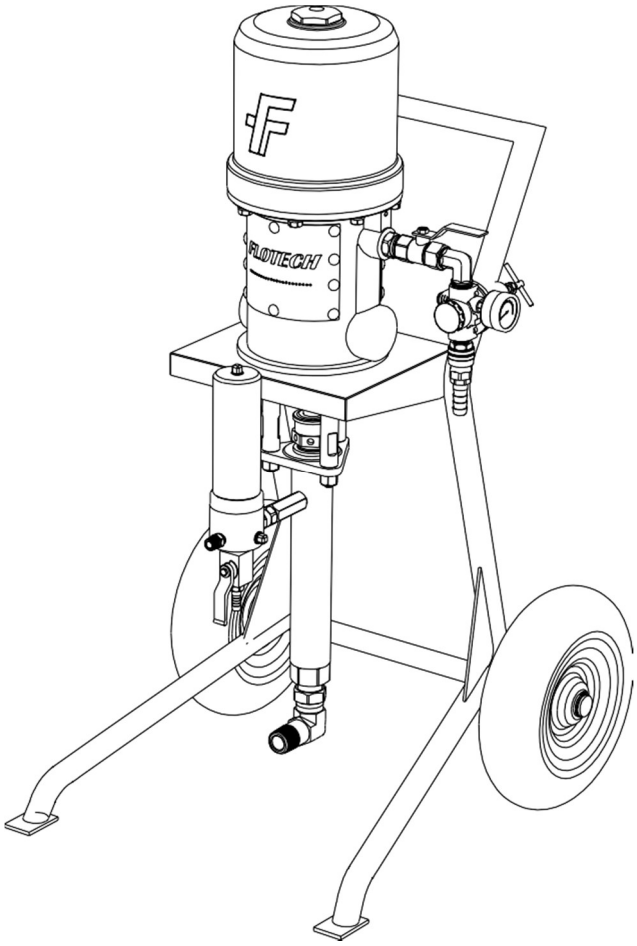
# REPAIR INSTRUCTIONS

Rev 1

## MODEL : DK301-000

## 30:1 Ratio Pump

*3000PSI (21.0 MPa, 210 bar) Maximum Fluid Working Persure*
*100psi (0.7 MPa, 7bar) Maximum Air Input Pressure*




*This manual contains important warning and information.*
Read and keep reference.

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# WARNING

**INJECTION HAZARD**

Spray from the spray gun, hose leaks or ruptured components can inject fluid into your body and cause extremely serious injury, including the need for amputation. Splashing fluid in the eyes or on the skin can also cause can also cause serious injury.

_ Fluid injected into the skin is a serious injury. The injury may look like just a cut, but it is a serious injury. **Get immediate medical attention.**
_ Do not point the gun at anyone or any part of the body.
_ Do not put hand or fingers over the spray tip.
_ Do not stop or deflect leaks with your hand, body, glove or rag.
_ Do not “blow back” fluid; this is not an air spray system.
_ Always have the tip guard on the spray gun when spraying
_ Check the spray gun diffuser (if so equipped) operation weekly. Refer to the gun manual.
_ Be sure the spray gun safety knob operates before operating the gun.
_ Lock the spray gun safety knob when you stop spraying.
_ Tighten all fluid connections before each use.
_ Check the hoses, tubes and couplings daily. Replace worn or damaged parts immediately. Permanently coupled hoses cannot be repaired.
_ Handle and route hoses and tubes carefully. Keep hoses and tubes away from moving parts and hot surfaces. Do not use the hoses to pull equipment. Do not expose FLOTECH hoses to temperatures
above 150_F (66_C) or below –40_F (–40_C).

**EQUIPMENT MISUSE HAZARD**

Equipment misuse can cause the equipment to rupture, malfunction, or start unexpectedly 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 uncertain about the usage, call your distributor.
_ Do not alter or modify this equipment. Use only genuine FLOTECH parts and accessories.
_ Check the equipment daily. Repair or replace worn or damaged parts immediately.
_ Do not exceed the maximum working pressure of the lowest rated system component. This equipment as a **5000 psi (345bar) maximum working pressure.**
_ Do not lift pressurized equipment.
_ Route the hoses away from the traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose FLOTECH hoses to temperatures above 150_F (66_C) or below –40_F (–40_C).
_ Do not use the hoses to pull the equipment.
_ Use fluids or solvents that are compatible with the equipment wetted parts. See the **Technical Data** section of all the equipment manuals. Read the fluid and solvent manufacturer’s warnings.
_ Fluid hoses must have spring guards on both ends to protect them from rupture caused by kinks or bends near the couplings.
_ Comply with all applicable local, state and national fire, electrical and other safety regulations.

