

HE POWER PACKS



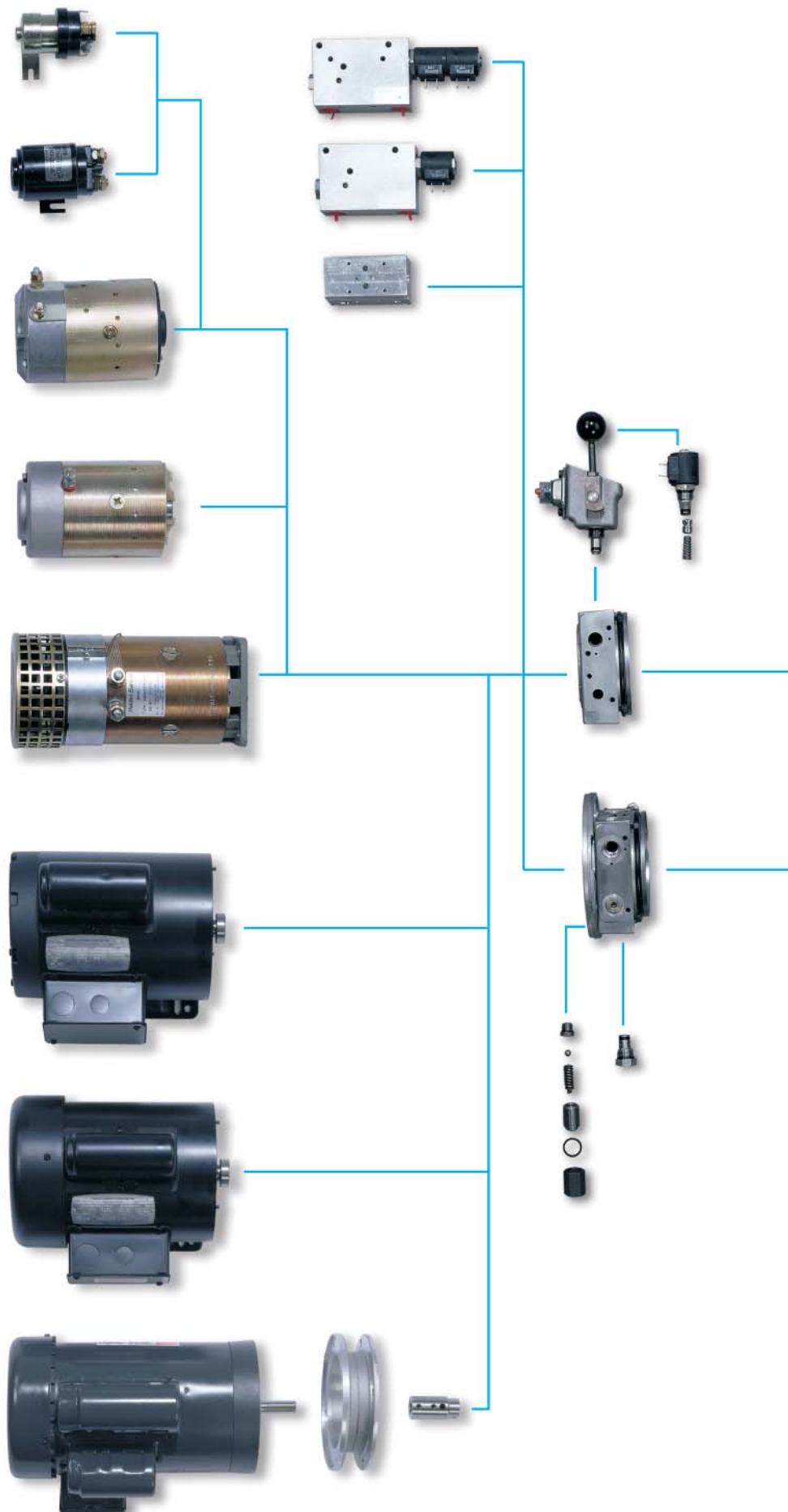
***A complete, cost-effective
and flexible system***

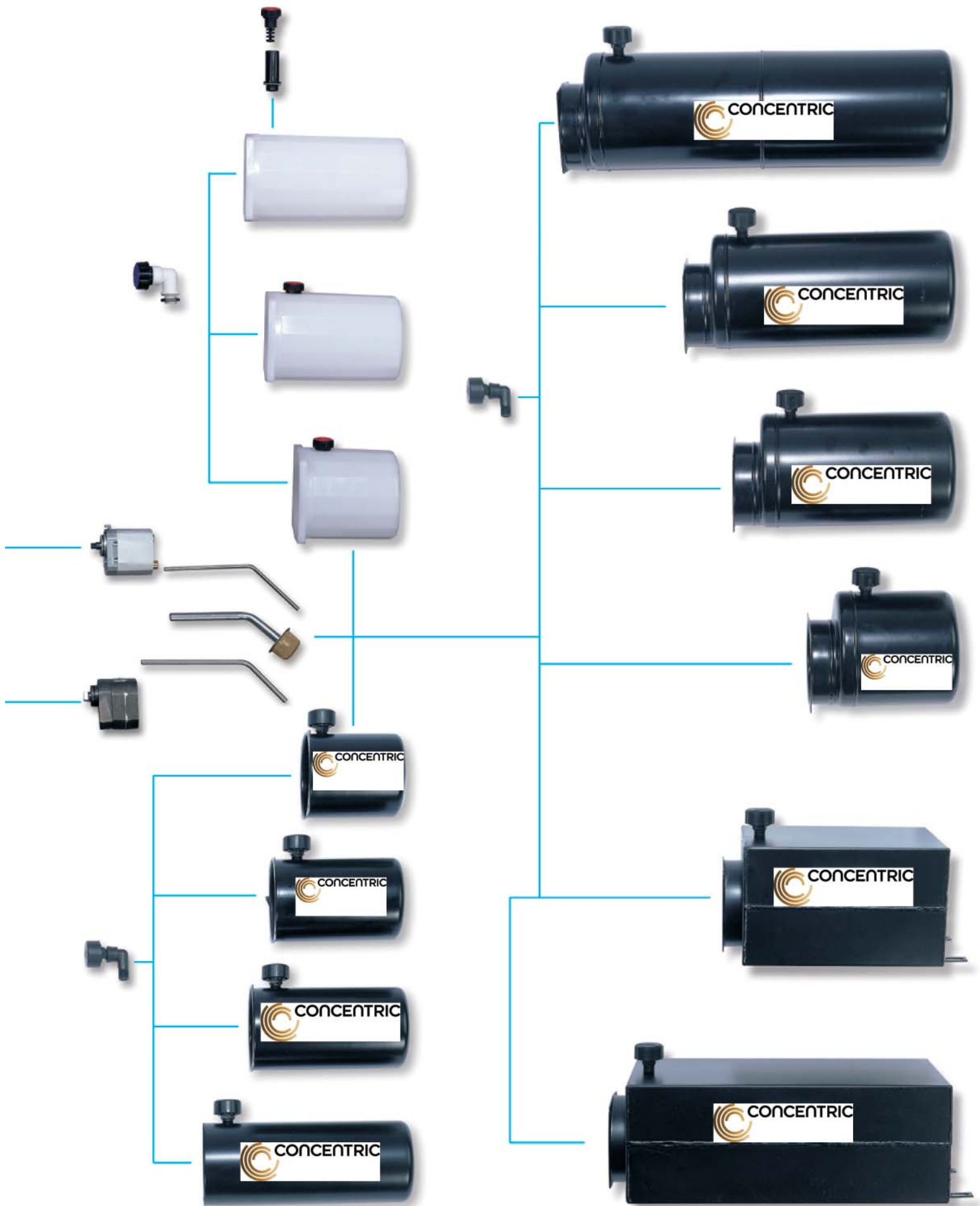
HE Power Packs allow you to build up hydraulic units simply and to your precise specifications. The system offers many advantages. It is flexible and lends itself readily to different applications.

It is very cost-effective, because you no longer need to hold complete units in stock. You build up the required unit from a small number of standard components.

Other advantages include low power consumption and low noise levels. High quality down to the finest detail ensures a long service life.

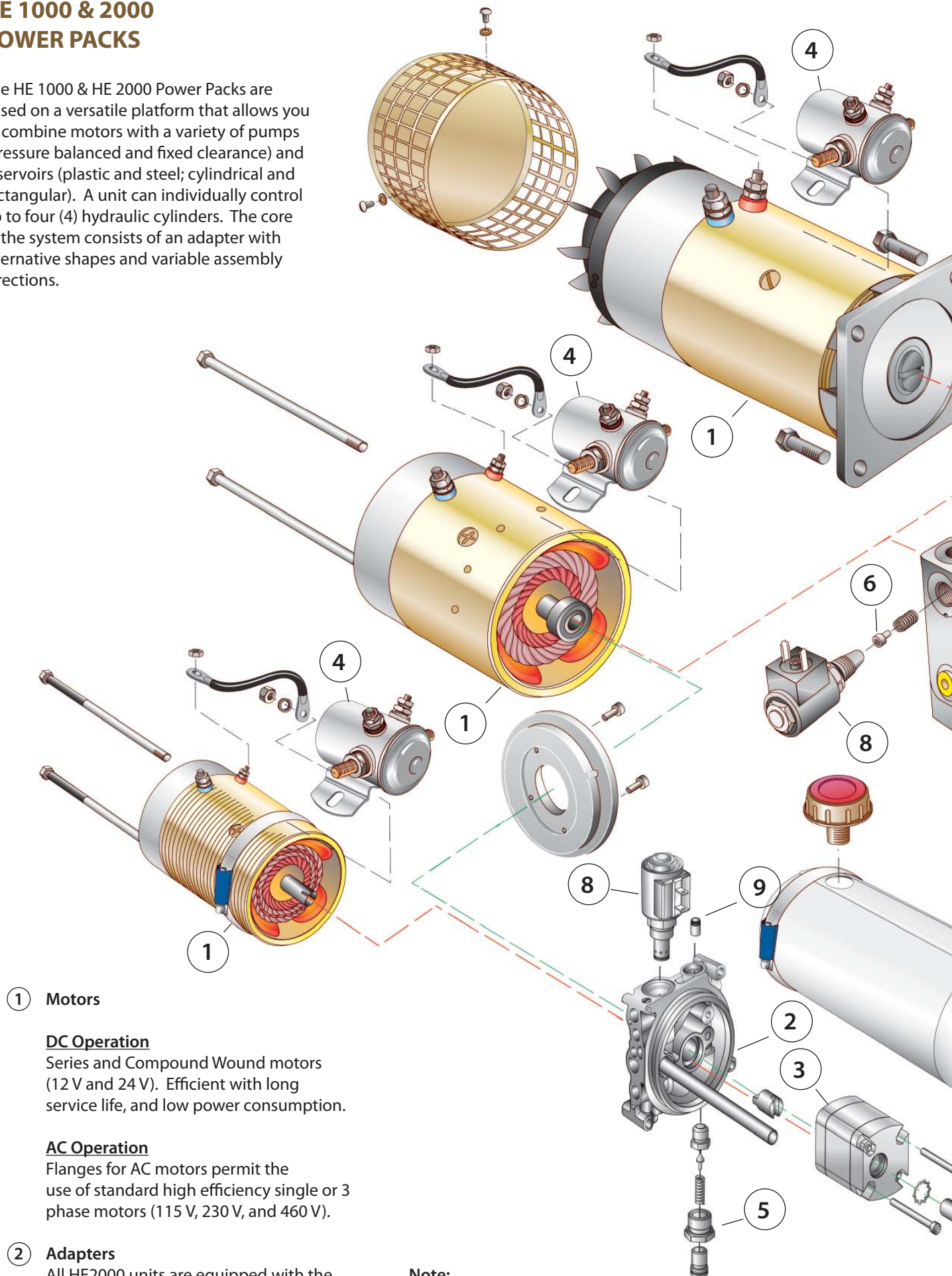
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HE 1000 & 2000 POWER PACKS

The HE 1000 & HE 2000 Power Packs are based on a versatile platform that allows you to combine motors with a variety of pumps (pressure balanced and fixed clearance) and reservoirs (plastic and steel; cylindrical and rectangular). A unit can individually control up to four (4) hydraulic cylinders. The core of the system consists of an adapter with alternative shapes and variable assembly directions.



