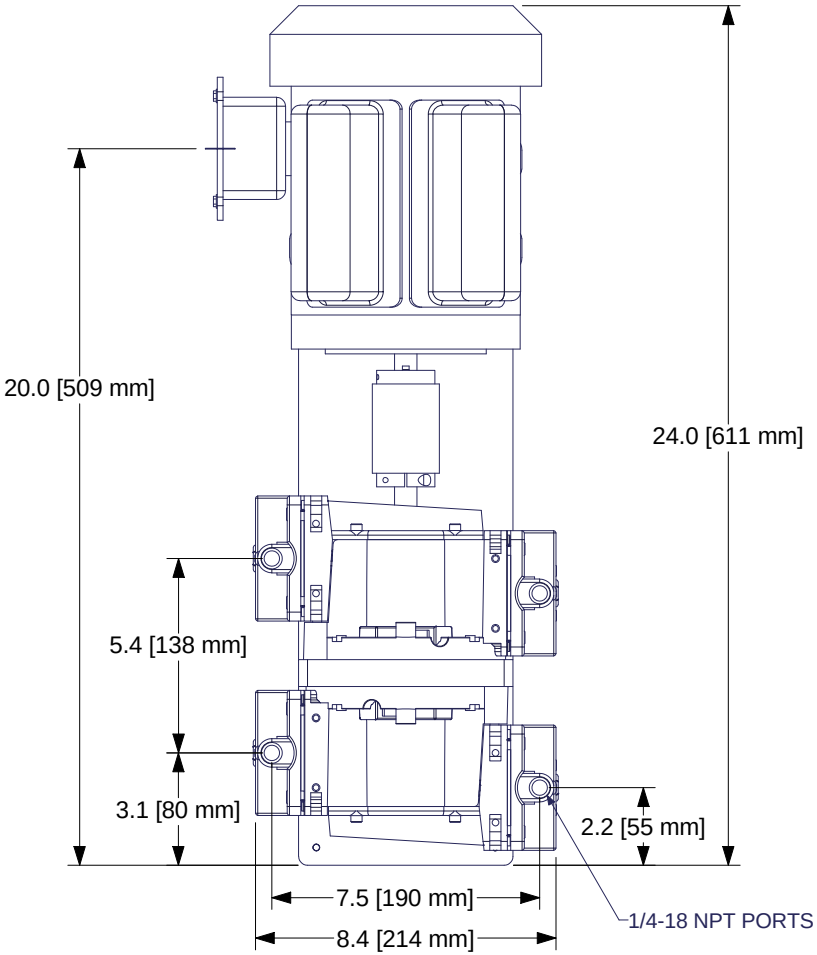
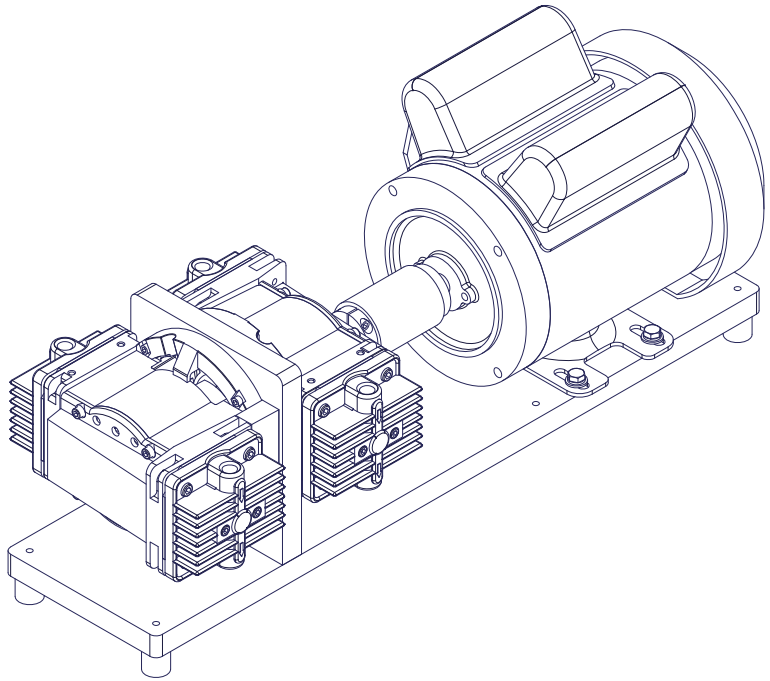
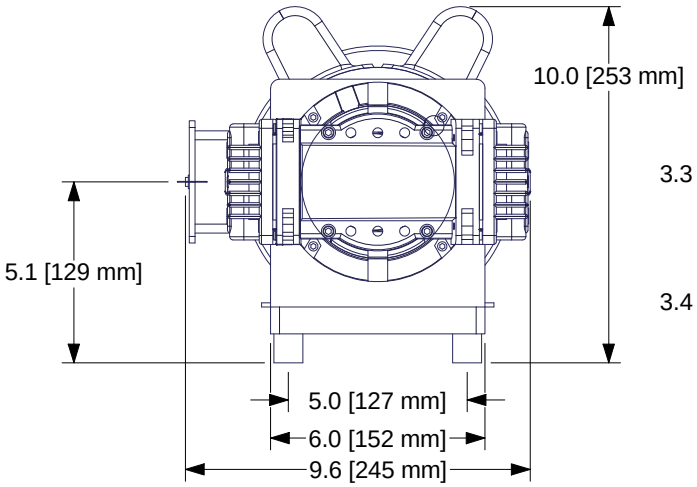
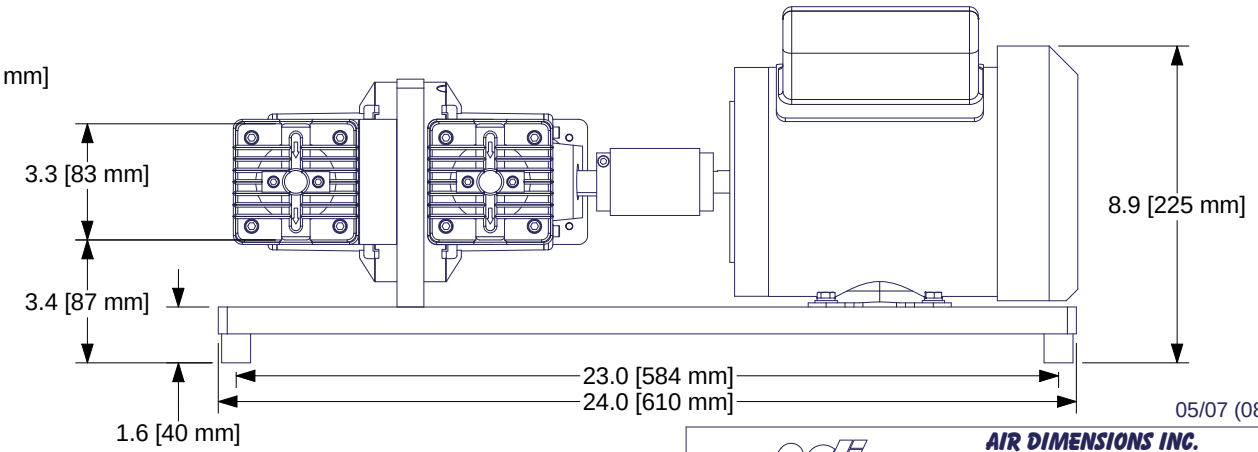








