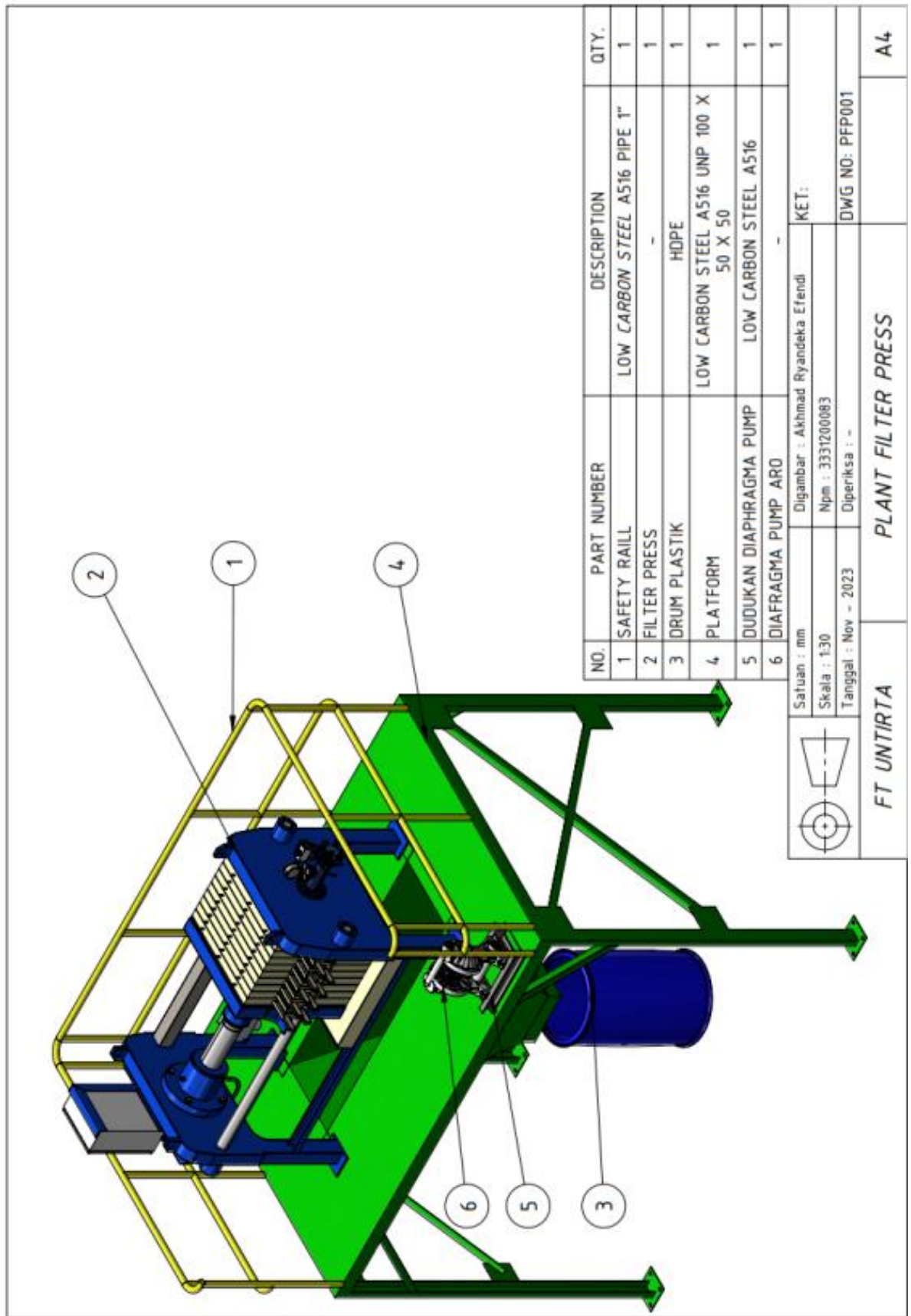


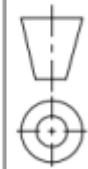
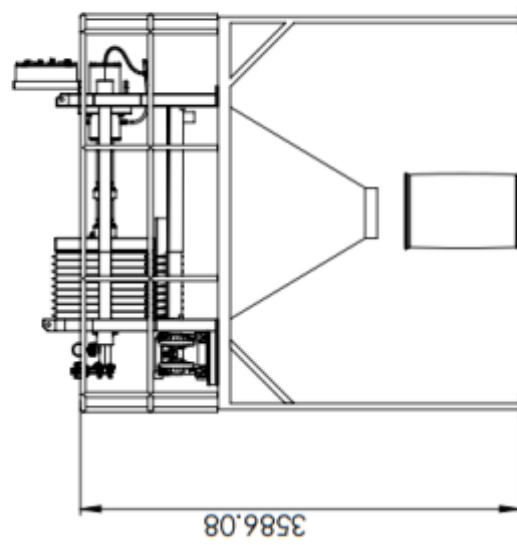
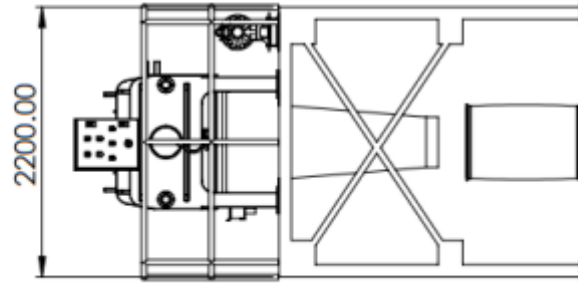
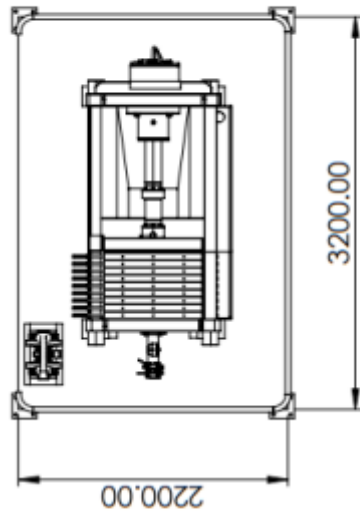
LAMPIRAN

