

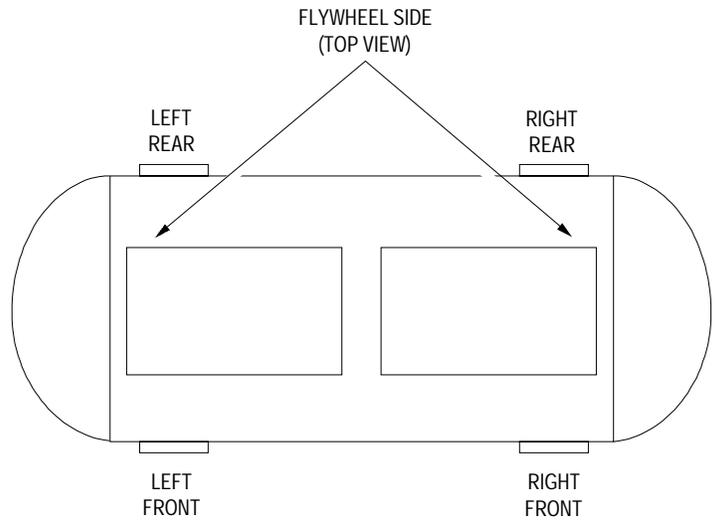
Part II: Installation

Pre-Installation Checkout

Prior to installing the Johnson Controls PureFlow air compressor, check the unit thoroughly for signs of shipping damage. Pay particular attention to those areas of the air compressor which extend beyond the main body of the unit. If shipping damage has occurred, the receiving Johnson Controls branch office will need to consult *Procedure 3C-5720-01: Materials Lost or Damaged in Shipment* for proper claim action. In addition, inspect all fittings and bolts on the air compressor for looseness that may have occurred during shipping. Tighten any loose fittings 1/4 of a turn past hand tight and any loose bolts to the torques specified in *Part VI* of this manual.

Installation Site Location

Choose a suitable location for installing the PureFlow air compressor. The unit should be located in a protected, well-ventilated, non-corrosive area, free of excessive dust and/or moisture. PureFlow air compressors operate most efficiently in ambient conditions ranging from 40 to 115°F (4 to 46°C), with a maximum dew point of 86°F (30°C), non-condensing. Ideally, the installation site should feature a climate controlled environment, capable of maintaining these desired ambient conditions. The air compressor should be positioned at least 12 in. (305 mm) away from nearby walls, in order to provide an unobstructed flow of air to cool the unit. For ease of air compressor service, the pulley side of the unit should face the wall. In addition, adequate space and lighting should be available, in order to periodically inspect and service all components of the air compressor.



**Figure 2.1: Leg Weight Distributions
(As detailed in Tables 2.1 and 2.2)**

SIMPLEX HORSEPOWER AND BASE MODEL SERIES	OPTIONAL EQUIPMENT	30 GALLON TANK				60 GALLON TANK				80 GALLON TANK				120 GALLON TANK				200 GALLON TANK				
		LEFT FRONT	LEFT REAR	RIGHT FRONT	RIGHT REAR	LEFT FRONT	LEFT REAR	RIGHT FRONT	RIGHT REAR	LEFT FRONT	LEFT REAR	RIGHT FRONT	RIGHT REAR	LEFT FRONT	LEFT REAR	RIGHT FRONT	RIGHT REAR	LEFT FRONT	LEFT REAR	RIGHT FRONT	RIGHT REAR	
1/2 Horsepower: AS-005 Series and AS-105 Series	None	20	22	32	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Starter Only	19	19	65	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Air Dryer Only	44	48	54	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/4 Horsepower: AS-007 Series and AS-107 Series	Starter and Air Dryer	44	43	66	64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	21	23	51	56	40	42	59	62	-	-	-	-	-	-	-	-	-	-	-	-	-
	Starter Only	20	19	63	61	42	41	67	65	-	-	-	-	-	-	-	-	-	-	-	-	-
1 Horsepower: AS-010 Series and AS-110 Series	Air Dryer Only	45	48	53	57	61	65	62	65	-	-	-	-	-	-	-	-	-	-	-	-	-
	Starter and Air Dryer	44	43	65	63	65	63	71	69	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	21	24	58	65	41	45	66	71	-	-	-	-	-	-	-	-	-	-	-	-	-
1-1/2 Horsepower: AS-015 Series	Starter Only	20	20	70	71	43	44	74	74	-	-	-	-	-	-	-	-	-	-	-	-	-
	Air Dryer Only	45	49	60	66	62	68	69	75	-	-	-	-	-	-	-	-	-	-	-	-	-
	Starter and Air Dryer	44	45	72	72	66	66	78	78	-	-	-	-	-	-	-	-	-	-	-	-	-
2 Horsepower: AS-020 Series	None	21	23	60	68	41	45	66	71	-	-	-	-	-	-	-	-	-	-	-	-	-
	Starter Only	19	19	73	73	44	44	74	74	-	-	-	-	-	-	-	-	-	-	-	-	-
	Air Dryer Only	44	50	58	66	63	68	67	73	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Horsepower: AS-030 Series	Starter and Air Dryer	44	44	74	74	66	66	78	78	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	-	-	-	-	47	51	79	86	54	63	88	102	-	-	-	-	-	-	-	-	-
	Starter Only	-	-	-	-	45	50	86	95	54	59	89	108	-	-	-	-	-	-	-	-	-
5 Horsepower: AS-050 Series	Air Dryer Only	-	-	-	-	69	82	71	85	85	99	78	91	-	-	-	-	-	-	-	-	-
	Starter and Air Dryer	-	-	-	-	71	78	85	94	86	94	92	100	-	-	-	-	-	-	-	-	-
	None	-	-	-	-	-	-	-	-	54	62	96	109	-	-	-	-	-	-	-	-	-
7-1/2 Horsepower: AS-075 Series	Starter Only	-	-	-	-	-	-	-	-	53	57	107	115	-	-	-	-	-	-	-	-	-
	Air Dryer Only	-	-	-	-	-	-	-	-	85	96	89	102	-	-	-	-	-	-	-	-	-
	Starter and Air Dryer	-	-	-	-	-	-	-	-	85	92	100	108	-	-	-	-	-	-	-	-	-
10 Horsepower: AS-100 Series	None	-	-	-	-	-	-	-	-	61	82	125	168	90	114	152	180	-	-	-	-	-
	Starter Only	-	-	-	-	-	-	-	-	69	88	128	165	92	112	161	197	-	-	-	-	-
	Air Dryer Only	-	-	-	-	-	-	-	-	61	87	116	169	89	113	161	204	132	151	249	284	284
10 Horsepower: AS-100 Series	Starter Only	-	-	-	-	-	-	-	-	58	79	132	179	91	112	170	208	131	147	260	292	292
	None	-	-	-	-	-	-	-	-	-	-	-	-	123	138	180	201	139	149	282	301	301
	Starter Only	-	-	-	-	-	-	-	-	-	-	-	-	125	136	188	205	137	145	280	308	308

* Pounds x 0.454 = kilograms

Table 2.1: PureFlow Simplex Air compressors Leg Weight Distribution Per Figure 2.1 (Pounds*)

DUPLIX: HORSEPOWER AND BASE MODEL SERIES	OPTIONAL EQUIPMENT	30 GALLON TANK						80 GALLON TANK						120 GALLON TANK						200 GALLON TANK					
		LEFT FRONT	LEFT REAR	RIGHT FRONT	RIGHT REAR	LEFT FRONT	LEFT REAR	RIGHT FRONT	RIGHT REAR	LEFT FRONT	LEFT REAR	RIGHT FRONT	RIGHT REAR	LEFT FRONT	LEFT REAR	RIGHT FRONT	RIGHT REAR	LEFT FRONT	LEFT REAR	RIGHT FRONT	RIGHT REAR				
1/2 Horsepower: AD-005 Series and AD-105 Series	None	45	52	53	62	71	75	79	84	-	-	-	-	-	-	-	-	-	-	-	-				
	Alternator Only	64	59	63	59	86	80	90	84	-	-	-	-	-	-	-	-	-	-	-	-				
	Air Dryer Only	99	111	26	29	102	108	72	77	-	-	-	-	-	-	-	-	-	-	-	-				
3/4 Horsepower: AD-007 Series and AD-107 Series	Alternator and Air Dryer	125	112	32	30	109	110	87	88	-	-	-	-	-	-	-	-	-	-	-	-				
	None	44	51	52	60	70	74	77	82	-	-	-	-	-	-	-	-	-	-	-	-				
	Alternator Only	63	58	62	57	84	78	89	84	-	-	-	-	-	-	-	-	-	-	-	-				
1 Horsepower: AD-010 Series and AD-110 Series	Air Dryer Only	96	110	24	27	102	108	70	75	-	-	-	-	-	-	-	-	-	-	-	-				
	Alternator and Air Dryer	122	112	30	28	118	110	83	77	-	-	-	-	-	-	-	-	-	-	-	-				
	None	55	66	56	67	72	75	77	81	-	-	-	-	-	-	-	-	-	-	-	-				
1-1/2 Horsepower: AD-015 Series	Alternator Only	74	72	66	64	85	79	88	83	-	-	-	-	-	-	-	-	-	-	-	-				
	Air Dryer Only	108	125	29	34	104	111	71	74	-	-	-	-	-	-	-	-	-	-	-	-				
	Alternator and Air Dryer	130	127	36	35	119	114	85	79	-	-	-	-	-	-	-	-	-	-	-	-				
2 Horsepower: AD-020 Series	None	56	66	59	70	58	62	77	82	-	-	-	-	-	-	-	-	-	-	-	-				
	Alternator Only	74	72	66	64	93	91	98	96	-	-	-	-	-	-	-	-	-	-	-	-				
	Air Dryer Only	106	126	28	34	107	120	77	86	-	-	-	-	-	-	-	-	-	-	-	-				
3 Horsepower: AD-030 Series	Alternator and Air Dryer	131	128	38	37	105	97	83	77	-	-	-	-	-	-	-	-	-	-	-	-				
	None	-	-	-	-	92	114	98	122	-	-	-	-	-	-	-	-	-	-	-	-				
	Alternator Only	-	-	-	-	107	119	110	122	-	-	-	-	-	-	-	-	-	-	-	-				
5 Horsepower: AD-050 Series	Air Dryer Only	-	-	-	-	126	157	81	101	-	-	-	-	-	-	-	-	-	-	-	-				
	Alternator and Air Dryer	-	-	-	-	145	161	97	108	-	-	-	-	-	-	-	-	-	-	-	-				
	None	-	-	-	-	96	115	110	131	129	145	136	153	-	-	-	-	-	-	-	-				
7-1/2 Horsepower: AD-075 Series	Alternator Only	-	-	-	-	112	121	121	131	143	152	148	153	-	-	-	-	-	-	-	-				
	Air Dryer Only	-	-	-	-	133	159	99	119	163	188	123	142	-	-	-	-	-	-	-	-				
	Alternator and Air Dryer	-	-	-	-	150	162	108	117	179	191	134	144	-	-	-	-	-	-	-	-				
10 Horsepower: AD-100 Series	None	-	-	-	-	-	-	-	-	174	241	161	224	230	272	255	307	-	-	-	-				
	Alternator Only	-	-	-	-	-	-	-	-	114	131	176	203	247	278	263	306	-	-	-	-				
	None	-	-	-	-	-	-	-	-	179	247	173	238	237	289	258	315	-	-	-	-				
10 Horsepower: AD-100 Series	Alternator Only	-	-	-	-	-	-	-	-	194	252	184	239	252	297	267	315	-	-	-	-				
	None	-	-	-	-	-	-	-	-	-	-	-	-	280	309	294	325	-	-	-	-				
	Alternator Only	-	-	-	-	-	-	-	-	-	-	-	-	295	316	303	324	-	-	-	-				

