The valves are located under the six 21mm 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: 21mm socket, ratchet, needle nose pliers, mechanics pick and torque wrench.

Plunger Pumps

Service Pumps (continued)

Valve Removal:

Figure 5

1. Remove the valve cap. (See Figure 5)
2. Inspect the valve cap O-ring for any damage, replace if necessary.

Figure 6

3. Use the needle nose pliers to remove the valve. (See Figure 6)
4. Use a small probe to move the poppet up and down to assure that the valve is functioning properly and that no debris is stuck in the valve.
5. Using the mechanics pick remove the valve seat O-ring and inspect for any damage, replace if necessary.

Valve Assembly:

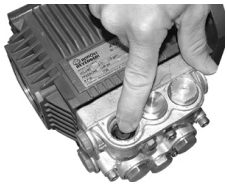


Figure 7

1. Install the valve seat O-ring squarely into the bottom of the manifold. (See Figure 7)
2. Insert the valve assembly squarely into the port pushing it into the O-ring.
3. Install the valve cap and torque to the proper specification. (See Figure 8)

Figure 8

Servicing the Packings/Seals

To access the water seals for inspection or replacement, you will first need to remove the head of the pump.

Tools required: 5mm hex socket, ratchet, (2) long screwdrivers, reversible pliers, mechanics pick and torque wrench.

Disassembly:

1. First remove the six 5mm head bolts.
2. Place the screwdrivers as shown between the head and crankcase of the pump, lifting one up and the other down. The head should start to lift off of the plungers. (See Figure 9)

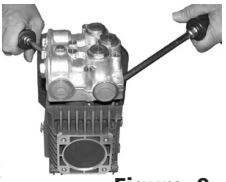


Figure 9

3. When you remove the head you may notice that some of the water seals have stayed on the plungers and some in the head. To remove the seals from the plungers simple turn the assemblies and pull off. (See Figure 10 & 11)

Figure 10

Figure 11

Plunger Pumps

Service Pumps (Continued)

4. If the seal assemblies are in the head use the reversible pliers to grab the seal retainer on the outside ring, twist the retainer in either direction (this is done to free the retainer O-ring which is stuck to the manifold) and lift out. (See Figure 12)


Figure 12

5. With your fingers pull the high pressure seal and head ring out of the head. (See Figure 13)


Figure 13

6. The low-pressure seal is located in the brass seal retainer. Using the mechanics pick go in between the seal and retainer, twist and pull, the seal will come out of the gland. (See Figure 14)


Figure 14

7. Remove the seal retainer O-ring with the mechanics pick.

Assembly:

1. Install the plastic head ring into the head (the flat side is on the bottom).
2. Install the high-pressure seal. Place the seal so the open "V" portion is toward the head ring. You need to place the seal at an angle and pull and push to work the seal into position with your fingers (do not use any tools you may damage the seal). Make sure the seal is totally seated against the head ring. (See Figure 15)

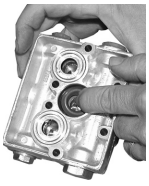


Figure 15

3. Installing the low-pressure seal. You want the open side of the seal to be pointed toward the water side of the head (toward the high-pressure seal) and the flat side toward the drive end of the pump.

Place the seal into the gland at an angle, with your finger push the exposed side of the seal towards the center and work the seal into position (ref. the drawing). After the seal is in the gland you can work it into it proper position. (See Figure 16)


Figure 16

4. Install the retainer O-ring.
5. Squarely seat the retainer into the head and push with even pressure until it snaps into position. (See Figure 17)


Figure 17

Servicing the Plungers

If the plungers are not damaged they do not need any servicing.

Tools required: 13mm socket, ratchet, mechanics pick, 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.

Plunger Pumps

Service Pumps (Continued)

Any time you remove a plunger it is recommended you 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.