Lampiran A Foto *Platform Mesin Filter Press*



Lampiran B Gambar Teknik Platform Mesin Filter Press



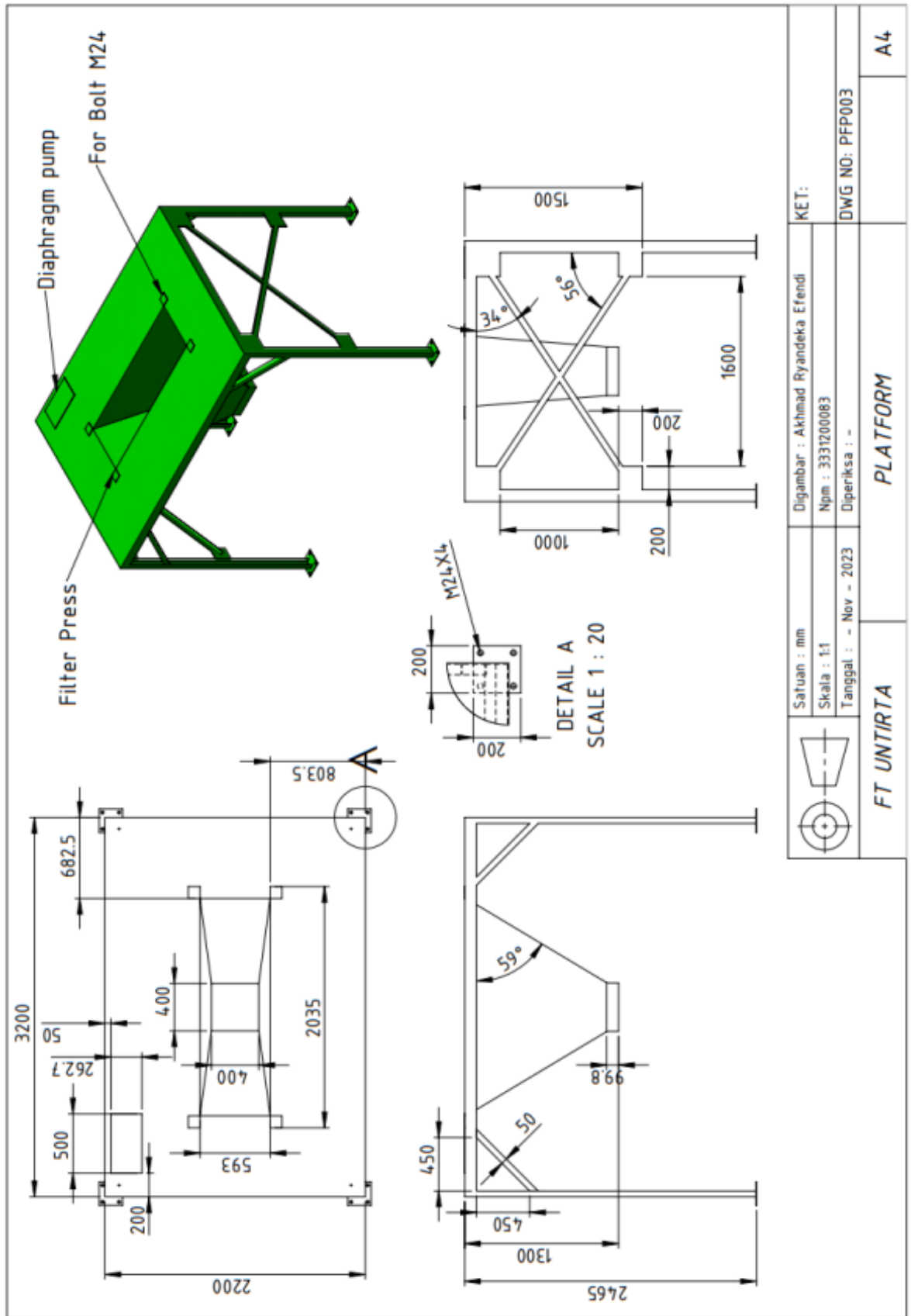


FT UNTIRTA

Platform Filter Press

A4

Satuan : mm	Digambar : Akhmad Ryandeka Efendi	KET :
Skala : 1:1	Npm : 3331200083	
Tanggal : - Nov - 2023	Diperiksa : -	DWG NO: PFP002



OPERATOR'S MANUAL PX15P-XXX-XXX-AXXX

INCLUDING: OPERATION, INSTALLATION AND MAINTENANCE

RELEASED: 9-5-03
 REVISED: 5-29-20
 (REV: U)

1-1/2" DIAPHRAGM PUMP 1:1 RATIO (NON-METALLIC)



**READ THIS MANUAL CAREFULLY BEFORE INSTALLING,
 OPERATING OR SERVICING THIS EQUIPMENT.**

It is the responsibility of the employer to place this information in the hands of the operator. Keep for future reference.

SERVICE KITS

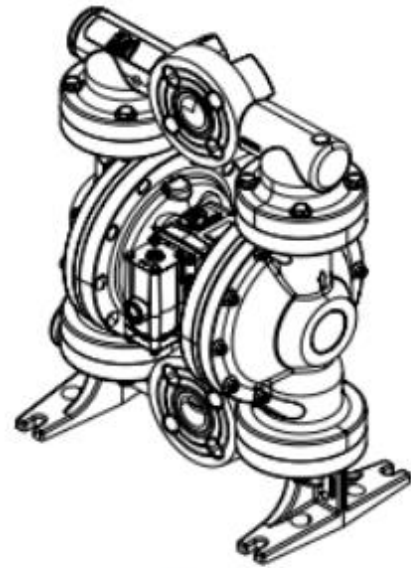
637391-XXX for fluid section repair **with** seats (see page 5).
637391-XX for fluid section repair **without** seats (see page 5).
NOTE: This kit also contains several air motor seals which will need to be replaced.
637389 for air section repair (see page 7).
637390-X major air valve assembly (see page 8).

PUMP DATA

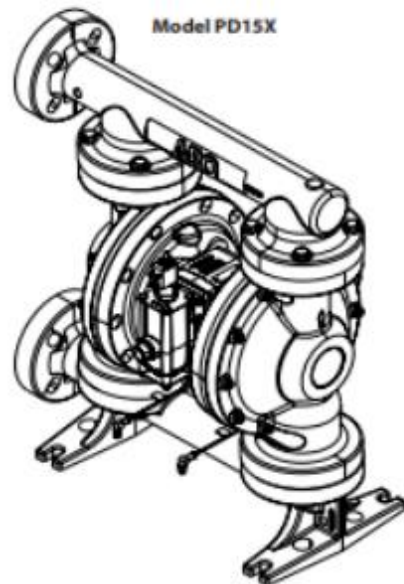
Models see Model Description Chart on page 2 for
 "XXX" options
Pump Type.. Non-Metallic Air Operated Double Diaphragm
Material..... see Model Description Chart
Weight PX15P-EKS-XXX-AXXX. 63.94 lbs (29.00 kgs)
 PX15P-EPS-XXX-AXXX. 42.60 lbs (19.32 kgs)
 PX15P-YKS-XXX-AXXX. 55.94 lbs (25.37 kgs)
 PX15P-YPS-XXX-AXXX. 42.30 lbs (19.19 kgs)
 PX15E-EES-XXX-AXXX. 43.14 lbs (19.57 kgs)
Maximum Air Inlet Pressure 120 psig (8.3 bar)
Maximum Material Inlet Pressure... 10 psig (0.69 bar)
Maximum Outlet Pressure 120 psig (8.3 bar)
Maximum Flow Rate (flooded inlet) . 123.1 gpm (465.9 lpm)
Displacement / Cycle @ 100 psig 0.617 gal (2.34 ltrs)
Maximum Particle Size 1/4" dia. (6.4 mm)
**Maximum Temperature Limits (diaphragm / ball / seat
 material)**
 E.P.R / EPDM -60° to 280° F (-51° to 138° C)
 Hytrel® -20° to 180° F (-29° to 82° C)
 Nitrile® 10° to 180° F (-12° to 82° C)
 Polypropylene..... 32° to 175° F (0° to 79° C)
 Kynar® PVDF..... 10° to 200° F (-12° to 93° C)
 Santoprene®..... -40° to 225° F (-40° to 107° C)
 PTFE..... 40° to 225° F (4° to 107° C)
 Viton® -40° to 350° F (-40° to 177° C)
Dimensional Data..... see page 10
Mounting Dimensions 8.687" x 14.937"
 (220.7 mm x 379.4 mm)
Noise Level @ 70 psig, 60 cpm ① 81dB(A) ②

① Tested with muffler 93139 assembly installed.

② The pump sound pressure levels published here have been updated to an Equivalent Continuous Sound Level (LAeq) to meet the intent of ANSI S1.13-2005, CAGI-PNEURODP SS.1, using four microphone locations.



Model PD15X



Model PE15X

Figure 1

MODEL DESCRIPTION CHART

Model Code Explanation

Example: PX15 X - X X S - X X X - A X X X

Model Series (PX15) | **Center Body Material** (X) | **Fluid Connection** (-) | **Fluid Caps & Manifold Material** (X) | **Hardware Material** (S) | **Seat Material** (-) | **Ball Material** (X) | **Diaphragm Material** (X) | **Revision** (-) | **Specialty Code 1** (A) | **Specialty Code 2** (X) | **Special Testing** (X) | **Special Testing** (X) | **Special Testing** (X)

PD15- Standard Pump

PE15- Electronic Interface

Center Body Material

E- Conductive Polypropylene

P- Polypropylene

Fluid Connection

F- 1-1/2" ANSI / Din Flange / End

Y- 1-1/2" ANSI / Din Flange / Center

Fluid Caps & Manifold Material

E- Conductive Polypropylene

K- Kynar PVDF (Single port)

P- Polypropylene (Single port)

Hardware Material

S- Stainless Steel

Seat Material

H- HARD 440Stainless Steel

K- Kynar PVDF

P- Polypropylene

S- 316 Stainless steel

Ball Material

A- Santoprene

C- Hytrel

G- Nitrile

S- Stainless steel

T- PTFE

V- Viton

Diaphragm Material

A- Santoprene

C- Hytrel

G- Nitrile

L- Long Life PTFE

M- Medical Grade Santoprene

T- Santoprene, PTFE

V- Viton

Revision

A- Revision

Specialty Code 1 (Blank if no Speciality Code)

A- Solenoid 120 VAC, 110 VAC AND 60 VDC

B- Solenoid 12 VDC, 24 VAC and 22 VAC

C- Solenoid 240 VAC, 220 VAC AND 120 VDC

D- Solenoid 24 VDC, 48 VAC and 44 VAC

E- Solenoid 12 VDC NEC / CEC

F- Solenoid 24 VDC NEC / CEC

G- Solenoid 12 VDC ATEX / IECEx

H- Solenoid 24 VDC ATEX / IECEx

J- Solenoid 120 VAC NEC / CEC

K- Solenoid 220VAC ATEX / IECEx

N- Solenoid with no Coil

P- Ported Motor (No major valve)

O- Standard Valve Block (No Solenoid)

S- Cycle Sensing on Major Valve

Specialty Code 2 (Blank if no Speciality Code)

E- End of Stroke feedback + Leak Detection

F- End of Stroke feedback

G- End of Stroke ATEX / IECEx / NEC / CEC

H- End of Stroke + Leak Detection ATEX / IECEx / NEC / CEC

L- Leak Detection

M- Leak Detection ATEX / IECEx / NEC / CEC

R- End of Stroke NEC

T- End of Stroke NEC / Leak Detection NEC

O- No option

Special Testing

For Special Testing options, please contact your nearest **Ingersoll Rand** Customer Service Representative or Distributor.

NOTICE: All possible options are shown in the chart, however, certain combinations may not be recommended.

Consult a representative or the factory if you have questions concerning availability.