05/07 (0862)

AIR DIMENSIONS INC.
DEERFIELD BEACH, FL. USA 33442
WWW.AIRDIMENSIONS.COM

DATE	TITLE		
10/11/2001	Quad Head TEFC Pump		
APPROVED BY	DWG NO	MODEL #	
FDM	Rxx4-xx-Mxx	Rxx4-xx-Mxx	SHEET 1 OF 2

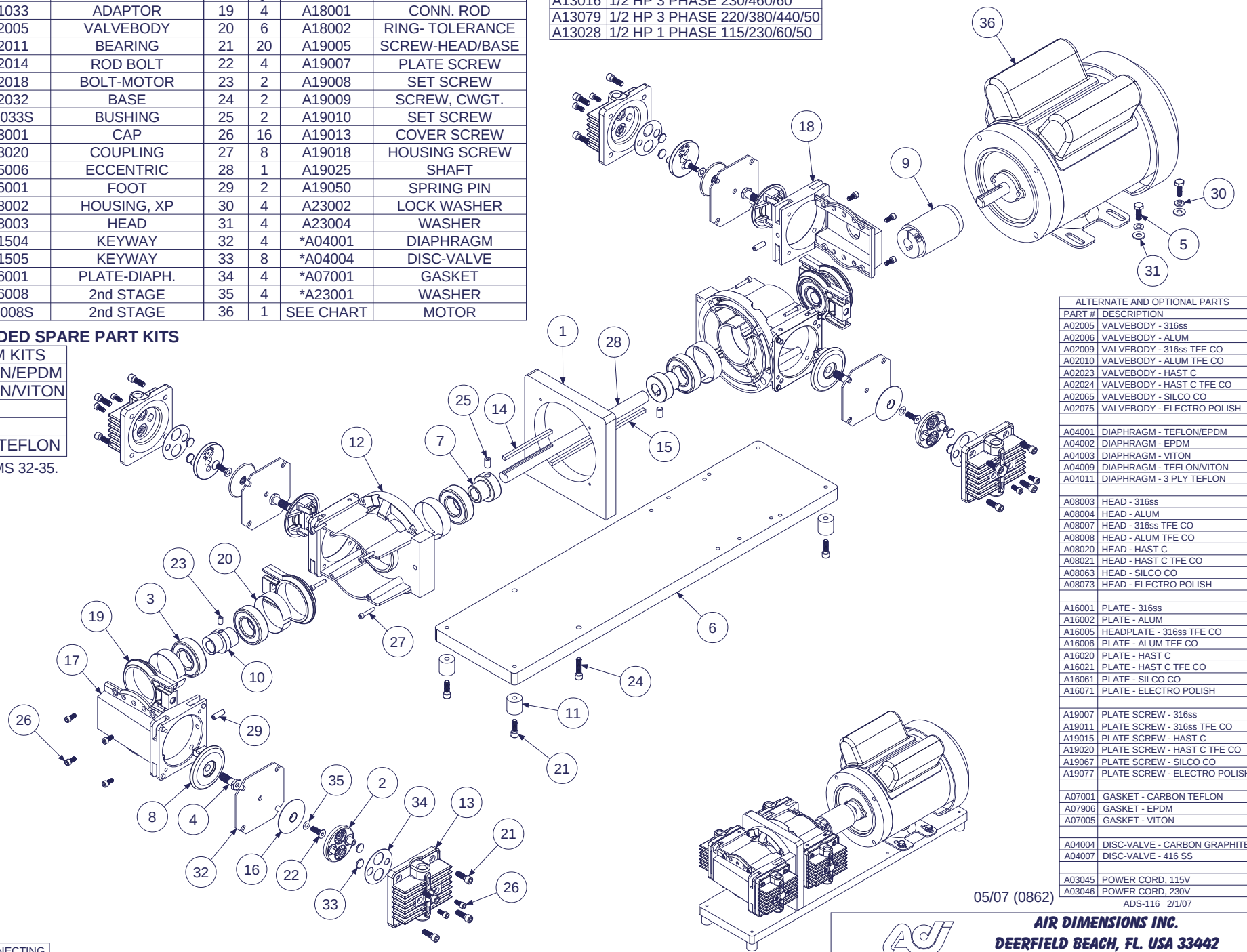
Parts List				Parts List			
ITEM	QT	PART #	DESCRIPTION	ITEM	QT	PART #	DESCRIPTION
1	1	A01033	ADAPTOR	19	4	A18001	CONN. ROD
2	4	A02005	VALVEBODY	20	6	A18002	RING- TOLERANCE
3	6	A02011	BEARING	21	20	A19005	SCREW-HEAD/BASE
4	4	A02014	ROD BOLT	22	4	A19007	PLATE SCREW
5	4	A02018	BOLT-MOTOR	23	2	A19008	SET SCREW
6	1	A02032	BASE	24	2	A19009	SCREW, CWGT.
7	2	A02033S	BUSHING	25	2	A19010	SET SCREW
8	4	A03001	CAP	26	16	A19013	COVER SCREW
9	1	A03020	COUPLING	27	8	A19018	HOUSING SCREW
10	2	A05006	ECCENTRIC	28	1	A19025	SHAFT
11	4	A06001	FOOT	29	2	A19050	SPRING PIN
12	2	A08002	HOUSING, XP	30	4	A23002	LOCK WASHER
13	4	A08003	HEAD	31	4	A23004	WASHER
14	1	A11504	KEYWAY	32	4	*A04001	DIAPHRAGM
15	1	A11505	KEYWAY	33	8	*A04004	DISC-VALVE
16	4	A16001	PLATE-DIAPH.	34	4	*A07001	GASKET
17	1	A16008	2nd STAGE	35	4	*A23001	WASHER
18	1	A16008S	2nd STAGE	36	1	SEE CHART	MOTOR

MOTOR PART NUMBERS	
A13016	1/2 HP 3 PHASE 230/460/60
A13079	1/2 HP 3 PHASE 220/380/440/50
A13028	1/2 HP 1 PHASE 115/230/60/50

***RECOMMENDED SPARE PART KITS**

DIAPHRAGM KITS	
11005	TEFLON/EPDM
11006	TEFLON/VITON
11007	VITON
11009	EPDM
11011	3-PLY TEFLON

INCLUDES ITEMS 32-35.



