

Hopper or Hose Heat Circulation Kit

313259G

EN

For circulating heated water or oil through XM plural-component sprayer double wall hoppers, heated hose, and Viscon[®] HP heater in hazardous or non-hazardous locations. For professional use only.

Model 256273 (for XM)

Includes parts needed to assemble heated hose system. Heated hose assembly and Viscon HP heater must be ordered separately.

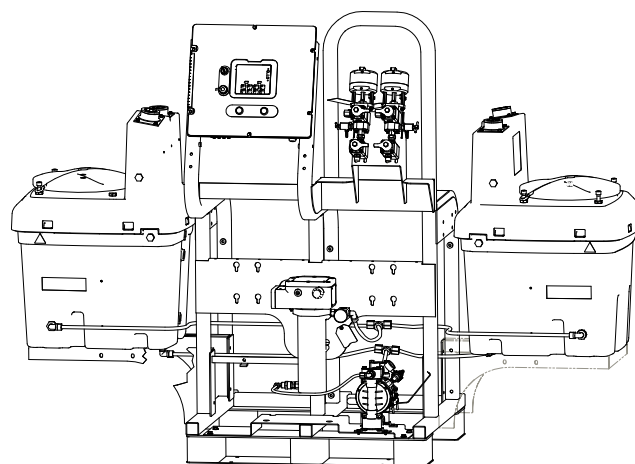
See **Technical Specifications** on page 23 for Maximum Working Pressure and Temperature Rating information.



Important Safety Instructions

Read all warnings and instructions in this manual. Save these instructions.

Model 256273 (shown installed on XM)



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Related Manuals





Manual	Description
312359	XM Operation
313289	XM Repair
313292	XM OEM, Instructions-Parts
312747	Double Wall Hopper, Instructions-Parts
309524	Viscon [®] HP Heater
308981	Husky [™] 716 Diaphragm Pump
3A5313	Water Heated Hose

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risk. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

 WARNING	
	<p>FIRE AND EXPLOSION HAZARD</p> <p>Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> • Use equipment only in well ventilated area. • Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc). • Keep work area free of debris, including solvent, rags and gasoline. • Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present. • Ground all equipment in the work area. See Grounding instructions. • Use only grounded hoses. • Hold gun firmly to side of grounded pail when triggering into pail. • If there is static sparking or you feel a shock, stop operation immediately. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.
	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Do not operate the unit when fatigued or under the influence of drugs or alcohol. • Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Specifications in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Specifications in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS forms from distributor or retailer. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. • Do not alter or modify equipment. • Use equipment only for its intended purpose. Call your distributor for information. • Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. • Do not kink or over bend hoses or use hoses to pull equipment. • Keep children and animals away from work area. • Comply with all applicable safety regulations.
	<p>ELECTRIC SHOCK HAZARD</p> <p>Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> • Turn off and disconnect power cord before servicing equipment. • Use only grounded electrical outlets. • Use only 3-wire extension cords. • Ensure ground prongs are intact on sprayer and extension cords. • Do not expose to rain. Store indoors.

! WARNING

	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not point gun at anyone or at any part of the body. • Do not put your hand over the spray tip. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Do not spray without tip guard and trigger guard installed. • Engage trigger lock when not spraying. • Follow Pressure Relief Procedure in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.
	<p>BURN HAZARD</p> <p>Equipment surfaces and fluid that's heated can become very hot during operation. To avoid severe burns, do not touch hot fluid or equipment. Wait until equipment/fluid has cooled completely.</p>
	<p>TOXIC FLUID OR FUMES HAZARD</p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> • Read MSDS's to know the specific hazards of the fluids you are using. • Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines. • Always wear impervious gloves when spraying or cleaning equipment.
	<p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, inhalation of toxic fumes, burns, and hearing loss. This equipment includes but is not limited to:</p> <ul style="list-style-type: none"> • Protective eyewear • Clothing and respirator as recommended by the fluid and solvent manufacturer • Gloves • Hearing protection

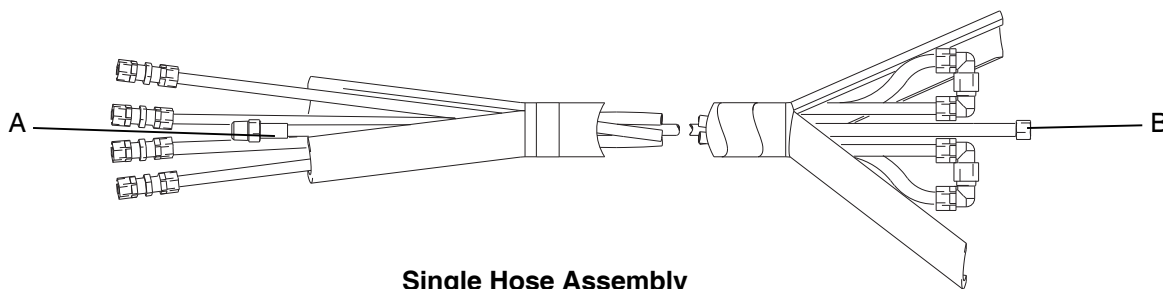
Heated Hopper or Hose Circulation Kit 256273

The kit described in this manual; includes all miscellaneous parts needed to assemble the system. There are three options for using circulation kit 256273:

- Circulate water through the heater and only the hoppers. See FIG. 1, page 8.
- Circulate water through the heater and only the heated hose. See FIG. 5, page 12.
- Circulate water through the heater, hoppers, and heated hose. See FIG. 3, page 10.



Heated Hose Assembly

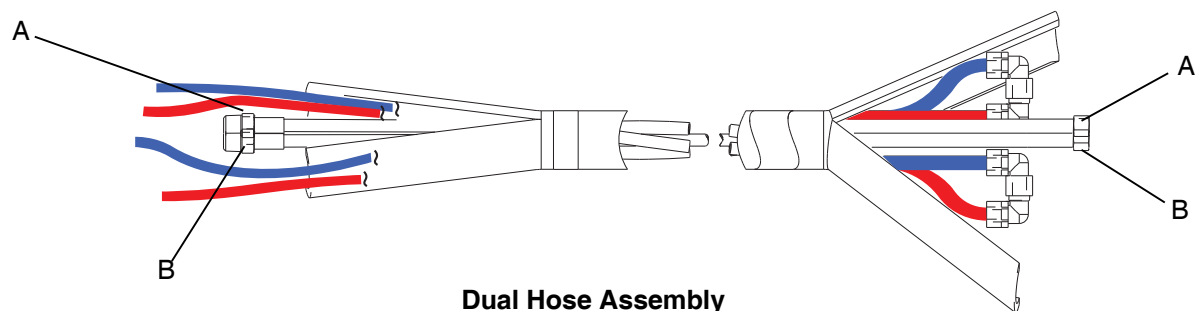
Order separately a heated hose assembly that meets maximum pressure and hose diameter requirements. You can connect up to six 50 ft. (15.2 m) heated hose sections for a maximum total length of 300 ft. (91.4 m). See your Water-Jacket Heated Hose Kit manual.




Single Hose Assembly

Single Hose Assemblies

Part, Series	Maximum Pressure Rating <i>psi (MPa, bar)</i>	Hose Diameter <i>in. (mm)</i>	Thread A <i>npt(m)</i>	Thread B <i>npsm(f)</i>	Approvals
245840, D	5000 psi (34, 345)	1/4 (6.35)	1/4	1/4	 
245841, D	7250 psi (50, 500)	1/4 (6.35)	1/4	1/4	
245842, D	5000 psi (34, 345)	3/8 (9.53)	3/8	3/8	
245843, D	7250 psi (50, 500)	3/8 (9.53)	3/8	3/8	
245844, D	5000 psi (34, 345)	1/2 (12.7)	1/2	1/2	
245845, D	7250 psi (50, 500)	1/2 (12.7)	1/2	1/2	




Dual Hose Assemblies

Part, Series	Maximum Pressure Rating psi (MPa, bar)	Hose Diameter in. (mm)	Thread A npsm(f)	Thread B npsm(f)	Approvals
248118, E	7250 psi (50, 500)	1/2 (12.7)	1/2	1/2	
248119, E	7250 psi (50, 500)	3/8 (9.53)	3/8	3/8	
248120, E	7250 psi (50, 500)	A = 1/2 (12.7) B = 3/8 (9.53)	1/2	3/8	
248121, E	7250 psi (50, 500)	A = 3/8 (9.53) B = 1/4 (6.35)	3/8	1/4	
24M439, E	7250 psi (50, 500)	A = 1/2 (12.7) B = 1/4 (6.35)	1/2	1/4	
24M440, E	5000 psi (34, 345)	A = 3/8 (9.53) B = 1/4 (6.35)	3/8	1/4	
24M441, E	5000 psi (34, 345)	3/8 (9.53)	3/8	3/8	
24M442, E	5000 psi (34, 345)	A = 1/2 (12.7) B = 1/4 (6.35)	1/2	1/4	
24M443, E	5000 psi (34, 345)	A = 1/2 (12.7) B = 3/8 (9.53)	1/2	3/8	
24M444, E	5000 psi (34, 345)	1/2 (12.7)	1/2	1/2	

Fluid Heater

Order separately a VISCON HP heater that meets local electrical and hazardous location requirements.

