

## AD-XXX Series PureFlow™ Duplex Air Compressors 1/2 Through 20 hp

### Features

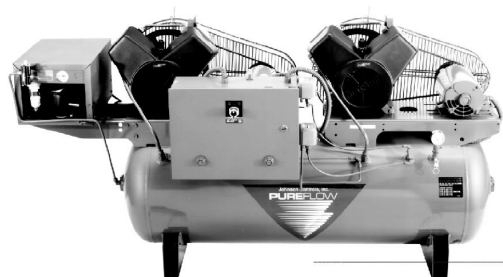
- Guaranteed low oil carryover rate of less than 4 PPM
- Factory break-in and documented oil carryover test
- Two-year “air side” warranty on compressor pump
- Conditional four-year warranty against oil contamination of the entire pneumatic control system\*

The AD-XXX Series PureFlow Duplex Air Compressors have been designed, broken-in, and tested to meet the most demanding specifications for low oil carryover and long life in the pneumatic climate control industry.

The units consist of two equally rated motor-compressor assemblies mounted on a single ASME tank. The compressor motors are NEMA Class B design. The AD-XXX Series Compressors are ideal for instrumentation systems requiring an alternate compressor for standby or overload capacity. See Table 1 for motor sizes and air delivery capacities available.

Compressor assemblies are available with or without a factory mounted basic or deluxe alternator/motor starter package. An unloading feature is included on all compressors to provide loadless starting. Models with an alternator are prewired and ready for operation. Internal wiring allows for shutdown of either compressor for repair while the other compressor is running.

*\* This warranty is offered on new construction projects with a complete Johnson Controls air supply system and is conditional upon proper system maintenance for the life of the warranty.*



**Fig. 1: AD-XXX Series 2 hp Duplex Air Compressor with  
Optional Deluxe Alternator Package**

An alternating type operation is desirable for many reasons. When a duplex air compressor is alternated, the temperature of both units is kept above the ambient dew point to minimize moisture deterioration and corrosion. Also, the reduction in on-time provides a lower average head temperature with reduced oil entrainment potential and improves the motor life by holding down the average heat rise.

All units are run through a factory break-in and are tested for low oil carryover, air delivery, leakage, and power consumption. Units are shipped with a proper fill of 30W compressor oil (Johnson Controls F-1000-203) in the crankcase and are furnished with an intake filter/silencer with a replaceable cartridge. This filter/silencer combination is designed to remove contaminants in the inlet air as well as provide quieter operation. The 5 through 20 hp models are complimented by this design utilizing dual element filtration which consists of a pleated element and a foam element, for filtration against larger particles from the atmosphere.

All models have conveniently located oil drain and filler ports to facilitate routine maintenance.

Tanks have a condensate drain valve with an extension for easy access. Mounting bases have V-belt tension adjustments to aid in maintaining proper compressor and motor alignment while adjusting the tension. Refer to Product Data A-4000 for a description of various compressor accessories available.

## **Operation**

Factory calibrated DPST pressure switches provide lead and lag settings. When using an alternator-starter package, the lead switch energizes the alternator and the alternator activates the compressor that was on standby during the previous cycle. If the demand exceeds the capacity of one compressor, the lag switch will cause both compressors to run simultaneously. Upon failure of either compressor, the lag switch will continue to activate the workable compressor.

Single-phase motors have built-in overload protection with automatic reset. Three-phase motors require a manual or magnetic starter and three overload heaters. Heaters are included with three-phase compressors that have a factory mounted alternator.

