



## MSVKC SERIES

### Sealless Non-Metallic Vertical Pumps

### Installation and Maintenance Instructions

Pat. No. 5,708,313

#### ASSEMBLY

**⚠ WARNING:** Magnetic field hazard. This pump contains powerful rare earth magnets. When the pump is disassembled (not connected to a motor) and the magnets are exposed, these magnets produce powerful magnetic fields. Individuals with cardiac pacemakers, implanted defibrillators, other electronic medical devices, metallic prosthetic heart valves, internal wound clips (from surgery), metallic prosthetic devices or sickle cell anemia must not handle or be in the proximity of the magnets contained inside the pump. Consult a health care provider for specific recommendations before working with this pump.

#### PUMPS WITH MOTORS

1. No assembly required. Simply unpack the pump and motor and examine for any signs of shipping damage. If damage is detected, save the packaging and notify the carrier immediately.
2. Ensure that lock rings are securely snapped in place and did not loosen during shipment.
3. To install the pump into the system, follow the installation instructions provided.

#### PUMPS WITHOUT MOTORS

**Note:** Finish Thompson has added extra weight (Flywheel item 35 in Figure 5) to several of our MSVKC Series Pumps to slow down motor start up & prevent possible magnet decoupling. It is necessary to know whether your pump was supplied with the flywheel. Flywheels are supplied with all 56C NEMA & 80 Metric frame motor adapters. If you are unsure whether your pump was supplied with a flywheel, please contact FTI's Tech Service Department at PH: 800-888-3743 or email [techservice@finishthompson.com](mailto:techservice@finishthompson.com).

**Note:** Motor assembly videos are available online at [www.finishthompson.com/downloads/maintenance\\_videos](http://www.finishthompson.com/downloads/maintenance_videos).

#### FOR 56C FRAME ADAPTERS WITH FLYWHEEL (ITEM 35 IN FIGURE 5):

1. Unpack the pump and any supplied accessories. Examine for shipping damage. If damage is detected, save the packaging and notify the carrier immediately.
2. Prepare to assemble the pump onto the motor by placing the motor on the fan cover on a suitable clean, level work surface.
3. Install motor key into motor shaft key slot. Align the keyway slot on the flywheel (item 35 in figure 5) and slide the flywheel onto the motor shaft with the protruding boss towards the motor face. Align the keyway slot in the top coupling half (item 29 in figure 5) and slide the coupling half on. Set coupling half with the motor shaft recessed 7/32" and tighten both setscrews with a 1/8" Allen wrench to 70 in-lbs.
4. Slide the flywheel forward so that it rests against the backside of the coupling half. Tighten both setscrews.
5. Install the coupling insert (yellow internally splined plastic ring) onto the coupling half on the motor shaft. Place coupling support (item 38A in figure 5) into center of coupling half with the short side facing the motor. Carefully slide the motor adapter end (item 9 in figure 5) of the pump assembly over the motor shaft until both coupling halves are completely seated in the coupling insert. Make sure rabbet on the motor is firmly seated into the motor adapter.

**⚠ CAUTION:** Pump assembly may be top heavy.

6. Rotate the pump and the mounting plate if ordered to the desired orientation. Align the holes in the mounting plate and the motor adapter with the holes in the motor face. Secure the mounting plate and motor adapter to the motor using the correct bolts and washers (items 6,7, and 8) from the hardware package.
7. Check and verify the locking rings are securely snapped in place and did not loosen during shipping. Rotate the motor fan to check for binding or rubbing inside the pump.
8. Install the pump into the system according to the installation instructions provided.

#### FOR 63, 71 METRIC FRAME ADAPTERS WITHOUT FLYWHEEL (USE FIGURE 6):

1. Unpack the pump and any supplied accessories and examine for damage. If any damage is detected, save the packaging and notify the carrier immediately.
2. Prepare to assemble the pump onto the motor by placing the motor on the fan cover on a suitable clean, level work surface.
3. Install the keyway into the motor shaft key slot. Align the keyway slot in the coupling half (item 29, figure 6), and slide the coupling half onto the motor shaft with the splined side facing the pump. Set the coupling half with the motor shaft recessed 11.1 mm. Tighten both setscrews with a 1/8" Allen wrench to 7.9 N-m.
4. Install the metric motor adapter (item 2 in figure 6) onto the motor. To aid in correct installation, the letters "A" & "B" are molded onto the opposite sides of the motor adapter. For 71 frame motors, using the correct hardware (items 3,4 and 5 in figure 6) mount the adapter with side "B" facing up. For 63 frame motors, using the correct hardware (items 3,4 and 5 in figure 6) mount the adapter with side "A" facing up. See figures A & B.



Figures A



Figures B

5. Install the coupling insert (yellow internally splined plastic sleeve) onto the coupling half on the motor shaft. Carefully slide the motor adapter (item 9 in figure 6) onto the motor making sure the pump shaft coupling matches up with the plastic insert and seats properly. Make sure rabbet on the motor is firmly seated into the motor adapter.

**⚠ CAUTION:** Improper positioning of the metric motor adapter can cause premature coupling failure or cause the pump shaft to bottom out before the pump is properly installed onto the motor adapter.

6. Rotate the pump discharge and the mounting plate if ordered to the desired orientation. Align the bolt holes on the mounting plate with the motor adapter (item 9 in figure 6) and the metric motor adapter flange (item 2 in figure 6). Secure with the hardware provided.

**⚠ CAUTION:** Pump assembly may be top heavy.

7. Check and verify the locking rings are securely snapped into place and did not loosen during the assembly process. Rotate the motor fan to check for binding or rubbing inside the pump.