Hazardous Location Heaters

Part	Series	VAC (50/60 Hz single phase) / Watts / Amps	Approvals
245848	C	120 / 2300 / 19.2	 <p>See heater manual 309524 for the complete list of approvals.</p>
245863	C	240 / 4000 / 16.7	
245864	C	480 / 4000 / 8.30	
245862	C	200 / 4000 / 20.0	
246254	C	380 / 4000 / 10.5	

Non-hazardous Location Heaters

Model	Series	VAC (50/60 Hz single phase) / Watts / Amps	Approvals
245867	C	120 / 2300 / 19.2	See heater manual 309524 for approvals.
245868	C	200 / 4000 / 20.0	
245869	C	240 / 4000 / 16.7	
245870	C	480 / 4000 / 8.30	
246276	C	380 / 4000 / 10.5	

Typical Installation

NOTE: XM kit 256273 is shown in all typical installation illustrations.

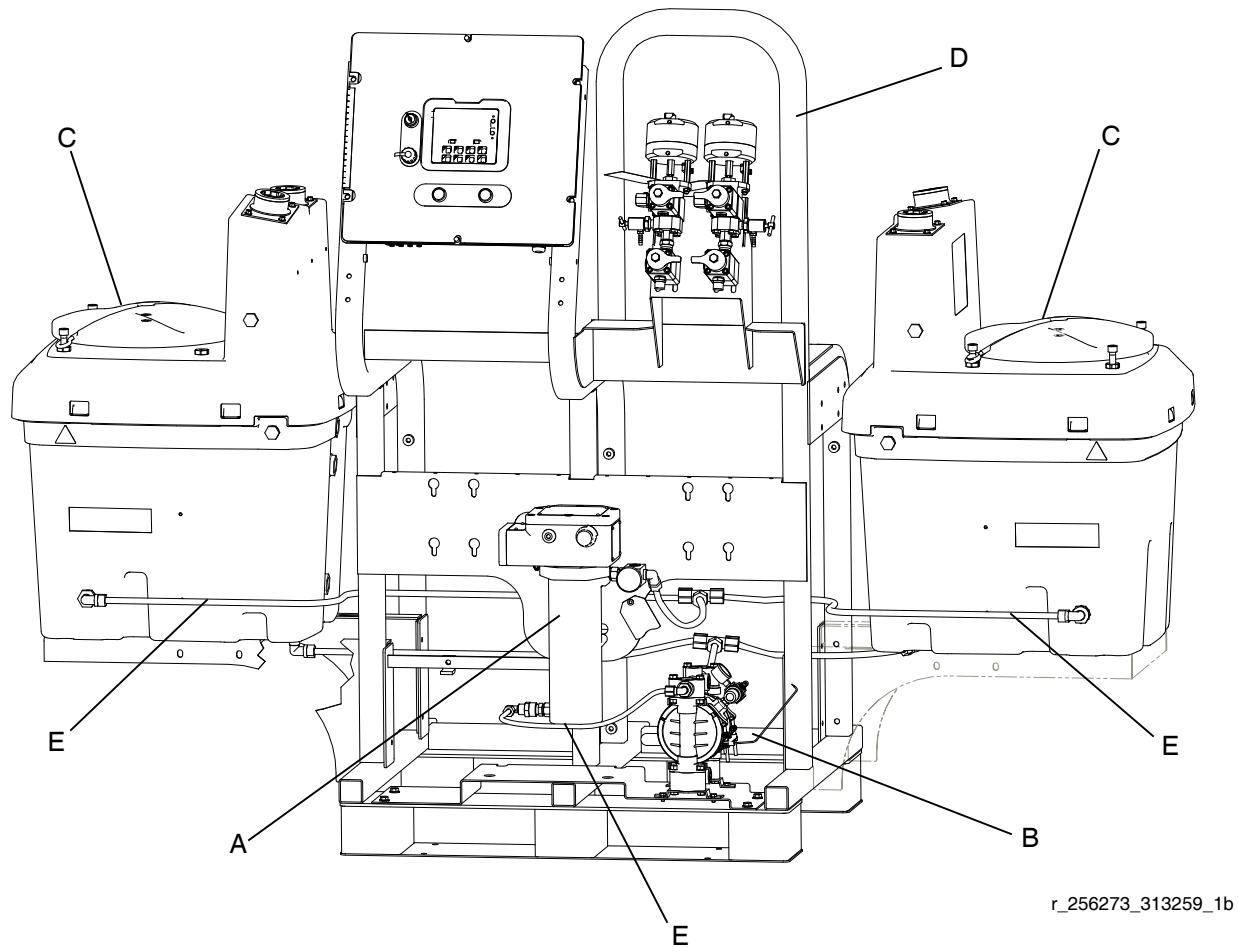


FIG. 1: Heat Only Hoppers Configuration

Key:

- A Viscon HP Heater
- B Husky diaphragm pump
- C Hopper
- D Frame
- E Fluid circulation tubing

NOTE: See FIG. 2 on page 9 for fluid schematic of heated fluid.

Back-Mounted Hoppers (BM)

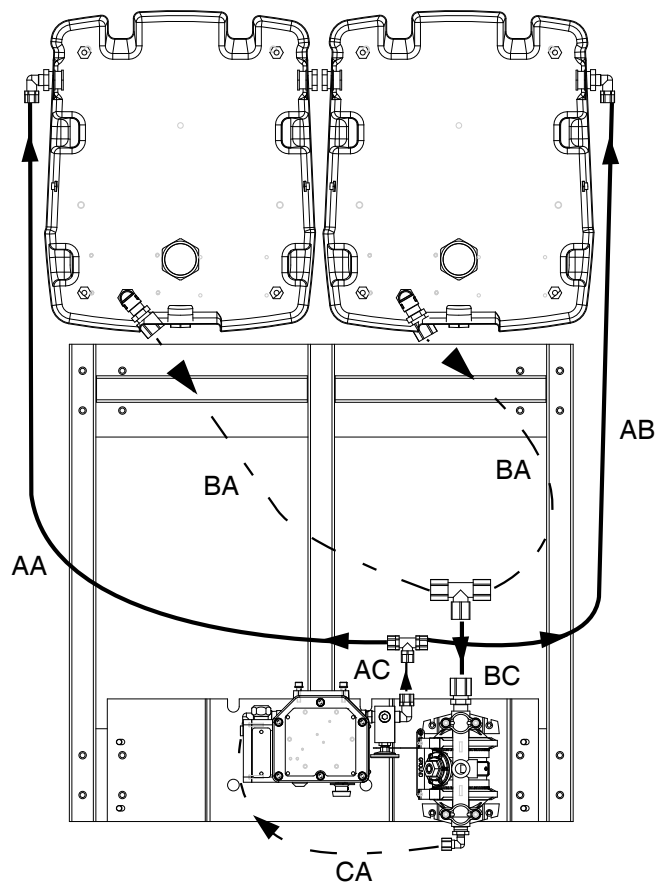


Table 1: Tubing Lengths

Section	Tubing	(BM) Hoppers in (mm)	(SM) Hoppers in (mm)
AA	1/2 in.	65 (1651)	50 (1270)
AB		51 (1295.4)	35 (889)
AC		7 (177.8)	4 (101.6)
BA	3/4 in.	40 (1016)	36 (914.4)
BB		29 (736.6)	17 (431.8)
BC		7 (177.8)	7 (177.8)
CA	3/8 in.	21 (533.4)	21 (533.4)

Side-Mounted Hoppers (SM)