**TOXIC FLUID HAZARD**

Hazardous fluids or toxic fumes can cause a 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.
_ Store hazardous fluid in an approved container. Dispose hazardous fluid according to all local, state and national guidelines.
_ Always wear protective eyewear, gloves, clothing and recommended by the fluid and solvent manufacturer.

**MOVING PARTS HAZARD**

Moving parts, such as the air motor piston and the secondary pump lever and connecting rod area, can pinch or amputate fingers.

_ Do not operate the equipment with the air motor plates removed.
_ Keep your body and tools clear of any moving parts when starting or operating the equipment.

**FIRE AND EXPLOSION HAZARD**

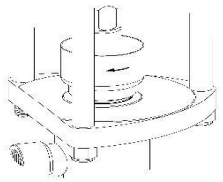
Improper grounding, poor air ventilation, open flames, or sparks can cause a hazardous condition and result in fire or explosion and serious injury.

_ Ground the equipment and the object being sprayed.
_ Provide fresh air ventilation to avoid the buildup of flammable fumes from solvent or the fluid being sprayed.
_ Extinguish all the open flames or pilot lights in the spray area.
_ Electrically disconnect all the equipment in the spray area.
_ Keep the spray area free of debris, including solvent, rags, and gasoline.
_ Do not turn on or off any light switch in the spray area while operating or if fumes are present.
_ Do not smoke in the spray area.
_ Do not operate a gasoline engine in the spray area.
_ If there is any static sparking while using the equipment, **stop spraying immediately**. Identify and correct the problem.

# Operation

1. Lock the spray gun trigger safety.
2. Close the red-handed bleed-type master air valve
3. Unlock the gun trigger safety.
4. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure.
5. Lock the gun trigger safety.
6. Open the drain valve having a container ready to catch the drainage.
7. Leave the drain valve open until you are ready to spray again.

If you suspect that the spray tip or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, very slowly loosen the tip guard retaining nut or hose end coupling and relieve pressure gradually, then loosen completely. Now clear the tip or hose.

| Packing nut / wet-cup | |
|---|---|
| Before starting, fill the packing nut 1/3 full with TSL or compatible solvent. To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the pressure relief procedure. The packing nut is torqued at the factory and is ready for operation If is becomes loose and there is leaking form the throat packings, relieve pressure, then torque the nut to 136-149N.m using a wrench. Do this whenever necessary. Do not over tighten the packing nut. |  |

## Flush the Pump Before first Using

The pump is tested with lightweight motor oil, which is left in to protect the pump parts.
If the fluid you are using may be contaminated by the oil, flush it out with a compatible solvent before using the pump. If the pump is being used to supply a circulating system, allow the solvent to circulate until the pump is thoroughly flushed.
Flush the pump.

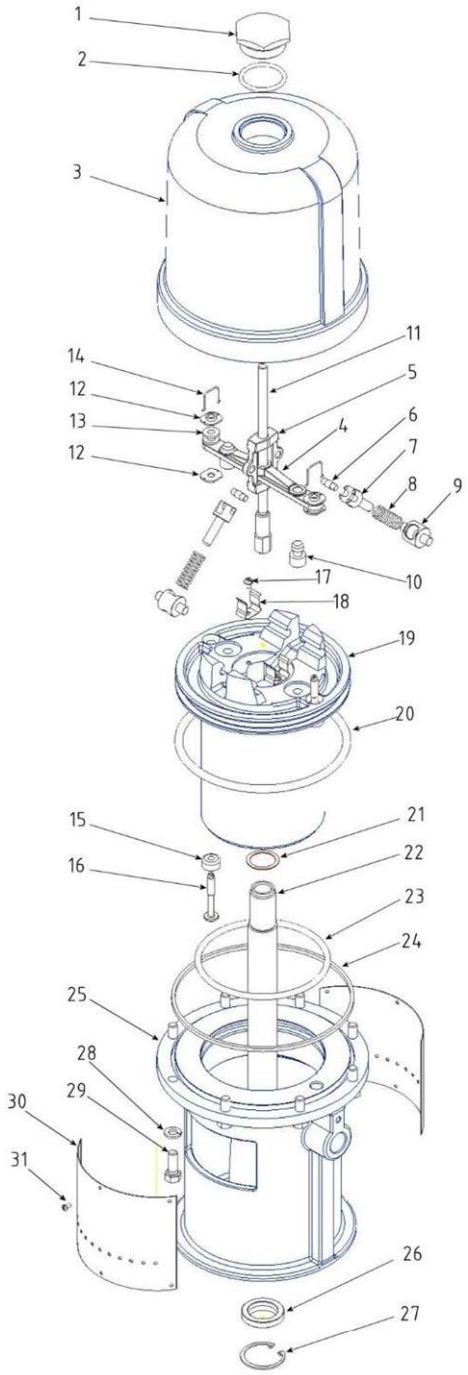
- Before the first use.
- When changing colors or fluids.
- Before fluid can dry or settle out in a dormant pump(check the pot life of catalysed fluids)
- Before storing the pump