Disassembly:

1. Remove the plunger retainer nut. (See Figure 18)


Figure 18

2. Insert the gasket scraper between the copper washer and plunger to remove the washer. (See Figure 19)

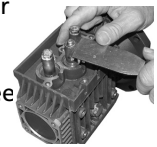


Figure 19

3. Twist and pull the plunger off the plunger rod. (See Figure 20)
4. Remove the plunger rod O-ring seal with the mechanics pick. (See Figure 21)


Figure 20

5. Remove the brass slinger. At this point clean any thread locker that is left on the plunger rod and retaining nut threads.


Figure 21

Assembly:

1. Install the brass slinger washer.
2. Install the plunger rod O-ring. Place a light film of oil on the O-ring.
3. Install the plunger by pushing straight down and twisting slightly in either direction. Make sure you fully seat the plunger. (See Figure 22)


Figure 22

4. Install the small copper washer on top of the plunger and place a small quantity of thread sealant in the thread. Install the plunger nut and tighten to the required torque. (See Figure 23)


Figure 23

Pump Head to Drive End Installation

1. Turn the crankshaft to align the plungers as shown. (See Figure 24)


Figure 24

2. Place the head evenly onto the plungers and push it until it makes contact with the drive end of the pump. (See Figure 25)


Figure 25

3. Torque the head bolt as shown in the tightening sequence diagram. (See Figure 26 & 27)


Figure 26

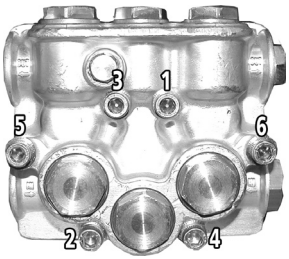


Figure 27

Troubleshooting

Symptom	Possible Cause(s)	Corrective Action
Oil Leak Between Crankcase and Pumping Section	Worn rod oil seals	Replace crankcase piston rod seals
Frequent or Premature Failure of the Packing	1. Cracked, damaged or worn plunger	1. Replace plungers
	2. Overpressure to inlet manifold	2. Reduce inlet pressure
	3. Material in the fluid being pumped	3. Install proper filtration on pump inlet plumbing
	4. Excessive pressure and/or temperature of fluid being pumped	4. Check pressures and fluid inlet temperature; be sure they are within specified range
	5. Running pump dry	5. Do not run pump without water
Pump Runs but Produces no Flow	Pump is not primed	Flood suction then restart pump
Pump Fails to Prime	Air is trapped inside pump	Disconnect discharge hose from pump. Flood suction hose, restart pump and run pump until all air has been evacuated
Pump Looses Prime, Chattering Noise, Pressure Fluctuates	1. Air leak in suction hose or inlet	1. Remove suction line and inspect it for a loose liner or debris lodged in hose. Avoid all unnecessary bends. Do not kink hose
	2. Clogged suction strainer	2. Clean strainer
Low Pressure at Nozzle	1. Unloader valve is bypassing	1. Make sure unloader is adjusted properly and bypass seat is not leaking
	2. Incorrect or worn nozzle	2. Make sure nozzle is matched to the flow and pressure of the pump. If the nozzle is worn, replace
	3. Worn packing or valves	3. Replace packing or valves
Pressure Gauge Fluctuates	1. Valves worn or blocked by foreign bodies	1. Clean or replace valves
	2. Packing worn	2. Replace packing
Low Pressure	1. Worn nozzle	1. Replace with nozzle of proper size
	2. Belt slippage	2. Tighten or replace with correct belt
	3. Air leak in inlet plumbing	3. Disassemble, reseal and reassemble
	4. Relief valve stuck, partially plugged or improperly adjusted valve seat worn	4. Clean and adjust relief valve; check for worn or dirty valve seats
	5. Worn packing. Abrasive	5. Install proper filter.