ALTERNATE AND OPTIONAL PARTS	
PART #	DESCRIPTION
A02005	VALVEBODY - 316ss
A02006	VALVEBODY - ALUM
A02009	VALVEBODY - 316ss TFE CO
A02010	VALVEBODY - ALUM TFE CO
A02023	VALVEBODY - HAST C
A02024	VALVEBODY - HAST C TFE CO
A02065	VALVEBODY - SILCO CO
A02075	VALVEBODY - ELECTRO POLISH
A04001	DIAPHRAGM - TEFLON/EPDM
A04002	DIAPHRAGM - EPDM
A04003	DIAPHRAGM - VITON
A04009	DIAPHRAGM - TEFLON/VITON
A04011	DIAPHRAGM - 3 PLY TEFLON
A08003	HEAD - 316ss
A08004	HEAD - ALUM
A08007	HEAD - 316ss TFE CO
A08008	HEAD - ALUM TFE CO
A08020	HEAD - HAST C
A08021	HEAD - HAST C TFE CO
A08063	HEAD - SILCO CO
A08073	HEAD - ELECTRO POLISH
A16001	PLATE - 316ss
A16002	PLATE - ALUM
A16005	HEADPLATE - 316ss TFE CO
A16006	PLATE - ALUM TFE CO
A16020	PLATE - HAST C
A16021	PLATE - HAST C TFE CO
A16061	PLATE - SILCO CO
A16071	PLATE - ELECTRO POLISH
A19007	PLATE SCREW - 316ss
A19011	PLATE SCREW - 316ss TFE CO
A19015	PLATE SCREW - HAST C
A19020	PLATE SCREW - HAST C TFE CO
A19067	PLATE SCREW - SILCO CO
A19077	PLATE SCREW - ELECTRO POLISH
A07001	GASKET - CARBON TEFLON
A07906	GASKET - EPDM
A07005	GASKET - VITON
A04004	DISC-VALVE - CARBON GRAPHITE
A04007	DISC-VALVE - 416 SS
A03045	POWER CORD, 115V
A03046	POWER CORD, 230V