Flush whit a fluid that is compatible whit fluid you are pumping and whit the wetted parts in your system.
Check whit a fluid manufacturer or supplier for recommended flushing fluids and flushing frequency.

# Technical Data

| Category | P-TYPE AIR MOTOR | M-TYPE AIR MOTOR |
|---|---|---|
| | 301 | |
| Maximum fluid working pressure | 21 MPa 210 bar | 10 MPa 100 bar |
| Maximum air input pressure | 0.7 MPa, 7 bar | |
| Ratio | 30:1 | 15:1 |
| Air inlet size | 1/2 in. npt(f) | |
| Fluid inlet size | 3/4 in npt | |
| Maximum operating temperature | 82°C (180°F) | |
| Wetted parts | Carbon Steel; Alloy Steel; S45C, 415,440: Zinc and Nickel Plating; Ductile Iron; Tungsten Carbide; PTFE; Leather | |

# Parts drawing and Parts List for Air Motor DK301-100




| No | Part No | Description | Qty |
|---|---|---|---|
| 1 | DK30-101 | NUT, cylinder cap | 1 |
| 2 | DK254-22 | O-RING | 1 |
| 3 | DK30-103 | CYLINDER, motor | 1 |
| 4 | DK30-104 | ACTUATOR, valve | 1 |
| 5 | DK30-105 | YOKE | 1 |
| 6 | DK30-106 | PIN, toggle | 2 |
| 7 | DK30-107 | ARM, toggle | 2 |
| 8 | DK30-108 | SPRING | 2 |
| 9 | DK30-109 | ROCKER, toggle | 2 |
| 10 | DK30-110 | POPPET, valve | 2 |
| 11 | DK30-111 | TRIP ROD | 1 |
| 12 | DK30-112 | NUT, adjusting | 4 |
| 13 | DK30-113 | GROMMET, rubber | 2 |
| 14 | DK30-114 | LOCKWIRE | 2 |
| 15 | DK30-115 | POPPET, valve | 2 |
| 16 | DK30-116 | STEM, valve | 2 |
| 17 | DK30-117 | SCREW | 2 |
| 18 | DK30-118 | CLIP, spring | 2 |
| 19 | DK30-119 | PISTON | 1 |
| 20 | DK30-120 | O-RING ,piston | 1 |
| 21 | DK254-30 | GASKET, copper | 1 |
| 22 | DK30-122 | ROD, piston | 1 |
| 23 | DK30-123 | O-RING | 1 |
| 24 | DK30-124 | SEAL | 1 |
| 25 | DK30-125 | BASE | 1 |
| 26 | DK30-126 | RETAINER | 1 |
| 27 | DK30-127 | SNAP RING | 1 |
| 28 | DK30-128 | WASHER | 8 |
| 29 | DK30-129 | SCREW | 8 |
| 30 | DK30-130 | PLATE, muffler | 2 |
| 31 | DK254-48 | SCREW | 20 |

**Note : part marked in color are the repair parts**

*Replacement Danger and Warning labels, tags and cards are available at no cost.*

*These parts are included in repair kit : **DK301-AM** which may be purchased separately.*

