

Heated Hoses and Applicator Kits

3A0237R

EN

For use with Graco® HFR™ Metering Systems.

Not approved for use in European explosive atmospheres. For professional use only.

See page 2 for Maximum Fluid Working Pressures and approvals.

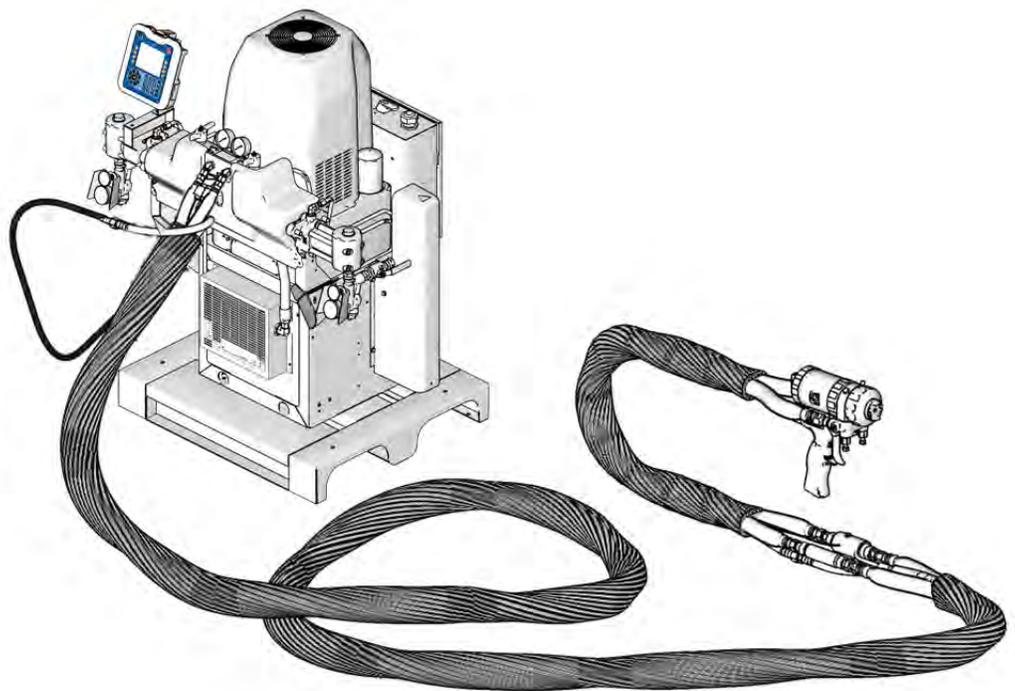
130 psi (0.9 MPa, 9 bar) Maximum Air Working Pressure

180°F (82°C) Maximum Hose Operating Temperature



Important Safety Instructions

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



Contents

- Related Manuals** 2
- Heated Hose Bundle Part Numbers** 3
 - Fluid Temperature Sensor (FTS) 4
 - Heated Whip Hose 4
- Individual Hoses** 5
- Applicator Kits** 9
 - MD2 Valve Applicator Kits 10
- Warnings** 11
- Important Isocyanate (ISO) Information** 14
 - Material Self-ignition 15
 - Keep Components A and B Separate 15
 - Moisture Sensitivity of Isocyanates 15
 - Foam Resins with 245 fa Blowing Agents 16
 - Changing Materials 16
- Installation** 17
 - Description 17
 - Connect Whip Hose to Gun or Gun Manifold .. 17
 - Connect Heated Hoses 18
 - Connect FTS and Heated Whip Hose 21
 - Connect Solenoid Kit 22
 - Check Hoses for Leaks 23
 - Protective Covering 23
- Operation** 24
- Maintenance** 25
 - Instructions for Replacing Individual A or B Hose 25
 - Clean Orifice 25
 - Bundle Individual Whip Hoses 27
 - Bundle Individual Heated Hoses 29
- Parts** 31
 - Whip Hoses 31
 - Heated Hose Bundles 34
 - Using Fluid Temperature Sensors For Single Heat Zones 37
 - Using Fluid Temperature Sensors for Dual Heat Zones 37
 - MD2 Applicator Kits 39
- Accessories** 40
 - Scuff Guard 40
 - Solenoid Kits 40
- Technical Data** 42
- Graco Standard Warranty** 43
- Graco Information** 43

Related Manuals

Component Manuals in U.S. English:

Manual	Description
313997	HFR Operation
313998	HFR, Repair-Parts
313872	EP™ Gun, Instructions-Parts
312185	MD2 Valve, Instructions-Parts
312666	Fusion™ CS Plural Component, Impingement Mix Spray Gun with ClearShot™ Liquid Technology, Instructions-Parts
310649	Fusion Automatic Plural Component, Impingement Mix Spray Gun, Instructions-Parts
309550	Fusion Air Purge Plural Component, Impingement Mix Spray Gun, Instructions-Parts
309856	Fusion Mechanical Purge Plural Component, Impingement Mix Spray Gun, Instructions-Parts
3A0861	Ratio Check Assembly, Instructions-Parts

Heated Hose Bundle Part Numbers

Each hose contains an A component hose, a B component hose, and an air hose (1/4 npt x 1/4 npsm, m x f).

Part No.	Ratio	ID in. (mm)	Length ft (m)	Single Hose Part No.		JIC Fittings		Maximum Fluid Pressure psi (MPa, bar)
				A (Red)	B (Blue)	A (Red)	B (Blue)	
Stainless Steel Dual Heat Zone Hose Bundle with Air Hose								
24D108	2:1	1/4 (6) A x 3/8 (10) B	5 (1.5)	24E925	24E934	5/5	6/6	3500 (24, 241)
24D109	2:1	1/4 (6) A x 3/8 (10) B	10 (3)	24E927	24E936	5/5	6/6	3500 (24, 241)
24D110	2:1	1/4 (6) A x 3/8 (10) B	25 (7.6)	24E929	24E938	5/5	6/6	3500 (24, 241)
24D111	2:1	1/4 (6) A x 3/8 (10) B	50 (15.2)	24E931	24E940	5/5	6/6	3500 (24, 241)
24D112	1:1	3/8 (10) A x 3/8 (10) B	5 (1.5)	24E933	24E934	5/5	6/6	3500 (24, 241)
24D113	1:1	3/8 (10) A x 3/8 (10) B	10 (3)	24E935	24E936	5/5	6/6	3500 (24, 241)
24D114	1:1	3/8 (10) A x 3/8 (10) B	25 (7.6)	24E937	24E938	5/5	6/6	3500 (24, 241)
24D115	1:1	3/8 (10) A x 3/8 (10) B	50 (15.2)	24E939	24E940	5/5	6/6	3500 (24, 241)
Carbon Steel Dual Heat Zone Hose Bundle with Air Hose								
24D116	2:1	1/4 (6) A x 3/8 (10) B	5 (1.5)	24E901	24E910	5/5	6/6	3500 (24, 241)
24D117	2:1	1/4 (6) A x 3/8 (10) B	10 (3)	24E903	24E912	5/5	6/6	3500 (24, 241)
24D118	2:1	1/4 (6) A x 3/8 (10) B	25 (7.6)	24E905	24E914	5/5	6/6	3500 (24, 241)
24D119	2:1	1/4 (6) A x 3/8 (10) B	50 (15.2)	24E907	24E916	5/5	6/6	3500 (24, 241)
24D120	1:1	3/8 (10) A x 3/8 (10) B	5 (1.5)	24E911	24E910	5/5	6/6	3500 (24, 241)
24D121	1:1	3/8 (10) A x 3/8 (10) B	10 (3)	24E913	24E912	5/5	6/6	3500 (24, 241)
24D122	1:1	3/8 (10) A x 3/8 (10) B	25 (7.6)	24E915	24E914	5/5	6/6	3500 (24, 241)
24D123	1:1	3/8 (10) A x 3/8 (10) B	50 (15.2)	24E917	24E916	5/5	6/6	3500 (24, 241)
Carbon Steel Single Heat Zone Hose Bundle with Air Hose								
24D124	2:1	1/4 (6) A x 3/8 (10) B	25 (7.6)	261520	261523	5/5	6/6	2000 (14, 138)
24D125	2:1	1/4 (6) A x 3/8 (10) B	50 (15.2)	261514	261517	5/5	6/6	2000 (14, 138)
24D126	1:1	3/8 (10) A x 3/8 (10) B	25 (7.6)	261522	261523	5/5	6/6	2000 (14, 138)
24D127	1:1	3/8 (10) A x 3/8 (10) B	50 (15.2)	261516	261517	5/5	6/6	2000 (14, 138)
Carbon Steel Single Heat Zone Hose Bundle with Air Hose								
24D129	2:1	1/4 (6) A x 3/8 B	50 (15.2)	261524	261527	5/5	6/6	3500 (24, 241)
24D131	1:1	3/8 (10) A x 3/8 (10) B	50 (15.2)	261526	261527	5/5	6/6	3500 (24, 241)
24E963	1:1	1/4 (6) A x 1/4 (6) B	25 (7.6)	246065✿	246066✿	5/5	6/6	2000 (14, 138)
24E964	1:1	1/4 (6) A x 1/4 (6) B	50 (15.2)	246059✿	246060✿	5/5	6/6	2000 (14, 138)
24E965	1:1	1/2 (13) A x 1/2 (13) B	50 (15.2)	246063✿	246064✿	5/5	6/6	2000 (14, 138)
24E966	1:1	1/4 (6) A x 1/4 (6) B	50 (15.2)	246067✿	246068✿	5/5	6/6	3500 (24, 241)
24E967	1:1	1/2 (13) A x 1/2 (13) B	50 (15.2)	246071✿	246072✿	5/5	6/6	3500 (24, 241)
24E968	1:1	1/4 (6) A x 1/4 (6) B	10 (3)	24D190	24D191	5/5	6/6	2000 (14, 138)
24E969	1:1	3/8 (10) A x 3/8 (10) B	10 (3)	24D760	24D761	5/5	6/6	2000 (14, 138)

✿ If ordered as replacement hose for a HFR hose bundles, reference manual 3A0237 not 309572.

★ All heated hose bundles are CE approved.

Fluid Temperature Sensor (FTS)

Part No.	Fittings	Description	Maximum Fluid Pressure psi (MPa, bar)
258756	JIC to JIC	Fluid Temperature Sensors for dual heat zones with stainless steel fittings	5000 (34.5, 345)
258758	JIC to JIC	Fluid Temperature Sensors for single heat zone with stainless steel fittings	5000 (34.5, 345)

Heated Whip Hose

Part No.	ID in. (mm)	Length ft (m)	Single Hose Part No.		JIC Fittings		Maximum Fluid Pressure psi (MPa, bar)
			A (Red)	B (Blue)	A (Red)	B (Blue)	
Carbon Steel Single Heat Zone							
24H076	1/4 (6)	10 (3)	24D190	24D191	5/5	6/6	3500 (24.1, 241)
24H077	3/8 (10)	10 (3)	24D760	24D760	5/5	6/6	3500 (24.1, 241)
Carbon Steel Dual Heat Zone							
24H078	1/4 (6)	10 (3)	24H064	24H065	5/5	6/6	3500 (24.1, 241)
24H079	3/8 (10)	10 (3)	24H066	24H067	5/5	6/6	3500 (24.1, 241)
Stainless Steel Single Heat Zone							
24H080	1/4 (6)	10 (3)	24H068	24H069	5/5	6/6	3500 (24.1, 241)
24H081	3/8 (10)	10 (3)	24H070	24H071	5/5	6/6	3500 (24.1, 241)
Stainless Steel Dual Heat Zone							
24H082	1/4 (6)	10 (3)	24H072	24H073	5/5	6/6	3500 (24.1, 241)
24H083	3/8 (10)	10 (3)	24H074	24H075	5/5	6/6	3500 (24.1, 241)

★ All heated whip hoses are CE approved.

Individual Hoses

A Side Heated Hoses (Red)

Part No.	ID in. (mm)	Length ft (m)	JIC Fittings	Maximum Fluid Pressure psi (MPa, bar)
Carbon Steel Heated Dual Heat Zone				
24E901	1/4 (6)	5 (1.5)	5/5	3500 (24, 241)
24E903	1/4 (6)	10 (3)	5/5	3500 (24, 241)
24E905	1/4 (6)	25 (7.6)	5/5	3500 (24, 241)
24E907	1/4 (6)	50 (15.2)	5/5	3500 (24, 241)
24E909	3/8 (10)	5 (1.5)	5/5	3500 (24, 241)
24E911	3/8 (10)	10 (3)	5/5	3500 (24, 241)
24E913	3/8 (10)	25 (7.6)	5/5	3500 (24, 241)
24E915	3/8 (10)	50 (15.2)	5/5	3500 (24, 241)
24E917	1/2 (13)	5 (1.5)	5/5	3500 (24, 241)
24E919	1/2 (13)	10 (3)	5/5	3500 (24, 241)
24E921	1/2 (13)	25 (7.6)	5/5	3500 (24, 241)
24E923	1/2 (13)	50 (15.2)	5/5	3500 (24, 241)
Carbon Steel Heated Single Heat Zone				
246065★	1/4 (6)	25 (7.6)	5/5	2000 (14, 138)
246059★	1/4 (6)	50 (15.2)	5/5	2000 (14, 138)
246067★	1/4 (6)	50 (15.2)	5/5	3500 (24, 241)
246094★	3/8 (10)	25 (7.6)	5/5	2000 (14, 138)
246061★	3/8 (10)	50 (15.2)	5/5	2000 (14, 138)
246069★	3/8 (10)	50 (15.2)	5/5	3500 (24, 241)
246063★	1/2 (13)	50 (15.2)	8/8	2000 (14, 138)
246071★	1/2 (13)	50 (15.2)	8/8	3500 (24, 241)
24D190	1/4 (6)	10 (3)	5/5	2000 (14, 138)
24D760	3/8 (10)	10 (3)	5/5	2000 (14, 138)

Part No.	ID in. (mm)	Length ft (m)	JIC Fittings	Maximum Fluid Pressure psi (MPa, bar)
Stainless Steel Heated Dual Heat Zone				
24E925	1/4 (6)	5 (1.5)	5/5	3500 (24, 241)
24E927	1/4 (6)	10 (3)	5/5	3500 (24, 241)
24E929	1/4 (6)	25 (7.6)	5/5	3500 (24, 241)
24E931	1/4 (6)	50 (15.2)	5/5	3500 (24, 241)
24E933	3/8 (10)	5 (1.5)	5/5	3500 (24, 241)
24E935	3/8 (10)	10 (3)	5/5	3500 (24, 241)
24E937	3/8 (10)	25 (7.6)	5/5	3500 (24, 241)
24E939	3/8 (10)	50 (15.2)	5/5	3500 (24, 241)
24E941	1/2 (13)	5 (1.5)	5/5	3500 (24, 241)
24E943	1/2 (13)	10 (3)	5/5	3500 (24, 241)
24E945	1/2 (13)	25 (7.6)	5/5	3500 (24, 241)
24E947	1/2 (13)	50 (15.2)	5/5	3500 (24, 241)

✿ If ordered as replacement hose for a HFR hose bundles, reference manual 3A0237 not 309572.

