Description

NOTE: Throughout this document the Rhino SD/XD Type-G/D 24 Vdc ISO Electric Control Module is referred to as the Control Module.

See Figure 1. The Control Module (1) provides the electrical operating functions for Rhino SD/XD bulk unloaders (2). It mounts to the side of small and large frame Rhino SD/XD bulk unloaders.

The Control Module can be configured for use on standalone or changeover Rhino SD/XD bulk unloaders. The changeover configuration allows the operator to change the empty container of one Rhino SD/XD bulk unloader while the other one is operating.

See Figure 2 and refer to Table 1 for a list of the Control Module components.

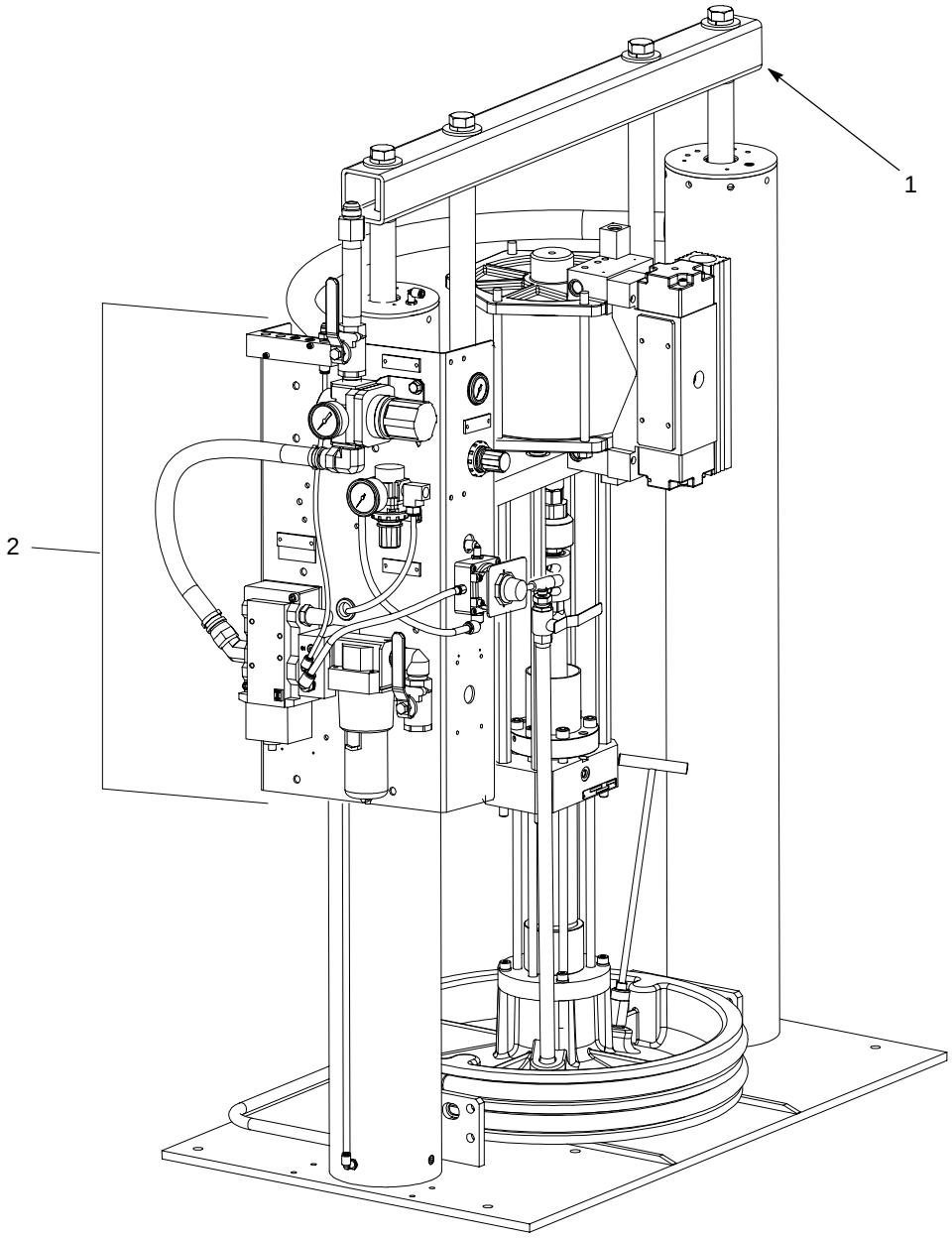

Figure 1 Control Module (Large Frame Rhino SD/XD Bulk Unloader Shown)