8. Install the pump into the system according to the installation instructions provided.

#### FOR 80 FRAME METRIC MOTOR ADAPTER WITH FLYWHEEL (ITEM 35 IN FIGURE 5):

1. Unpack the pump parts and any supplied accessories and examine for damage. If damage is detected, save the packaging and notify the carrier immediately.
2. Prepare to assemble the pump onto the motor by placing the motor on the fan cover on a suitable clean, level work surface.
3. Install the keyway into motor shaft key slot. Align the keyway slot in flywheel adapter / coupling half combination (item 34 and metal half of item 29 in figure 5) and install on motor shaft with splined side facing the pump. Note: these items are pre-assembled at the factory. Set coupling half flush with the end of the motor shaft and secure with coupling support washer, lock washer and bolt (items 38B, 39 & 40 in figure 5). Tighten both setscrews in coupling half with 1/8" Allen wrench to 7.9 N-m.
4. Install the metric motor adapter (item 2 in figure 5) onto the motor. To aid in correct installation, the letters "A" and "B" are molded on the opposite sides of the metric motor adapter. For 80 frame motors using the correct hardware (items 3, 4 and 5 in figure 5) mount the adapter with side "A" facing up. The metric motor adapter must be positioned so that the adapter seats onto the motor rabbet. See figures A & B above.

**CAUTION:** Improper positioning of the metric motor adapter can cause premature coupling failure or cause the pump shaft to bottom out before the pump is properly installed onto the motor adapter.

5. Install the flywheel (item 35 in figure 5) onto the flywheel adapter and attach using four screws with lock washers (items 36 and 37 in figure 5). Tighten securely.
6. Insert the coupling insert (yellow internally splined plastic sleeve) into the coupling half on the motor. Carefully slide the motor adapter end (item 9 in figure 5) of the pump assembly over the motor shaft until both coupling halves are completely seated in the coupling insert. Make sure rabbet on the motor is firmly seated into the motor adapter.
7. Rotate the pump discharge and mounting plate if ordered to the desired orientation. Align the bolt holes on the mounting plate with the motor adapter (item 9) and the metric motor adapter flange (item 2). Secure with the hardware provided.
8. Make sure that the locking rings are securely snapped in place and did not loosen during shipping or the assembly process.

**CAUTION:** Pump assembly may be top heavy.

Install the pump into the system according to the installation instructions provided.

#### INSTALLATION

The VKC Series is a versatile pump designed to be operated in a variety of mounting configurations. The pump can be mounted either inside or outside of a tank or sump. See Figure 1.

**Note:** Drawings for illustration only. Pumps need to be properly supported when installed.

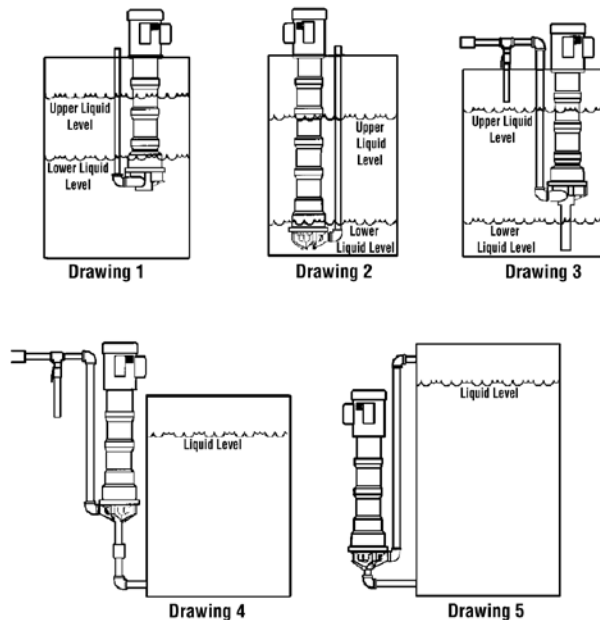


Figure 1

*Drawing 1 shows drawing of pump mounted inside a tank with suction off the bottom of the tank and level fluctuating from near top of pump column to close to the bottom of the pump.*

*Drawing 2 shows drawing of pump suction near tank bottom and level fluctuating between the top and bottom of the tank.*

*Drawing 3 shows drawing of pump with suction extension and the level fluctuating between startup level and low level.*

*Drawing 4 shows drawing of pump mounted outside the tank.*

*Drawing 5 shows drawing of pump mounted outside the tank with the motor below the liquid level.*

#### MOUNTING

A mounting plate is recommended for in-tank installations. Use a hole saw to cut holes in desired location for piping if required.

Support and securely fasten the mounting plate on all four sides if possible or on two sides if mounted in a corner. Drill holes in the mounting plate at the desired location for bolting to the tank.

A drip cover may be installed on top of the motor if desired.

Mount pump in desired configuration. Securely fasten mounting plate if used. Motor feet may also be used for mounting.

#### PIPING

1. Support piping near the pump to eliminate any strain on the pump casings. Do not use suction or discharge piping to support the pump.
2. Do not overtighten the piping on the discharge on initial installation (i.e., down to the O-ring). Damage to the discharge can occur. The O-ring is used only when there is wear and the plastic threads are loose.
3. Do not place the pump suction directly on the bottom of the tank. Keep the pump suction at least one pipe diameter off the bottom.
4. A suction extension tube of up to nine feet in length can be added.
5. To minimize head loss from friction:
  - a. Increase pipe size by 1 diameter.
  - b. Use minimal number of pipe bends.
6. If a check valve is installed in the discharge piping, an air bleed must be installed in the discharge line to prevent air lock. This allows air trapped in the pump internals to be removed on initial startup. See drawings 3 and 4 in Figure 1.
7. Maintain a flooded suction. Use a foot valve if necessary.

8. Ensure that the piping does not leak and suction is not prone to clogging. Use a strainer if necessary on the suction.
9. If flexible hose is preferred, use reinforced hose rated for the proper temperature and pressure. This helps avoid collapse or kinks.
10. Install valves a minimum of 10 pipe diameters from the pump.

**⚠ CAUTION:** To stop the pump if prime is lost, use one of the following: (1) pressure switch on the discharge or (2) motor minder to monitor motor current.

## MOTOR/ELECTRICAL

Only qualified personnel trained in the safe installation and operation of this equipment should install the motor. Install the motor according to National Electric Code, NEMA MG-2, IEC standards requirements and/or applicable local electrical codes. The voltage and frequency variations of the power supply should never exceed the limits established in the applicable standard. Prior to connecting to the power line, check nameplate voltage, rotation connection and ensure proper grounding. Sufficient ventilation area should be provided to insure proper operation and cooling of the motor. The motor must be installed with a suitable overload protection circuit. For three phase motors it is recommended to install a phase failure protection device. Download the motor manual from the specific motor manufacturers' website for additional information concerning motor installation, safety and maintenance instructions.