① Motors

DC Operation

Series and Compound Wound motors (12 V and 24 V). Efficient with long service life, and low power consumption.

AC Operation

Flanges for AC motors permit the use of standard high efficiency single or 3 phase motors (115 V, 230 V, and 460 V).

② Adapters

All HE2000 units are equipped with the same adapter size as shown above.

Note:

The HE1000 adapter not shown here.

3 Pumps

Pressure-balanced W Series (.24 to 5.7 cc per rev. / .010 to .348 in.³ per rev.) and fixed clearance GC Series (1.06 to 6.36 cc per rev. / .065 to .388 in.³ per rev.) gear pumps of our own design are extremely efficient, with low noise.

4 Start Switches

12 VDC and 24 VDC, 3-pole and 4-pole, standard duty and heavy duty; 1 & 3 PH, 115/230/460 VAC start switches with high IP protection class and silverplated contacts meet tough demands for a long service life.

5 Relief Valves

Cartridge-style relief valves meet tough demands for dependability and life expectancy.

6 Constant-Flow Regulator

A built-in pressure-compensated flow regulator can be added, providing pressure compensated lowering speed between 1 and 4 gpm regardless of load.

7 Oil Reservoir

The standard unit can be equipped with a translucent plastic reservoir with (.13 to 1.05 gal. / .5 to 4.0 ltr) usable volume or a steel reservoir with (.18 to 4 gal. / .7 to 15.2 ltr.) usable volume.

5

2

3

9

7

9 Check Valve

High performance cartridge check valve is standard.

8 Valves

Screw-in cartridge valves with a standard cavity are available in 2-way/2-position, 3-way/2-position, 3-way/3-position or 4-way/2-position versions. Cetop 2, Cetop 3, and additional cartridge valve blocks are available for up to 4 individual functions.

The following pages contain more information on the HE power range. If you have any questions, please do not hesitate to contact our local sales office or distributor, or any of our factories.



THE POWER OF HE

Concentric is one of the world's leading manufacturers of hydraulic power packs. In recent years, we have focused on strategically important markets, and the result is a new series of high performance hydraulic power packs. The HE series represents a further development of the universal technical platform developed by Concentric, worldwide.

HE Power Packs are optimized for demanding applications. They are designed for use in trucks operating in harsh climates, or for heavy materials handling with long service intervals. Applications that demand high performance and superb quality. We have also prioritized customers' wishes for greater flexibility and better cost-efficiency.

The result is an extremely versatile platform, which uses standard components and can handle most of the applications the market demands. It lets you cut your stock of hydraulic components down to a minimum and radically reducing the need for specially developed components.

HE Power Packs make it easier to build short series of special applications cost efficiently.

Concentric is an innovator in flow control and fluid power, supplying proprietary systems and components for trucks, buses and industrial vehicles, worldwide. With 1,156 employees and yearly sales exceeding 1,977 million Swedish Kronor, Concentric AB is listed on the Stockholm Stock Exchange (www.concentricAB.com).

The company operates globally and enjoys global advantages: secure supply lines, close contact with customers on development and a universal technical platform that will always fit your product. No matter where in the world it is manufactured.

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12 VDC Single Terminal Series Wound Motor	
12 VDC Double Terminal Series Wound Motor	
24 VDC Double Terminal Series Wound Motor	
24 VDC Single Terminal Series Wound Motor	
24 VDC Double Terminal Low Speed Compound Wound Motor	
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Recommended fluids, min. and max. temperatures, and fluid cleanliness as well as technical information, formulas and symbols. Also shown are Supplemental Bolt Kits for Stock.	
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HE 1000 Adaptors and Valves

● HE 1000

The HE 1000 is designed for light duty applications using the 3" diameter motor, or for heavier duty applications with the 4.5" diameter motor. It's smaller envelope size, when compared to it's big brother, the HE 2000, allows further flexibility for your application.

The HE 1000 power pack can be used in a Lift-Hold-Lower circuit, a customer supplied custom valve block package or a 2-position 4-way valve circuit.

The HE 1000 adaptor includes a check valve, relief valve and most models can be equipped with a pressure compensated return flow control.

In addition to both vertical and horizontal reservoirs, the HE1000 also offers weather protection boots for the motor and start switch terminals, and a single acting pendant for remote control.

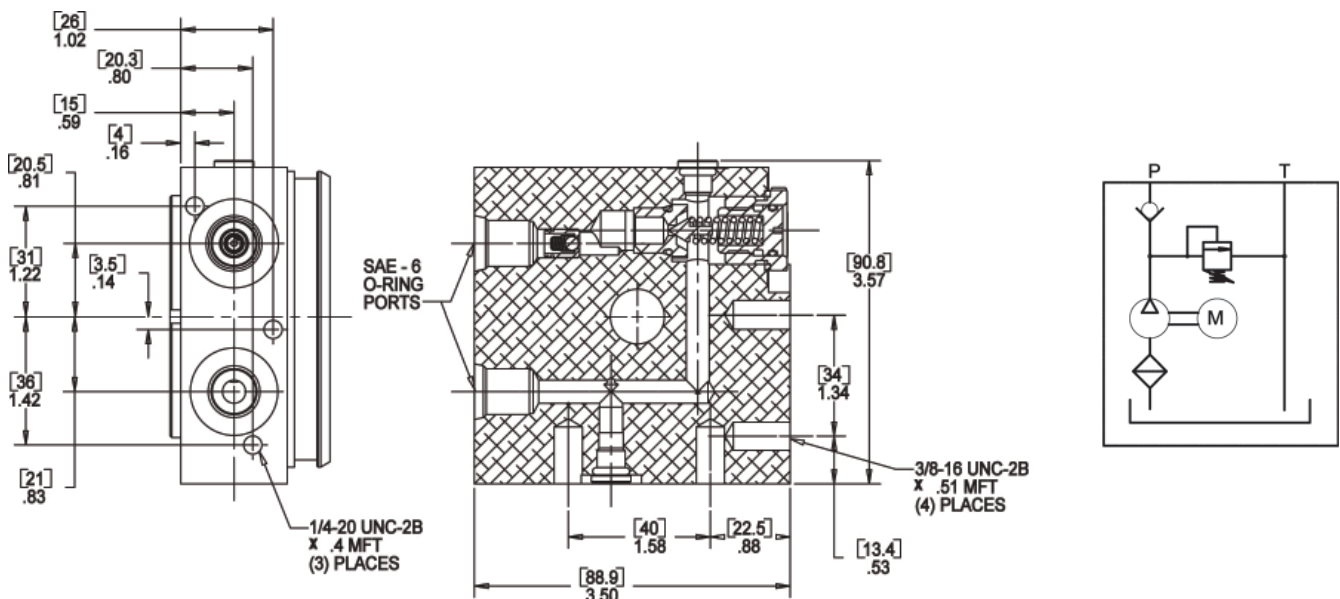
Please note that adaptors are shown from the reservoir side on the following pages.

HE 1000 Adaptors

NA000

● NA000

Adaptor prepared for pressure and return (P & T) circuit or a customer supplied custom valve block.



HE 1000 Adaptors (Cont.)

NE012 & NE024 / NO012 & NO024

- NE012

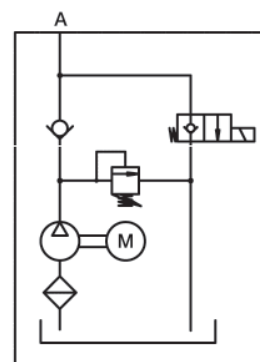
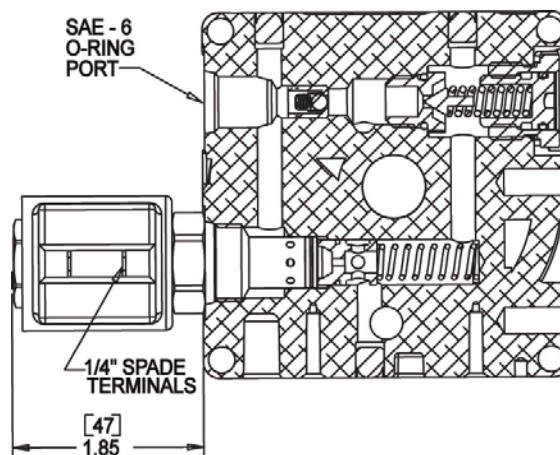
- NE024

Adaptor prepared for lift-hold-lower (LHL) applications, using 12 or 24 VDC solenoid cartridge valves.

- NO012

- NO024

Same as shown, except with integrated manual override in the solenoid cartridge valve.

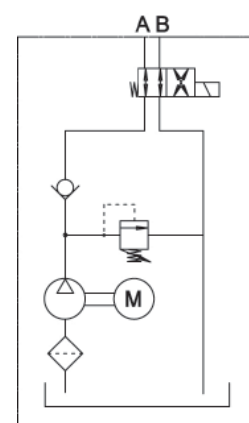
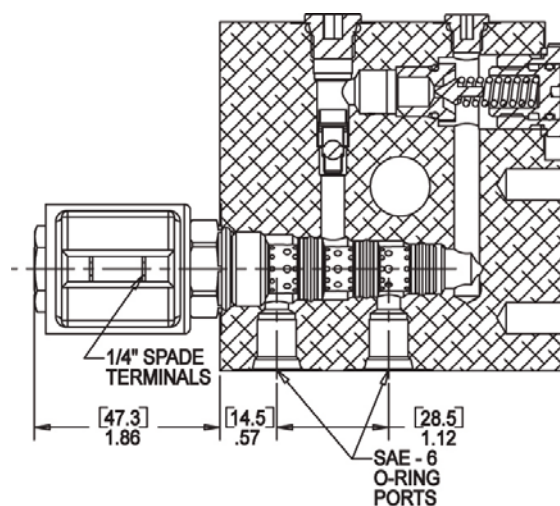


NL012 & NL024

- NL012

- NL024

Adaptor prepared for 2-position 4-way solenoid cartridge valve integrated in adaptor. Adaptor also tapped and machined for a customer supplied custom manifold with pilot operated checks.



HE 2000 Adapter/Circuit Options

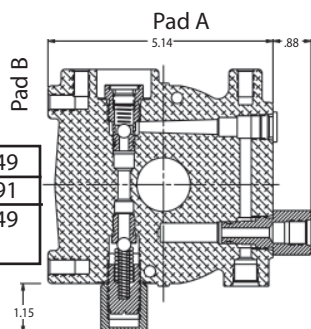
Each of the adapter options shown on the following pages provide the complete circuit indicated by the corresponding schematic. The order codes at the rear of this catalog provide the vehicle for specifying the coil voltage, flow control set-

tings, relief valve settings and a number of other options. The manifold adapters shown come with the manifold for the circuit indicated. All adapters, manifolds, coils, etc. are also available as stand alone kits which are easily assembled.

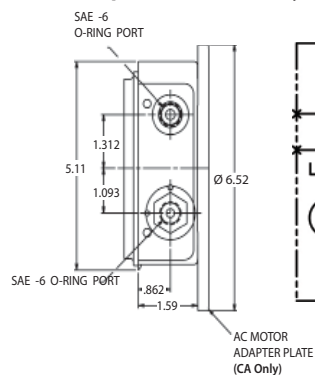
BA (DC Version) OR CA (AC Version) Adapter, P & T ports, Relief Valve & Check Valve

Adapter kit	1303649
Port Plug	1300191
AC Motor Adapter Kit (CA only)	1303549

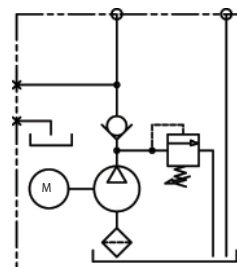
View from Reservoir End



Top View



Hydraulic Schematic

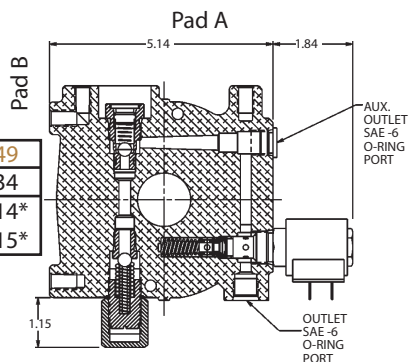


BB (DC Version) Adapter, Normally Closed Solenoid Lowering Valve

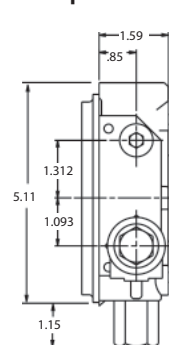
Adapter kit	1303649
Solenoid Release valve kit	1303534
BB012 12 VDC Solenoid kit	1300914*
BB024 24 VDC Solenoid kit	1300915*

* Must order (1) 12 VDC or (1) 24 VDC.

