

Air-Operated Diaphragm Pumps

308981ZBB

EN

For fluid transfer applications. For professional use only. Only models marked with (*) are approved for use in European explosive atmosphere locations.

100 psi (0.7 MPa, 7 bar) Maximum Fluid Working Pressure

100 psi (0.7 MPa, 7 bar) Maximum Air Input Pressure

ACETAL*, POLYPROPYLENE, AND PVDF

Husky™ 515

- Model No. D 5 1 ___ Acetal NPT Pumps
- Model No. D 5 2 ___ Polypropylene Pumps
- Model No. D 5 5 ___ PVDF NPT Pumps
- Model No. D 5 A ___ Acetal BSPT Pumps
- Model No. D 5 B ___ Polypropylene BSPT Pumps
- Model No. D 5 E ___ PVDF BSPT Pumps
- Model No. D 9 1 ___ Acetal NPT Pumps
- Model No. D 9 A ___ Acetal BSPT Pumps

For Additional Models, see Table of Contents

ALUMINUM* AND STAINLESS STEEL*

Husky™ 716

- Model No. D 4 D ___ Stainless Steel BSPT Pumps, Remote
- Model No. D 5 3 ___ Aluminum NPT Pumps
- Model No. D 5 4 ___ Stainless Steel NPT Pumps
- Model No. D 5 C ___ Aluminum BSPT Pumps
- Model No. D 5 D ___ Stainless Steel BSPT Pumps
- Model No. D 9 4 ___ Stainless Steel NPT Pumps
- Model No. D 9 D ___ Stainless Steel BSPT Pumps

For Additional Models, see Table of Contents

*These models are certified:



Ex II 2 GD

Ex h IIC 66°C...135°C Gb

Ex h IIC T135°C Db

ATEX T-code rating is dependent on the temperature of the fluid being pumped. Fluid temperature is limited by the materials of the pump interior wetted parts. See Technical Data for the maximum fluid operating temperature for your specific pump model.

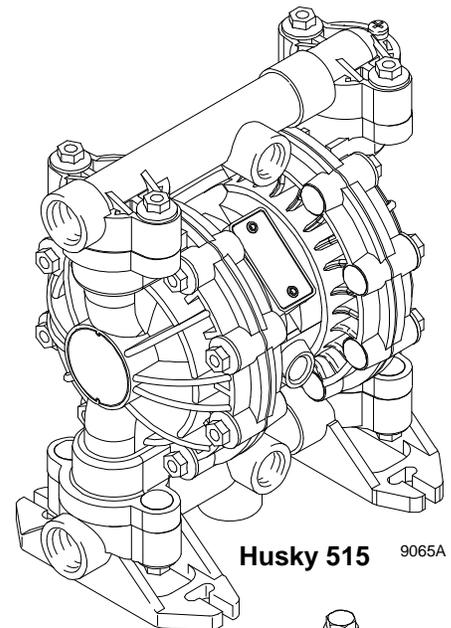


Important Safety Instructions

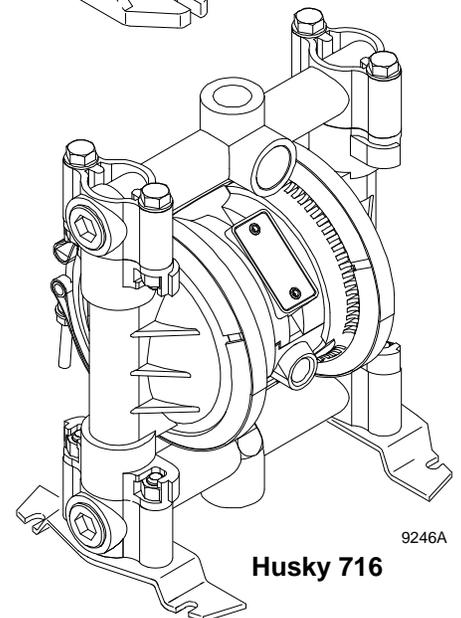
Read all warnings and instructions in this manual.

Save these instructions.

Refer to the Pump Matrix on page 23 to determine the model number of your pump.



Husky 515 9065A



Husky 716 9246A



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Symbols

Warning Symbol



This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

Caution Symbol



This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

! WARNING



INSTRUCTIONS

EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are not sure, call your Graco distributor.
- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated component in your system. This equipment has a **100 psi (0.7 MPa, 7 bar) maximum working pressure at 100 psi (0.7 MPa, 7 bar) maximum incoming air pressure.**
- Use fluids and solvents that are compatible with the equipment wetted parts. Refer to the Technical Data section of all equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Graco hoses to temperatures above 82°C (180°F) or below -40°C (-40°F).
- Wear hearing protection when operating this equipment.
- Do not lift pressurized equipment.
- Do not kink or overbend hoses or use hoses to pull equipment.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.
- Do not use 1.1.1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in pressurized aluminum equipment. Such use could result in a chemical reaction, with the possibility of explosion.

⚠ WARNING



TOXIC FLUID HAZARD

Hazardous fluid or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, inhaled, or swallowed.

- Know the specific hazards of the fluid you are using.
- Do not lift a pump under pressure. If dropped, the fluid section may rupture. Always follow the Pressure Relief Procedure on page 10 before lifting the pump.
- Store hazardous fluid in an approved container. Dispose of hazardous fluid according to all local, state, and national guidelines.
- Always wear protective eyewear, gloves, clothing, and respirator as recommended by the fluid and solvent manufacturer.
- Pipe and dispose of the exhaust air safely, away from people, animals, and food handling areas. If the diaphragm fails, the fluid is exhausted along with the air. Read **Air Exhaust Ventilation** on page 6.
- **Never** use an acetal pump to pump acids. Take precautions to avoid acid or acid fumes from contacting the pump housing exterior. Stainless steel parts will be damaged by exposure to acid spills and fumes.



FIRE AND EXPLOSION HAZARD

Improper grounding, poor ventilation, open flames, or sparks can cause a hazardous condition and result in a fire or explosion and serious injury.

- Ground the equipment. Refer to **Grounding** on page 8.
- **Never** use a polypropylene or PVDF pump with non-conductive flammable fluids as specified by your local fire protection code. Refer to **Grounding** on page 8 for additional information. Consult your fluid supplier to determine the conductivity or resistivity of your fluid.
- If there is any static sparking or you feel an electric shock while using this equipment, **stop pumping immediately**. Do not use the equipment until you identify and correct the problem.
- Provide fresh air ventilation to avoid the buildup of flammable fumes from solvents or the fluid being pumped.
- Pipe and dispose of the exhaust air safely, away from all sources of ignition. If the diaphragm fails, the fluid is exhausted along with the air. Read **Air Exhaust Ventilation** on page 6.
- Keep the work area free of debris, including solvent, rags, and gasoline.
- Electrically disconnect all equipment in the work area.
- Extinguish all open flames or pilot lights in the work area.
- Do not smoke in the work area.
- Do not turn on or off any light switch in the work area while operating or if fumes are present.
- Do not operate a gasoline engine in the work area.
- Keep a fire extinguisher in the work area.

Installation

General Information

- The Typical Installations in **Fig. 2** are only guides for selecting and installing system components. Contact your Graco distributor for assistance in planning a system to suit your needs.
- Always use Genuine Graco Parts and Accessories.
- Use a compatible, liquid thread sealant on all male threads. Tighten all connections firmly to avoid air or fluid leaks.

Tightening Threaded Fasteners Before First Use

Before using the pump for the first time, check and retorquer all external fasteners. See **Torque Sequence**, page 32. After the first day of operation, retorquer the fasteners. Although pump use varies, a general guideline is to retorquer fasteners every two months.

Toxic Fluid Hazard



Read **TOXIC FLUID HAZARD** on page 3.

Use fluids and solvents that are compatible with the equipment wetted parts. Refer to the Technical Data section of all equipment manuals. Read the fluid and solvent manufacturer's warnings.

CAUTION

Safe Operating Temperatures

Minimum (all pumps): 40°F (4°C)

Maximum

Acetal: 180°F (82°C)

Polypropylene: 150°F (66°C)

Aluminum, stainless steel, PVDF: 225°F (107°C)

These temperatures are based upon mechanical stress only and may be significantly altered by pumping certain chemicals. Consult engineering guides for chemical compatibilities and temperature limits, or contact your Graco distributor.

Mountings

- These pumps can be used in a variety of installations. Be sure the mounting surface can support the weight of the pump, hoses, and accessories, as well as the stress caused during operation.
- **Fig. 2** shows some installation examples. On all installations, mount the pump using screws and nuts.
- Prolonged exposure to UV radiation will degrade natural polypropylene components of the pumps. To prevent potential injury or equipment damage, do not expose pump or the plastic components to direct sunlight for prolonged periods.

Pumping High-Density Fluids

High density fluids may prevent the lighter non-metallic check valve balls from seating properly, which reduces pump performance significantly. Stainless steel balls should be used for such applications.

Split Manifolds

Plastic Split Manifold Kits are available to enable you to pump two fluids simultaneously or to mix two fluids in the pump. To order a Split Manifold Kit, use the Part No. from the list below:

| | |
|---------------|-----------------------------|
| 241240 | polypropylene; split inlet |
| 241241 | acetal; split inlet |
| 241242 | PVDF; split inlet |
| 241243 | polypropylene; split outlet |
| 241244 | acetal; split outlet |
| 241245 | PVDF; split outlet |

Installation

Air Line

WARNING

A bleed-type master air valve (B) is required in your system to relieve air trapped between this valve and the pump. See **Fig. 2**. Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury, including splashing in the eyes or on the skin, injury from moving parts, or contamination from hazardous fluids.

CAUTION

The pump exhaust air may contain contaminants. Ventilate to a remote area if the contaminants could affect your fluid supply. Read **Air Exhaust Ventilation** on page 6.

1. Install the air line accessories as shown in **Fig. 2**. Mount these accessories on the wall or on a bracket. Be sure the air line supplying the accessories is electrically conductive.
 - a. The fluid pressure can be controlled in either of two ways. To control it on the air side, install an air regulator (G). To control it on the fluid side, install a fluid regulator (J) near the pump fluid outlet (see **Fig. 2**).
 - b. Locate one bleed-type master air valve (B) close to the pump and use it to relieve trapped air. Read the **WARNING** above. Locate the other master air valve (E) upstream from all air line accessories and use it to isolate them during cleaning and repair.
 - c. The air line filter (F) removes harmful dirt and moisture from the compressed air supply.
2. Install an electrically conductive, flexible air hose (C) between the accessories and the 1/4 npt(f) pump air inlet. Use a minimum 1/4 in. (6.3 mm) ID air hose. Screw an air line quick disconnect coupler (D) onto the end of the air hose (C), and screw the mating fitting into the pump air inlet snugly. Do not connect the coupler (D) to the fitting yet.

Installation of Remote Pilot Air Lines

1. Refer to Parts Drawings. Connect air line to pump as in preceding steps.
2. Connect 1/4 in. O.D. tubing to push type connectors (16) on underside of pump.

NOTE: by replacing the push type connectors, other sizes or types of fittings may be used. The new fittings will require 1/8 in. npt threads.

3. Connect remaining ends of tubes to external air signal, such as Graco's Cycleflo (P/N 195264) or Cycleflo II (P/N195265) controllers.

NOTE: the air pressure at the connectors must be at least 30% of the air pressure to the air motor for the pump to operate.

Fluid Suction Line

- For all pumps, use flexible fluid hoses.
- If using a conductive (acetal) pump, use conductive hoses. If using a non-conductive pump, ground the fluid system. Read **Grounding** on page 8. The fluid inlet port is 1/2 in. or 3/4 in.
- At inlet fluid pressures greater than 15 psi (0.1 MPa, 1 bar), diaphragm life will be shortened.

Fluid Outlet Line

WARNING

A fluid drain valve (H) is required in your system to relieve pressure in the hose if it is plugged. See **Fig. 2**. The drain valve reduces the risk of serious injury, including splashing in the eyes or on the skin, or contamination from hazardous fluids when relieving pressure. Install the valve close to the pump fluid outlet.

1. Use flexible, electrically conductive fluid hoses (K). The pump fluid outlet is 1/2 in. or 3/4 in. Screw the fluid fitting into the pump outlet snugly. Do not overtighten.
2. Install a fluid regulator (J) at the pump fluid outlet to control fluid pressure, if desired (see **Fig. 2**). See **Air Line**, step 1a, for another method of controlling pressure.
3. Install a fluid drain valve (H) near the fluid outlet. Read the **WARNING** above.

Installation

Fluid Pressure Relief Valve

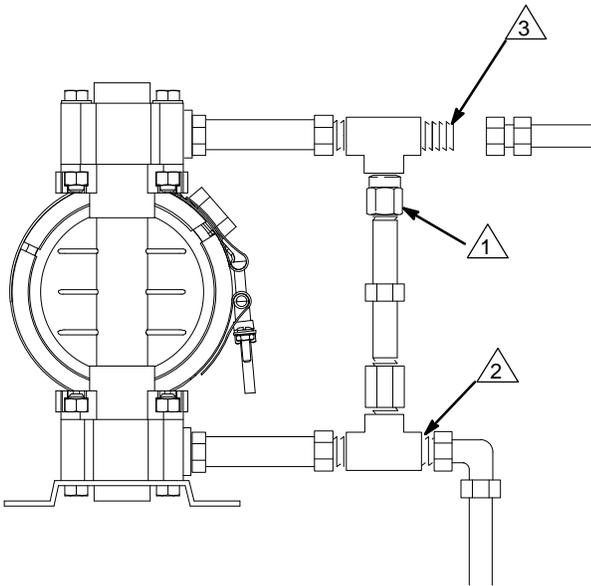
CAUTION

Some systems may require installation of a pressure relief valve at the pump outlet to prevent overpressurization and rupture of the pump or hose. See **Fig. 1**.

Thermal expansion of fluid in the outlet line can cause overpressurization. This can occur when using long fluid lines exposed to sunlight or ambient heat, or when pumping from a cool to a warm area (for example, from an underground tank).

Overpressurization can also occur if the Husky pump is being used to feed fluid to a piston pump, and the intake valve of the piston pump does not close, causing fluid to back up in the outlet line.

-  1 Install valve between fluid inlet and outlet ports.
-  2 Connect fluid inlet line here.
-  3 Connect fluid outlet line here.



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Fig. 1

Air Exhaust Ventilation

 Read **TOXIC FLUID HAZARD** on page 3.

 Read **FIRE AND EXPLOSION HAZARD** on page 3.

Be sure the system is properly ventilated for your type of installation. You must vent the exhaust to a safe place, away from people, animals, food handling areas, and all sources of ignition when pumping flammable or hazardous fluids.

Diaphragm failure will cause the fluid being pumped to exhaust with the air. Place an appropriate container at the end of the air exhaust line to catch the fluid. See **Fig. 2**.

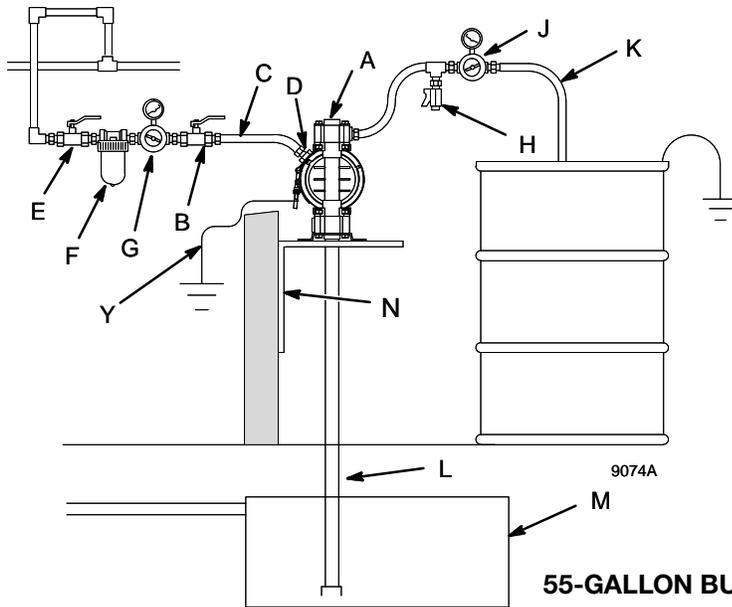
The air exhaust port is 3/8 npt(f). Do not restrict the air exhaust port. Excessive exhaust restriction can cause erratic pump operation.