**CAUTION:** Do not operate the pump to check rotation until the pump is full of liquid or damage may occur even if the motor is "bumped" to check motor rotation direction.

Check all electrical connections with the wiring diagram on the motor. Make sure the voltage, frequency, phase and amp draw comply with the supply circuit.

If utilized, verify that power monitors or variable frequency drives have been properly installed according to the manufacturer's instructions.

**Important.** To verify the correct motor rotation:

1. Install the pump into the system.
2. Fully open suction and discharge valves.
3. Allow fluid to flow into the pump. Do not allow the pump to run dry (PTFE & ceramic bushings can not be allowed to run dry without damage to pump components).
4. Jog the motor (allow it to run for one to two seconds) and observe rotation of the motor fan. Refer to directional arrow on the pump.

Note: A pump running backwards will pump but at a greatly reduced flow and pressure.

## OPERATION

1. Completely open the discharge valve. On pumps equipped with a discharge check valve, open air bleed valve on initial startup.
2. Start the pump and check liquid flow. If there is no flow, see the Troubleshooting section.
3. Adjust the flow rate and pressure by regulating the discharge valve.

## MAINTENANCE

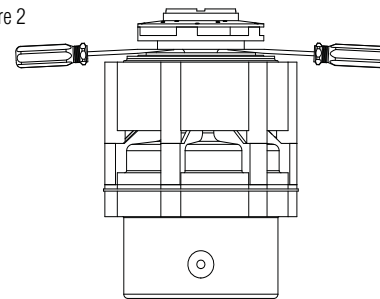
### DISASSEMBLY

1. Disconnect the power and remove the wiring.
2. Close the discharge valve and disconnect the piping.
3. Remove the mounting bolts and pull the pump from the tank. Securely anchor or clamp the motor to a workbench in a horizontal position.
4. Gently tap the locking ring (item 11 closest to pump end) toward the motor until it is loose. Mark a matching line on the barrier/column

housing adapter (item 16) and the 2nd stage impeller housing (item 20) as a discharge orientation reference during re-assembly. Using a strap wrench on the barrier/column housing adapter (item 16), turn it counterclockwise and remove it from the pump column. When it is unthreaded, pull it straight off to expose the drive magnet assembly (item 14).

5. Place the pump end / barrier column housing adapter on a clean work surface with the suction pointing straight up. Remove the six screws and washers (items 25A,B, & C) from the impeller housing.
6. Using a thin bladed screwdriver, gently separate the 1st stage housing (item 24) from the diffuser (item 22). Remove the 1st stage impeller housing (item 24) being careful to pull straight off so as not to damage the ceramic front spindle support. Remove the housing O-ring (item 17). Using two flat blade screwdrivers, gently pry the first stage impeller/drive shaft assembly (items 2 & 3) from the pump. See figure 2.

Figure 2



7. Remove the diffuser assembly (item 22) and the diffuser O-ring (item 21) from the top of the 2nd stage impeller housing (item 20). Remove the 2nd stage impeller housing (item 20), the housing O-ring (item 17), and the 2nd stage impeller assembly (items 18 & 19) from the barrier/column-housing adapter (item 16).
8. If further disassembly is required, place a 9/16-inch wrench on the flat area of the pump shaft (item 13) on the motor side of the drive magnet assembly (item 14).  
Holding the pump shaft with the wrench, remove the locking nut (item 15) by turning it clockwise (left hand thread). After the nut is removed, unthread the drive magnet assembly (item 14).
9. If the pump is longer than 12 inches, you remove each of the column extensions (item 30) by doing the following. Loosen the two set screws on the shaft bearing (item 31), gently tap the locking ring (item 11) toward the motor, and use the strap wrench to unthread the section.
10. When you are down to the motor adapter (item 9), mark a matching line on the adapter flange, mounting plate (item 10), and the motor to be referenced during reassembly. Loosen the setscrews on the shaft bearing (item 31). Remove the 4 motor adapter bolts and washers (items 6, 7, & 8), the mounting plate (item 10), the motor adapter (item 9), and the metric motor adapter (item 2) if required. If motor is to be replaced, remove the coupling insert and coupling half (part of item 29).

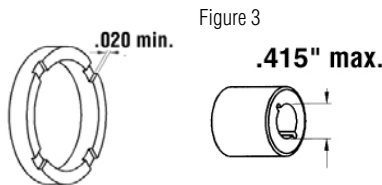
**⚠ CAUTION:** Keep the drive magnet assembly and the impeller drives away from metal chips or particles

### EXAMINATION/REPLACEMENT OF PARTS

1. Inspect the bushings (items 18A) in both the impeller drive (item 18) and the impeller drive shaft (item 23). See figure 2. If bushing in impeller drive (item 18) requires replacement, grip the impeller assembly (items 18 & 19) with the bushing side up, and gently tap the impeller (item 19) off the impeller drive (item 18). Insert a 1/16-inch punch into the balance hole (inner circle of four holes) on top of the impeller drive (item 18) and gently tap out the bushing. The punch may need to be moved to a second hole to complete the removal. Install the new bushing by gently pressing it in until it bottoms out (use a block of wood and a

mallet if necessary). If the bushing in the impeller drive shaft is worn or cracked, the complete impeller drive shaft with bushing (item 23) needs to be replaced.

2. Inspect both thrust rings (item 19A) for wear. See figure 3. If replacement is necessary pull the old ring out, align the flat on the new ring and the seating area and press into place.