OPERATING AND SAFETY PRECAUTIONS

READ, UNDERSTAND, AND FOLLOW THIS INFORMATION TO AVOID INJURY AND PROPERTY DAMAGE



- ⚠ WARNING** **EXCESSIVE AIR PRESSURE.** Can cause personal injury, pump damage or property damage.
- Do not exceed the maximum inlet air pressure as stated on the pump model plate.
 - Be sure material hoses and other components are able to withstand fluid pressures developed by this pump. Check all hoses for damage or wear. Be certain dispensing device is clean and in proper working condition.
- ⚠ WARNING** **STATIC SPARK.** Can cause explosion resulting in severe injury or death. Ground pump and pumping system.
- Sparks can ignite flammable material and vapors.
 - The pumping system and object being sprayed must be grounded when it is pumping, flushing, recirculating or spraying flammable materials such as paints, solvents, lacquers, etc. or used in a location where surrounding atmosphere is conducive to spontaneous combustion. Ground the dispensing valve or device, containers, hoses and any object to which material is being pumped.
 - Secure pump, connections and all contact points to avoid vibration and generation of contact or static spark.
 - Consult local building codes and electrical codes for specific grounding requirements.
 - After grounding, periodically verify continuity of electrical path to ground. Test with an ohmmeter from each component (e.g., hoses, pump, clamps, container, spray gun, etc.) to ground to ensure continuity. Ohmmeter should show 0.1 ohms or less.
 - Submerge the outlet hose end, dispensing valve or device in the material being dispensed if possible. (Avoid free streaming of material being dispensed.)
 - Use hoses incorporating a static wire.
 - Use proper ventilation.
 - Keep inflammables away from heat, open flames and sparks.
 - Keep containers closed when not in use.
- ⚠ WARNING** **Pump exhaust may contain contaminants.** Can cause severe injury. Pipe exhaust away from work area and personnel.
- In the event of a diaphragm rupture, material can be forced out of the air exhaust muffler.
 - Pipe the exhaust to a safe remote location when pumping hazardous or inflammable materials.
 - Use a grounded 3/4" minimum ID hose between the pump and the muffler.
- ⚠ WARNING** **HAZARDOUS PRESSURE.** Can result in serious injury or property damage. Do not service or clean pump, hoses or dispensing valve while the system is pressurized.
- Disconnect air supply line and relieve pressure from the system by opening dispensing valve or device and / or carefully and slowly loosening and removing outlet hose or piping from pump.
- ⚠ WARNING** **HAZARDOUS MATERIALS.** Can cause serious injury or property damage. Do not attempt to return a pump to the factory or service center that contains hazardous material. Safe handling practices must comply with local and national laws and safety code requirements.
- Obtain Material Safety Data Sheets on all materials from the supplier for proper handling instructions.

- ⚠ WARNING** **EXPLOSION HAZARD.** Models containing aluminum wetted parts cannot be used with Ill-Trichloroethane, Methylene Chloride or other Halogenated Hydrocarbon solvents which may react and explode.
- Check pump motor section, fluid caps, manifolds and all wetted parts to assure compatibility before using with solvents of this type.
- ⚠ WARNING** **MISAPPLICATION HAZARD.** Do not use models containing aluminum wetted parts with food products for human consumption. Plated parts can contain trace amounts of lead.
- ⚠ CAUTION** Verify the chemical compatibility of the pump wetted parts and the substance being pumped, flushed or recirculated. Chemical compatibility may change with temperature and concentration of the chemical(s) within the substances being pumped, flushed or circulated. For specific fluid compatibility, consult the chemical manufacturer.
- ⚠ CAUTION** Maximum temperatures are based on mechanical stress only. Certain chemicals will significantly reduce maximum safe operating temperature. Consult the chemical manufacturer for chemical compatibility and temperature limits. Refer to PUMP DATA on page 1 of this manual.
- ⚠ CAUTION** Be certain all operators of this equipment have been trained for safe working practices, understand it's limitations, and wear safety goggles / equipment when required.
- ⚠ CAUTION** Do not use the pump for the structural support of the piping system. Be certain the system components are properly supported to prevent stress on the pump parts.
- Suction and discharge connections should be flexible connections (such as hose), not rigid piped, and should be compatible with the substance being pumped.
- ⚠ CAUTION** Prevent unnecessary damage to the pump. Do not allow pump to operate when out of material for long periods of time.
- Disconnect air line from pump when system sits idle for long periods of time.
- ⚠ CAUTION** Use only genuine ARO® replacement parts to assure compatible pressure rating and longest service life.
- NOTICE** **TORQUE ALL FASTENERS BEFORE OPERATION.** Creep of housing and gasket materials may cause fasteners to loosen. Torque all fasteners to ensure against fluid or air leakage.

- | | |
|------------------|---|
| ⚠ WARNING | = Hazards or unsafe practices which could result in severe personal injury, death or substantial property damage. |
| ⚠ CAUTION | = Hazards or unsafe practices which could result in minor personal injury, product or property damage. |
| NOTICE | = Important installation, operation or maintenance information. |

GENERAL DESCRIPTION

The ARO diaphragm pump offers high volume delivery even at low air pressure and a broad range of material compatibility options available. Refer to the model and option chart. ARO pumps feature stall resistant design, modular air motor / fluid sections.

Air operated double diaphragm pumps utilize a pressure differential in the air chambers to alternately create suction and positive fluid pressure in the fluid chambers, ball checks ensure a positive flow of fluid.

Pump cycling will begin as air pressure is applied and it will continue to pump and keep up with the demand. It will build and maintain line pressure and will stop cycling once maximum line pressure is reached (dispensing device closed) and will resume pumping as needed.

AIR AND LUBE REQUIREMENTS

WARNING: EXCESSIVE AIR PRESSURE. Can cause pump damage, personal injury or property damage.

- A filter capable of filtering out particles larger than 50 microns should be used on the air supply. There is no lubrication required other than the "O" ring lubricant which is applied during assembly or repair.
- If lubricated air is present, make sure that it is compatible with the "O" rings and seals in the air motor section of the pump.

INSTALLATION

- Verify correct model / configuration prior to installation.
- Retorque all external fasteners per specifications prior to start up.
- Pumps are tested in water at assembly. Flush pump with compatible fluid prior to installation.
- When the diaphragm pump is used in a forced-feed (flooded inlet) situation, it is recommended that a "Check Valve" be installed at the air inlet.
- Material supply tubing should be at least the same diameter as the pump inlet manifold connection.
- Material supply hose must be reinforced, non-collapsible type compatible with the material being pumped.
- Piping must be adequately supported. Do not use the pump to support the piping.
- Use flexible connections (such as hose) at the suction and discharge. These connections should not be rigid piped and must be compatible with the material being pumped.
- Secure the diaphragm pump legs to a suitable surface (level and flat) to ensure against damage by vibration.
- Pumps that need to be submersed must have both wet and non-wet components compatible with the material being pumped.
- Submersed pumps must have exhaust pipe above liquid level. Exhaust hose must be conductive and grounded.
- Flooded suction inlet pressure must not exceed 10 psig (0.69 bar).

OPERATING INSTRUCTIONS

- Always flush the pump with a solvent compatible with the material being pumped if the material being pumped is subject to "setting up" when not in use for a period of time.
- Disconnect the air supply from the pump if it is to be inactive for a few hours.

PARTS AND SERVICE KITS

Refer to the part views and descriptions as provided on page 5 through 8 for parts identification and Service Kit information.

- Certain ARO "Smart Parts" are indicated which should be available for fast repair and reduction of down time.
- Service kits are divided to service two separate diaphragm pump functions: 1. AIR SECTION, 2. FLUID SECTION. The FLUID SECTION is divided further to match typical part MATERIAL OPTIONS.

MAINTENANCE

- Provide a clean work surface to protect sensitive internal moving parts from contamination from dirt and foreign-matter during service disassembly and reassembly.
- Keep good records of service activity and include pump in preventive maintenance program.
- Before disassembling, empty captured material in the outlet manifold by turning the pump upside down to drain material from the pump.

FLUID SECTION DISASSEMBLY

1. Remove (61) outlet manifold and (60) inlet manifold.
2. Remove (22) balls, (19 and 33) "O" rings and (21) seats.
3. Remove (15) fluid caps.

NOTE: Only PTFE diaphragm models use a primary diaphragm (7) and a backup diaphragm (8).

4. Remove the (6) diaphragm washer, (7) or (7 / 8) diaphragms, and (5) backup washer.

NOTE: Do not scratch or mar the surface of (1) diaphragm rod.

FLUID SECTION REASSEMBLY

- Reassemble in reverse order. Refer to the torque requirements on page 6.
- Clean and inspect all parts. Replace worn or damaged parts with new parts as required.
- Lubricate (1) diaphragm rod and (144) "U" cup with Lubriplate[®] FML-2 grease (94276 grease packet is included in service kit).
- For models with PTFE diaphragms: Item(8) Santoprene diaphragm is installed with the side marked "AIR SIDE" towards the pump center body. Install the PTFE diaphragm (7) with the side marked "FLUID SIDE" towards the (15) fluid cap.
- Check torque settings after pump has been re-started and run a while.