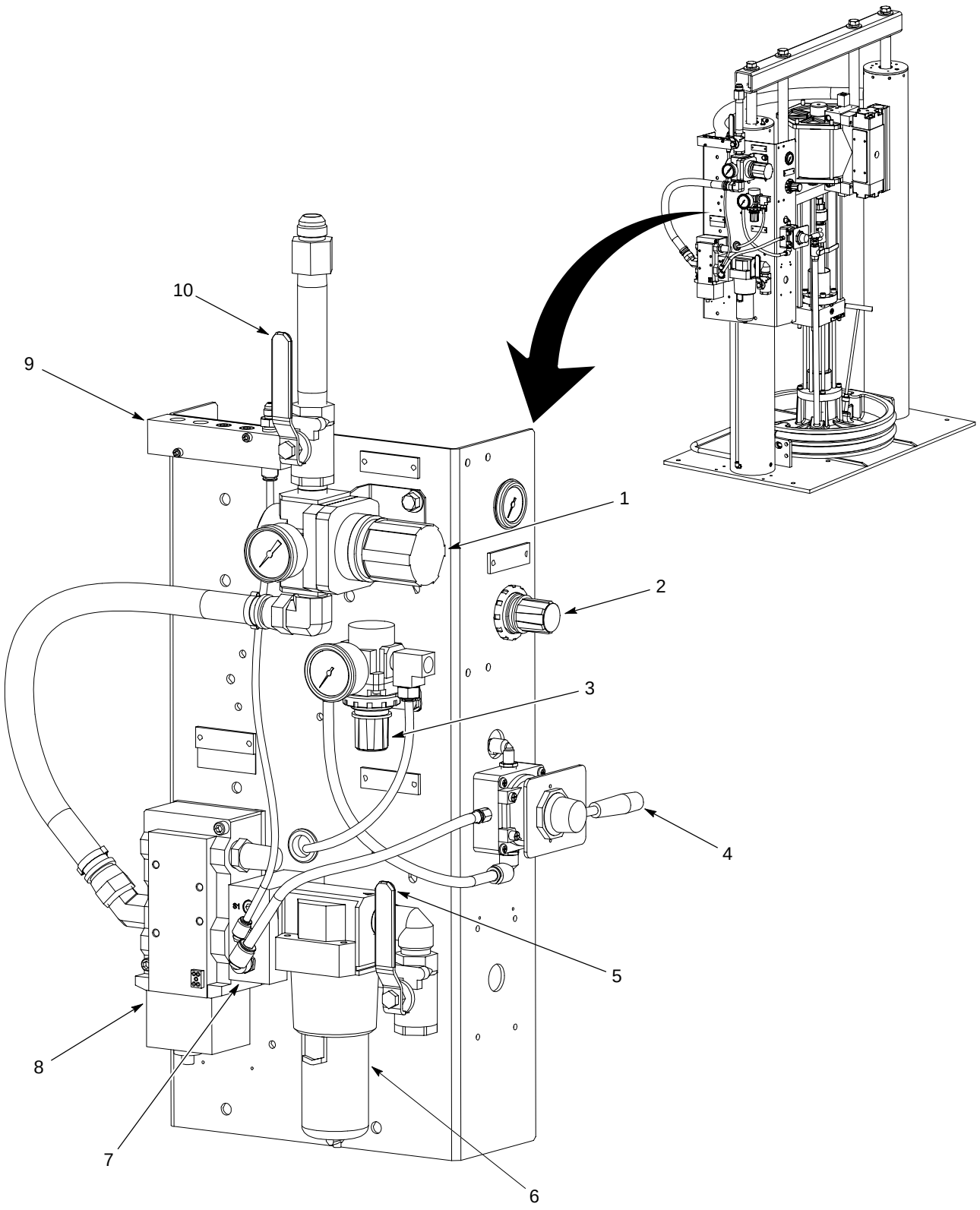

Figure 2 Control Module Components

Table 1 Control Module Components

Item	Function
1	Air Motor Regulator: Sets the amount of air pressure going to the air motor which determines the amount of material pressure exiting the unloader.
2	Ram Down Regulator: Sets the amount of air pressure going to the top of the ram cylinders which determines the amount of pressure the follower plate exerts on the material.
3	Preset 25-psi Rating Blow-off/Ram Up Regulator: This regulator controls the air pressure to the blow-off valve and the ram up side of the elevator cylinders.
4	Ram Control Valve: Rotary valve that initiates ram movement. Placing the ram control valve in the • RAM UP position, raises the ram and follower plate and supplies air to the blow-off valve. • NEUTRAL position, halts ram movement. • RAM DOWN position, lowers the ram and follower plate assembly into the material container. **NOTE:** When the ram control valve is in the NEUTRAL position, air pressure remains in the unloader ram cylinders. The elevator rams will drift downward if they are not supported by either the follower plate resting in a drum of material or on the base plate.
5	Master Air Lockout Valve: When this valve is in the open position, it supplies air to the unloader pneumatic circuit. Closing this valve, disables the unloader and also bleeds off air.
6	Filter/Separator: Has a 5-micron filter element that removes most contaminants and moisture from the supply air.
7	Main Air Manifold: Supplies line pressure to various components.
8	Air Motor Control Valve: Receives signals to control the air motor.
9	Distribution Manifold: Provides pneumatic connections to the air motor shift valves and empty/low drum level switches.
10	Air Lockout Valve: On each individual unloader, these valves lock out and vent air pressure to the individual air motors. They prevent the pump from stroking but do not shut off ram air. The follower plate can be raised and lowered but the air motor will not activate and cause the pump to stroke.

Installation

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

NOTE: Read and understand the *Safety* section in the Nordson *System Documentation* that shipped with the system before installing the Control Module.

Install the Control Module to a Bulk Unloader Frame

See Figure 3. Mount the Control Module onto the bulk unloader using the supplied screws (1) and washers (2). Tighten the screws securely.