See Venting Exhaust Air in **Fig. 2**. Exhaust to a remote location as follows:

1. Remove the muffler (W) from the pump air exhaust port.
2. Install an electrically conductive air exhaust hose (X) and connect the muffler to the other end of the hose. The minimum size for the air exhaust hose is 3/8 in. (10 mm) ID. If a hose longer than 15 ft (4.57 m) is required, use a larger diameter hose. Avoid sharp bends or kinks in the hose.
3. Place a container (Z) at the end of the air exhaust line to catch fluid in case a diaphragm ruptures. See **Fig. 2**.

Installation

ABOVE-GROUND TRANSFER INSTALLATION



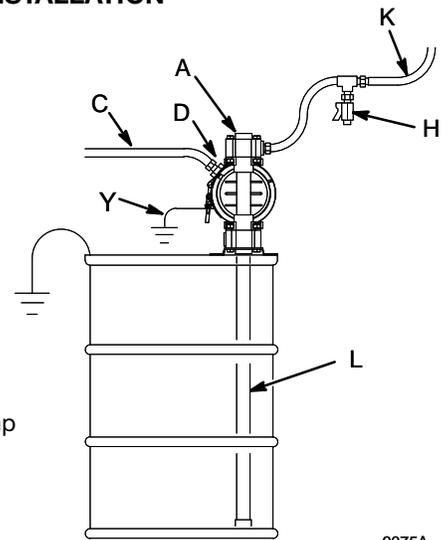
KEY

- A Pump
- B Bleed-type master air valve (required for pump)
- C Electrically conductive air supply line
- D Air line quick disconnect
- E Master air valve (for accessories)
- F Air line filter
- G Pump air regulator
- H Fluid drain valve (required)
- J Fluid regulator (optional)
- K Electrically conductive fluid supply hose
- L Fluid suction line
- M Underground storage tank
- N Wall mounting bracket
- Y Ground wire (required; see page 8 for installation instructions)

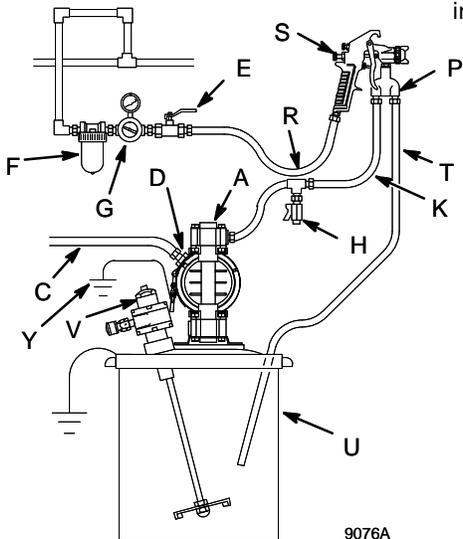
55-GALLON BUNG PUMP INSTALLATION

KEY

- A Pump
- C Electrically conductive air supply line
- D Air line quick disconnect
- H Fluid drain valve (required)
- K Electrically conductive fluid supply hose
- L Fluid suction line
- Y Ground wire (required; see page 8 for installation instructions)



AIR SPRAY INSTALLATION



KEY

- A Pump
- C Electrically conductive air line to pump
- E Gun air line shutoff valve
- F Air line filter
- G Gun air regulator
- H Fluid drain valve (required)
- K Electrically conductive fluid supply hose
- P Circulating valve
- R Electrically conductive air line to gun
- S Air spray gun
- T Electrically conductive fluid return line
- U 5-gallon pail
- V Agitator
- Y Ground wire (required; see page 8 for installation instructions)

VENTING EXHAUST AIR

KEY

- W Muffler
 - X Electrically Conductive Air Exhaust Hose
 - Z Container for Remote Air Exhaust
- All wetted and non-wetted pump parts must be compatible with the fluid being pumped.

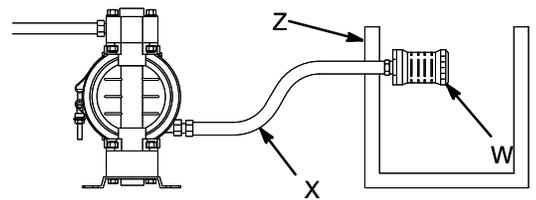


Fig. 2

Installation

Grounding

WARNING

FIRE AND EXPLOSION HAZARD



This pump must be grounded. Before operating the pump, ground the system as explained below. Also read the section **FIRE AND EXPLOSION HAZARD** on page 3.

The acetal Husky 515 pump contains stainless steel fibers, which makes the wetted parts conductive. Attaching the ground wire to the grounding screw (106) grounds the wetted parts. See **grounding screw** on page 25.

The metal Husky 716 pumps have a grounding strip connecting the vee clamps (109). Attach a ground wire to the grounding strip with the screw, lockwasher, and nut as shown in the **Grounding Detail** on page 27.

The polypropylene and PVDF Husky 515 pumps are not conductive.

When pumping conductive flammable fluids, always ground the entire fluid system by making sure the fluid system has an electrical path to a true earth ground (see **Fig. 3**). Never use a polypropylene or PVDF pump with non-conductive flammable fluids as specified by your local fire protection code.

US Code (NFPA 77 Static Electricity) recommends a conductivity greater than 50×10^{-12} Siemens/meter (mhos/meter) over your operating temperature range to reduce the hazard of fire. Consult your fluid supplier to determine the conductivity or resistivity of your fluid. The resistivity must be less than 2×10^{12} ohm-centimeters.

To reduce the risk of static sparking, ground the pump and all other equipment used or located in the pumping area. Check your local electrical code for detailed grounding instructions for your area and type of equipment.

NOTE: When pumping conductive flammable fluids with a polypropylene or PVDF pump, **always** ground the fluid system. See the **WARNING** above. **Fig. 3** shows a recommended method of grounding flammable fluid containers during filling.

Ground all of this equipment:

- **Pump:** The metal pump has a grounding strip in front of the center housing. The acetal pump has a grounding screw on the top manifold. Connect the non-clamp end of the ground wire to the grounding strip or grounding screw, and connect the clamp end of the ground wire to a true earth ground. To order a ground wire and clamp, order Part No. 222011.
- **Air and fluid hoses:** Use only flexible, electrically conductive hoses.
- **Air compressor:** Follow the manufacturer's recommendations.
- **Solvent pails used when flushing:** Follow the local code. Use only grounded metal pails, which are conductive. Do not place the pail on a non-conductive surface, such as paper or cardboard, which interrupts the grounding continuity.
- **Fluid supply container:** Follow the local code.

GROUNDING A PUMP

KEY

- A Pump
- H Fluid drain valve (required)
- S Dispense valve
- T Fluid drain line
- Y Fluid section grounding via grounding strip or grounding screw (required for metal and acetal pumps)
- Z Container ground wire (required)

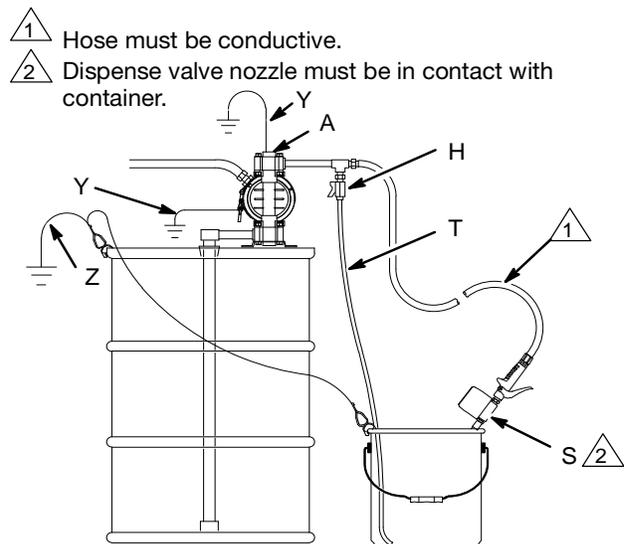


Fig. 3

Installation

Changing the Orientation of the Fluid Inlet and Outlet Ports (Husky 515)

You can change the orientation of the fluid inlet and outlet ports by repositioning the manifolds. For Husky 515, see **Fig. 4**. For Husky 716, see **Fig. 5**.

1.  Relieve the pressure. See **Pressure Relief Procedure** on page 11.

2. Remove the four manifold nuts (109) or bolts (105).
3. Turn the manifold to the desired position, reinstall the nuts or bolts, and torque to 80 to 90 in-lb (9 to 10 NSm). See **Torque Sequence**, page 32.

NOTE: Make sure all manifold o-rings are positioned correctly before you fasten the manifold. Manifold o-rings (139) are shown in **Fig. 8** and **Fig. 9**.

NOTE: Pumps with duckbill check valves are shipped with the inlet manifold on top and the outlet manifold on the bottom. See page 14 for details.

1. Torque to 80 to 90 in-lb (9 to 10 NSm). See **Torque Sequence**, page 32.

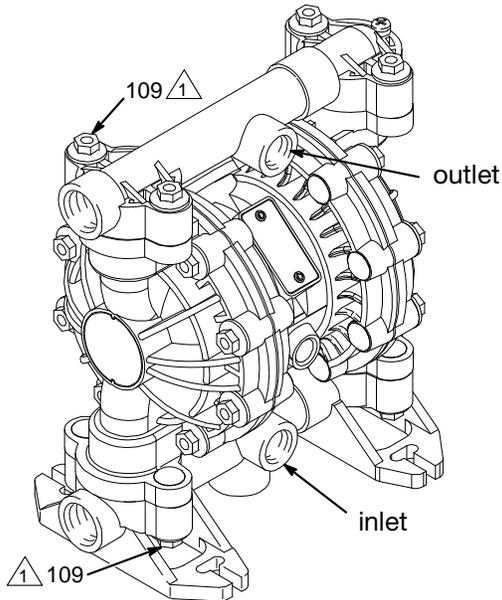


Fig. 4

1. Torque to 80 to 90 in-lb (9 to 10 NSm). See **Torque Sequence**, page 32.

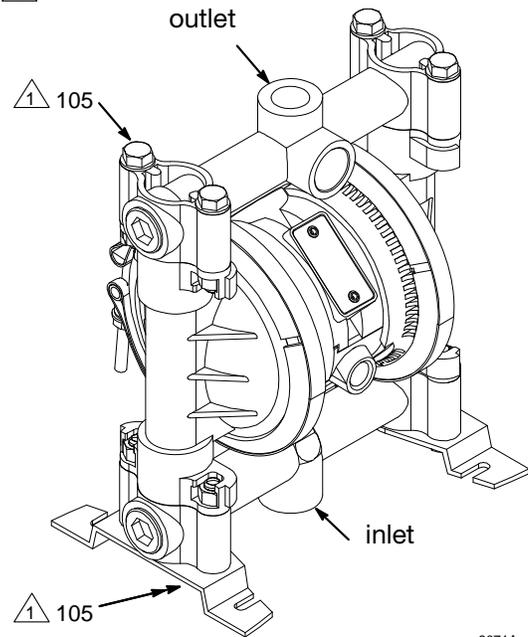


Fig. 5

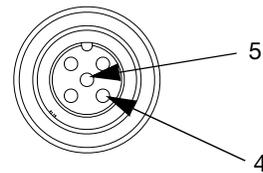
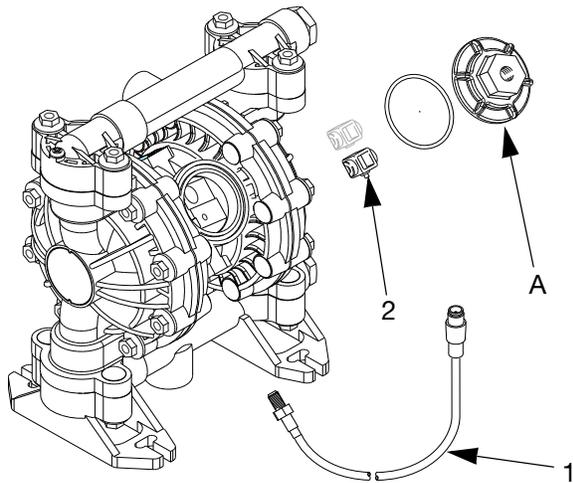
9071A

Install Reed Switch

1. Shut off air to pump and remove valve cover (A).
2. Remove lower carriage and replace with new carriage assembly (2), so magnet faces end of valve chamber.
3. Replace valve cover. Torque to 80 to 100 in-lb (9.0 to 13.6 N•m).
4. Screw reed switch (1) into one of two holes on underside of air motor until it bottoms out.
5. Attach the reed switch cable (1) to the system monitoring counts.

NOTE: The following steps will require that the pump is operated with the targeted fluid, and at the minimum operational speed, so that the reed switch counting is properly calibrated.

6. Set the inlet air pressure to a minimum of 40 psi (2.76 bar). Observe that the air motor is functioning. If it is not, increase the pressure until it does begin to operate.
7. While monitoring the reed switch output at the monitoring location, slowly turn the reed switch counter-clockwise until a consistent pulse output is observed.
8. Mark a vertical line on the threads of the reed switch and a corresponding alignment mark on the body of the air motor.
9. While monitoring the pulse output, slowly turn the reed switch counter-clockwise until breaks in the pulses are observed. Make a mark on the air motor where the line on the threads of the reed switch is located.
10. Rotate the reed switch clockwise until the line on the threads is halfway between the two marks on the air motor.
11. Tighten the lock nut on the reed switch against the air motor. Do not overtighten.



Cable connector
Pins 1-3 unused

Operation

Pressure Relief Procedure

WARNING

PRESSURIZED EQUIPMENT HAZARD

The equipment stays pressurized until pressure is manually relieved. To reduce the risk of serious injury from pressurized fluid, accidental spray, or splashing fluid, follow this procedure whenever you

- Are instructed to relieve pressure
- Stop pumping
- Check, clean, or service any system equipment
- Install or clean fluid nozzles

1. Shut off the air to the pump.
2. Open the dispensing valve, if used.
3. Open the fluid drain valve to relieve all fluid pressure, and have a container ready to catch the drainage.

Flush Pump Before First Use

The pump was tested with water. Prior to first use, flush the pump thoroughly with a compatible solvent.

Reactor feed pumps, part numbers 246484, 246485, and 257447, were tested with lightweight oil, which is left in the fluid passages. To avoid contaminating your fluid with oil, flush the pump with a compatible solvent before using the equipment. Follow the steps under **Starting and Adjusting Pump**.

Starting and Adjusting Pump

1.   Read **TOXIC FLUID HAZARD** on page 3.
2.  If lifting the pump, follow the **Pressure Relief Procedure** above.
3.   Be sure the pump is properly grounded. Read **FIRE AND EXPLOSION HAZARD** on page 3.
4. Check all fittings to be sure they are tight. Use a compatible liquid thread sealant on all male threads. Tighten the fluid inlet and outlet fittings snugly. Do not overtighten the fittings into the pump.
5. Place the suction tube (if used) in the fluid to be pumped.

NOTE: If the inlet fluid pressure to the pump is more than 25% of the outlet working pressure, the ball check valves will not close fast enough, resulting in inefficient pump operation.

6. Place the end of the fluid hose (K) into an appropriate container.
7. Close the fluid drain valve (H).
8. With the pump air regulator (G) closed, open all bleed-type master air valves (B, E).
9. If the fluid hose has a dispensing device, hold it open while continuing with the following step. Slowly open the air regulator (G) until the pump starts to cycle. Allow the pump to cycle slowly until all air is pushed out of the lines and the pump is primed.

If you are flushing, run the pump long enough to thoroughly clean the pump and hoses. Close the air regulator. Remove the suction tube from the solvent and place it in the fluid to be pumped.

Operation of Remote Piloted Pumps

1. **Fig. 2** and Parts Drawings. Follow preceding steps 1 through 8 of **Starting and Adjusting Pump**.
2. Open air regulator (G).

WARNING

The pump may cycle once before the external signal is applied. Injury is possible. If pump cycles, wait until end before proceeding.

3. Pump will operate when air pressure is alternately applied to push type connectors (16).

NOTE: Leaving air pressure applied to the air motor for extended periods when the pump is not running may shorten the diaphragm life. Using a 3-way solenoid valve to automatically relieve the pressure on the air motor when the metering cycle is complete prevents this from occurring.