3. Inspect both ceramic housing thrust rings and both the barrier ceramic post and the 1st stage impeller housing ceramic support post for cracks, chips, scoring, or excessive wear. Replace as required.
4. Check for loose magnets on the drive hub (item 14) or rubbed areas on the barrier/column housing adapter (item 16) or impeller assemblies. Contact your distributor or FTI Technical Service if a problem is found.
5. Inspect the bearing(s) for damage and replace if necessary. To remove the bearing, unscrew the four retaining screws (item 32) and press the bearing out (note: the top of the bearing where the set screws are faces away from the motor). Installation of the new bearing requires pressing it into the section with the set screws/collar facing away from the motor, and replacing the retaining screws.
6. Examine all the plastic parts for damage or wear. Replace as needed.

## REASSEMBLY

1. If the motor was replaced-

Slide the coupling half (half of #29) on to the motor shaft with the splines facing away from the motor. On 56C motors, set coupling half so that motor shaft is recessed 7/32\".

For 63 and 71 frame motors, set coupling half so that motor shaft is recessed 7/16\", and on 80 frame motors set coupling half so that it is flush with the motor shaft.

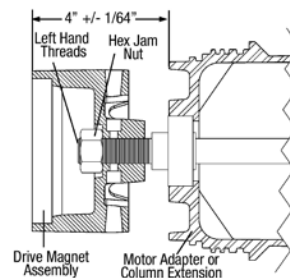
2. On 56C, 63, & 80 frame motors, align one set screw with flat or key slot on motor shaft and tighten both set screws with a 1/8\" Allen wrench to 70 in.-lbs. (7.9 N-m). For 71 frame motors, align both set screws 90 degrees from motor flat or key slot and tighten as instructed above.
3. If the shaft was replaced, slide the second coupling half onto the pump shaft (the end with the milled flat) with the splined side facing away from the threaded end of the shaft. For 56C motor frames, set the coupling with the pump shaft recessed 7/32\". For 63 and 71 motor frames, set it with the pump shaft recessed 7/16\". For 80 frame, the pump shaft should be recessed 1/4\". When coupling half is set correctly, align set screw with the flat on the pump shaft, and tighten both set screws with 1/8\" allen wrench to 70 in.-lbs. (7.9 N-m).
4. Place the motor gently on the fan cover for reassembly. For metric frame pumps, install the metric motor adapter flange (item 2) onto the motor with the correct hardware (items 3, 4, & 5). One side of the adapter fits 63 & 80 frame motors (side B) and the other side fits the 71 frame motors (side A). The letters A & B are molded onto the adapter. For 71 frame motors the \"A\" must face the motor, and for 63 & 80 frame motors the \"B\" must face the motor. The metric motor adapter must be oriented so that the adapter seats completely onto the motor rabbet. Make sure your orientation marks are aligned (step 10 of disassembly instructions).

**CAUTION:** Improper orientation of the metric motor adapter can cause premature coupling failure or cause the pump shaft to bottom out on the motor shaft before

5. Install the coupling insert (center plastic part of item 29) onto the coupling half on the motor. Now insert the pump shaft with coupling half into the coupling insert until it is completely seated.

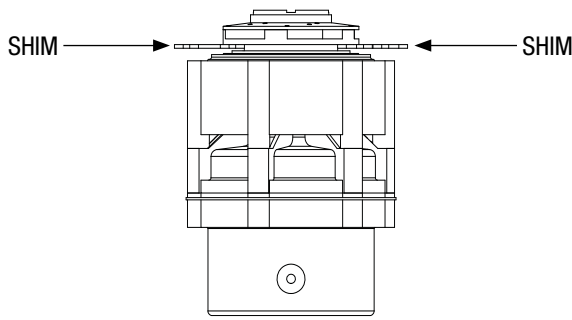
6. Locating the pump shaft through the bearing in the motor adapter section (item 9) carefully slide the motor adapter (item 9) down the shaft until it is fully seated on the (56C) motor rabbet or (63, 71, 80 frame) on the metric motor adapter. If a mounting plate (item 10) is being used, gently slide it over the pump shaft and the motor adapter section (item 9).
7. Rotate the mounting plate and the motor adapter to the desired orientation (marked before disassembly), and align the holes through the mounting plate, motor adapter and into the motor (metric motor adapter if used). Secure the mounting plate and the adapter to the motor (item 1)/metric adapter (item 2) using the correct hardware (items 6, 7, & 8 for 56C or item 33 for metric).
8. Tap down gently with a rubber mallet on the top of the pump shaft to ensure complete coupling engagement. Tighten both bearing set screws onto the pump shaft using a 3/32\" Allen wrench. Replace if needed and lubricate the two motor adapter/ column extensions o-rings (item 12) with a chemically compatible thread lubricant.
9. For 12\" pumps, go to step 10. For 18\" or longer pumps, slide the lock ring (item 11) past the corresponding flats toward the motor. Make sure to place the smaller inside diameter side of the lock ring toward the motor. Use a chemically compatible thread lubricant to lubricate the external plastic threads on the motor adapter (item 9) and the internal
10. Thread the left hand threaded drive magnet assembly (item 14) onto the pump shaft until it is 4\" +/- 1/64\" as measured from the top of the drive magnet assembly as shown in Figure 4. A 9/16\" wrench can be used on the milled flats below the threads to hold the pump shaft during this step. Apply a small amount of Loctite Thread Locker 262 to the left-hand threaded 5/8-18 hex jam nut (item 15) and thread onto the pump shaft. Tighten to 50 ft. lbs. Recheck the drive setting dimension after the nut is tightened.

Figure 4



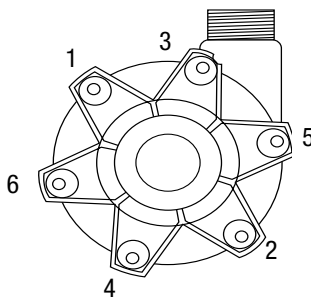
11. Place the barrier/housing adapter on a clean surface with the white ceramic post facing up. Place the impeller drive assembly (items 18 and 19) onto the ceramic post. Install and lubricate (with a chemically compatible lubricant) the housing o-ring (item 17).
12. Noting the reference marks made during disassembly on the impeller housing and the barrier column assembly, align the bolt hole tabs and snap the housing in place (bolt hole alignment is critical).
13. Install and lubricate the diffuser o-ring (item 21). Install the diffuser assembly (item 22) being careful not to dislodge the o-ring and to keep the bolt hole alignment straight.
14. If the impeller drive shaft (item 23) was replaced, reassemble it onto the impeller assembly (item 19) by matching the three tabs on the end of the drive shaft with the three recessed slots in the impeller assembly and pressing together.
15. Looking through the hole in the center of the diffuser assembly, note the orientation of the square recess in the top of the impeller. Insert the square end of the drive shaft through the hole and start it in the square recessed hole in the top of the impeller. Note it is a tight fit between the drive shaft and the impeller. Place two .100\" (2.5 mm) shims on either side of the top of the diffuser body so the shims are between the diffuser body and the bottom of the impeller shroud. See figure 5 Use an arbor press and a soft arbor to press the drive shaft until the bottom of the impeller shroud is touching the shims.