★ All heated hoses are CE approved.

A Side Unheated Hoses (Red)

Part No.	ID in. (mm)	Length ft (m)	JIC Fittings	Maximum Fluid Pressure psi (MPa, bar)
Carbon Steel Unheated				
262173	1/4 (6)	5 (1.5)	5/5	3500 (24, 241)
262175	1/4 (6)	10 (3)	5/5	3500 (24, 241)
262177	1/4 (6)	25 (7.6)	5/5	3500 (24, 241)
262179	1/4 (6)	50 (15.2)	5/5	3500 (24, 241)
262181	3/8 (10)	5 (1.5)	5/5	3500 (24, 241)
262183	3/8 (10)	10 (3)	5/5	3500 (24, 241)
262185	3/8 (10)	25 (7.6)	5/5	3500 (24, 241)
262187	3/8 (10)	50 (15.2)	5/5	3500 (24, 241)
262189	1/2 (13)	5 (1.5)	8/8	3500 (24, 241)
262191	1/2 (13)	10 (3)	8/8	3500 (24, 241)
262193	1/2 (13)	25 (7.6)	8/8	3500 (24, 241)
262195	1/2 (13)	50 (15.2)	8/8	3500 (24, 241)

Part No.	ID in. (mm)	Length ft (m)	JIC Fittings	Maximum Fluid Pressure psi (MPa, bar)
Stainless Steel Unheated				
262236	1/4 (6)	5 (1.5)	5/5	3500 (24, 241)
262238	1/4 (6)	10 (3)	5/5	3500 (24, 241)
262240	1/4 (6)	25 (7.6)	5/5	3500 (24, 241)
262242	1/4 (6)	50 (15.2)	5/5	3500 (24, 241)
262244	3/8 (10)	5 (1.5)	5/5	3500 (24, 241)
262246	3/8 (10)	10 (3)	5/5	3500 (24, 241)
262248	3/8 (10)	25 (7.6)	5/5	3500 (24, 241)
262250	3/8 (10)	50 (15.2)	5/5	3500 (24, 241)
262252	1/2 (13)	5 (1.5)	8/8	3500 (24, 241)
262254	1/2 (13)	10 (3)	8/8	3500 (24, 241)
262256	1/2 (13)	25 (7.6)	8/8	3500 (24, 241)
262258	1/2 (13)	50 (15.2)	8/8	3500 (24, 241)

Individual A Side Heated Whip Hose

Part No.	ID in. (mm)	Length ft (m)	Heat Zone	Maximum Fluid Pressure psi (MPa, bar)	Material
24E949	1/4 (6)	10 (3)	Single	3500 (24, 241)	CST
24E951	3/8 (10)	10 (3)	Single	3500 (24, 241)	CST
24H085	1/4 (6)	10 (3)	Dual	3500 (24, 241)	CST
24H087	3/8 (10)	10 (3)	Dual	3500 (24, 241)	CST
24H089	1/4 (6)	10 (3)	Single	3500 (24, 241)	SST
24H091	3/8 (10)	10 (3)	Single	3500 (24, 241)	SST
24H093	1/4 (6)	10 (3)	Dual	3500 (24, 241)	SST
24H095	3/8 (10)	10 (3)	Dual	3500 (24, 241)	SST

Part No.	ID in. (mm)	Length ft (m)	Heat Zone	Maximum Fluid Pressure psi (MPa, bar)	Material
24H224	1/4 (6)	5 (1.5)	Single	3500 (24, 241)	CST
24H226	3/8 (10)	5 (1.5)	Single	3500 (24, 241)	CST
24H228	1/4 (6)	5 (1.5)	Dual	3500 (24, 241)	CST
24H230	3/8 (10)	5 (1.5)	Dual	3500 (24, 241)	CST
24H232	1/4 (6)	5 (1.5)	Single	3500 (24, 241)	SST
24H234	3/8 (10)	5 (1.5)	Single	3500 (24, 241)	SST
24H236	1/4 (6)	5 (1.5)	Dual	3500 (24, 241)	SST
24H238	3/8 (10)	5 (1.5)	Dual	3500 (24, 241)	SST

B Side Heated Hoses (Blue)

Part No.	ID in. (mm)	Length ft (m)	JIC Fittings	Maximum Fluid Pressure psi (MPa, bar)
Carbon Steel Heated Dual Heat Zone				
24E902	1/4 (6)	5 (1.5)	6/6	3500 (24, 241)
24E904	1/4 (6)	10 (3)	6/6	3500 (24, 241)
24E906	1/4 (6)	25 (7.6)	6/6	3500 (24, 241)
24E908	1/4 (6)	50 (15.2)	6/6	3500 (24, 241)
24E910	3/8 (10)	5 (1.5)	6/6	3500 (24, 241)
24E912	3/8 (10)	10 (3)	6/6	3500 (24, 241)
24E914	3/8 (10)	25 (7.6)	6/6	3500 (24, 241)
24E916	3/8 (10)	50 (15.2)	6/6	3500 (24, 241)
24E918	1/2 (13)	5 (1.5)	6/6	3500 (24, 241)
24E920	1/2 (13)	10 (3)	6/6	3500 (24, 241)
24E922	1/2 (13)	25 (7.6)	6/6	3500 (24, 241)
24E924	1/2 (13)	50 (15.2)	6/6	3500 (24, 241)
Carbon Steel Heated Single Heat Zone				
246066*	1/4 (6)	25 (7.6)	6/6	2000 (14, 138)
246060*	1/4 (6)	50 (15.2)	6/6	2000 (14, 138)
246095*	3/8 (10)	25 (7.6)	6/6	2000 (14, 138)
246070*	3/8 (10)	50 (15.2)	6/6	2000 (14, 138)
246062*	3/8 (10)	50 (15.2)	6/6	2000 (14, 138)
246064*	1/2 (13)	50 (15.2)	6/6	2000 (14, 138)
246068*	1/4 (6)	50 (15.2)	6/6	3500 (24, 241)
246072*	1/2 (13)	50 (15.2)	6/6	3500 (24, 241)
24D191	1/4 (6)	10 (3)	6/6	2000 (14, 138)
24D761	3/8 (10)	10 (3)	6/6	2000 (14, 138)

Part No.	ID in. (mm)	Length ft (m)	JIC Fittings	Maximum Fluid Pressure psi (MPa, bar)
Stainless Steel Heated Dual Heat Zone				
24E926	1/4 (6)	5 (1.5)	6/6	3500 (24, 241)
24E928	1/4 (6)	10 (3)	6/6	3500 (24, 241)
24E930	1/4 (6)	25 (7.6)	6/6	3500 (24, 241)
24E932	1/4 (6)	50 (15.2)	6/6	3500 (24, 241)
24E934	3/8 (10)	5 (1.5)	6/6	3500 (24, 241)
24E936	3/8 (10)	10 (3)	6/6	3500 (24, 241)
24E938	3/8 (10)	25 (7.6)	6/6	3500 (24, 241)
24E940	3/8 (10)	50 (15.2)	6/6	3500 (24, 241)
24E942	1/2 (13)	5 (1.5)	6/6	3500 (24, 241)
24E944	1/2 (13)	10 (3)	6/6	3500 (24, 241)
24E946	1/2 (13)	25 (7.6)	6/6	3500 (24, 241)
24E948	1/2 (13)	50 (15.2)	6/6	3500 (24, 241)

* If ordered as replacement hose for a HFR hose bundles, reference manual 3A0237 not 309572.

★ All heated hoses are CE approved.

B Side Unheated Hoses (Blue)

Part No.	ID in. (mm)	Length ft (m)	JIC Fittings	Maximum Fluid Pressure psi (MPa, bar)
Carbon Steel Unheated				
262174	1/4 (6)	5 (1.5)	6/6	3500 (24, 241)
262176	1/4 (6)	10 (3)	6/6	3500 (24, 241)
262178	1/4 (6)	25 (7.6)	6/6	3500 (24, 241)
262180	1/4 (6)	50 (15.2)	6/6	3500 (24, 241)
262182	3/8 (10)	5 (1.5)	6/6	3500 (24, 241)
262184	3/8 (10)	10 (3)	6/6	3500 (24, 241)
262186	3/8 (10)	25 (7.6)	6/6	3500 (24, 241)
262188	3/8 (10)	50 (15.2)	6/6	3500 (24, 241)
262190	1/2 (13)	5 (1.5)	10/10	3500 (24, 241)
262192	1/2 (13)	10 (3)	10/10	3500 (24, 241)
262194	1/2 (13)	25 (7.6)	10/10	3500 (24, 241)
262196	1/2 (13)	50 (15.2)	10/10	3500 (24, 241)

Part No.	ID in. (mm)	Length ft (m)	JIC Fittings	Maximum Fluid Pressure psi (MPa, bar)
Stainless Steel Unheated				
262237	1/4 (6)	5 (1.5)	6/6	3500 (24, 241)
262239	1/4 (6)	10 (3)	6/6	3500 (24, 241)
262241	1/4 (6)	25 (7.6)	6/6	3500 (24, 241)
262243	1/4 (6)	50 (15.2)	6/6	3500 (24, 241)
262245	3/8 (10)	5 (1.5)	6/6	3500 (24, 241)
262247	3/8 (10)	10 (3)	6/6	3500 (24, 241)
262249	3/8 (10)	25 (7.6)	6/6	3500 (24, 241)
262251	3/8 (10)	50 (15.2)	6/6	3500 (24, 241)
262253	1/2 (13)	5 (1.5)	10/10	3500 (24, 241)
262255	1/2 (13)	10 (3)	10/10	3500 (24, 241)
262257	1/2 (13)	25 (7.6)	10/10	3500 (24, 241)
262259	1/2 (13)	50 (15.2)	10/10	3500 (24, 241)

Individual B Side Heated Whip Hose

Part No.	ID in. (mm)	Length ft (m)	Heat Zone	Maximum Fluid Pressure psi (MPa, bar)	Material
24E950	1/4 (6)	10 (3)	Single	3500 (24, 241)	CST
24E952	3/8 (10)	10 (3)	Single	3500 (24, 241)	CST
24H086	1/4 (6)	10 (3)	Dual	3500 (24, 241)	CST
24H088	3/8 (10)	10 (3)	Dual	3500 (24, 241)	CST
24H090	1/4 (6)	10 (3)	Single	3500 (24, 241)	SST
24H092	3/8 (10)	10 (3)	Single	3500 (24, 241)	SST
24H094	1/4 (6)	10 (3)	Dual	3500 (24, 241)	SST
24H096	3/8 (10)	10 (3)	Dual	3500 (24, 241)	SST

Part No.	ID in. (mm)	Length ft (m)	Heat Zone	Maximum Fluid Pressure psi (MPa, bar)	Material
24H225	1/4 (6)	5 (1.5)	Single	3500 (24, 241)	CST
24H227	3/8 (10)	5 (1.5)	Single	3500 (24, 241)	CST
24H229	1/4 (6)	5 (1.5)	Dual	3500 (24, 241)	CST
24H231	3/8 (10)	5 (1.5)	Dual	3500 (24, 241)	CST
24H233	1/4 (6)	5 (1.5)	Single	3500 (24, 241)	SST
24H235	3/8 (10)	5 (1.5)	Single	3500 (24, 241)	SST
24H237	1/4 (6)	5 (1.5)	Dual	3500 (24, 241)	SST
24H239	3/8 (10)	5 (1.5)	Dual	3500 (24, 241)	SST

Applicator Kits

The table below lists applicators that can be used with the heated hoses and identifies which applicators require solenoid kits. See **Related Manuals** for the applicator manual numbers.

NOTE: The MD2 valves must use one of the chemical connection kits to connect to the fluid hoses. See MD2 Valve Applicator Kits on page 10.

NOTE: When selecting an applicator, if an applicator is chosen which does not have a signal communicating to the HFR, then the sizes of the A and B pumps added together must be greater or equal to 120 cc. For example: A (red) pump size = 20 cc, B (blue) pump size = 100 cc, 20 cc + 100 cc = 120 cc. Since the pump sizes combined = 120 cc, an applicator may be selected which does not have a signal communicating to the HFR.

Applicator	Handle Options	Required Solenoid Kit	Pressure Relief Kit
Automatic Fusion Air Purge Guns	No handle	24D161	
Automatic Fusion Mechanical Purge Guns	No handle	24D161	
Fusion Air Purge Guns			24C067
Fusion Mechanical Purge Guns			24C067
Fusion CS Guns			24C067
EP Gun	No handle		
	Electric actuated pistol		
1:1 and 10:1 MD2 Valves (See MD2 Valve Applicator Kits on page 10 for models and chemical connection kits)	No handle	24D160, 24C757	
	Electric actuated pistol	24D160, 24C757	
	Pneumatic		
	Electric actuated lever	24D160, 24C757	

MD2 Valve Applicator Kits

Part No. (Series)	MD2 Valve (see manual 312185)	MD2 Handle			Chemical Connection Kit	
		Electric (255208)	Lever (255249)	Pneumatic (255206)	Carbon Steel (24D414)	Stainless Steel (24D162)
24D500	255179 (1:1 with soft seats)				✓	
24D501		✓			✓	
24D502			✓		✓	
24D503						✓
24D504		✓				✓
24D505			✓			✓
24D509		255180 (1:1 with hard seats)				✓
24D510	✓				✓	
24D511			✓		✓	
24D512				✓	✓	
24D513						✓
24D514	✓					✓
24D515			✓			✓
24D516				✓		✓
24D521	255181 (10:1 with soft seats)				✓	
24D522		✓			✓	
24D523			✓		✓	
24D524						✓
24D525		✓				✓
24D526			✓			✓
24D530	255182 (10:1 with hard seats)				✓	
24D531		✓			✓	
24D532			✓		✓	
24D533				✓	✓	
24D534						✓
24D535		✓				✓
24D536			✓			✓
24D537				✓		✓

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>ELECTRIC SHOCK HAZARD</p> <p>The hoses must be grounded. Improper grounding, set-up or usage of the hoses can cause electric shock.</p> <ul style="list-style-type: none"> • Turn off and disconnect power before disconnecting before installing or servicing hoses. • Connect to grounded power source. • All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations. • Never cut or puncture a hose cover. • Do not expose to rain. Store indoors.
	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from 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"> • Inspect hose before each use for cuts, bulges, kinks or any other damage. • Replace hoses proactively at regular intervals based on your operating conditions. • Replace damaged hose immediately. • Tighten all fluid connections before operating the equipment. • Keep clear of leaks. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Never exceed hose Maximum Pressure or Temperature ratings. • Only use chemicals that are compatible with wetted parts. See Technical Data in this manual. Read MSDSs and fluid and solvent manufacturer's recommendations. • Follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing equipment.
	<p>THERMAL EXPANSION HAZARD</p> <p>Fluids subjected to heat in confined spaces, including hoses, can create a rapid rise in pressure due to the thermal expansion. Over-pressurization can result in equipment rupture and serious injury.</p> <ul style="list-style-type: none"> • Open a valve to relieve the fluid expansion during heating. • Replace hoses proactively at regular intervals based on your operating conditions.
	<p>BURN HAZARD</p> <p>Equipment surfaces and fluid that's heated can become very hot during operation. To avoid severe burns:</p> <ul style="list-style-type: none"> • Do not touch hot fluid or equipment.