## Specifications

<b>Product</b>	AD-XXX Series PureFlow Duplex Air Compressors	
<b>Performance Specifications</b>	See Table 1	
<b>Models &amp; Options</b>	See Table 2	
<b>Lubrication</b>	<b>1/2 Through 10 hp Models</b>	Splash Lubrication System
	<b>15 &amp; 20 hp Models</b>	Pressure Lubrication System
<b>Operating Voltages</b>	1 $\phi$	115/230 Volts, 60 Hz
	3 $\phi$	208-230/460 Volts, 60 Hz
<b>Compression Cycle</b>	<b>1/2 Through 10 hp Models</b>	Single-Stage
	<b>15 &amp; 20 hp Models</b>	Two-Stage
<b>Motor Overload Protection</b>	1 $\phi$	Built-In
	3 $\phi$	Manual or Magnetic Starter with Thermal Overloads (Supplied with all Factory Mounted Alternators; Otherwise Field Supplied)
<b>Pressure Switch Settings</b>	<b>Lead</b>	Cut-In: Factory Set at Approximately 70 PSIG (490 kPa)
		Cut-Out: Factory Set at Approximately 90 PSIG (630 kPa)
	<b>Lag</b>	Cut-In: Factory Set at Approximately 60 PSIG (420 kPa)
		Cut-Out: Factory Set at Approximately 80 PSIG (560 kPa)
<b>Overpressure Protection</b>	ASME Safety Relief Valve Factory Set and Sealed at Approximately 115 PSIG (805 kPa)	
<b>Outlet Air Connections</b>	1/2 in. NPT on 30 and 80 Gallon Tanks; 1 in. NPT on 120, 200, and 240 Gallon Tanks	
<b>Tank Sizes</b>	See Table 2	
<b>California Ordinance 462 (M) (2)</b>	Meets Requirements of this Ordinance	
<b>Accessories (Order Separately)</b>	Vibration Pads for 30 and 80 Gallon Tanks: A-4000-150	
	Vibration Pads for 120 Through 240 Gallon Tanks: A-4000-151	

*The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damage resulting from misapplication or misuse of its products.*

**Table 1: AD-XXX Series PureFlow Duplex Air Compressors Performance Specifications**

Base Model	Actual hp		Motor Rating		Compressor RPM	Compressor Capacity ACFM*		
	1 $\phi$	3 $\phi$	hp	RPM		100% Runtime	50% Runtime	33% Runtime
AD-105	.54	—	1/2	1725	805	1.8	0.9	0.6
AD-005	—	.54		1720				
AD-107	.73	—	3/4	1725	1000	2.5	1.25	0.83
AD-007	—	.73						
AD-110	1.07	—	1	1725	675	3.7	1.85	1.23
AD-010	—	1.07						
AD-015	—	1.54	1-1/2	1750	990	5.2	2.6	1.73
AD-020	—	2.0	2	1750	740	8.2	4.1	2.73
AD-030	—	3.1	3	1745	850	12.0	6.0	4.0
AD-050	—	5.6	5	1745	660	22.0	11.0	7.33
AD-075	—	8.2	7-1/2	1745	965	31.5	15.8	10.5
AD-100	—	10.3	10	1750	800	39.0	19.5	13.0
AD-150	—	15.5	15	1750	730	68.0	34.0	22.7
AD-200	—	19.0	20	1750	850	81.0	40.5	27.0

\* Actual Cubic Feet per Minute from one pump at 80 PSIG (560 kPa), with clean inlet air filter installed.

**Table 2: Ordering Data**

AD — [ ] [ ] [ ] — [ ] — [ ] — [ ]

Horsepower and Voltage Phase
Tank Size
Alternator
Tank Drain/Dryer

OR

Motor Horsepower, Voltage Phase		
1φ	Horsepower	3φ
105 =	1/2	= 005
107 =	3/4	= 007
110 =	1	= 010
NA =	1-1/2	= 015
NA =	2	= 020
NA =	3	= 030
NA =	5	= 050
NA =	7-1/2	= 075
NA =	10	= 100
NA =	15	= 150
NA =	20	= 200

Tank Size (Gallons)	Available on:
30 = 1	1/2 Through 1-1/2 hp
80 = 3	1/2 Through 3 hp
120 = 4	3 Through 7-1/2 hp
200 = 5	5 Through 10 hp
240 = 6	15 And 20 hp

Alternators		
Basic		Deluxe
0 =	None	= 0
2 =	3φ, 208V	= A
3 =	3φ, 230V	= B
4 =	3φ, 460V	= C
5 =	1φ, 115V	= E
6 =	1φ, 208V	= NA
7 =	1φ, 230V	= G

1φ vs 3φ selection must agree with base model selection.

Tank Drain/Dryer Options	
Manual Drain, No Dryer	= 1
Auto Drain, No Dryer	= 2
Manual Drain, with Dryer	= 3
Auto Drain, with Dryer	= 4

**Available on 1/2 through 3 hp models only.**

**Notes:**

For base-mounted option, order two simplex compressors.

NA = Not Available.

**Example 1** – To order a duplex air compressor with 3/4 hp single-phase motors, 80 gallon tank, deluxe 230 volt alternator package, automatic tank drain, and an air dryer, use product code AD-107-3G4.

**Example 2** – To order a duplex air compressor with 10 hp three-phase motors, 200 gallon tank, and an auto drain, use product code AD-100-502.