Figure 5



16. Install and lubricate the housing o-ring (item 17) onto the diffuser (item 22). Lower the first stage impeller housing (item 24) straight down onto the pump with the ceramic front spindle support sliding into the bushing (item 18A) on top of the first stage impeller assembly. Orient the housing with the direction arrow on top (same as discharge direction), the drain boss on the bottom, and with the mounting holes aligned. Install the mounting bolts and hardware (items 25A, B & C) making sure not to dislodge the housing o-ring (item 17) or the diffuser o-ring (item 21). Hand tighten the mounting bolts to pull the pump together using the pattern shown in Figure 6.

Figure 6



**Note:** It is not recommended to reuse plastic screws. Always use thread lubricant when installing plastic screws.

17. After the housing is secure, insert a screw driver into the suction and push down on the front of the first stage impeller assembly to completely seat the drive shaft (item 23) into the 2nd stage impeller (item 18). Push firmly on all three areas separated by the front spindle support in the suction.

**CAUTION:** Do not press on the gray thrust ring.

18. Slide the lock ring (item 11) over the drive magnet assembly and past the corresponding flats on the column extension (motor adapter if 12" pump) making sure the smaller inside diameter side is toward the motor. Lubricate the external threads on the column extension (motor adapter on 12" models), the o-rings, and the internal threads on the barrier column section. Gripping the assembled pump end firmly, slide it down over the drive hub until the threads touch, and screw the pump end onto the column section. Use a strap wrench to tighten until there is no gap between the sections and the flats are parallel. Pull the lock ring up. Match with corresponding flats and snap into place.

**CAUTION:** Do not allow your fingers to get between the drive hub and the barrier column section during assembly.

19. Rotate the motor fan and listen/feel for drive hub rubbing (recheck drive hub setting) or the first stage impeller (item 19) rubbing on the housing (recheck step 17).
20. Reinstall the pump into the system according to the installation instructions.

## GENERAL NOTES

1. Do not pump liquids containing metal fines.
2. If magnets decouple, stop the pump immediately. The rare earth magnets used in this pump are more resistant to demagnetization, but operating the pump with the magnets decoupled will eventually weaken the magnets.
3. Plastic pumps will expand and contract with temperature so periodically check and hand tighten screws.
4. Use a chemically compatible thread lubricant on threads of column sections.
5. The setting of the drive magnet dimension is critical. Failure to properly set the dimension may result in decoupling or damage to pump components.
6. An information sticker is attached to the motor adapter section or the mounting plate. The first line is the model number, and the second line is the serial number.



7. The pump will contain various numbers of shaft bearings (item 28) based on the length of the pump as follows:
 

18" pump	=	(1) shaft bearings
24" pump	=	(2) shaft bearings
30" pump	=	(3) shaft bearings
36" pump	=	(4) shaft bearings
42" pump	=	(5) shaft bearings
48" pump	=	(6) shaft bearings
54" pump	=	(7) shaft bearings
60" pump	=	(8) shaft bearings
8. Due to the hermetically sealed design, the pump will displace liquid as follows:
 

18" pump	=	approximately 1-1/4 gallons (4.73 liters)
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 Add approximately 1 quart (.95 liter) per column section.  
 E.G. 24" pump = 1-1/2 gallons (5.68 liters)
9. 18" pumps do not have column extensions.
10. Largest diameter impeller is always closest to motor.

Figure 5  
MSVKC with Flywheel  
56C and 80 Frame Metric Motors  
Spare Parts Drawing