WARNING
**TOXIC FLUID OR FUMES HAZARD**

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled or swallowed.

- Read Safety Data Sheet (SDS) for handling instructions and to know the specific hazards of the fluids you are using, including the effects of long-term exposure.
- When spraying, servicing equipment, or when in the work area, always keep work area well ventilated and always wear appropriate personal protective equipment. See **Personal Protective Equipment** warnings in this manual.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

**FIRE AND EXPLOSION HAZARD**

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

- 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.

**EQUIPMENT MISUSE HAZARD**

Misuse can cause death or serious injury.

- 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 Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure. Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- 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.

 **WARNING****PERSONAL PROTECTIVE EQUIPMENT**

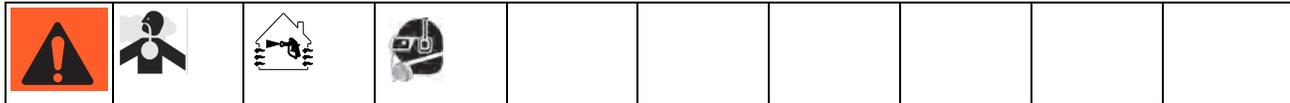
Use siempre equipo de protección individual apropiado y proteja su piel cuando pulverice, realice el mantenimiento del equipo o se encuentre en la zona de trabajo. El equipo de protección le ayuda a evitar lesiones graves, como la exposición prolongada a productos, la inhalación de emanaciones tóxicas, gotas suspendidas o vapores; reacciones alérgicas; quemaduras; lesiones oculares y pérdida de audición. Este equipo de protección incluye, entre otros:

- Un respirador bien ajustado, que puede incluir un respirador con suministro de aire, guantes impermeables a sustancias químicas, ropa y calzado de protección según recomendaciones del fabricante del fluido y la autoridad reguladora local.
- Protección ocular y auditiva.

Important Isocyanate (ISO) Information

Isocyanates (ISO) are catalysts used in two component materials.

Isocyanate Conditions



Spraying or dispensing fluids that contain isocyanates creates potentially harmful mists, vapors, and atomized particulates.

- Read and understand the fluid manufacturer’s warnings and Safety Data Sheet (SDS) to know specific hazards and precautions related to isocyanates.
- Use of isocyanates involves potentially hazardous procedures. Do not spray with this equipment unless you are trained, qualified, and have read and understood the information in this manual and in the fluid manufacturer’s application instructions and SDS.
- Use of incorrectly maintained or mis-adjusted equipment may result in improperly cured material which could cause off gassing and offensive odors. Equipment must be carefully maintained and adjusted according to instructions in the manual.
- To prevent inhalation of isocyanate mists, vapors and atomized particulates, everyone in the work area must wear appropriate respiratory protection. Always wear a properly fitting respirator, which may include a supplied-air respirator. Ventilate the work area according to instructions in the fluid manufacturer’s SDS.
- Avoid all skin contact with isocyanates. Everyone in the work area must wear chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority. Follow all fluid manufacturer recommendations, including those regarding handling of contaminated clothing. After spraying, wash hands and face before eating or drinking.
- Hazard from exposure to isocyanates continues after spraying. Anyone without appropriate personal protective equipment must stay out of the work area during application and after application for the time period specified by the fluid manufacturer. Generally this time period is at least 24 hours.
- Warn others who may enter work area of hazard from exposure to isocyanates. Follow the recommendations of the fluid manufacturer and local regulatory authority. Posting a placard such as the following outside the work area is recommended:

WARNING	
	TOXIC FUMES HAZARD
DO NOT ENTER DURING SPRAY FOAM APPLICATION OR FOR ___ HOURS AFTER APPLICATION IS COMPLETE	
DO NOT ENTER UNTIL:	
DATE: _____ TIME: _____	

For all applications except spray foam



Spraying or dispensing fluids that contain isocyanates creates potentially harmful mists, vapors, and atomized particulates.

- Read and understand the fluid manufacturer's warnings and Safety Data Sheet (SDS) to know specific hazards and precautions related to isocyanates.
- Use of isocyanates involves potentially hazardous procedures. Do not spray with this equipment unless you are trained, qualified, and have read and understood the information in this manual and in the fluid manufacturer's application instructions and SDS.
- Use of incorrectly maintained or mis-adjusted equipment may result in improperly cured material. Equipment must be carefully maintained and adjusted according to instructions in the manual.
- To prevent inhalation of isocyanate mists, vapors, and atomized particulates, everyone in the work area must wear appropriate respiratory protection. Always wear a properly fitting respirator, which may include a supplied-air respirator. Ventilate the work area according to instructions in the fluid manufacturer's SDS.
- Avoid all skin contact with isocyanates. Everyone in the work area must wear chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority. Follow all fluid manufacturer recommendations, including those regarding handling of contaminated clothing. After spraying, wash hands and face before eating or drinking.

Material Self-ignition



Some materials may become self-igniting if applied too thick. Read material manufacturer's warnings and Safety Data Sheet (SDS).

Keep Components A and B Separate



Cross-contamination can result in cured material in fluid lines which could cause serious injury or damage equipment. To prevent cross-contamination:

- **Never** interchange component A and component B wetted parts.
- Never use solvent on one side if it has been contaminated from the other side.

Moisture Sensitivity of Isocyanates

Exposure to moisture (such as humidity) will cause ISO to partially cure, forming small, hard, abrasive crystal that become suspended in the fluid. Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity.

NOTICE

Partially cured ISO will reduce performance and the life of all wetted parts.

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. **Never** store ISO in an open container.
- Keep the ISO pump wet cup or reservoir (if installed) filled with appropriate lubricant. The lubricant creates a barrier between the ISO and the atmosphere.
- Use only moisture-proof hoses compatible with ISO.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Always lubricate threaded parts with an appropriate lubricant when reassembling.

NOTE: The amount of film formation and rate of crystallization varies depending on the blend of ISO, the humidity, and the temperature.

Foam Resins with 245 fa Blowing Agents

Some foam blowing agents will froth at temperatures above 90°F (33°C) when not under pressure, especially if agitated. To reduce frothing, minimize preheating in a circulation system.

Changing Materials

NOTICE

Changing the material types used in your equipment requires special attention to avoid equipment damage and downtime.

- When changing materials, flush the equipment multiple times to ensure it is thoroughly clean.
- Always clean the fluid inlet strainers after flushing.
- Check with your material manufacturer for chemical compatibility.
- When changing between epoxies and urethanes or polyureas, disassemble and clean all fluid components and change hoses. Epoxies often have amines on the B (hardener) side. Polyureas often have amines on the B (resin) side.

Installation

Description

The heated hose maintains proper fluid temperature while dispensing.

Fluid hoses are marked with red tape for ISO/hardener/minor volume side, blue tape for RES/resin/major volume side. Fittings have different sized threads to prevent incorrect connection, which can cause fluid cross-over and permanently damage the hose.

Hoses are 5 ft (1.5 m), 10 ft (3 m), 25 ft (7.6 m), and 50 ft (15.2 m) long. The whip hose is 5 ft (1.5 m) or 10 ft (3 m) long.

Connect Whip Hose to Gun or Gun Manifold

NOTE: For best whip hose flexibility, assemble whip hose to gun or gun manifold as instructed.

1. Assemble A and B component hoses to gun or gun manifold fittings as shown in FIG. 1 and FIG. 2.
2. If applicable, assemble signal cable (E1) and air hose to gun or gun manifold fittings.
3. Tighten fittings to A and B component hoses. Ensure hose remains flat after fittings are tightened. Loosen and retighten fittings as necessary to eliminate any torque on hoses. This will help achieve a flat profile on the hose.

NOTE: Use chemical connection kit (153) on all MD2 valves. See FIG. 2.

4. For MD2 valves with 255208 and 255249 and both EP Gun models, connect the signal cable (E1) from the applicator to the whip hose signal cable (3b).
5. See applicator manual for complete setup instructions.

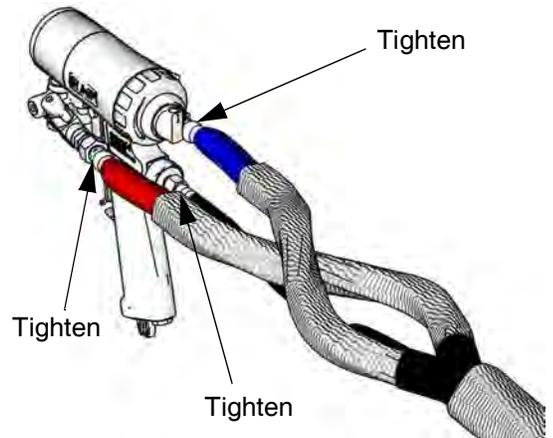


FIG. 1: Fusion Gun

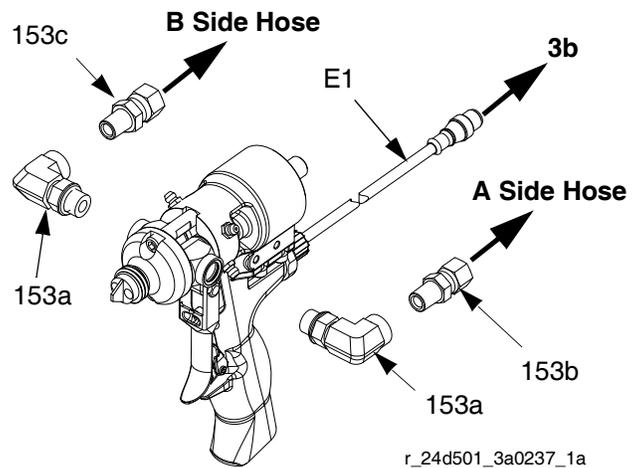


FIG. 2: MD2 Valve Kit 24D501

Connect Heated Hoses



1. Lay heated hoses end to end, matching the color coding. Red for component A (ISO), blue for component B (RES).

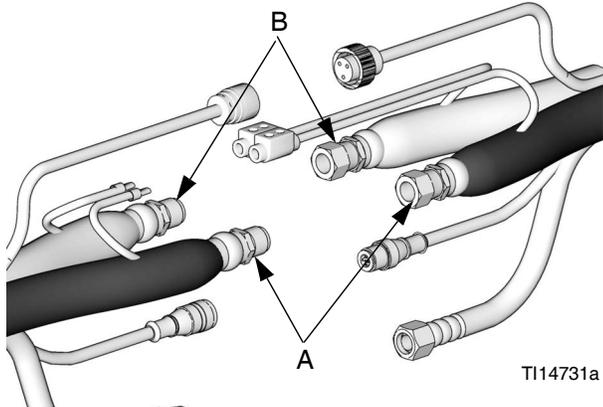


FIG. 3

2. Connect fluid hoses (A, B).
3. Connect signal cables (13).

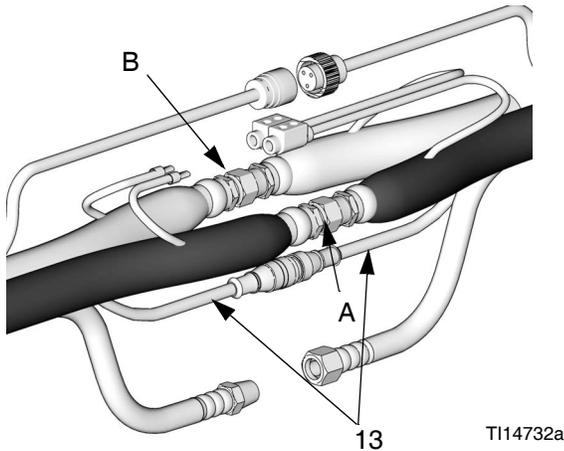
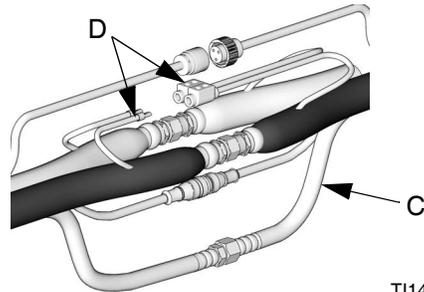


FIG. 4

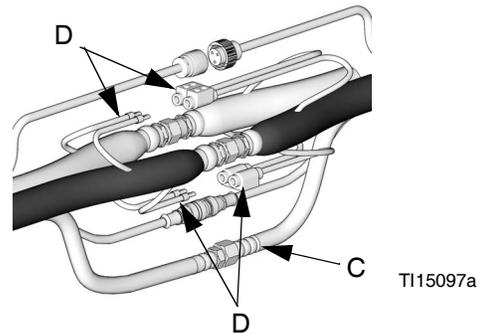
NOTE: Do not connect the main air supply to the air hose at this time.

4. Connect air hoses (C).

Single Heat Zone with A and B Heated Hose



Dual Heat Zone with A and B Heated Hose



Single Heat Zone with A or B Heated Hose

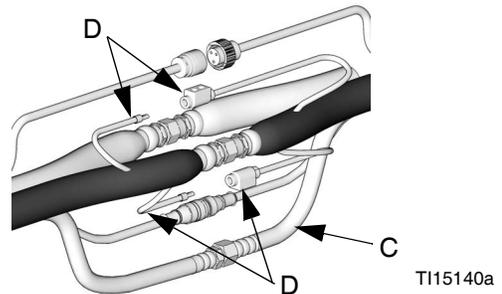


FIG. 5

5. Connect electrical wires (D).

- a. Ensure electrical wires ends are 5/8 in. (0.625mm) long. If they are not, use a sharp scissors to strip all four wire ends to the correct length. See Strip Length Gauge for correct length.



TI9733a

FIG. 6

NOTE: Be careful not to cut or nick copper strands. If more than five strands are cut or nicked, trim wire and re-strip.

New hoses are pre-stripped at correct length; remove insulation to expose bare wire.

- a. Ensure strip length is correct by fitting ferrule over exposed wire. Ferrule should be flush with wire end. See FIG. 7.