* Pounds x 0.454 = Kilograms

Table 2.2: PureFlow Duplex Air Compressors Leg Weight Distribution Per Figure 2.1 (Pounds)

It is best for the installation site to include a raised concrete pad for securing the PureFlow air compressor solidly in place. If the installation site includes a spanned floor, spring isolators (purchased locally) will be required; refer to Figure 2.1 and Tables 2.1 and 2.2 for leg weight distributions for all simplex and duplex models.

Regardless of the mounting surface chosen, all PureFlow air compressors must be installed in a level position. If the mounting surface is uneven, metal shims (field furnished) will be required to level the air compressor within a horizontal plane prior to securing the unit in place.

If floor space is limited, angle iron wall brackets are available

(A-4000-108, ordered separately) for mounting the air compressor on a wall. Installations utilizing wall brackets are limited to PureFlow simplex air compressors with 30 gallon receiver tanks.

Oil Lubrication

All PureFlow air compressors are shipped from the factory with a proper fill of 30W non-detergent oil (Johnson Controls F-1000-383) in the crankcase. A properly filled crankcase will show an oil level somewhere within the red ring of the oil level sight glass. Referring to Figure 3.1 in the *Oil Level and Oil Filling* section of *Part III*, the top of the red ring indicates the maximum oil level and the bottom of the red ring indicates the minimum oil level.

Refer to the *Air Compressor Oil Change* section of *Part VI* for step-by-step oil changeout procedures, as well as a listing of nominal air compressor crankcase capacities.



WARNING:

When replacing the oil in the crankcase, **never use synthetic oil**. There is no advantage in lubrication, life, or carryover. Furthermore, any synthetic oil carried into the pneumatic climate control system may result in damage to certain plastic components.

Securing the Air Compressor in Place

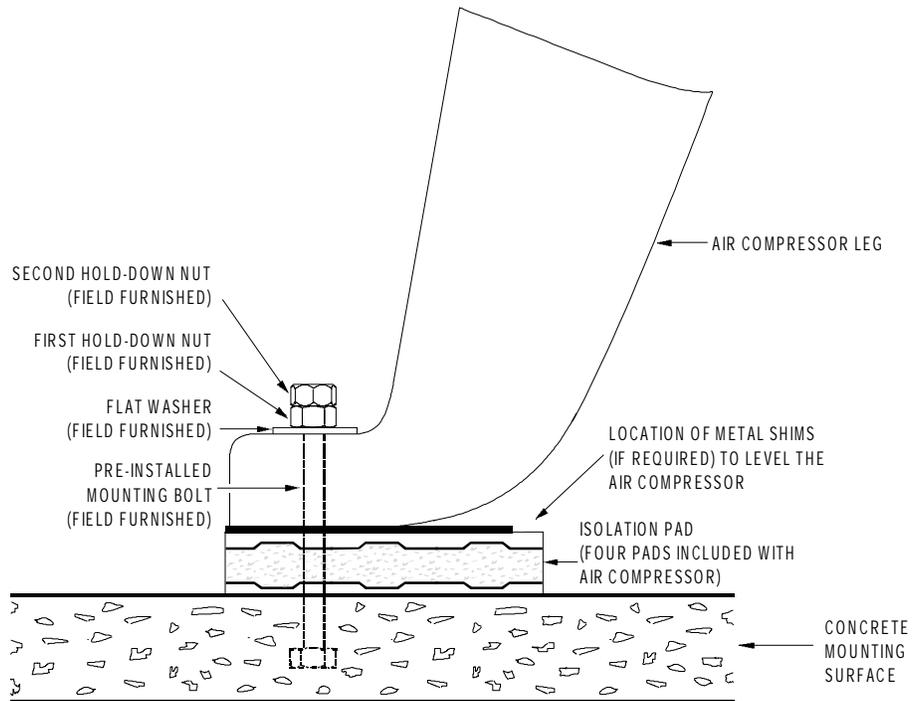


Figure 2.2: Typical PureFlow Air Compressor Installation

After choosing a suitable installation site following the guidelines outlined in the *Installation Site Location* section of *Part II*, install the PureFlow air compressor permanently in place. To do so, refer to Figure 2.2 and proceed as follows:

1. Install four mounting bolts, studs, or threaded floor anchors (all field furnished) at the installation site; refer to Figures 2.3 and 2.4, and Tables 2.3 and 2.4 for the dimensions required to properly locate the mounting hardware in the surface.
2. Four isolation pads are included with every PureFlow air compressor shipped from the factory. In order to reduce the effects of vibration during air compressor operation, drill an appropriately sized hole in the isolation pads and place one pad over each mounting bolt or stud installed in the surface.
3. Move the PureFlow air compressor off its wooden shipping pallet and onto the four pad and mounting bolt/stud combinations.
4. If the mounting surface is uneven, properly level the PureFlow air compressor by shimming the legs of the unit to be level within 1/16 in. (2 mm) of each other. Place a level on the air compressor saddle and check that the unit is level on both horizontal planes.

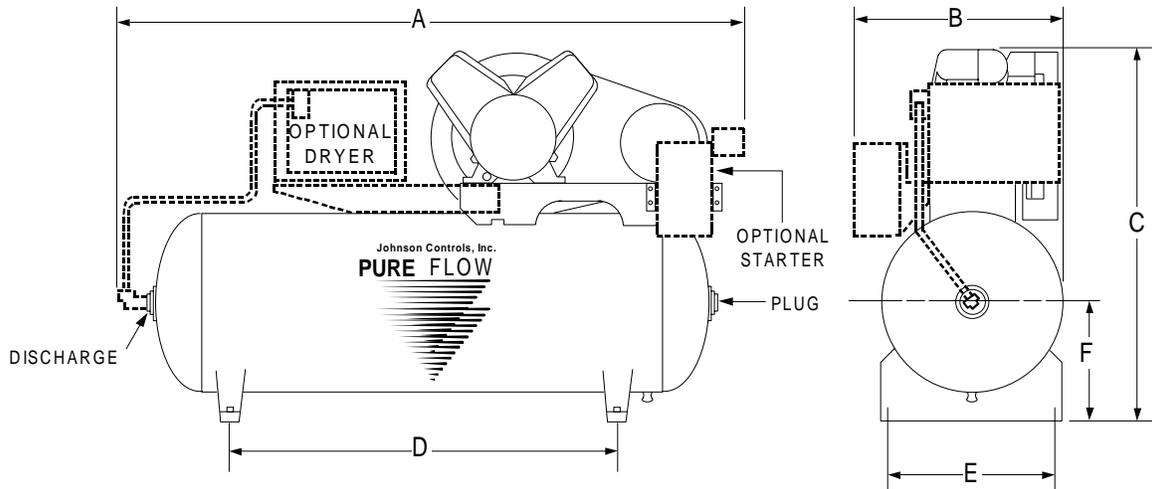


Figure 2.3: PureFlow AS Series Simplex Air Compressor Dimensions in./cm (See Table 2.3.)

Table 2.3: PureFlow Simplex Air Compressors Dimensions Per Figure 2.3 (Inches*)

Simplex Base Model Series	Tank Size Gallons	A				B				C	D	E	F
		W/Starter, W/O dryer	W/O Starter or Dryer	W/Starter and Dryer	W/O Starter W/Dryer	W/Starter, W/O Dryer	W/O Starter or Dryer	W/Starter and Dryer	W/O Starter, W/Dryer				
AS-105-1XX AS-005-1XX	30	42-1/2	40	43-19/32	42	21-1/4	17-3/4	21-13/16	18-3/4	35-1/2	18	15-3/4	12-1/4
AS-107-1XX AS-007-1XX	30	42-1/2	40	43-19/32	42	21-1/4	17-3/4	21-13/16	18-3/4	36	18	15-3/4	12-1/4
AS-107-2XX AS-007-2XX	60	50-3/4	50-3/4	51-27/32	52-3/4	22-1/4	20	22-5/16	21	40	29	18	14
AS-110-1XX AS-010-1XX	30	42-1/2	40	43-19/32	42	21-1/4	17-3/4	21-13/16	18-3/4	36	18	15-3/4	12-1/4
AS-110-2XX AS-010-2XX	60	50-3/4	50-3/4	51-27/32	52-3/4	22-1/4	20	22-5/16	21	40	29	18	14
AS-015-1XX	30	42-1/2	40	43-19/32	42	21-1/4	17-3/4	21-13/16	18-3/4	36	18	15-3/4	12-1/4
AS-015-2XX	60	50-3/4	50-3/4	51-27/32	52-3/4	22-1/4	20	22-5/16	21	40	29	18	14
AS-020-2XX	60	51-1/2	50-3/4	52-19/32	52-3/4	23-1/4	20	23-5/16	21	42	29	18	14
AS-020-3XX	80	65	64	66-23/32	66	23-1/4	20	23-5/16	21	41	40	18-1/2	13
AS-030-3XX	80	65-1/2	64	66-23/32	66	23-1/4	20	23-5/16	21	41	40	18-1/2	13
AS-050-3XX	80	64	64	--	--	23-1/4	20	--	--	46	40	18-1/2	13
AS-050-4XX	120	70-3/4	70-3/4	--	--	26-1/4	24	--	--	49-1/4	42	22	15-3/4
AS-075-3XX	80	64	64	--	--	23-1/4	20	--	--	46	40	18-1/2	13
AS-075-4XX	120	70-3/4	70-3/4	--	--	26-1/4	24	--	--	49-1/4	42	22	15-3/4
AS-075-5XX	200	81-3/4	81-1/2	--	--	30	30	--	--	55-1/2	42	22	18-3/4
AS-100-4XX	120	79	76-1/2	--	--	27-1/4	24	--	--	51	42	22	15-3/4
AS-100-5XX	200	81-3/4	79-1/4	--	--	30	30	--	--	58	42	22	18-3/4