PARTS LIST / PX15X-XXX-XXX-AXXX

Fluid Section Service Kits (637391-XXX OR 637391-XX)

For Fluid Kits With Seats:

● 637391-XXX Fluid section service kit includes: Seats (see SEAT Option, refer to -XX in chart below), Balls (see BALL Option, refer to -XX in chart below), Diaphragms (see DIAPHRAGM Option, refer to -XX in chart) and item 19, 33, 70, 144, 175 and 180 (listed below) plus items 174 and 94276 Lubriplate® FML-2 grease (page 7).

For Fluid Kits Without Seats:

● 637391-XX Fluid section service kit includes: Balls (see Ball Option, refer to -XX in chart below), Diaphragms (see Diaphragm Option, refer to -XX in chart below) and item 19, 33, 70, 144, 175 and 180 (listed below) plus items 174 and 94276 Lubriplate® FML-2 grease (page 7).

COMMON PARTS

PX15P-XXX-XXX-AXXX					PX15P-XXX-XXX-AXXX				
Item	Description	[Mtl]	Qty	Part no	Item	Description	[Mtl]	Qty	Part no
1	Connecting Rod	[C]	(1)	97147	●070	Gasket	[B]	(2)	95843
5	Backup Washer	[SS]	(2)	95819-1	074	Pipe Plug (1/4 - 18 NPT x 7/16")	[K]	(2)	93832-3
24	Washer (0.406" ID)	[SS]	(20)	93360-1	76	Pipe Plug (1/8 - 27 NPT x 0.27") (only on PE15P-XXX-XXX-AXXX)	[SS]	(1)	Y17-50-5
26	Screw (M10 x 1.5 - 6g x 45 mm)	[SS]	(16)	95925	131	Screw (M10 x 1.5 - 6g x 110 mm)	[SS]	(4)	96056
27	Screw (M8 x 1.25 - 6g x 65.5 mm)	[SS]	(20)	96030	●0144	"U" Cup (3/16" x 1-1/4" OD)	[B]	(2)	Y186-50
29	Flange Nut (M8 x 1.25 - 6h)	[SS]	(20)	96229	●0175	"O" Ring (3/32" x 13/16" OD)	[B]	(2)	Y325-114
43	Ground Lug (PE15E-XXX-XXX-AXXX), (PD15E-XXX-XXX-AXXX)	[Co]	(1)	93004	●0180	"O" Ring (3 mm x 15 mm OD)	[B]	(8)	96291
68	Air Cap (PX15E-XXX-XXX-AXXX) (PX15P-XXX-XXX-AXXX)	[P]	(1)	95971-7 95971-3	195	Nut (M10 x 1.5 - 6h)	[SS]	(4)	94992
69	Air Cap (PX15E-XXX-XXX-AXXX) (PX15P-XXX-XXX-AXXX)	[P]	(1)	95971-8 95971-4	MATERIAL CODE [B] = Nitrile [MSP] = Medical Grade Santoprene [C] = Carbon Steel [P] = Polypropylene [E] = EPR / EPDM [SH] = Hard Stainless Steel [GP] = Groundable Polypropylene [SP] = Santoprene [H] = Hytrel [SS] = Stainless Steel [K] = Rybar PVD [T] = PTFE [L] = Long Life PPE [V] = Viton				

MANIFOLD / FLUID CAP MATERIAL

PX15X-XXS-XXX-AXXX												
		PX15P-EKS		PX15P-YKS		PX15P-EPS		PX15P-YPS		PX15E-FES		
Item	Description	Qty	Part no	[Mtl]	Part no	[Mtl]	Part no	[Mtl]	Part no	[Mtl]	Part no	[Mtl]
6	Diaphragm Washer	(2)	95975-2	[K]	95975-2	[K]	95975-1	[P]	95975-1	[P]	95975-1	[GP]
15	Fluid Cap	(2)	95972-2	[K]	95972-2	[K]	95972-1	[P]	95972-1	[P]	95972-3	[GP]
60	Inlet Manifold	(1)	95974-2	[K]	96022-2	[K]	95974-1	[P]	96022-1	[P]	95974-3	[GP]
61	Outlet Manifold	(1)	95973-2	[K]	96021-2	[K]	95973-1	[P]	96021-1	[P]	95973-3	[GP]

**SEAT OPTIONS
PX15P-XXS-XX-AXXX**

"21"			
-XX	Seat	Qty	[Mtl]
-HX	96101	(4)	[SH]
-IX	96070-2	(4)	[K]
-PX	96070-1	(4)	[P]
-SX	96100	(4)	[SS]

**BALL OPTIONS
PX15P-XXS-XX-AXXX**

● "22" (2" diameter)							
-XX	Ball	Qty	[Mtl]	-XX	Ball	Qty	[Mtl]
-AX	95826-A	(4)	[SP]	-IX	95826-4	(4)	[T]
-CX	95826-C	(4)	[H]	-YX	95826-3	(4)	[V]
-GX	95826-2	(4)	[B]				
-SX	95878	(4)	[SS]				

DIAPHRAGM OPTIONS PX15P-XXS-XX-AXXX

-XX	● Service Kit With Seat -XX = (Seat) -XX = (Ball) -XX = (Diaphragm)	● Service Kit Without Seat -XX = (Ball) -XX = (Diaphragm)	● "7"			● "8"			● "19" (3/16" x 3-1/4" OD)			● "33" (3/16" x 4" OD)		
			Diaphragm	Qty	[Mtl]	Diaphragm	Qty	[Mtl]	"O" Ring	Qty	[Mtl]	"O" Ring	Qty	[Mtl]
-XXA	637391-XXA	637391-XA	96166-A	(2)	[SP]	---	---	---	96059	(4)	[E]	95912	(4)	[E]
-XXC	637391-XXC	637391-XC	96166-C	(2)	[H]	---	---	---	Y325-336	(4)	[B]	Y325-342	(4)	[B]
-XXG	637391-XXG	637391-XG	96329-2	(2)	[B]	---	---	---	Y325-336	(4)	[B]	Y325-342	(4)	[B]
-XXL	637391-XXL	637391-XL	96165-L	(2)	[L]	96164-A	(2)	[SP]	96057	(4)	[T]	95910	(4)	[T]
-XXM	637391-XXM	637391-XM	96166-M	(2)	[MSP]	---	---	---	96059	(4)	[E]	95912	(4)	[E]
-XXT	637391-XXT	637391-XT	96165-T	(2)	[T]	96164-A	(2)	[SP]	96057	(4)	[T]	95910	(4)	[T]
-XXV	637391-XXV	637391-XV	95820-3	(2)	[V]	---	---	---	Y327-336	(4)	[V]	Y327-342	(4)	[V]