Pump Shutdown

At the end of the work shift, relieve the pressure as described in **Pressure Relief Procedure** on page 11.



Maintenance

Lubrication

The air valve is lubricated at the factory to operate without additional lubrication. If you want to provide additional lubrication, remove the hose from the pump air inlet and add two drops of machine oil to the air inlet every 500 hours of operation or every month.



CAUTION

Do not over-lubricate the pump. Oil is exhausted through the muffler, which could contaminate your fluid supply or other equipment. Excessive lubrication can also cause the pump to malfunction.

Flushing and Storage

Flush the pump to prevent the fluid you are pumping from drying or freezing in the pump and damaging it. Use a compatible solvent.

Always flush the pump and **relieve the pressure** before you store it for any length of time.



Read **Pressure Relief Procedure** on page 11.

Tightening Threaded Connections

Before each use, check all hoses for wear or damage and replace as necessary. Check to be sure all threaded connections are tight and leak-free.

Check fasteners. Tighten or retorque as necessary. Although pump use varies, a general guideline is to retorque fasteners every two months. See **Torque Sequence**, page 32.

Preventive Maintenance Schedule

Establish a preventive maintenance schedule, based on the pump's service history. This is especially important for prevention of spills or leakage due to diaphragm failure.

Troubleshooting



Read **Pressure Relief Procedure** on page 11, and relieve the pressure before you check or service the equipment. Check all possible problems and causes before disassembling the pump.

| PROBLEM | CAUSE | SOLUTION |
|--|--|---|
| Pump will not cycle, or cycles once and stops. | Air valve is stuck or dirty. | Use filtered air. |
| Pump cycles at stall or fails to hold pressure at stall. | Leaky check valves or o-rings. | Replace. |
| | Worn check balls or duckbill valves or guides. | Replace. |
| | Check ball wedged in guide. | Repair or replace. |
| | Worn diaphragm shaft seals. | Replace. |
| Pump operates erratically. | Clogged suction line. | Inspect; clear. |
| | Sticky or leaking check valve balls. | Clean or replace. |
| | Diaphragm ruptured. | Replace. |
| Air bubbles in fluid. | Suction line is loose. | Tighten. |
| | Diaphragm ruptured. | Replace. |
| | Loose manifolds or damaged manifold o-rings. | Tighten manifold bolts or nuts; replace o-rings. |
| | Loose fluid side diaphragm plates. | Tighten. |
| Fluid in exhaust air. | Diaphragm ruptured. | Replace. |
| | Loose fluid side diaphragm plates. | Tighten. |
| | Worn diaphragm shaft seals. | Replace. |
| Pump exhausts air from clamps (metal pumps). | Loose clamps. | Tighten clamp nuts. |
| | Air valve o-ring is damaged. | Inspect; replace. |
| Pump leaks fluid from check valves. | Worn or damaged check valve o-rings. | Inspect; replace. |
| Reed switch electrical signal output erratic or inconsistent | Switch moved | Re-install reed switch. See page 10. |
| | Running speed of pump less than reed switch calibration speed. | Reset reed switch calibration with pump running at or below minimum operation speed. See page 10. |
| | Slow changeover or pump inlet pressure too low. | Increase pump inlet pressure to a minimum of 40 psi. |

Service

Air Valve (Husky 515 and Husky 716 pumps without reed switch)

NOTE: Air Valve Repair Kit 241657 is available. Parts included in the kit are marked with a dagger (†) in **Fig. 6** and in the Parts Drawings and Lists. A tube of general purpose grease 111920 is supplied in the kit. Service the air valve as follows. See **Fig. 6**.



Relieve the pressure. See **Pressure Relief Procedure** on page 11.

1. Remove the cover (10) and the o-ring (4).
2. Remove the carriage plungers (7), carriages (8), carriage pins (9), and valve plate (14) from the center housing (11).
3. Clean all the parts, and inspect them for wear or damage.

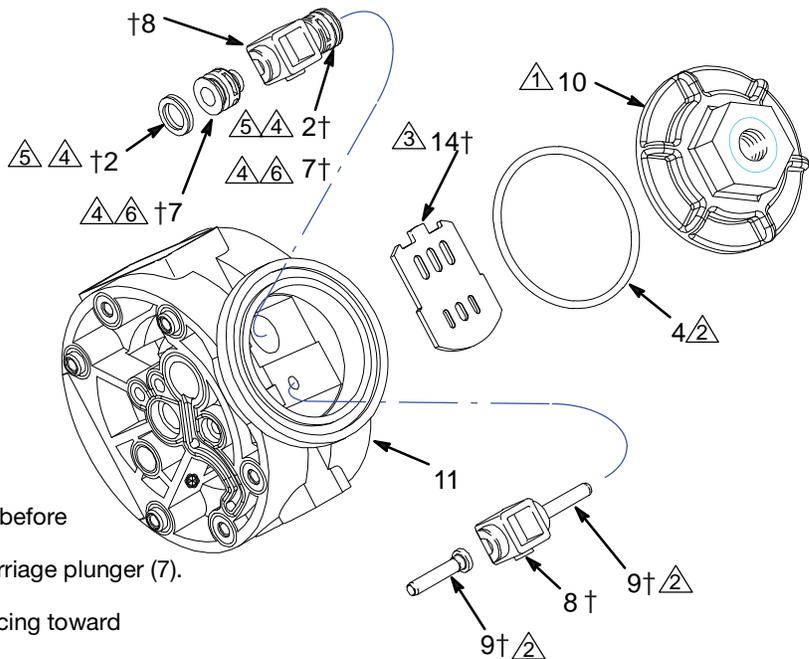
NOTE: If you are installing the new Air Valve Repair Kit 241657, use all the parts in the kit.

4. Grease the lapped surface of the valve plate (14), and install the valve plate with the lapped surface facing up.
5. Grease the bores of the center housing (11), install the u-cup packings (2) on the carriage plungers (7), and slide the carriage plungers into the carriage plunger bores. See the following important installation notes:

NOTES:

- When you install each u-cup packing (2) on each carriage plunger (7), make sure the lips of the u-cup packing face toward the clip end (the smaller end) of the carriage plunger.
 - When you slide the carriage plungers (7) into the bores, slide them in with the clip ends (the smaller ends) facing toward the center of the center housing (11).
6. Grease the carriage pins (9), and slide the carriage pins into the carriage pin bores.
 7. Install the carriages (8). Make sure the carriages engage the clip ends of the carriage plungers (7) and carriage pins (9).
 8. Grease the o-ring (4), and seat it in the groove around the cover opening of the center housing (11).
 9. Screw the cover (10) into the center housing, and torque the cover to 80 to 100 in-lb (9.0 to 13.6 N-m).

NOTE: Center housing (11) is shown separated from the air covers, but it is not necessary to remove the air covers for this service. Leave the center housing and air covers assembled for this service.



† Included in Air Valve Repair Kit 241657

- 1 Torque to 80 to 100 in-lb (9.0 to 13.6 N-m).
- 2 Apply grease.
- 3 Apply grease to lapped face.
- 4 Apply grease to bores of center housing (11) before installing.
- 5 Seal lips face clip end (the smaller end) of carriage plunger (7).
- 6 Install with the clip ends (the smaller ends) facing toward center of center housing (11).

Fig. 6

9069A

Air Valve (Husky 515 and Husky 716 pumps with reed switch)

NOTE: Air Valve Repair Kit 25C469 is available. Parts included in the kit are marked with a dagger (†) in **Fig. 7** and in the Parts Drawings and Lists. A tube of general purpose grease 111920 is supplied in the kit. Service the air valve as follows. See **Fig. 7**.

Relieve the pressure. See **Pressure Relief Procedure** on page 11.



1. Remove the cover (10) and the o-ring (4).
2. Remove the carriage plungers (7), carriages (8, 8a), carriage pins (9), and valve plate (14) from the center housing (11).
3. Clean all the parts, and inspect them for wear or damage.

NOTE: If you are installing the new Air Valve Repair Kit 25C469, use all the parts in the kit.

4. Grease the lapped surface of the valve plate (14), and install the valve plate with the lapped surface facing up.
5. Grease the bores of the center housing (11), install the u-cup packings (2) on the carriage plungers (7), and slide the carriage plungers into the carriage plunger bores. See the following important installation notes:

NOTE: Center housing (11) is shown separated from the air covers, but it is not necessary to remove the air covers for this service. Leave the center housing and air covers assembled for this service.

NOTES:

- When you install each u-cup packing (2) on each carriage plunger (7), make sure the lips of the u-cup packing face toward the clip end (the smaller end) of the carriage plunger.
 - When you slide the carriage plungers (7) into the bores, slide them in with the clip ends (the smaller ends) facing toward the center of the center housing (11).
6. Grease the carriage pins (9), and slide the carriage pins into the carriage pin bores.
 7. Install the carriages (8, 8a). Make sure the carriages engage the clip ends of the carriage plungers (7) and carriage pins (9).
 8. Grease the o-ring (4), and seat it in the groove around the cover opening of the center housing (11).
 9. Screw the cover (10) into the center housing, and torque the cover to 80 to 100 in-lb (9.0 to 13.6 N-m).

† Included in Air Valve Repair Kit 25C469

- 1 Torque to 80 to 100 in-lb (9.0 to 13.6 N-m).
- 2 Apply grease.
- 3 Apply grease to lapped face.
- 4 Apply grease to bores of center housing (11) before installing.
- 5 Seal lips face clip end (the smaller end) of carriage plunger (7).
- 6 Install with the clip ends (the smaller ends) facing toward center of center housing (11).

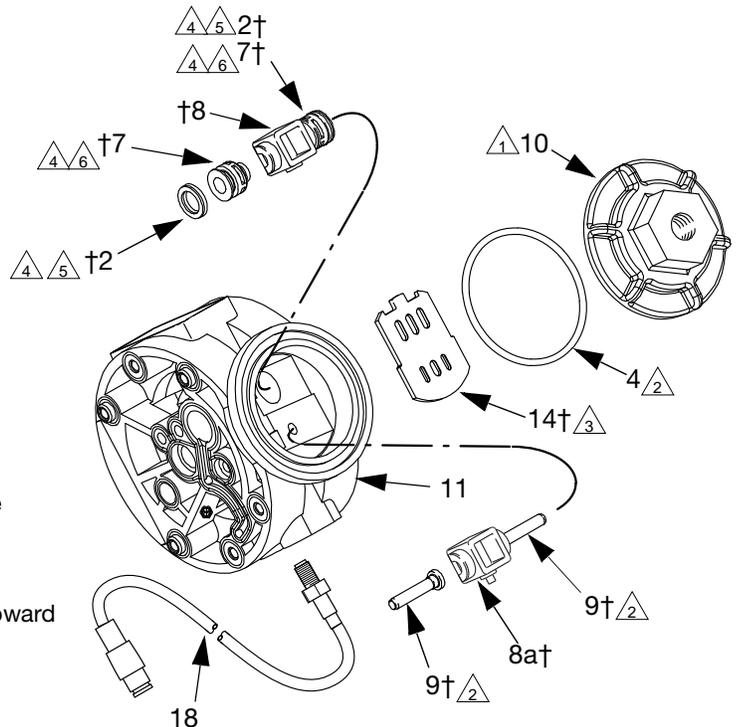


Fig. 7

Service

Air Section (Husky 515 and 716)

NOTE: Air Section Repair Kit 25U241 is available. Parts included with the kit are marked with an asterisk (*) in **Fig. 10** and **Fig. 11**. General purpose grease 111920 is supplied in the kit. Service the air section as follows. See **Fig. 10** and **Fig. 11**.

Disassembly



Relieve the pressure. See **Pressure Relief Procedure** on page 11.

1. Remove the manifolds (102) and fluid covers (101).
NOTE: Make sure all the check valve parts stay in place. See **Fig. 9**.
2. Remove the grounding strip from the vee clamps (109), and remove the vee clamps.
3. Remove one of the fluid-side diaphragm plates (133) (whichever one comes loose first when you use a wrench on the hex of each), and pull the diaphragm shaft out of the center housing (11).
Overmolded Diaphragms: Grip both diaphragms securely around the outer edge and rotate counter-clockwise. One diaphragm assembly will come free and the other will remain attached to the diaphragm shaft (15). Remove the freed diaphragm and the air side plate (6). Pull the other diaphragm assembly and the diaphragm shaft (15) out of the center housing (11).
4. Use a wrench on the flats of the diaphragm shaft (15) to remove the other fluid-side diaphragm plate (133) from the diaphragm shaft.
Overmolded Diaphragms: Use a wrench on the flats of the diaphragm shaft (15) to remove the second diaphragm from the diaphragm shaft.
5. Remove the screws (141) and air covers (136), and remove all old gasket (12) material from the ends of the center housing (11) and the surfaces of the air covers.
6. Remove the diaphragm shaft u-cups (416) and pilot pin o-rings (1).
7. Inspect all parts for wear or damage, and replace as necessary.

Reassembly

1. Insert a diaphragm shaft u-cup (416) and a pilot pin o-ring (1) into the end of the diaphragm shaft bore of the center housing (11).
NOTE: Make sure the lips of the u-cup face out of the center housing.
2. Line up the holes in the gasket (12) with the holes in the end of the center housing (11), and use six screws (141) to fasten an air cover (136) to the end of the center housing (11). Torque the screws to 35 to 45 in-lb (4.0 to 5.1 N-m).
3. Position the exhaust cover (13) and o-ring (4) on the center housing (11).

4. Repeat steps 1 and 2 for the other end of the center housing and the remaining air cover.
5. Apply medium-strength (blue) thread locker to the threads of the screws (140). Install on one end of the diaphragm shaft (15) the following parts (see proper order in **Fig. 11**): air-side diaphragm plate (6), backup diaphragm (402, used only on models with PTFE diaphragms), diaphragm (401), fluid-side diaphragm plate (133), o-ring (115), and screw (140).

NOTE: The words "AIR SIDE" on the diaphragm (401), the backup diaphragm (402, used only on models with PTFE diaphragms), and the flat side of the air-side diaphragm plate (6) must face toward the diaphragm shaft (15).

Overmolded Diaphragms: Assemble the air-side plate (6) onto the diaphragm (401). The words AIR SIDE on the air side plate must face away from the diaphragm. Apply medium-strength (blue) thread locking adhesive to the threads of the diaphragm assembly. Screw the assembly into the diaphragm shaft (15) hand tight.

6. Put grease on the diaphragm shaft (15), and carefully (do not damage the shaft u-cups) run the diaphragm shaft (15) through the center housing (11) bore.
7. Repeat step 5 for the other end of the diaphragm shaft (15), and torque the diaphragm shaft screws (140) to 80 to 90 in-lb (9 to 10 N-m) at 100 rpm maximum.
Overmolded Diaphragms: Repeat Step 5 for the other end of the diaphragm shaft (15).
8. Install the muffler (3).

NOTE: When you install the vee clamps in step 9, orient the center housing (11) so the air inlet is approximately 45° above horizontal and the muffler (3) is approximately horizontal.

9. Apply thin, even film of grease to inside of vee clamp (109).
10. Position the fluid covers (101), install the vee clamps (109) around the fluid and air covers, install the grounding strip on the vee clamps, and torque the vee clamp nuts to 80 to 90 in-lb (9 to 10 N-m). See **Torque Sequence**, page 32.
11. Make sure all the check valve parts are in place. See **Fig. 9**.
12. Install the manifolds (102), and torque the manifold bolts (105) to 80 to 90 in-lb (9 to 10 N-m). See **Torque Sequence**, page 32.

Service

Ball or Duckbill Check Valves

NOTE: Fluid Section Repair Kit D05XXX is available. See page 27 to order the correct kit for your pump. Adhesive 113500 is supplied in the kit.



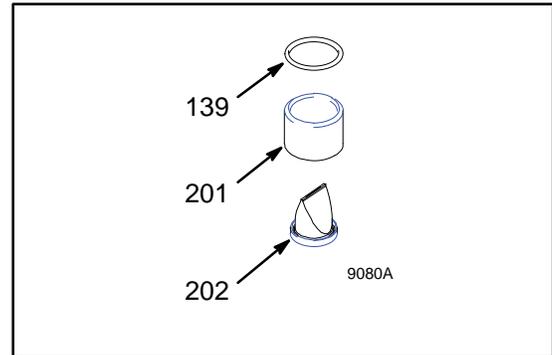
Relieve the pressure. See **Pressure Relief Procedure** on page 11.