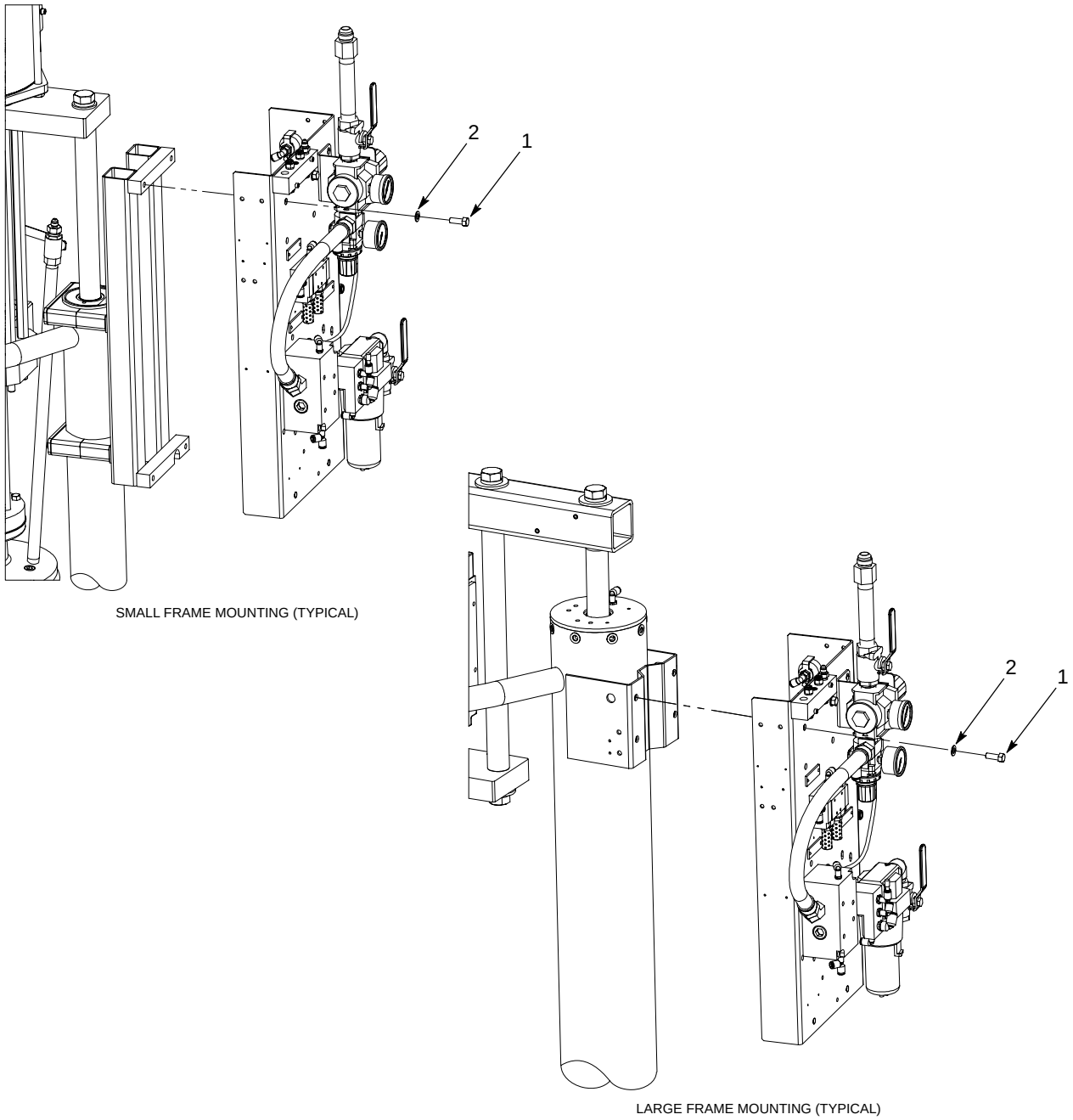

Figure 3 Installing the Control Module

Connect the Ram Up and Ram Down Tubing

1. See Figure 4. Connect the ram up tubing (1) as shown.
2. Connect the ram down tubing (3) between the regulator (2) and frame fitting (4).

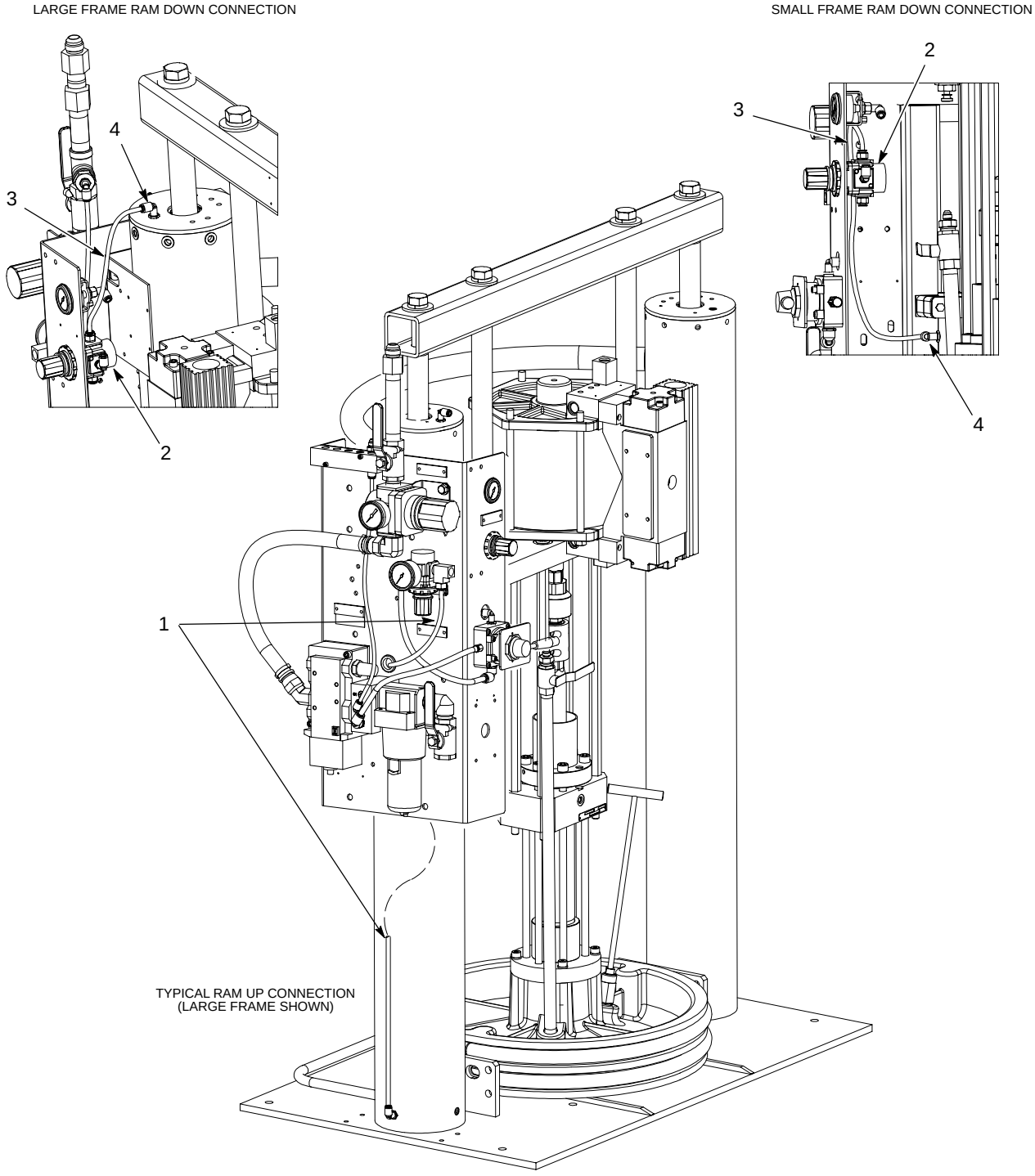

Figure 4 Ram Up and Ram Down Tubing Connections

Auto-Changeover Connections

When two unloaders (an A-Unit and a B-Unit) are used together with the auto-changeover feature, they must be connected together by several air lines and electrical cables.