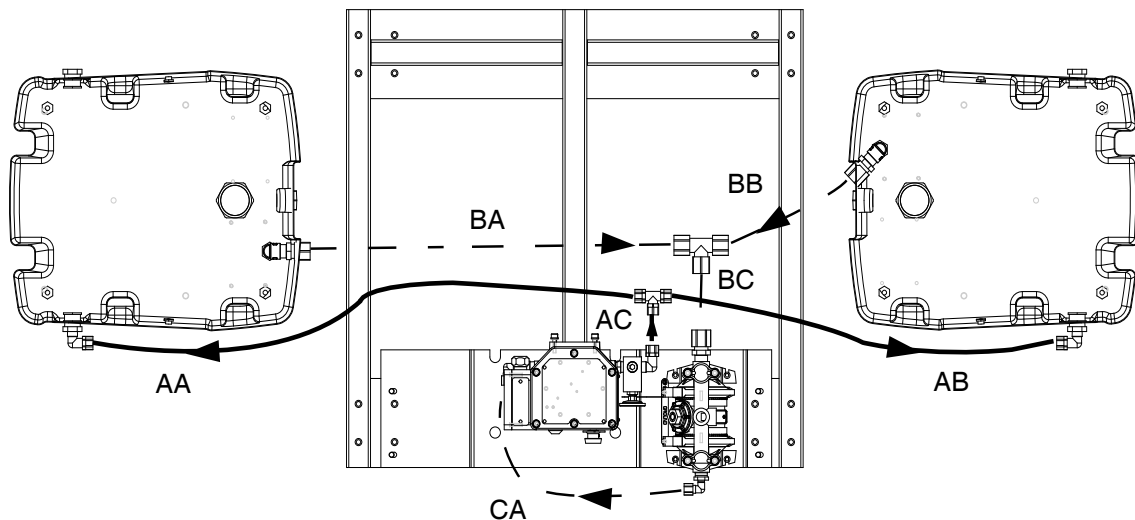


FIG. 2: Fluid schematic for only heating hoppers

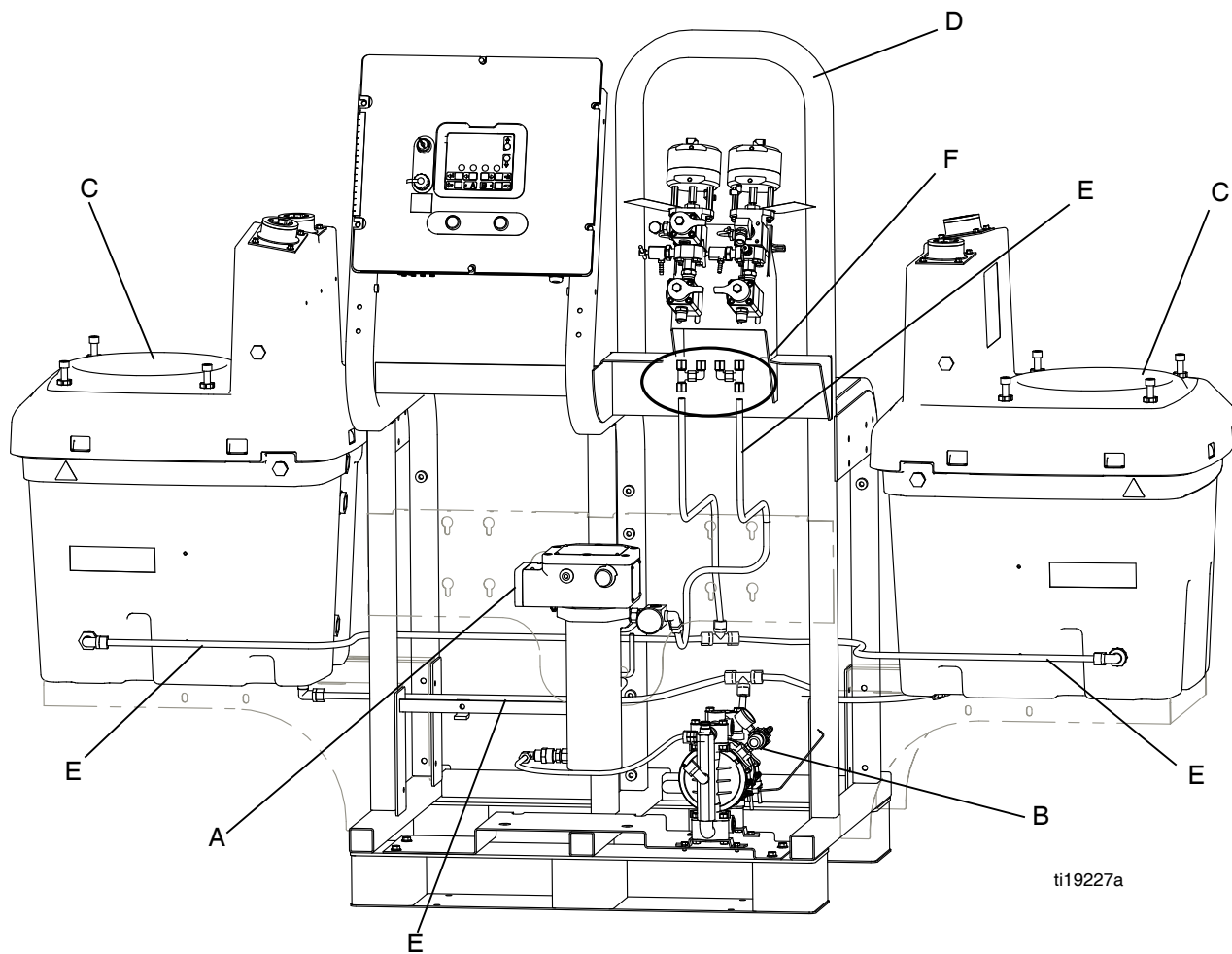


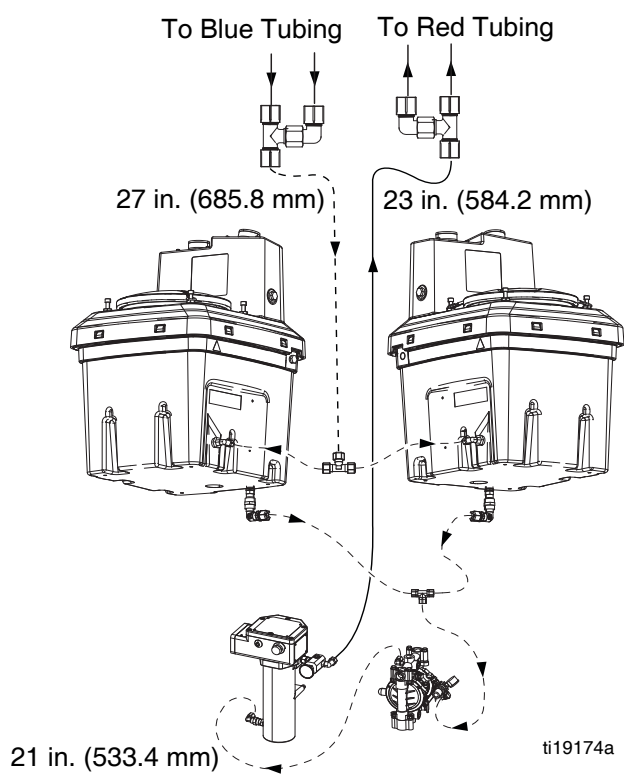
FIG. 3: Hoppers and Heated Hose Configuration

Key:

- A Viscon HP Heater
- B Husky diaphragm pump
- C Hopper
- D Frame
- E Fluid circulation tubing
- F Heated hose tee and elbow fittings (see heated hose connections on page FIG. 5 and FIG. 6 on page 12 and 13.)

NOTE: See FIG. 6 on page 13 for fluid schematic of heated fluid.

NOTE: See page 9 for tubing lengths not shown in FIG. 4.