ADS-116 2/1/07

ECCENTRIC	CONNECTING ROD
.275	A18001-275
.250	A18001-250
.222 to .060	A18001

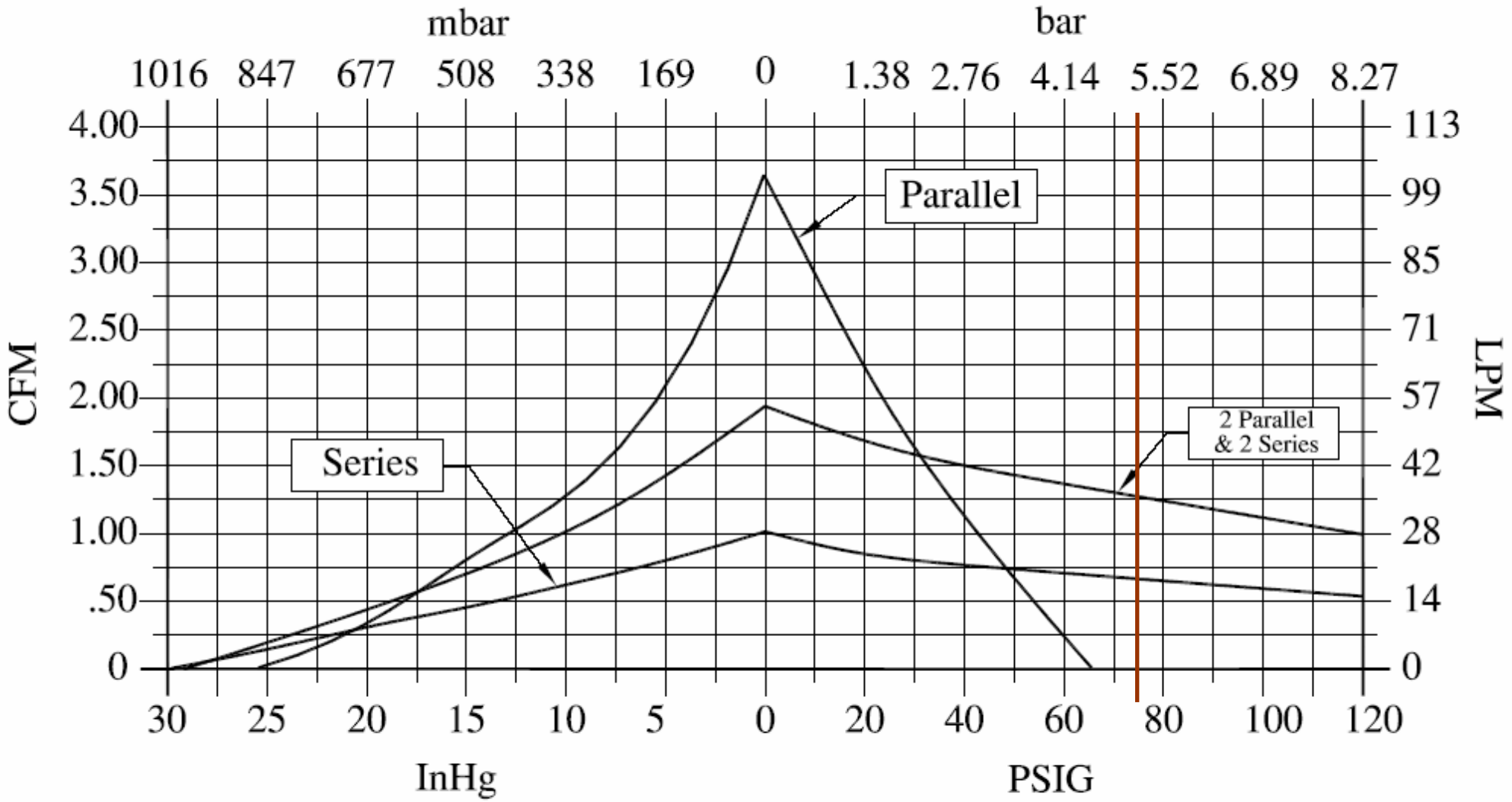
ADS-119 1/12/07

05/07 (0862)

AIR DIMENSIONS INC.
DEERFIELD BEACH, FL. USA 33442
WWW.AIRDIMENSIONS.COM

DATE	TITLE		
10/11/2001	Quad Head TEFC Pump		
APPROVED BY	DWG NO	MODEL #	SHEET 2 OF 2
FDM	Rxx4-xx-Mxx	Rxx4-xx-Mxx	

Standard Quad Head Pump - R224



Notes: Standard continuous performance ratings listed above are at sea level with an ambient temperature of 75° F (24° C) and 60Hz electrical supply. Performance characteristics given are for reference only. Specifications are subject to change without notice. Note that ADI does not recommend pressures in excess of 75 PSIG. *For 50Hz reduce Flow only by 17%.

AIR DIMENSIONS INCORPORATED

1371 West Newport Center Dr., Suite 101, Deerfield Beach, FL 33442
Phone 954-428-7333 or 800-423-6464 Fax 954-360-0987
http://www.airdimensions.com
e-mail address -Info@AirDimensions.com

Standard DIA-VAC®

MAINTENANCE AND DISASSEMBLY INSTRUCTIONS

A. General Operations Characteristics

1. The Dia-Vac® normally runs at 130 to 150 degrees F. It is not an indication of trouble if the outer surfaces of the Dia-Vac® Pump or motor are hot to the touch.

2. To check pumping efficiency, employ suitably damped gauges connected so as to dead-end either pressure or vacuum.
NOTE: Check each separately, One or the other port must be open during this test. Use 0-60 PSI pressure gauge and 0-30 inch hg. vacuum gauge, (or mercury manometer.)

Minimum pressure should be 40 PSIG for the .222 eccentric
Minimum vacuum should be 22 inches hg. For the .222 eccentric

3. The Dia-Vac® normally runs quietly, especially when both pressure and vacuum ports are connected into a closed system. An obvious knock or rattle could indicate a problem. Check through "Disassembly and Inspection Procedures" with particular attention to the tightness of all screw fasteners.