NOTE: On some older heated hoses wire insulation will not fit inside ferrule insulator. In these cases, use scissors to split and remove ferrule insulator.

- b. If wire is short of ferrule end, adjust strip length accordingly. If bare wire is protruding from ferrule, trim flush to ferrule end. See FIG. 7.

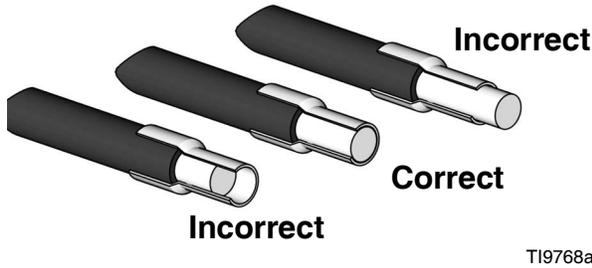


FIG. 7

- c. Remove ferrule and apply oxide inhibitor to bare wire. See FIG. 8.
- d. Reinsert wire in ferrule and apply more oxide inhibitor to ferrule and wire end.

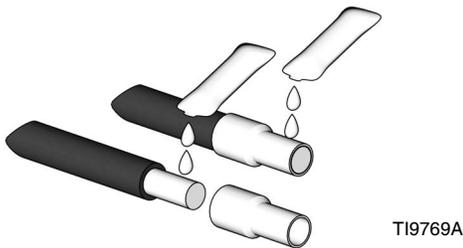
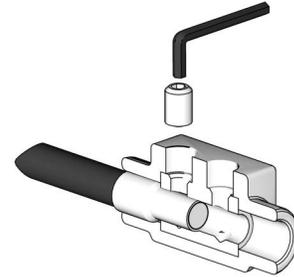


FIG. 8

- 6. Pair electrical wires as follows: A-Hose to A-Hose; B-Hose to B-Hose.

NOTE: When connecting first hose section to proportioner, wire pairing does not make a difference.

- a. Insert one wire from heated hose into connector. Ensure that ferrule is mating with connector insert. See FIG. 9.

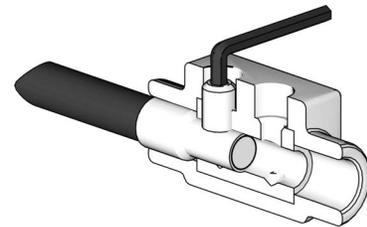


TI9770A

FIG. 9: Insert Wire and Setscrew

- b. Thread in setscrew and use hex wrench to torque setscrew to 60 in-lbs (6.78 N•m).

NOTE: To reach approximately 60 in-lbs (6.78 N•m), complete 4.5 revolutions with hex wrench after setscrew comes in contact with ferrule.



TI9779A

FIG. 10: Torque Setscrew

- c. Insert remaining wire from pair into connector; ensure proper insertion depth. Thread setscrew and torque to 60 in-lbs (6.78 N•m); see sub-step B. See FIG. 9 and FIG. 10.
- d. Repeat sub-steps A through C for remaining wire pair.
- e. Re-torque all setscrews to 60 in-lbs (6.78 N•m).

NOTE: When torqued to 60 in-lbs (6.78 N•m) setscrews will be approximately flush with connector. See FIG. 11.

Installation

- f. Insert cap plugs over setscrews. See FIG. 11.

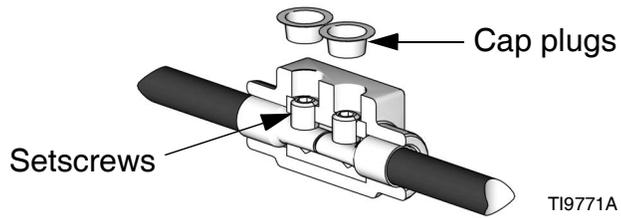


FIG. 11

- g. Wrap connector and wire on each side of connector in black electrical tape to help seal out moisture. Ensure 1 in. (25.4 mm) of wire on each side of connector is wrapped.

7. Connect cables (F). Leave slack (G) in cables as stress relief to prevent cable failure.

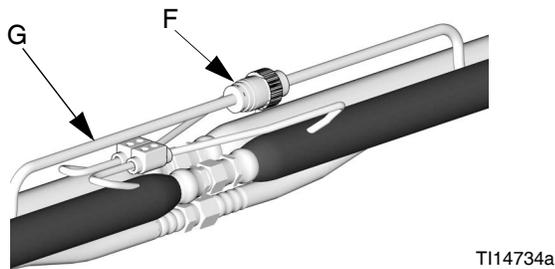


FIG. 12

8. Repeat for additional hoses.
9. See **Connect FTS and Heated Whip Hose**, page 21.

Connect FTS and Heated Whip Hose

NOTICE
To prevent damage to probe, do not kink or excessively bend hose. Do not coil hose tighter than the minimum bend radius of 3 ft (0.9 m). Do not subject hose to excessive weight, impact, or other abuse.

1. **For Single Zone Heat:**
Carefully extend FTS probe (H) into the hose section from the proportioner. Do not bend or kink probe. Insert in component A (red) side of main hose for foam or polyurea systems.

For Dual Zone Heat:
Carefully extend FTS probe (H) into the hose sections from the proportioner. Do not bend or kink probe. Insert in component A (red) and component B (blue) side of main hose for foam or polyurea systems.

2. Connect FTS (J) to whip hose (W).

3. Connect whip hose ground wire (K) to ground screw on underside of FTS.

4. Connect fluid hoses to FTS (J).

NOTE: To use 1/2 in. (13 mm) ID fluid hoses, remove the adapters from the proportioner fluid manifold and install them in the FTS swivel inlets.

5. Connect electrical connectors (D).

6. Connect air hose (C) to whip air hose (L) or see **Connect Solenoid Kit** on page 22 for installation instructions.

7. Connect hose assembly cable (F) to FTS cable (R). Leave slack (G) in cables as stress relief, to prevent cable failure.

8. See **Check Hoses for Leaks**, page 23.

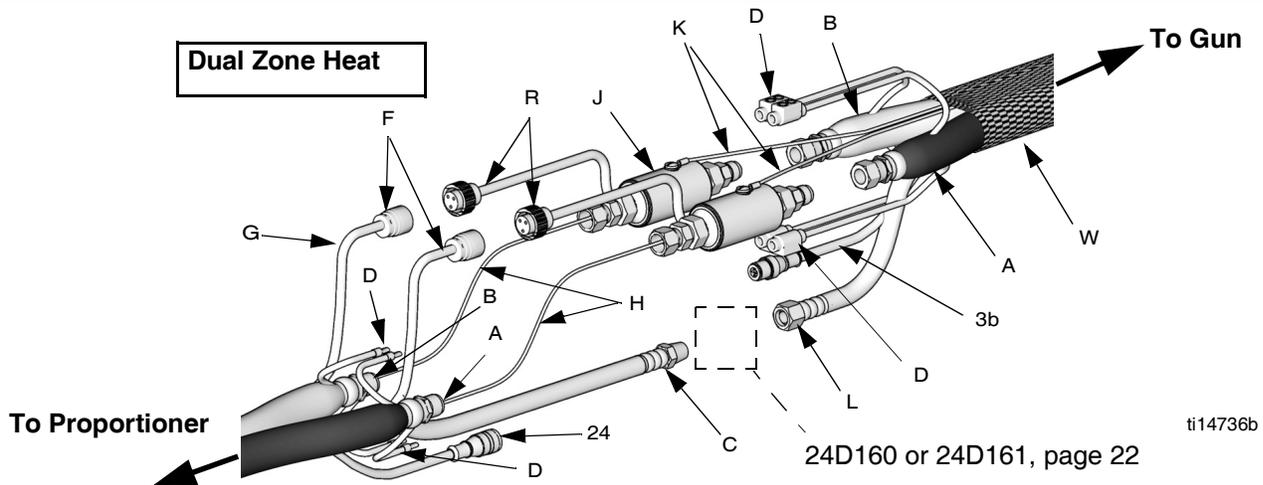
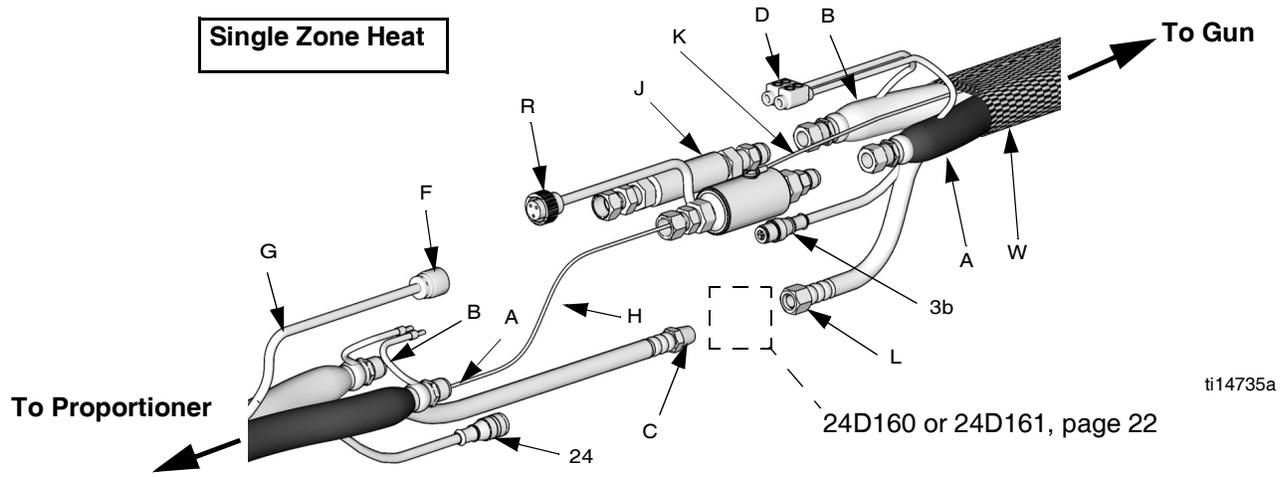


Fig. 13: FTS Connections

Connect Solenoid Kit

A solenoid kit is required for some applicators used with Graco Metering Systems. See **Individual Hoses** on page 5 to see which applicators require a solenoid kit.

NOTE: To ensure proper operation of valve, install the solenoid kit within 15 ft (4.5 m) of the applicator. The solenoid reaction time decreases if the solenoid kit is farther away from the applicator. Ensure that the scuff guard covers the solenoid if mounted between the hose and whip hose.

1. Turn off all power to the system.
2. Apply anaerobic pipe sealant to pipe threads on mufflers (205), tee fitting (202), and swivel fitting (215). Connect to valve (201).
3. Connect elbow fittings (204), and wire harness (206) to valve (201).
4. Connect air hose (C) to swivel fitting (215).
5. Connect two elbows (207) and tubing (212) to open and closed ports on the applicator. See applicator manual for port locations.

NOTE: Cut tubing (212) to desired length if necessary.

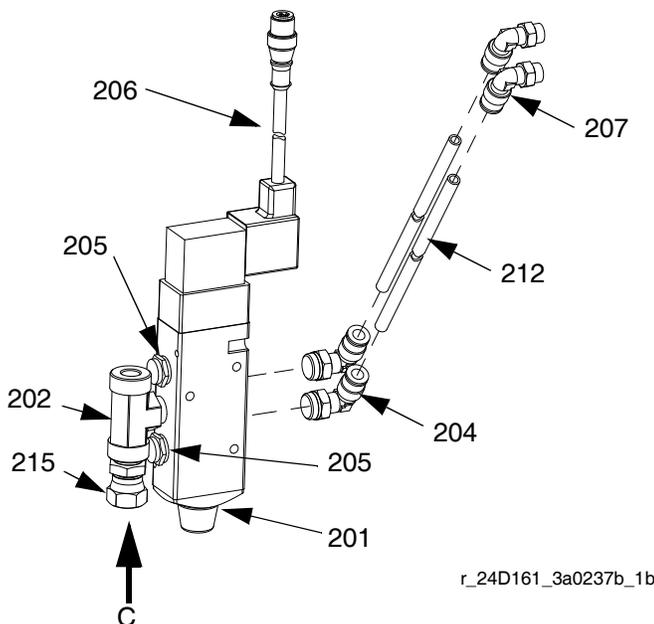


FIG. 14

6. Install plug (203), or tube fitting (214) and ball valve (213) in the other side of the tee fitting (202).

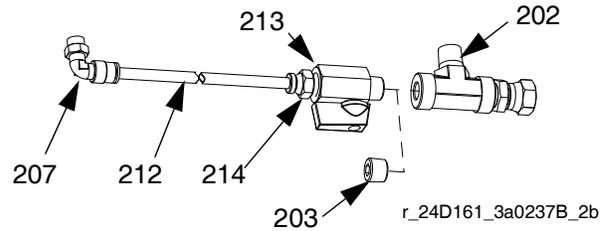


FIG. 15

7. For solenoid kit 24D161: Connect elbow fitting (207) and tubing (212) to the purge air port and tube fitting (214). See applicator manual for port locations.

Connect Splitter

24D160 and 24D161 use a splitter (211) to allow the Graco Metering System to dispense material from the system controls.

1. Connect the splitter (211) to the valve (201) with screw (208), washer (209), and nut (210).
2. Connect the hose communications cable (24) to the single splitter (211) connection.
3. Connect the wire harness (206) and signal cable (3b) from the whip hose to the splitter (211).

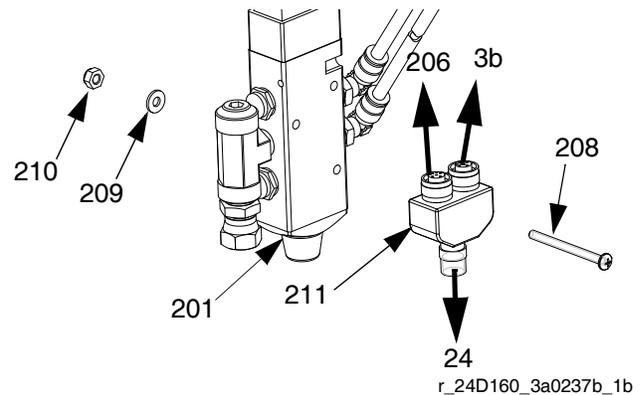


FIG. 16

- For 24C757: Connect valve (201) to the B side pump guard (GD) with screws (208) and washers (209).