View from Reservoir End

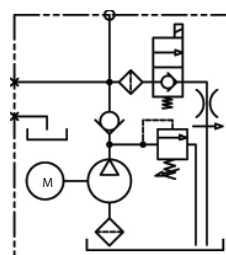


Top View



Hydraulic Schematic

Shown with optional flow control.
See Model Code V for flow control options - page 26.

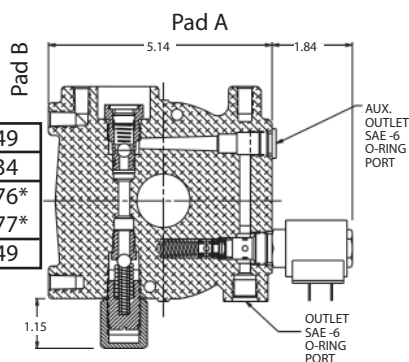


CB (AC Version) Adapter, Normally Closed Solenoid Lowering Valve

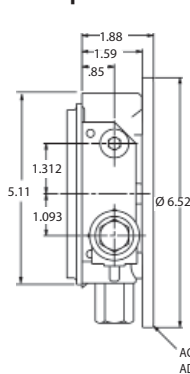
Adapter kit	1303649
Solenoid Release valve kit	1303534
CF115 110 VAC Solenoid kit	1303576*
CF230 230 VAC Solenoid kit	1303577*
AC Motor Adapter kit	1303549

* Must order (1) 115 VAC or (1) 230 VAC.

View from Reservoir End

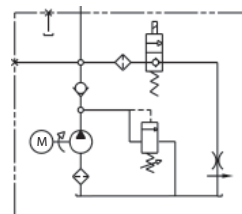


Top View



Hydraulic Schematic

Shown with optional flow control.
See Model Code V for flow control options - page 26.

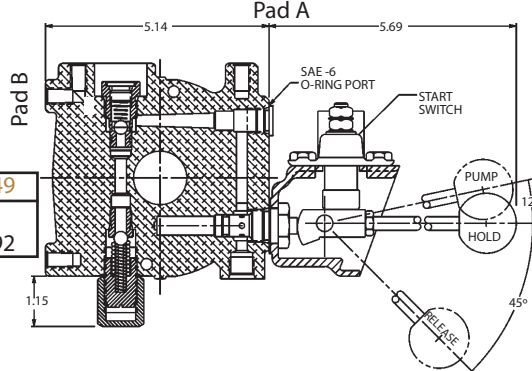


BE Manual Normally Closed Lowering Adapter with DC Contactor

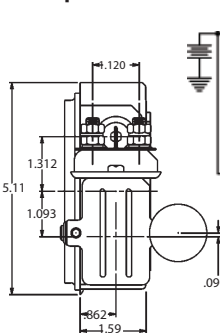
Adapter kit	1303649
Manual Release valve kit w/ pilot solenoid contactor	1300192

NOTE: Motor solenoid start switch still required.

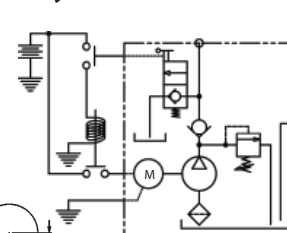
View from Reservoir End



Top View



Hydraulic Schematic

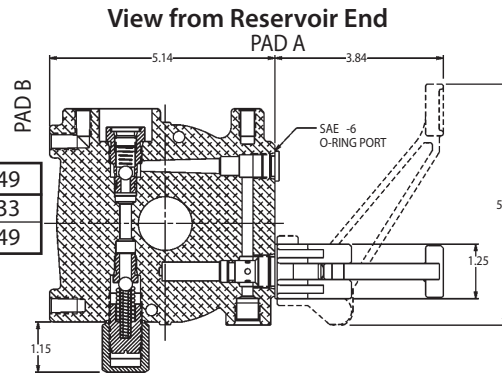


HE 2000 Adapter/Circuit Options (continued)

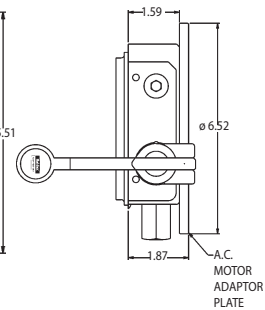
CE

AC Manual Normally Closed
Lowering Valve Adapter

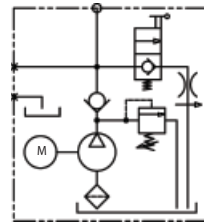
Adapter kit	1303649
Manual Release valve kit	1303533
AC Motor Adapter kit	1303549



Top View



Hydraulic Schematic



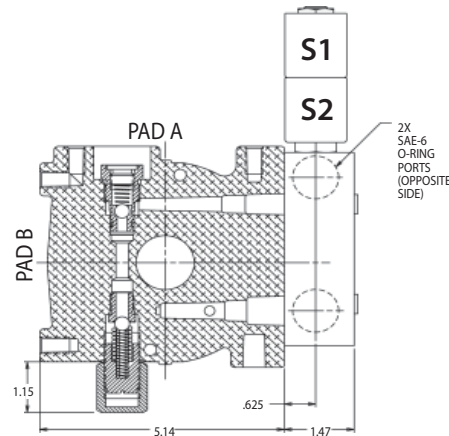
BF

Manifold Adapter w/3-position, 4-way
Valve (motor spool) (DC Version)

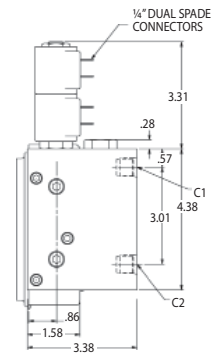
Adapter kit	1303650
Manifold kit	1300866
Motor Spool Valve	1303382
Plug (P. O. Check cavity)	1303540
BF012 12 VDC Solenoid kit	1300914*
BF024 24 VDC Solenoid kit	1300915*

* Must order (2) 12 VDC or (2) 24 VDC.

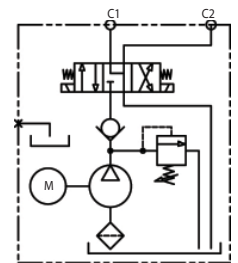
View from Reservoir End



Top View



Hydraulic Schematic



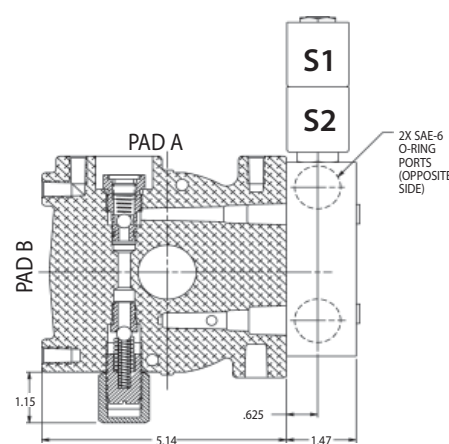
BH

Manifold Adapter w/3-position, 4-way
Valve (motor spool)
(DC Version w/Double P.O. Check)

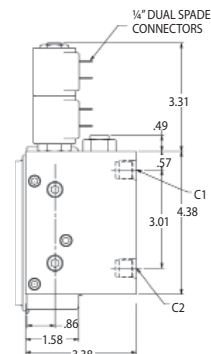
Adapter kit	1303650
Manifold kit	1300866
Motor Spool Valve	1303382
Double P. O. Check Valve	1303538
BH012 12 VDC Solenoid kit	1300914*
BH024 24 VDC Solenoid kit	1300915*

* Must order (2) 12 VDC or (2) 24 VDC.

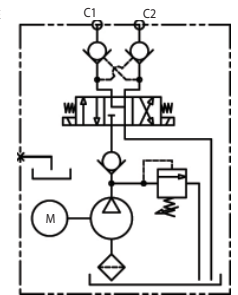
View from Reservoir End



Top View



Hydraulic Schematic



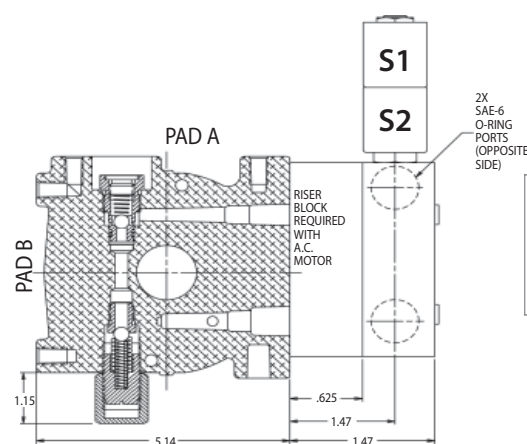
CF

Manifold Adapter w/3-position, 4-way
Valve (motor spool) (AC Version)

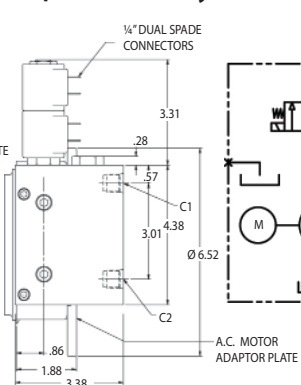
Adapter kit	1303650
Manifold kit	1300866
Motor Spool Valve	1303382
Plug (P. O. Check cavity)	1303540
CF115 115 VAC Solenoid kit	1303576*
CF230 230 VAC Solenoid Kit	1303577*
Riser block (required for AC units w/manifolds)	1300855
AC Motor Adapter kit	1303549

* Must order (2) 115 VAC or (2) 230 VAC.

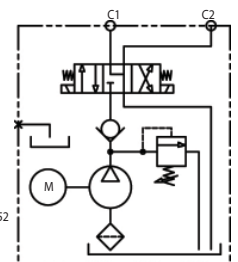
View from Reservoir End



Top View



Hydraulic Schematic



HE 2000 Adapter/Circuit Options (continued)

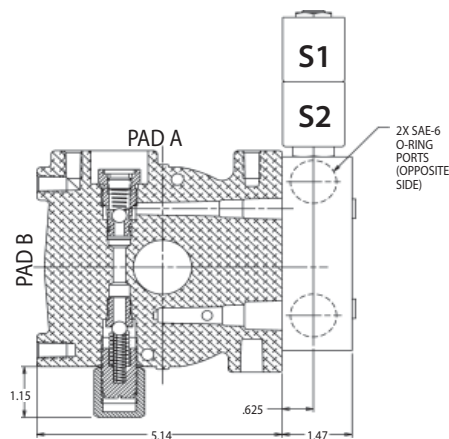
BJ

Manifold Adapter w/3-position, 4-way Valve (tandem center spool) (DC Version)

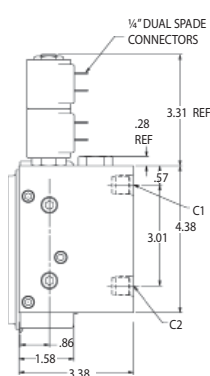
Adapter kit	1303650
Manifold kit	1300866
Tandem Center Valve	1303530
Plug (P. O. Check cavity)	1303540
BJ012 12 VDC Solenoid kit	1300914*
BJ024 24 VDC Solenoid kit	1300915*

* Must order (2) 12 VDC or (2) 24 VDC.