* Inches x 2.54 = Centimeters

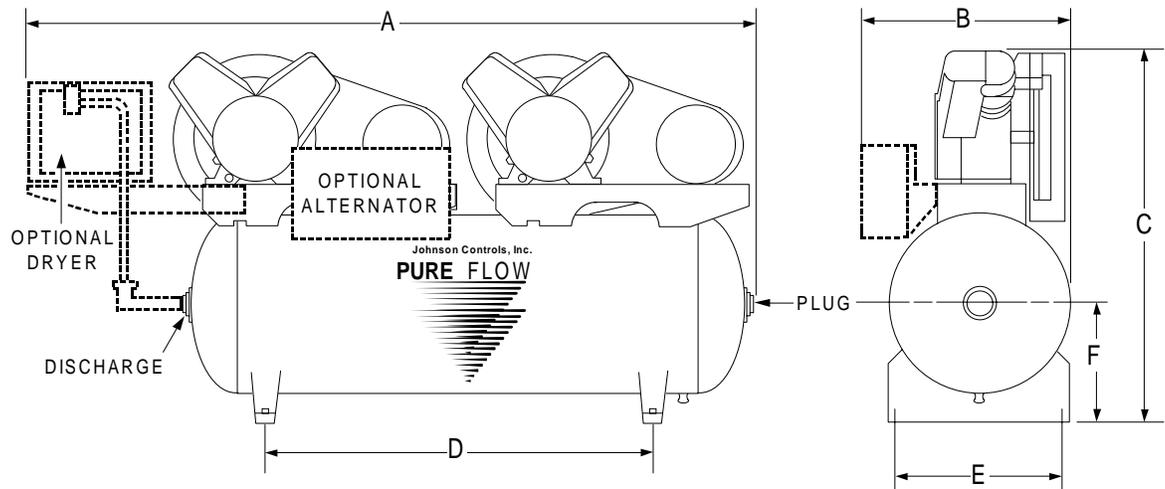


Figure 2.4: PureFlow AD Series Duplex Air Compressors Dimensions in./cm (See Table 2.4.)

Table 2.4: PureFlow Duplex Air Compressors Dimensions Per Figure 2.4 (Inches*)

Duplex Base Model Series	Tank Size Gallons	A		B		C	D	E	F
		With Air Dryer	Without Air Dryer	With Alternator	Without Alternator				
AD-105-1XX AD-005-1XX	30	68-1/2	41-1/2	21-1/4	17-3/4	35-1/4	18	15-3/4	12-1/4
AD-105-3XX AD-005-3XX	80	77-3/4	64-1/4	22-1/4	20	39	40	18-1/2	13
AD-107-1XX AD-007-1XX	30	68-1/2	41-1/2	21-1/4	17-3/4	36	18	15-3/4	12-1/4
AD-107-3XX AD-007-3XX	80	77-3/4	64-1/4	22-1/4	20	39	40	18-1/2	13
AD-110-1XX AD-010-1XX	30	68-1/2	41-1/2	21-1/4	17-3/4	36	18	15-3/4	12-1/4
AD-110-3XX AD-010-3XX	80	77-3/4	64-1/4	22-1/4	20	39	40	18-1/2	13
AD-015-1XX	30	68-1/2	41-1/2	21-1/4	17-3/4	36	18	15-3/4	12-1/4
AD-015-3XX	80	77-3/4	64-1/4	22-1/4	20	39	40	18-1/2	13
AD-020-3XX	80	90-3/4	65-1/4	23-1/4	20	41	40	18-1/2	13
AD-030-3XX	80	90-3/4	65-1/4	23-1/4	20	41	40	18-1/2	13
AD-030-4XX	120	96-1/4	70-3/4	25-3/4	24	44	42	22	15-3/4
AD-050-4XX	120	--	71-1/4	26-1/4	24	49-1/4	42	22	15-3/4
AD-050-5XX	200	--	81-1/2	30	30	55-1/2	42	22	18-3/4
AD-075-4XX	120	--	71-1/4	26-1/4	24	49-1/4	42	22	15-3/4
AD-075-5XX	200	--	81-1/2	30	30	55-1/2	42	22	18-3/4
AD-100-5XX	200	--	84	30	30	58	42	22	18-3/4

* Inches x 2.54 = Centimeters

5. Place a flat washer and hold-down nut (all field furnished) on the four mounting bolts or studs installed in the surface.
6. Tighten each hold-down nut 1/4 of a turn past hand tight to secure the PureFlow air compressor in place.
Note: Be careful not to over tighten the hold-down nuts; doing so will unnecessarily strain the PureFlow air compressor and reduce the effectiveness of the vibration/isolation pads.
7. To complete the air compressor installation, install a second hold-down nut (field furnished) on top of the first hold-down nut. While holding the first nut, turn the second nut 1/4 of a turn past hand tight to lock both nuts in place.

Intake Filter

All PureFlow simplex and duplex air compressors are furnished with intake filters to ensure that 99% particulate-free air is admitted to the air compressor. If clean, dry, cool air is not available at the installation site, pipe the intake filters to receive either outside air, or conditioned air from an HVAC return air duct.

Note: Do not substitute oil bath or oil wetted filters for the dry-type intake filters furnished with the PureFlow air compressor. Doing so increases the probability of excessive oil carryover into the pneumatic climate control system.

Receiver Tank Drain Installation

All PureFlow air compressors are available with either a manual tank drain or an automatic tank drain. If a manual tank drain was ordered with the air compressor, the unit will be shipped with the drain pre-installed at the factory. If an automatic tank drain was ordered, the drain will need to be installed on the air compressor in the field. To do so, refer to Figure 2.5 and proceed as follows:

1. Remove and discard the plastic protective cap from the “IN” connection of the automatic tank drain, as well as the cap inserted in the threaded outlet near the manual pushbutton.
2. Apply thread sealant to the hex union fitting (packaged separately with the PureFlow air compressor).

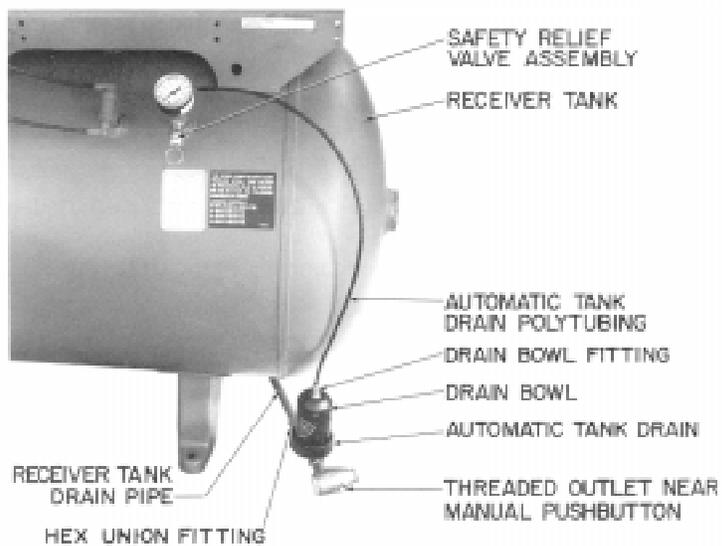


Figure 2.5: Properly Installed Automatic Tank Drain

3. Using an adjustable wrench and an adjustable pliers, install the hex union fitting in the “IN” connection of the automatic tank drain.
4. Install the automatic tank drain and hex union fitting assembly on the receiver tank drain pipe. Using an adjustable wrench and a pipe wrench (or slip-joint pliers), tighten the assembly 1/4 of a turn past hand tight. The automatic tank drain must be secured in an upright position such that the drain bowl and drain bowl fitting are directed upward.
5. Install one end of the automatic tank drain polytubing (packaged separately with the PureFlow air compressor) into the fitting on top of the drain bowl, pushing the polytubing down as far as it will go into the fitting. Check the connection by pulling firmly on the polytubing.
6. In the same manner as Step 5, install the other end of the automatic tank drain polytubing into the fitting of the 90° elbow near the safety relief valve assembly.

7. Connect a suitable drain line to the automatic tank drain, and tighten the drain line fitting to secure it in place.
Note: Since the receiver tank condensate may contain entrained oil, be certain to dispose of this waste properly, in accordance with local, state, and federal regulations.
8. After the air compressor has been started up, it is recommended that a leak detector solution be used to check all of the threaded fittings on the automatic tank drain for air leakage.

Wiring and Current Draw



WARNING: All wiring must be performed by a qualified (certified or licensed) electrician.