Bottom View

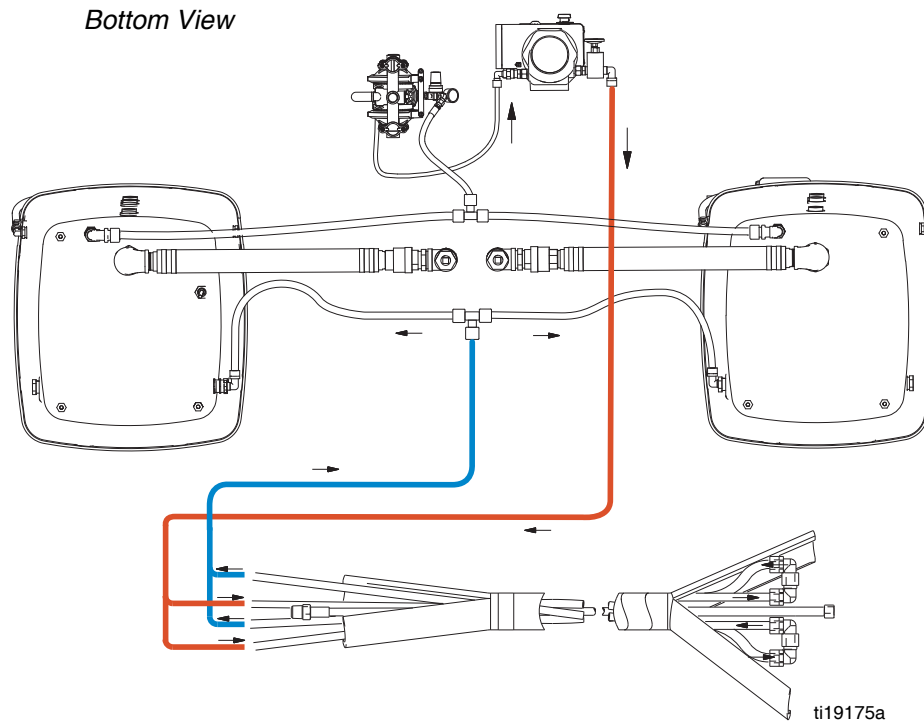
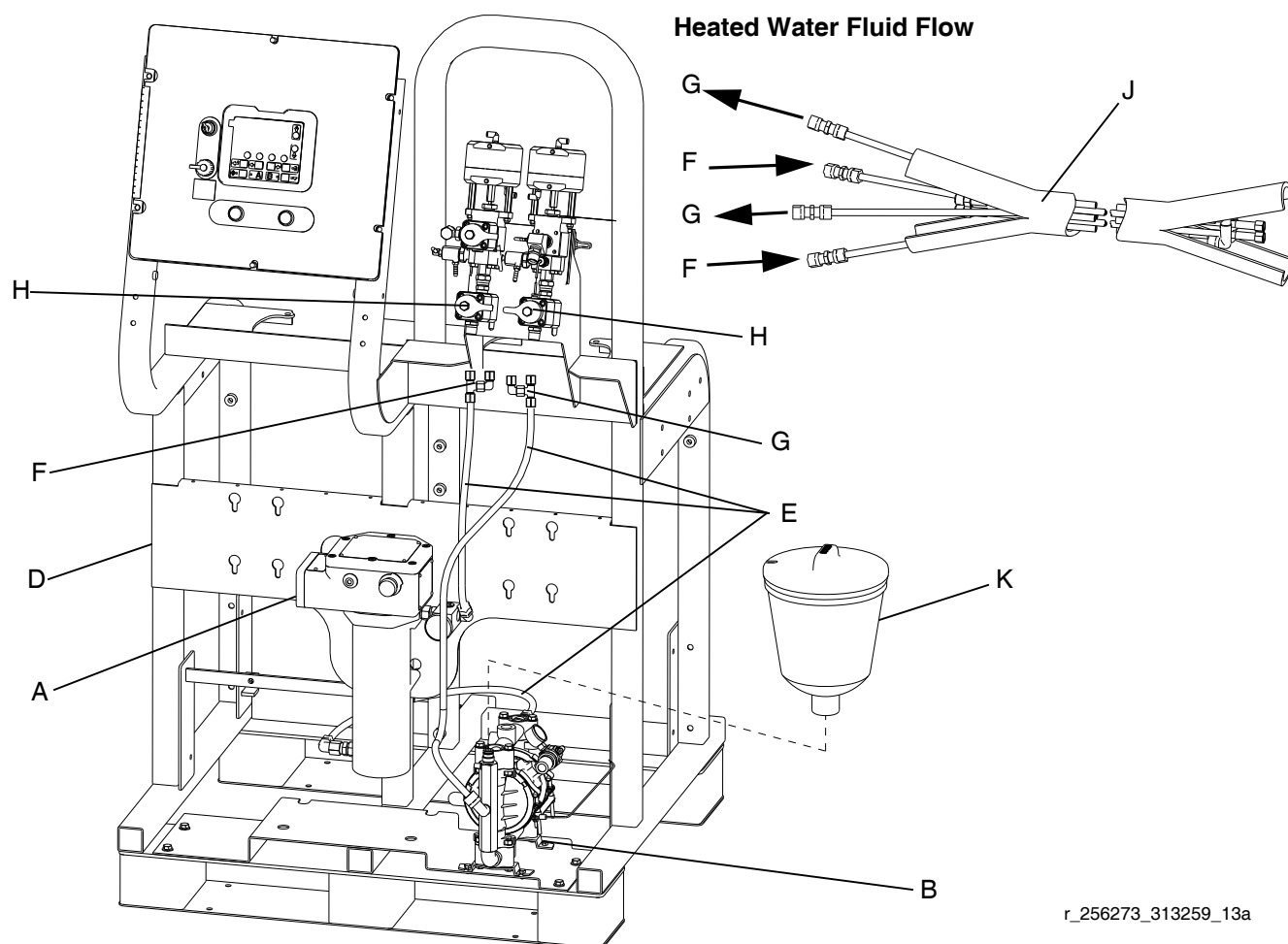


FIG. 4: Fluid schematic for heating hoppers and heated hose



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FIG. 5: Heated Hose Only Configuration

Key:

- A Viscon HP heater
- B Husky diaphragm pump
- C Hopper (not shown)
- D Frame
- E Fluid circulation tubing
- F Heated hose tee and elbow fitting (to red tubing)
- G Return hose tee and elbow fitting (from blue tubing)
- H Recirculation valve
- J Heated hose assembly (purchase separately)
- K Overflow tank (used for only heated hose configuration)

NOTE: See FIG. 6 on page 13 for fluid schematic of heated fluid.

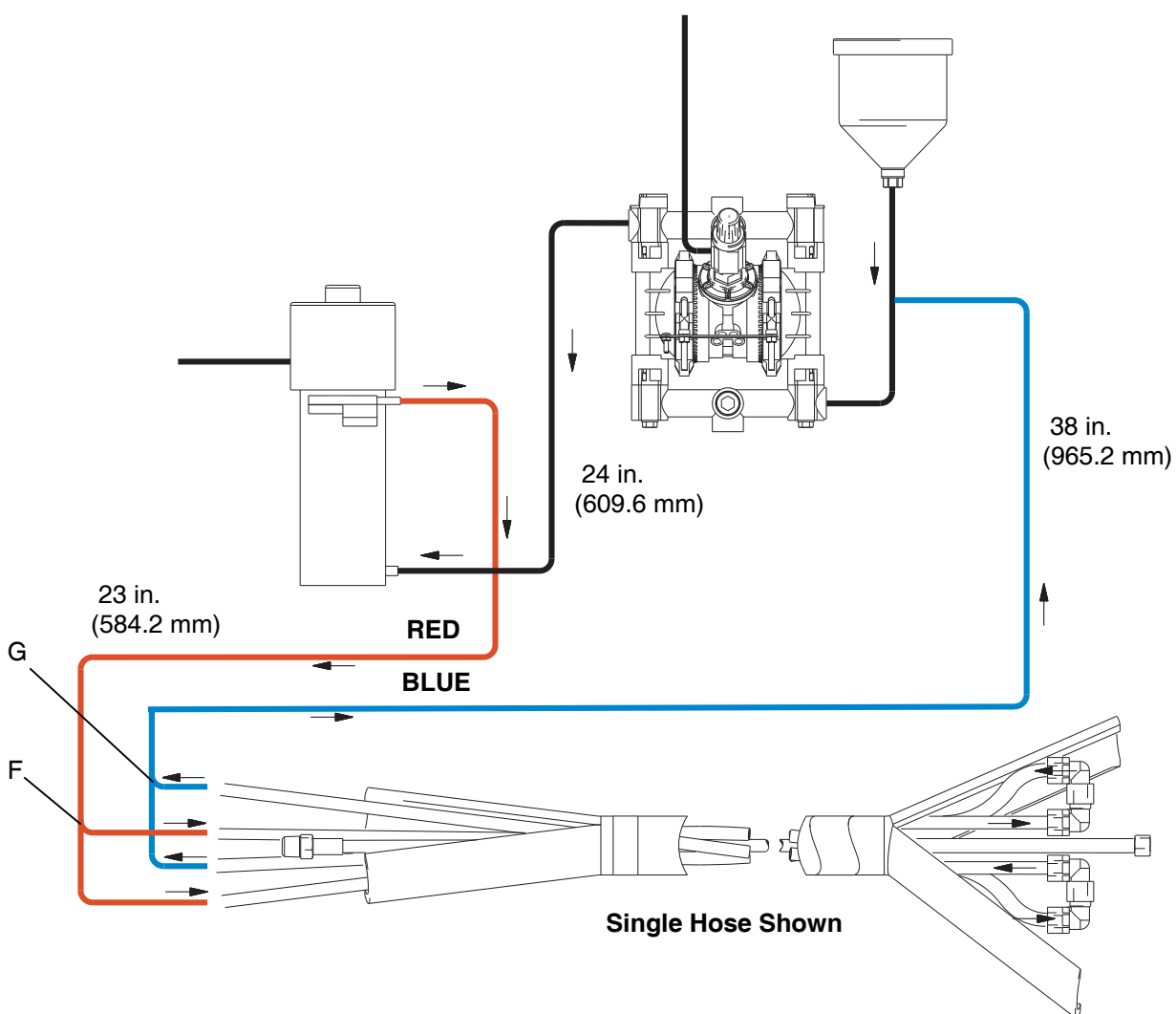
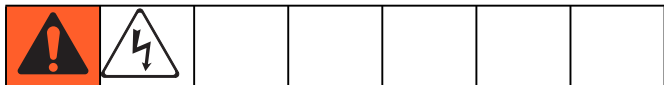