1. Remove the top and bottom manifolds (102, 103).
2. Remove all parts shown with a dagger (†) in **Fig. 8** and **Fig. 9**.
3. Clean all parts, and replace worn or damaged parts.
4. Reassemble the pump.

NOTE: Torque the manifold nuts (109) or bolts (105) to 80 to 90 in-lb (9 to 10 NSm). See **Torque Sequence**, page 32.

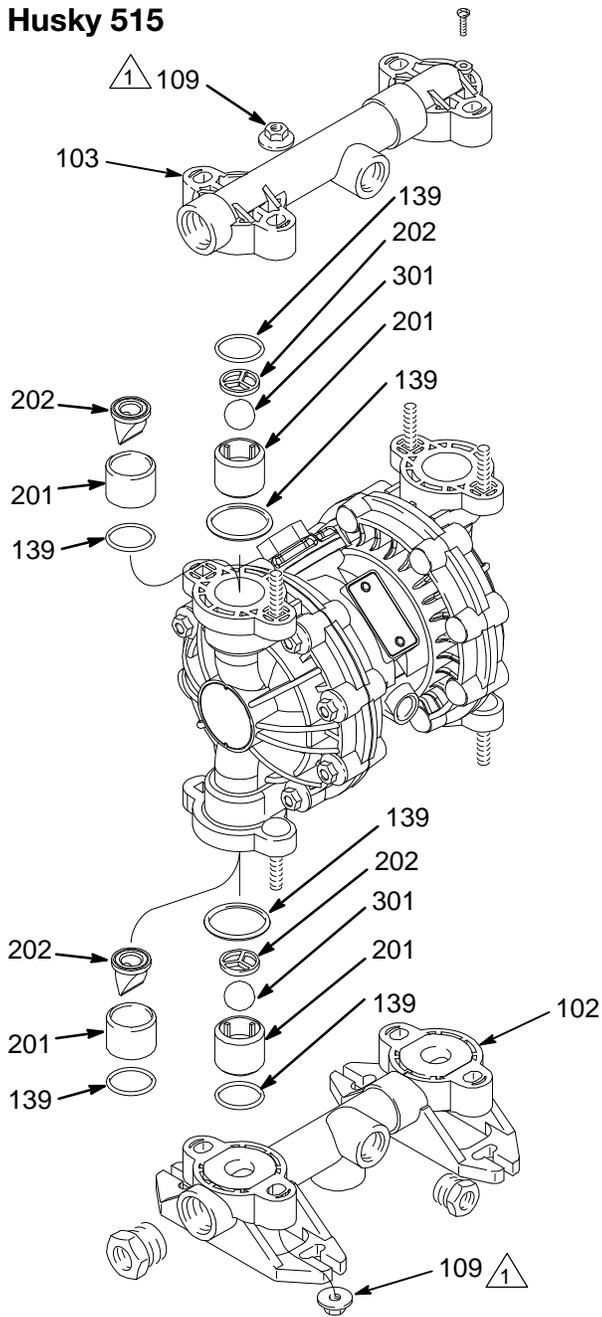
Inlet and Outlet for Pumps with Duckbill Check Valves

Pumps with duckbill check valves are shipped with the inlet manifold on top and the outlet manifold on the bottom. To make the inlet manifold on the bottom and the outlet manifold on the top, rotate each of the four duckbill assemblies vertically 180° as shown below.



Service

Husky 515

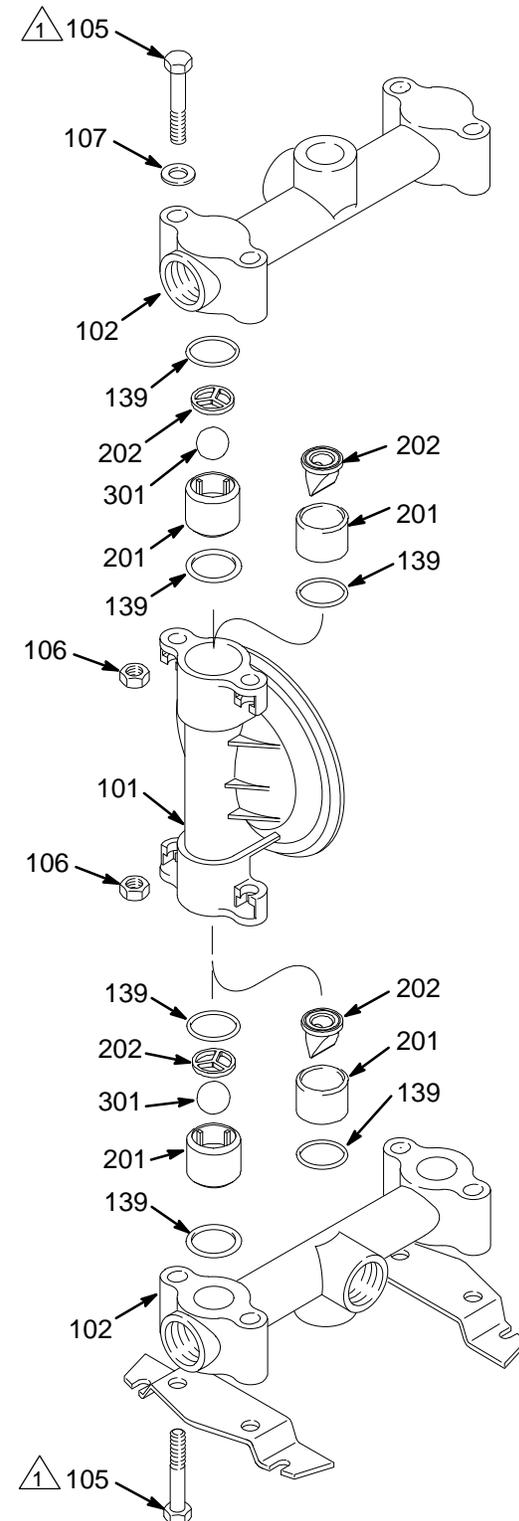


⚠ Torque to 80 to 90 in-lb (9 to 10 N-m). See **Torque Sequence**, page 32.

9067A

Fig. 8

Husky 716



⚠ Torque to 80 to 90 in-lb (9 to 10 N-m). See **Torque Sequence**, page 32.

9081A

Fig. 9

Service

Diaphragms (Husky 515)

NOTE: Fluid Section Repair Kit D05XXX is available. See page 23 to order the correct kit for your pump. Service the diaphragms as follows. See **Fig. 10**.

Disassembly



Relieve the pressure. See **Pressure Relief Procedure** on page 11.

1. Remove manifolds (102,103) and fluid covers (101).
NOTE: Make sure all the check valve parts stay in place. See **Fig. 8**.
 2. Remove one of the fluid-side diaphragm plates (133) (whichever one comes loose first when you use a wrench on the hex of each), and pull the diaphragm shaft out of the center housing (11).
Overmolded Diaphragms: The air cover bolts may make it difficult to remove the overmolded diaphragms on the 515 pump. Use a flat surface that fits within the bolt pattern to apply pressure on one of the diaphragms to shift the diaphragm shaft to one side. Apply pressure until the other diaphragm is separated from the air cover. Rotate the separated diaphragm counterclockwise until the diaphragm assembly comes free.
 3. Use a wrench on the flats of the diaphragm shaft (15) to remove the other fluid-side diaphragm plate (133) from the diaphragm shaft.
Overmolded Diaphragms: Use a wrench on the flats of the diaphragm shaft (15) to remove the second diaphragm.
 4. Inspect all parts for wear or damage, and replace as necessary.
2. Repeat step 1 for the other end of the diaphragm shaft (15). Torque the fluid-side diaphragm plates (133) to 80–90 in-lb (9–10 N-m) at 100 rpm maximum.
Overmolded Diaphragms: The air cover bolts may make it difficult to assemble the overmolded diaphragms on the 515 pump. Two people are needed. Use a flat surface that fits within the bolt pattern to apply pressure on the diaphragm that has already been assembled. Apply pressure until the diaphragm shaft sticks out of the other end of the center housing far enough to attach the second diaphragm assembly. Screw the assembly into the shaft (15) hand tight.
 3. Make sure all the check valve parts are in place. See **Fig. 8**.
 4. Reinstall the fluid covers (101) and manifolds (102 and 103), and torque the fluid cover and manifold nuts (109) to 80 to 90 in-lb (9 to 10 N-m). See **Torque Sequence**, page 32.

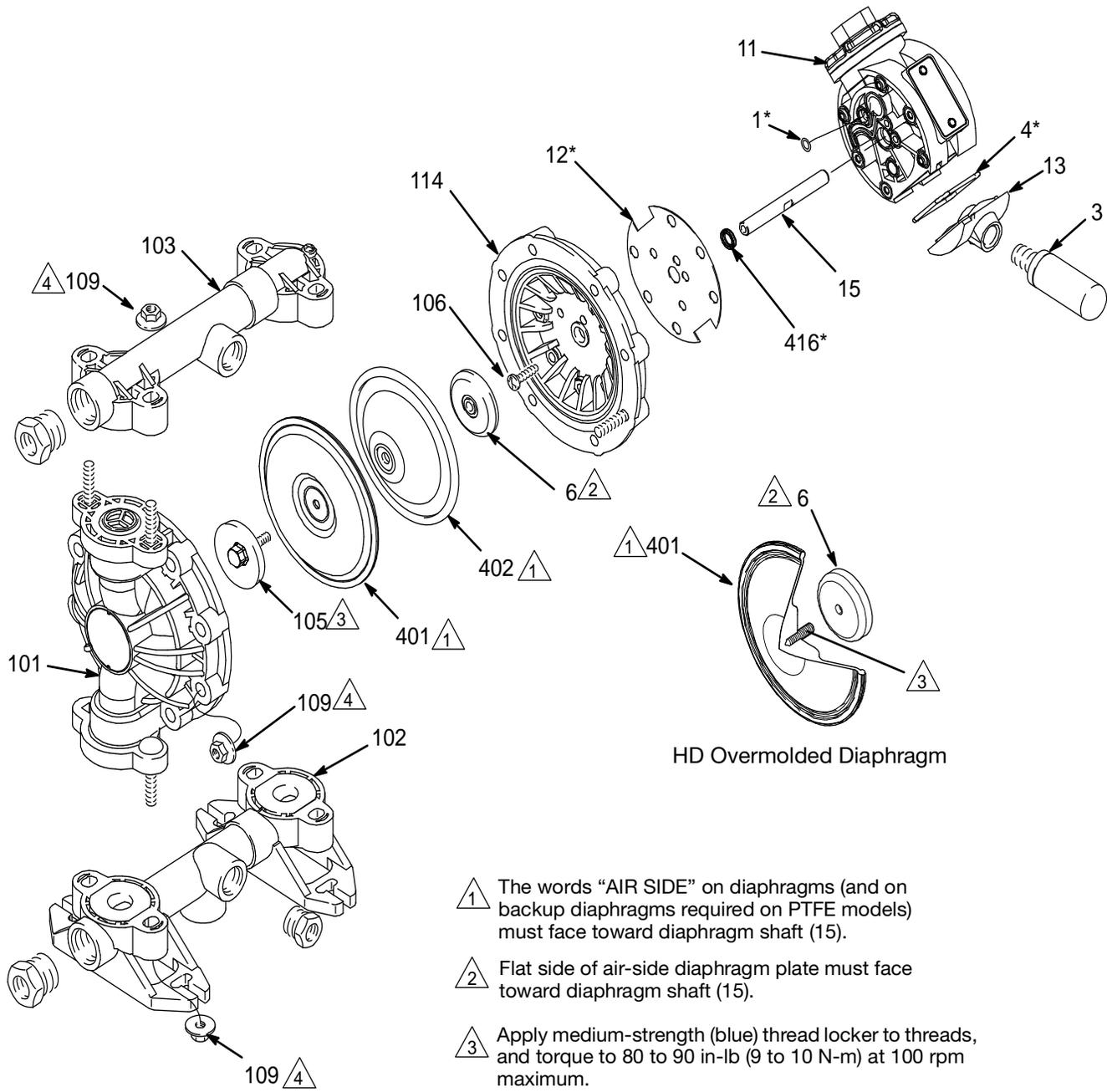
Reassembly

1. Apply medium-strength (blue) thread locker to the threads of the fluid-side diaphragm plate (133). Install on one end of the diaphragm shaft (15) the following parts (see proper order in **Fig. 10**): air-side diaphragm plate (6), backup diaphragm (402, used only on models with PTFE diaphragms), diaphragm (401), and fluid-side diaphragm plate (133).
NOTE: The words “AIR SIDE” on the diaphragm (401), the backup diaphragm (402, used only on models with PTFE diaphragms) and the flat side of the air-side diaphragm plate (6) must face toward the diaphragm shaft (15).

Overmolded Diaphragms: Assemble the air-side plate (6) onto the diaphragm (401). The words AIR SIDE on the air-side plate must face away from the diaphragm. Apply medium-strength (blue) thread locking adhesive to the threads of the diaphragm assembly. Screw the assembly into the diaphragm shaft (15) hand tight.

Service

Diaphragms (Husky 515)



HD Overmolded Diaphragm

- ① The words "AIR SIDE" on diaphragms (and on backup diaphragms required on PTFE models) must face toward diaphragm shaft (15).
- ② Flat side of air-side diaphragm plate must face toward diaphragm shaft (15).
- ③ Apply medium-strength (blue) thread locker to threads, and torque to 80 to 90 in-lb (9 to 10 N-m) at 100 rpm maximum.
- ④ Torque to 80 to 90 in-lb (9 to 10 N-m). See **Torque Sequence**, page 32.

Fig. 10

Service

Diaphragms (Husky 716)

NOTE: Fluid Section Repair Kit D05XXX is available. See page 23 to order the correct kit for your pump. Adhesive 113500 is supplied in the kit. Service the diaphragms as follows. See **Fig. 11**.

Disassembly



Relieve the pressure. See **Pressure Relief Procedure** on page 11.

1. Remove the manifolds (102) and fluid covers (101).

NOTE: Make sure all the check valve parts stay in place. See **Fig. 9**.

2. Remove the grounding strip from the vee clamps (109), and remove the vee clamps.
3. Remove one of the fluid-side diaphragm plates (133) (whichever one comes loose first when you use a wrench on the hex of each), and pull the diaphragm shaft out of the center housing (11).
Overmolded Diaphragms: Grip both diaphragms securely around the outer edge and rotate counter-clockwise. One diaphragm assembly will come free and the other will remain attached to the diaphragm shaft (15). Remove the freed diaphragm and the air side plate (6).
4. Use a wrench on the flats of the diaphragm shaft (15) to remove the other fluid-side diaphragm plate (133) from the diaphragm shaft.

Overmolded Diaphragms: Use a wrench on the flats of the diaphragm shaft (15) to remove the second diaphragm from the diaphragm shaft.

5. Inspect all parts for wear or damage, and replace as necessary.

Reassembly

1. Apply medium-strength (blue) thread locker to the threads of the screws (140). Install on one and of the diaphragm shaft (15) the following parts (see proper order in **Fig. 11**): air-side diaphragm plate (6), backup diaphragm (402, used only on models with PTFE diaphragms), diaphragm (401), fluid-side diaphragm plate (133), o-ring (115), and screw (140).

NOTE: The words “AIR SIDE” on the diaphragm (401), the backup diaphragm (402, used only on models with PTFE diaphragms), and the flat side of the air-side diaphragm plate (6) must face toward the diaphragm shaft (15).

Overmolded Diaphragms: Assemble the air-side plate (6) onto the diaphragm (401). The words AIR SIDE on the air side plate must face away from the diaphragm. Apply medium-strength (blue) thread locking adhesive to the threads of the diaphragm assembly. Screw the assembly into the diaphragm shaft (15) hand tight.

2. Repeat step 1 for the other end of the diaphragm shaft (15), and torque the diaphragm shaft screws (140) to 80 to 90 in-lb (9 to 10 N-m) at 100 rpm maximum.