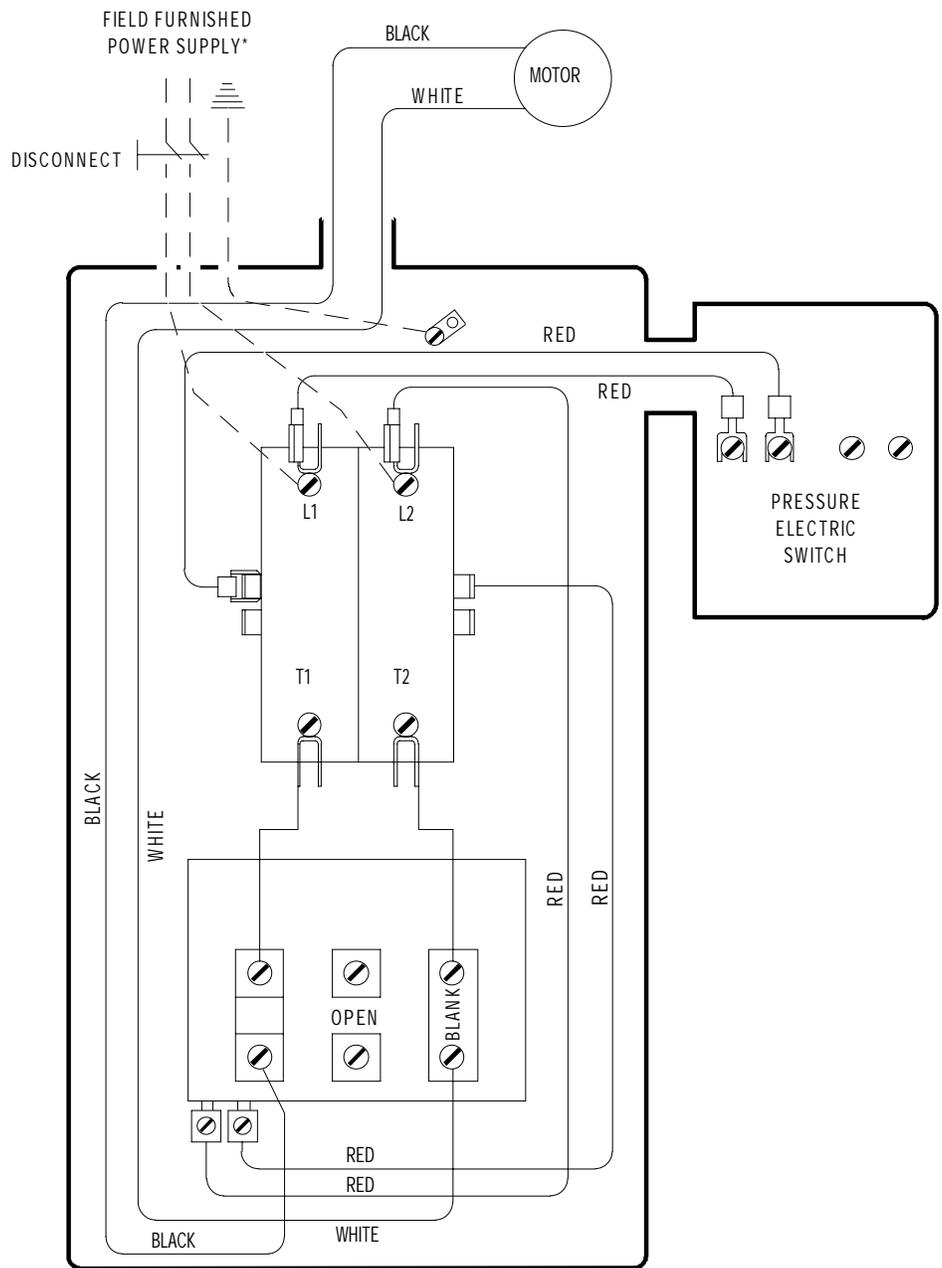
The PureFlow air compressor must be permanently wired and grounded by a qualified electrician, in accordance with national and local codes. In addition, all optional electrical accessories used in conjunction with the PureFlow air compressor must also be wired and grounded per electrical code requirements.

Figures 2.6 through 2.8 illustrate typical wiring arrangements for PureFlow AS Series Simplex Air Compressors, and Figures 2.9 through 2.15 illustrate typical wiring arrangements for PureFlow AD Series Duplex Air Compressors. In addition, Table 2.5 lists pertinent electrical data (per motor) required to properly wire the PureFlow air compressor.

If the air compressor includes a factory mounted DryFlow refrigerated air dryer, wire the dryer according to the procedures outlined in the *Air Dryer Installation and Maintenance Manual* (included with the PureFlow air compressor; also available from the local Johnson Controls branch office).

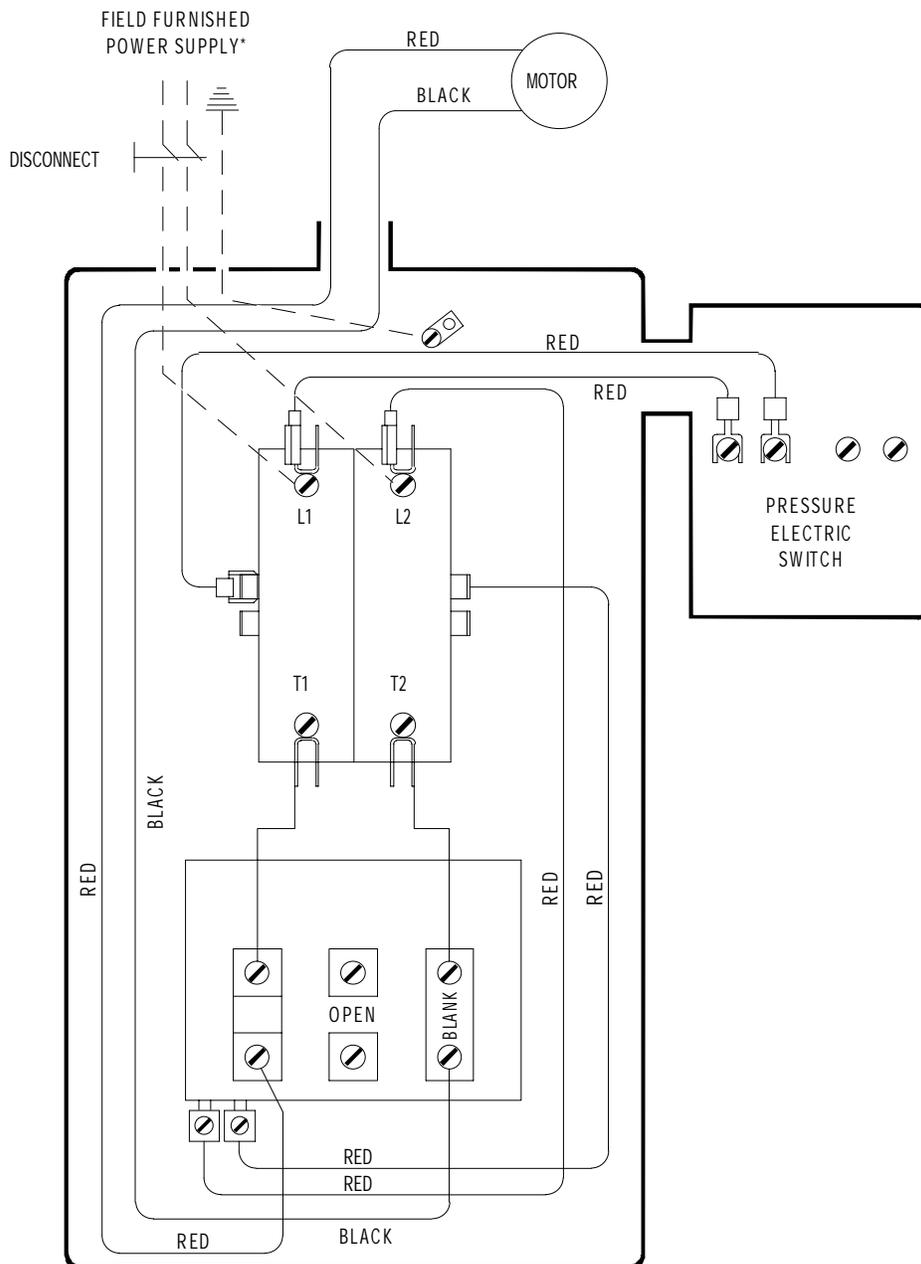
After the air compressor and all of its associated electrical accessories have been properly wired, check the compressor pump for proper rotation. To do so, briefly apply electrical power to the air compressor and check that the pump rotates in the same direction as the arrow molded into the front of the pump cooling fan shroud.

If the pump rotation is incorrect, disconnect the electrical power and, for single-phase motors, rewire the motor as indicated on its nameplate. For three-phase motors, simply switch any two of the three power leads.



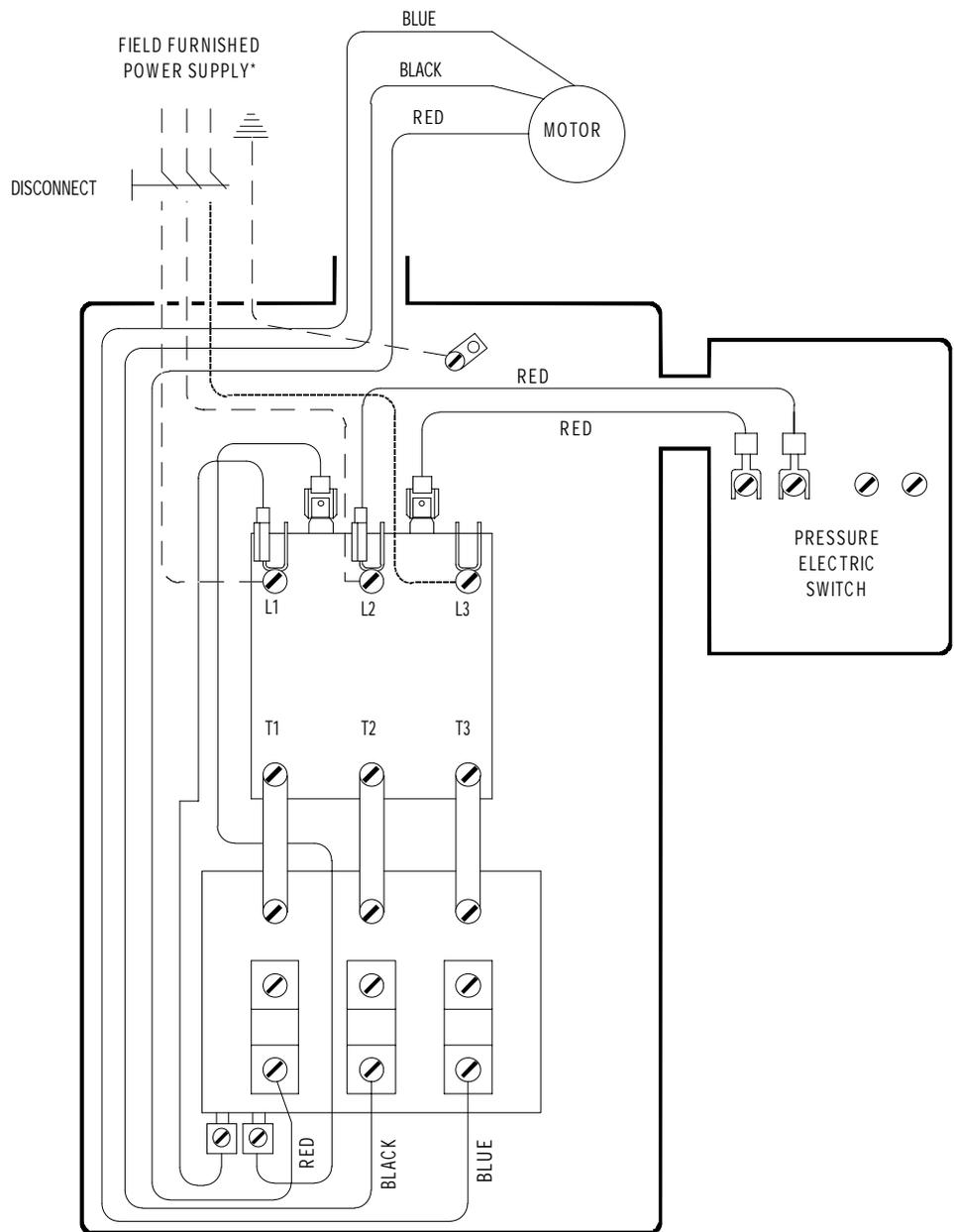
*MAIN DISCONNECT AND BRANCH CIRCUIT PROTECTION TO BE INSTALLED BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