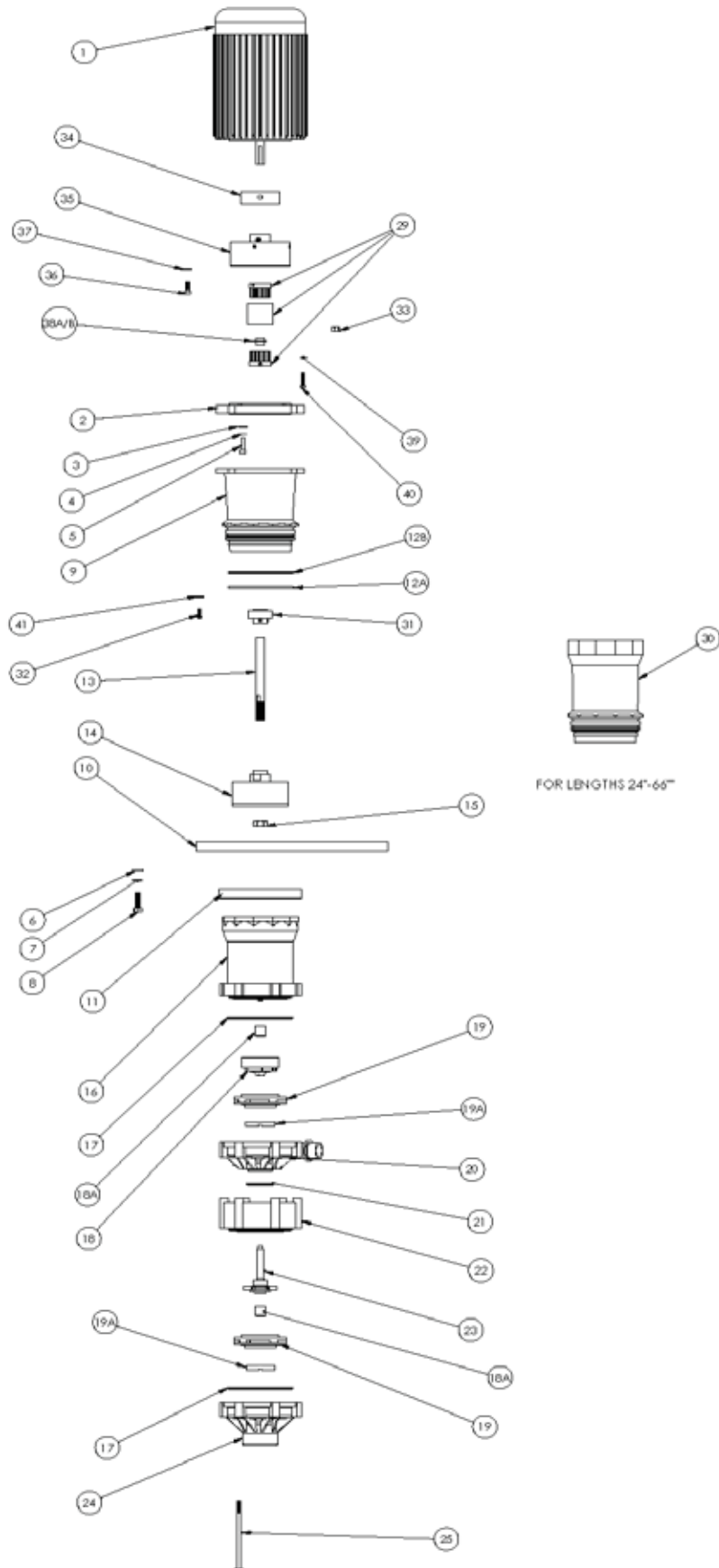
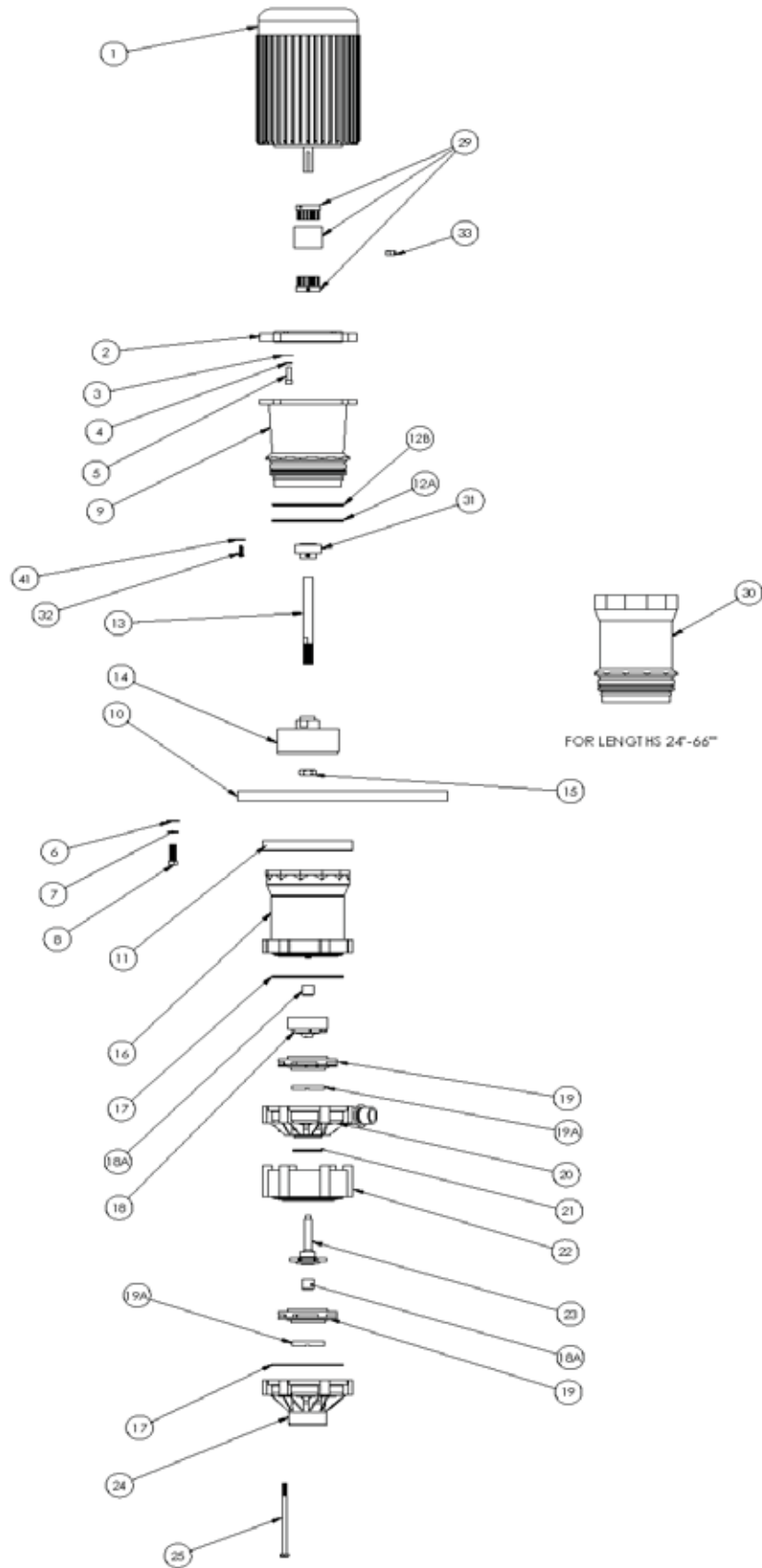


Figure 6  
MSVKC Without Flywheel  
63 and 71 Frame Metric Motors  
Spare Parts Drawing