4. All bolts and screws except A19005 and A19006 should have one drop of Loctite® Removable 242® (or equivalent) on threads before tightening.

B. Maintenance Procedures

1. Motor oiling

No oiling or other lubrication addition is necessary at all with the Dia-Vac® pumps. Please note the Air driven GAST® motor does require SAE 10 oil lubrication for proper operation.

2. Diaphragm Replacement (See also Maintenance Procedure Below)

a.) Standard EPDM (part 4002 or complete repair kit 11009).

b.) Teflon® coated EPDM (part 4001 or complete repair kit 11005).

c.) Viton® (part 4003 or kit complete repair kit 11007).

d.) Teflon®/Viton® (part 4009 or kit 1 complete repair kit 11006)

e.) All-Teflon® (part 4009 or kit complete repair kit 11011)

The degree of usage and condition of operating temperatures or pressure will determine the rate of replacement of part or parts. For heavy loads (25-75 PSI) and constant operation the diaphragm should be inspected at least every six months.

For lighter loads (0-15 PSI or up to maximum vacuum) the diaphragm may operate successfully for a year or more. The corrosive content of the gas media being pumped can effect the recommended inspection and replacement cycle of the diaphragm.

***Diaphragms require close precision tolerance, therefore only ADI diaphragms should be used as replacements.**

C. Disassembly of Head Section and Service Diaphragm

1. Remove head section by unscrewing the four large bolts. A flat-bladed screw driver may be needed to gently pry the head free of the service diaphragm. **If you have Teflon® coating on the heads use caution not to scratch the surface.