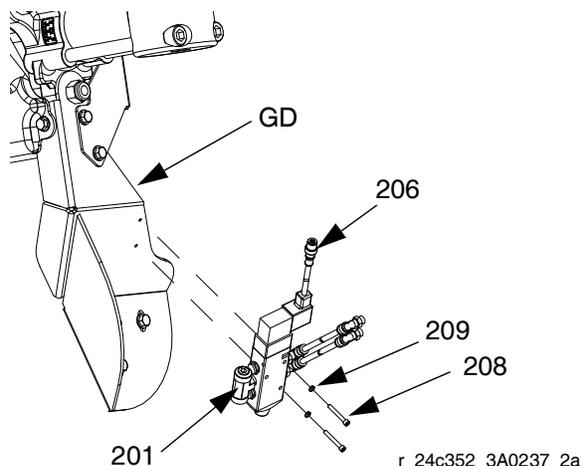
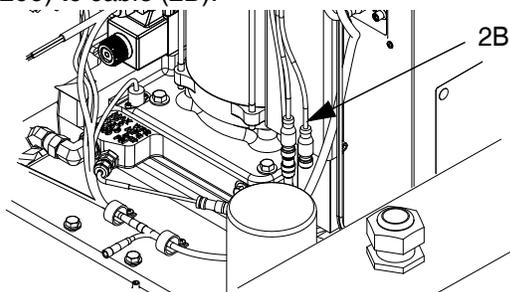


FIG. 17

- Remove motor cover and connect solenoid cable (206) to cable (2B).



- For 24D160 and 24D161: Connect the valve (201) between the last hose bundle and the whip hose with zip ties (not supplied.) See FIG. 13.

NOTE: To ensure proper operation of valve, install the solenoid kit within 15 ft (4.5 m) of the applicator. The solenoid reaction time decreases if the solenoid kit is farther away from the applicator. Ensure that the scuff guard covers the solenoid if mounted between the hose and whip hose.

Check Hoses for Leaks

- Grease with Fusion grease and connect fluid hoses to proportioner fluid manifold (M). Red for hardener, blue for resin. See FIG. 18.

NOTE: The manifold hose adapters (N,P) allow use of 1/4 in. and 3/8 in. ID fluid hoses.

To check adapter tightness, torque as follows:

- A (red) side (N) to 20-25 ft-lb (27-34 N•m).
- B (blue) side (P) to 30-35 ft-lb (41-47 N•m).

To use 1/2 in. (13 mm) ID fluid hoses, remove the adapters from the proportioner fluid manifold and install them in the FTS swivel inlets.

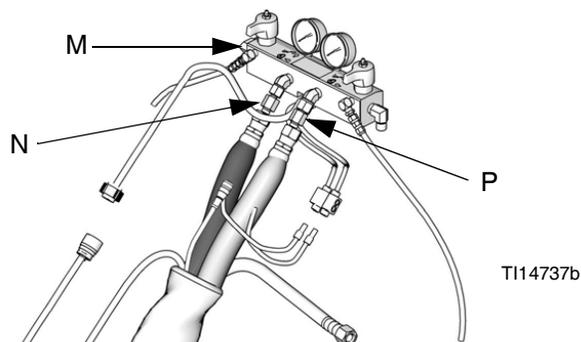


FIG. 18

- For spray guns, close fluid valves on gun fluid manifold. Remove manifold from gun, see gun manual. Connect fluid whip hoses to manifold.
- Check that all equipment is properly grounded. See system operation manual.
- Pressure check hose. See proportioner manual for priming instructions. After all lines are free of air, check for leaks. If there are leaks, relieve pressure as instructed in proportioner manual. Tighten connections, then pressurize again to ensure leaks have stopped. Relieve pressure.

Protective Covering

- Wrap all fluid hose connections with electrical tape.

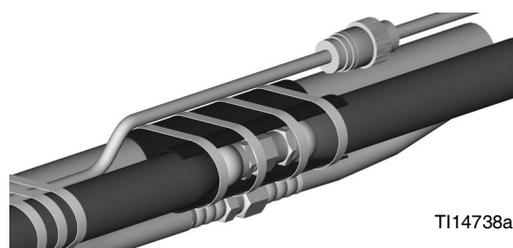


FIG. 19

- Fold wire back on hose to ensure adequate strain relief. Wrap all electrical connections and cable connections with electrical tape to protect them from pulling apart and abrasion.
- Install protective cover, or wrap hose bundle with duct tape to protect foam.
- For hoses that include a protective scuff cover, unroll excess cover over hose and electrical connections. Tape securely.

Operation



Do not operate a coiled hose. A coiled hose creates uneven heat buildup which can result in hose rupture and cause serious injury, including fluid injection.

Maximum hose operating temperature is 180°F (82°C). If using hose without an FTS, measure hose temperature to ensure it does not exceed 180°F (82°C).

Hose must be properly supported to avoid excessive strain due to weight, bending, or sharp edges.

Fluids subjected to heat in confined spaces, including hoses, can create a rapid rise in pressure due to the thermal expansion. Over-pressurization can result in equipment rupture and serious injury.

- Open a valve to relieve the fluid expansion during heating.
- Replace hoses proactively at regular intervals based on your operating conditions.

1. Connect air hose (C) to main air supply if equipped.
2. Connect electrical connectors (D) to connector from fluid manifold (M) or accessory control box. See , page 17. Connect hose cable (F) to cable from proportioner fluid manifold (M) or accessory control box. Connect signal cable (24) to connector behind the proportioner fluid manifold (M). Wrap connections with electrical tape.

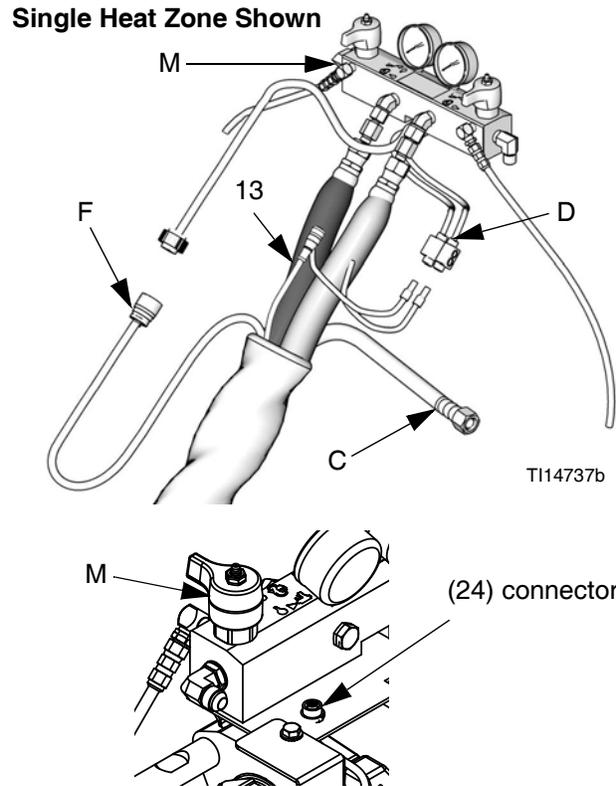


FIG. 20

Maintenance



1. Before disconnecting or repairing hoses, relieve all fluid pressure and shut off electrical power to proportioner. See system operation manual.
2. Be sure fluid is cool before disconnecting hoses.

Instructions for Replacing Individual A or B Hose

1. Before disconnecting hoses, relieve all fluid pressure and shut off electrical power to proportioner. See system operation manual.
2. Disconnect electrical wire from connectors (5). Disconnect fluid hose and remove from bundle.
3. For whip hose bundles, see **Bundle Individual Whip Hoses** on page 27.
4. For hose bundles, see **Bundle Individual Heated Hoses** on page 29.

Clean Orifice

Only for MD2 Valve using Orifice Block Kit 24E505 and an orifice.

NOTE: 24E505 does not come with an orifice. See on page 40 for orifice part numbers.

1. Follow **Pressure Relief Procedure** in MD2 valve manual.
2. Use 5/16 in. nut driver to remove orifices.

NOTICE

To prevent cross-contamination of the orifices do not interchange A component and B component parts. The A component orifice is marked with an A.

3. Remove cap from orifice.

NOTE: The cap is held in place with reverse threads.

4. Remove needle from orifice. Thoroughly inspect all o-rings and replace if necessary.
5. If necessary, use drill bit that is the same size as the orifice to drill out the orifice. Orifice size is marked on the orifice.
6. Liberally lubricate all o-rings.
7. Reassemble in reverse order. Torque orifices into fluid housing to 20-30 in-lb (2.26-3.39 N•m).

Bundle Individual Whip Hoses

Individual whip hoses must be bundled with scuff guards and air and signal cables. Follow the instructions below to bundle single and dual heat zone whip hose bundles.

See FIG. 21 on page 28.

1. Lay out the A and B material hoses with the male fittings at the same end of the bundle.
2. Lay out the air hose (3) with the male fitting at the same end as the male fittings of the material hoses.

NOTE: The female fitting of the air hose should be 6 in. (152.4 mm) beyond the female fitting of the material hoses.

3. Lay out the signal cable (4) with the female end of the signal cable at the same end as the male ends of the material hoses.

NOTE:

- **The male sign cable connector (4) should be 6 in. beyond the female ends of the material hoses.**
 - **Use electrical tape (8) to secure position of signal cable 10 in. (254 mm) back from the end of the material hose.**
4. Connect Electrical Connectors.

For Single Zone Heated Whip Hose Bundles:

- a. Place one 6 AWG electrical connector (5) 24 in. (609.6 mm) from the male material hose fittings.
- b. Connect the 6 AWG wire from each material hose to the electrical connector (5).
- c. Use black electrical tape (8) to secure the connector to the hose bundle.

For Dual Zone Heated Whip Hose Bundles:

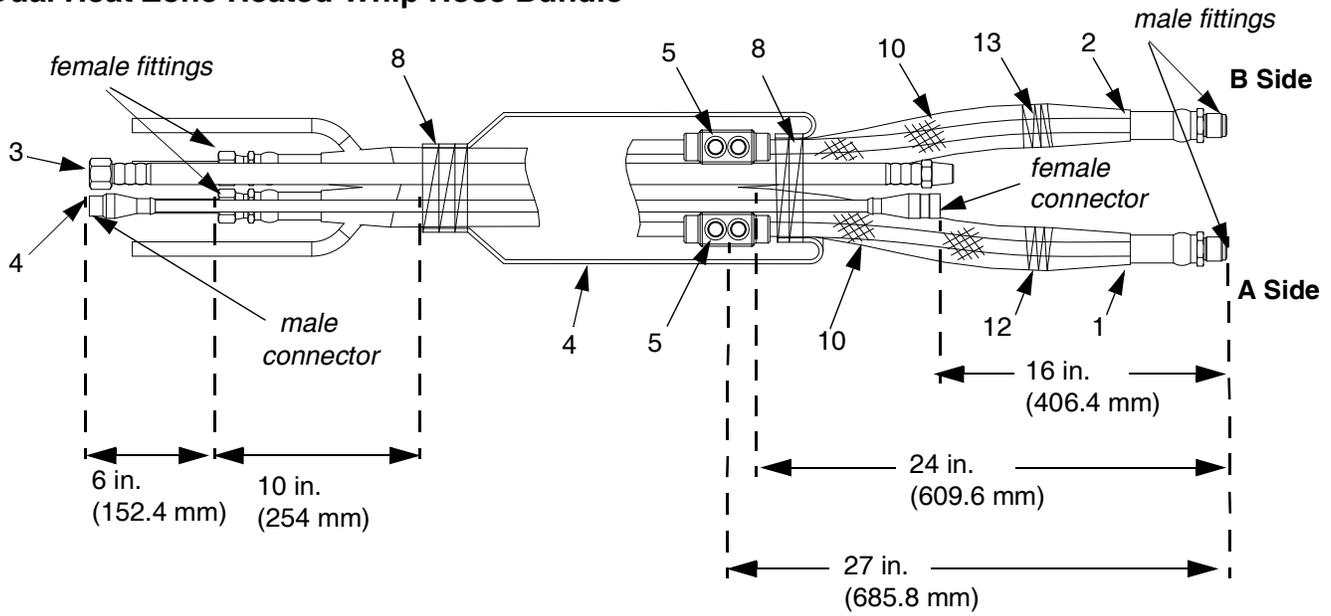
- a. Place two 6 AWG electrical connectors (5) 24 in. (609.6 mm) from the male material hose fittings.
- b. Unlace the 6 AWG wire from each material hose, trim back the wire, and connect to the electrical connector (5).
- c. Use black electrical tape (8) to secure both connectors (5) to the correct material hose.

5. Apply scuff guard (10) on each individual material hose up to the electrical connector (5).
6. Use red electrical tape (12) to secure the scuff guard (10) on the red material hose.
7. Use blue electrical tape (13) to secure the scuff guard (10) on the blue material hose.
8. Use electrical tape and temporarily tape the hose and cable ends together.
9. Feed the scuff guard (4) over the male material hose fittings.
10. Use black electrical tape (8) and secure at least 3 in. (76.2 mm) of scuff guard (4) next to the electrical connector (5) on side with male material hose fittings.

NOTE: Ensure no foam insulation is exposed on either material hose.

11. Fold the scuff guard (4) over itself and feed the remaining scuff guard over the entire length of the bundle.
12. Leave excess scuff guard (4) loose on the end with the female material fittings.
13. Remove electrical tape securing the hose and cable ends together.
14. Apply warning label (10) in the center of the bundle. Secure edges with black electrical tape.

Dual Heat Zone Heated Whip Hose Bundle



Single Heat Zone Heated Whip Hose Bundle

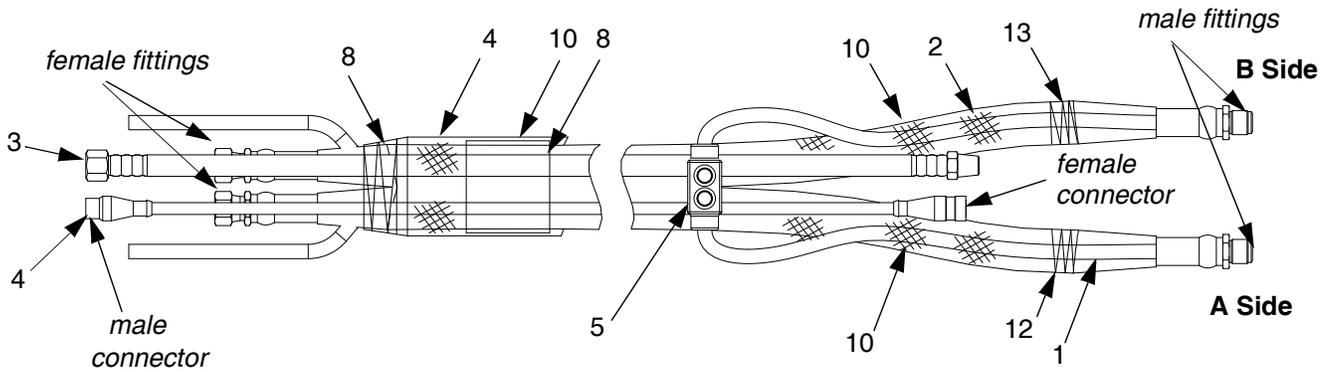


FIG. 21: Whip Hose Bundles

Bundle Individual Heated Hoses

Individual hoses must be bundled with a scuff guard, FTS cable(s), and air and signal cables. Follow the instructions below to bundle individual heated hoses for dual and single zone heat.