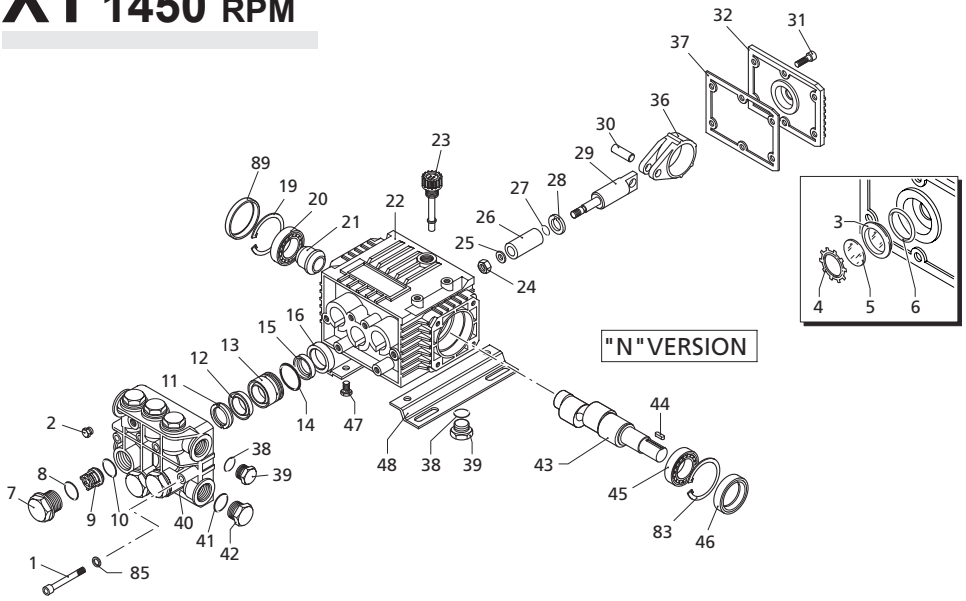
Troubleshooting

Symptom	Possible Cause(s)	Corrective Action
Low Pressure (cont)	in pumped in cavitation. Inadequate water	Suction at inlet manifold must be limited to lifting less than 20 feet of water or 8.5 psi vacuum
	6. Worn inlet, discharge valve blocked or dirty	6. Replace inlet and discharge valve
Pump Runs Extremely Rough, Pressure Very Low	Inlet restrictions and/or air leaks. Stuck inlet or discharge valve	Clean out foreign material. Replace worn valves
Water Leakage from Under Manifold. Slight Leak	Worn packing or cracked plunger	Install new packing or plunger
Oil Leaking in the Area of Crankshaft	1. Worn crankshaft seal or improperly installed oil seal O-ring 2. Bad bearing	1. Remove oil seal retainer and replace damaged O-ring and/or seals 2. Replace bearing
Excessive Play in the End of the Crankshaft Pulley	Worn main bearing from excessive tension on drive belt	Replace crankcase bearing and/or tension drive belt
Water in Crankcase	1. Humid air condensing into water inside the crankcase 2. Worn packing and/or cracked plunger	1. Change oil intervals 2. Replace packing. Replace plunger
Loud Knocking Noise in Pump	1. Cavitation or sucking air 2. Pulley loose on crankshaft 3. Broken or worn bearing	1. Check water supply is turned on 2. Check key and tighten set screw 3. Replace bearing

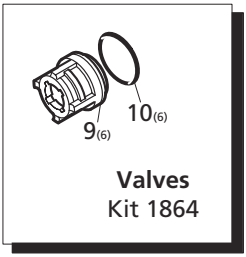
Oil Change

Change oil after first 50 hours of use. Then every 500 hours. Refer to parts breakdown for oil type.