2. The valve body can then be removed by unscrewing the two smaller screws (also accessible on the top of the head section). This part may be freed by gently tapping on these two screws after they have been loosened about three or four turns. When the valve body is removed, check all internal surfaces for any accumulation of dirt. The two valve discs can be wiped clean and replaced as long as they appear unaffected by usage. The valve gasket can be easily removed and should be inspected. As a matter of good practice, the valve discs and valve gasket should be replaced during any routine maintenance check of the head section. A once a year routine procedure is recommended.

3. The service diaphragm is secured by the single screw in its center. Remove this screw with a 5/32" Allen wrench. The diaphragm and its clamping plate should be easily lifted off. Some slight adherence to the metal may occur if the diaphragm has been in use for a long period. Before inserting the diaphragm cap screw (19007) apply a small amount of Teflon® paste or a Teflon® Washer seal (23001), (**do not use Teflon® tape**), then tighten the cap screw.

NOTE: When replacing the service diaphragm, be sure the four projecting studs of the base casting are properly located in the four outer holes provided in the diaphragm before the part is clamped in place. Be sure the diaphragm plate is firmly replaced with its center screw.

D. Disassembly of the Connecting Rod

1. Remove head section and service diaphragm as described in (C) above.

2. Remove the front plate from the face of the base casting by removing the four retaining screws.

3. Using a hex socket wrench, remove the hex head bolt on the connecting rod top surface. This will release the connecting rod cap (3001) which may then be lifted off.

4. The connecting rod assembly on single head units, including the counterweight, is held in place by the counterweight screw. This can be loosened by a 3/16" Allen wrench. The connecting rod assembly may then be slid off the motor shaft. On the dual and quad head units the assembly is held in place by the set screw. This can be loosened by a 1/8" Allen wrench and the assembly may then be slid off the motor shaft.

E. Replacement of the Connecting Rod

1. Replace the connecting rod assembly on the motor shaft, taking care to align set screw or counterweight screw as squarely as possible on the flat of the motor shaft.

2. Replace the connecting rod cap and connecting rod bolt. Tighten this assembly firmly with the hex socket wrench.

3. Put a new Service Diaphragm in place taking care to locate it over the four projecting studs on the top face of the base casting.

F. Related Torque Values / Running Amps

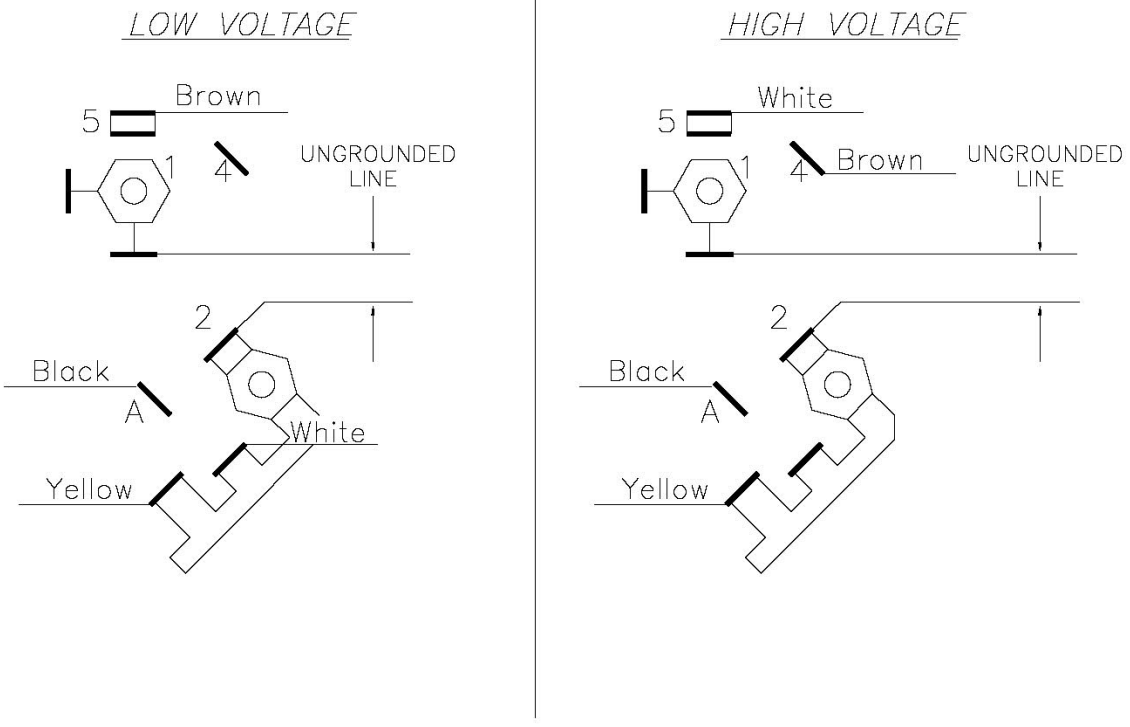
1. Head bolts - 110 inch pounds.