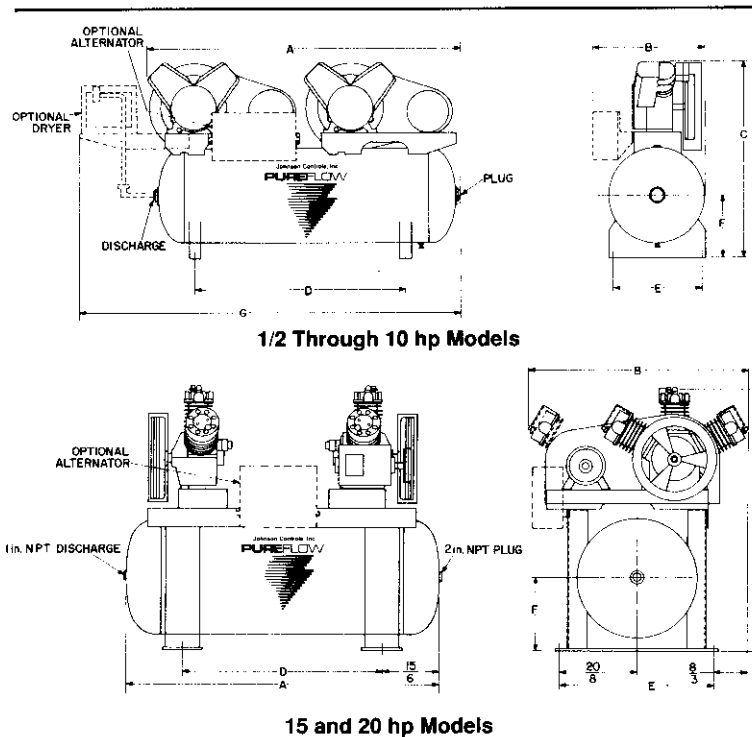


Fig. 2: Dimensions in./cm (See Table 3)

**Table 3: Dimensions (Inches\*) and Shipping Weights (Pounds\*)**

Base Model	A	B		C	D	E	F	G	Shipping Weight**	
		with Altrntr	without Altrntr						with Altrntr	without Altrntr
AD-105-1XX AD-005-1XX	41-1/2	21-1/4	17-3/4	35-1/4	18	15-3/4	12-1/4	68-1/2	260	240
AD-105-3XX AD-005-3XX	64-1/4	22-1/4	20	39	40	18-1/2	13	77-3/4	420	400
AD-107-1XX AD-007-1XX	41-1/2	21-1/4	17-3/4	36	18	15-3/4	12-1/4	68-1/2	260	240
AD-107-3XX AD-007-3XX	64-1/4	22-1/4	20	39	40	18-1/2	13	77-3/4	425	405
AD-110-1XX AD-010-1XX	41-1/2	21-1/4	17-3/4	36	18	15-3/4	12-1/4	68-1/2	270	250
AD-110-3XX AD-010-3XX	64-1/4	22-1/4	20	39	40	18-1/2	13	77-3/4	435	415
AD-015-1XX	41-1/2	21-1/4	17-3/4	36	18	15-3/4	12-1/4	68-1/2	270	250
AD-015-3XX	64-1/4	22-1/4	20	39	40	18-1/2	13	77-3/4	435	415
AD-020-3XX	65-1/4	23-1/4	20	41	40	18-1/2	13	90-3/4	500	480
AD-030-3XX	65-1/4	23-1/4	20	41	40	18-1/2	13	90-3/4	650	630
AD-030-4XX	70-3/4	25-3/4	24	44	42	22	15-3/4	96-1/4	780	760
AD-050-4XX	71-1/4	26-1/4	24	49-1/4	42	22	15-3/4	—	930	910
AD-050-5XX	81-1/2	30	30	55-1/2	42	22	18-3/4	—	1155	1135
AD-075-4XX	71-1/4	26-1/4	24	49-1/4	42	22	15-3/4	—	950	925
AD-075-5XX	81-1/2	30	30	55-1/2	42	22	18-3/4	—	1175	1150
AD-100-5XX	84	30	30	58	42	22	18-3/4	—	1440	1415
AD-150-6XX	84	57	57	68-1/2	54	40	19	—	2828	2800
AD-200-6XX	84	57	57	68-1/2	54	40	19	—	3008	2880

\*Inches x 2.54 = Centimeters, Pounds x 0.454 = Kilograms.