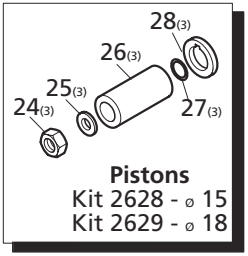
XT 1450 RPM



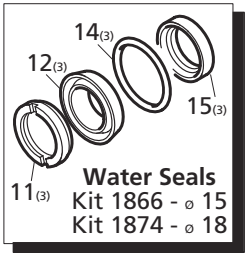
Repair Kits



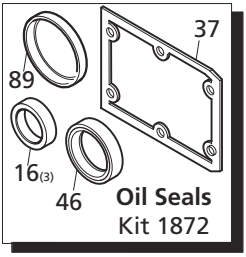
Valves
Kit 1864



Pistons
Kit 2628 - ø 15
Kit 2629 - ø 18



Water Seals
Kit 1866 - ø 15
Kit 1874 - ø 18



Oil Seals
Kit 1872

Pos	Code	Description	Qty.
1	1322730	Head bolt M6x60 (137 in/lbs)	6
2	620301	Plug 1/8" G	1
3	1260250	Oil sight glass	1
4	1260430	Snap ring	1
5	1780690	Contrast disc	1
6	1140450	O-Ring ø20.24x2.62	1
7	1260162	Valve cap (300 in/lbs)	6
	1260162T	Valve Cap 1/4" threaded (300 in/lbs)	1
	1260163	Valve Cap 1/8" threaded (300 in/lbs)	1
8	960160	O-Ring ø17.86x2.62	6
9	1269050	Complete valve	6
10	880830	O-Ring ø15.54x2.62	6
11	1260140	Support ring reducer brass ø15 ❍	3
	1260141	Support ring reducer plastic ø15 ❍	3
	1520120	Support ring ø15 ❒	3
	1320340	Support ring ø18	3
12	1271650	High pressure packing ø15	3
	1260220	High pressure packing ø18	3
13	1260151	Piston guide ø15	3
	1320351	Piston guide ø18	3
14	1260420	O-Ring ø26.70x1.78	3
15	1260440	Low pressure seal ø15	3
	1260450	Low pressure seal ø18	3
16	1260460	Oil seal	3
19	1260790	Circlip øi52	1
20	1320370	Bearing	1
21	1320330	Bushing	1
22	1320010	Pump housing	1
23	880130	Vented oil cap	1
24	1260110	Nut (106 in/lbs)	3
25	1260100	Washer 8x13x0.50	3
26	1260120	Plunger ø15	3
	1260210	Plunger ø18	3
27	480480	O-Ring ø4.48x1.78	3
28	1260091	Washer (slinger)	3
29	1260070	Plunger rod	3
30	1260080	Plunger rod pin	3

Pos	Code	Description	Qty.
31	1260760	Bolt M5x20 (48 in/lbs)	6
32	1269101	Rear cover Low	1
	1329010	Rear cover High	1
36	1260060	Con rod - Aluminum	3
	1320140	Con rod - Bronze	3
37	1260040	Gasket	1
38	740290	O-Ring ø14x1.78	2
39	1980740	Plug 3/8" G Brass	2
40	1320022	Pump head - Brass ❒❍	1
	1320020	Pump head - Brass ■⅄	1
41	180101	O-Ring ø17.5x2	1
42	820361	Plug 1/2" G Brass	1
43	1260180	Crankshaft 24mm ①	1
	1260200	Crankshaft 24mm ③	1
44	1380520	Key	1
45	1320370	Bearing	1
46	1260750	Oil seal	1
47	1260470	Bolt M8x10	4
48	1263890	Rail 1-1/2"	2
	1260830	Rail 3/8"	2
83	1260790	Circlip øi52	1
85	1381550	Washer	6
89	1266740	Cap	1
	AR64516	Oil	1

OIL CAPACITY - PSI≤ 1740 = 8 OZ - LOW

OIL CAPACITY - PSI≥ 1740 = 10 OZ - HIGH

Special Parts / Kits

Code	Description	Qty.
2029	Viton water seals ø15	1
2030	Viton water seals ø18	1
2815	Kit for up to 180° F ø15 High Temp	1
2816	Kit for up to 180° F ø18 High Temp	1
1836	Rail Kit - 3/8" - 2 Rails & 4 Bolts	1
1836H	Rail Kit - 1-1/2" - 2 Rails & 4 Bolts	1