Refer to the Nordson *System Documentation* that shipped with the system for specific auto-changeover connections.

Install an Air Motor Control Valve

1. See Figure 5. Install the desired air motor control valve (2) to the air motor control valve base (3) using the screws (1). Tighten the screws securely.
2. Connect the cable to the air motor control valve base. Refer to the Nordson *System Documentation* that shipped with the system for cable connections.

Operation

Control Module operation is dependent upon the system application. Refer to the Nordson *System Documentation* that shipped with the system for specific application parameters and operating procedures.

Parts

To order parts, call the Nordson Customer Service Center or your local Nordson representative.

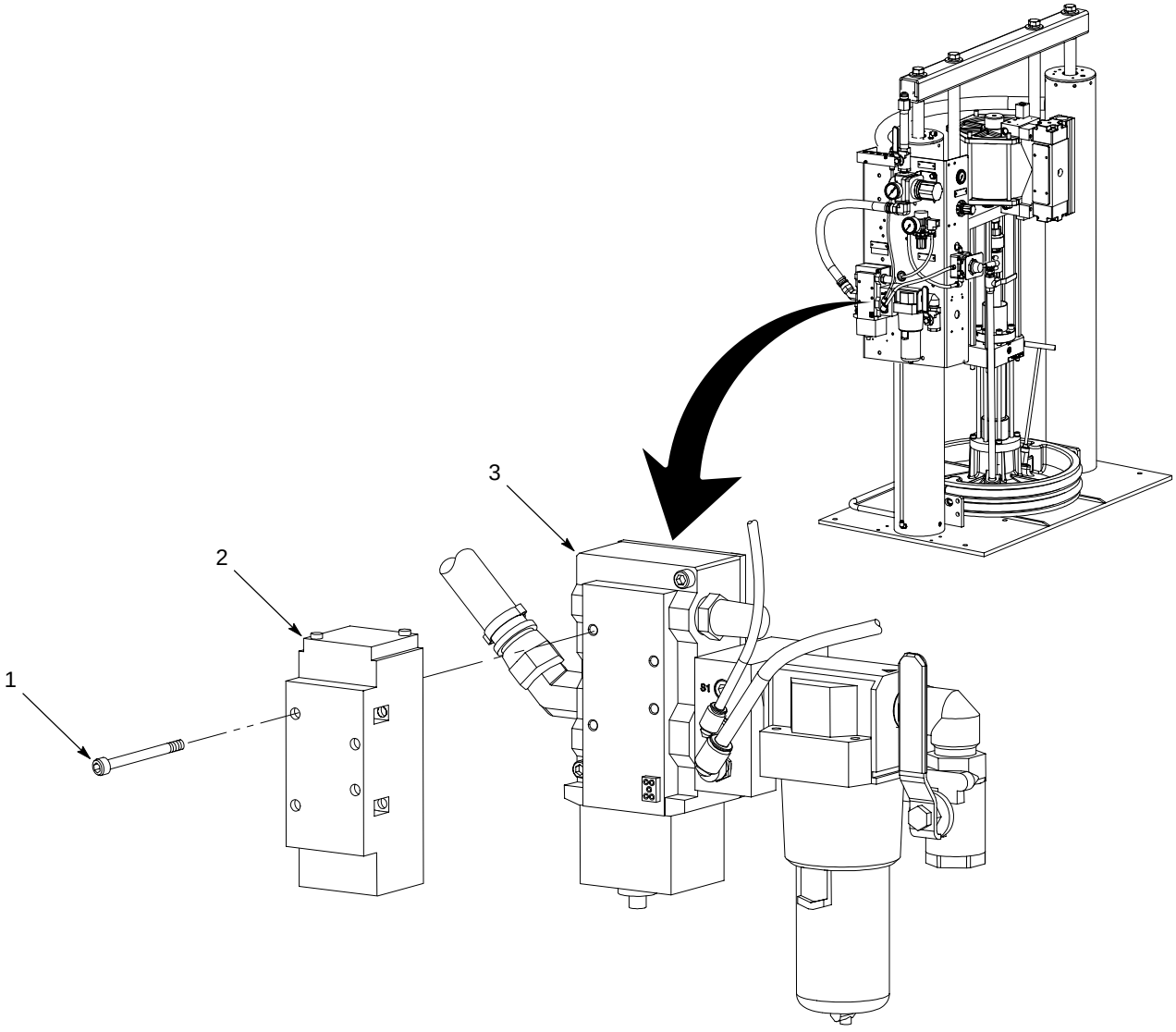

Figure 5 Typical Air Motor Control Valve Installation

Control Module

See Figures 6 and 7. Refer to the following parts list.