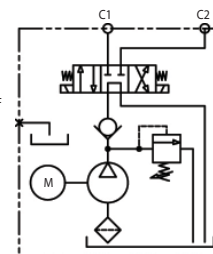
View from Reservoir End



Top View



Hydraulic Schematic



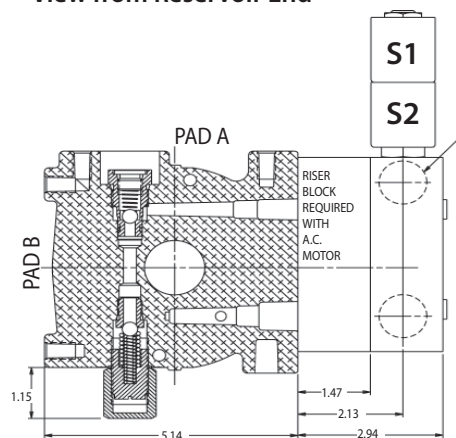
CJ

Manifold Adapter w/3-position, 4-way Valve (tandem center spool) (AC Version)

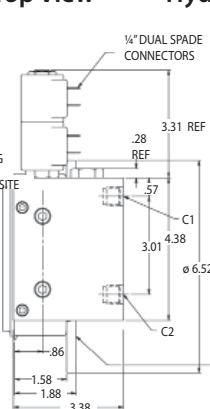
Adapter kit	1303650
Manifold kit	1300866
Tandem Center Valve	1303530
Plug (P. O. Check cavity)	1303540
CJ115 115 VAC Solenoid kit	1303576*
CJ230 230 VAC Solenoid kit	1303577*
Riser block (required for AC units w/manifolds)	1300855
AC Motor Adapter kit	1303549

* Must order (2) 115 VAC or (2) 230 VAC.

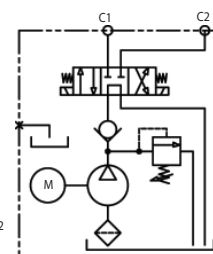
View from Reservoir End



Top View



Hydraulic Schematic



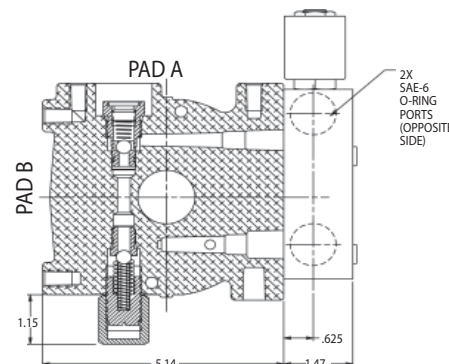
BR

Manifold Adapter w/Solenoid Operated, 2-position, 4-way Valve (DC Version)

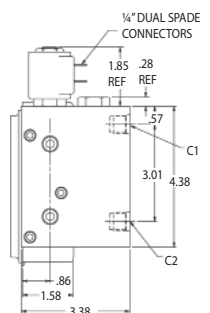
Adapter kit	1303650
Manifold kit	1300866
Normally Open Valve	1303529
Plug (P. O. Check cavity)	1303540
BR012 12 VDC Solenoid kit	1300914*
BR024 24 VDC Solenoid kit	1300915*

* Must order (1) 12 VDC or (1) 24 VDC.

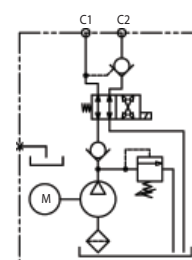
View from Reservoir End



Top View



Hydraulic Schematic



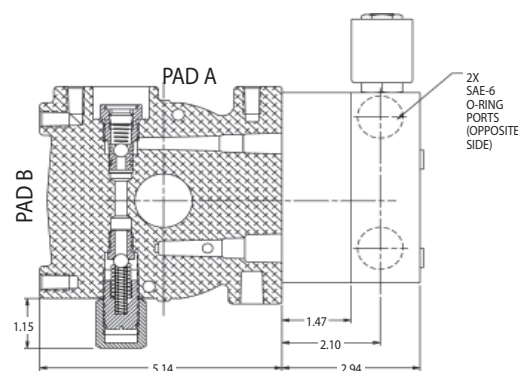
CR

Manifold Adapter w/Solenoid Operated, 2-position, 4-way Valve (AC Version)

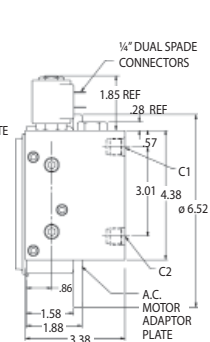
Adapter kit	1303650
Manifold kit	1300866
Normally Open Valve	1303529
Plug (P. O. Check cavity)	1303540
CR115 115 VAC Solenoid kit	1303576*
CR230 230 VAC Solenoid kit	1303577*
Riser block (required for AC units w/manifolds)	1300855
AC Motor Adapter kit	1303549

* Must order (1) 115 VAC or (1) 230 VAC.

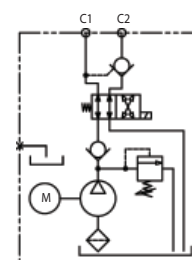
View from Reservoir End



Top View



Hydraulic Schematic



HE 2000 Adapter/Circuit Options (continued)

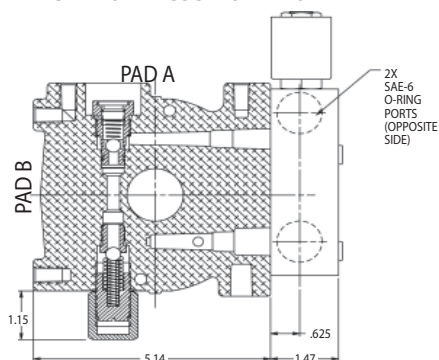
BS

Manifold Adapter w/Solenoid Operated,
2-position, 4-way Valve
(DC Version w/P.O. Check)

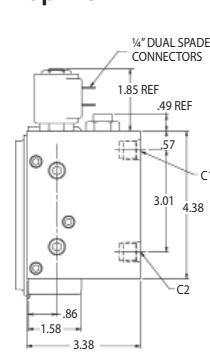
Adapter kit	1303650
Manifold kit	1300866
Normally Open Valve	1303529
BS012 12 VDC Solenoid kit	1300914*
BS024 24 VDC Solenoid kit	1300915*
Single P.O. Check Valve	1303539

* Must order (1) 12 VDC or (1) 24 VDC.

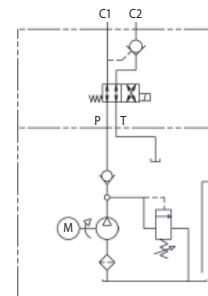
View from Reservoir End



Top View



Hydraulic Schematic



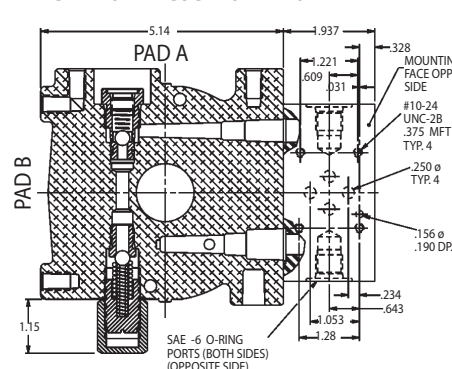
DA

Manifold Adapter w/Single D03 Valve

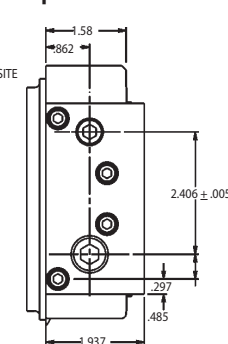
Manifold (DC Version)

Adapter kit	1303650
D03 Manifold kit	1300854
Bolt Kit	1300865

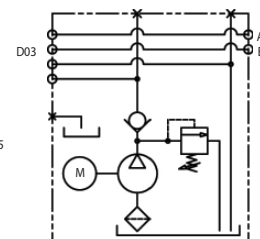
View from Reservoir End



Top View



Hydraulic Schematic



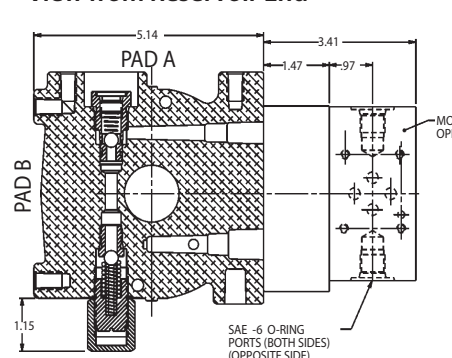
DB

Manifold Adapter w/Single D03 Valve

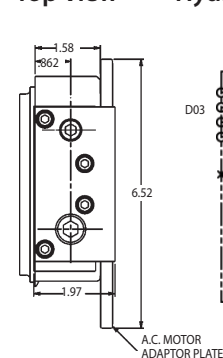
Manifold (AC Version)

Adapter kit	1303650
Primary D03 Manifold kit	1300854
Bolt Kit	1300857
Riser block (required for AC units w/manifolds)	1300855
AC Motor Adapter kit	1303549

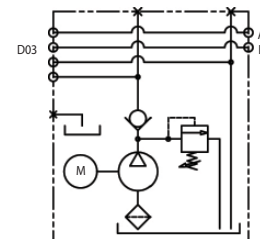
View from Reservoir End



Top View



Hydraulic Schematic



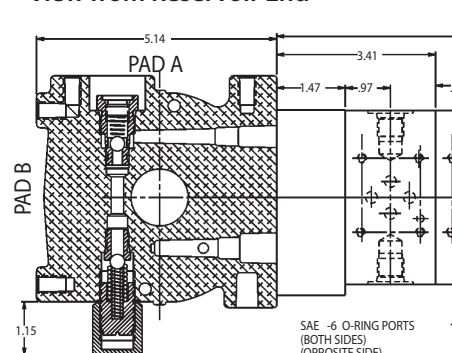
DC

Manifold Adapter w/Double D03 Valve

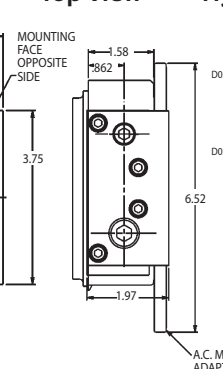
Manifold (AC Version Only)

Adapter kit	1303650
Primary D03 Manifold kit	1300854
Primary D03 Manifold kit	1300854
Bolt Kit	1300858
Riser block (required for AC units w/manifolds)	1300855
AC Motor Adapter kit	1303549

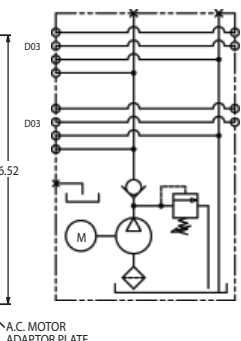
View from Reservoir End



Top View



Hydraulic Schematic



DM

Manifold Adapter (DC Version)

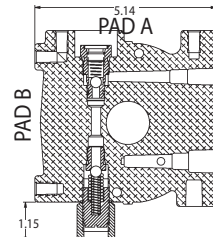
Adapter kit	1303650
-------------	---------

AM

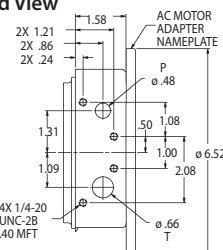
Manifold Adapter (AC Version)

Adapter kit	1303650
AC Motor Adapter Kit	1303549

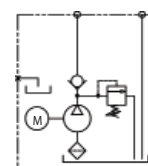
View from Reservoir End



Manifold View



Hydraulic Schematic



HE 1000 PUMPS AND DC MOTORS

The HE series is equipped with motors for 12 or 24 VDC. These **wound field** motors provide extremely high power output and meet tough load requirements. A thoughtful basic design and long-lasting carbon brushes cut down on maintenance

requirements. All motors are manufactured by Concentric to ensure maximal system optimization, performance and quality.

MAKE THE OPTIMAL CHOICE OF PUMP AND MOTOR

On the following pages, you will find our range of DC motors and pumps.

Important parameters to consider in choosing the correct unit are flow in l/min, pressure in bars, and duty cycle. In some cases, allowable amp consumption is a factor too, due to restricted battery capacity.

Our curves permit easy comparison at a constant voltage measurement.