\*\*Add 60.0 lb for units equipped with a factory mounted air driver.

## Mounted and Connected Options

### Deluxe Alternator Package

All PureFlow duplex air compressors may be ordered with an optional deluxe alternator package consisting of two magnetic motor starters with thermal overloads, an alternating coil, a 120 VAC control transformer, and a three-position selector switch. The three-position switch allows for automatic alternation, or the selection of running only, the left pump or the right pump, to simplify servicing one compressor while the other unit is running. Refer to Table 2 for ordering details.

### Basic Alternator Package

If the deluxe alternator package is not desirable, all PureFlow duplex air compressors may instead be ordered with a simplified line voltage basic alternator package. The basic alternator package consists of an alternating coil and

two Square D magnetic motor starters, selected and wired for the intended input voltage. All starters are furnished with properly sized overload heaters. Refer to Table 2 for ordering details.

### Refrigerated Air Dryer

A factory mounted Johnson Controls A-4110 Series Refrigerated Air Dryer with automatic condensate drain trap assembly and bypass valve is available as an option on all 1/2 through 3 hp PureFlow duplex air compressors. The air dryer is piped to the compressor at the factory; power wiring to the dryer is done in the field using the integral cord and plug which fits into a standard 120 volt receptacle. Refer to Table 2 for ordering details.

### Automatic Tank Drain

PureFlow air compressors may be ordered with a Drainview float type automatic tank drain. This unit is

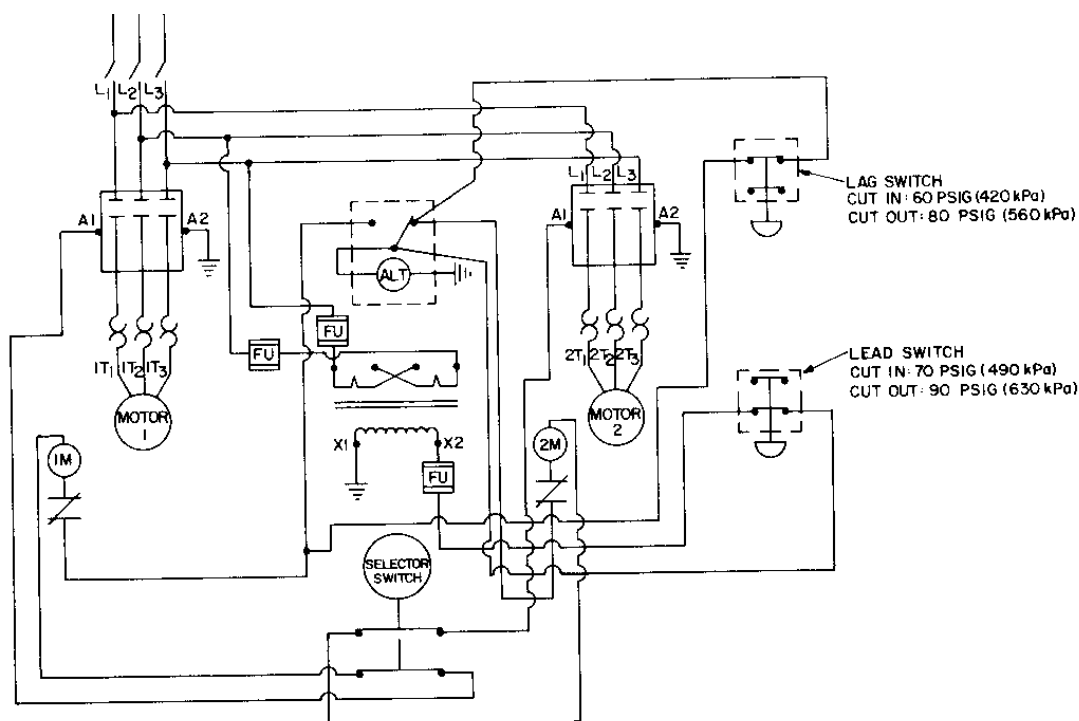
furnished with a manual drain attachment and must be mounted to the compressor in the field. Refer to Table 2 for ordering details.

### Vibration Dampening Pads

Vibration pads of waffle type design can be ordered (by separate code number) to be shipped with the air compressor. For 30 and 80 gallon tanks, order code number A-4000-150; for 120 through 240 gallon tanks, order code number A-4000-151.

### Hookup and Wiring

Refer to Installation Data AS/AD-XXX-A for detailed installation instructions. For a deluxe alternator package wiring diagram for three-phase units, refer to Fig. 3; for a basic alternator package wiring diagram, refer to Fig. 4.