Item	Part	Description	Qty	Note
—	1044768	Module, controls, electric, 24 vdc ISO	1	
1	1046891	• Panel, controls, bulk unloader	1	
2	901245	• Gage, pressure, 0-100 psi (0-7 Bar)	1	
3	1043084	• Regulator, air, $^1/_4$ NPT, with check valve, panel mounted	1	
4	124797	• Valve, rotary, 3 position, $^1/_4$ ports	1	
5	901252	• Gage, air, $^1/_4$ NPT, psi-kpa-Kg/Cm2	1	
6−7	- - - - - -	• NOT USED ON THIS CONFIGURATION	—	
8	1029522	• Regulator, $^3/_4$ NPT, 8−125 psi	1	
9	1043086	• Regulator, $^3/_8$ NPT, 25 psi, with check	1	
10	- - - - - -	• NOT USED ON THIS CONFIGURATION	—	
11	1043446	• Plate, spacer	1	
12	1043425	• Base, manifold, ISO size 3, $^3/_4$ NPT, 5-port	1	
13	1029952	• Manifold	1	
14	1029533	• Filter, air, $^3/_4$ NPT	1	
15	1030866	• Valve, ball, vented, $^3/_4$ NPT	2	
16	- - - - - -	• NOT USED ON THIS CONFIGURATION	—	
17	324896	• Grommet, rubber, 0.812 ID x 1.25 OD	2	
18−19	- - - - - -	• NOT USED ON THIS CONFIGURATION	—	
20	973103	• Nipple, stl, schedule 40, $^3/_4$, 1.37	3	
21	973252	• Nipple, hex, $^3/_4$ x $^3/_4$ x 1.96	1	
22	- - - - - -	• NOT USED ON THIS CONFIGURATION	—	
23	327109	• Nipple, stl, Schedule 40, $^3/_4$ x 6, galvanized	1	
24	1030650	• Connector, female, 37, 1-$^1/_{16}$-12 x $^3/_4$, stl zinc	1	
25	972583	• Ell, male, 37,1-$^1/_{16}$-12 x $^3/_4$, stl	1	
26	124795	• Fitting, hose, $^3/_4$ barb x 1$^1/_{16}$	2	
27	973140	• Elbow, male, 45d, $^3/_4$ NPT x 1$^1/_{16}$	1	
28	973442	• Plug, pipe, socket, flush, $^3/_4$, zinc	1	
29	124851	• Muffler, $^3/_4$ NPT, 40 micron	2	
30	973226	• Ell, pipe, $^3/_4$ stl	1	
31−32	- - - - - -	• NOT USED ON THIS CONFIGURATION	—	
33	972194	• Elbow, male, $^3/_8$ tube x $^3/_8$	1	
34	- - - - - -	• NOT USED ON THIS CONFIGURATION	—	
35	971177	• Connector, male, $^3/_8$ tube x $^1/_4$ NPT	1	
36	971265	• Connector, male, $^1/_4$ tube x $^1/_4$ NPT	3	
37	971266	• Elbow, male, $^1/_4$ tube x $^1/_4$ NPT	2	
38	972183	• Elbow, male, $^3/_8$ tube x $^1/_4$ NPT	2	
39	- - - - - -	• NOT USED ON THIS CONFIGURATION	—	
40	1040700	• Elbow, female, push-in, $^1/_4$ tube x $^1/_8$ FPT	1	
41	972119	• Elbow, $^1/_4$ tube x $^1/_8$ NPT	1	
42	972000	• Connector, male, 37, $^7/_{16}$-20 x $^1/_4$, stl	1	
43	973483	• Plug, pipe, socket, $^1/_8$ in., steel	2	
44	973411	• Plug, socket, $^1/_4$ tube	4	

Continued...

Item	Part	Description	Qty	Note
—	1044768	Module, controls, electric, 24 vdc ISO	1	
45	973431	• Plug, pipe, socket, standard, $^1/_2$, zinc	1	
46	1010810	• Tubing, $^1/_4$ OD Polyethylene, flame-resistant	AR	
47	1010777	• Tubing, $^3/_8$ OD Polyethylene, flame−resistant	AR	
48	- - - - - -	• NOT USED ON THIS CONFIGURATION	—	
49	124792	• Hose, 0.75 ID, 200 psi	AR	
50	981710	• Screw, hex, $^3/_8$-16x 0.750, cap, zinc	4	
51	- - - - - -	• NOT USED ON THIS CONFIGURATION	—	
52	981402	• Screw, hex, $^3/_8$-16 x 1	4	
53	983160	• Washer, flat, E, spt, $^3/_8$	4	
54	983061	• Washer, flat, E, 0.406 x 0.812 x 0.065, zinc	8	
55	345840	• Nut, hex, regular, $^3/_8$-16, zinc	4	
56	338844	• Screw, socket, $^5/_{16}$-18 x 3	2	
57	- - - - - -	• NOT USED ON THIS CONFIGURATION	—	
58	345836	• Nut, hex, $^1/_4$-20, stl, zinc, 14441−GA	2	
59	345977	• Washer, lock, E, $^1/_4$, stl, zinc, 14451−GA	2	
60	971672	• Connector, male, $^1/_4$ tube x $^3/_8$ NPT	1	
61−62	- - - - - -	• NOT USED ON THIS CONFIGURATION	—	
63	984120	• Nut, hex, machined, #10-32, stl, zinc, 14448−FA	4	
64	981176	• Screw, pan, 10-32 x 1.500, sl, zinc	4	
65	983123	• Washer, flat, E, 0.219 x 0.500 x 0.049, zinc	4	
66	983120	• Washer, lock, E, spt, #10, Stl, Ni	4	
67	1025108	• Screw, drive, rd, 4 x 0.312, zinc	2	
68	981907	• Screw, drive, rd, 4 x 0.250, zinc	6	
69	981211	• Screw, hex,$^1/_4$-20 x 0.750, cap	2	
70	345913	• Washer, flat, regular, $^1/_4$, zinc	2	
71	1034396	• Muffle, exhaust, $^1/_4$ NPT	1	
72	973276	• Tee, pipe, straight, $^3/_8$ x $^3/_8$, brass	1	
73-74	- - - - - -	• NOT USED ON THIS CONFIGURATION	—	
75	1040926	• Label kit	1	
76−78	- - - - - -	• NOT USED ON THIS CONFIGURATION	—	
79	345938	• Washer, flat, E, 0.375 x 0.875 x 0.083 zinc	2	
80	345978	• Washer, lock, regular, $^5/_{16}$	2	
81	984449	• Nut, hex, regular, $^5/_{16}$-18, G8, zinc	2	
82	901240	• Gage, air, 0−30 psi, 0−2.1 kg/cm	1	
83	983083	• Flat washer, 0.438 x 1 x 0.083	4	
84	1004377	• Clamp, hose, 1.125, crimp, double-ear	2	
85	1065690	• Bracket, mounting, regulator, $^3/_4$ NPT	1	
86	1065691	• Bracket, mounting, filter, $^3/_4$ NPT	1	
AR: As Required				

Recommended Spare Parts

Keep the following on hand to reduce downtime.

Item	Part
Filter element, 5 micron	1057764

Optional Air Motor Control Valve

The following air motor control valve is available.