FIG. 6: Fluid schematic for heated hose

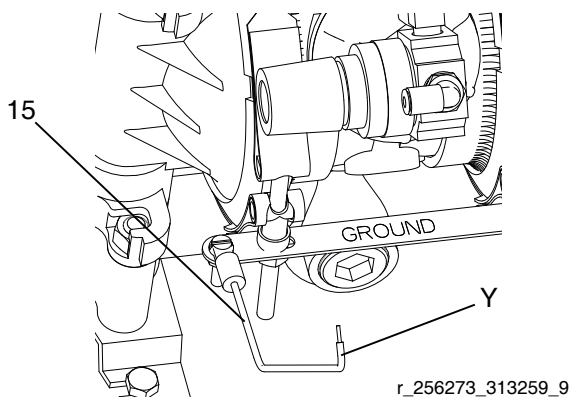
Installation

Grounding

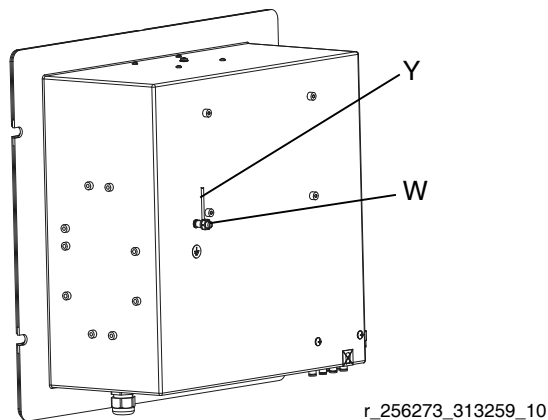


The equipment must be grounded. Grounding reduces the risk of static and electric shock by providing an escape wire for the electrical current due to static build up or in the event of a short circuit.

1. Remove grounding screw on diaphragm pump (3) and tighten ring terminal on grounding cable (15) under ground screw.



2. Loosen grounding lug locknut (W) on back of control box. Insert ground wire end (Y) into lug slot and tighten locknut securely.



Tubing Lengths

The length of tubing (4, 16, 29) is determined by the hopper mounting configuration and heating choices. Reference the fluid schematic, from the configurations listed below, to find the tubing lengths.

- Heating hoppers only. See FIG. 2 on page 9.
- Heating hoses only. See FIG. 6 on page 13.
- Heating hoppers and hoses. See FIG. 4 on page 11.

Cut tubing to length specified in fluid schematics.

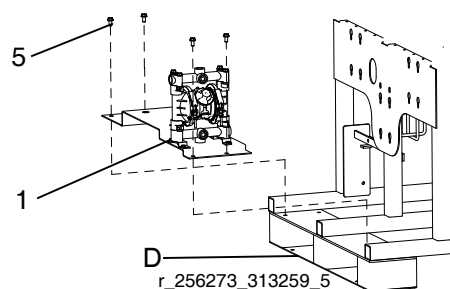
1. Use tubing cutter to cut tubing (4) squarely to desired lengths.

NOTE: To ensure a leak-proof seal, apply PTFE tape on all npt threads.

2. Insert tubing through the back of the nut in each of the plastic fittings (7) until the tube stops. Tighten the nut hand tight, then tighten it to 1-1/2 to 2 turns with a wrench.

Install

1. Mount bracket (1) on XM frame (D) using screws (5).



2. Remove 3/4 npt plugs from the end of the diaphragm pump fluid manifold and place in center.
3. **For only heating hoppers or heating hoppers and heated hose:** Install tube fitting (31) in fluid inlet. See FIG. 7.

4. For heating heated hose only (see FIG. 7):

- a. Install elbow (32), mounting fitting (23), o-ring (22) and 1.5 gallon reservoir tank (21) on diaphragm pump fluid inlet.
 - b. **XM Kit 256273 only:** Connect elbow fitting (7) to mounting fitting (23).
5. Install bushing (12) and elbow tube fitting (17) to diaphragm pump fluid outlet. See FIG. 7.
 6. Mount diaphragm pump to bracket. Use four screws (2) to mount pump (3) on mounting bracket. See FIG. 7.

7. Connect air regulator assembly. Connect nipple (10), air regulator/gauge (9), and fitting (19) to pump (3). See FIG. 7.
8. Remove plug on system air control supply and connect fitting (19) in place of the plug. Connect hose (27) between fitting (19) on 100 psi (0.7 MPa, 7 bar) XM air supply and fitting (19) on the air regulator/gauge (9). See FIG. 7. Refer to your Husky 716 manual if needed.

NOTE: The air regulator (9) controls pump pressure.

XM: Heated Hose Only

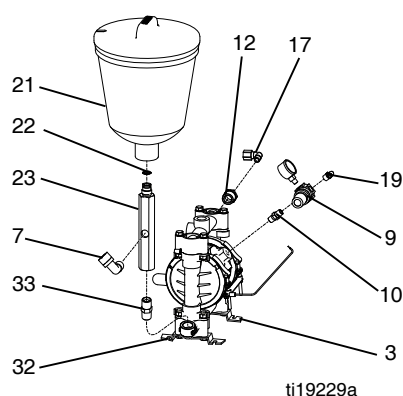
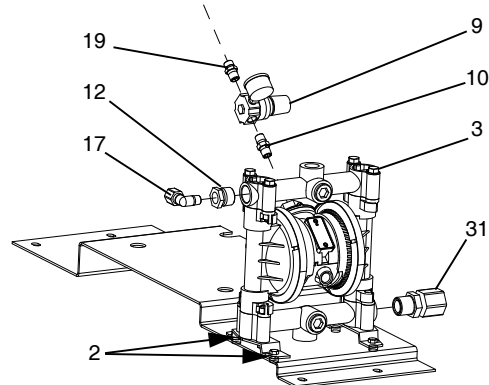
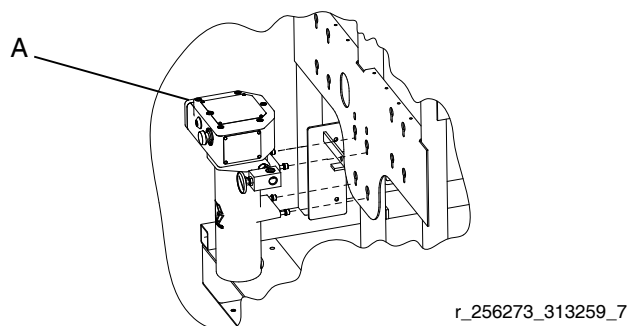


FIG. 7: Diaphragm Pump Installation

XM: All Others



9. Slide Viscon HP heater (A) into slots on frame. Tighten bolts to secure to frame.



10. **For heating hoppers or heating hoppers and heated hose:** install fitting (18) and elbow (17) in the heater's fluid inlet facing away from the system. Install elbow (7) in heater outlet facing the back of the system.

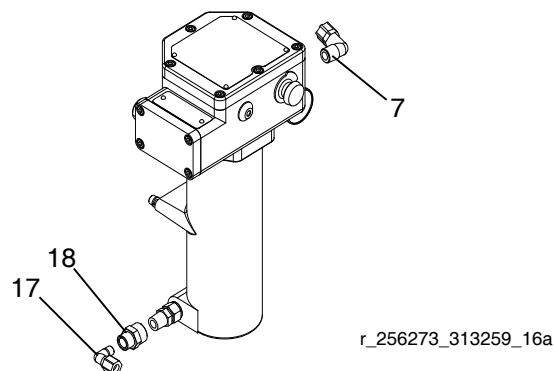


FIG. 8

11. **For heating heated hose only:** connect elbow fitting (17) to heater fluid inlet facing the back of the system. Install elbow (7) in the heater outlet facing upward.