**Fig. 3: Deluxe Alternator Package Wiring Diagram for Three-Phase Units**

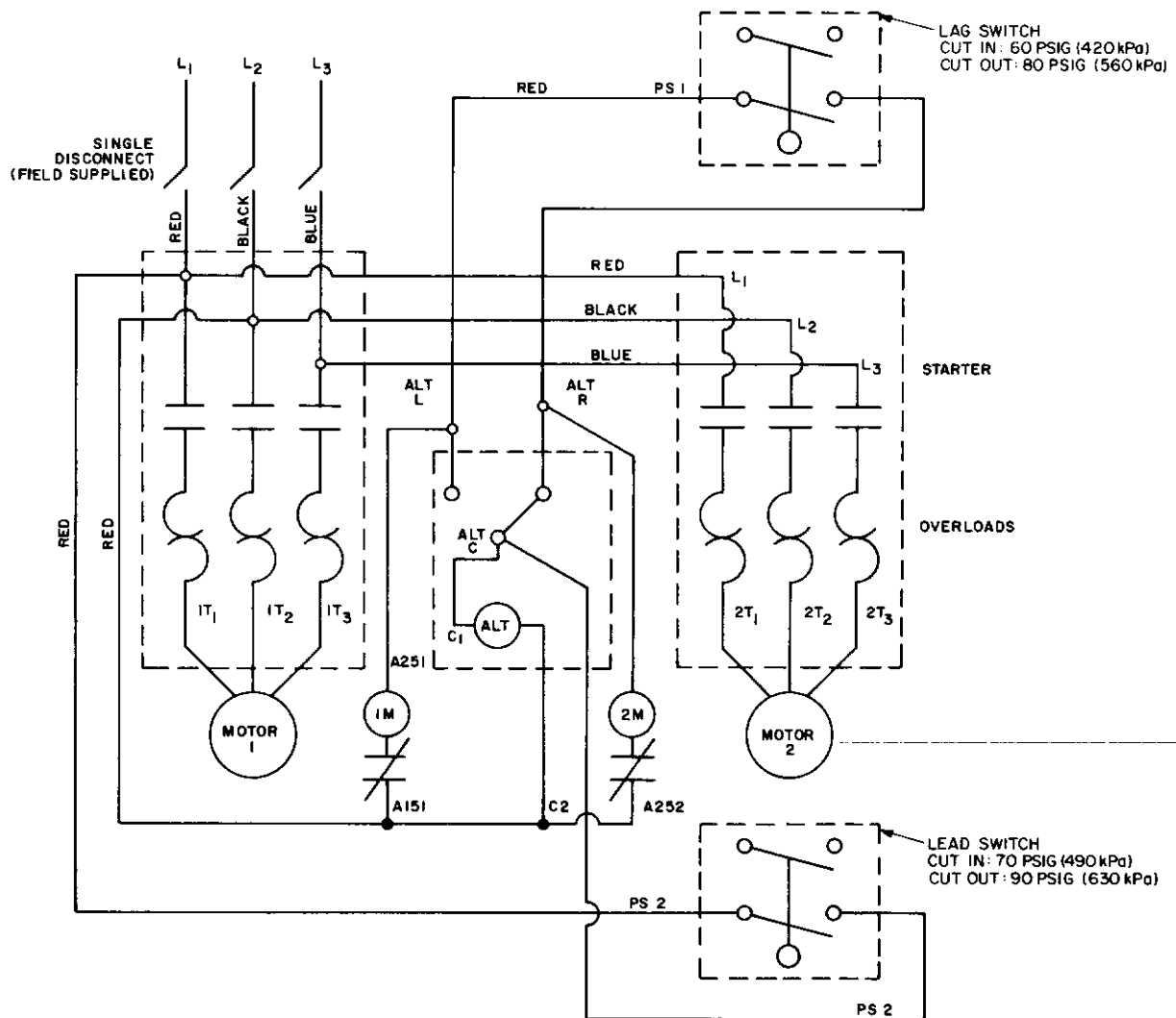
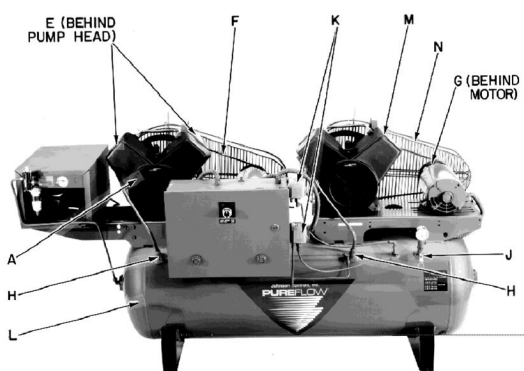