2. Valve body screws and Diaphragm plate screws - 70 inch pounds.

3. Connecting rod bolt - 250 inch pounds.

Run Amps	60Hz	50Hz
115v	2.8 - 3.0	3.4 - 3.6
230v	1.4 - 1.5	1.7—1.8

G. General Purpose Wiring Diagram (p/n-A13001)



Teflon® is a Registered Trademarks of E.I. Du Pont

Loctite® is a Registered Trademark of Henkel Technologies Inc.

Dia-Vac® is a Registered Trademark of Air Dimensions Inc.

GAST® is a Registered Trademark of GAST Mfg. Inc.

Viton® is a Registered Trademark of E.I. Du Pont

Dia-Vac® Diaphragm Sampling Pumps

Single , Double , & Quad Stage Diaphragm Pumps and Compressors

Dia-Vac® gaseous diaphragm pumps and compressors have been used worldwide since 1971. These pumps are built for continuous use and have proven over time to be extremely reliable. The rugged & dependable Dia-Vac® pumps are an ideal choice for the environmental sampling, gas analysis, chemical processing, refinery, gas chromatography, medical devices and automotive emission testing industries.

The Dia-Vac® pump offers a wide variety of eccentric stroke options which allow you to customize the pump to meet your application requirements while at the same time increasing the life of both the diaphragm and the bearings. Every Dia-Vac® pump is factory tested to performance specs prior to shipment. ADI's Standard Dia-Vac® pumps are available in a wide variety of options to suit almost any application you require. Requests for custom pump applications are always welcome.

Features:

- Performance range 0-150 LPM , 0-29.9" Hg. 0-75 PSIG
- Leak Free , Oil Free and contamination free sampling.
- High Quality
- Built for continuous reliable operation
- Extremely durable with low maintenance requirements
- Fast Shipments , emergency shipments within 24 hours
- Customized options available

Wetted Parts:

Aluminum, 316 Stainless Steel, Hastelloy C-(all available w/ Teflon® coating), Solid Teflon®, and SilcoSteel® 316 ss.

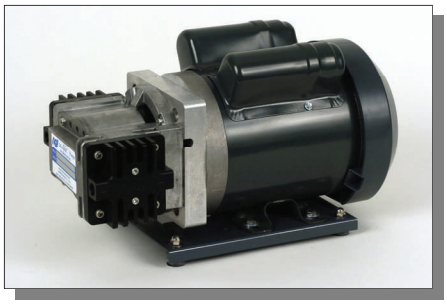
Motor Options:

General Purpose, Totally Enclosed Fan Cooled (TEFC), Explosion Proof-UL, CSA, ATEX, Brush DC and Air Driven.

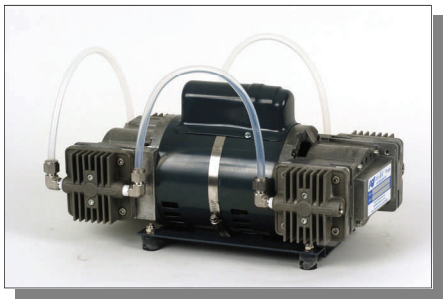
Additional Pump Options:

- **Heated Head** - Prevents condensation buildup in the pump head. The Heated Head Dia-Vac® is designed to transport gas samples up to a maximum of 400°F(200°C).
- **Elevated and Extended Head Options -** an excellent choice allowing you to place the head inside a hot oven (up to 400°F) while the motor remains at ambient temperatures.
- **High Vacuum** - available in either Double or Quad Stage configuration with ultimate vacuum of 29.5" Hg in Double or 29.92" Hg for the Quad Stage Dia-Vac®.
- **Double Diaphragm**—This option allows for increased safety when transporting expensive or extremely hazardous gases. Should the primary diaphragm fail, the secondary diaphragm keeps the sample media intact
- **Heavy Load motor options** - ADI can offer a variety of options for applications requiring starting under load conditions.

R221-AT-AA1



R222-BT-CA1



RVA4-FT-AA1

www.airdimensions.com ***"We Pass Your Gas"***

Standard Dia-Vac® Performance

ADI's Dia-Vac® Pumps can Pass your Gas at the Speed of Need! Due to an increased interest in reducing the pressure, vacuum, and/or flow on the Dia-Vac® pumps , our engineers have designed a modified eccentric design. This allows you to customize your Dia-Vac® pump to meet your application requirements while at the same time increasing the diaphragm and bearing life. The normal eccentric size is ..222 on Standard Dia-Vac® Pumps. Please see **"How to Specify and Order Pumps at ADI"** (below) or call the factory direct at **954-428-7333** or **1-800-423-6464** for more information.