MSVKC SPARE PARTS			
Item	Description	Part Number	
		Polypropylene	PVDF
1	<b>Motor</b>		
		AS LISTED	
2	<b>Metric Motor Adapter</b>		
	IEC 63 & 71	M101947	
	IEC 80	M101947-2	
3	<b>Flat Washer</b>		
	1/4" - for all metric frames	J100113	
4	<b>Lock Washer</b>		
	1/4" - for all metric frames	J100672	
5	<b>Socket Head Screw</b>		
	IEC 71 & 80	J103228	
6	<b>Flat Washer</b>		
	3/8" SSTL	J100128	
7	<b>Lock Washer</b>		
	3/8" SSTL	J100115	
8	<b>Motor Mounting Bolts</b>		
	NEMA 56C - 3/8-16 x 1-3/4" Hex Hd. Cap Screw	J103161	
	NEMA 56C - 3/8-16 x 1" Hex Hd. Cap Screw	J100114	
	IEC 71 & 80 - 3/8-16 x 2-1/4" Hex Hd. Cap Screw	J103227	
	IEC 71 & 80 - 3/8-16 x 1-1/2" Hex Hd. Cap Screw	J103207	
9	<b>Motor Adapter</b>		
		M101981-1	M101981-2
10	<b>Mounting Plate</b>		
	PVC - 9 1/2" x 14" x 3/4" (optional)	105611	
11	<b>Lock Ring</b>		
		M101984-1	M101984-2
12A	<b>Motor Adapter/Column Ext. O-ring</b>		
	FKM - 4 mm	J103306	
	EPDM - 4 mm	J103308	
12B	<b>Motor Adapter/Column Ext. O-ring</b>		
	FKM - 4.5 mm	J103307	
	EPDM - 4.5 mm	J103309	
13	<b>Shaft</b>		
	18" NEMA 56C	M102119-9	
	18" IEC 80	M102119-19	
	18" IEC 71	M102119-10	
	24" NEMA 56C	M102119-1	
	24" IEC 80	M102119-20	
	24" IEC 71	M102119-5	
	30" NEMA 56C	M102119-2	
	30" IEC 80	M102119-21	
	30" IEC 71	M102119-6	
	36" NEMA 56C	M102119-3	
	36" IEC 80	M102119-22	
	36" IEC 71	M102119-7	
	42" NEMA 56C	M102119-4	
	42" IEC 80	M102119-23	
	42" IEC 71	M102119-8	
	48" NEMA 56C	M102119-11	
	48" IEC 80	M102119-24	
	48" IEC 71	M102119-15	
	54" NEMA 56C	M102119-12	
	54" IEC 80	M102119-25	
	54" IEC 71	M102119-16	
	60" NEMA 56C	M102119-13	
	60" IEC 80	M102119-26	
	60" IEC 71	M102119-17	
	66" NEMA 56C	M102119-14	
	66" IEC 80	M102119-27	
	66" IEC 71	M102119-18	



Item	Description	Part Number	
		Polypropylene	PVDF
14	<b>Drive Mag Assembly</b>		
		A101989-20	
15	<b>Jam Nut</b>		
	Left hand thread	J103515	
16	<b>Barrier/Column Hsg. Adapter</b>		
		A102271-1	A102271-2
17	<b>Impeller Housing O-ring</b>		
	Viton	J102389	
	EPDM	J102585	
18	<b>Impeller Drive</b>		
	with Carbon Bushing	A103269-1	A103269-4
	with PTFE Bushing	A103269-2	A103269-5
	with Ceramic Bushing	A103269-3	A103269-6
18A	<b>Impeller Bushing</b>		
	Carbon	J102387	
	PTFE	J102790	
	Ceramic	J103617	
19	<b>Impeller with Thrust Ring</b>		
	3.00"	A101983-17	A101983-18
	3.19"	A101983-15	A101983-16
	3.50"	A101983-2	A101983-5
	3.88"	A101983-3	A101983-6
19A	<b>Thrust Ring - PTFE</b>		
	3.00"/3.19"	J103893	
	3.50"/3.88"	J101606	
20	<b>Impeller Housing - 2nd Stage</b>		
	NPT	A103205-3	A103205-4
	BSP with Viton® Discharge O-ring	A103271-1	A103271-2
	BSP with EPDM Discharge O-ring	A103271-3	A103271-4
21	<b>Diffuser O-ring</b>		
	Viton	J102447	
	EPDM	J102446	
22	<b>Diffuser Assembly (pumps s/n 79945 and below must also order item 20)</b>		
	Polypropylene	A103242-3	
	PVDF	A103242-4	
23	<b>Impeller Drive Shaft</b>		
	w/Carbon Bushing	A103270-1	A103270-4
	w/PTFE Bushing	A103270-2	A103270-5
	w/Ceramic Bushing	A103270-3	A103270-6
24	<b>Impeller Housing - 1st Stage</b>		
	1st Stage - NPT	A103195-1	A103195-2
	1st Stage - BSP	A103195-3	A103195-4
25	<b>C/S Hex Head 5/16-18 x 5-1/4" lg.</b>		
	PVDF - standard	J103926	
	Hastelloy - optional	J103925	
	Titanium - optional	J103872	
26	<b>Hex reducer Bushing</b>		
	1-1/2" x 1"	J103160	J103159
27	<b>Elbow - Not Shown</b>		
	90° x 1-1/2"	J103165	J103166

Item	Description	Part Number	
		Polypropylene	PVDF
28	<b>Discharge Pipe</b>		
	18" pump length	M101965-1	M101965-2
	24" pump length	M101965-7	M101965-8
	30" pump length	M101965-3	M101965-4
	36" pump length	M101965-9	M101965-10
	42" pump length	M101965-5	M101965-6
	48" pump length	M101965-11	M101965-12
	54" pump length	M101965-13	M101965-14
	60" pump length	M101965-15	M101965-16
	66" pump length	M101965-17	M101965-18
29	<b>Coupling</b>		
	NEMA 56C	A102485	
	IEC 63	A102486	
	IEC 71	A102487	
	IEC 80	A102488	
30	<b>Column Extension</b>		
		M101982-1	M101982-2
31	<b>Shaft Bearing</b>		
		J103157	
32	<b>Bearing Retaining Screw</b>		
		J103175	
33	<b>Hex Nut</b>		
	3/8-16 (for metric motor adapter)	J100135	
34	<b>Flywheel Adapter</b>		
	IEC 80	105442	
35	<b>Flywheel</b>		
	NEMA 56C	105462	
	IEC 80	105443	
36	<b>Socket Head Bolts</b>		
	IEC 80	J100023	
37	<b>Lock Washer</b>		
	IEC 80	J103637	
38A	<b>Coupling Support</b>		
	56C frame only	105463	
38B	<b>Coupling Support</b>		
	80 frame only	105444	
39	<b>Lock Washer</b>		
		J100672	
40	<b>Hex Head Bolt</b>		
		J102759	
41	<b>Flat Washer</b>		
		J103638	