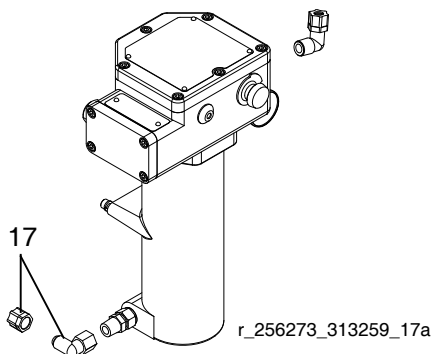
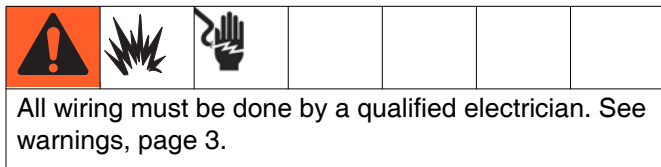


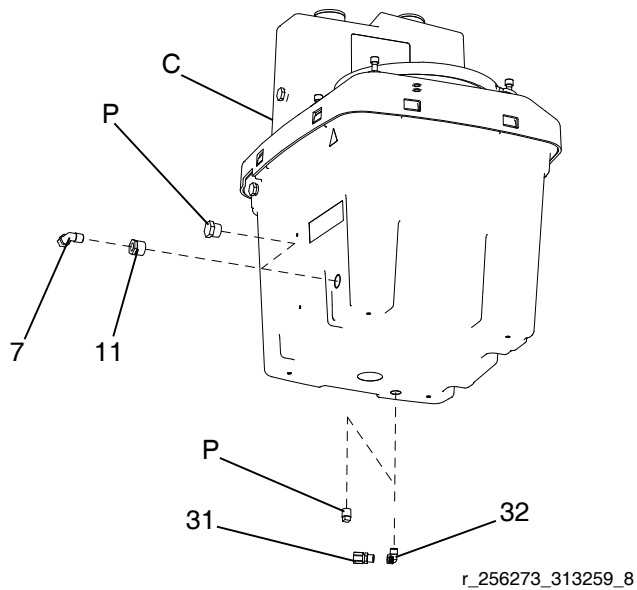
FIG. 9



12. Wire Viscon HP heater (B) to your voltage supply. Follow wiring procedure in your Viscon HP heater manual.

13. If heating hoppers:

- Remove bottom plug (P) from hopper (C).
- Install elbows (32) and fittings (31).
- Repeat for second hopper.



- Remove side plug (P) used for fluid inlet.
- Replace plug with bushing (11) and elbow fitting (7).
- Cut tubing (4, 16, 29). See **Tubing Lengths** on page 14.

NOTE: Fitting nuts may need retightening as the system reaches normal operating temperatures.

Setup

For heating hoppers only:

See fluid schematic on page 9 and parts on page 21.

NOTE: To ensure a leak-proof seal, use PTFE tape on all pipe thread connections.

1. Connect A and B fluid hoses to shutoff check valve outlets (H).
2. Connect elbow fitting (17) in pump outlet (3) and elbow fitting (17) on heater inlet (A) with tubing (16).
3. Connect fitting (7) in the heater fluid outlet (A) and tee fitting (13) with tubing (4). Connect tee fitting (13) and fittings (7) in the hopper side ports with tubing (4).
4. Connect fittings (31) to elbow in bottom outlet of hoppers and tee fitting (30) with tubing (29). Connect tee fitting (30) and the pump (3) inlet fitting (31) with tubing (29).

For heating heated hose only:

See fluid schematic on page 13 and parts on page 22.

1. Connect A and B fluid hoses to shutoff check valve fluid outlets (H).
2. Connect elbow fitting (17) in pump outlet (3) and elbow fitting (17) on heater inlet (A) with tubing (16).
3. Connect fitting (7) in the heater fluid outlet (A) and tee fitting (13) with tubing (4).
4. Connect tee fitting (42) and elbow fitting (41) to recirculation inlets and outlet connections of the heated hose. See FIG. 10.
5. Connect elbow fitting (7) to 1-1/2 gallon tank manifold (23) with tubing (4).

For heating hoppers and heated hose:

See fluid schematic on page 11 and parts on page 20.

1. Connect A and B fluid hoses to shutoff check valve outlets (H).
2. Connect elbow fitting (17) in pump outlet (3) and elbow fitting (17) on heater inlet (A) with tubing (16).

3. Connect fitting (7) in the heater fluid outlet (A) and tee fitting (13) to hose circulation inlet with tubing (4).
4. Connect tee fitting (13) from hose circulation return to tee fitting (13) with tubing (4).
5. Connect tee fitting (13) and fittings (7) in the hopper side ports with tubing (4).
6. Connect fittings (31) to elbow in bottom outlet of hoppers and tee fitting (30) with tubing (29). Connect tee fitting (30) and the pump (3) inlet fitting (31) with tubing (29).

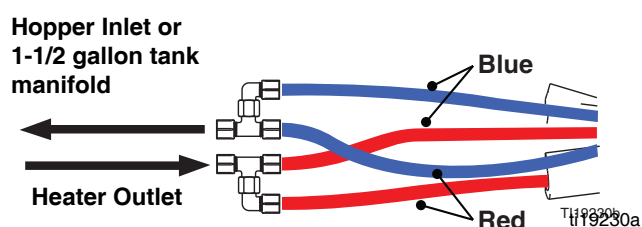


FIG. 10: Recirculation Inlet and Outlet Connections

Connecting Additional Hose Lengths

Up to six 50 ft (15.2 m) sections of heated hose can be attached for a maximum total length of 300 ft (91.4 m).

1. Remove plastic u-turn fittings at the end of the heated hose assembly.
2. Connect the next length of hose, using union fittings supplied with the hose.
3. Tubes are color coded. Connect like colors.

NOTICE

To prevent cross-contamination, ensure you connect "A" side fluid hose to "A" side fluid hose on additional heated hose.

Operation



1. Select fluid to use for heating circulation.

- 50% water and 50% ethylene glycol mixture is recommended for fastest heat-up time and prevention of algae build-up regardless of ambient temperature.
- Oil can be used but heat-up time will increase and the hopper fill level must be decreased. See item 2.

NOTE: Detailed diaphragm pump operating instructions are in the Husky 716 diaphragm pump manual 308981.

2. **Fill Heating Fluid** in double wall hopper (C) outer cavity. See manual 312747 for instructions.

NOTICE

Do not plug top ports. Always have venting fittings installed to prevent outer cavity pressurization. Failure to do so may cause leakage into spray material.

NOTICE

If oil is the heating fluid selected, the maximum oil level must be 3 in. (76.2 mm) below the hopper side port level. A higher fluid level may cause the oil to overflow during initial pump and heater startup.

NOTE: If using heated hose: each 50 ft. (15.2 m) heated hose section holds approximately 1.25 gal. (4.7 liters) of fluid.

3. Set the flow rate of the circulation fluid by adjusting the pump's air regulator (9) until the pump cycles about 50 cycles/min. Do not use a higher flow rate as doing so will decrease system heating performance and pump life. Never exceed the hose's 95 psi (0.6 MPa, 6.6 bar) maximum working pressure rating.
4. Adjust the heater thermostat to the desired circulation temperature. The setting at the heater output thermometer should be about 10° F (6° C) higher than the desired paint temperature. Never exceed the hose's 140° F (60° C) maximum temperature rating. See Viscon HP heater manual 309524 for instructions.

NOTE: If the hose is not being used for more than one hour, shut off Viscon HP heater and pump to lengthen heater life.

Maintenance

- Check double wall hopper heating fluid level monthly. Add fluid as needed.
- **Do not overfill when using oil.** See overfilling notice on page 18.
- Follow pump maintenance instructions in your Husky 716 diaphragm pump manual.
- Follow heater maintenance instructions in your Viscon HP heater manual.