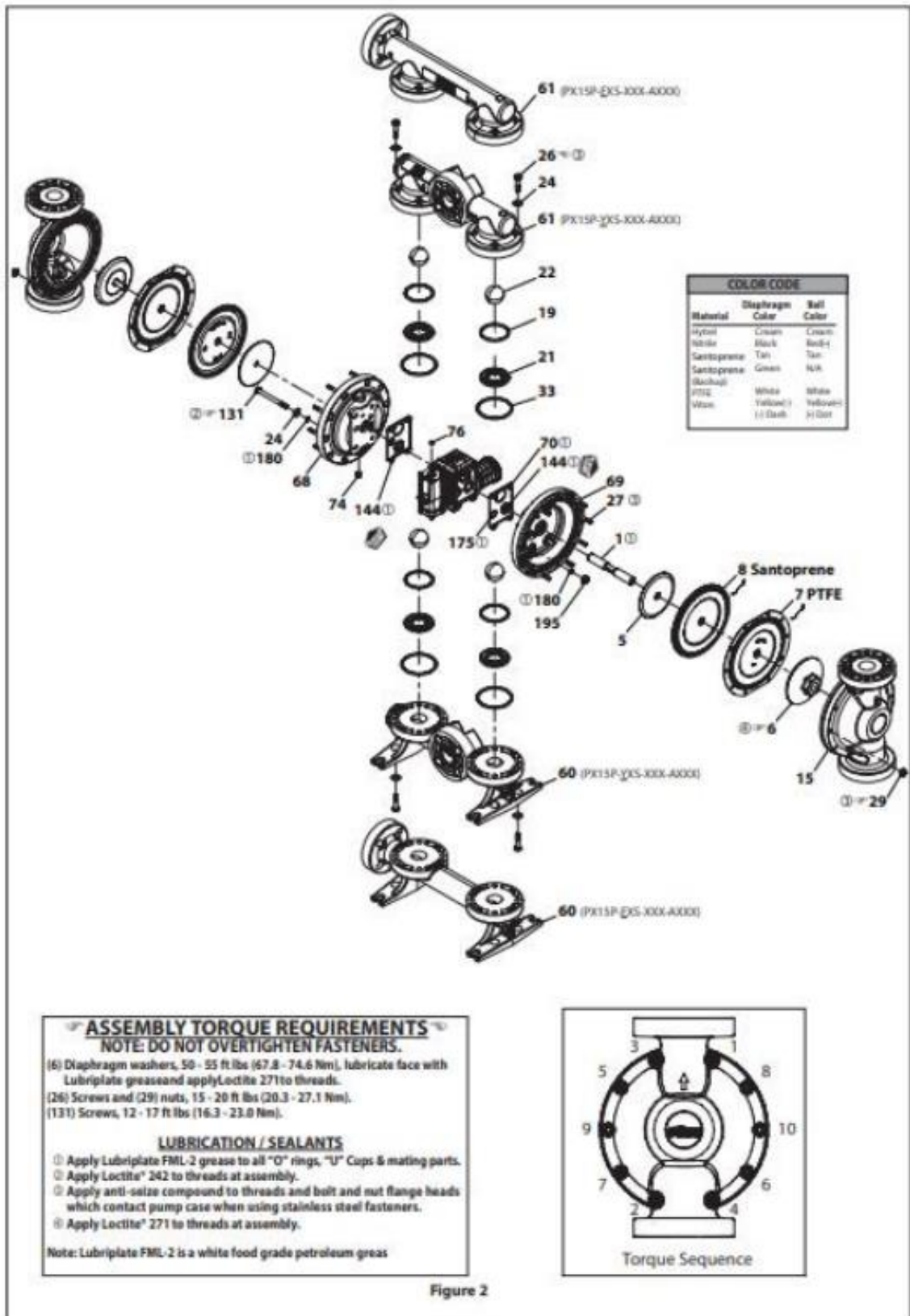


Figure 2

PARTS LIST / PX15P-XXX-XXX-AXXX AIR SECTION PARTS

⊕ Indicates parts included in 837389 Air Section Service Kit shown below and items (70), (144), (175) and (180) shown on page 5.

Item	Description	Part no	Qty	[Mtl]
101	Center Body (PX15E-XXX-XXX-AXXX)	97032	(1)	[GP]
	(PX15P-XXX-XXX-AXXX)	97026		[P]
103	Bushing	97392	(1)	[D]
105	Screw (M6 x 1 - 6g x 130 mm)	95886	(4)	[SS]
107	End Plate	95840	(2)	[SS]
111	Spool	96293	(1)	[D]
118	Actuator Pin	95839	(2)	[SS]
121	Sleeve	95123	(2)	[D]
126	Pipe Plug	93897-1	(1)	[P]
⊕ 132	Gasket	96170	(1)	[B]
133	Washer (M6)	95931	(5)	[SS]
	(PE15E) (PD15E)			
	(PE15P) (PD15P)			[6]
134	Screw (M6 x 1 - 6g x 20 mm)	95887	(6)	[SS]
135	Valve Block (PX15E-XXX-XXX-AXXX)	95834-5	(1)	[P]
	(PX15P-XXX-XXX-AXXX)	95834-1		
136	End Cap	95833	(1)	[P]
⊕ 137	Gasket	95844	(1)	[B]
⊕ 138	"U" Cup (3/16" x 1-5/8" OD)	Y186-53	(1)	[B]
⊕ 139	"U" Cup (3/16" x 1-1/8" OD)	Y186-49	(1)	[B]
140	Valve Insert	95838	(1)	[AO]
141	Valve Plate	95837	(1)	[AO]

AIR MOTOR SECTION SERVICE

Service is divided into two parts - 1. Pilot Valve, 2. Major Valve. GENERAL REASSEMBLY NOTES:

- Air Motor Section Service is continued from Fluid Section repair.
- Inspect and replace old parts with new parts as necessary. Look for deep scratches on surfaces, and nicks or cuts in "O" rings.
- Take precautions to prevent cutting "O" rings upon installation.
- Lubricate "O" rings with Lubriplate FML-2 grease.
- Do not over-tighten fasteners, refer to torque specification block on view.
- Torque fasteners following restart.
- SERVICE TOOLS - To aid in the installation of (168) "O" rings onto the (167) pilot piston, use tool # 204130-T, available from ARO.

PILOT VALVE DISASSEMBLY

- A light tapping on (118) should expose the opposite (121) sleeve, (167) pilot piston and other parts.
- Remove (170) sleeve, inspect inner bore of sleeve for damage.

PILOT VALVE REASSEMBLY

- Clean and lubricate parts not being replaced from service kit.
- Install new (171 and 172) "O" rings, replace (170) sleeve.
- Install new (168) "O" rings and (169) seal - **NOTE:** The lip direction. Lubricate and replace (167).
- Reassemble remaining parts, replace (173 and 174) "O" rings.

Item	Description	Part no	Qty	[Mtl]
⊕ 166	Gasket	96171	(1)	[B]
⊕ 167	Pilot Piston (includes 168 and 169)	67164	(1)	[D]
168	"O" Ring (3/32" x 5/8" OD)	94433	(2)	[U]
169	"U" Cup (1/8" x 7/8" OD)	Y240-9	(1)	[B]
170	Piston Sleeve	94081	(1)	[D]
⊕ 171	"O" Ring (3/32" x 1-1/8" OD)	Y325-119	(1)	[B]
⊕ 172	"O" Ring (1/16" x 1-1/8" OD)	Y325-22	(1)	[B]
⊕ 173	"O" Ring (3/32" x 1-3/8" OD)	Y325-123	(2)	[B]
⊕ 174	"O" Ring (1/8" x 1/2" OD)	Y325-202	(2)	[B]
176	Diaphragm (check valve)	95845	(2)	[U]
181	Roof pin (5/32" OD x 1/2" long)	Y178-52-5	(4)	[SS]
⊕ 200	Gasket	95842	(1)	[B]
201	Muffler (PX15P-XXX-XXX-AXXX)	93139	(1)	[P]
	(PX15E-XXX-XXX-AXXX)	350-568	(1)	-
233	Adapter Plate	95832	(1)	[P]
236	Nut (M6 x 1 - sh)	95924	(4)	[SS]
⊕ ⊕	Lubriplate FML-2 grease	94276	(1)	
	Lubriplate Grease Packets (10)	637308		

⊕ Fluid Section Service Kit parts, See page 5.

MAJOR VALVE DISASSEMBLY

- Remove (135) valve block and (233) adapter plate, exposing (132 and 166) gaskets and (176) check valve.
- Insert a small flat blade screwdriver into the notch in the side of (135) valve block and push in on tab to remove (233) adapter plate, releasing (140) valve insert, (141) valve plate and (200) gasket.
- Remove (136) end cap and (137) gasket, releasing (111) spool.