**FINISH THOMPSON INC.**  
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## EU Declaration of Conformity



Finish Thompson Inc. hereby declares that the following machine(s) fully comply with the applicable health and safety requirements as specified by the EU Directives listed. The product may not be taken into service until it has been established that the drive motor for the centrifugal pump complies with the provisions of all relevant EU Directives. The complete product complies with the provisions of the EC Directive on machinery safety provided motors carry CE marking.

This declaration is valid provided that the devices are fully assembled and no modifications are made to these devices.

**Type of Device:**

Centrifugal Pumps

**Models:**

AC/AK/AV - 400/500/600/800	GP-11/22/32	VKC-5.5/6/6H/7/8/10
DB-3/4/5/5.5/6/6H/7/8/9/10/11/15/22	MSKC	SP-10/11/15/22
KC-3/4/5/5.5/6/6H/8/10/11/22/32	MSVKC	
UC-1516/1516L/1518/1518L/2110/3158/326/326H/328/436/438/4310H/326H/4310H/6410		

**EU Directives:**

Machinery Safety (2006/42/EC)

**Applied Harmonized Standards:**

EN ISO 12100  
EN 809

Manufacturer: Finish  
Thompson Inc.  
921 Greengarden Road  
Erie, Pennsylvania 16501-1591 U.S.A

Signed,

President

1 August 2016

Person(s) Authorized to Compile Technical File: Finish Thompson GmbH  
Otto-Hahn-Strasse 16  
Maintal, D-63477 DEU  
Telephone: 49 (0)6181-90878-0

## TROUBLESHOOTING

### NO DISCHARGE

- Pump not primed.
- Air lock in pump.
- Discharge head too high.
- Closed valve.
- Viscosity or specific gravity too high (magnets uncoupled).

### INSUFFICIENT DISCHARGE

- Discharge head higher than anticipated.
- Clogged suction line, foot valve or crimp in hose.
- Foot valve too small.
- Foot valve or suction opening not submerged enough.
- Incorrect pump rotation

### INSUFFICIENT PRESSURE

- Air or gasses in liquid.
- Impeller diameter too small.
- Discharge head higher than anticipated.
- Incorrect pump rotation.

### LOSS OF PRIME

- Leaking discharge line.
- Suction lift too high or insufficient NPSHA. Should be 2 feet above NPSHR.
- Foreign matter in impeller.
- Leaking valve.
- Malfunctioning level sensor or control.

### EXCESSIVE POWER CONSUMPTION

- System head lower than rating.
- Pumps too much liquid.
- Specific gravity or viscosity of liquid being pumped is too high or higher than defined in application.
- Binding pump parts.

### VIBRATION/NOISE

- Excess bearing wear.
- Drive magnet uncoupled.
- Loose magnet.
- Pump cavitation.
- Motor or piping not properly secured.
- Foreign object in impeller.
- Set screws on motor shaft coupling loose.
- Drive magnet assembly may not be properly set or secured.

## WARRANTY

Finish Thompson, Inc (manufacturer) warrants this pump product to be free of defects in materials and workmanship for a period of one year from date of purchase by original purchaser. If a warranted defect, which is determined by manufacturer's inspection, occurs within this period, it will be repaired or replaced at the manufacturer's option, provided (1) the product is submitted with proof of purchase date and (2) transportation charges are prepaid to the manufacturer. Liability under this warranty is expressly limited to repairing or replacing the product or parts thereof and is in lieu of any other warranties, either expressed or implied. This warranty does not apply to normal wear of the product or components. This warranty does not apply to products or parts broken due to, in whole or in part, accident, overload, abuse, chemical attack, tampering, or alteration. The warranty does not apply to any other equipment used or purchased in combination with this product. The manufacturer accepts no responsibility for product damage or personal injuries sustained when the product is modified in any way. If this warranty does not apply, the purchaser shall bear all cost for labor, material and transportation.

Manufacturer shall not be liable for incidental or consequential damages including, but not limited to process down time, transportation costs, costs associated with replacement or substitution products, labor costs, product installation or removal costs, or loss of profit. In any and all events, manufacturer's liability shall not exceed the purchase price of the product and/or accessories.

Call our toll free Technical Service Hot Line, 1-800-888-3743, if you have any questions regarding product operation or repair.

## WARRANTY REGISTRATION

Thank you for your purchase of this quality Finish Thompson product. Be sure to take a minute to register your pump at [Finishthompson.com/warranty](http://Finishthompson.com/warranty). Simply provide the model number, serial number and a few other pieces of information.

## ORDERING SPARE PARTS

Spare parts can be ordered from your local distributor. Always refer to pump model number to avoid error.

## OTHER FINISH THOMPSON PRODUCTS

Drum Transfer Pumps, available in sanitary construction, stainless steel, polypropylene, PVDF, and CPVC, are capable of flows to 40 gpm, discharge head to 80 feet and viscosities to 15,000 cps.

Portable Mixers for turbine mixing and blending handle viscosities to 1,000 cps with gentle, non-vortexing circulation. Available in 316 stainless steel.

Centrifugal Pumps, in polypropylene, PVDF, and 316 stainless steel are offered in mag drive sealless or mechanical seal models. Pumps are capable of 250 gpm, up to 130 feet discharge head, and 220°F (104°C) maximum.

For more product information, contact Finish Thompson Inc.



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Toll Free Service 1-800-888-3743  
Part Number J104101, Rev 8, 2/27/2019