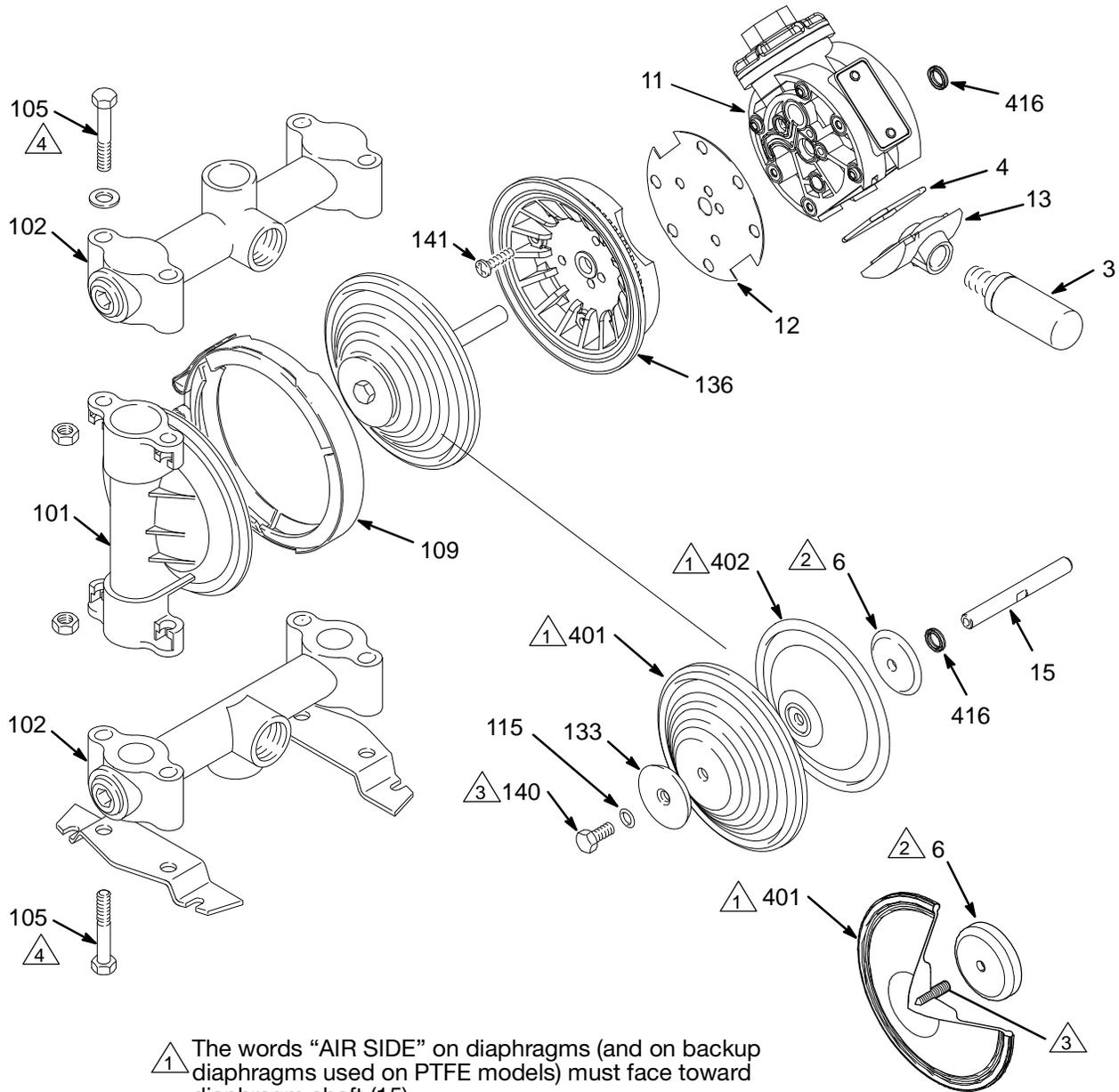
Overmolded Diaphragms: Repeat Step 1 for the other end of the diaphragm shaft (15).

NOTE: When you install the vee clamps in step 3, orient the center housing (11) so the air inlet is approximately 45° above horizontal and the muffler (3) is approximately horizontal.

3. Apply thin, even film of grease to inside of vee clamp (109).
4. Position the fluid covers (101), install the vee clamps (109) around the fluid and air covers, install the grounding strip on the vee clamps, and torque the vee clamp nuts to 80 to 90 in-lb (9 to 10 N-m). See **Torque Sequence**, page 32.
5. Make sure all the check valve parts are in place. See **Fig. 9**.
6. Install the manifolds (102), and torque the manifold bolts (105) to 80 to 90 in-lb (9 to 10 N-m). See **Torque Sequence**, page 32.

Service

Diaphragms (Husky 716)



HD Overmolded Diaphragm

- 1 The words "AIR SIDE" on diaphragms (and on backup diaphragms used on PTFE models) must face toward diaphragm shaft (15).
- 2 Flat side of the air-side diaphragm plate must face toward diaphragm shaft (15).
- 3 Apply medium-strength (blue) thread locker to threads, and torque to 80 to 90 in-lb (9 to 10 N-m) at 100 rpm maximum.
- 4 Torque to 80 to 90 in-lb (9 to 10 N-m). See **Torque Sequence**, page 32.

Fig. 11

9072A

Husky 515 and Husky 716 Pump Matrix

Your Model No. is marked on the pump's serial plate. To determine a pump Model No. from the following matrix, select the six digits that describe the pump, working from left to right. The first digit is always D, designating Husky diaphragm pumps. The remaining five digits define the air motor type and the materials of construction. For example, a pump with a standard air motor, acetal fluid section, acetal seats, PTFE balls, and PTFE diaphragms is Model D 5 1 2 1 1. The same model with EN 10204 Type 3.1 certification would be D51211C31.

| Column1 | Column 2 | Column 3 | Column 4 | Column 5 | Column 6 | Option |
|--------------------------|---|--|--------------------------|----------------------------|----------------------------|----------------------|
| Diaphragm Pump | Air Motor | Fluid Section | Guides | Balls | Diaphragms | EN 10204 Type |
| D (for all pumps) | 4 (Husky 515/716; remote-operated) | 1 (acetal) Husky 515, NPT | 2 (acetal) | 1 (PTFE) | 1 (PTFE) | C31 (Type 3.1) |
| | 5 (Husky 515/716; standard) | 2 (polypropylene) Husky 515, NPT | 3 (316 sst) | 3 (316 sst) | | C31A (Type 3.1 Adv.) |
| | 9 (Husky 515/716; cycle count) | 3 (aluminum) Husky 716, NPT | 9 (polypropylene) | 5 (TPE) | 5 (TPE) | C32 (Type 3.2) |
| | | 4 (Stainless Steel) Husky 716, NPT | A (PVDF) | 6 (Santoprene®) | 6 (Santoprene®) | |
| | | 5 (PVDF) Husky 515, NPT | D (duckbill) | 7 (buna-N) | 7 (buna-N) | |
| | | A (acetal) Husky 515, BSPT | | 8 (fluoroelastomer) | 8 (fluoroelastomer) | |
| | | B (polypropylene) Husky 515, BSPT | | | | |
| | | C (aluminum) Husky 716, BSPT | | | | |
| | | D (stainless steel) Husky 716, BSPT | | | | |
| | | E (PVDF) Husky 515, BSPT | | | | |

Additional Husky 515 and Husky 716 Pumps

| Model | Pump | Same As: | Except for: |
|---|------|----------|---|
| 241564 | 515 | D51211 | Has open downward port. Use inlet manifold 241558. |
| 26C021 | 515 | D52966 | Has split inlets/outlets. |
| 26D862 | 515 | D52966 | Has manifolds rotated 180°. |
| 241565 | 515 | D52911 | Has open downward port. Use inlet manifold 241557. |
| 26C022 | 515 | D52911 | Has split inlets/outlets. |
| 248171 | 515 | D51277 | Has split inlets/outlets. |
| 248172 | 515 | D51255 | Has split inlets/outlets. |
| 248173 | 515 | D52977 | Has split inlets/outlets. |
| 248174 | 515 | D52955 | Has split inlets/outlets. |
| 26B205 | 515 | D5BD06 | Has split inlets/outlets. |
| 25B493 | 515 | - - - | Conductive polypropylene inlets/outlets. |
| 25B494 | 515 | - - - | Conductive polypropylene inlets/outlets. |
| 25B495 | 515 | - - - | Conductive polypropylene inlets/outlets. |
| 25B496 | 515 | - - - | Conductive polypropylene inlets/outlets. |
| 25B497 | 515 | - - - | Conductive polypropylene inlets/outlets. |
| 246484 | 515 | D51331 | Has open downward port. Use inlet manifold 241558. Has downspout mounting plate 196093. |
| 26C092 | 515 | D51331 | Has open downward port. Use inlet manifold 241558. |
| 24G745 | 515 | - - - | Has BSPP threads. Use o-ring 110956 for Ref. 139. |
| 253344 | 515 | D51311 | Has open downward port. Use inlet manifold 241558. |
| 246485† | 716 | D53331 | Has open downward port. Use inlet manifold 190246. |
| 243305 | 716 | D53266 | Has open downward port. Use inlet manifold 190246. |
| 243306 | 716 | D53277 | Has open downward port. Use inlet manifold 190246. |
| 243307 | 716 | D53211 | Has open downward port. Use inlet manifold 190246. |
| 25D749 | 716 | D53211 | Has manifolds rotated 180°. |
| 257447 | 716 | D54311 | Was tested for use with moisture-sensitive materials. |
| 24B674 | 716 | D54311 | - - - |
| 24X781 | 716 | D54377 | Has a 3.1 cert. |
| 26B283 | 716 | 24N261 | Has BSPT porting. |
| Pumps with Overmolded Diaphragms | | | |
| 24N093 | 515 | D5291_ | Has overmolded diaphragm parts shown in table below. |
| 26C020 | 515 | 24N093 | Has split inlets/outlets. |
| 24N094 | 515 | D5B91_ | Has overmolded diaphragm parts shown in table below. |
| 24N095 | 515 | D55A1_ | Has overmolded diaphragm parts shown in table below. |
| 24N096 | 515 | D5121_ | Has overmolded diaphragm parts shown in table below. |
| 24N097 | 515 | D5133_ | Has overmolded diaphragm parts shown in table below. |
| 24N098 | 515 | D5A21_ | Has overmolded diaphragm parts shown in table below. |
| 24N257 | 716 | D5321_ | Has overmolded diaphragm parts shown in table below. |
| 24N258 | 716 | D5331_ | Has overmolded diaphragm parts shown in table below. |
| 24N259 | 716 | D5333_ | Has overmolded diaphragm parts shown in table below. |
| 24N260 | 716 | D5421_ | Has overmolded diaphragm parts shown in table below. |
| 24N261 | 716 | D5431_ | Has overmolded diaphragm parts shown in table below. |
| 24N262 | 716 | D5433_ | Has overmolded diaphragm parts shown in table below. |

† Mounting feet (186207) ordered separately.

| Ref | Part | Description | Qty |
|-----|--------|---|-----|
| 6 | 16M001 | PLATE, air side | 2 |
| 115 | ----- | not used | 0 |
| 133 | ----- | not used | 0 |
| 140 | ----- | not used | 0 |
| 401 | 16H679 | DIAPHRAGM, HD, overmolded, PTFE/EPDM, with setscrew | 2 |
| 402 | ----- | not used | 0 |

Husky 515 and Husky 716 Repair Kits

NOTE: Order Repair Kits separately.

To order the Air Valve Repair Kit, order Part No. 241657.

To order the Fluid Section Repair Kit, order **Part No. D05** __ __ __. For the last three digits, use the last three digits of your pump Model No.

The guides in **Part No. D__3__** pumps are powdered 316 stainless steel. Machined 316 stainless steel guides are available separately in a kit, **Part No. 24F846**.

Part No. 24N320: Husky 515/716 HD Overmolded PTFE/EPDM Diaphragm Repair Kit

Part No. 24N321: Husky 515/716 HD overmolded PTFE/EPDM Diaphragm Repair Kit, with new air side diaphragm plates.

Husky 515 and Husky 716 Common Parts

See the Pump Matrix on page 23 for an explanation of the Matrix Column and the Digit.

Air Motor Parts List (Matrix Column 2)

| Digit | Ref. No. | Part No. | Description | Qty. |
|-------|----------|----------|---------------------------------------|------|
| 4 & 5 | 1 | 114866 | PACKING, o-ring | 2 |
| | 2†, 416† | 108808 | PACKING, u-cup | 2 |
| | 3 | 112933 | MUFFLER | 1 |
| | 4† | 162942 | PACKING, o-ring | 2 |
| | 6 | 195025 | PLATE, diaphragm, air side | 2 |
| | 7† | 15Y825 | PLUNGER, carriage | 2 |
| | 8† | 192595 | CARRIAGE | 2 |
| | 9† | 192596 | PIN, carriage | 2 |
| | 10 | 192597 | COVER, valve chamber | 1 |
| | 11 | 192602 | HOUSING, center | 1 |
| | 11* | 194380 | HOUSING, center, includes Ref 16 & 17 | 1 |
| | 12 | 192765 | GASKET | 2 |
| | 13 | 194247 | COVER, exhaust | 1 |
| | 14† | 194269 | PLATE, valve | 1 |
| | 15 | 192601 | SHAFT, diaphragm | 1 |
| | 16* | 115671 | CONNECTOR, male | 2 |
| | 17* | 194381 | PIN | 2 |
| 9 | 1 | 114866 | PACKING, o-ring | 2 |
| | 2† | 108808 | PACKING, u-cup | 2 |
| | 3 | 112933 | MUFFLER | 1 |
| | 4† | 162942 | PACKING, o-ring | 2 |
| | 6 | 195025 | PLATE, diaphragm, air side | 2 |
| | 7† | 15Y825 | PLUNGER, carriage | 2 |
| | 8† | 192595 | CARRIAGE | 1 |
| | 8a†♦ | --- | CARRIAGE with magnet | 1 |
| | 9† | 192596 | PIN, carriage | 2 |
| | 10 | 192597 | COVER, valve chamber | 1 |
| | 11 | 192602 | HOUSING, center | 1 |
| | 12 | 192765 | GASKET | 2 |
| | 13 | 194247 | COVER, exhaust | 1 |
| | 14† | 194269 | PLATE, valve | 1 |
| | 15 | 192601 | SHAFT, diaphragm | 1 |
| | 18♦ | --- | SWITCH, reed | 1 |

† Included in Air Valve Repair Kit 241657 (column 2 = 4 or 5) or 25C469 (column 2 = 9)

* These parts are unique to the remote operated air motor.

♦ Included in Proximity Sensor Accessory Kit 241405
 --- not sold separately.