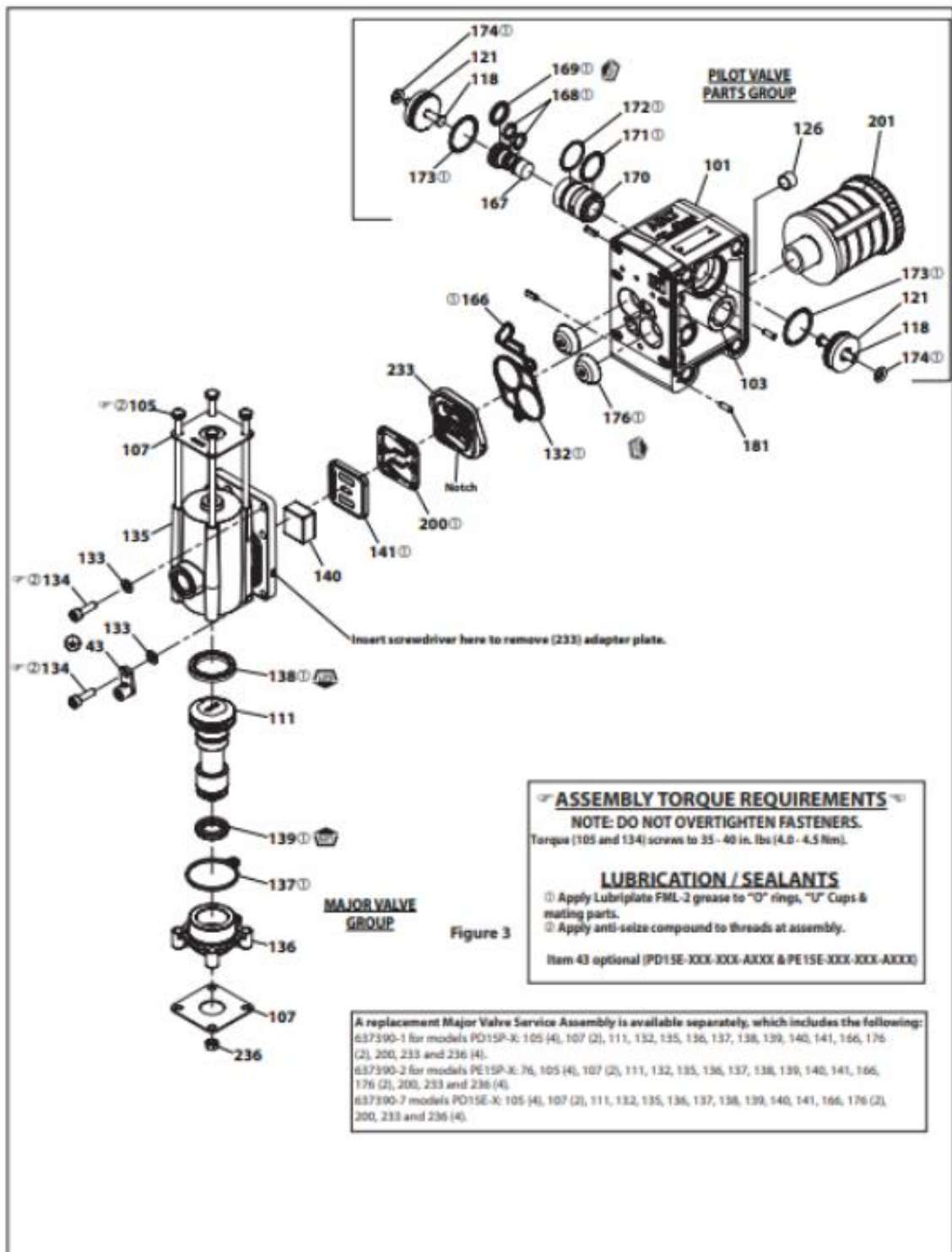
MAJOR VALVE REASSEMBLY

- Install new (138 and 139) "U" cups on (111) spool - **LIPS MUST FACE EACH OTHER.**
- Insert (111) spool into (135) valve block.
- Install (137) gasket on (136) end cap and assemble end cap to (135) valve block, securing with (107) end plates and (105) screws. **NOTE:** Tighten (105) screws to 35 - 40 in. lbs (4.0 - 4.5 Nm).
- Install (140) valve insert and (141) valve plate into (135) valve block. **NOTE:** Assemble (140) valve insert with "dished" side toward (141) valve plate. Assemble (141) valve plate with part number identification toward (140) valve insert.
- Assemble (200) gasket and (233) adapter plate to (135) valve block. **NOTE:** Assemble (233) adapter plate with notched side down.
- Assemble (132 and 166) gaskets and (176) check valve to (101) body.
- Assemble (135) valve block and components to (101) body, securing with (134) screws. **NOTE:** Tighten (134) screws to 35 - 40 in. lbs (4.0 - 4.5 Nm).

MATERIAL CODE

[AO]	= Alumina Oxide	[P]	= Polypropylene
[B]	= Nitrile	[SP]	= Santoprene
[Br]	= Brass	[SS]	= Stainless Steel
[D]	= Acetal	[U]	= Polyurethane
[GP]	= Groundable Polypropylene		

PX15P-XXX-XXX-AXXX / AIR SECTION



TROUBLESHOOTING

Product discharged from air exhaust.

- Check for diaphragm rupture.
- Check tightness of (6) diaphragm washer.

Air bubbles in product discharge.

- Check connections of suction plumbing.
- Check "O" rings between intake manifold and inlet side fluid caps.
- Check tightness of (6) diaphragm washer.

Motor blows air or stalls.

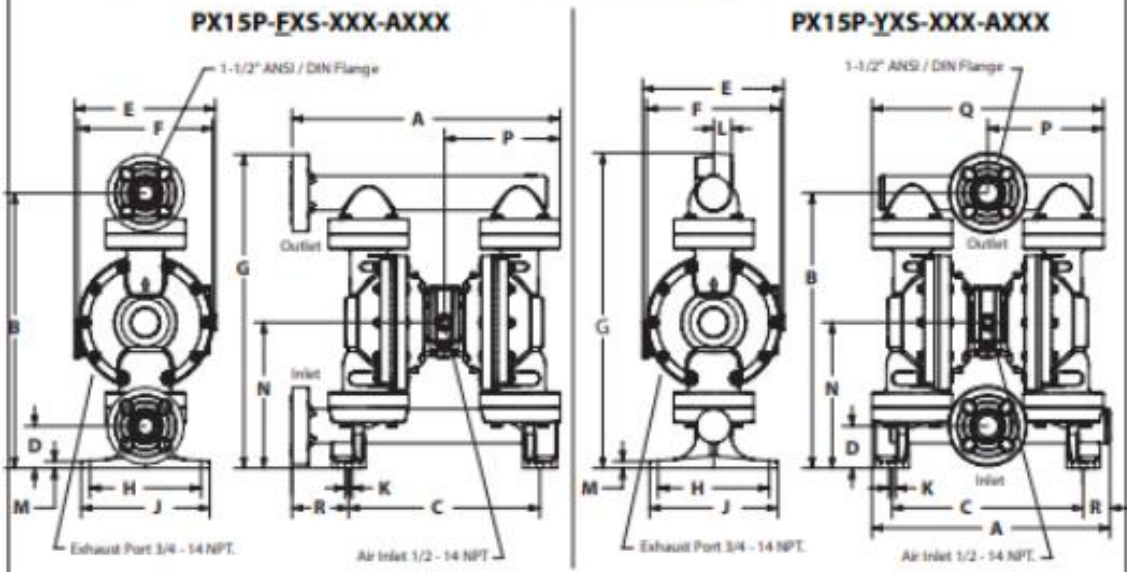
- Check (176) check valve for damage or wear.
- Check for restrictions in valve / exhaust.

Low output volume.

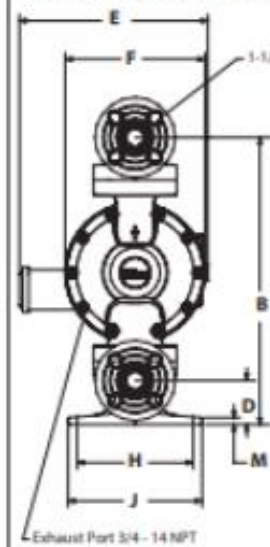
- Check air supply.
- Check for plugged outlet hose.
- Check for kinked (restrictive) outlet material hose.
- Check for kinked (restrictive) or collapsed inlet material hose.
- Check for pump cavitation - suction pipe should be sized at least as large as the inlet thread diameter of the pump for proper flow if high viscosity fluids are being pumped. Suction hose must be a non-collapsing type, capable of pulling a high vacuum.
- Check all joints on the inlet manifolds and suction connections. These must be air tight.
- Inspect the pump for solid objects lodged in the diaphragm chamber or the seat area.

DIMENSIONAL DATA

Dimensions shown are for reference only, they are displayed in inches and millimeters (mm).



PX15E-XXX-XXX-AXXX



DIMENSIONS

- A - See below
- B - 21-15/32" (545.3 mm)
- C - 14-15/16" (379.4 mm)
- D - 3-9/32" (83.3 mm)
- E - See below
- F - 10-1/2" (266.3 mm)
- G - see below
- H - 8-11/16" (220.7 mm)
- J - 10-1/32" (254.8 mm)
- K - 9/16" (14.3 mm)
- L - see below
- M - 17/32" (13.0 mm)
- N - 11-3/8" (288.4 mm)
- P - 9-1/32" (229.5 mm)
- Q - see below
- R - see below

	"A"	"E"	"G"
PX15P-FXS-XXX-AXXX	20-15/16" (531.6 mm)	---	24-15/32" (621.5 mm)
PX15P-YXS-XXX-AXXX	18-27/32" (478.7 mm)	---	24-19/32" (624.5 mm)
PX15P-XXX-XXX-AXXX	---	11" (279.5 mm)	---
PX15E-XXX-XXX-AXXX	---	14-1/8" (358.5 mm)	---

	"L"	"Q"	"R"
PX15P-FXS-XXX-AXXX	---	---	4-7/16" (112.4 mm)
PX15P-YXS-XXX-AXXX	1-3/8" (34.9 mm)	18-3/32" (459.0 mm)	2-3/32" (53.1 mm)
PX15P-XXX-XXX-AXXX	---	---	---
PX15E-XXX-XXX-AXXX	---	---	---

Figure 4

1" Metallic Models

EXP SERIES PUMPS

ARO® EXP 1" metallic diaphragm pumps achieve flow rates of up to 52.2 GPM (197.6 LPM) and offer a wide array of material and porting configurations. These pumps are often used for transfer, filling, recirculation and batching in ceramic, industrial, chemical and petrochemical markets.