Standard Flow Averages

Model #	Eccentric	PSIG	Bar	InHg	Mbar	CFM	LPM
R061	.060	5.7	.39	8.6	291	.34	9.7
R081	.080	8.4	.58	11.6	393	.45	12.7
R101	.100	10.4	.72	13.6	461	.47	13.3
R121	.120	15.0	1.04	16.1	545	.56	15.8
R151	.150	22.0	1.51	18.8	637	.65	18.6
R181	.180	33.0	2.27	21.4	725	.75	21.2
R201	.200	42.1	2.90	22.4	759	.82	23.4
R221 (Std.)	.222	53.0	3.66	24.0	812	.92	26.0
R251	.250	60.0	4.14	24.5	830	.97	27.4
R271	.275	70.0	4.83	25.4	860	1.06	30.0
R221 (HS)	.222 (High Speed)	59.7	4.10	23.8	805	1.34	38.2
R222 (para/series)	.222 (double)	59.7	4.10 / 70+	24.3 / 28.5	819 / 965	1.73 / .93	49.1 / 26.3
RVA2 (series)	High-Vac Double	N/A	N/A	29.5	998	1.0	28.0
R222 (para/series)	.222 (double High Speed)	67.5 / 100	4.65	24.1 / 28.6	816 / 968	2.57 / 1.29	72.7 / 36.5
R224 (para/series)	.222 (Quad)	55 / 100+	3.8 / 7.0+	24 / 29.5	812 / 998	3.5 / .95	100 / 27
RVA4 (Series)	High Vac Quad	N/A	N/A	29.90	1013	1.15	32.5

- Continuous pressure in excess of 75 PSI should be avoided due to decreased diaphragm and bearing life.
- Test results are approximate. These test results are for reference only, and are intended to help provide information to the user when determining which pump to buy.
- Reduce flow 17% for 50 Hz.

How to Specify and Order Pumps from Air Dimensions, Inc.

CAPACITY			-	WETTED MATERIALS		-	POWER			-	OPTIONAL
STYLE	ECC.	HEADS		HEAD	DIAPHRAGM		TYPE	VOLTS	Hz		OPTIONS
R=Std.	27	1		A=Alum	E=Encapsulated*		A=Gen. Pur.	A=115	0=N/A		A= 416 ss Valve Discs
	25	2		B=Alum (TefCo)	F=Teflon/Viton		B=Gen Pur. HS	B=230	1=60 1Ph		B= Head at Both Ends
	22	3		F=316ss	N=EPDM		C= TEFC	C=115/230	2=50 1Ph		C= Power Cord
	20	4		G=316ss (TefCo)	P=All Teflon		D= Air Driven	D=220/380	3=60 3Ph		D= Double Diaphragm
	18	5		H=Hast C	*T=Tef/EPDM		E= XP (Gr CD)	E=230/460	4=50 3Ph		E= Extended Head
	15	6		J=Hast C (TefCo)	V=Viton		G= XP/ATEX/IIC	F= 460	5=50/60 1Ph		L=Elevated Head
	12	8		L=SilcoSteel			J=Brush DC	G=575	6=50/60 3Ph		M=Heated w/K Thermocouple
	10			T=Teflon			M= TEFC 1/2 HP	H=12(DC)			M2=Heated 65° Thermostat
	08						N= XP (Gr CD)	J=24(DC)			M3=Heated 100° Thermostat
	06						R= XP (Gr. BCD UL)	K=90			M4=Heated 140° Thermostat
							X= Not Applicable	X=N/A			M5=Heated 163° Thermostat
											M6=Heated 200° Thermostat
											M8=Heated Steam
											M9=Heated Bi-Metallic
											V= Valox Spacer

*Solid Teflon only

CAPACITY			-	WETTED MATERIALS		-	POWER			-	OPTIONAL
STYLE	ECC.	HEADS		HEAD	DIAPHRAGM		TYPE	VOLTS	Hz		OPTIONS
RVA=HighVac		2		F=316 ss	T= TeflonEPDM		Same as Above				C=Power Cord
		4			P=All Teflon						

EXAMPLE:

R22I-FT-AAI : SINGLE STAGE GENERAL PURPOSE DIA-VAC® W/ SS HEADS, .222 ECC., TFE/EPDM DIAPHRAGM, 115V/60HZ MOTOR

Note that ADI will always attempt to accommodate any custom application that you may have. Please contact the factory for more information.

1371 West Newport Ctr. Drive
Suite 101
Deerfield Beach , FL
33442

Phone: 954-428-7333 • 800-423-6464
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web: www.airdimensions.com

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