See FIG. 22 on page 30.

1. Lay out the A and B material hoses with the male fittings at the same end of the bundle.
2. Lay out the air hose (23) with the male fitting at the same end as the male fittings of the material hoses.
3. Lay out the signal cable (24) and FTS cable(s) (25) with the female end of the cables at the same end as the male fittings of the material hoses.

NOTE:

- **All signal cable connectors (24) should be 2 in. (50.8 mm) beyond the male fittings of the material hoses.**
 - **Use electrical tape (29) to secure position of signal cable 10 in. (254 mm) back from the end of the material hose.**
4. Wrap FTS Cables.

NOTICE

To heat material correctly, ensure that the red electrical tape is on the A side FTS cable and the blue electrical tape is on B side FTS cable.

- a. Wrap each end of one FTS cable (25) with red electrical tape (32). This FTS cable will correspond with the A material hose.
 - b. *For Dual Zone Heat Only:* wrap each end of the other FTS cable (25) with blue electrical tape (33). This FTS cable will correspond with the B material hose.
5. Carefully twist the material hoses, air hose (23), and cables throughout the entire bundle with a 24 in (609.6 mm) maximum pitch.

NOTE: Do not twist 5 ft and 10 ft hose bundle lengths.

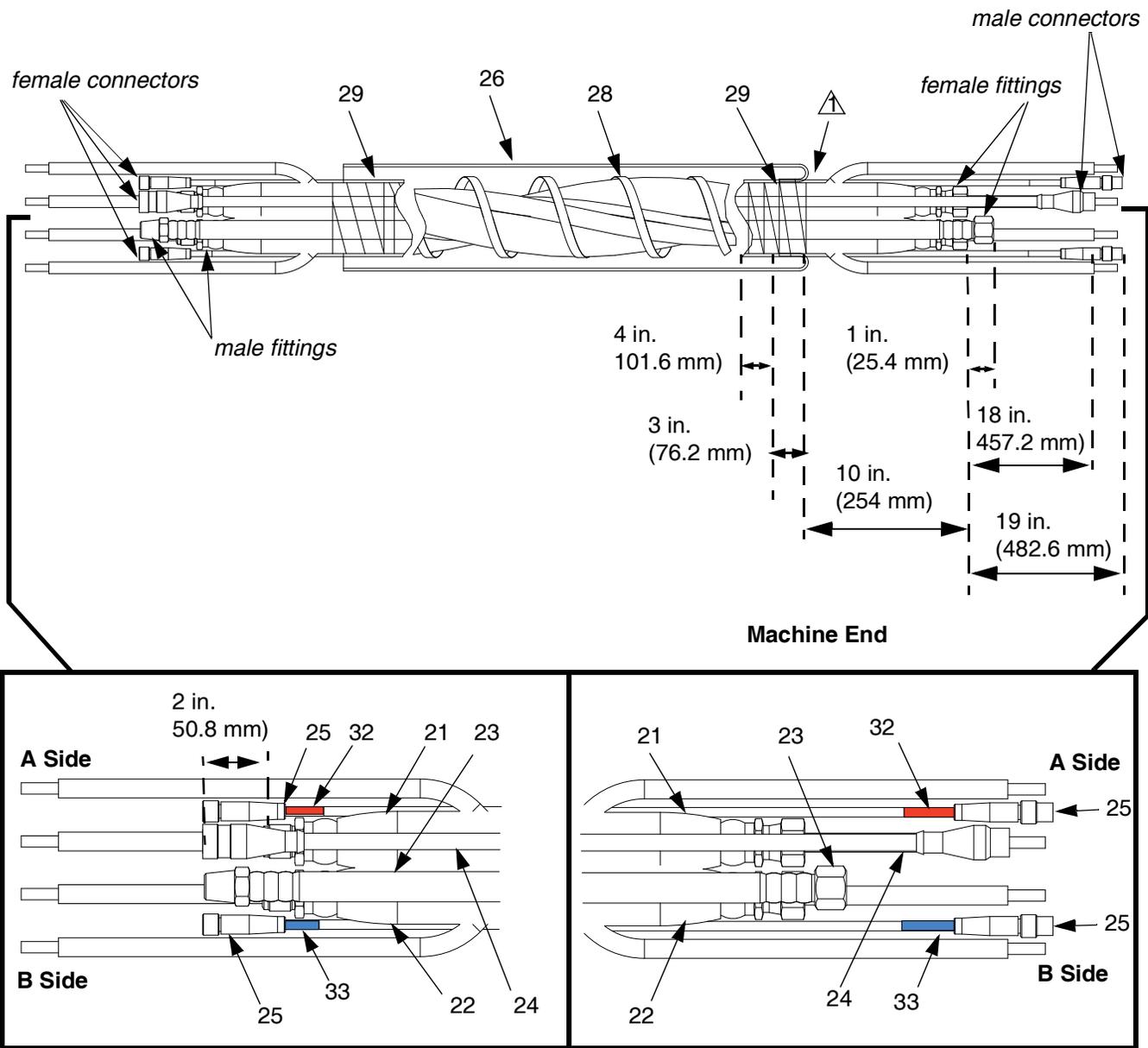
6. Tightly wrap the bundle with lace (28) with an 8 in. maximum pitch. Use black electrical tape to stop the lacing 10 in. (254 mm) from the material fittings on each end of the hoses.

7. Use electrical tape and temporarily tape the hose and cable ends together.
8. Feed the scuff guard (26) over the female material hose fittings.
9. Use black electrical tape (29) and tape the scuff guard (26) down 10 in. from the female fittings on the material hoses. Tape at least 3 in. (76.2 mm) of scuff guard (26).

NOTE: Ensure no foam insulation is exposed on either material hose.

10. Fold the scuff guard (26) over itself and feed the remaining scuff guard over the entire length of the bundle.
11. Leave excess scuff guard (26) loose on the end with the male material fittings.
12. Remove electrical tape securing the hose and cable ends together.
13. Apply warning label (31) in the center of the bundle. Secure edges with black electrical tape (29).

Dual Heat Zone Heated Hose Bundle Shown



No exposed foam permitted.

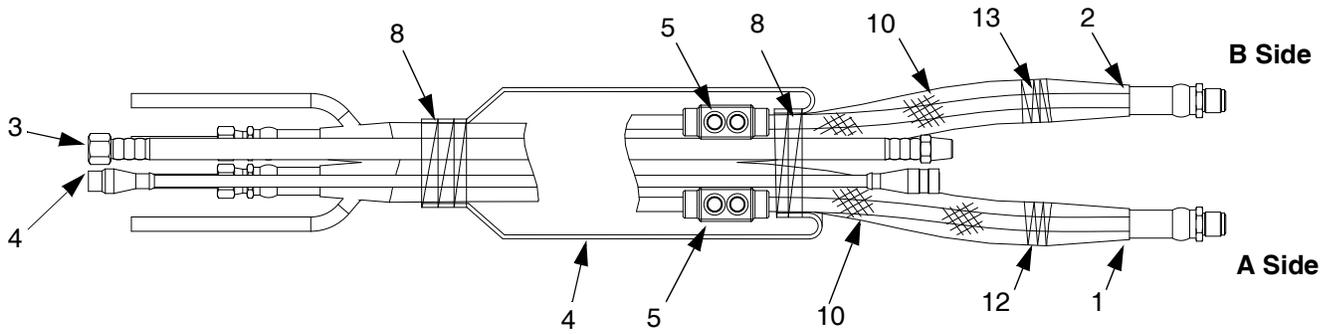
FIG. 22: Heated Hose Bundles

Parts

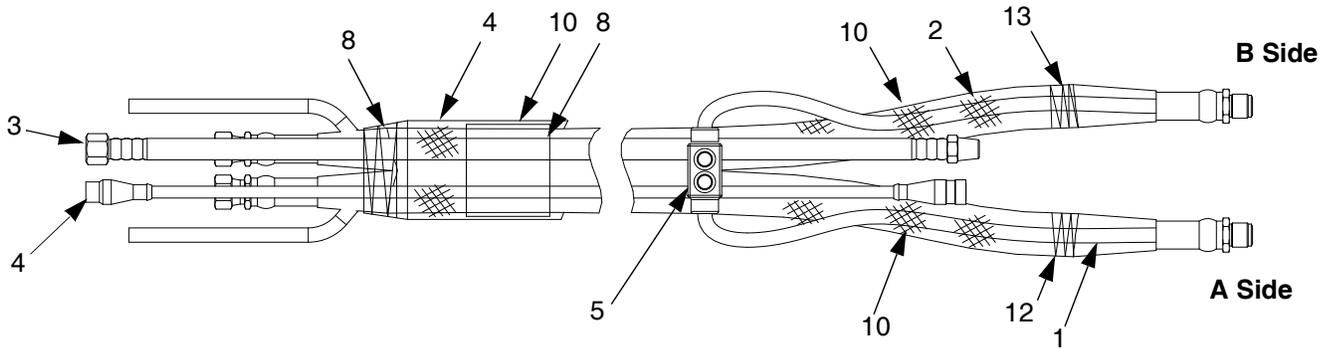
Whip Hoses

NOTE: A FTS assembly must connect the heated hose and whip hose. See page 36.

Dual Heat Zone Heated Whip Hose



Single Heat Zone Heated Whip Hose



Heated Whip Hoses

Common Parts

Ref. No.	Part No.	Description	Qty
4★		SCUFF GUARD; 1.75 in. dia.; see varied parts table for length	1
7▲✘	15B679	LABEL, safety; A hose, B Hose, and whip hose, English	3
▲✘	16M219	LABEL, safety; A hose, B Hose, and whip hose, Spanish/French	3
8‡		TAPE, electrical; black	1
9	120542	BAG, polyethylene; not shown	2
10✿		SCUFF GUARD; 1.25 in. dia.; see varied parts table for length	2

Ref. No.	Part No.	Description	Qty
12‡		TAPE, electrical; red	1
13‡		TAPE, electrical; blue	1

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

✘ *Not shown.*

‡ *Purchase locally.*

✿ *Order 24E961 for replacement scuff guard. Contains 30 ft (9 m) of braided polyester mesh.*

★ *Order 24E954 replacement scuff guard. Contains 200 ft (60.9 m) of braided polyester mesh.*

Varied Parts

Hose Assy	Length ft (m)	Reference Number and Description					
		1	2	3	4	5	6✘
		Red (A) Hose	Blue (B) Hose	Air Hose and Signal Cable Kit	Scuff Guard Length ft (m)	Electrical Connector	Connector Splice
Stainless Steel Dual Heat Zone							
24D193	5 (1.5) x 1/4"	See Heated Whip Hose , page 4.	See Heated Whip Hose , page 4.	24D169	9 (2.7)	261821	
24D194	10 (3) x 1/4"			24D171	10 (3)	261821	
24D750	5 (1.5) x 3/8"			24D169	9 (2.7)	261821	
24D751	10 (3) x 3/8"			24D171	10 (3)	261821	
Carbon Steel Dual Heat Zone							
24D195	5 (1.5) x 1/4"	See Heated Whip Hose , page 4.	See Heated Whip Hose , page 4.	24D169	9 (2.7)	261821	
24D196	10 (3) x 1/4"			24D171	10 (3)	261821	
24D752	5 (1.5) x 3/8"			24D169	9 (2.7)	261821	
24D753	10 (3) x 3/8"			24D171	10 (3)	261821	
Carbon Steel Single Heat Zone							
24D192	10 (3) x 1/4"	See Heated Whip Hose , page 4.	See Heated Whip Hose , page 4.	24D171	10 (3)	261821 (1)	
24D822	10 (3) x 3/8"			24D171	10 (3)	261821 (1)	261181
24E970	10 (3) x 1/4"			24D171	10 (3)	261821 (1)	
24E971	10 (3) x 3/8"			24D171	10 (3)	261821 (1)	
Qty.		1	1	1		2 (1)	1

Air Hose and Signal Cable Kits (3)

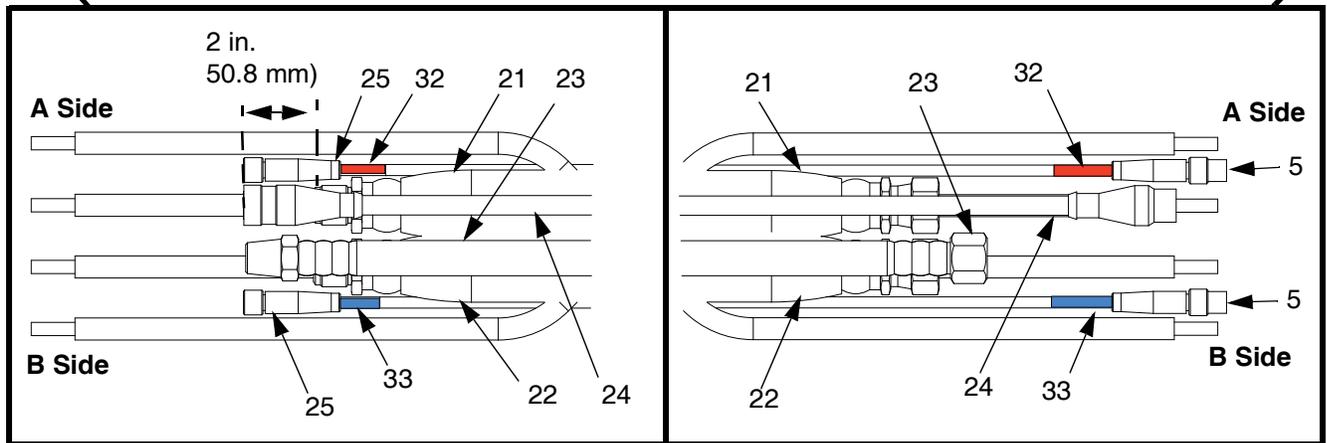
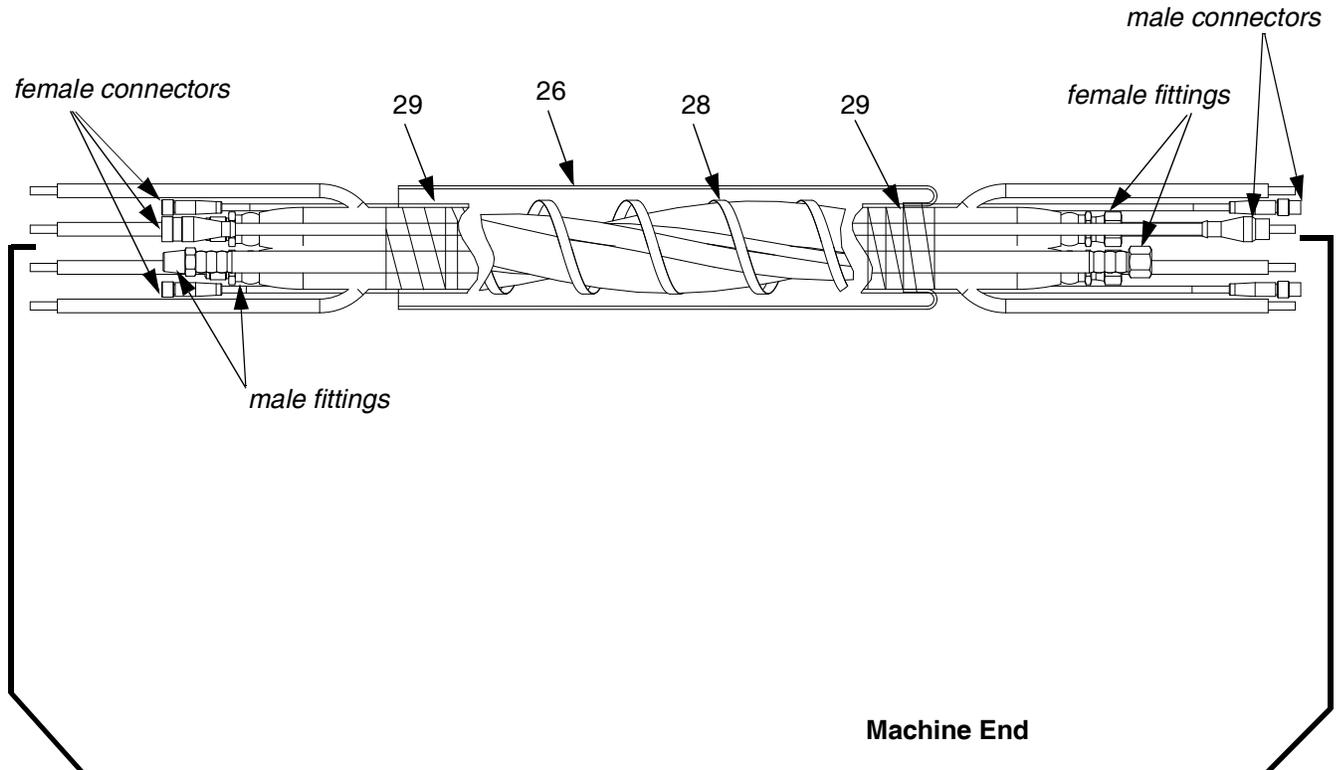
Kit	Reference Number and Description	
	3a	3b
	Air Hose	5 Pin Signal Cable
24D169	24E953	24E900
24D171	15B280	24E899