How to read the curves:

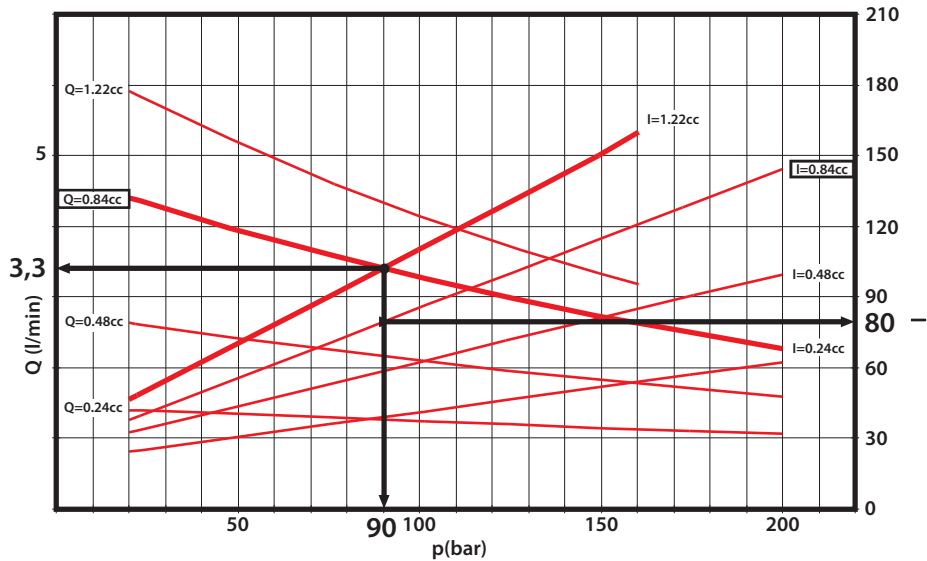
When pressure and flow are determined, the amperage can be read from the pump/motor curve. The amperage is then transferred to curve 2.

The amperage corresponds to an S2 and an S3 value. These values represent two ways of calculating duty capability.

S2 is the number of minutes a unit can operate at a certain workload before reaching the maximum allowable temperature. After this, the unit must cool down until the motor temperature is less than 2°C from the ambient temperature before the same S2 value can be applied again.

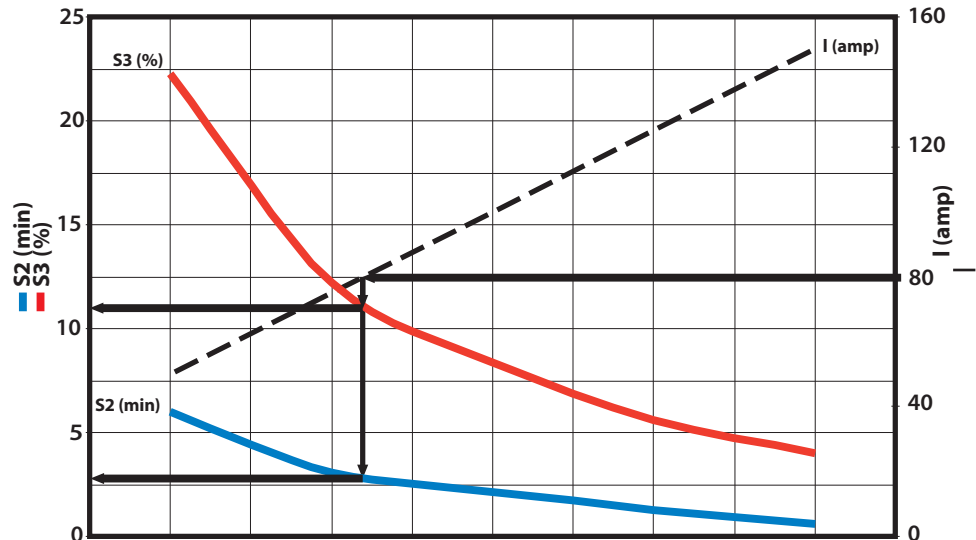
S3 is the maximum time in % per 5 minute period that a unit can work at a certain pressure/workload. For example, an S3 value of 11% = 33 sec. for each 5 min. period, over and over again.

Pump motor



Example: 3,3 l/min at 90 bar and 80 amp on pump motor curve gives S2 = 3 min and S3 = 11% at corresponding motor curve.

12MG32, Ø 80mm

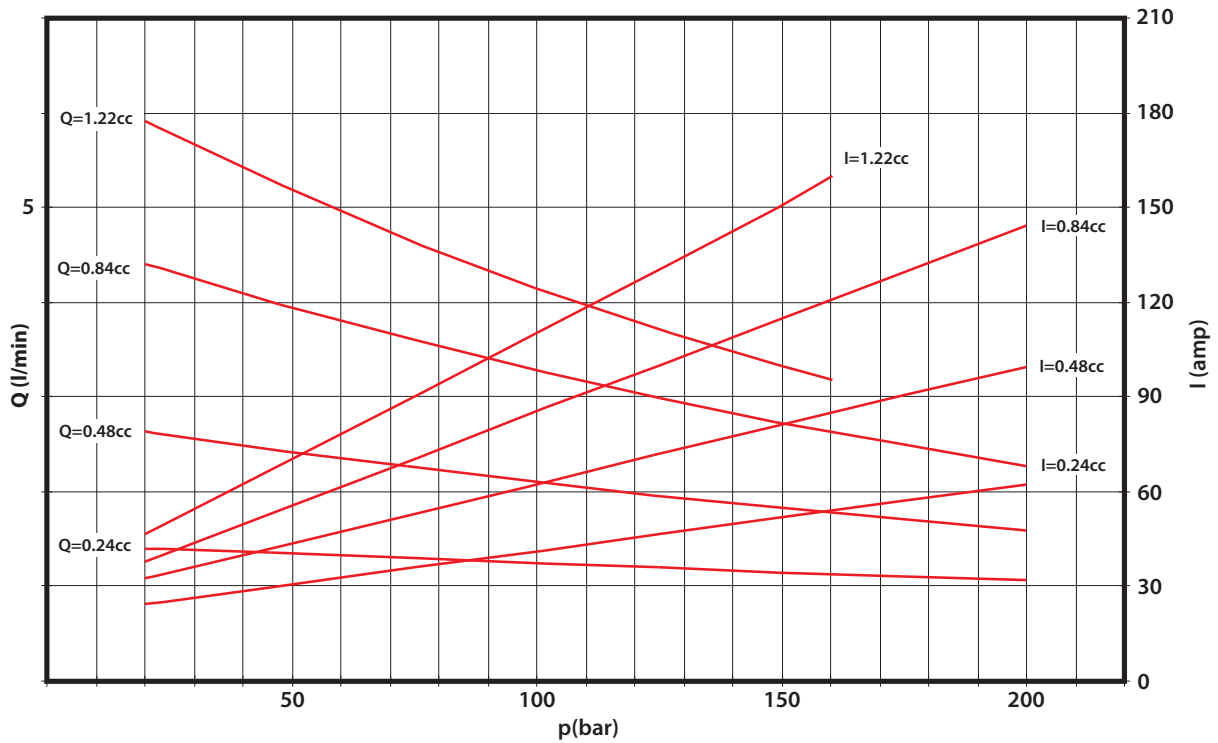


HE 1000 Performance Information

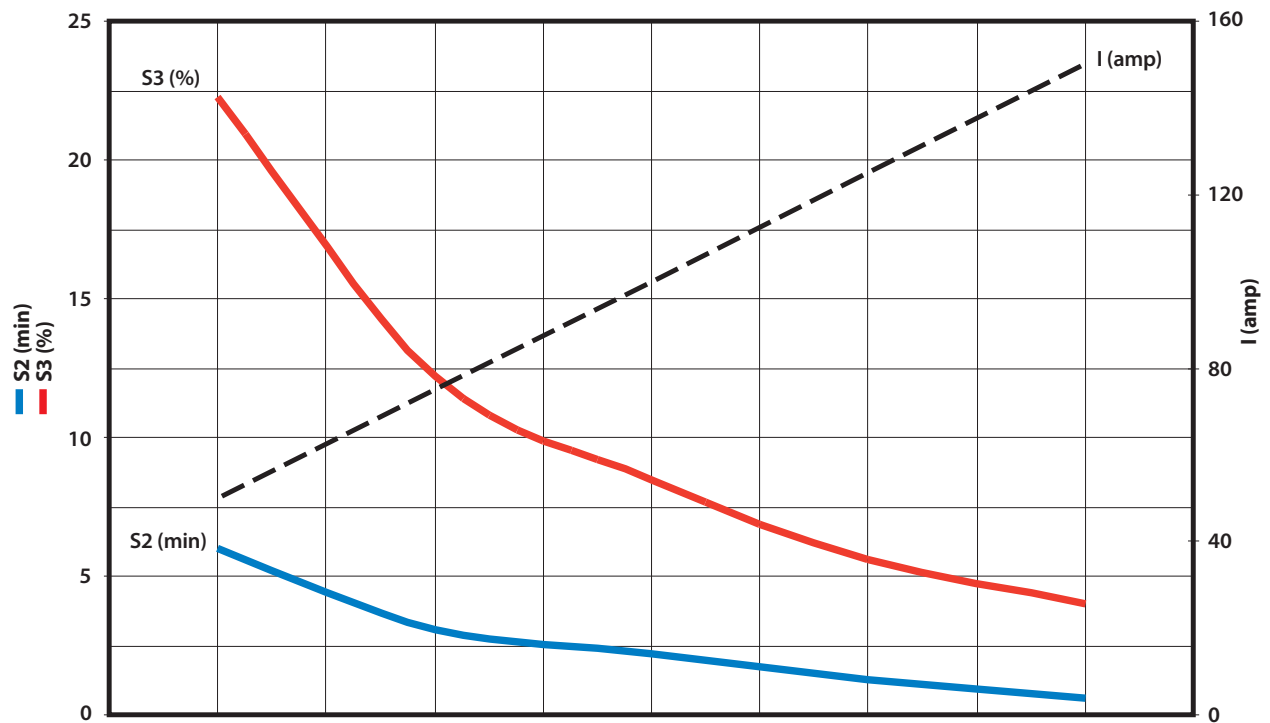
HE 1000 MG Pump/Motor w/ 12 VDC Ø 80 mm Motor