**Always use genuine FLOTECH parts.**

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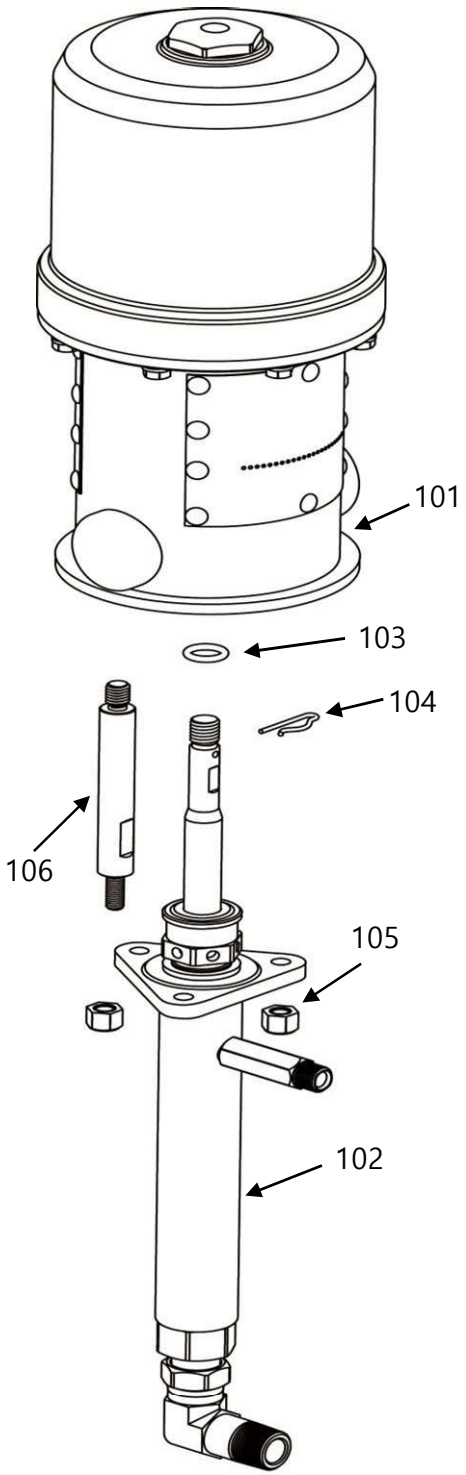
# Parts drawing and Parts List




| No | Part No | Description | Qty |
|---|---|---|---|
| 101 | DK301-100 | AIR MOTOR | 1 |
| 102 | DK301-200 | DIS. PUMP ASS'Y | 1 |
| 103 | DK30-201 | SEAL(O-RING) | 1 |
| 104 | DK30-202 | COTTER PIN | 1 |
| 105 | DK30-203 | NUT | 3 |
| 106 | DK30-225 | TIE ROD | 3 |

## DISCONNECTING THE DISPLACEMENT PUMP

**1.** Flush the pump if possible. Stop the pump at the bottom of its stroke. **Relieve the pressure.**

2. Disconnect the air and fluid hoses. Remove the pump from its mounting. Note the relative position of the pump's fluid outlet to the air motor's air inlet.

3. Unscrew the tie rod locknuts (105) from the tie rods (106). Remove the cotter pin (104). Unscrew the displacement rod (13) from the air motor (101).
Carefully pull the displacement pump (102) off the air motor (101).

4. Refer to for displacement pump service.
To service the air motor, refer to the air motor service.

## RECONNECTING THE DISPLACEMENT PUMP

1. Place it on the rod. The align pump's fluid outlet to the air motor's air inlet was noted under Disconnecting the Displacement pump. Position the displacement pump on The tie rod.

2. Screw the locknuts onto the tie loosely.
Screw the displacement rod into the shaft of the air motor until the pin holes align the cotter pin.

3. Mount the pump and reconnect all hoses. Reconnect the ground wire if it was disconnected during repair. Torque the packing nut/wet–cup (24) to 18–20 ft–lb (24–27 N.m). Fill the wet–cup with FLOTECH Throat Seal Liquid or compatible solvent.

4. Tighten the tie rod locknuts (105) evenly, and torque to 25–30 ft–lb (34–41 N.m).

5. Start the pump and run it at about 40 psi (280 kPa,2.8 bar) air pressure, to check that it is operating properly.

# Displacement Pump Service

## Disassembly

When disassembling the pump, lay out all removed parts in sequence, to ease reassembly.