Kit	Reference Number and Description	
	3a	3b
	Air Hose	5 Pin Signal Cable
Qty.	1	1

Heated Hose Bundles

NOTE: A FTS assembly must connect the heated hose and whip hose. See page 36.

Dual Heat Zone Heated Hose Bundle Shown



Dual Zone Heated Hose Bundles

Common Parts

Ref. No.	Part No.	Description	Qty	
26	*	SCUFF GUARD; 1.75 in. dia.; see varied parts table for length	1	▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.
27	261821	CONNECTOR, electrical	2	* Order 24E954 for replacement scuff guard. Contains 200 ft (60.9 m) of braided polyester mesh.
29	‡	TAPE, electrical; black	1	* Not shown.
30	*	BAG, polyethylene	2	‡ Purchase locally.
31	▲*	120542 LABEL, safety; A hose, B Hose, and hose bundle, English	3	
	▲*	16M219 LABEL, safety; A hose, B Hose, and hose bundle, Spanish/French	3	
32	‡	TAPE, electrical; red	1	
33	‡	TAPE, electrical; blue	1	

Varied Parts

Hose Assy	Length ft (m)	Reference Number and Description						
		21	22	23	24	25	26	28
		Red (A) Hose	Blue (B) Hose	Air Hose	5 Pin Signal Cable	FTS Cable	Scuff Guard Length ft (m)	Tie Hose Lacing Length in. (mm)
24D108	5 (1.5)	See Heated Hose Bundle Part Numbers , page 3.	See Heated Hose Bundle Part Numbers , page 3.	24E953	24E900	24E896	9 (2.7)	
24D109	10 (3)			15B280	24E899	24E895	10 (3)	18 (457.2)
24D110	25 (7.6)			24F179	24E898	24E894	33 (10)	45 (1143)
24D111	50 (15.2)			15B290	24E897	24E893	56 (17)	90 (2286)
24D112	5 (1.5)			24E953	24E900	24E896	9 (2.7)	
24D113	10 (3)			15B280	24E899	24E895	10 (3)	18 (457.2)
24D114	25 (7.6)			24F179	24E898	24E894	33 (10)	45 (1143)
24D115	50 (15.2)			15B290	24E897	24E893	56 (17)	90 (2286)
24D116	5 (1.5)			24E953	24E900	24E896	9 (2.7)	
24D117	10 (3)			15B280	24E899	24E895	10 (3)	18 (457.2)
24D118	25 (7.6)			24F179	24E898	24E894	33 (10)	45 (1143)
24D119	50 (15.2)			15B290	24E897	24E893	56 (17)	90 (2286)
24D120	5 (1.5)			24E953	24E900	24E896	9 (2.7)	
24D121	10 (3)			15B280	24E899	24E895	10 (3)	18 (457.2)
24D122	25 (7.6)			24F179	24E898	24E894	33 (10)	45 (1143)
24D123	50 (15.2)	15B290	24E897	24E893	56 (17)	90 (2286)		
Qty.		1	1	1	1	2	1	see above

Single Zone Heated Hose Bundles

Common Parts

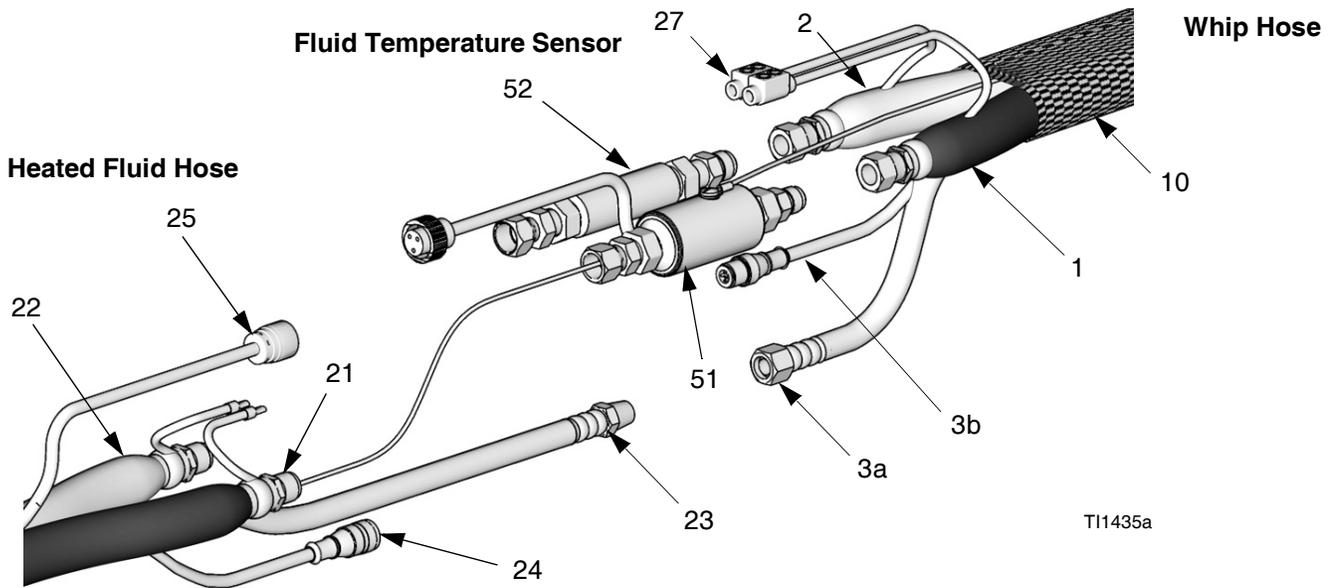
Ref. No.	Part No.	Description	Qty	
26	✳	SCUFF GUARD; 1.75 in. dia.; see varied parts table for length	1	▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.
27	261821	CONNECTOR, electrical	1	✳ Order 24E954 for replacement scuff guard. Contains 200 ft (60.9 m) of braided polyester mesh.
29	‡	TAPE, electrical; black	1	✳ Not shown.
30	✳	BAG, polyethylene	2	‡ Purchase locally.
31	▲✳	15B679 LABEL, safety; A hose, B Hose, and hose bundle, English	3	
	▲✳	16M219 LABEL, safety; A hose, B Hose, and hose bundle, Spanish/French	3	
32	‡	TAPE, electrical; red	1	
33	‡	TAPE, electrical; blue	1	

Varied Parts

Hose Assy	Length ft (m)	Reference Number and Description						
		21	22	23	24	25	26	28
		Red (A) Hose	Blue (B) Hose	Air Hose	5 Pin Signal Cable	FTS Cable	Scuff Guard Length ft (m)	Tie Hose Lacing Length in. (mm)
24D124	25 (7.6)	See Heated Hose Bundle Part Numbers, page 3.	See Heated Hose Bundle Part Numbers, page 3.	24E953	24E900	24E896	33 (10)	45 (1143)
24D125	50 (15.2)			15B280	24E899	24E895	56 (17)	90 (2286)
24D126	25 (7.6)			24F179	24E898	24E894	33 (10)	45 (1143)
24D127	50 (15.2)			15B290	24E897	24E893	56 (17)	90 (2286)
24D129	50 (15.2)			15B280	24E899	24E895	56 (17)	90 (2286)
24D131	50 (15.2)			15B290	24E897	24E893	56 (17)	90 (2286)
Qty.		1	1	1	1	1	1	see above

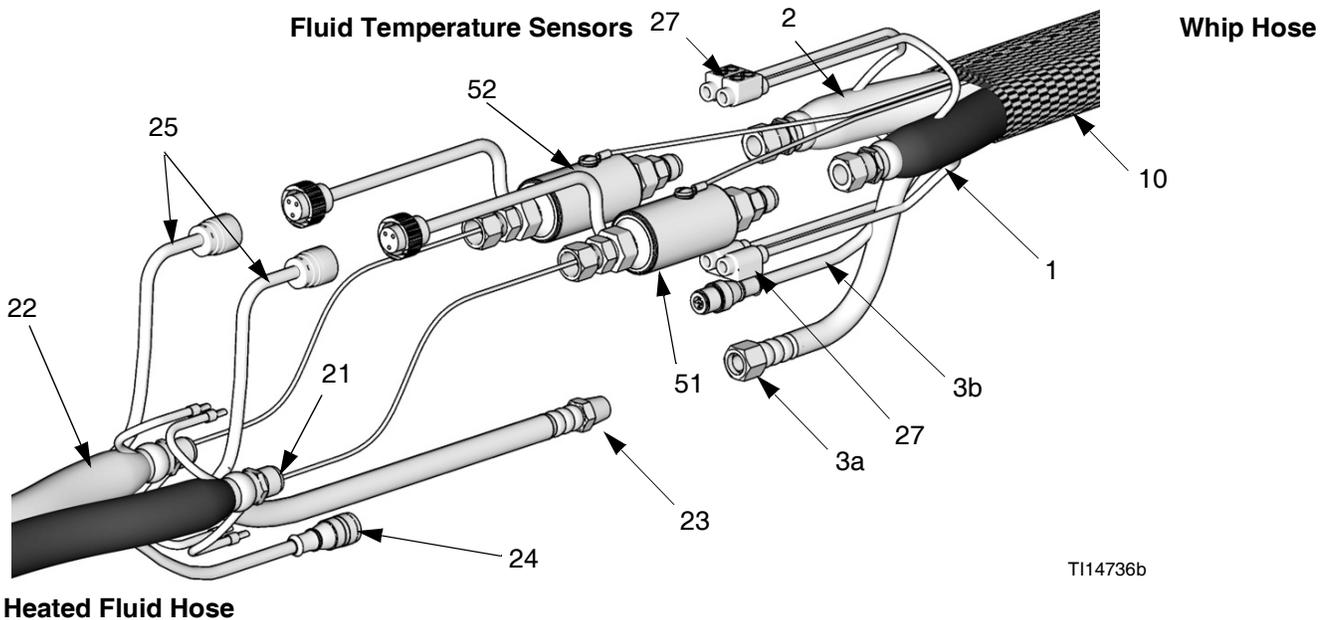
Using Fluid Temperature Sensors For Single Heat Zones

258758 Carbon Steel Fluid Temperature Sensor



Using Fluid Temperature Sensors for Dual Heat Zones

258757 Stainless Steel Fluid Temperature Sensor



FTS Kits

Ref.	Description	Dual Heat Zones	
		258756	Qty.
51	FTS, sensor, red	24F393	1
52	FTS, sensor, blue	24F392	1

Ref.	Description	Single Heat Zones	
		258758	Qty.
51	FTS, sensor, red	24F393	1
52	COUPLER	16C806	1

15F144 Hose Wire Jumper

Use the 15F144 Hose Wire Jumper to heat only the major volume hose, in a wide ratio system.

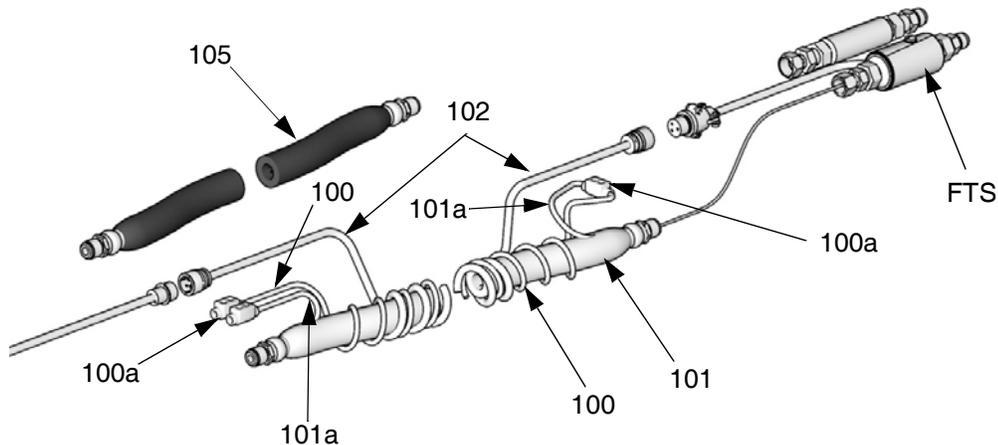
To build one complete 50 ft single side heated hose bundle, order the following parts:

Ref.	Part	Description	Qty
100	15F144	JUMPER, hose wire; includes two 117789 electrical connectors; 50 ft (15.2 m) long	1
101	chart 2, page 37	HOSE, resin, heated; 50 ft (15.2 m) minimum	1
102	15B296	CABLE, FTS	1
103	15C517	HARNESS, hose jumper	1
104	261670	FLUID TEMPERATURE SENSOR	1
105	purchase locally	HOSE, hardener, unheated; 50 ft (15.2 m) minimum; customer supplied	1
106	purchase locally	CONNECTORS, fluid; as required to complete assembly; not shown	as req'd

1. Wrap hose wire jumper (100) around resin hose (101) in a spiral fashion.
2. Connect resin hose wire (101a) to other side of Power-Lock™ connector (100a); see page 17.
3. Wrap FTS cable (102) around resin hose (101) in a spiral fashion.
4. Twist hoses (101 and 105) together to provide strain relief.
5. Repeat steps 1-4 for each length of hose (101). Connect hoses, electrical connectors, and cables; see , page 17.
6. Install one -Lock connector (100a) between wires; see page 18.
7. **Connect 258758**, page 21.
8. Install whip hose and gun. Ensure that gun is grounded.
9. Connect hoses to proportioner.
10. Insulate and protect hoses. See **Protective Covering**, page 23.