Viscosity 32 cSt at 40°C. Voltage 12 VDC constant

Code	Pump
02	0,24cc
05	0,48cc
08	0,84cc
12	1,22cc



Code	Motor
10	12MG32-HE
11	12MG32THE

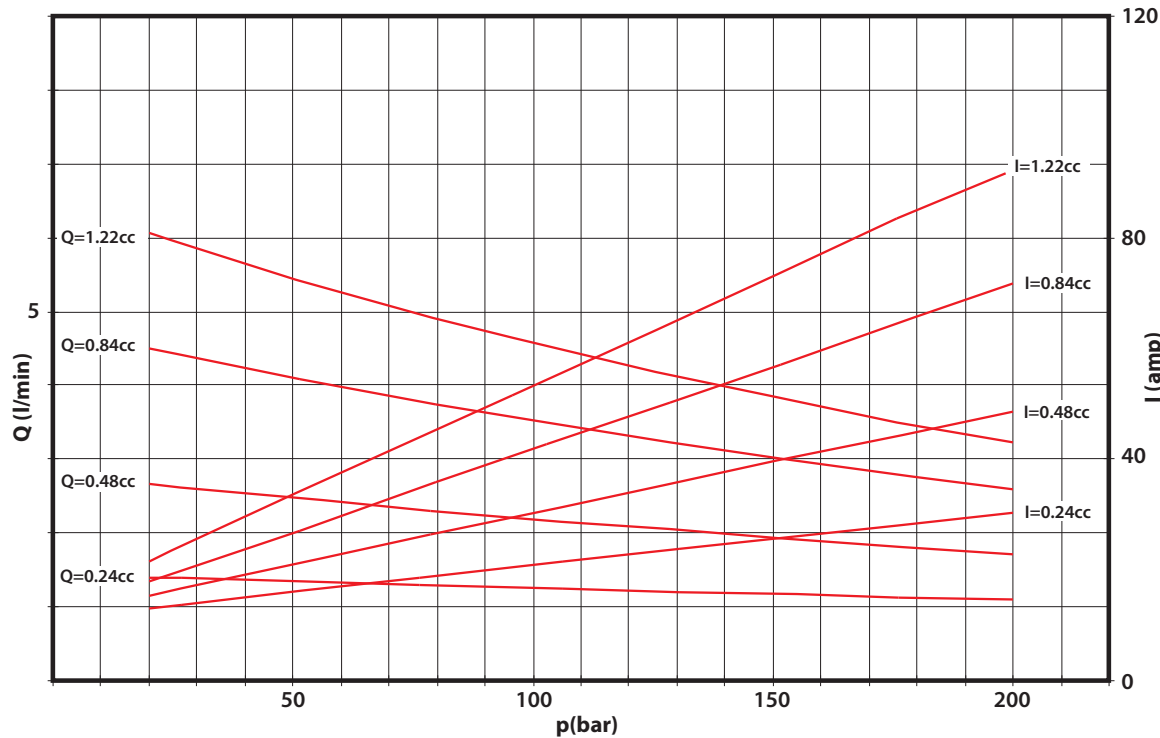


HE 1000 Performance Information

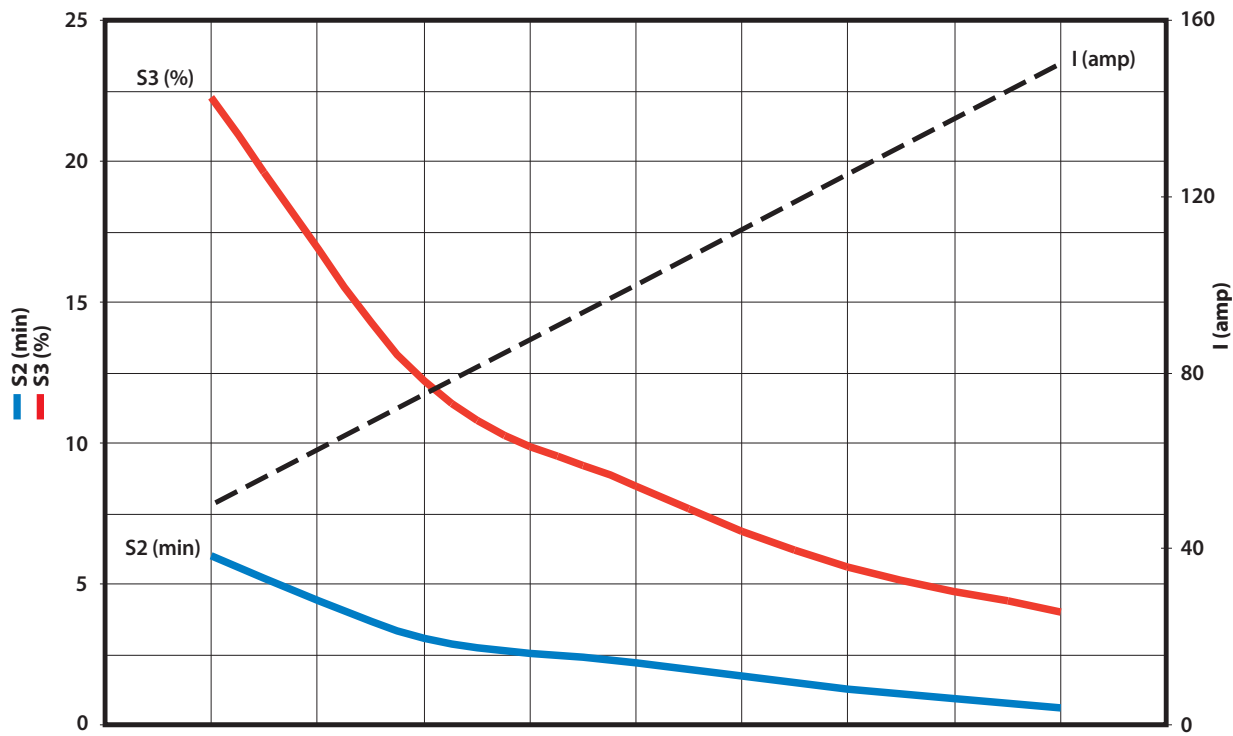
HE 1000 MG Pump/Motor w/ 24 VDC Ø 80 mm Motor

Viscosity 32 cSt at 40°C. Voltage 24 VDC constant

Code		Pump
02		0,24cc
05		0,48cc
08		0,84cc
12		1,22cc



Code		Motor
15		24MG32-HE
16		24MG32THE

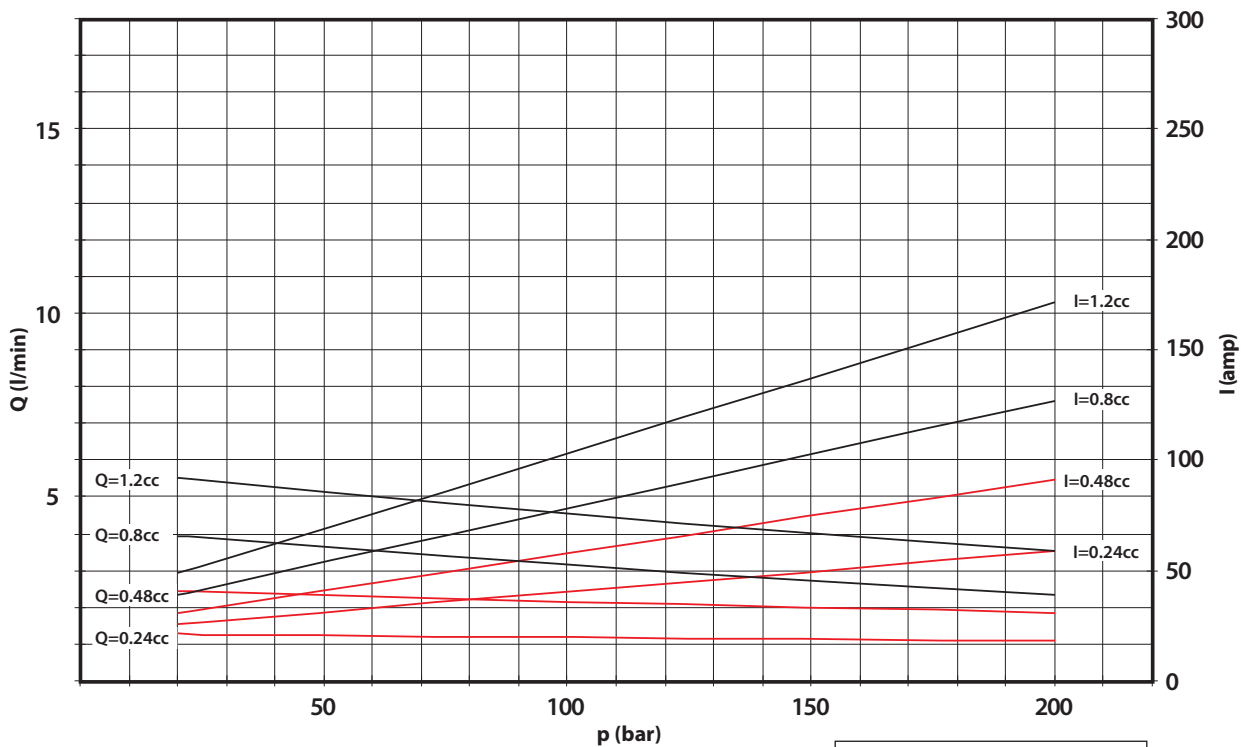


HE 1000 Performance Information

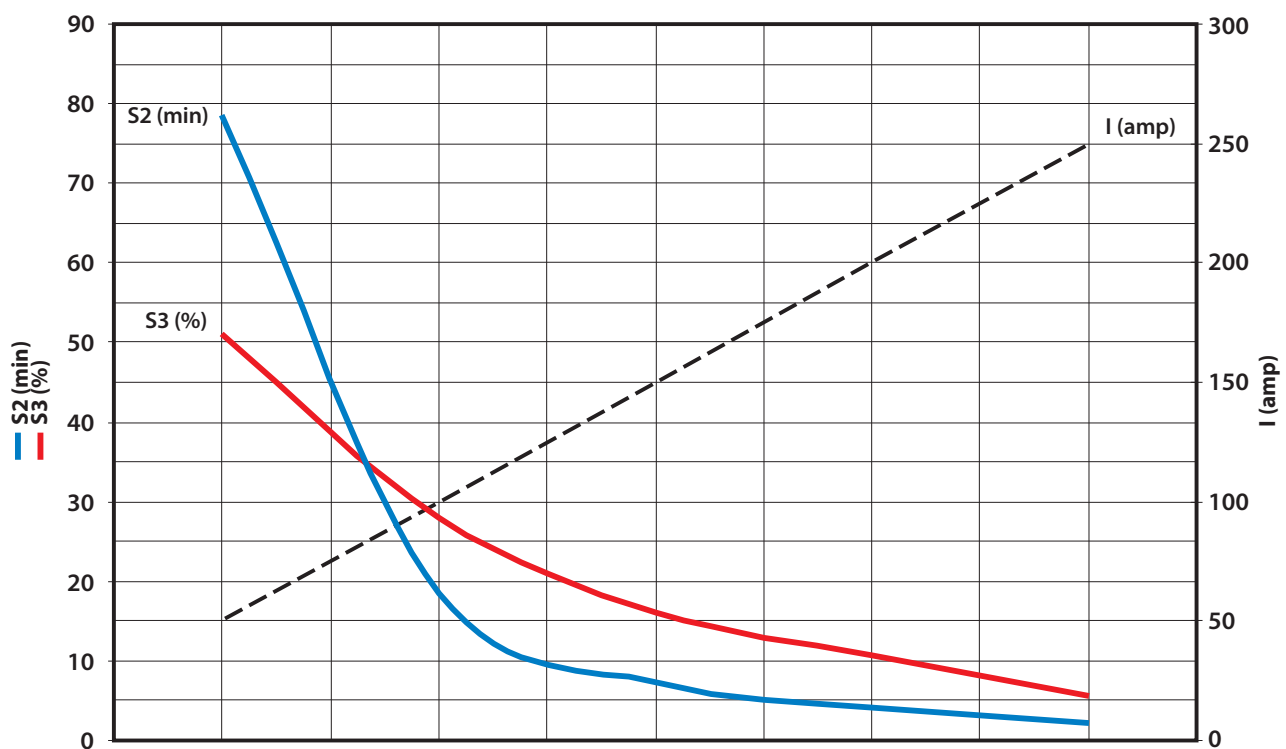
HE 1000 MD Pump/Motor w/ 12 VDC Ø 112 mm Motor