Clean all the parts thoroughly when disassembling. Check them carefully for damage or wear, replacing parts as needed.

1. Remove the displacement pump from the air motor as explained.

2. Unscrew the intake valve housing (19) from the pump housing (9). If it is difficult to remove, squirt penetrating oil around the threads and *gently* tap around the valve housing with a plastic hammer to loosen it.

3. Remove the ball stop pin (15), o–ring(17), retainer (16), and ball (18), ball guide(22), from the intake housing (19).

4. Loosen the packing nut (24). Push the displacement rod (12) down as far as possible, then pull it out the bottom of the pump housing (9).

5. Secure the flats of the displacement rod (12) in a vise. Screw the piston stud(14) out of the rod . Remove the ball(13), reatainer(21), packings(5,6) And glands(4,7).

6. Remove the packing nut (24), throat packings (5.6) and glands (4,7) from the pump housing (9).

7. Inspect all parts for damage. Clean all parts and threads with a compatible solvent before assembling. Inspect the polished surfaces of the displacement rod (12) and sleeve (11) for scratches, scoring or other damage, which can cause premature packing wear and leaking. To check, run a finger over the surface or hold the part up to the light at an angle. Be sure the ball seats of the piston and intake housing are not chipped or nicked. Replace any worn or damaged parts.

**NOTE:** If the sleeve (11) needs replacement and is hard to remove, contact your FLOTECH distributor.

## Reassembly

1. Lubricate the throat packings and install them in The outlet housing (9) one at a time as follows, *with the lips of the v–packings facing down:* the male gland (4), one teflon (6), two leather(5), one teflon (6), one leather (5), one teflon (6), and the female gland (7). Install the packing nut (24) loosely. See the throat packing detail.

2. If you removed the sleeve (11), reinstall it in the pump housing (9), making sure to replace the gasket (10). *Be sure the tapered end of the sleeve faces down, toward the pump intake.*

3. Lubricate the piston packings and install them onto the piston stud (14) one at a time in the following order, *with the lips of the v–packings facing up:* the female gland (7), one Teflon (6), two leather (5), one Teflon (6), one leather (5), one Teflon (6), the male gland (4), and the packing retainer (21). See the piston packing detail.

4. DO NOT use thread sealant on the piston stud(14) Install the piston ball (13) on the piston and screw the piston valve assembly into the displacement rod (12). Torque to 65–75 ft–lb (88–102 N.m).

5. Insert the displacement rod (12) into the bottom of the pump housing (9), being careful not to scratch the sleeve (11). Push the rod straight up until it protrudes from the packing nut (24).

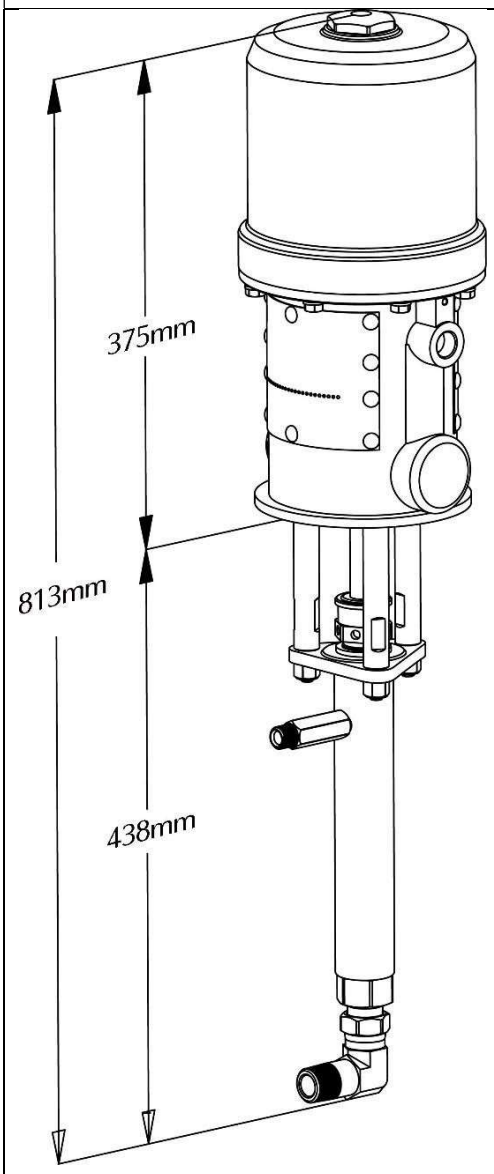
6. Install the ball (18), o–ring (17), retainer(16), and ball stop pin (15), ball guide(22), in the intake valve housing (19). Apply thread lubricant and Screw the intake housing into the pump housing (9). Torque to 75–100 ft–lb (102–136 N.m).