Install as follows:

<p>Hoses (101 and 105) must be sized and pressure rated to meet the requirements of your system.</p> <p>Do not operate heated hose (101) at more than 45 A. If hose is cold, turn current adjustment fully counter-clockwise before reheating hose.</p> <p>Spray gun must be grounded.</p>					

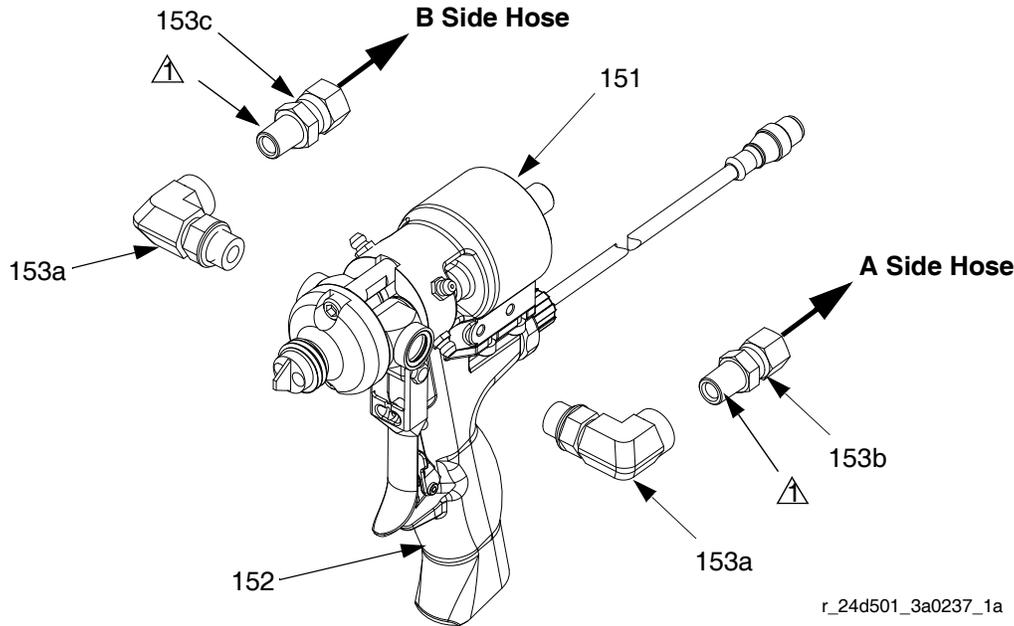


T114739a

MD2 Applicator Kits

See **MD2 Valve Applicator Kits** table on page 10 for kit descriptions.

MD2 Applicator Kit 24D501 Shown



Apply anaerobic pipe sealant.

MD2 Applicator Kits

Ref.	Part	Description	Qty
151		VALVE; see Individual Hoses on page 5	1
152★		HANDLE; see MD2 Valve Applicator Kits on page 10	1
153★		KIT, chemical connection; see parts lists.	1

★ MD2 valve kits only.

See **Solenoid Kits** on page 39 for parts.

24F227 Ratio Check Assembly

To check spray ratio with Fusion and Graco EP guns. See manual 3A0861 for more information.

24E505 Orifice Block Kit

To balance pressures with adjustable orifices. See manual 312185 for more information.

(153) 24D162 Stainless Steel Connection Kit

Ref.	Part	Description	Qty
153a	258307	FITTING, elbow; SAE 06 x 1/4 npt(f)	2
153b	122961	ADAPTER, swivel; JIC 6 x 1/4 npt	1
153c	122737	ADAPTER, swivel; 1/4 npt x JIC 5	1

(153) 24D414 Carbon Steel Connection Kit

Ref.	Part	Description	Qty
153a	122969	FITTING, elbow; 1/4 npt x SAE 06	2
153b	122721	ADAPTER, swivel; JIC 6 x 1/4 npt	1
153c	122963	ADAPTER, swivel; JIC 5 x 1/4 npt	1

Accessories

Scuff Guard

Use to keep hose clean and protect it from damage.

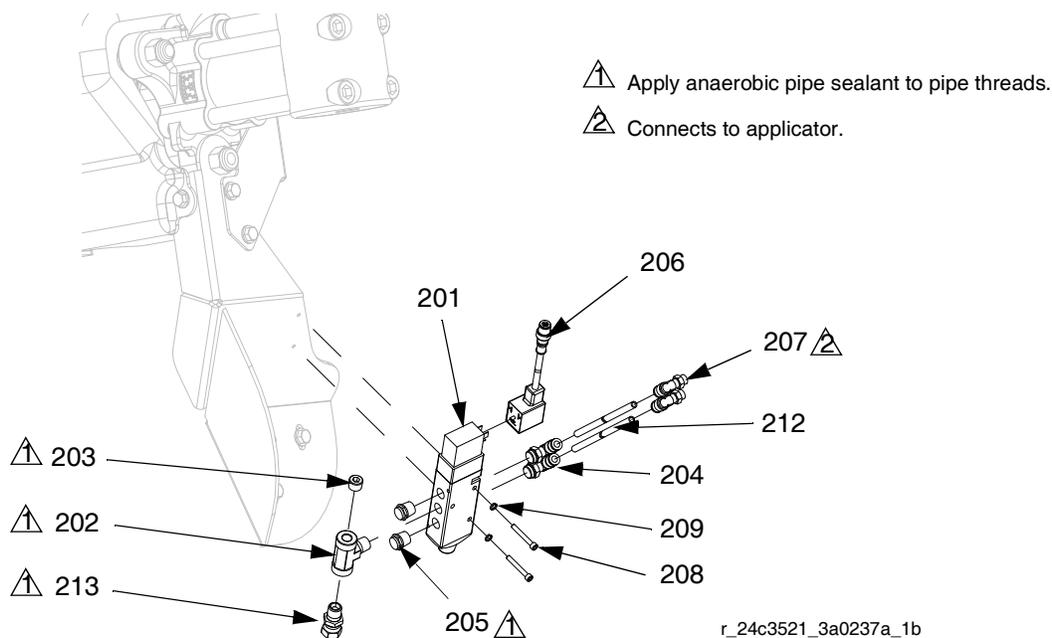
Part	Description
24E954	200 ft (60.9 m) braided polyester mesh. Fold back over itself for easy installation.

Part	Description
24E961	30 ft (9 m) braided polyester mesh. Fold back over itself for easy installation.
246456	50 ft (15.2 m) polyethylene bag. Inflate with air for easy installation.

Solenoid Kits

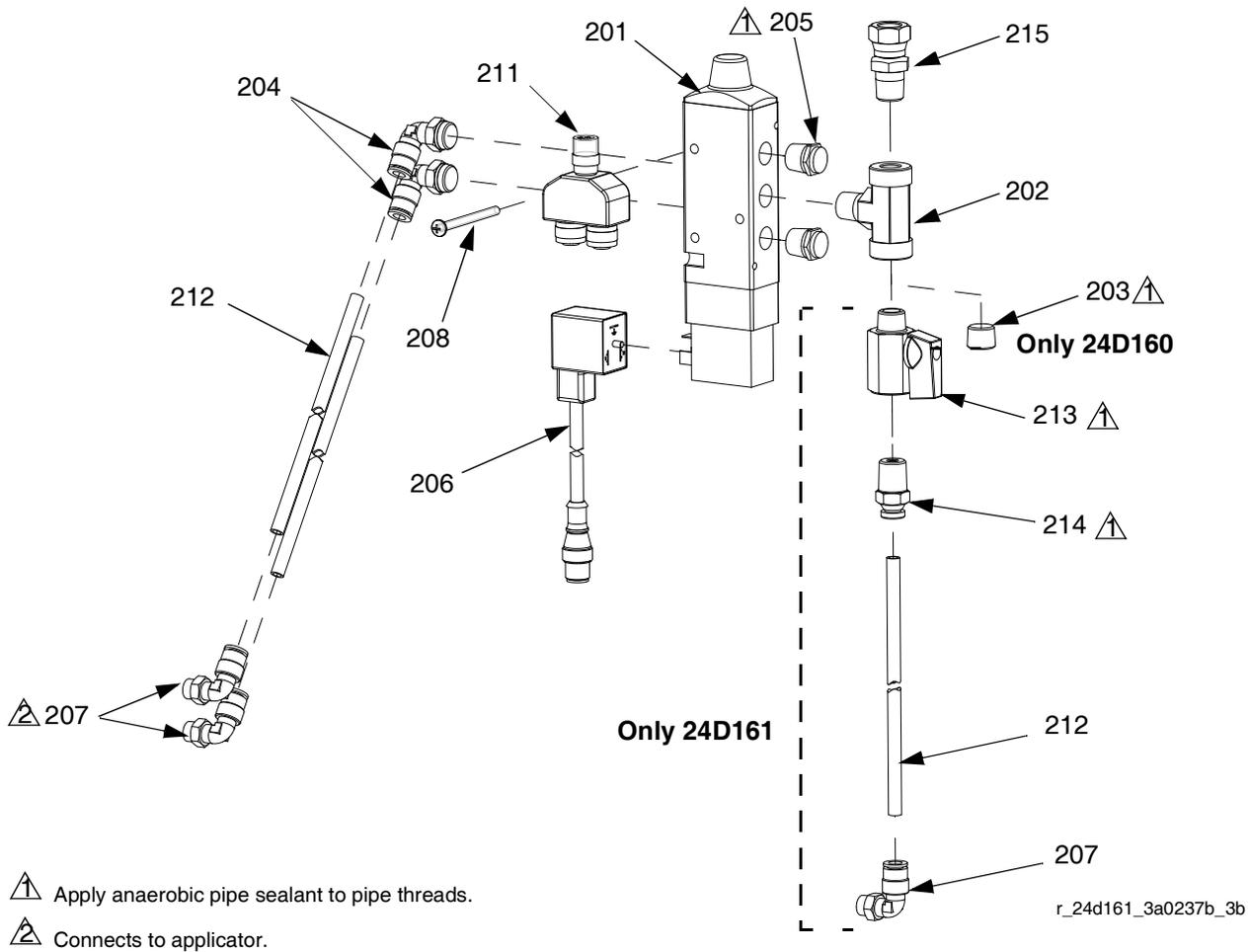
Not all applicator kits require a solenoid kit. See **Applicator Kits**, page 9.

24C757 Machine Mount Kit



Ref.	Part	Description	Qty	Ref.	Part	Description	Qty
201	120900	VALVE, solenoid, 3 way	1	207	112698	ELBOW, swivel, male; 1/8 npt	2
202	108638	FITTING, pipe, tee	1	208	115968	SCREW, cap, socket head	2
203	100721	PLUG, pipe	1	209	GC2107	WASHER, lock, spring, #8	2
204	121022	FITTING, elbow, male, 1/4 npt	2	212	054130	TUBING, polyethylene; 1/4 OD; 36 ft (11 m)	1
205	121021	MUFFLER, 1/4 npt	2	213	114339	FITTING, union, swivel, 1/4 npt; sst	1
206	122955	HARNESS, m12 x mini din	1				

24D160 Remote Mount MD2 Kit
24D161 Remote Mount Fusion Kit



Ref.	Part	Description	Qty
201	120900	VALVE, solenoid, 3 way	1
202	108638	FITTING, pipe, tee	1
203	100721	PLUG, pipe; for 24D160	1
204	121022	FITTING, elbow, male; 1/4 npt	2
205	121021	MUFFLER; 1/4 npt	2
206	122955	HARNESS, m12 x mini din	1
207	112698	ELBOW, swivel, male; 1/8 npt	2,3
208	120094	SCREW, pan hd,	1
209	102360	WASHER, flat	1
210	15F988	NUT, lock, hex	1
211	120953	CONNECTOR, splitter	1
212	054130	TUBING, polyethylene; 1/4 OD; 36 ft (11 m) for 24D160; 54 ft (16.5 m) for 24D161	1
213	15B565	VALVE, ball	1
214	116658	FITTING, tube, male; 1/4 npt; 24D161	1
215	114339	FITTING, union, swivel, 1/4 npt; sst	1

Technical Data

Category	Data
Maximum Fluid Working Pressure	See page 3
Maximum Air Working Pressure	130 psi (0.9 MPa, 9 bar)
Maximum Operating Temperature	180°F (82°C)

Category	Data
Wetted Parts	Nylon, Zinc-Plated Carbon Steel, 303 Stainless Steel, Butyl
Total Heating Load (2 hoses)	1/4" diameter: 11 watts/foot (36 watts/meter) 3/8" diameter: 13 watts/foot (43 watts/meter) 1/2" diameter: 15 watts/foot (49 watts/meter)

California Proposition 65

CALIFORNIA RESIDENTS

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

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco 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 Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco 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-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

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.

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.

Graco's 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 two (2) years of the date of sale.

GRACO 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 GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco 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 Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

Graco Information

Sealant and Adhesive Dispensing Equipment

For the latest information about Graco products, visit www.graco.com.

For patent information, see www.graco.com/patents.

TO PLACE AN ORDER, contact your Graco distributor, go to www.graco.com and select "Where to Buy" in the top blue bar, or call to find the nearest distributor.

If calling from the US: 800-746-1334

If calling from outside the US: 0-1-330-966-3000

All written and visual data contained in this document reflects the latest product information available at the time of publication. Graco reserves the right to make changes at any time without notice.

Original instructions. *This manual contains English. MM 3A0237*

Graco Headquarters: Minneapolis

International Offices: Belgium, China, Japan, Korea

GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS MN 55440-1441 • USA

Copyright 2010, Graco Inc. All Graco manufacturing locations are registered to ISO 9001.

www.graco.com

Revision R, June 2022