Ratio:		1:1
Maximum GPM (LPM):		52 (197)
Displacement per cycle: Gallons (Liters):		0.232 (0.88)
Air Inlet (Female):		1/4 - 18 N.P.T.
Fluid Inlet/Outlet:		1 - 11-1/2 N.P.T.F.-1, Rp1(1-11 BSP)
Max. operating pressure psi (bar):		120 (8.3)
Suspended solids max. dia. in. (mm):		1/8" (3.3)
Weight lbs (kg):	PX10R-XXX-XXX	20.7 (9.4)
	PX10R-XCX-XXX	35.2 (16.0)
	PX10R-XHX-XXX	39.6 (18.0)
	PX10R-XSX-XXX	38.2 (17.3)

Note: Add 4.65 lbs (2.11 kg) for aluminum air motor

Add 11.09 lbs (5.03 kg) for stainless steel air motor

Maximum dry suction lift ft(m):	19 (5.7)
Sound Level:	70 PSI 60 Cycles/Min 80.6 db(A)
Muffler Included:	93110



Ordering

Position	1	2	3	4	5	6	7	8	9	10	11			
Example:	PX10	X	-	X	X	X	-	X	X	X	-	A	X	X

Position 1 Model Series	Position 2 Center Section	Position 3 Connections	Position 4 Wetted Parts	Position 5 Hardware	Position 6 Seat Material	Position 7 Ball Material	Position 8 Diaphragm Material	Position 9
PD10- Standard Pump PE10 - Electronic Interface Accessible Pump	A - Aluminum* R - Polypropylene S - Stainless Steel*	A - NPTF Thread B - BSP Thread	A - Aluminum* C - Cast Iron H - Hastelloy-C* S - Stainless Steel*	P - Plated Steel S - SS	A - Santoprene® C - Hytrel® E - Carbon Steel F - Aluminum G - Nitrite H - 440 SS L - Hastelloy-C S - 316 SS	A - Santoprene® C - Hytrel® G - Nitrite S - 316 SS T - PTFE V - Viton®	A - Santoprene® C - Hytrel® G - Buna-N L - Long-Life PTFE M - Medical Grade Santoprene® T - PTFE/Santoprene® V - Viton®	Person Level Position 10 & 11 Specialty Code Fluid control options for pump with electronic interface (PEGS model). See complete description on page 35

* Acceptable for use in hazardous locations. - NEC / CEC, Class I, Div. 1, Group A-D
- ATEX, Zone 1, 2, 21, 22

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Accessories

Air Line Connection Kit | 66073-2

(Piggyback Filter/Regulator with gauge, pipe nipple and 5-foot air hose)

Diaphragm Failure Detection | 67237

Cycle Counter Kit | 66350

Cycle Sensor Kit | 67350 (PE10X pump model is required)

Service Repair Kits | 637397 (air motor for PX10A, PX10R and PX10S),

637401-XXX (fluid section with seats)

637395-X (major air valve assembly)

1" Metallic Dimensions and Flow Charts

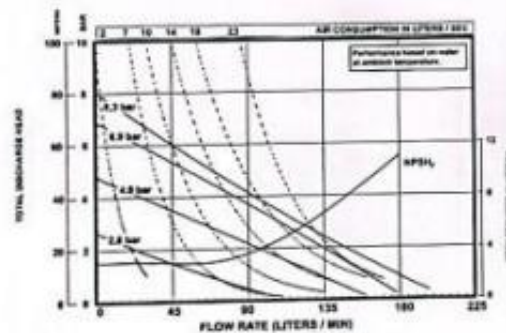
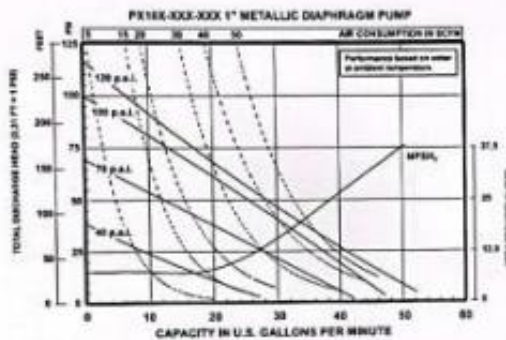
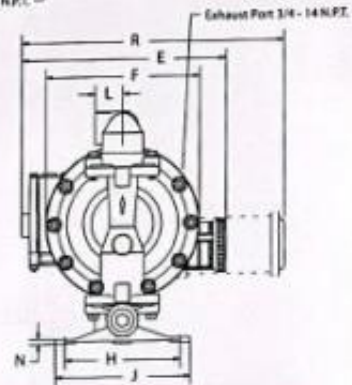
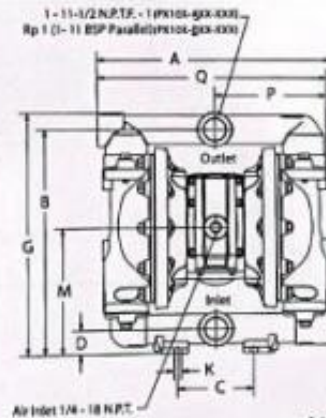
DIMENSIONS

A - 12-11/32" (313.2 mm)	G - 12-7/16" (315.9 mm)	N - see below
B - 11-9/16" (293.7 mm)	H - 6-1/4" (158.8 mm)	P - 5-27/32" (148.2 mm)
C - 4" (101.6 mm)	J - 7-5/16" (185.7 mm)	Q - 12" (304.8 mm)
D - 1-1/4" (31.8 mm)	K - 13/32" (10.3 mm)	R - see below
E - see below	L - 1-1/2" (38.1 mm)	
F - see below	M - 6-15/32" (164.3 mm)	

PX10 Δ XXX-XXX	E	F	R
PX10 \square XXX-XXX	11-1/32" (279.5 mm)	8-1/8" (206.4 mm)	14-1/32" (356.2 mm)
PX10 γ XXX-XXX		8-5/16" (211.1 mm)	
		8-3/16" (207.9 mm)	13-27/32" (351.4 mm)

"N"

PX10X-X Δ X-XXX	1/4" (6.4 mm)
PX10X-X \square X-XXX	9/32" (7.1 mm)
PX10X-X γ X-XXX	9/32" (7.1 mm)
PX10X-X δ X-XXX	9/32" (7.1 mm)



Refer to www.SBC.com for full size flow charts.
For ordering information contact
technical support at 1-800-451-6276

Ordering Position 10

Specialty Code 1 (Blank if no Specialty Code)

- | | |
|---------------------|--|
| A - Solenoid 120VAC | G - Solenoid 12VDC ATEX/IECex* |
| B - Solenoid 12VDC | H - Solenoid 24VDC ATEX/IECex* |
| C - Solenoid 240VAC | J - 120VAC NEC/CEC* |
| D - Solenoid 24VDC | K - Solenoid 220VAC ATEX/IECex* |
| E - 12vDC NEC/CEC* | N - Solenoid with no coil |
| F - 24vDC NEC/CEC* | O - Standard Valve Block (No Solenoid) |
| | P - Ported Motor (No major valve provided) |

Ordering Position 11 Specialty Code 2 (Blank if no Specialty Code)

- | | |
|--|--|
| E - End of stroke feedback + Leak Detection | L - Leak Detection |
| F - End of stroke feedback | M - Leak Detection ATEX/IECex/NEC/CEC* |
| G - End of Stroke ATEX/IECex* | O - No Option |
| H - End of Stroke/Leak Detection ATEX/IECex* | R - End of Stroke Feedback NEC / CEC* |
| | T - End of Stroke Feedback + Leak Detection NEC / CEC* |

* Acceptable for use in hazardous locations - NEC / CEC, Class III, Div 1 & 2 - Group A-D - ATEX Zone 1&2, 21&22

Lampiran D Spesifikasi Mesin *Filter Press***Cylinder Performance Details****Inputs**

Cylinder Bore:	180,0 mm
Rod Diameter:	100,0 mm
Stroke:	350,0 mm
Operating Pressure (max):	170,0 bar
Pump Displacement:	4,5 cc's/rev
Drive Speed:	1.450,0 rpm