Legend

ø 15
For ❍
XT8.12A③

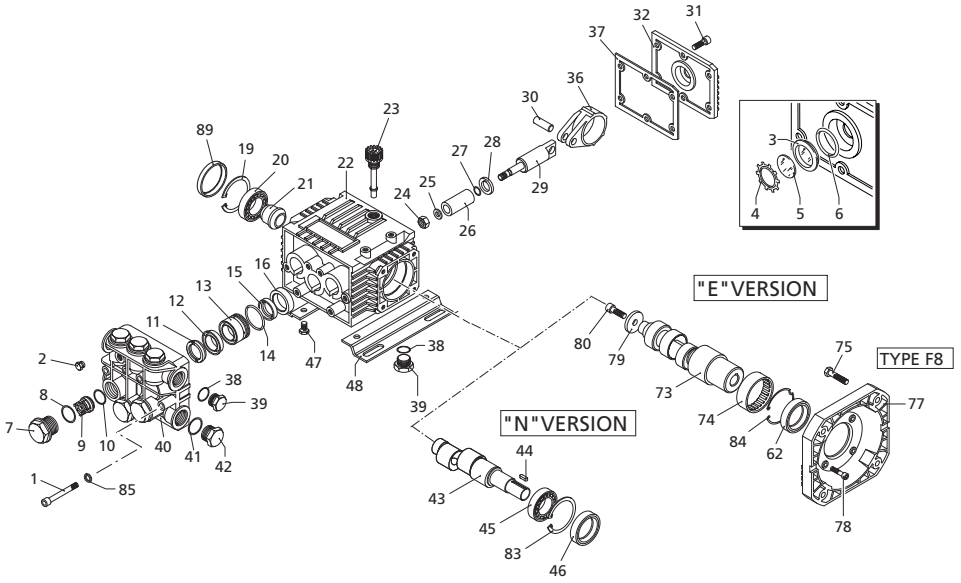
For ❒
XT8.12③
XT8.14③

ø 18
For ⅄
XT11.11③

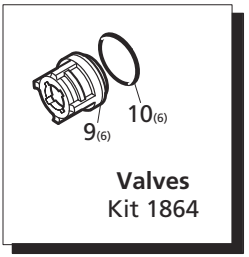
ø 18
For ■
XT9.14①
XT11.14③

NORTH AMERICA
First Choice When Quality Matters

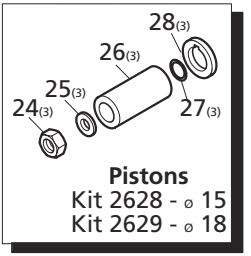
XTA 1750 RPM



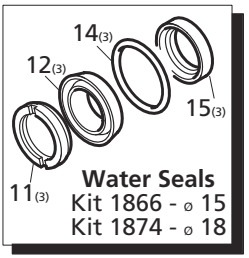
Repair Kits



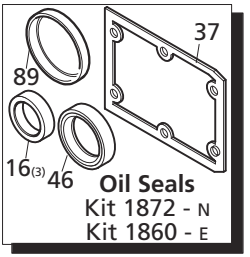
Valves
Kit 1864



Pistons
Kit 2628 - ø 15
Kit 2629 - ø 18



Water Seals
Kit 1866 - ø 15
Kit 1874 - ø 18



Oil Seals
Kit 1872 - N
Kit 1860 - E

Pos	Code	Description	Qty.
1	1322730	Head bolt M6x60 (137 in/lbs)	6
2	620301	Plug 1/8"	1
3	1260250	Oil sight glass	1
4	1260430	Snap ring	1
5	1780690	Contrast disc	1
6	1140450	O-Ring ø20.24x2.62	1
7	1260162	Valve cap (300 in/lbs)	6
	1260162T	Valve Cap 1/4" threaded (300 in/lbs)	1
	1260163	Valve Cap 1/8" threaded (300 in/lbs)	1
8	960160	O-Ring ø17.86x2.62	6
9	1269050	Complete valve	6
10	880830	O-Ring ø15.54x2.62	6
11	1260140	Support ring reducer brass ø15 ❍	3
	1260141	Support ring reducer plastic ø15 ❍	3
	1520120	Support ring ø15 ❒	3
	1320340	Support ring ø18	3
12	1271650	High pressure packing ø15	3
	1260220	High pressure packing ø18	3
13	1260151	Piston guide ø15	3
	1320351	Piston guide ø18	3
14	1260420	O-Ring ø26.70x1.78	3
15	1260440	Low pressure seal ø15	3
	1260450	Low pressure seal ø18	3
16	1260460	Oil seal	3
19	1260790	Circlip øi52	1
20	1320370	Bearing	1
21	1320330	Bushing	1
22	1320010	Pump housing	1
23	880130	Vented oil cap	1
24	1260110	Nut (106 in/lbs)	3
25	1260100	Washer 8x13x0.50	3
26	1260120	Plunger ø15	3
	1260210	Plunger ø18	3
27	480480	O-Ring ø4.48x1.78	3