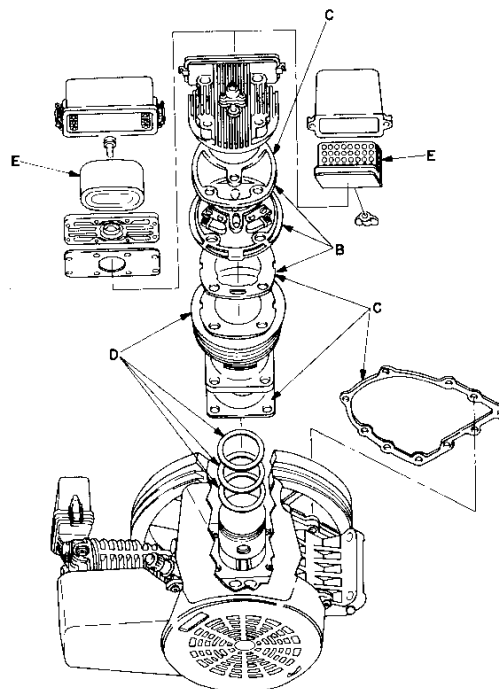
Fig. 4: Basic Alternator Package Wiring Diagram for Three-Phase Units

#### Application and Drawing Identification





**Fig. 5: Repair Parts (See Table 4)**



**Note:** For air dryer repair parts, refer to Product Data A-4110. For Drainview automatic condensate drain trap repair parts, refer to the Branch Purchasing Directory.