Assumption

Overall Efficiency Factor	85,0 %
---------------------------	--------

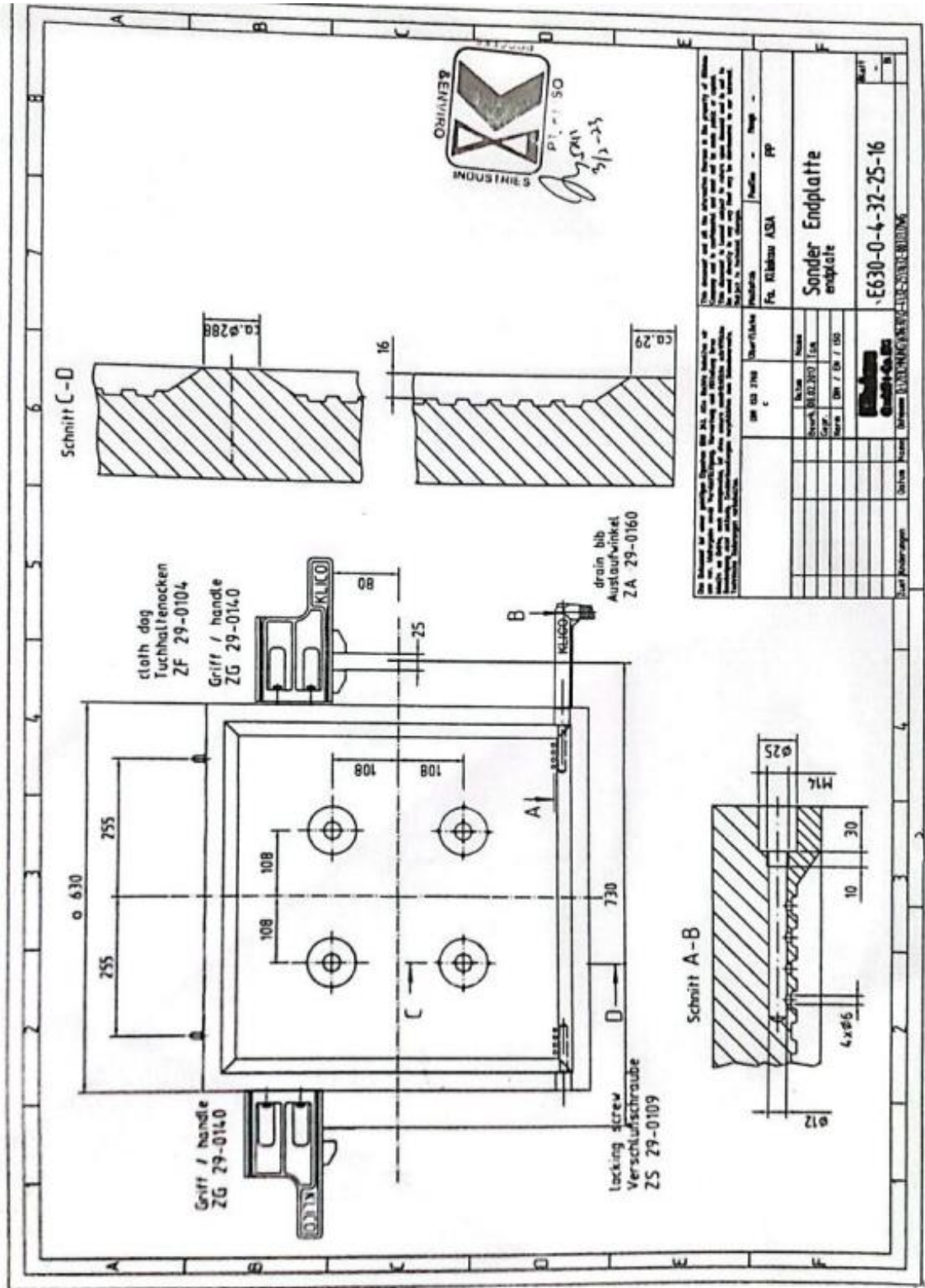
Required Extend Speed: 0,8 mm/sec

Required Retract Speed: 0,5 mm/sec

Application:

Outputs

Flow Rate:	6,5 l/min
Input Power Required:	2,2 kW
Cylinder Ratio:	3,2 :1
Cylinder Volume:	8,9 litres
Annulus Volume:	6,2 litres
Rod Volume:	2,7 litres
Compressive Force:	43.259,7 kgs
	432,6 kN
Tensile Force:	29.908,0 kgs
	299,1 kN
Regenerative Force:	13.351,8 kgs
	133,5 kN
Cylinder Extension Rate:	4,3 mm/sec
Total Extension Time:	81,9 secs
Resulting Exhaust Flow Rate:	4,5 l/min
Cylinder Retraction Rate:	6,2 mm/sec
Total Retraction Time:	56,6 secs
Resulting Exhaust Flow Rate:	9,4 l/min
Cylinder Regenerative Rate:	7,2 mm/sec
Total Regen. Extens. Time:	48,4 secs
Required Inflow Rate:	1,2 l/min
Resulting Exhaust Flow Rate:	0,8 l/min
Required Input Power:	0,3 kW
Required Inflow Rate:	0,5 l/min
Resulting Exhaust Flow Rate:	0,8 l/min
Input Power:	0,1 kW



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Produktdaten Produkt Fe. Klöpper ASBA Farbe PP	Sonder-Endplatte endplatte E630-0-4-32-25-16
DM 02 210 c Name Stück (Bil.) / Tag Grp. Nr. / Dr. / Dst.	Seiming Seiming Seiming Seiming
Zeichner Prüfer Fertiger Bearbeiter	Datum Blatt von

Lampiran E Spesifikasi Mesin Compressor



Specifications (HORIZONTAL & VERTICAL TANK MOUNT TYPE)

Tank Type	Motor Output kW	Model	Maximum Pressure MPa	Cylinder Diameter mm & Stroke mm X Number of Cylinders	Compressor Speed rpm	Discharge L/min	Capacity of Maximum Pressure L/min	Air Tank Capacity L	Power Source PH	Standard Accessories	External Dimension Width X Depth X Height mm	Weight Kg	Noise Level dB(A)		
Horizontal	Automatic unloader type	0.75	0.75P-9.5VSL-5A	0.93	50X65X1	990	126	80	62	1PH	Pressure gauge, Safety valve, Hose joint, V-belt, Bell cover, Silencer, Stop valve	931X376X816	70		
		1.5	1.5P-9.5VSL-5A		72X65X1	970	257	165	80	1PH		1,173X380X857	72		
		2.2	2.2P-9.5VSL-5A		72X65X2	730	386	265	90	1PH		1,283X403X808	72		
		3.7	3.7P-9.5VSL-5A		L) 90X85X1 H) 90X85X1	1,000	541	440	125	3PH		1,343X428X948	74		
		5.5	5.5P-9.5VSL-5A		L) 105X85X1 H) 80X85X1	1,080	795	630	150	3PH		1,470X482X979	76		
		7.5	7.5P-9.5VSL-5A		L) 90X85X2 H) 72X85X1	950	1,027	840	235	3PH		1,643X547X1,103	79		
		11	11P-9.5VSL-5A		L) 105X85X2 H) 80X85X1	1,050	1,546	1,200	260	3PH		1,793X611X1,103	83		
	15	15P-9.5VSL-5A	L) 110X110X2 H) 80X110X1		1,000	2,091	1,650	290	3PH	1,983X794X1,221		84			
	Pressure-switch type	0.75	0.75P-9.5VSL-5A		1.37	50X65X1	990	126	80	62 (82)		1PH	Pressure gauge, Safety valve, Hose joint, V-belt, Bell cover, Silencer, Stop valve 3/8BX1 for 3.7 & 5.5 kW 1/4BX1 for 7.5 & 11 kW 1/8X1 for 15 kW	931X376X804	70
		1.5	1.5P-9.5VSL-5A			72X65X1	970	257	165	80 (150)		1PH		1,173X380X855	72
		2.2	2.2P-9.5VSL-5A			72X65X2	730	386	265	90 (170)		1PH		1,283X403X808	72
		3.7	3.7P-9.5VSL-5A			L) 90X85X1 H) 90X85X1	1,000	541	440	125 (170)		3PH		1,343X428X948	74
		5.5	5.5P-9.5VSL-5A			L) 105X85X1 H) 80X85X1	1,080	795	630	150		3PH		1,470X482X932	76
		7.5	7.5P-9.5VSL-5A			L) 90X85X2 H) 72X85X1	950	1,027	840	235		3PH		1,643X547X1,094	79
		11	11P-9.5VSL-5A			L) 105X85X2 H) 80X85X1	1,050	1,546	1,200	260		3PH		1,793X611X1,098	83
15		15P-9.5VSL-5A	L) 110X110X2 H) 80X110X1	1,000		2,091	1,650	290	3PH	1,983X794X1,221	84				
Horizontal	3.7	3.7P-14VH-5A	1.37	L) 90X85X1 H) 50X85X1	900	487	400	230	3PH	Pressure gauge, Safety valve, Hose joint, V-belt, Bell cover, Silencer, Stop valve 3/8BX1 for 3.7 & 5.5 kW 3/4BX1 for 7.5 kW	1,690X525X799	187	74		
	5.5	5.5P-14VH-5A		L) 105X85X1 H) 50X85X1	970	714	550	230	3PH		1,890X573X1,000	244	76		
	7.5	7.5P-14VH-5A		L) 90X85X2 H) 72X85X1	900	873	760	230	3PH		1,690X553X1,084	290	79		
Vertical	3.7	3.7P-12.5(14)VSA	1.37	L) 90X85X1 H) 50X85X1	900	487	400	300	3PH		957X590X1,732	250	75		
	5.5	5.5P-12.5(14)VSA		L) 105X85X1 H) 50X85X1	970	714	550	300	3PH		1,025X611X1,734	317	76		
	7.5	7.5P-12.5(14)VSA		L) 90X85X2 H) 72X85X1	900	873	760	300	3PH		1,102X634X1,814	363	80		

Note: 1. Use the compressor at a place where ambient temperature is 0 to 40 degrees C.
 2. The noise level shown are those obtained at a distance of 1.5m from the front of the compressor operating under full load in a reverberation free room.
 3. The capacity of compressed air is the amount of air discharged under the maximum pressure converted in terms air suction (under the atmospheric pressure).
 4. These compressor series is not available for direct use of breathing air.