28	1260091	Washer (slinger)	3
29	1260070	Plunger rod	3
30	1260080	Plunger rod pin	3
31	1260760	Bolt M5x20 (48in/lbs)	6
32	1269101	Rear cover Low	1
	1329010	Rear cover High	1
36	1260060	Con rod - Aluminum	3
	1320140	Con rod - Bronze	3
37	1260040	Gasket	1
38	740290	O-Ring ø14x1.78	2
39	1980740	Plug 3/8" G Brass	2
40	1320022	Pump head - Brass ❒❍☒	1
	1320020	Pump head - Brass ■⩓◆	1
41	180101	O-Ring ø17.5x2	1
42	820361	Plug 1/2" G Brass	1

Pos	Code	Description	Qty.
43	1260200	Crankshaft 24mm ⩓	1
	1260190	Crankshaft 24mm ❍❒■	1
	1320260	Crankshaft 24mm ◆	1
44	1380520	Key	1
45	1320370	Bearing	1
46	1260750	Oil seal	1
47	1260470	Bolt M8x10	4
48	1263890	Rail 1-1/2" (N Version Only)	2
	1260830	Rail 3/8" (N Version Only)	2
62	480671	Oil seal	1
73	1321110	Hollow shaft ø5/8" ❍❒■	1
	1322240	Hollow shaft ø5/8" ⩓	1
	1322250	Hollow shaft ø5/8" ◆	1
	1323030	Hollow shaft ø5/8" ☒	1
74	1321190	Bearing	1
75	650610	Screw 3/8"	4
77	1584	Electric motor flange - NEMA 56-C	1
78	1200430	Bolt M6x16	4
79	780230	Washer ø6.5	1
80	390430	Bolt M6x25	1
83	1260790	Circlip øi52	1
84	1321080	Snap ring	1
85	1381550	Washer	6
89	1266740	Cap	1
	AR64516	Oil	1

Oil Capacity - PSI≤ 1740 = 8 oz - Low

Oil Capacity - PSI≥ 1740 = 10 oz - High

Special Parts / Kits

Code	Description	Qty.
2029	Viton water seals ø15	1
2030	Viton water seals ø18	1
2815	Kit for up to 180° F ø15 High Temp	1
2816	Kit for up to 180° F ø18 High Temp	1
1836	Rail Kit - 3/8" - 2 Rails & 4 Bolts (N only)	1
1836H	Rail Kit - 1-1/2" - 2 Rails & 4 Bolts (N only)	1

Legend

ø 15
For ❍
XTA1G15
XTA2G15

For ❒
XTA2G20
XTA2G22

For ☒
XTA0.5G10 (E)