Figure 2.6: PureFlow 1/2 Through 1 hp Simplex Air Compressors Single-Phase Wiring Diagram for 115 Volts



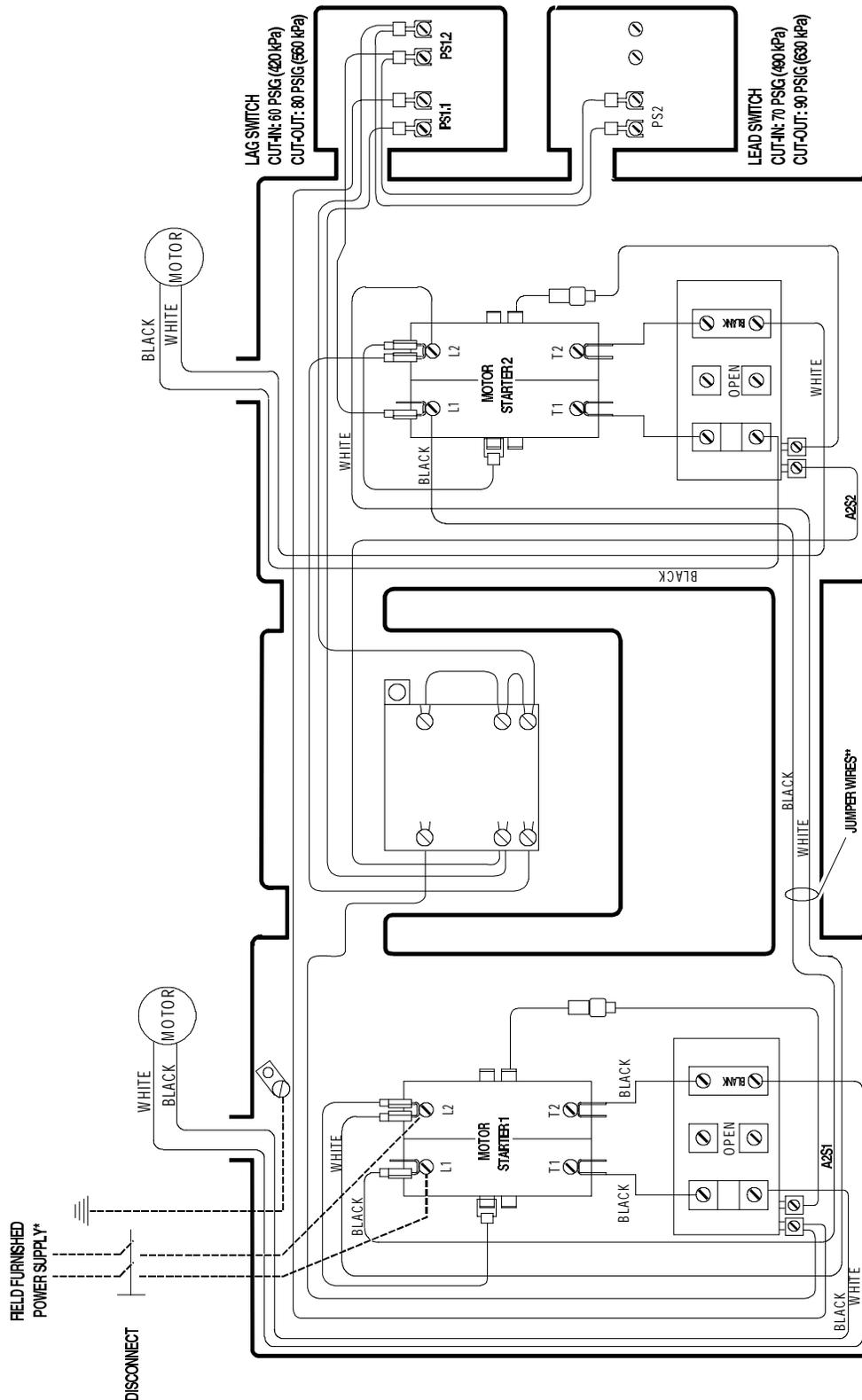
*MAIN DISCONNECT AND BRANCH CIRCUIT PROTECTION TO BE INSTALLED BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

Figure 2.7: PureFlow 1/2 Through 1 hp Simplex Air Compressors Single-Phase Wiring Diagram for 208/230 Volts



*MAIN DISCONNECT AND BRANCH CIRCUIT PROTECTION TO BE INSTALLED BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

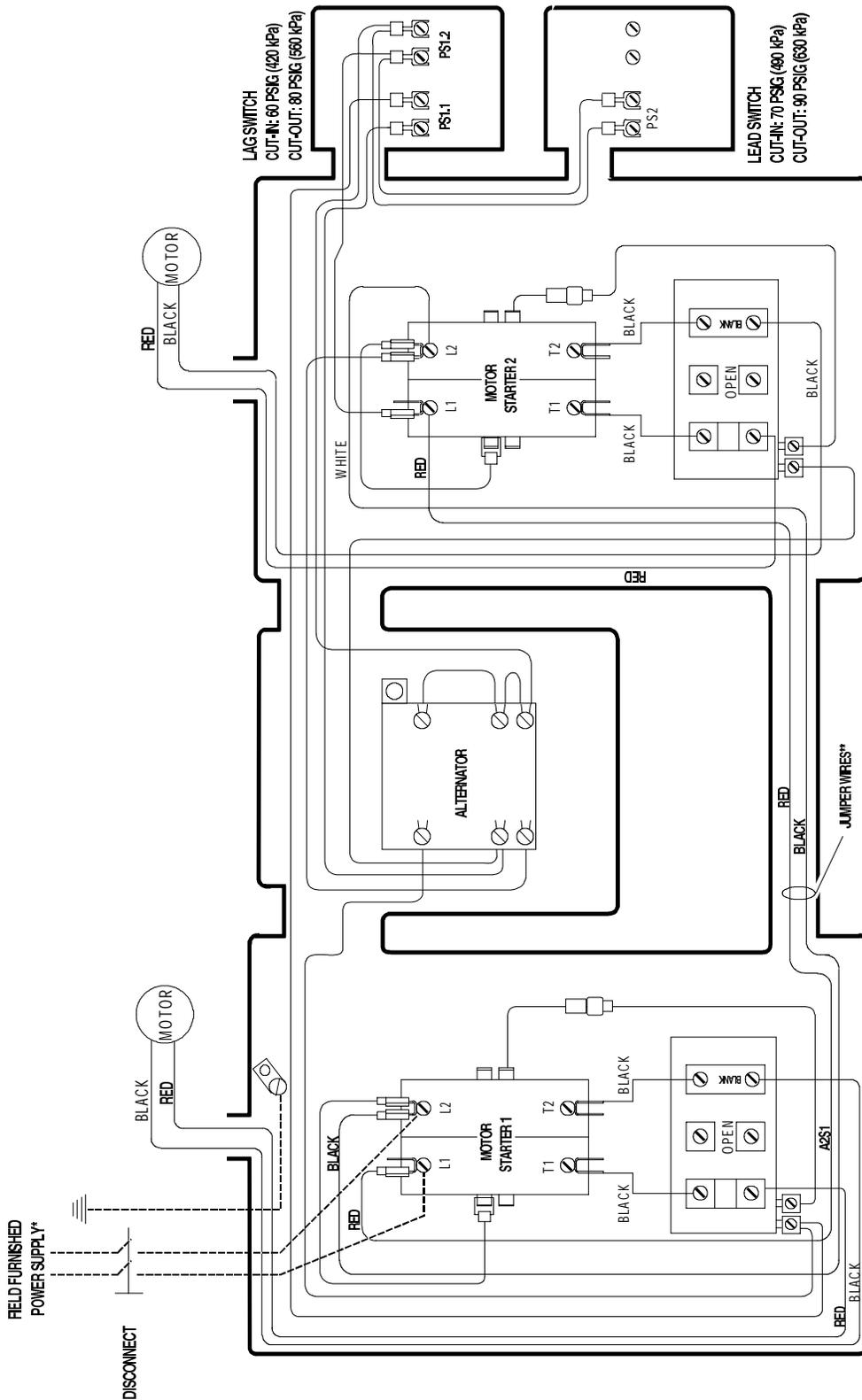
Figure 2.8: PureFlow 1/2 Through 10 hp Simplex Air Compressors Three-Phase Wiring Diagram for 208/230-460 Volts



*MAIN DISCONNECT AND BRANCH CIRCUIT PROTECTION TO BE INSTALLED BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

**FOR DUAL DISCONNECT REQUIREMENTS, REMOVE THE WHITE AND BLACK JUMPER WIRES BETWEEN THE TWO MOTOR STARTERS AT L1 AND L2. INSTALL THE SECOND DISCONNECT FOR MOTOR STARTER2 IN A SIMILAR FASHION AS SHOWN FOR MOTOR STARTER 1. NOTE: MAKING THESE WIRING CHANGES WILL VOID THE UL LISTING.