7. Reconnect the displacement pump to the air motor as explained.

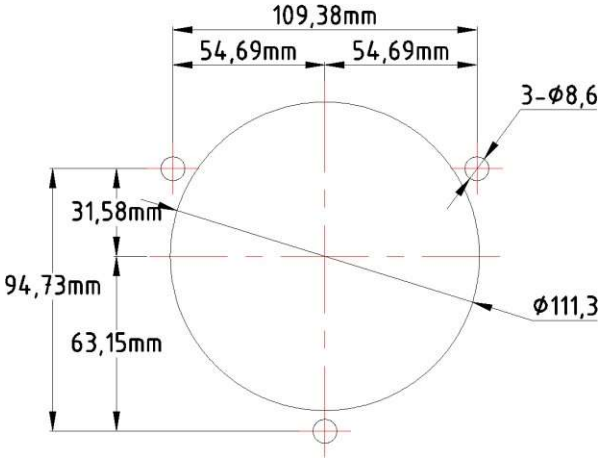
# Technical Data

| | |
|---|---|
| Maximum fluid working pressure | 3600 psi (25.0 MPa, 250 bar. |
| Maximum air input pressure | 120 psi (0.8 MPa, 8 bar. |
| Pump cycles per 1 gallon (3.8 liters) | 60. |
| Maximum flow at 60 cycles/min | 1 gallon (3.8 liters) .. |
| Recommended speed for optimum pump life | 15–25 cycles/min;. |
| | 0.25 to 0.42 gpm (0.9 to 1.6 liters/min) |
| Air consumption | approx. 35 scfm (0.98 min) |
| | at 1 gpm (3.8 liters/min) at 100 psi (0.7 MPa, 7 bar) air pressure |
| Weight approx. | 24 lb (11 Kg) |