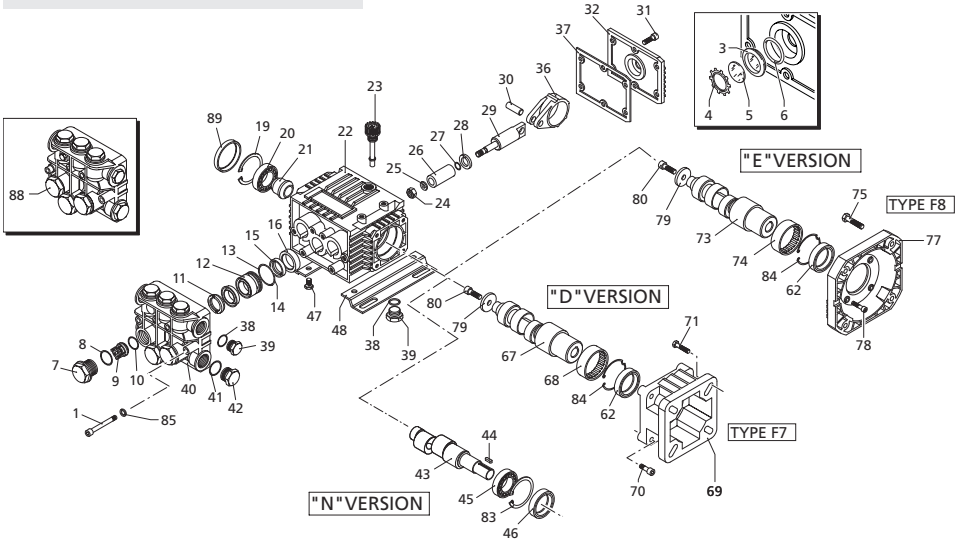
ø 18
For ■
XTA3G16
XTA3G19
XTA3G22

For ◆
XTA4G10 (N)
XTA4G15

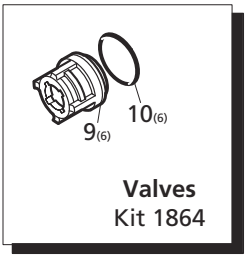
ø 18
For ⩓
XTA3.5G17 (N)
XTA3.5G20

NORTH AMERICA
First Choice When Quality Matters

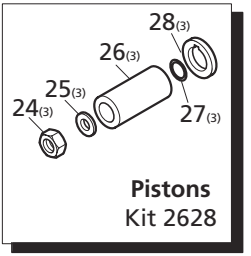
XTV 3400 RPM



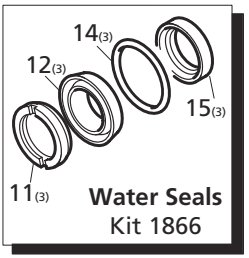
Repair Kits



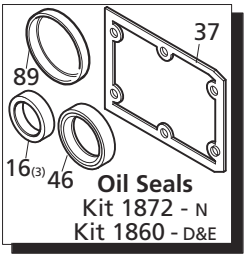
Valves
Kit 1864



Pistons
Kit 2628



Water Seals
Kit 1866



Oil Seals
Kit 1872 - N
Kit 1860 - D&E

Pos	Code	Description	Qty.
1	1322730	Head bolt M6x60 (137 in/lbs)	6
3	1260250	Oil sight glass	1
4	1260430	Snap ring	1
5	1780690	Contrast disc	1
6	1140450	O-Ring ø20.24x2.62	1
7	1260162	Valve cap (300 in/lbs)	6
	1260162T	Valve Cap 1/4" threaded (300 in/lbs)	1
	1260163	Valve Cap 1/8" threaded (300 in/lbs)	1
8	960160	O-Ring ø17.86x2.62	6
9	1269050	Complete valve	6
10	880830	O-Ring ø15.54x2.62	6
11	1260140	Support ring reducer brass ❍	3
	1260141	Support ring reducer plastic ❍	3
	1520120	Support ring ●■	3
12	1260130	High pressure packing	3
13	1260151	Piston guide	3
14	1260420	O-Ring ø26.70x1.78	3
15	1260440	Low pressure seal	3
16	1260460	Oil seal	3
19	1260790	Circlip øi52	1
20	1320370	Bearing	1
21	1320330	Bushing	1
22	1320010	Pump housing	1
23	880130	Vented oil cap	1
24	1260110	Nut (106 in/lbs)	3
25	1260100	Washer 8x13x0.50	3
26	1260120	Plunger	3
27	480480	O-Ring ø4.48x1.78	3
28	1260091	Washer (slinger)	3
29	1260070	Plunger rod	3
30	1260080	Plunger rod pin	3
31	1260760	Bolt M5x20 (48 in/lbs)	6
32	1329010	Rear cover	1
36	1260060	Con rod - Aluminum	3
	1320140	Con rod - Bronze	3
37	1260040	Gasket	1
38	740290	O-Ring ø14x1.78	2
39	1980740	Plug 3/8" G Brass	2
40	1320022	Pump head - Brass	1
41	180101	O-Ring ø17.5x2	1
42	820361	Plug 1/2" G Brass	1
43	1322150	Crankshaft 24mm ❍●	1
	1321790	Crankshaft 24mm ■	1
44	1380520	Key	1
45	1320370	Bearing	1
46	1260750	Oil seal	1
47	1260470	Bolt M8x10	4
48	1263890	Rail 1-1/2" (N Version Only)	2
	1260830	Rail 3/8" (N Version Only)	2
62	480671	Oil seal	1