Figure 2.9: PureFlow 1/2 Through 1 hp Duplex Air Compressors with Basic Alternator Package Single-Phase Wiring Diagram for 115 Volts



*MAIN DISCONNECT AND BRANCH CIRCUIT PROTECTION TO BE INSTALLED BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

**FOR DUAL DISCONNECT REQUIREMENTS, REMOVE THE RED AND BLACK JUMPER WIRES BETWEEN THE TWO MOTOR STARTERS AT L1 AND L2. INSTALL THE SECOND DISCONNECT FOR MOTOR STARTER 2 IN A SIMILAR FASHION AS SHOWN FOR MOTOR STARTER 1. NOTE: MAKING THESE WIRING CHANGES WILL VOID THE UL LISTING.

Figure 2.10: PureFlow 1/2 Through 1 hp Duplex Air Compressors with Basic Alternator Package Single-Phase Wiring Diagram for 208/230 Volts

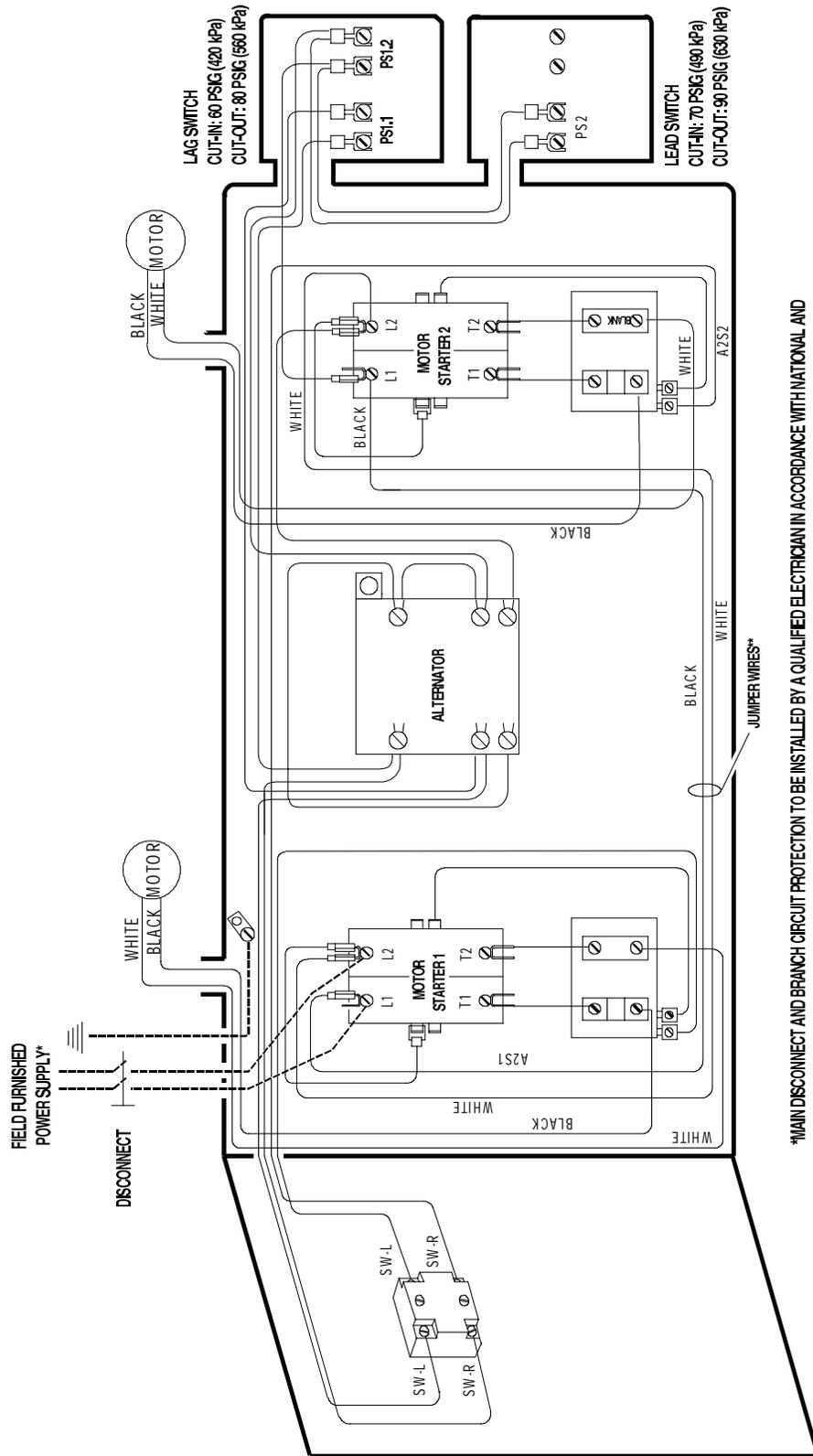
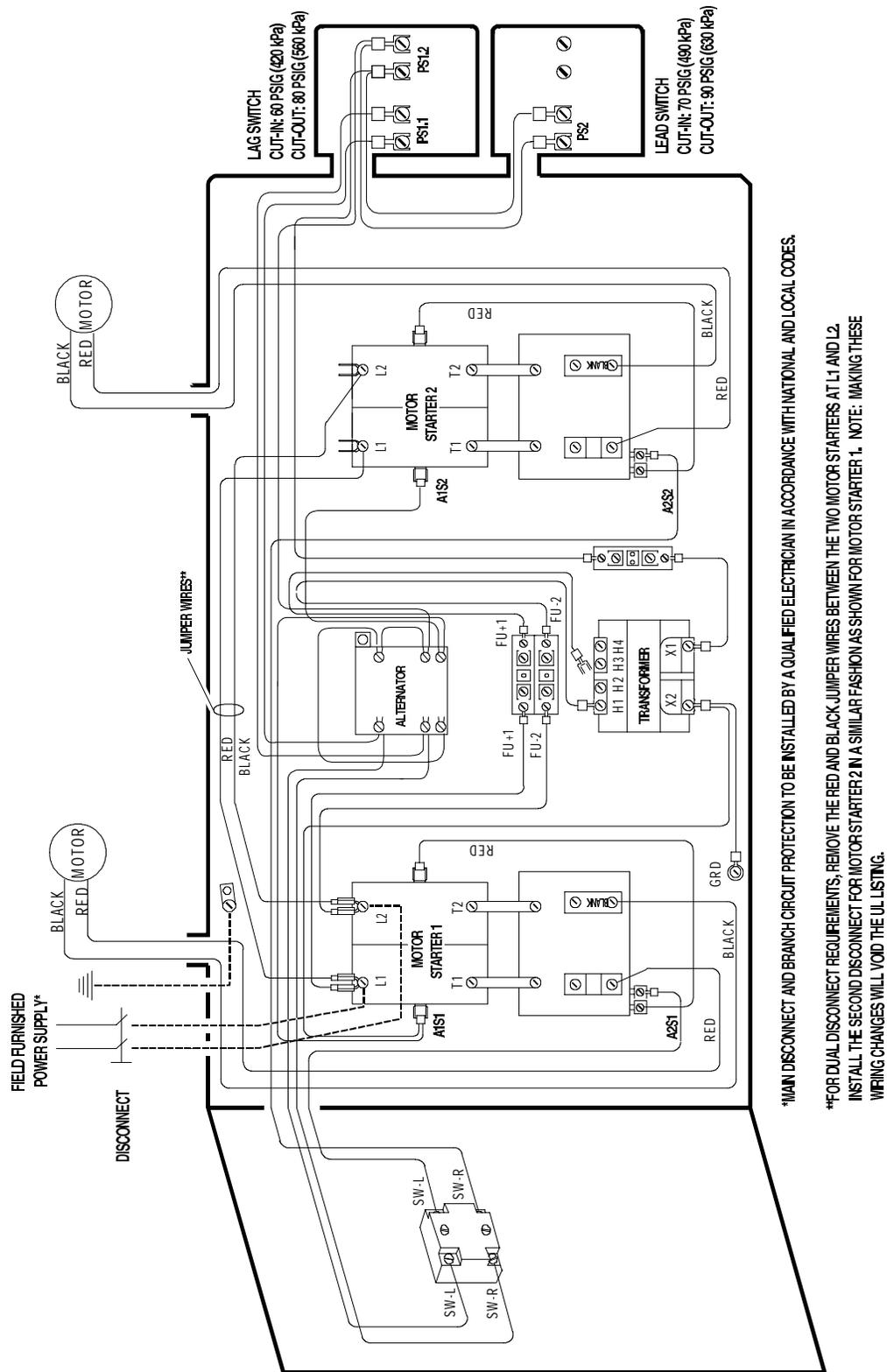


Figure 2.12: PureFlow 1/2 Through 1 hp Duplex Air Compressors with Deluxe Alternator Package Single-Phase Wiring Diagram for 115 Volts