Guide Kits (Matrix Column 4)

| Digit | Ref. No. | Kit No. | Description | Qty. |
|-------|----------|---------|---------------------------|------|
| 2 | 201 | D05200 | GUIDE; acetal | 1 |
| | 202 | --- | STOP; acetal | |
| 3 | 201 | D05300 | GUIDE; sst | 1 |
| | 202 | --- | STOP; sst | |
| 9 | 201 | D05900 | GUIDE; polypropylene | 1 |
| | 202 | --- | STOP; polypropylene | |
| A | 201 | D05A00 | GUIDE; PVDF | 1 |
| | 202 | --- | STOP; PVDF | |
| D | 201 | D05D00 | SPACER; Acetal | 1 |
| | 202 | --- | VALVE, duckbill; Urethane | |

Kits include: 4 guides and 4 stops

Ball Kits (Matrix Column 5)

| Digit | Ref. No. | Kit No. | Description | Qty. |
|-------|----------|---------|-----------------------|------|
| 1 | 301 | D05010 | BALL; PTFE | 1 |
| 3 | 301 | D05030 | BALL; sst | 1 |
| 5 | 301 | D05050 | BALL; TPE | 1 |
| 6 | 301 | D05060 | BALL; Santoprene® | 1 |
| 7 | 301 | D05070 | BALL; Buna-N | 1 |
| 8 | 301 | D05080 | BALL; Fluoroelastomer | 1 |

Kits include: 4 check balls

Diaphragm Kit (Matrix Column 6)

| Digit | Ref. No. | Kit No. | Description | Qty. |
|-------|----------|---------|---------------------------------|------|
| 1 | 115 | --- | PACKING, o-ring | 1 |
| | 401 | D05001 | DIAPHRAGM; PTFE | |
| | 402 | --- | DIAPHRAGM, backup; Polyurethane | |
| 5 | 115 | --- | PACKING, o-ring | 1 |
| | 401 | D05005 | DIAPHRAGM; TPE | |
| | 402 | --- | Not required | |
| 6 | 115 | --- | PACKING, o-ring | 1 |
| | 401 | D05006 | DIAPHRAGM; Santoprene® | |
| | 402 | --- | Not required | |
| 7 | 115 | --- | PACKING, o-ring | 1 |
| | 401 | D05007 | DIAPHRAGM; Buna-N | |
| | 402 | --- | Not required | |
| 8 | 115 | --- | PACKING, o-ring | 1 |
| | 401 | D05008 | DIAPHRAGM; Fluoroelastomer | |
| | 402 | --- | Not required | |

Kits include: 2 diaphragms, 2 backup diaphragms (if required), and 2 o-rings

Complete Fluid Section Repair Kits

Kit descriptions appear in the following order: *Pump model, seat material, ball material, diaphragm material, gasket material.* For example, *515/716 IN, SS,SS,FK,FKP.*

| Kit No. | Description | Qty. |
|---------|--------------------------|------|
| D05338 | 515/716 IN, SS,SS,FK,FKP | 1 |
| D05337 | 515/716 IN, SS,SS,BN,FKP | 1 |
| D05336 | 515/716 IN, SS,SS,SP,FKP | 1 |
| D05331 | 515/716 IN, SS,SS,PT,FKP | 1 |
| D05368 | 515/716 IN, SS,SP,FK,FKP | 1 |
| D05315 | 515/716 IN, SS,PT,TP,FKP | 1 |
| D05366 | 515/716 IN, SS,SP,SP,FKP | 1 |
| D05361 | 515/716 IN, SS,SP,PT,FKP | 1 |
| D05335 | 515/716 IN, SS,SS,TP,FKP | 1 |
| D05355 | 515/716 IN, SS,TP,TP,FKP | 1 |
| D05277 | 515/716 IN, AC,BN,BN,FKP | 1 |
| D05275 | 515/716 IN, AC,BN,TP,FKP | 1 |
| D05288 | 515/716 IN, AC,FK,FK,FKP | 1 |
| D05237 | 515/716 IN, AC,SS,BN,FKP | 1 |
| D05266 | 515/716 IN, AC,SP,SP,FKP | 1 |
| D05236 | 515/716 IN, AC,SS,SP,FKP | 1 |
| D05231 | 515/716 IN, AC,SS,PT,FKP | 1 |
| D05215 | 515/716 IN, AC,PT,TP,FKP | 1 |
| D05218 | 515/716 IN, AC,PT,FK,FKP | 1 |
| D05211 | 515/716 IN, AC,PT,PT,FKP | 1 |
| 26C887 | 515/716 IN, AC,PT,PO,FKP | 1 |
| D05A66 | 515/716 IN, PV,SP,SP,FKP | 1 |
| D05A16 | 515/716 IN, PV,PT,SP,FKP | 1 |
| D05A11 | 515/716 IN, PV,PT,PT,FKP | 1 |
| D05955 | 515/716 IN, PP,TP,TP,FKP | 1 |
| 26C890 | 515/716 IN, PV,PT,PO,FKP | 1 |
| D05A88 | 515/716 IN, PV,FK,FK,FKP | 1 |
| D05377 | 515/716 IN, SS,BN,BN,FKP | 1 |
| D05318 | 515/716 IN, SS,PT,FK,FKP | 1 |
| D05311 | 515/716 IN, SS,PT,PT,FKP | 1 |
| 26C888 | 515/716 IN, SS,PT,PO,FKP | 1 |
| D05385 | 515/716 IN, SS,FK,TP,FKP | 1 |
| D05378 | 515/716 IN, SS,BN,FK,FKP | 1 |
| D05381 | 515/716 IN, SS,FK,PT,FKP | 1 |
| D05988 | 515/716 IN, SS,FK,FK,FKP | 1 |
| D05981 | 515/716 IN, PP,FK,PT,FKP | 1 |
| D05988 | 515/716 IN, PP,FK,FK,FKP | 1 |
| D05918 | 515/716 IN, PP,PT,FK,FKP | 1 |
| D05255 | 515/716 IN, AC,TP,TP,FKP | 1 |
| D05977 | 515/716 IN, PP,BN,BN,FKP | 1 |
| 26C889 | 515/716 IN, PP,PT,PO,FKP | 1 |
| D05937 | 515/716 IN, PP,SS,BN,FKP | 1 |
| D05966 | 515/716 IN, PP,SP,SP,FKP | 1 |
| D05936 | 515/716 IN, PP,SS,SP,FKP | 1 |

| Kit No. | Description | Qty. |
|---------|-----------------------------|------|
| D05931 | 515/716 IN, PP,SS,PT,FKP | 1 |
| D05961 | 515/716 IN, PP,SP,PT,FKP | 1 |
| D05916 | 515/716 IN, PP,PT,SP,FKP | 1 |
| D05911 | 515/716 IN, PP,PT,PT,FKP | 1 |
| D05968 | 515/716 IN, PP,SP,FK,FKP | 1 |
| D05915 | 515/716 IN, PP,PT,TP,FKP | 1 |
| D05D07 | 515/716 IN UD, --,BN,FKP,TP | 1 |

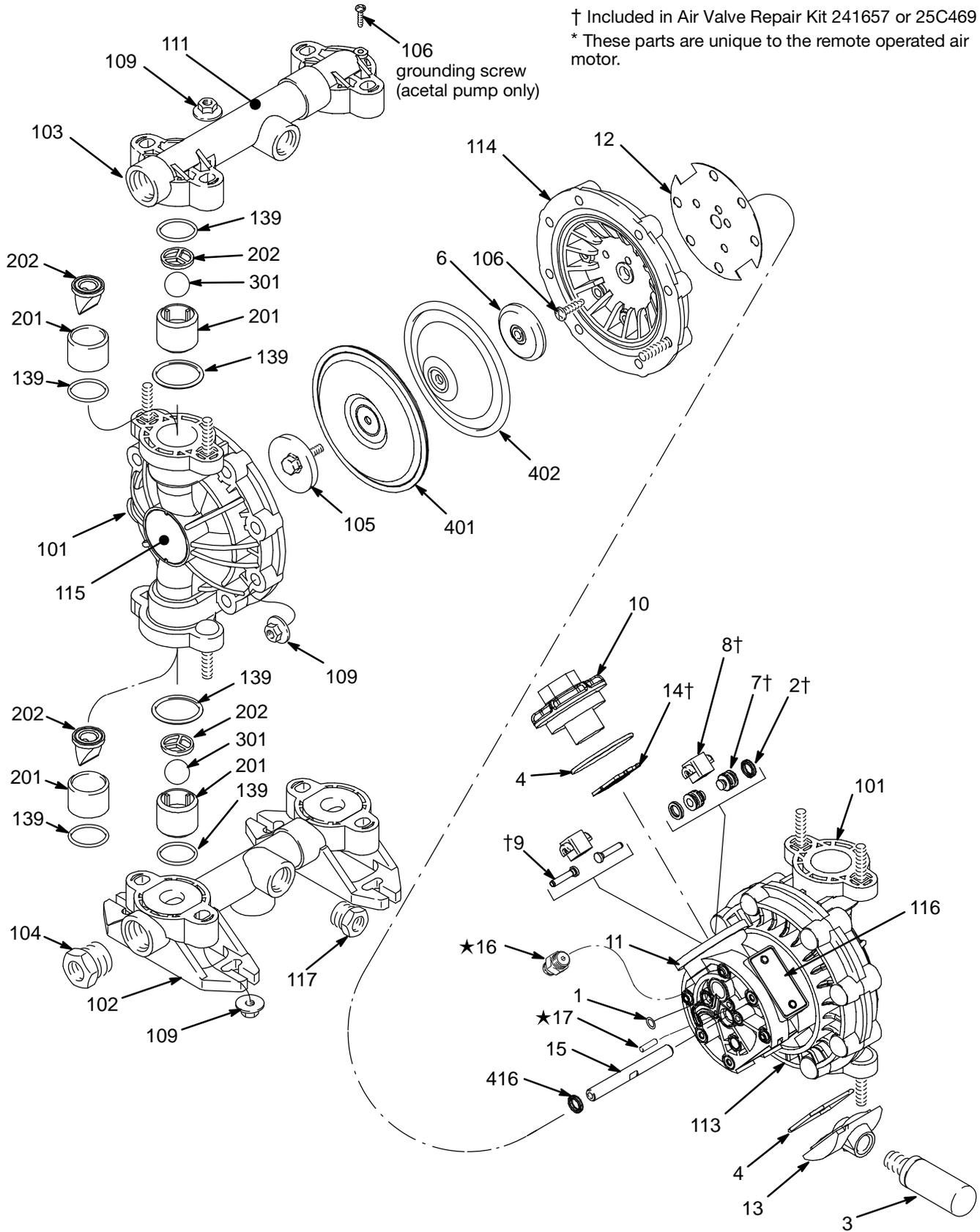
Kits include:

- 4 ball stops or valves (202)
- 4 ball guides or spacers (201)
- 4 balls (301)
- 2 diaphragms (401)
- 2 diaphragm backers (402), if applicable
- 8 o-rings (139), PTFE
- 8 o-rings (139), Encapsulated
- 2 o-rings (115)

Husky 515 Parts Drawing

† Included in Air Valve Repair Kit 241657 or 25C469

* These parts are unique to the remote operated air motor.



9064B

Husky 515 Fluid Section Parts List

See the Pump Matrix on page 23 for an explanation of the Matrix Column and the Digit.
See page 26 for Air Motor Parts List (Matrix Column 2)

Husky 515 Fluid Section Parts List (Matrix Column 3)

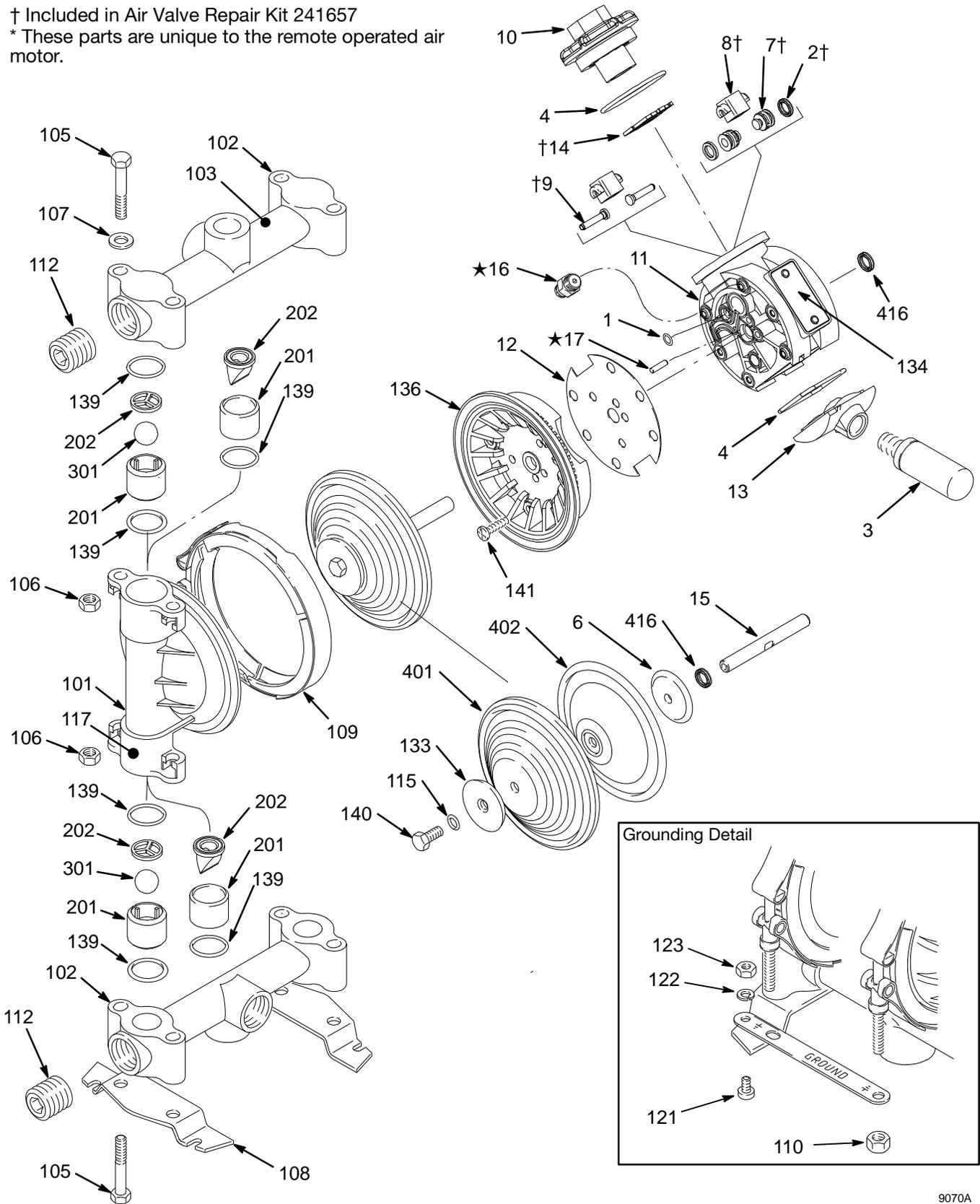
| Ref. No. | Acetal Pumps Digit: 1 (NPT) Digit: A (BSPT) | | | Polypropylene Pumps Digit: 2 (NPT) Digit: B (BSPT) | | | PVDF Pumps Digit: 5 (NPT) Digit: E (BSPT) | | |
|----------|---|--|------|--|---|------|---|---|------|
| | Part No. | Description | Qty. | Part No. | Description | Qty. | Part No. | Description | Qty. |
| 101 | 192559 | COVER, fluid; acetal | 2 | 192558 | COVER, fluid; polypropylene | 2 | 192560 | COVER, fluid; PVDF | 2 |
| 102 | 192571 | MANIFOLD, inlet; acetal; NPT | 1 | 192570 | MANIFOLD, inlet; polypropylene; NPT | 1 | 192572 | MANIFOLD, inlet; PVDF; NPT | 1 |
| 102 | 192576 | MANIFOLD, inlet; acetal; BSPT | 1 | 192575 | MANIFOLD, inlet; polypropylene; BSPT | 1 | 192577 | MANIFOLD, inlet; PVDF; BSPT | 1 |
| 102* | 241558 | MANIFOLD, inlet; open downspout, acetal; NPT | 1 | 241557 | MANIFOLD, inlet; open downspout, polypropylene; NPT | 1 | | Not applicable to PVDF pumps | |
| 102 | | | | 124847 | MANIFOLD, inlet; polypropylene; BSPP | 1 | | | |
| 103 | 192562 | MANIFOLD, outlet; acetal; NPT | 1 | 192561 | MANIFOLD, outlet; polypropylene; NPT | 1 | 192563 | MANIFOLD, outlet; PVDF; NPT | 1 |
| 103 | 192567 | MANIFOLD, outlet; acetal; BSPT | 1 | 192566 | MANIFOLD, outlet; polypropylene; BSPT | 1 | 192568 | MANIFOLD, outlet; PVDF; BSPT | 1 |
| 103 | | | | 124848 | MANIFOLD, outlet; polypropylene; BSPP | 1 | | | |
| 104 | 194362 | PLUG; acetal; 3/4 NPT | 2 | 194361 | PLUG; polypropylene; 3/4 NPT | 2 | 194363 | PLUG; PVDF; 3/4 NPT | 2 |
| 104 | 194368 | PLUG; acetal; 3/4 BSPT | 2 | 194367 | PLUG; polypropylene; 3/4 BSPT | 2 | 194369 | PLUG; PVDF; 3/4 BSPT | 2 |
| 105 | 187711 | PLATE, diaphragm, fluid; acetal | 2 | 187712 | PLATE, diaphragm, fluid; polypropylene | 2 | 192679 | PLATE, diaphragm, fluid; PVDF | 2 |
| 106 | 114882 | SCREW, torx | 13 | 114882 | SCREW, torx | 12 | 114882 | SCREW, torx | 12 |
| 109 | 114850 | NUT, hex, large flng | 24 | 114850 | NUT, hex, large flng | 24 | 114850 | NUT, hex, large flng | 24 |
| 111 | 187732 | LABEL, warning | 1 | 187732 | LABEL, warning | 1 | 187732 | LABEL, warning | 1 |
| 113 | 192599 | COVER, air, right | 1 | 192599 | COVER, air, right | 1 | 192599 | COVER, air, right | 1 |
| 114 | 192600 | COVER, air, left | 1 | 192600 | COVER, air, left | 1 | 192600 | COVER, air, left | 1 |
| 115 | 194352 | LABEL, identification | 2 | 194352 | LABEL, identification | 2 | 194352 | LABEL, identification | 2 |
| 116 | 290045 | PLATE, designation | 1 | 290045 | PLATE, designation | 1 | 290045 | PLATE, designation | 1 |
| 117 | 194359 | PLUG; acetal; 1/2 NPT | 2 | 194358 | PLUG; polypropylene; 1/2 NPT | 2 | 194360 | PLUG; PVDF; 1/2 NPT | 2 |
| 117 | 194365 | PLUG, acetal; 1/2 BSPT | 2 | 194364 | PLUG; polypropylene; 1/2 BSPT | 2 | 194366 | PLUG; PVDF; 1/2 BSPT | 2 |
| 119 | 111183 | RIVET (for plate 116) | 2 | 111183 | RIVET (for plate 116) | 2 | 111183 | RIVET (for plate 116) | 2 |
| 139 | D05000 | PACKING, o-ring; encapsulated, kit of 8 | 8 | D05000 | PACKING, o-ring; encapsulated, kit of 8 | 8 | D05000 | PACKING, o-ring; encapsulated, kit of 8 | 8 |

* Inlet manifolds with downspouts are used on pump models 241564, 241565, 246484, 253344, and 26C092 only.