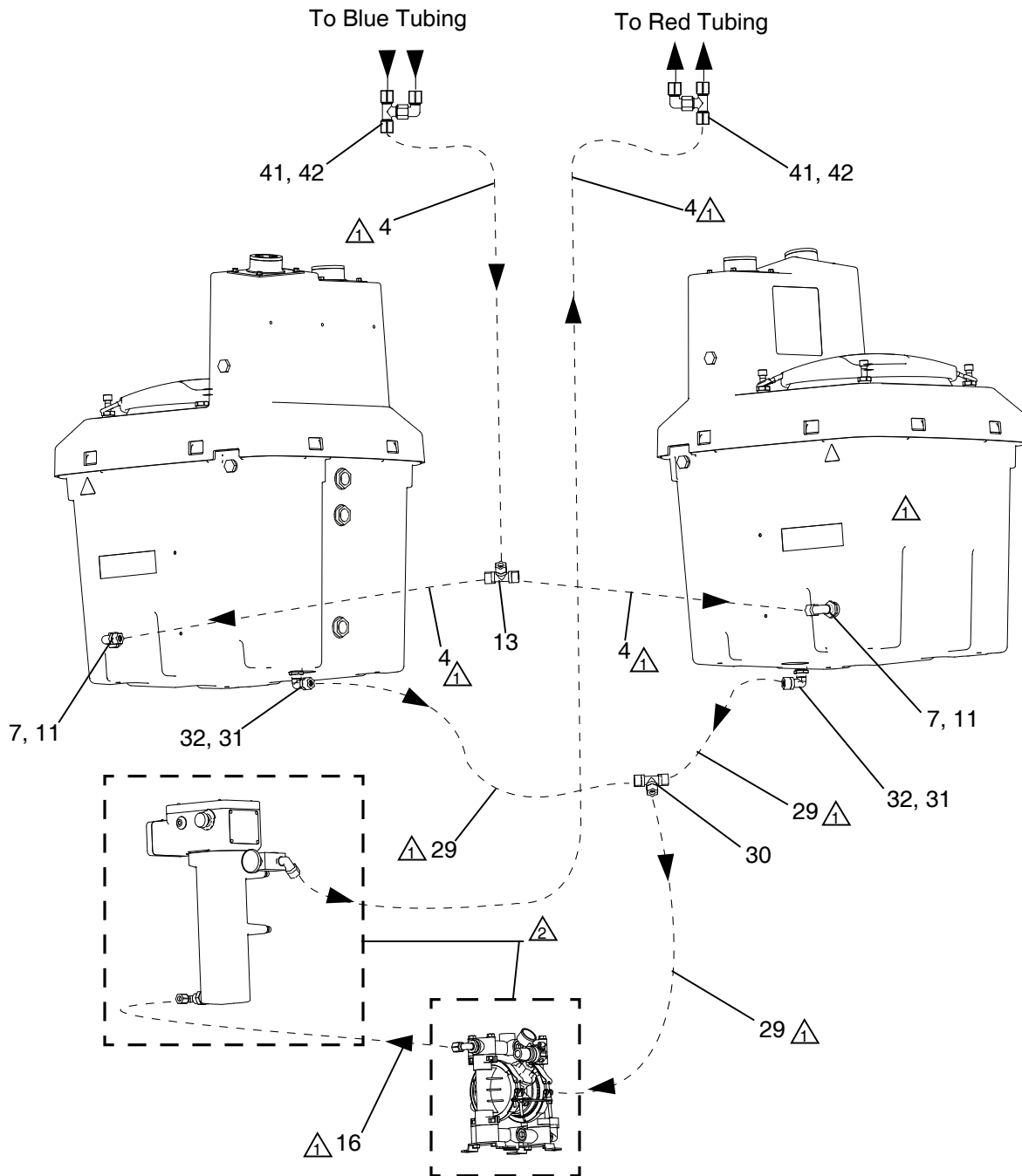
Troubleshooting

Problem	Cause	Solution
Fluid fittings leaking.	Loose fittings.	Tighten fittings after system reaches desired temperature.
Hose not heating to desired temperature.	Diaphragm flow rate set too high.	Decrease diaphragm pump flow rate to 50 cycles/min.
	Problem with Viscon HP heater.	See troubleshooting in your Viscon HP heater manual.
Diaphragm pump not operating correctly.		See troubleshooting in your Husky 716 diaphragm pump manual.
Oil overflowing out vented hopper side fill port during startup.	Oil level higher than 3 in. (76.2 mm) below fill port at room temperature and at rest.	Lower oil level to 3 in. (76.2) below hopper fill port.
Hopper not reaching set temperature when heating fluid hose first.	Temperature loss in heated hose is too much for the heater capacity to compensate for.	Allow longer heating time. Insulate heated hose bundle.
Air and heating fluid splatter is exiting hopper vented fitting.	Diaphragm in Husky 716 diaphragm pump is cracked.	Replace pump diaphragm. See your Husky 716 diaphragm pump manual for parts.

Parts

256273, XM Heated Hopper or Hose Circulation Kit

For heating hoppers and heated hose



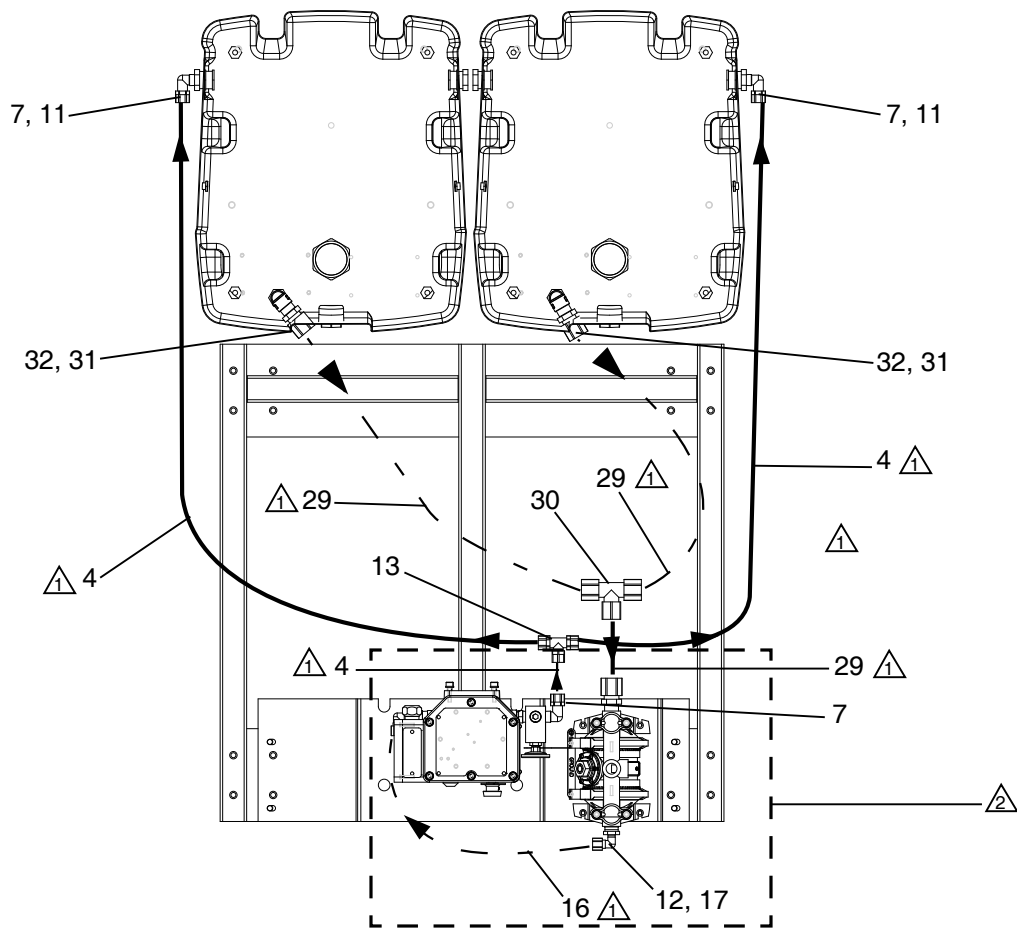
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△1 Cut tubing to length. See table on page 9.

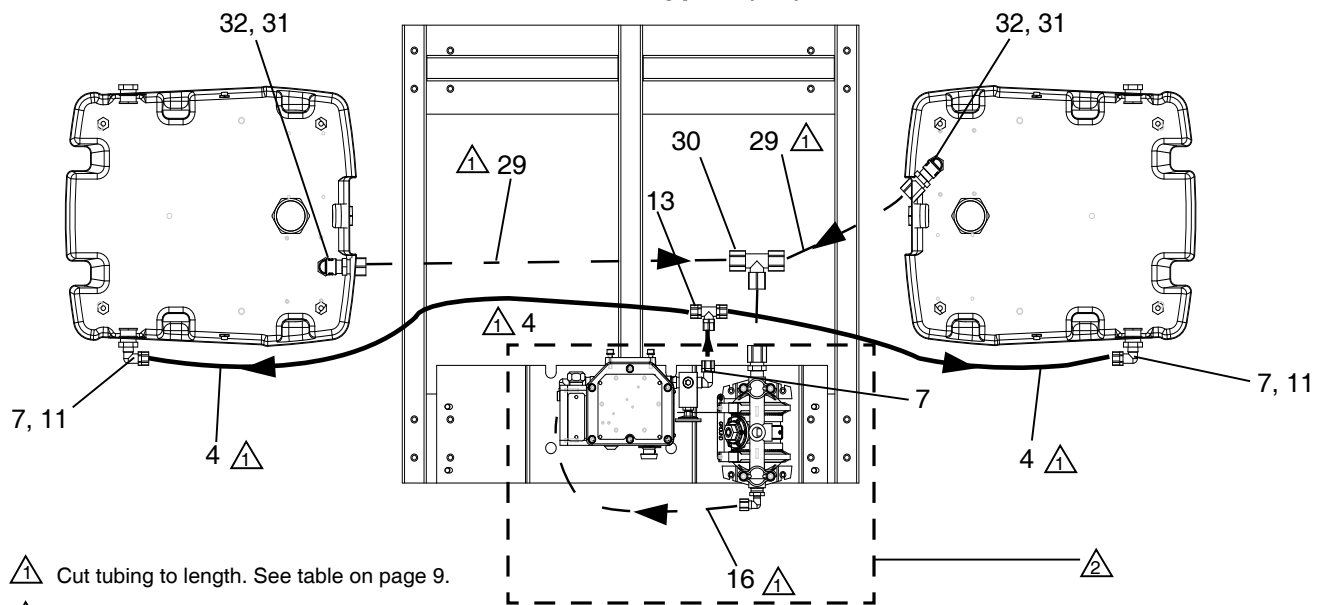
△2 See **Heater and Diaphragm Pump (3) Connections** on page 22.