## Dimensions

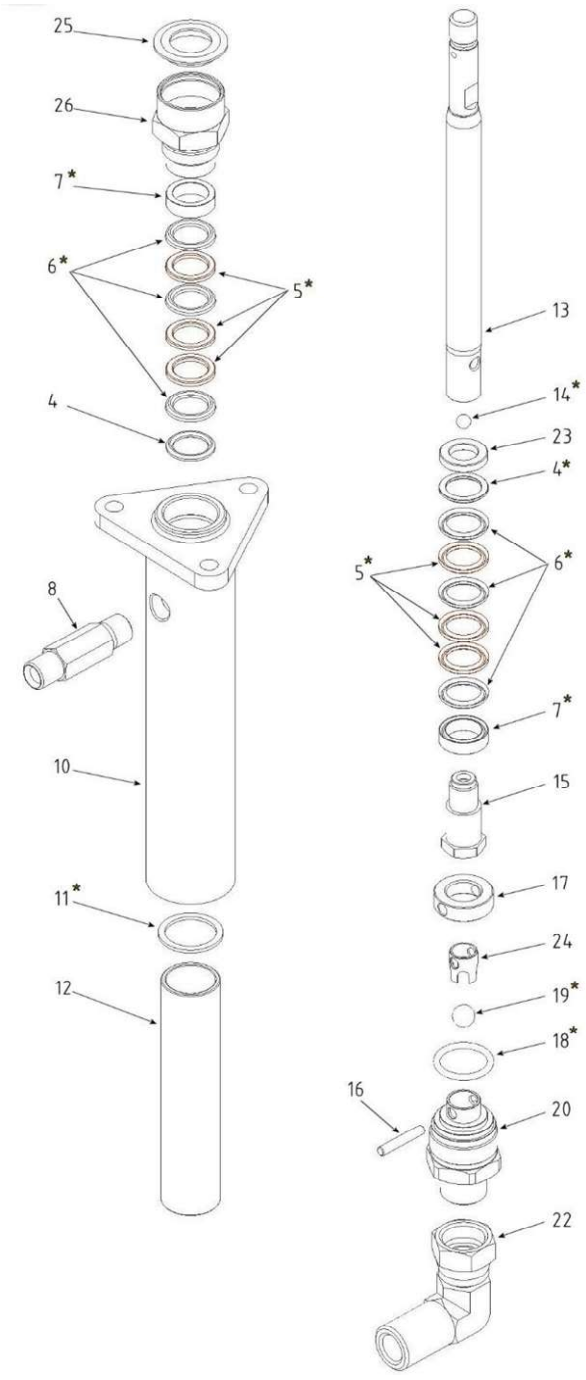



## Mounting Hole Layout



# Parts drawing and Parts List

## *301 DISPLACEMENT PUMP*



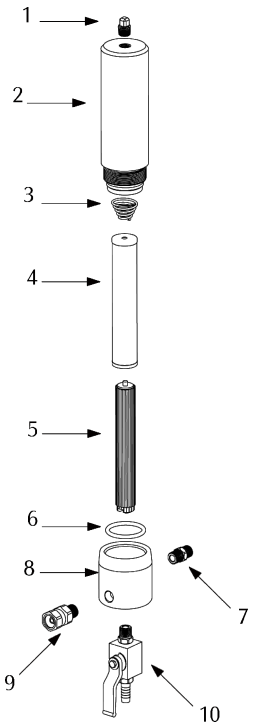

**Note : part marked in color are the spare parts**

*These parts are included in repair kit : **DK301-LA** which may be purchased separately.*

**Always use genuine parts**

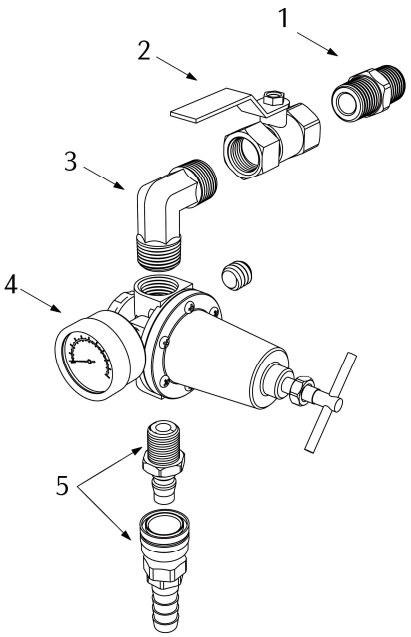
| No | Part No | Description | Qty |
|---|---|---|---|
| 4 | DK30-204 | GLAND , male | 2 |
| 5 | DK30-205 | V-LEATHER | 6 |
| 6 | DK30-206 | V-TEFLON | 6 |
| 7 | DK30-207 | GLAND , female | 2 |
| 8 | DK30-208 | NIPPLE | 1 |
| 10 | DK30-209 | PUMP HOUSING | 1 |
| 11 | DK30-210 | SEAL(TEFLON) | 1 |
| 12 | DK30-211 | SLEEVE | 1 |
| 13 | DK30-212 | DIS. ROD | 1 |
| 14 | DK30-213 | BALL(5/16”) | 1 |
| 15 | DK30-214 | VALVE PISTON | 1 |
| 16 | DK30-215 | PIN | 1 |
| 17 | DK30-216 | RETAINER | 1 |
| 18 | DK30-217 | SEAL(TEFLON) | 1 |
| 19 | DK30-218 | BALL(1/2”) | 1 |
| 20 | DK30-219 | INTAKE | 1 |
| 22 | DK254-02 | UNION | 1 |
| 23 | DK30-221 | WASHER | 1 |
| 24 | DK30-222 | GUIDE , BALL | 1 |
| 25 | DK30-223 | PLUG | 1 |
| 26 | DK30-224 | PACKING , NUT | 1 |