Husky 716 Parts Drawing

† Included in Air Valve Repair Kit 241657

* These parts are unique to the remote operated air motor.



9070A

Husky 716 Fluid Section Parts List

See the Pump Matrix on page 23 for an explanation of the Matrix Column and the Digit.
See page 26 for Air Motor Parts List (Matrix Column 2)

Husky 716 Fluid Section Parts List (Matrix Column 3)

| Ref. No. | Aluminum Pumps Digit: 3 (NPT) Digit: C (BSPT) | | | Stainless Steel (sst) Pumps Digit: 4 (NPT) Digit: D (BSPT) | | |
|----------|---|-----------------------------------|------|--|--|------|
| | Part No. | Description | Qty. | Part No. | Description | Qty. |
| 101 | 185622 | COVER, fluid; aluminum | 2 | 187241 | COVER, fluid; sst | 2 |
| 102* | 185624 | MANIFOLD; aluminum; NPT | 2 | 187244 | MANIFOLD; sst | 2 |
| 102 | 192061 | MANIFOLD; aluminum; BSPT | 2 | 192060 | MANIFOLD; sst; BSPT | 2 |
| 102* | 190246 | MANIFOLD; aluminum; NPT | 2 | | | |
| 103 | 189220 | LABEL, warning | 1 | 189220 | LABEL, warning | 1 |
| 105 | 112912 | SCREW; 3/8-16; 2.25 in. (57.2 mm) | 8 | 112912 | SCREW; 3/8-16; 2.25 in. (57.2 mm) | 8 |
| 106 | 112913 | NUT, hex; 3/8-16; sst | 8 | 112913 | NUT, hex; 3/8-16; sst | 8 |
| 107 | 112914 | WASHER, flat; 3/8 in.; sst | 4 | 112914 | WASHER, flat; 3/8 in.; sst | 4 |
| 108 | 186207 | BASE, feet | 2 | 186207 | BASE, feet | 2 |
| 109 | 189540 | CLAMP, vee | 2 | 189540 | CLAMP, vee | 2 |
| 110 | 112499 | NUT, clamp; 1/4-28 | 2 | 112499 | NUT, clamp; 1/4-28 | 2 |
| 111 | 191079 | STRIP, grounding | 1 | 191079 | STRIP, grounding | 1 |
| 112 | 102726 | PLUG, steel; NPT | 2 | 111384 | PLUG, steel; NPT | 2 |
| 112 | 113989 | PLUG, steel; BSPT | 2 | 113990 | PLUG, steel; BSPT | 2 |
| 112 | 24H344 | PLUG, sst; BSPP with seal | 2 | | | |
| 115 | 110004 | O-RING; PTFE | 2 | 110004 | O-RING; PTFE | 2 |
| 117 | 186205 | LABEL, warning | 1 | | | |
| 121 | 102790 | SCREW; 10-24; 0.31 in. (8 mm) | 1 | 102790 | SCREW; 10-24; 0.31 in. (8 mm) | 1 |
| 122 | 100718 | LOCKWASHER; #10 | 1 | 100718 | LOCKWASHER; #10 | 1 |
| 123 | 100179 | NUT, hex; 10-24 | 1 | 100179 | NUT, hex; 10-24 | 1 |
| 133 | 191837 | PLATE, diaphragm, fluid side; sst | 2 | 16M908 | PLATE, diaphragm, fluid side; sst machined | 2 |
| 134 | 290045 | PLATE, designation | 1 | 290045 | PLATE, designation | 1 |
| 136 | 194246 | COVER air | 2 | 194246 | COVER air | 2 |
| 139 | 26B522 | O-RING; PTFE, kit of 8 | 8 | 26B522 | O-RING; PTFE, kit of 8 | 8 |
| 140 | 113747 | SCREW, flange; hex head | 2 | 113747 | SCREW, flange; hex head | 2 |
| 141 | 114882 | SCREW, machine, torx | 12 | 114882 | SCREW, machine, torx | 12 |
| 142 | 111183 | RIVET (for plate 134) | 2 | 111183 | RIVET (for plate 134) | 2 |

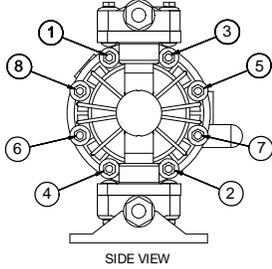
* Pump model numbers 243305, 243306, 243307, and 246485 have one 190246 inlet manifold and one 185624 outlet manifold.

Torque Sequence

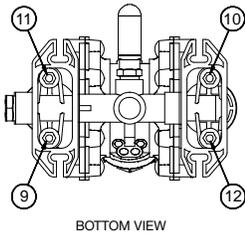
Always follow torque sequence when instructed to torque fasteners.

Husky 515

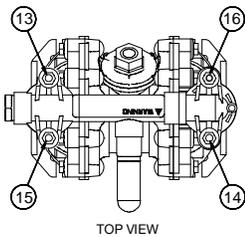
1. Left/Right Fluid Covers
Torque bolts to 80-90 in-lb (9-10 N•m)



2. Inlet Manifold
Torque bolts to 80-90 in-lb (9-10 N•m)

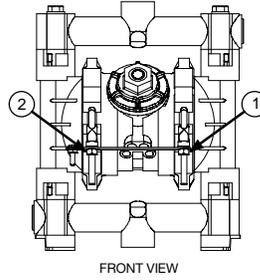


3. Outlet Manifold
Torque bolts to 80-90 in-lb (9-10 N•m)

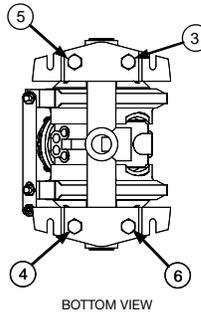


Husky 716

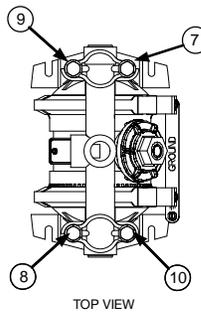
1. Left/Right Fluid Covers
Torque bolts to 80-90 in-lb (9-10 N•m)



2. Inlet Manifold
Torque bolts to 80-90 in-lb (9-10 N•m)



3. Outlet Manifold
Torque bolts to 80-90 in-lb (9-10 N•m)



Husky 515 Technical Data

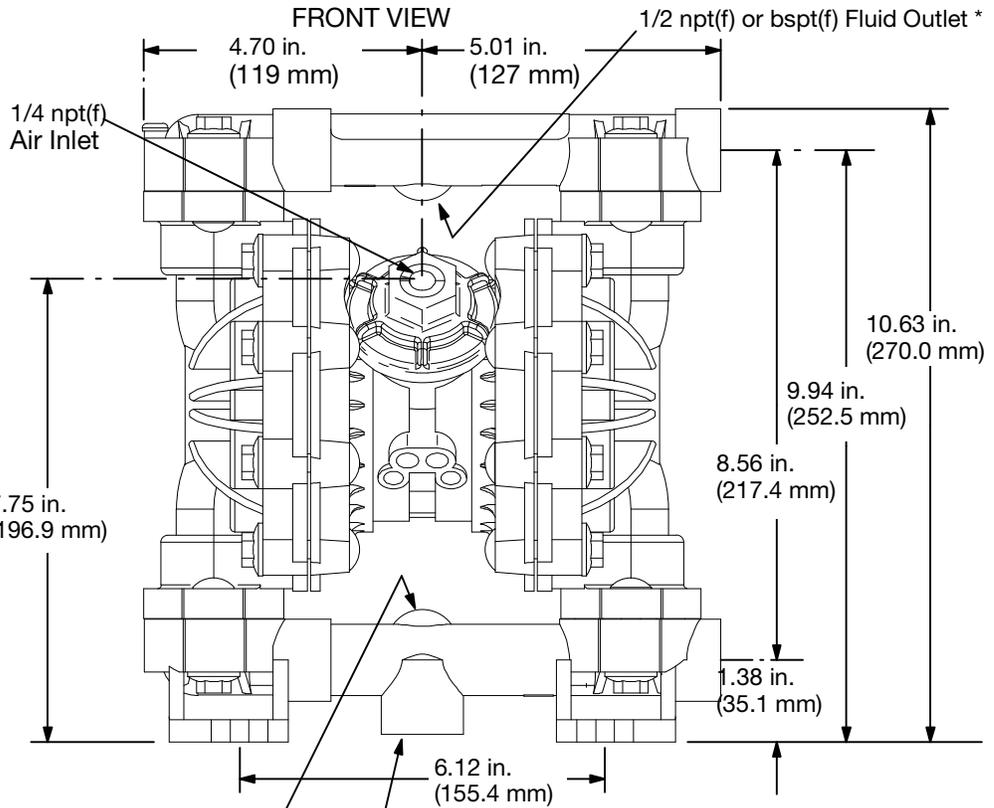
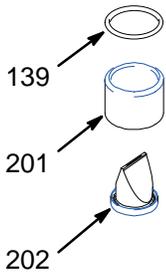
| | |
|---|---|
| Maximum fluid working pressure | 100 psi (0.7 MPa, 7 bar) |
| Air pressure operating range | 30 to 100 psi (0.2 to 0.7 MPa, 2.1 to 7 bar) |
| Operating Temperature Range* | |
| Acetal: | 32° to 180°F (0° to 82°C) |
| Polypropylene: | 32° to 175°F (0° to 79°C) |
| PVDF: | 32° to 200°F (0° to 93°C) |
| Aluminum and Stainless Steel: | 32° to 225°F (0° to 107°C) |
| Flooded volume | 0.115 gal. (0.435 liters) |
| Maximum air consumption | .28 scfm (0.672 cubic meters/min.) |
| Maximum free flow delivery (1/2 in. ports) | 15 gpm (57 l/min) |
| Maximum pump speed | 400 cpm |
| Gallons (Liters) per cycle | .04 (0.15) |
| Maximum suction lift (water w/buna balls) | 15 ft (4.5 m) dry, 25 ft (7.6 m) wet |
| Maximum size pumpable solids | .3/32 in. (2.5 mm) |
| Sound power level (measured per ISO standard 9614-2) | |
| At 70 psig (0.48 MPa, 4.8 bar) at 50 cycles per minute | 77 dBA |
| At 100 psig (0.7 MPa, 7 bar) at maximum cycles per minute | 95 dBA |
| Sound pressure level (measured 1 meter from pump) | |
| At 70 psig (0.48 MPa, 4.8 bar) at 50 cycles per minute | 67 dBA |
| At 100 psig (0.7 MPa, 7 bar) at maximum cycles per minute | 85 dBA |
| Air inlet size | 1/4 npt(f) |
| Air exhaust port size | 3/8 npt(f) |
| Fluid inlet size | 1/2 and 3/4 in. npt(f) or bspt(f) |
| Fluid outlet size | 1/2 and 3/4 in. npt(f) or bspt(f) |
| Wetted parts (in addition to ball, seat, and diaphragm materials, which vary by pump) | |
| Polypropylene pumps | polypropylene, PTFE |
| Acetal pumps | groundable acetal, PTFE |
| PVDF pumps | PVDF, PTFE |
| Non-wetted external parts | polypropylene, stainless steel, polyester and aluminum (labels), nickel-plated brass |
| Weight (approximate) | |
| Polypropylene pumps | 6.5 lb (2.9 kg) |
| Acetal pumps | 7.8 lb (3.5 kg) |
| PVDF pumps | 8.5 lb (3.9 kg) |

*These temperatures are based on mechanical stress only and may be altered significantly by pumping certain chemicals. Consult engineering guides for chemical compatibilities and temperature limits, or contact your Graco distributor.

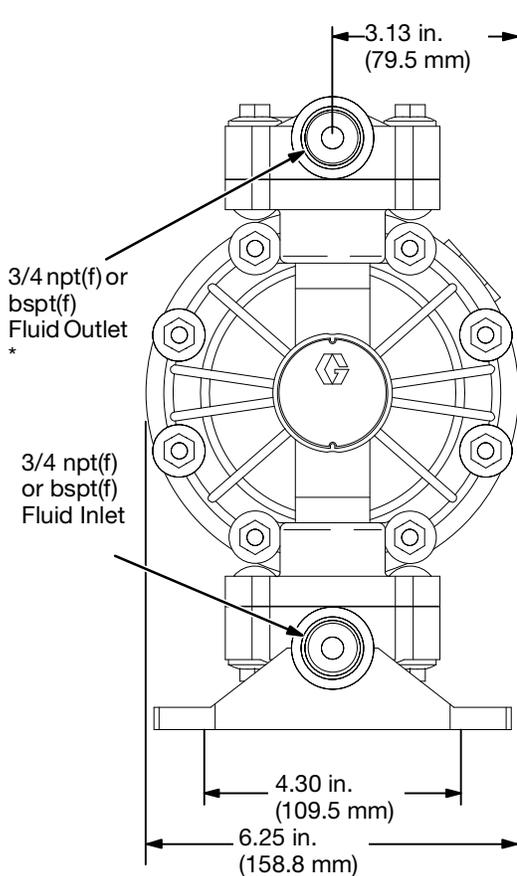
Santoprene® is a registered trademark of the Monsanto Company.

Husky 515 Dimensions

* Pumps with duckbill check valves are shipped with the inlet manifold on top and the outlet manifold on the bottom. To make the inlet manifold on the bottom and the outlet manifold on the top, rotate each of the four duckbill assemblies vertically 180° as shown below.



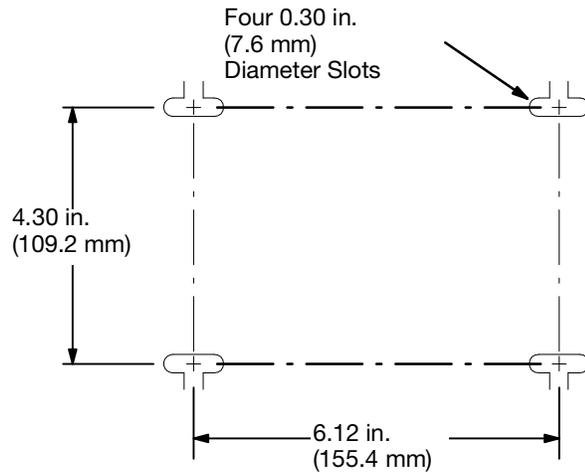
SIDE VIEW



1/2 npt(f) or bspt(f) Fluid Inlet *

NOTE: Bottom port open on 241564, 241565 and 246484 only.