Part	Description
1044953	Size 3, 24 Vdc, 2-position, 4-way, SMC

Pneumatic Schematics

Control Schematic 1038936B01 shows the following:

Sheet	Description
1	Electric Purge Button
2	Pneumatic Purge Button

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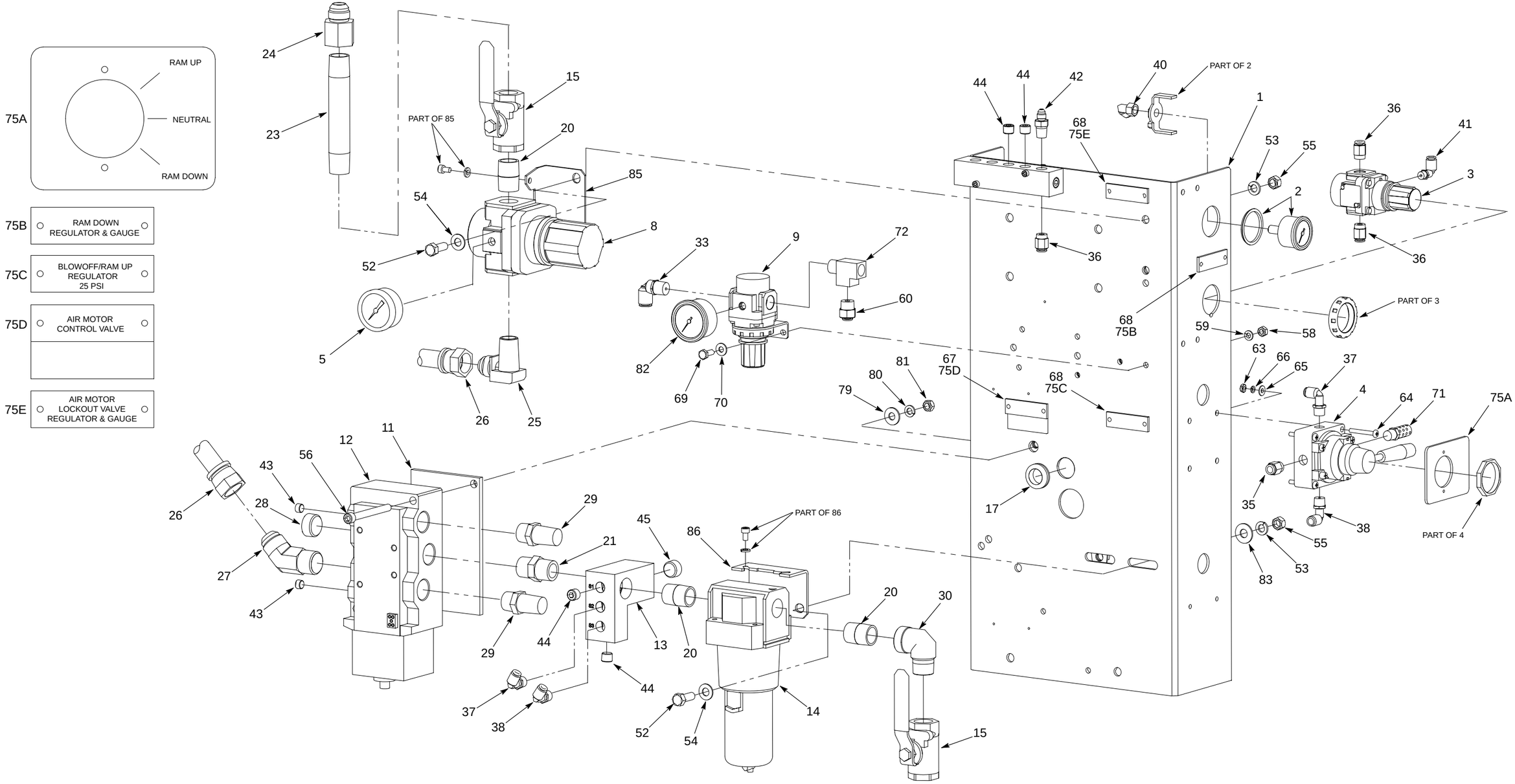
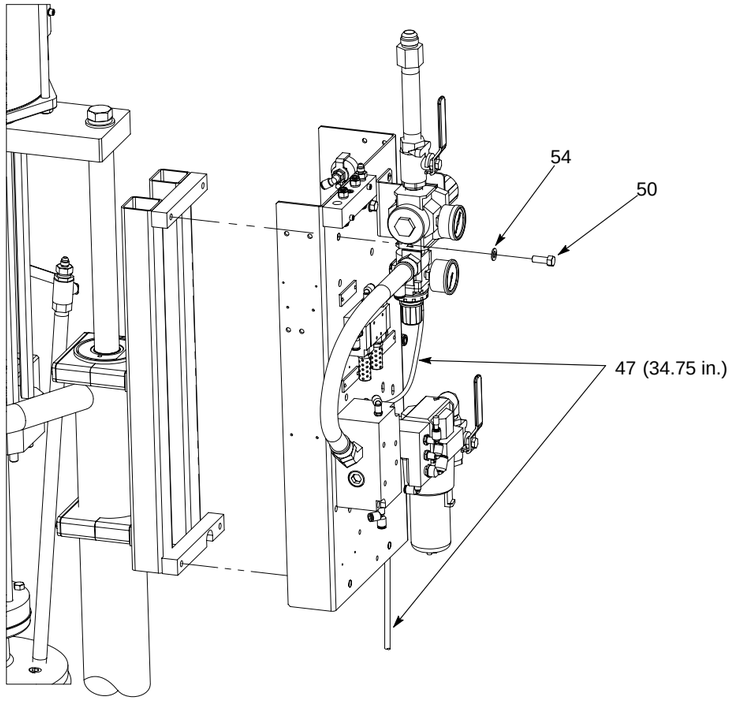
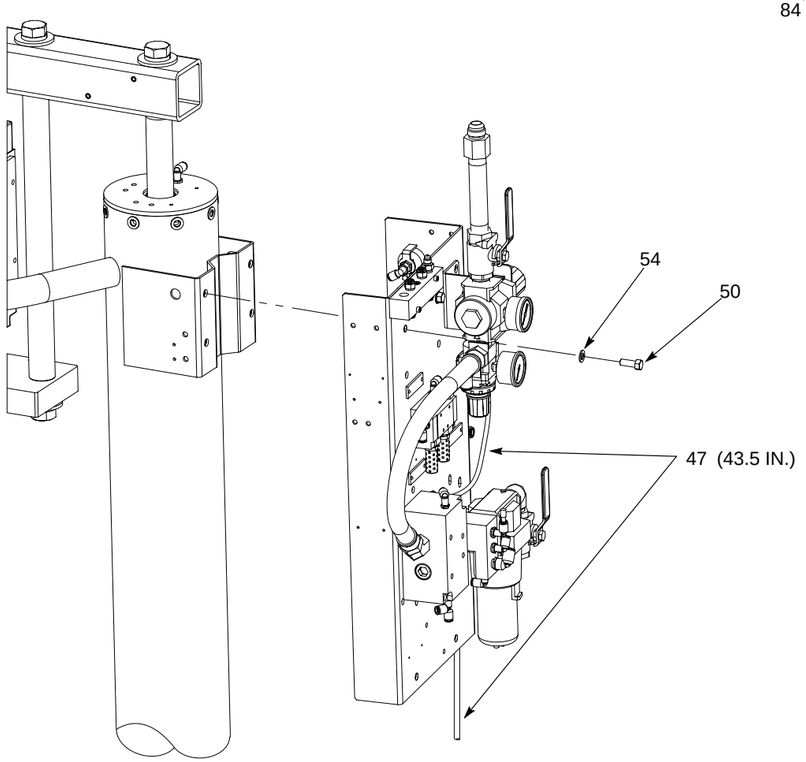