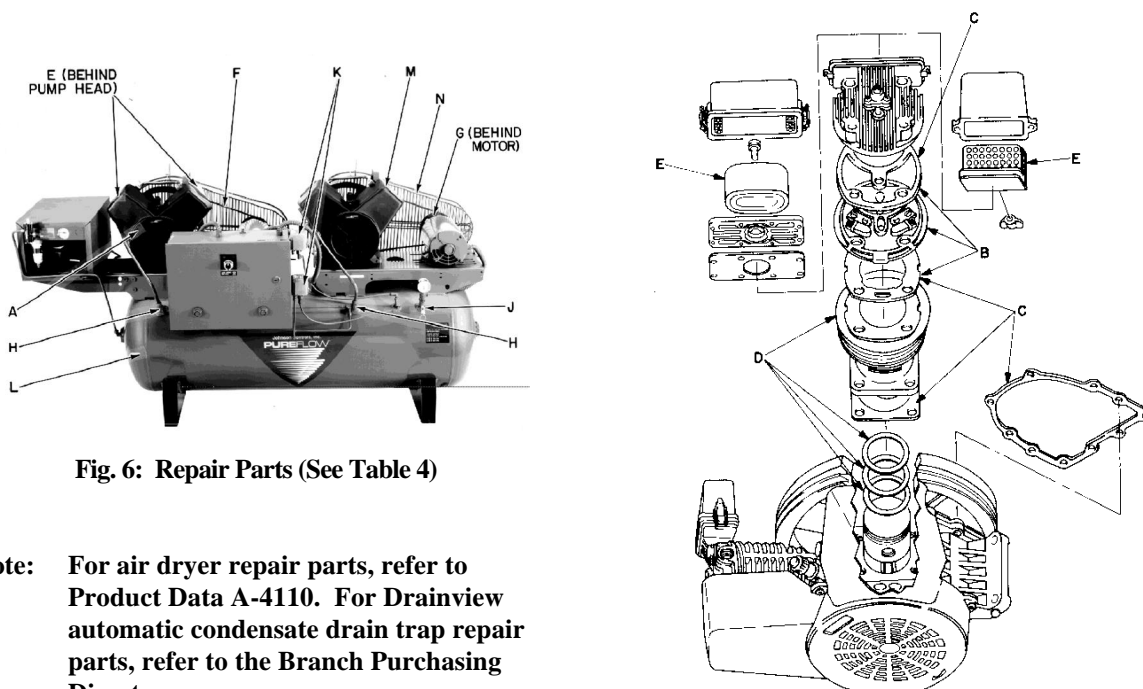
**Table 4: Repair Parts**

Item	Description	Qty Required	Shipping Weight lb*	Code Number
A	Pump and Flywheel: Motor hp			
	1/2, 3/4	2	19.5	A-005-6001
	1, 1-1/2	2	35	A-010-6001
	2	2	59	A-020-6001
	3	2	66	A-030-6001
	5, 7-1/2	2	115	A-050-6001
	10	2	180	A-100-6001
	15, 20	2	660	A-200-6001
B	Valve Kit: Includes valve plate, spacer, and head gasket. Motor hp			
	1/2	2	0.4	A-005-6002
	3/4 (pump shipped prior to 8/1/90)	2	0.5	A-010-6002
	3/4 (pump shipped after 8/1/90)	2	0.4	A-005-6002
	1, 1-1/2	2	0.5	A-010-6002
	2	4	0.5	A-020-6002
	3	4	0.7	A-030-6002
	5, 7-1/2	4	1.2	A-075-6002
	10	6	1.2	A-075-6002
	15, 20 (left & right cylinders)	4	7.3	A-150-6002
	15, 20 (center cylinder)	2	4.2	A-200-6002

\*lb x 0.454 = kg

– List of Parts Continued on Next Page –





**Fig. 6: Repair Parts (See Table 4)**

**Note:** For air dryer repair parts, refer to Product Data A-4110. For Drainview automatic condensate drain trap repair parts, refer to the Branch Purchasing Directory.

**Table 4: Repair Parts (cont'd)**

Item	Description	Qty Required	Shipping Weight lb*	Code Number
C	Gasket Kit: Includes crankcase end gasket, upper and lower cylinder gasket, and head gasket. Motor hp			
	1/2	2	0.1	A-005-6003
	3/4 (pump shipped prior to 8/1/90)	2	0.1	A-010-6003
	3/4 (pump shipped after 8/1/90)	2	0.1	A-005-6003
	1, 1-1/2	2	0.1	A-010-6003
	2	2	0.1	A-020-6003
	3	2	0.1	A-030-6003
	5, 7-1/2	2	0.2	A-050-6003
	10	2	0.3	A-100-6003
	15, 20	2	0.4	A-200-6003
D	Ring/Cylinder Kit: Includes all compression rings, oil control rings, and cylinder. Motor hp			
	1/2	2	3.6	A-005-6004
	3/4 (pump shipped prior to 8/1/90)	2	4.8	A-010-6004
	3/4 (pump shipped after 8/1/90)	2	3.6	A-005-6004
	1, 1-1/2	2	4.8	A-010-6004
	2	4	4.8	A-020-6004
	3	4	5.5	A-030-6004
	5, 7-1/2	4	10	A-075-6004
	10	6	10	A-075-6004
	15, 20 (left & right cylinders)	4	7.3	A-150-6004
	15, 20 (center cylinder)	2	4.2	A-200-6004