PUMP MOUNTING HOLE PATTERN



9077A

Husky 716 Technical Data

| | |
|---|---|
| Maximum fluid working pressure | 100 psi (0.7 MPa, 7 bar) |
| Air pressure operating range | 30 to 100 psi (0.2 to 0.7 MPa, 2.1 to 7 bar) |
| Operating Temperature Range* | |
| Acetal: | 32° to 180°F (0° to 82°C) |
| Polypropylene: | 32° to 175°F (0° to 79°C) |
| PVDF: | 32° to 200°F (0° to 93°C) |
| Aluminum and Stainless Steel: | 32° to 225°F (0° to 107°C) |
| Flooded volume | 0.142 gal. (0.538 liters) |
| Maximum air consumption | .28 scfm (0.672 cubic meters/min.) |
| Maximum free flow delivery | 16 gpm (61 l/min) |
| Maximum pump speed | 400 cpm |
| Gallons (Liters) per cycle | 0.04(0.15) |
| Maximum suction lift (water w/buna balls | 15 ft (4.5 m) dry, 25 ft (7.6 m) wet |
| Maximum size pumpable solids | .3/32 in. (2.5 mm) |
| Sound power level (measured per ISO standard 9614-2) | |
| At 70 psig (0.48 MPa, 4.8 bar) at 50 cycles per minute | 77 dBa |
| At 100 psig (0.7 MPa, 7 bar) at maximum cycles per minute | 95 dBa |
| Sound pressure level (measured 1 meter from pump) | |
| At 70 psig (0.48 MPa, 4.8 bar) at 50 cycles per minute | 67 dBa |
| At 100 psig (0.7 MPa, 7 bar) at maximum cycles per minute | 85 dBa |
| Air inlet size | 1/4 npt(f) |
| Air exhaust port size | 3/8 npt(f) |
| Fluid inlet size | 3/4 npt(f), bspt(f) or bspp(f) |
| Fluid outlet size | 3/4 npt(f), bspt(f) or bspp(f) |
| Wetted parts (in addition to ball, seat, and diaphragm materials, which vary by pump) | |
| Aluminum pumps | aluminum, stainless steel, PTFE, zinc-plated steel |
| Stainless steel pumps | 316 stainless steel, PTFE |
| Non-wetted external parts | polypropylene, stainless steel, polyester (labels), nickel-plated brass, epoxy-coated steel (feet) |
| Weight (approximate) | |
| Aluminum pumps | 8.5 lb (3.9 kg) |
| Stainless steel pumps | 18 lb (8.2 kg) |

*These temperatures are based on mechanical stress only and may be altered significantly by pumping certain chemicals. Consult engineering guides for chemical compatibilities and temperature limits, or contact your Graco distributor.

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Reed Switch Technical Data

Contact Ratings

State Normally open
Voltage 200 VDC Max
Current 500 mA Max Switching
..... 800 mA Max Carry
Power 10 W Max
Resistance 100 mohm Max Initial
Ambient Temperature -40°C to 105°C (-40°F to 221°F)

Ex Ratings

Classification "simple apparatus" in accordance with UL/EN/IEC 60079-11, clause 5.7

Class I, Div 1, Group A, B, C, D T4
 $-40^{\circ}\text{C} \leq T_a \leq 60^{\circ}\text{C}$

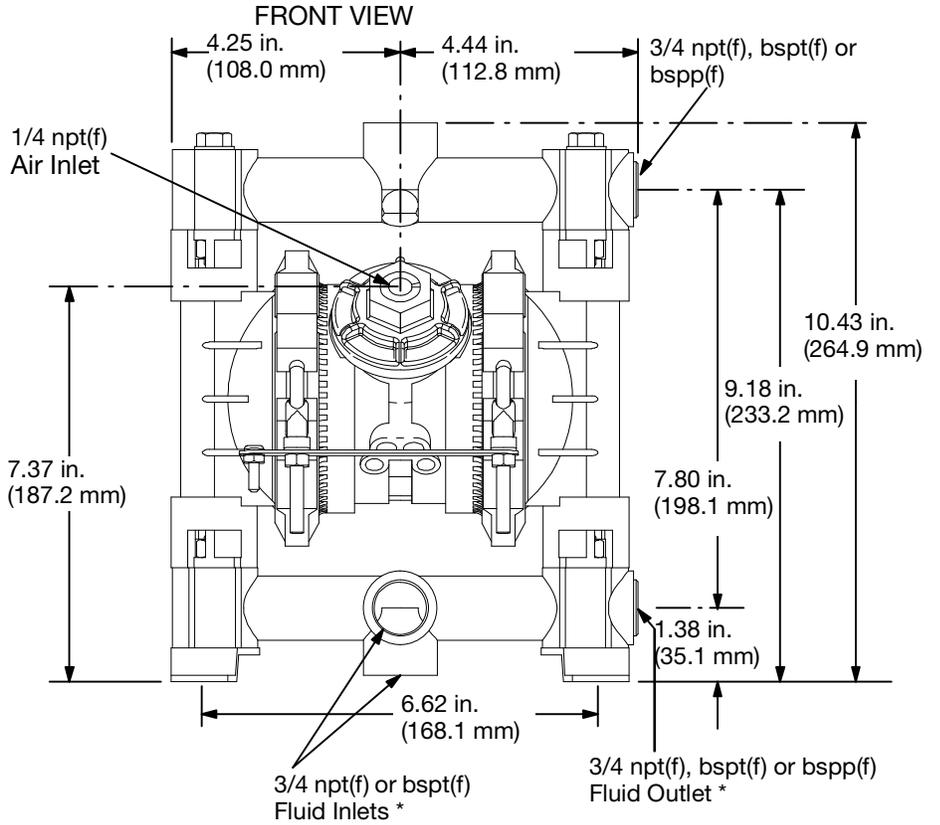
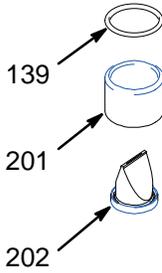


Ex ia IIC T4 Ga
 $-40^{\circ}\text{C} \leq T_a \leq 60^{\circ}\text{C}$

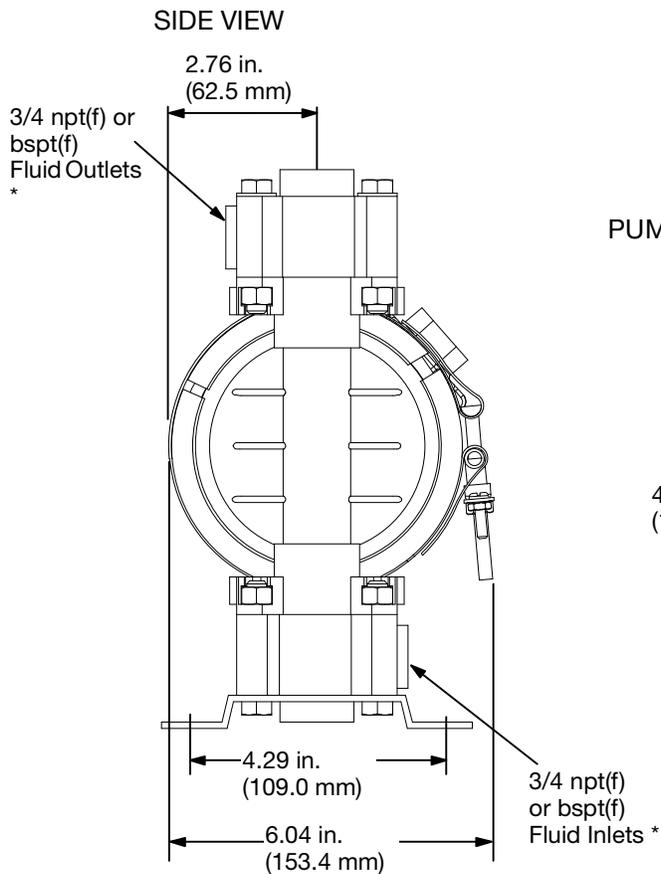
.....
Parameters $U_i = 45\text{ V}$
..... $I_i = 500\text{ mA}$
..... $P_i = 1.2\text{ W}$
..... $C_i = 251\text{ pF}$
..... $L_i = 1.01\text{ }\mu\text{H}$

Husky 716 Dimensions

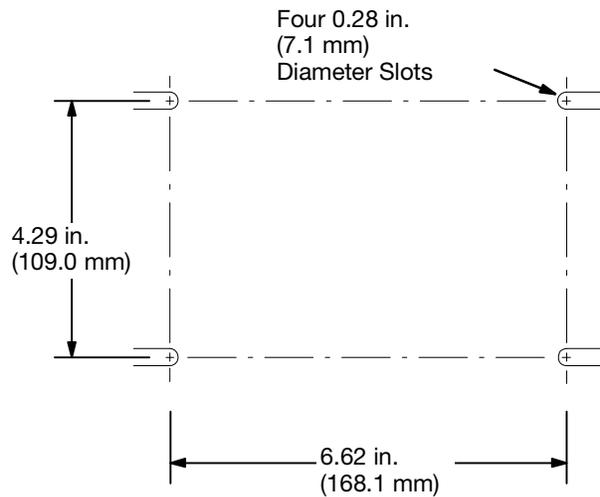
* Pumps with duckbill check valves are shipped with the inlet manifold on top and the outlet manifold on the bottom. To make the inlet manifold on the bottom and the outlet manifold on the top, rotate each of the four duckbill assemblies vertically 180° as shown below.



NOTE: Bottom port open on 243305, 243306, 243307 and 246485 only.



PUMP MOUNTING HOLE PATTERN

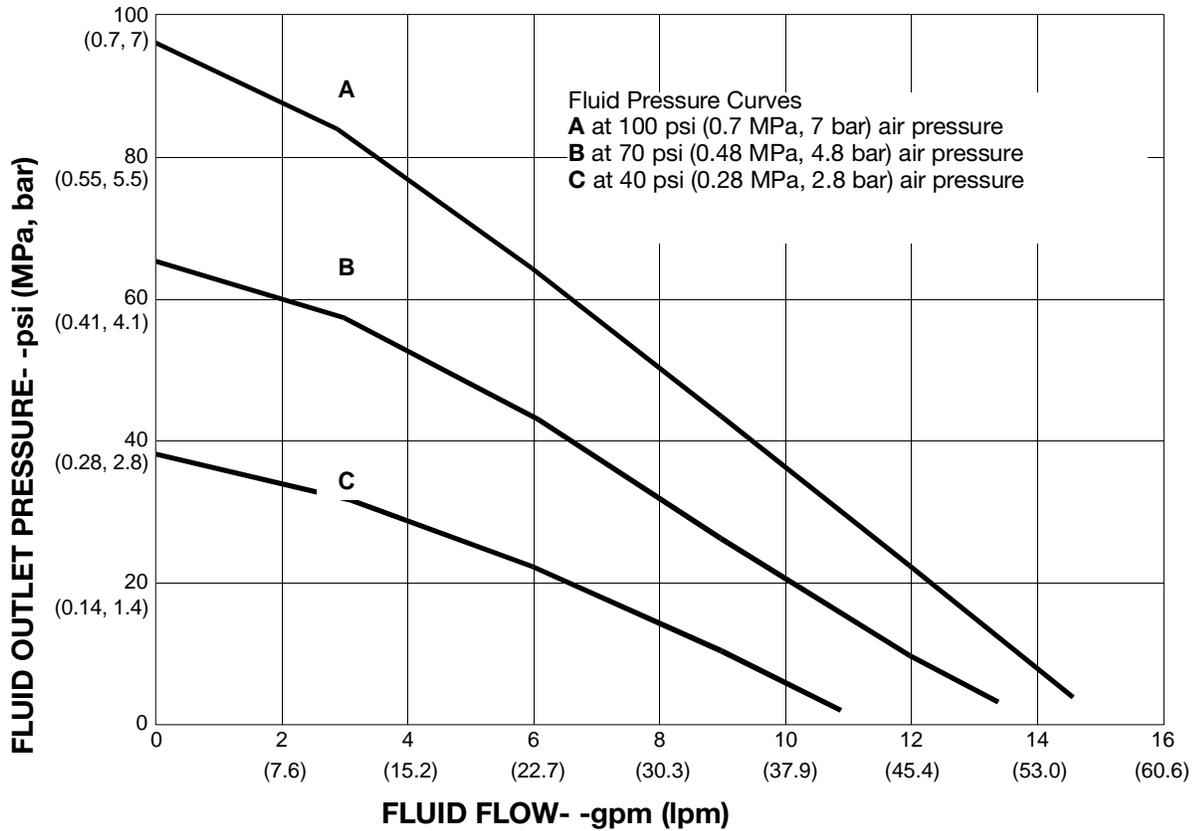


9078A

Husky 515 and 716 Performance Charts

Fluid Outlet Pressure

Test Conditions: Pump tested in water with inlet submerged.



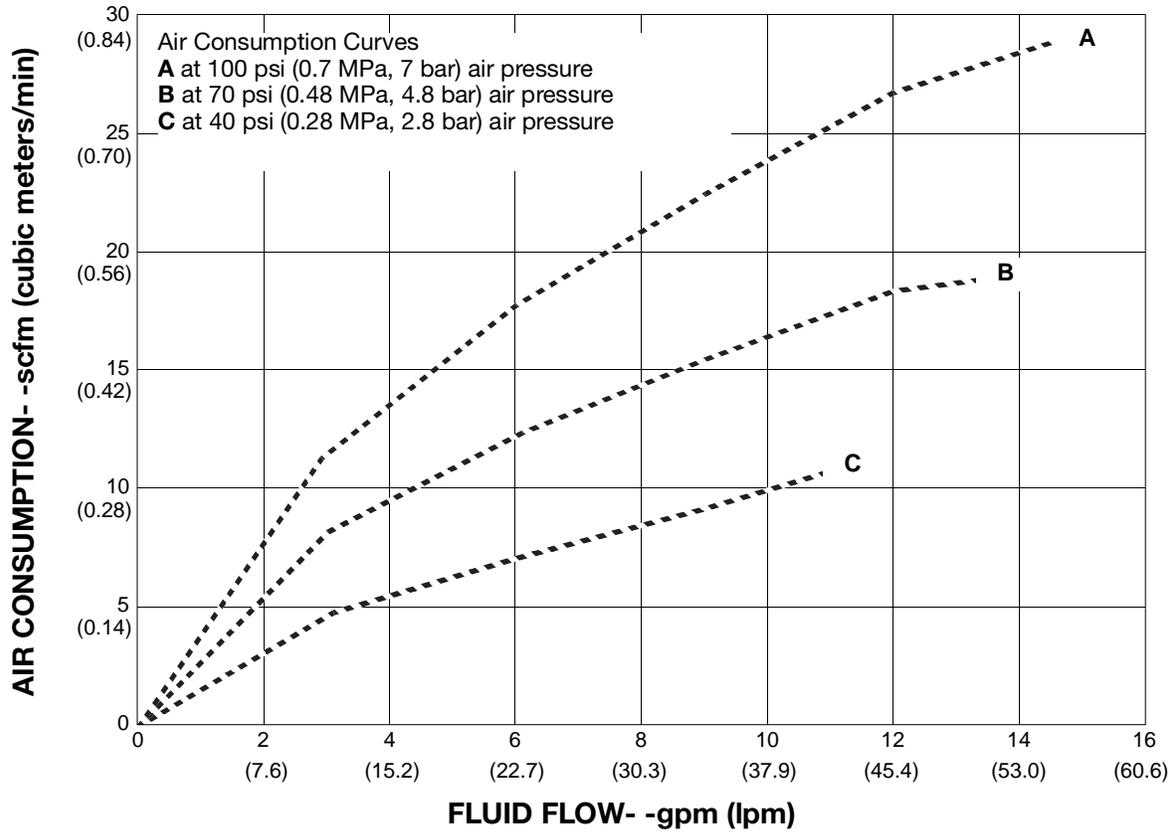
To find Fluid Outlet Pressure (psi/MPa/bar) at a specific fluid flow (gpm/lpm) and operating air pressure (psi/MPa/bar):

1. Locate fluid flow rate along bottom of chart.
2. Follow vertical line up to intersection with selected fluid outlet pressure curve.
3. Follow left to scale to read fluid outlet pressure.

Husky 515 and 716 Performance Charts

Air Consumption

Test Conditions: Pump tested in water with inlet submerged.



To find Pump Air Consumption (scfm or m³/min) at a specific fluid flow (gpm/lpm) and air pressure (psi/MPa/bar):

1. Locate fluid flow rate along bottom of chart.
2. Read vertical line up to intersection with selected air consumption curve.
3. Follow left to scale to read air consumption.

California Proposition 65

CALIFORNIA RESIDENTS

⚠ WARNING: Cancer and reproductive harm – www.P65warnings.ca.gov.

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Original instructions. This manual contains English. MM 308981

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