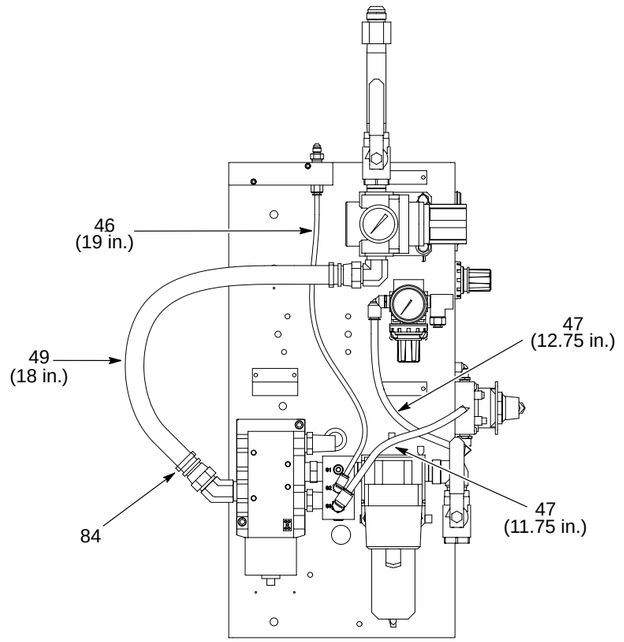
Figure 6 Control Module Parts



SMALL FRAME MOUNTING (TYPICAL)



LARGE FRAME MOUNTING (TYPICAL)



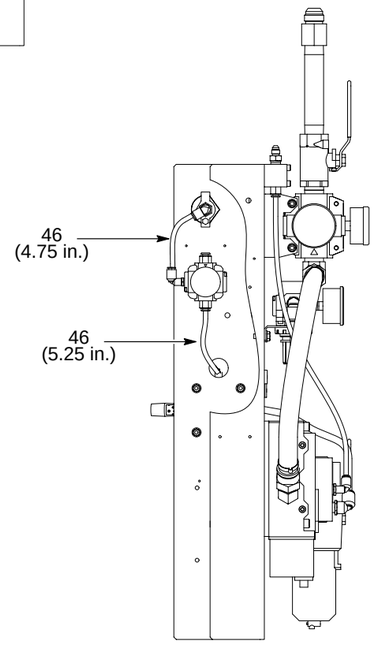
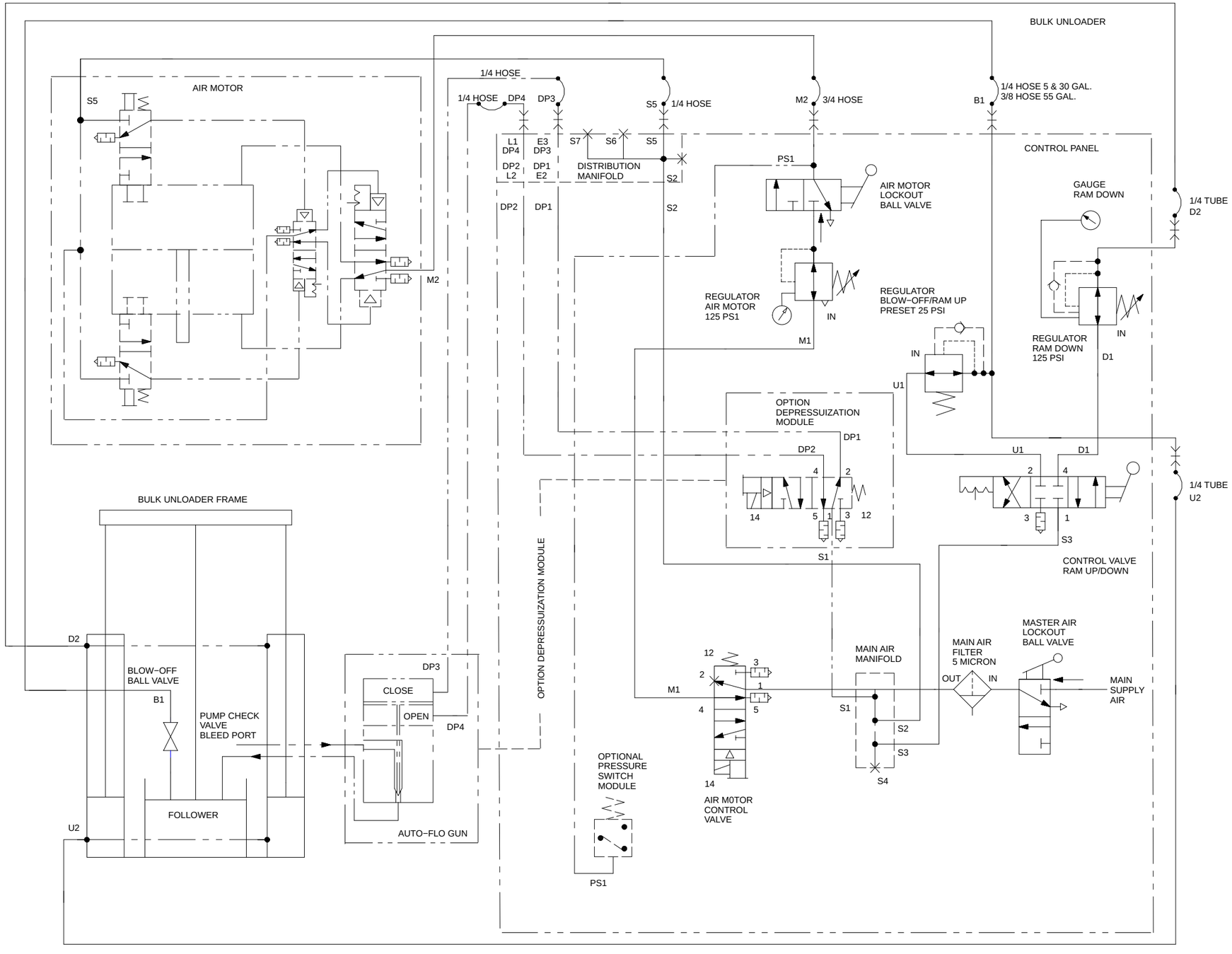