For only heating hoppers

Back-Mounted Hoppers (BM)



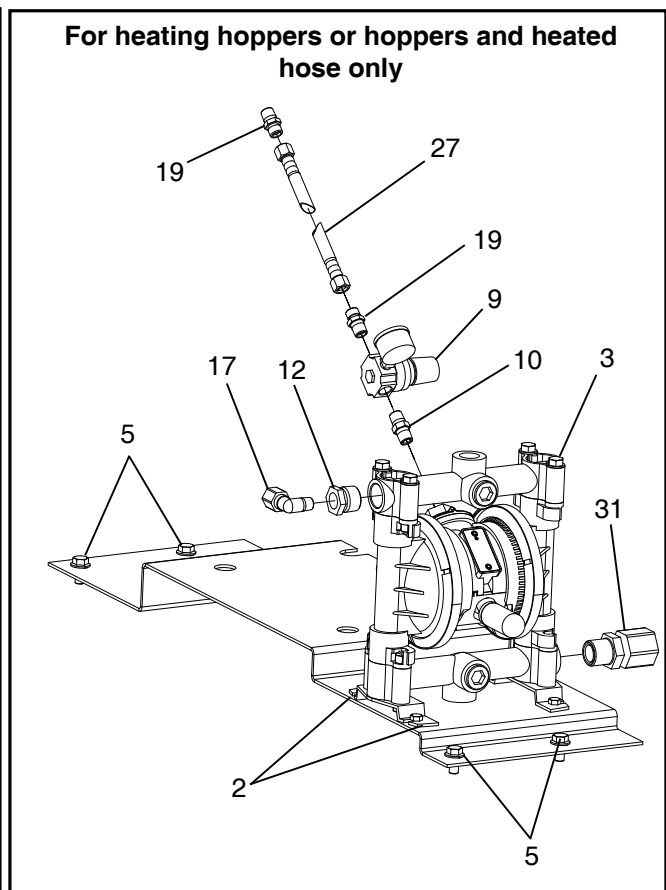
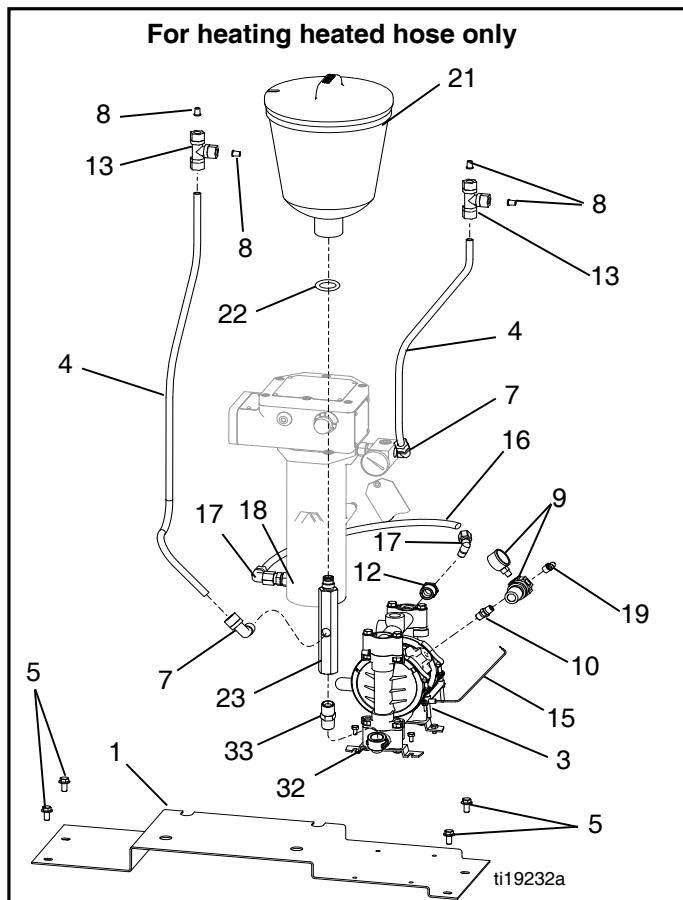
Side-Mounted Hoppers (SM)



△ Cut tubing to length. See table on page 9.

△ See **Heater and Diaphragm Pump (3) Connections** on page 22.

Heater and Diaphragm Pump (3) Connections



Parts List

Ref. Part	Description	Qty.	Ref. Part	Description	Qty.
1	256196 PLATE, mounting	1	19	162453 FITTING, nipple; 1/4 npt(m) x 1/4 nps(m)	2
2	100333 SCREW, cap, hex; 1/4-20 x 1/2 in. (13 mm)	4	21*	188787 HOPPER, 1.5 gallon	1
3	D53288 PUMP, 716, Husky	1	22*	104938 O-RING	1
4	054139 TUBE, nylon, flexible, 1/2 in. (13 mm) OD; 17 ft (5.2 m)	1	23*	15B338 FITTING, reservoir, mounting	1
5	112395 SCREW, cap, flng hd	4	27	212005 HOSE, coupled; 6 ft (1.8 m)	1
7	126898 FITTING, elbow; 1/2 npt(m) x 1/2 in. (13 mm) OD tube	5	29	24Y618 TUBE, nylon, flexible; 3/4 in. (19 mm) OD, 8 ft (2.4 m)	1
9	110147 REGULATOR, air, 1/4 npt	1	30	17H050 FITTING, union tee, 3/4 in tube	1
10	156971 FITTING, nipple, short; 1/4-18 npt	1	31	17H051 FITTING, connector, male; 3/4 npt(m) x 3/4 OD tube	3
11	124070 BUSHING, pipe; 1 npt(m) x 1/2 npt(f)	2	32	124042 FITTING, elbow, street; 3/4 npt(m) x 3/4 in.(f)	3
12	C19683 BUSHING, reducing; 3/4(m) x 3/8(f)	1	33	175013 FITTING, nipple 3/4	1
13	17E117 FITTING, tee; 1/2 in. (13 mm) OD tube	1	41	126896 FITTING, elbow, tube x nptf	2
15	119402 CABLE, coiled, ground	1	42	126895 FITTING, tee, tube x tube x nptm	2
16	054134 TUBE, nylon; 3 ft (914 mm); 3/8 in. (9.5 mm)	1			
17	17E118 FITTING, elbow, male; 3/8-18 npt x 3/8 OD tube	2			
18	122275 FITTING, coupling, reducing; 3/8 x 1/2	1			

* Only used for circulating heated fluid through heated hose.

Viscon HP heater is not included with this kit (purchase separately).

Heated hose assembly is not included with this kit (purchase separately).

Technical Specifications

Hopper or Hose Circulation Kit		
	US	Metric
Maximum Temperature Rating	140° F	60° C
Maximum working pressure		
High Pressure Fluid Hose	See Heated Hose Assembly table, page 5	
Heated Fluid Circulation Components	95 psi	0.6 MPa, 6.6 bar
Wetted Parts		
High Pressure Fluid Hose	Nylon, Zinc-Plated Carbon Steel	
Heated Fluid Circulation Tubing	Nylon	
Heated Fluid Circulation Fittings	Aluminum, Brass, Zinc-Plated Carbon Steel	
Reservoir Tank	Low Density Polyethylene	
Heated Hose Weight (50 ft. section)		
Dry	31 lb	14.1 kg
Wet	41 lb	18.6 kg
Notes		
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This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco 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.

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Original instructions. This manual contains English. MM 313259

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Revision G, November 2019