\*lb x 0.454 = kg

— List of Parts Continued on Next Page —

**Table 4: Repair Parts (cont'd)**

Item	Description	Qty Required	Shipping Weight lb*	Code Number
E	Intake Filter Element: Motor hp			
	1/2	2	0.1	A-005-6005
	3/4 (pump shipped prior to 8/1/90)	2	0.2	A-010-6005
	3/4 (pump shipped after 8/1/90)	2	0.1	A-005-6005
	1, 1-1/2	2	0.2	A-010-6005
	2	4	0.2	A-010-6005
	3	4	0.2	A-030-6005
	5, 7-1/2	4	0.3	A-075-6005
	10	6	0.3	A-075-6005
	15, 20	4	0.6	A-200-6005
F	Belts: Motor hp                      Size			
	1/2                      AX-42	2	0.3	A-005-6006
	3/4 (pump shipped prior to 8/1/90)			
	3/4 (pump shipped after 8/1/90)	2	0.3	A-010-6006
	1                      AX-42	2	0.3	A-005-6006
	1-1/2                      AX-43	2	0.3	A-010-6006
	2 & 3                      AP-45	2	0.3	A-015-6006
	5                      AX-62	2	0.4	A-030-6006
	7-1/2 (120 gal tank)                      AP-65	4	1.6	A-050-6006
	7-1/2 (200 gal tank)                      AP-67	4	2.0	A-075-6046
	10                      AP-75	4	2.0	A-075-6056
	15                      AP-80	4	2.4	A-100-6006
	20                      BP-94	4	4.0	A-150-6006
	20                      BP-96	4	4.0	A-200-6006
G	Motor Pulleys: Motor hp                      Type			
	1/2                      1A-4.4" P.D., 5/8" Bore	2	3.8	A-005-6007
	3/4 (pump shipped prior to 8/1/90)			
	3/4 (pump shipped after 8/1/90)	2	2.1	A-007-6007
	1 (1φ)                      1A-5.8" P.D., 5/8" Bore	2	3.9	A-007-6037
	1 (3φ)                      1A-4.0" P.D., 5/8" Bore	2	3.2	A-110-6007
	1-1/2                      1A-4.0" P.D., 7/8" Bore	2	3.2	A-010-6007
	2                      1A-6.0" P.D., 7/8" Bore	2	5.6	A-015-6007
	3                      1A-5.5" P.D., 7/8" Bore	2	5.2	A-020-6007
	5                      1A-6.2" P.D., 1-1/8" Bore	2	6.3	A-030-6007
	7-1/2                      2A-5.6" P.D., 1-1/8" Bore	2	7.6	A-050-6007
	10                      2A-8.2" P.D., 1-3/8" Bore	2	12.5	A-075-6007
	15                      2A-7.6" P.D., 1-5/8" Bore	2	13.5	A-100-6007
	20                      2B-8.6" P.D., 1-5/8" Bore	2	13.5	A-150-6007
	20                      2B-10.4" P.D., 1-5/8" Bore	2	16.0	A-200-6007
H	In-Tank Check Valve: Motor hp                      Size			
	1/2 Through 3                      1/2" MPT x 1/2" FPT	2	0.3	A-010-6008
	5 Through 10                      3/4" MPT x 3/4" FPT	2	0.4	A-075-6008
	15, 20                      1-1/4" MPT x 1-1/4" FPT	2	1.1	A-200-6008
J	Safety Relief Valve: Set at approximately 115 PSIG (805 kPa).			
	1/2 Through 5 hp Models	1	0.1	A-050-6009
	7-1/2 Through 20 hp Models	1	0.2	A-200-6009
	Safety Relief Valve: Set at approximately 175 PSIG (1225 kPa).			
	15 and 20 hp (base mount)	1	0.1	A-150-6019

\*lb x 0.454 = kg

— List of Parts Continued on Next Page —

**Table 4: Repair Parts (cont'd)**

Item	Description	Qty Required	Shipping Weight lb*	Code Number
K	Pressure Electric Switches: For all models.			
	Lead Switch: Set at approximately 70 PSIG (490 kPa) cut-in and 90 PSIG (630 kPa) cut-out.	1	0.9	A-100-6010
	Lag Switch: Set at approximately 60 PSIG (420 kPa) cut-in and 80 PSIG (560 kPa) cut-out.	1	0.9	A-100-6011
L	Tanks:			
	<u>Motor hp</u> <u>Tank Size</u>			
	1/2 Through 1-1/2              30 gallon	1	134.0	A-010-6030
	1/2 Through 1-1/2              80 gallon	1	235.0	A-010-6080
	2 & 3                              80 gallon	1	243.0	A-020-6080
	2 & 3                              120 gallon	1	398.0	A-020-6120
	5 & 7-1/2                        120 gallon	1	415.0	A-050-6120
	5 Through 10                    200 gallon	1	677.0	A-100-6200
	15 & 20                        240 gallon	1	826.0	A-200-6240
M	Cooling Shrouds:			
	<u>Motor hp</u>			
	1/2	2	1.0	A-005-6013
	3/4 (pump shipped prior to 8/1/90)	2	1.3	A-010-6013
	3/4 (pump shipped after 8/1/90)	2	1.0	A-005-6013
	1 & 1-1/2	2	1.3	A-010-6013
	2	2	1.7	A-020-6013
	3	2	1.7	A-030-6013
	5 & 7-1/2	2	1.9	A-050-6013
	10	2	4.5	A-100-6013
N	Belt Guards:			
	<u>Motor hp</u>			
	1/2 Through 1-1/2	2	2.4	A-010-6012
	2 & 3	2	12.5	A-020-6012
	5 & 7-1/2	2	12.5	A-050-6012
	10	2	18.5	A-100-6012
	15 & 20	2	26.5	A-200-6012
	Johnson Controls Air Compressor Oil (Not Shown): 1 Quart Bottle (For a full case, order 12 bottles)	—	2.0	F-1000-383

\*lb x 0.454 = kg

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## Notes

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## Notes



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