*MAIN DISCONNECT AND BRANCH CIRCUIT PROTECTION TO BE INSTALLED BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

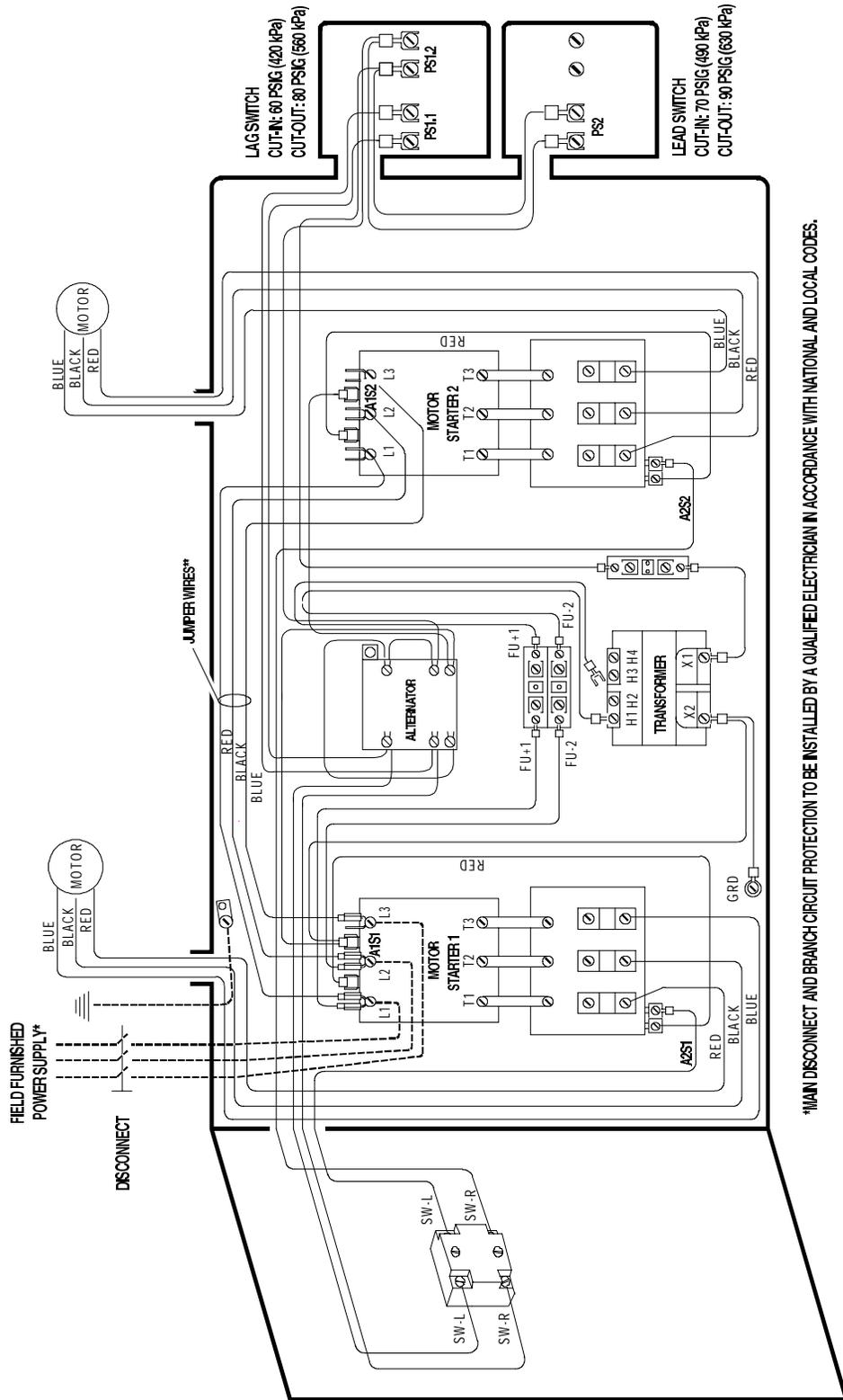
**FOR DUAL DISCONNECT REQUIREMENTS, REMOVE THE WHITE AND BLACK JUMPER WIRES BETWEEN THE TWO MOTOR STARTERS AT L1 AND L2. INSTALL THE SECOND DISCONNECT FOR MOTOR STARTER 2 IN A SIMILAR FASHION AS SHOWN FOR MOTOR STARTER 1. NOTE: MAKING THESE WIRING CHANGES WILL VOID THE UL LISTING.



*MAIN DISCONNECT AND BRANCH CIRCUIT PROTECTION TO BE INSTALLED BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

**FOR DUAL DISCONNECT REQUIREMENTS, REMOVE THE RED AND BLACK JUMPER WIRES BETWEEN THE TWO MOTOR STARTERS AT L1 AND L2. INSTALL THE SECOND DISCONNECT FOR MOTOR STARTER 2 IN A SIMILAR FASHION AS SHOWN FOR MOTOR STARTER 1. NOTE: MAKING THESE WIRING CHANGES WILL VOID THE UL LISTING.

Figure 2.13: PureFlow 1/2 Through 1 hp Duplex Air Compressors with Deluxe Alternator Package Single-Phase Wiring Diagram for 208/230 Volts



*MAIN DISCONNECT AND BRANCH CIRCUIT PROTECTION TO BE INSTALLED BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

**FOR DUAL DISCONNECT REQUIREMENTS, REMOVE THE RED, BLACK, AND BLUE JUMPER WIRES BETWEEN THE TWO MOTOR STARTERS AT L1 AND L2. INSTALL THE SECOND DISCONNECT FOR MOTOR STARTER 2 IN A SIMILAR FASHION AS SHOWN FOR MOTOR STARTER 1. NOTE: MAKING THESE WIRING CHANGES WILL VOID THE UL LISTING.

Figure 2.14: PureFlow 1/2 Through 3 hp Duplex Air Compressors with Deluxe Alternator Package Three-Phase Wiring Diagram for 208/230-460 Volts

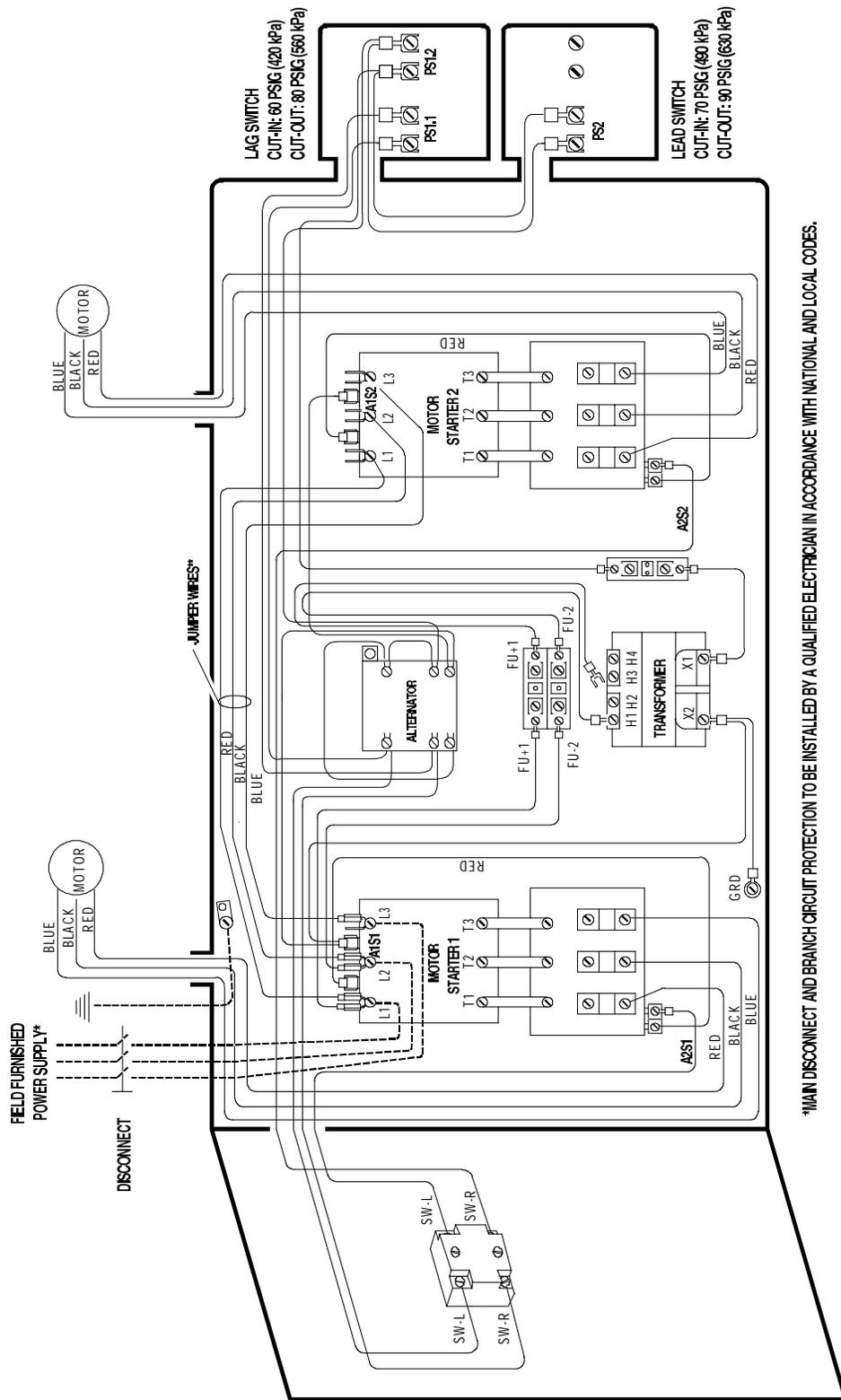


Figure 2.15: PureFlow 5 Through 10 hp Duplex Air Compressors with Deluxe Alternator Package Three-Phase Wiring Diagram for 208/230-460 Volts

*MAIN DISCONNECT AND BRANCH CIRCUIT PROTECTION TO BE INSTALLED BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

**FOR DUAL DISCONNECT REQUIREMENTS, REMOVE THE RED, BLACK, AND BLUE JUMPER WIRES BETWEEN THE TWO MOTOR STARTERS AT L1 AND L2. INSTALL THE SECOND DISCONNECT FOR MOTOR STARTER 2 IN A SIMILAR FASHION AS SHOWN FOR MOTOR STARTER 1. NOTE: MAKING THESE WIRING CHANGES WILL VOID THE UL LISTING.

Air Compressor Power Requirements

The required input voltage for all PureFlow air compressors is the motor nameplate voltage (plus or minus 10%), as measured at the motor by a qualified electrician with the air compressor running. Any measured input voltage outside of this specified range could result in damage to the motor and/or other electrical components of the air compressor. On three-phase PureFlow air compressors, it is also necessary that the input voltages across each phase be in balance to within 2% of the average of all three phases. To determine if all three phases are properly balanced, proceed as follows:

1. With the air compressor running, use a suitable voltmeter to measure the voltage across each of the three phases.
Example: Phase I = 215 V, Phase II = 221 V, Phase III = 224 V
2. Add the three voltages and divide the total by three to determine the average.
Example: $(215 \text{ V} + 221 \text{ V} + 224 \text{ V}) \div 3 = 220 \text{ V}$ Average
3. Calculate the difference between the average voltage determined in Step 2 and the worst phase measured in Step 1 to determine the largest difference.
Example: $220 \text{ V} - 215 \text{ V} = 5 \text{ V}$ Difference (Largest)
4. Divide the largest difference calculated in Step 3 by the average voltage from Step 2, and multiply the result by 100 to determine the percentage of difference from the average.
Example: $(5 \text{ V} \div 220 \text{ V}) \times 100 = 2.27\%$ Difference

If the percentage of difference is greater than 2% (the maximum allowable percentage of difference), the input voltage across the three phases is imbalanced.