Viscosity 32 cSt at 40°C. Voltage 12 VDC constant

Code	Pump
02	0,24cc
05	0,48cc
08	0,8cc
12	1,2cc



Code	Motor
20	12MD12-WA
21	12MD12TWA

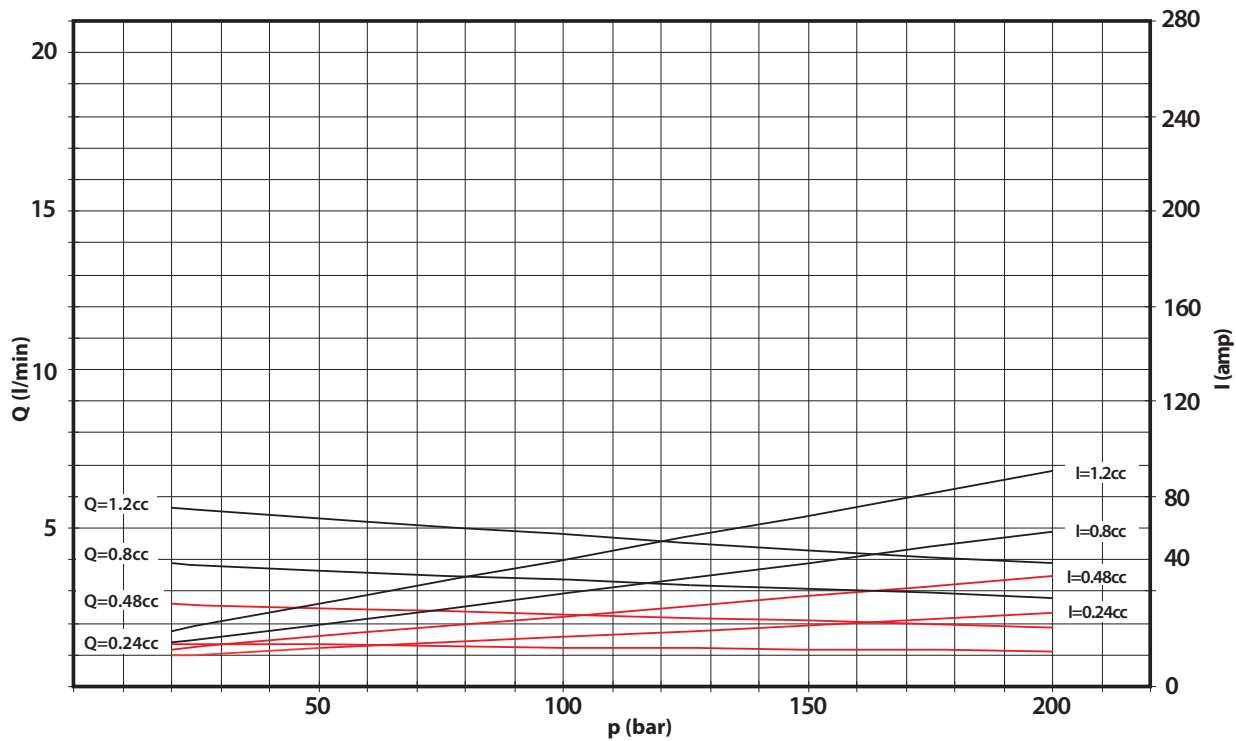


HE 1000 Performance Information

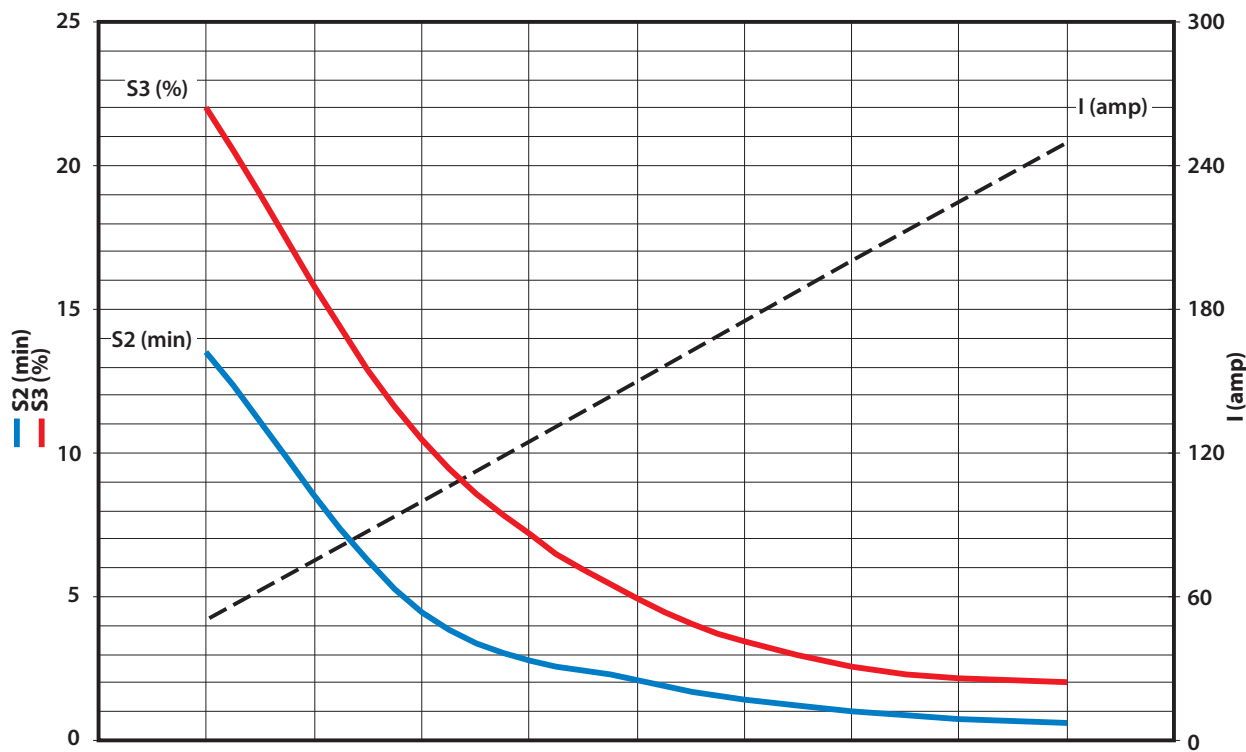
HE 1000 MD Pump/Motor w/ 24 VDC Ø 112 mm Motor

Viscosity 32 cSt at 40°C. Voltage 24 VDC constant

Code	Pump
02	0,24cc
05	0,48cc
08	0,8cc
12	1,2cc

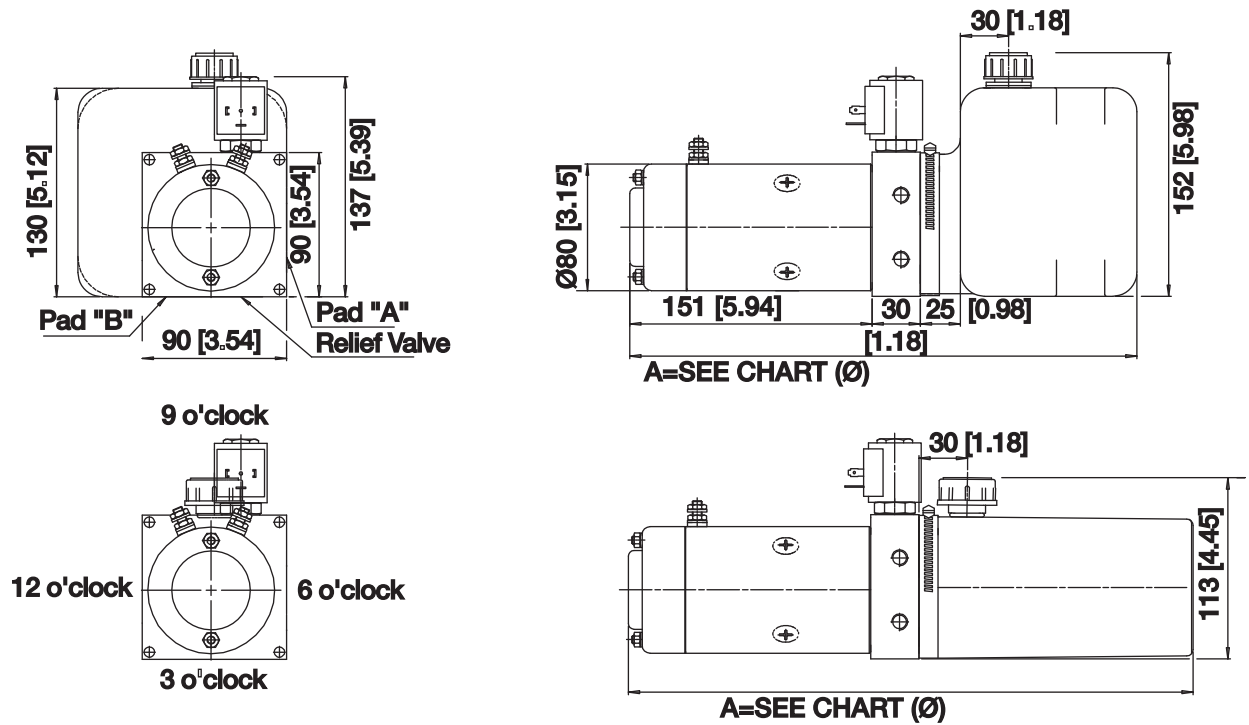


Code	Motor
25	24MD22-WA
26	24MD22TWA

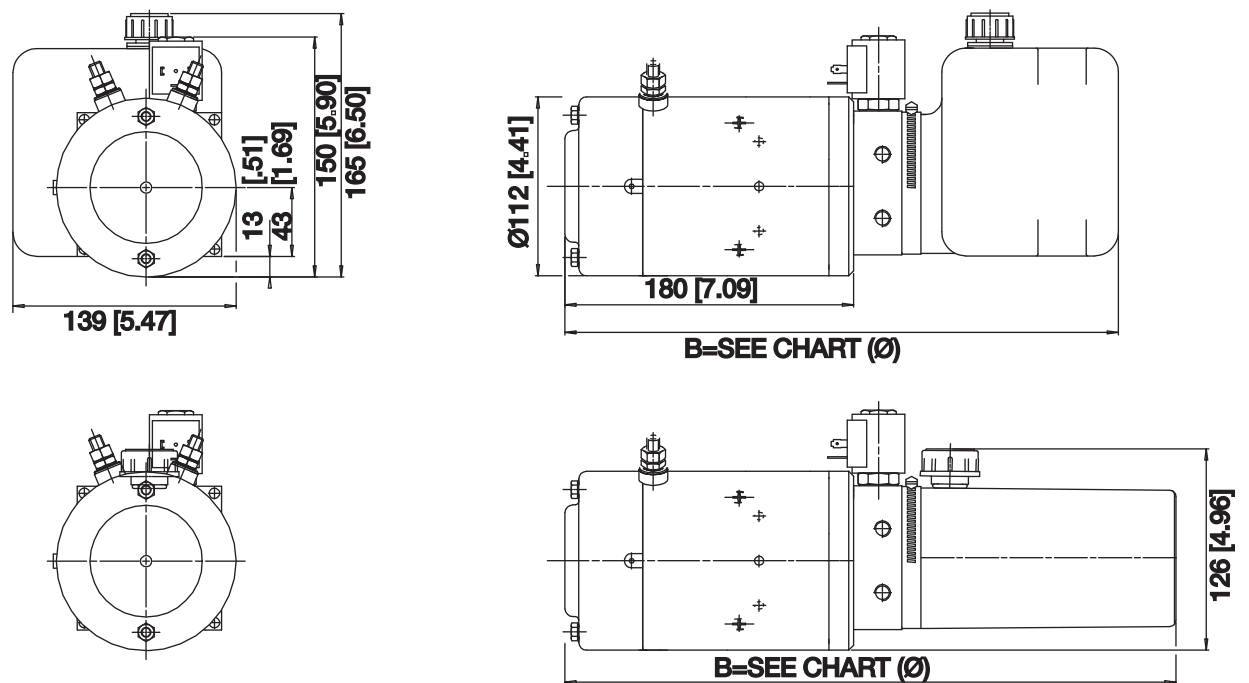


HE 1000 Power Pack Dimensions

HE 1000 w/ 12/24 VDC Ø 80 mm Motor



HE 1000 w/ 12/24 VDC Heavy Duty Ø 112 mm Motor



Reservoir		A	B	Codes	
V = Usable volume				Horizontal	Vertical
V = 0.5 L Ø	Cylindrical	353	381	AA	AB
V = 1.0 L Ø	Cylindrical	430	458	AC	AD
V = 1.5 L Ø	Rectangular	316	344	AE	AF
V = 2.0 L Ø	Rectangular	351	379	AG	AH
V = 2.5 L Ø	Rectangular	386	414	AJ	AK
V = 4.0 L Ø	Rectangular	486	514	AL	AM

HE 2000 DC Selection / Performance Information

The following pages include performance information for combinations of pumps and DC motors as well as pumps and AC motors. Pages 12-16 feature pump/DC motor performance curves. Page 28 features pump/AC motor performance curves.