# SURGE TANK ASS'Y (DK301-300)



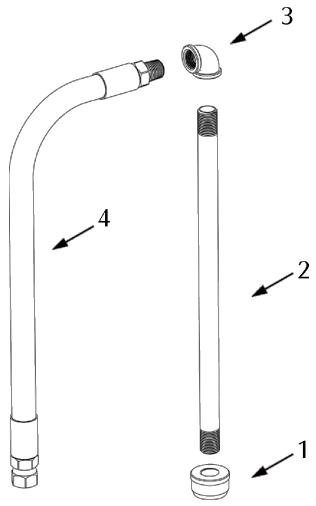

| No | PART NO. | DESCRIPTION | Q'TY |
|---|---|---|---|
| **1** | DK301-301 | PLUG | 1 |
| **2** | DK301-302 | BOWL | 1 |
| **3** | DK254-303 | SPRING | 1 |
| **4** | DK-KS2202 | STRAINER #60 | 1 |
| **5** | DK186-075 | SUPPORT | 1 |
| **6** | DK301-306 | PACKING,O-RING | 1 |
| **7** | DK301-307 | NIPPLE | 1 |
| **8** | DK301-308 | MANIFOLD | 1 |
| **9** | DK301-309 | UNION | 1 |
| **10** | DK254-308 | BALL VALVE | 1 |

# REGULATOR ASS'Y(DK301-400)



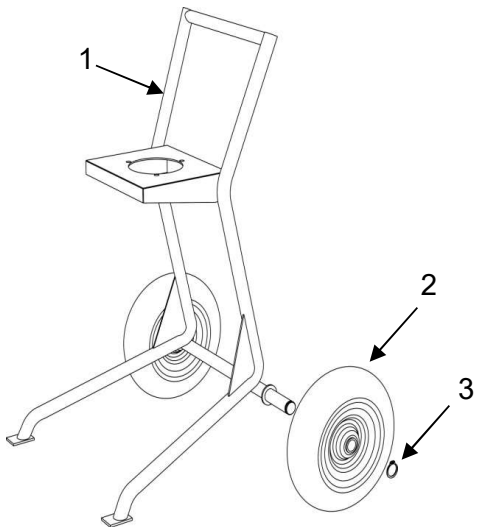

| No | PART NO. | DESCRIPTION | Q'TY |
|---|---|---|---|
| **1** | DK301-401 | NIPPLE | 1 |
| **2** | DK301-402 | VALVE | 1 |
| **3** | DK301-403 | ELBOW | 1 |
| **4** | DK301-404 | AIR REGULATOR & GUAGE | 1 |
| **5** | DK301-405 | AIR COUPLER | 1 |

# SUCTION ASS'Y(DK301-500)




| No | PART NO. | DESCRIPTION | Q'TY |
|---|---|---|---|
| **1** | DK-KS22903 | 3/4" FILTER | 1 |
| **2** | DK301-502 | SUPPORT PIPE | 1 |
| **3** | DK301-503 | ELBOW | 1 |
| **4** | DK301-504 | SUCTION HOSE | 1 |

# CART ASS'Y(DK301-600)




| No | PART NO. | DESCRIPTION | Q'TY |
|---|---|---|---|
| **1** | DK301-601 | CART & HANDLE | 1 |
| **2** | DK301-602 | TIRE | 2 |
| **3** | DK301-603 | SANP RING | 2 |

# FLOTECH Standard Warranty

FLOTECH warrants all equipment referenced in this document which is manufactured by FLOTECH and bearing its name to be free from
defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended,or limited warranty published by FLOTECH, FLOTECH will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by FLOTECH to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with FLOTECH written recommendations.

This warranty does not cover, and FLOTECH shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non–FLOTECH component parts. Nor shall FLOTECH be liable for malfunction, damage or wear caused by the incompatibility of FLOTECH equipment with structures, accessories, equipment or materials not supplied by FLOTECH, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by FLOTECH.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized FLOTECH distributor for verification of the claimed defect. If the claimed defect is verified, FLOTECH will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

**THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT
NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE**.

FLOTECH sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within one (1) years of the date of sale.

**FLOTECH MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD
BUT NOT MANUFACTURED BY FLOTECH.** These items sold, but not manufactured by FLOTECH (such as electric motors, switches,
hose, etc.), are subject to the warranty, if any, of their manufacturer. FLOTECH will provide purchaser with reasonable assistance in making any claim for breach of these warranties.
In no event will FLOTECH be liable for indirect, incidental, special or consequential damages resulting from FLOTECH supplying equipment
hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of FLOTECH or otherwise.

# FLOTECH Information

***TO PLACE AN ORDER OR FOR SERVICE***, contact your FLOTECH distributor, or call these numbers to identify the nearest
distributor.

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TEL: +65-68631998 FAX: +65-68631667
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