An excessive voltage imbalance is cause for concern, especially since the actual increase in temperature at the motor stator is equal to two times the square of the calculated imbalance.

Example: $2 \times (2.27\% \times 2.27\%) = 10.3\%$ Rise in Temperature

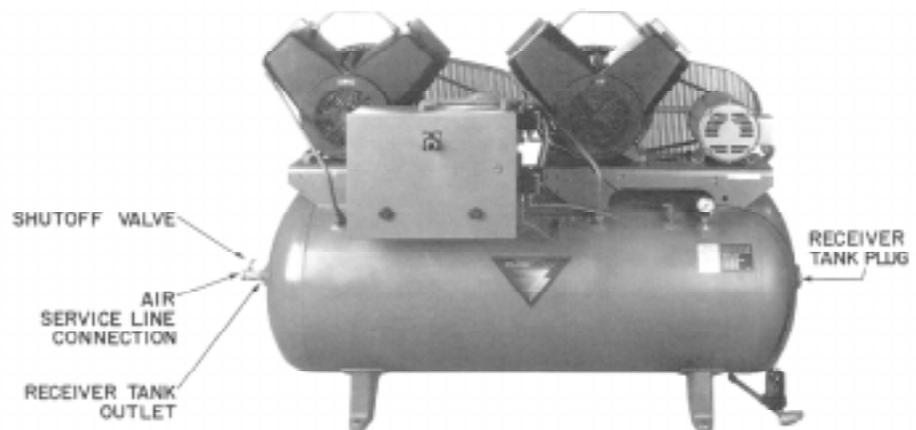
To compound the situation, this temperature increase is not uniform throughout the stator; rather, it is concentrated on only one of the three phases. Under such circumstances, the motor stator may burn out.

To avoid the likelihood of burning out a motor as a result of excessive imbalance, proceed as follows:

1. Roll the wire leads of each of the three phases forward one position by moving the lead on Phase I to Phase II, Phase II to Phase III, and Phase III to Phase I.

2. Recalculate the voltage imbalance following the procedures outlined in Steps 1 through 4 on the previous page.
3. If the recalculated voltage imbalance determined in Step 2 is within the 2% maximum allowable percentage of difference, the problem has been corrected and there is no longer a cause for concern.
If the recalculated voltage imbalance determined in Step 2 remains greater than 2%, roll the wire leads of each of the three phases forward one more position.
4. Recalculate the voltage imbalance again following the procedures outlined earlier.
5. If the voltage imbalance is now within the 2% maximum allowable percentage of difference, the problem has been corrected. If not, disconnect the electrical service to the air compressor (to protect it from possible equipment damage), and have a qualified electrician analyze the building power supply and load distribution.

Piping the Air Compressor

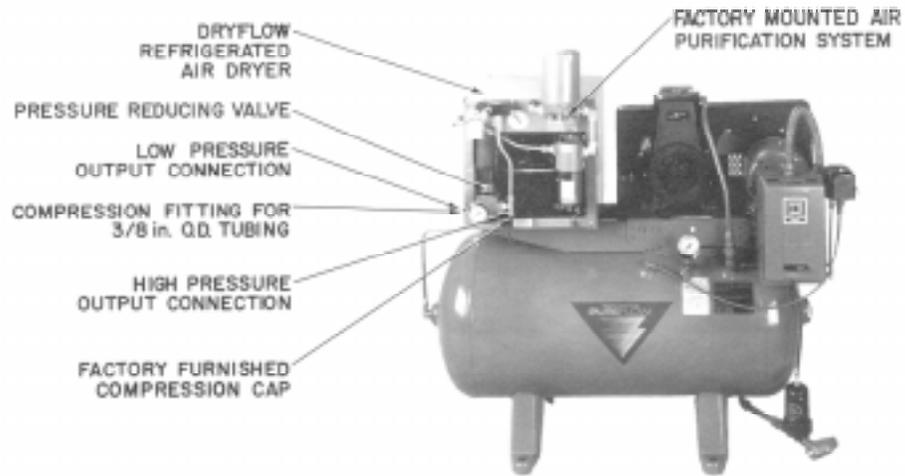


**Figure 2.16: PureFlow Air Compressor
Without Factory Mounted DryFlow Refrigerated Air Dryer**

To pipe a PureFlow simplex or duplex air compressor **that does not come equipped with a factory mounted DryFlow refrigerated air dryer**, refer to Figure 2.16 and proceed as follows:

1. Remove and discard the plastic protective cap from the threaded receiver tank outlet.
2. Depending on the orientation of the air compressor installation, determine which end of the receiver tank would be best suited for the air service line connection.

3. If necessary, relocate the receiver tank plug (factory installed on one end of the receiver tank) to the side of the tank directly opposite the end chosen in Step 2 for the air service line.
 Note: Use care when relocating the receiver tank plug to avoid damaging the integral plug O-ring.
4. Apply thread sealant to the threaded portion of the shutoff valve (packaged separately with the PureFlow air compressor).
5. Using an adjustable wrench, install the shutoff valve at the selected service end of the receiver tank and secure the assembly firmly in place.
6. To minimize vibration transmission during air compressor operation, it is recommended that a flexible coupling (field furnished) be used between the shutoff valve and the air service line.



**Figure 2.17: PureFlow Air Compressor
With Factory Mounted DryFlow Refrigerated Air Dryer**

To pipe a PureFlow simplex or duplex air compressor **that comes equipped with a factory mounted DryFlow refrigerated air dryer**, refer to Figure 2.17 and proceed as follows:

1. Locate the low pressure output (20 PSIG nominal) of the factory mounted Air Purification System on the DryFlow refrigerated air dryer. This output is equipped with a compression fitting to accommodate 3/8 in. O.D. tubing.
2. Connect the desired service line (either 3/8 in. O.D. copper tubing or 3/8 in. O.D. polytubing) to the control system at the low pressure compression fitting located in Step 1.
3. If a high pressure output (80 PSIG nominal) is also required, the high pressure connection is located directly ahead of the pressure reducing valve on the factory mounted Air Purification System.
 To use this connection, first remove the factory furnished compression cap. Then, connect the desired high pressure service line (either 3/8 in. O.D. copper tubing or 3/8 in. O.D. polytubing) using a 3/8 in. compression nut (field furnished), a 3/8 in. ferrule (copper tubing ferrule: F-1000-13; polytubing ferrule: F-1000-10, both ordered separately), and for polytubing high pressure service lines, a metal insert (F-1000-384, ordered separately) is also required.

**Starting the
Air Compressor
for Operation**

When starting up the PureFlow air compressor for the first time to provide air to power a pneumatic climate control system, it is necessary to perform the following checks to ensure proper air compressor operation:

**Pressure Electric
(PE) Switch
Function**

PureFlow AS Series Simplex Air Compressors come equipped with a lead PE switch while PureFlow AD Series Duplex Air Compressors with a factory mounted alternator come equipped with both a lead and a lag PE switch.

Observe the air compressor through two complete cycles of operation to check the cut-in and cut-out settings of the lead PE switch. The lead switch is factory set to cut-in at approximately 70 PSIG (490 kPa) and cut-out at approximately 90 PSIG (630 kPa). If it is observed that the air compressor cuts-in and out at values other than these factory settings, adjust the lead PE switch according to the procedures outlined in the *PE Switch Settings and Standby Function* section of *Part III*.

On duplex air compressors with a factory mounted alternator, it is also necessary to check the standby function of the air compressor. The lag PE switch is used as the standby switch in the event of failure of one of the compressor pumps. Check the lag switch settings by disabling one compressor pump so that it cannot run, according to the procedures outlined in the *PE Switch Settings and Standby Function* section of *Part III*. The lag switch is factory set to cut-in at approximately 60 PSIG (420 kPa) and cut-out at approximately 80 PSIG (560 kPa). In addition, check the alternator function by observing the air compressor through two complete cycles of operation to ensure that the two pumps alternate.

Excessive Vibration

If the PureFlow air compressor vibrates excessively when the unit is started up for the first time, one or more of the following checks should be performed to determine the cause of the excessive vibration, as well as the necessary remedy:

- Inspect the PureFlow air compressor thoroughly for signs of shipping damage (for example a bent motor pulley or pump flywheel, etc.), and replace any damaged components.
- Check that all hold-down nuts, mounting bolts or studs, and threaded floor anchors are secure.
- Check that all of the hold-down nuts have been tightened relatively equal in comparison to one another.
Note: Be careful not to over tighten the hold-down nuts; doing so will unnecessarily strain the PureFlow air compressor and reduce the effectiveness of the vibration/isolation pads.
- Check that the isolation pads included with the air compressor are positioned properly under each leg of the unit.
- Check that the air compressor is leveled properly on both horizontal planes and, if necessary, shim the legs of the unit to within 1/16 in. (2 mm) of each other.
- Check that a flexible coupling (field furnished) is used between the shutoff valve and the air service line. Lack of a flexible coupling may reduce the effectiveness of the vibration/isolation pads.

Air Leak Detection

Using a leak detector solution, check all fittings and air lines on the PureFlow air compressor for air leaks. If an air leak is found at any of the fittings, remove the fitting and re-apply thread sealant to the appropriate threaded area. If a leak is found on any of the air lines, the air line will need to be repaired or replaced.

Pump-Up Time Test

Check that the PureFlow air compressor is able to maintain the desired system pressure at a specified flow rate, without running continuously. To do so, perform a pump-up time test according to the procedures outlined in the *Pump-Up Time Test* section of *Part IV*. On duplex air compressors, this test will need to be performed twice (once on each compressor pump). Do not run both pumps simultaneously while performing the pump-up time test.

Oil Carryover Test

After one hour of air compressor operation, perform an oil carryover test using the field installed A-4000-120 Oil Indicator and Needle Valve Assembly (ordered separately) located at the air compressor receiver tank outlet. Refer to the *Oil Carryover Test* section of *Part III* for more details.