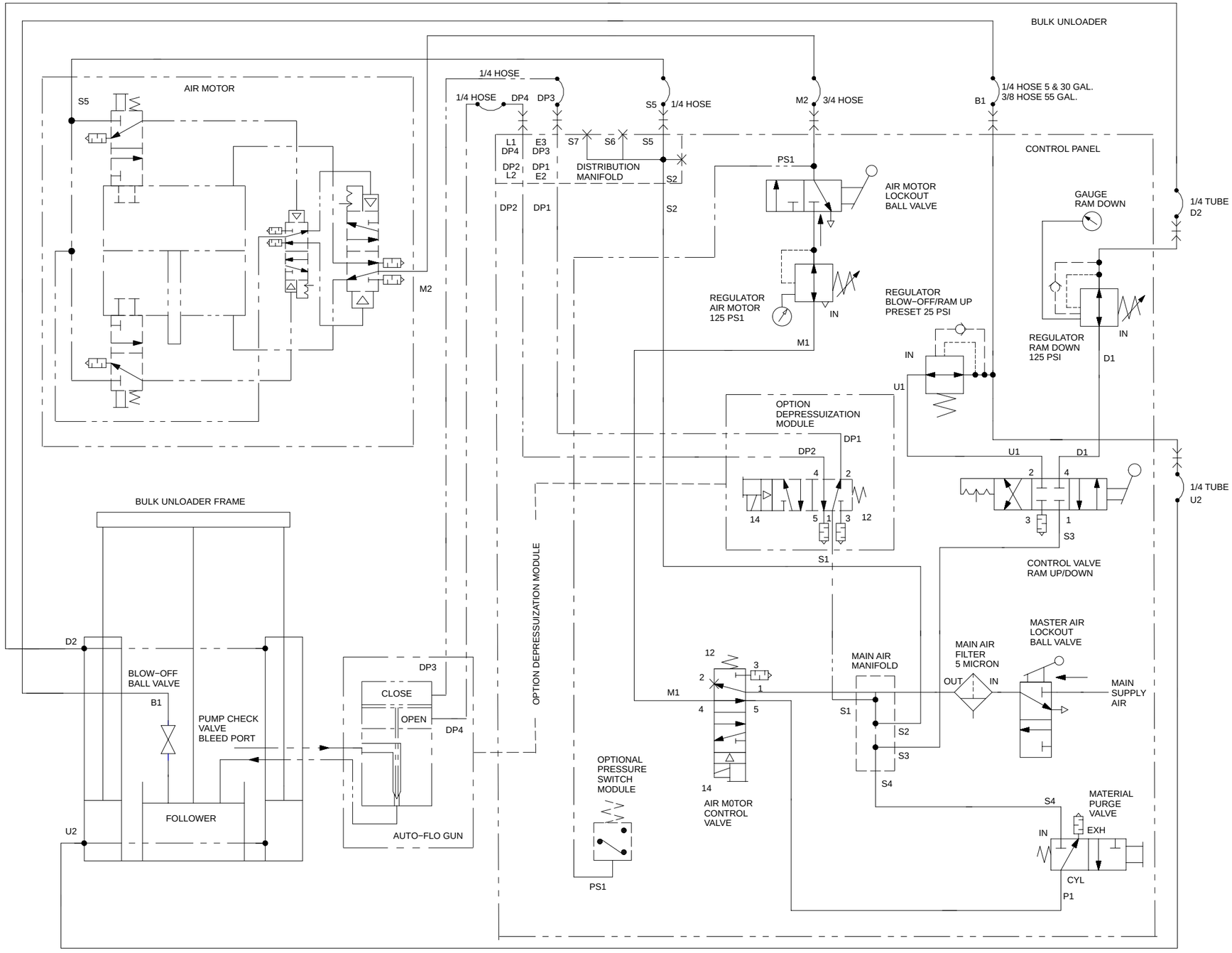
Figure 7 Control Module Parts

SHEET 1: ELECTRIC PURGE BUTTON
SHEET 2: PNEUMATIC PURGE BUTTON



Schematic 1038936B01 (Sheet 1 of 2)

SHEET 1: ELECTRIC PURGE BUTTON
SHEET 2: PNEUMATIC PURGE BUTTON



Schematic 1038936B01 (Sheet 2 of 2)

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