Pos	Code	Description	Qty.
67	1321800	Hollow shaft ø3/4" ❍●	1
	1321810	Hollow shaft ø3/4" ■	1
68	1321190	Bearing	1
69	1579	Gas engine flange	1
70	1200430	Bolt M6x16	4
71	621710	Bolt 5/16"	4
73	1321820	Hollow shaft ø5/8" ❍●	1
	1321830	Hollow shaft ø5/8" ■	1
	1323010	Hollow shaft ø5/8" ☒	1
74	1321190	Bearing	1
75	650610	Bolt 3/8"	4
77	1584	Electric motor flange - NEMA 56-C	1
78	1200430	Bolt M6x16	4
79	780230	Washer	1
80	390430	Bolt M6x25	1
83	1260790	Circlip øi52	1
84	1321080	Snap ring	1
85	1381550	Washer	6
88	1269209	Complete pump head	1
89	1266740	Cap	1
	AR64516	Oil	1

Oil Capacity - 10 oz

Special Parts / Kits

Code	Description	Qty.
2029	Viton water seals ø15	1
2815	Kit for up to 180° F ø15 High Temp	1
1836	Rail Kit - 3/8" - 2 Rails & 4 Screws (N only)	1
1836H	Rail Kit - 1-1/2" - 2 Rails & 4 Screws (N only)	1

Legend

ø 15
For ❍
XTV2G15

For ☒
XTV0.5G10 (E)

ø 15
For ●
XTV2G18 (N&D)
XTV2G20
XTV2G22

ø 15
For ■
XTV3G16
XTV3G18 (N)
XTV3G20
XTV3G22

NORTH AMERICA
First Choice When Quality Matters

Plunger Pumps

Torque Specifications in/lbs:(ft/lbs)

Oil Capacity	Manifold (Head)	Piston Nut	Rear Cover	Side Cover	Valve Cap	Connecting Rods
10	137/(11)	106/(8.8)	48/(4.0)	N/A	300/(25)	N/A

Limited Warranty

Annovi Reverberi (A.R.) *Cam Shaft Plunger Pumps* are warranted for a period of five years and *Axial Radial Pumps* are warranted for a period of one year to the original purchaser. *Electric Pressure Washers* are warranted for a period of one year to the original purchaser. This is from the date shipped from factory or U.S. Warehouse. **AR, ArrowLine** and **GF** accessories are warranted for a period of 90 days.

Warranty covers manufacturing defects or workmanship that may develop under normal use and service in a manner up to the directions and usage recommended by the manufacturer.

Warranty does not apply to misuse or when pump or accessory is altered or used in excess of recommended speeds, pressures, temperatures or handling fluids not suitable for pump or accessory material construction. Warranty does not apply to normal wear, freight damage, freezing damage or damage caused by parts or accessories not supplied by AR North America, Inc.

Liability of manufacturer for warranty is limited to repair or replacement at the option of the manufacturer when such products are found to be of original defect or workmanship at the time it was shipped from factory. This warranty is in lieu of all other warranties, expressed or implied, including any warranty of merchantability and of any and all other obligations or liabilities on the part of the manufacturers or equipment.

Warranty Returns

Items returned for warranty consideration must have a ***Returned Merchandise Authorization (RMA)*** number. All unauthorized returns will be refused and shipped back to sender. Please fax requests to: 763-398-2009 or e-mail to shop@arnorthamerica.com.