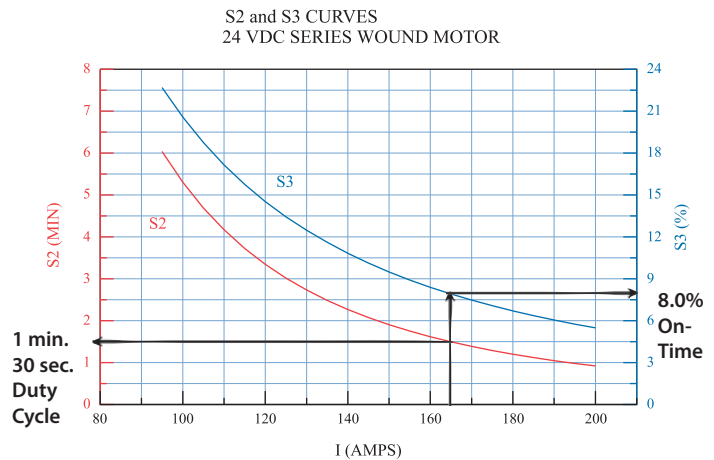
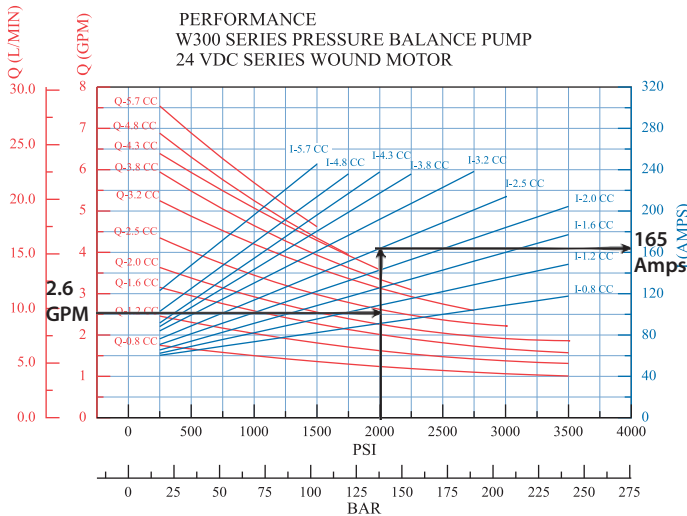
Selecting Pump and DC Motor Combinations

Refer to the appropriate “pump/motor” curve for your application voltage. Find the required flow at working pressure. Refer to the amp draw axis to determine the amp draw for the selected pump/motor combination. Note: Performance will vary depending on whether a pressure balanced or fixed clearance pump is chosen. On the “S2 (absolute continuous on-time)/S3 (percentage on-time)” curve you can determine the maximum duty cycle of your selected pump/motor combination. **Note: All S3 curves are based on a 5 minute duty cycle.**

Following is an example of determining this information:

Assuming a 2.6 GPM at 2000 PSI is required, the performance graph indicates a 2.5 cc/rev. pump is needed. The performance graph also shows a requirement of 165 amps with a W300 Pressure Balanced Pump. The S2/S3 curve at that amp draw has a S2 (absolute continuous on-time) of 1 minute, 30 sec. At that point, the motor would have to be turned off to allow cooling to ambient temperature. The motor could then be run for another 1 minute, 30 sec.

The S3 (percentage on-time) curve shows a maximum percentage on time of 8.0%, which means the motor can be operated for 24 seconds on, 276 seconds off, continuously.



Relief Valve Characteristics

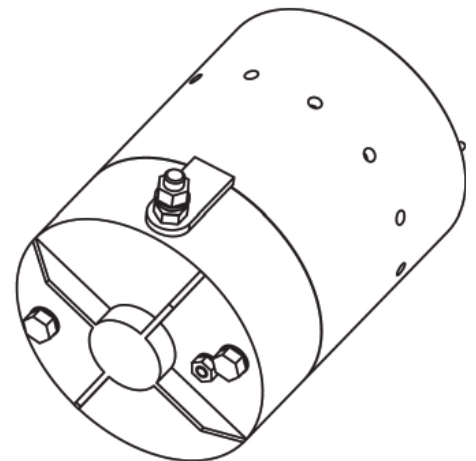
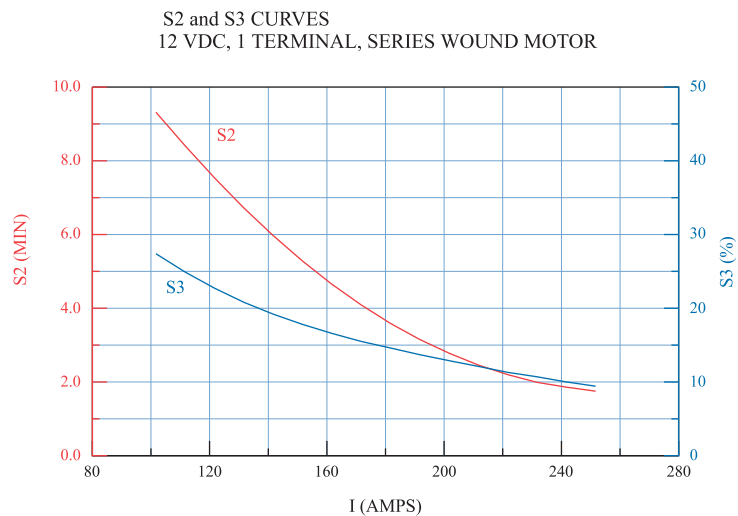
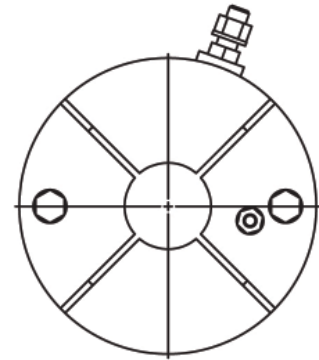
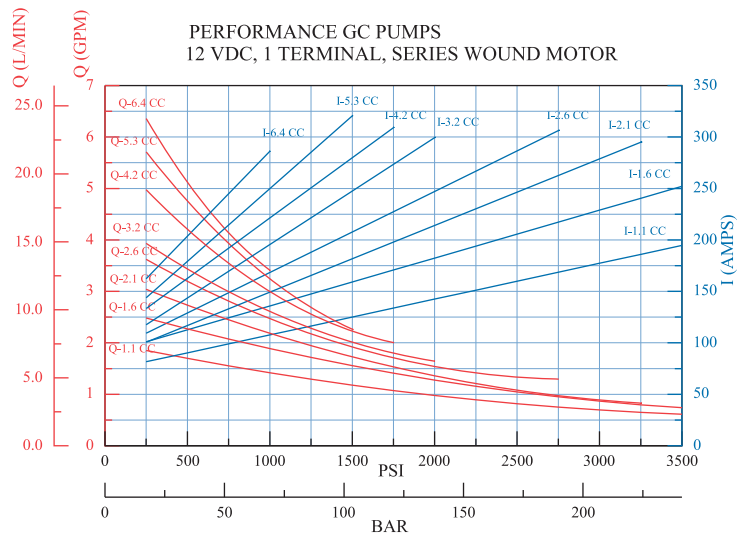
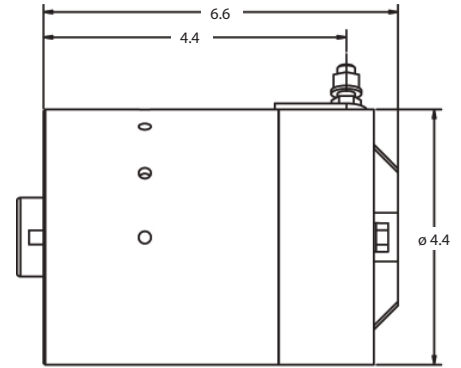
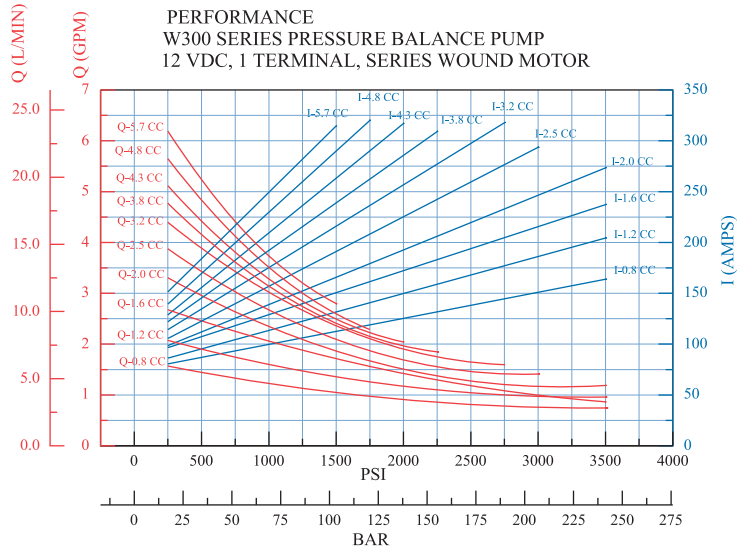
“Cracking pressure” is defined as when the relief valve begins to open and starts bypassing flow to the reservoir (defined as .25 GPM flow loss).

Relief valve cracking pressure is approximately 80% of the full bypass pressure and flow (i.e., if the relief valve pressure is to be set at 2500 PSI full bypass, then $2500 \times 0.8 = 2000$ PSI is the cracking pressure).

“Full bypass pressure and flow” is defined as when the relief valve is completely open and all flow is going back to the reservoir.

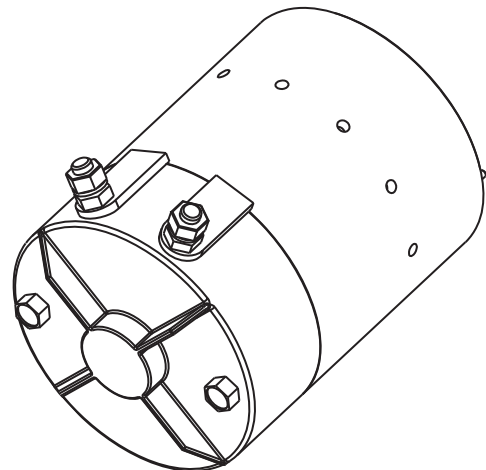
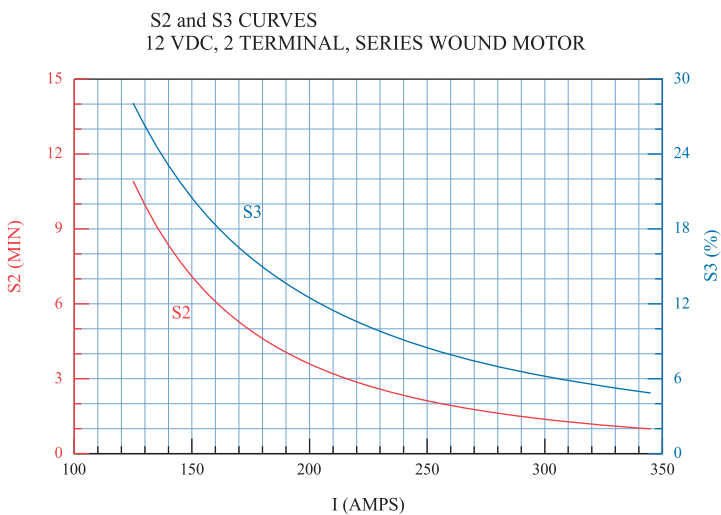
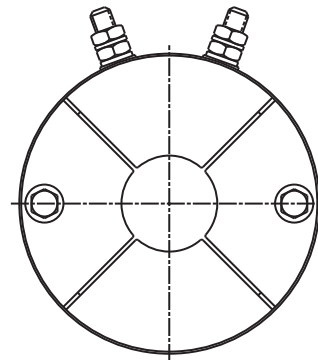
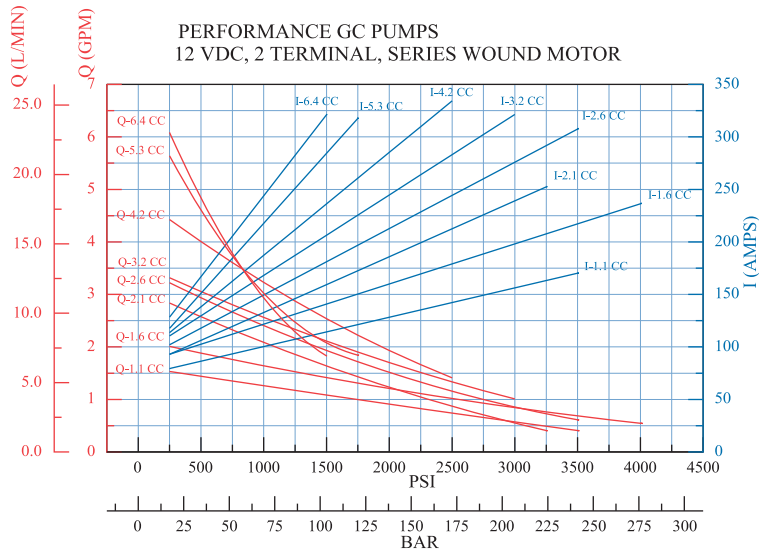
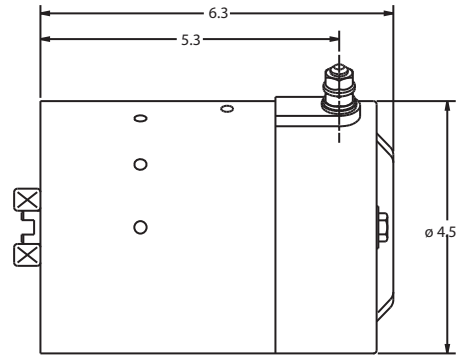
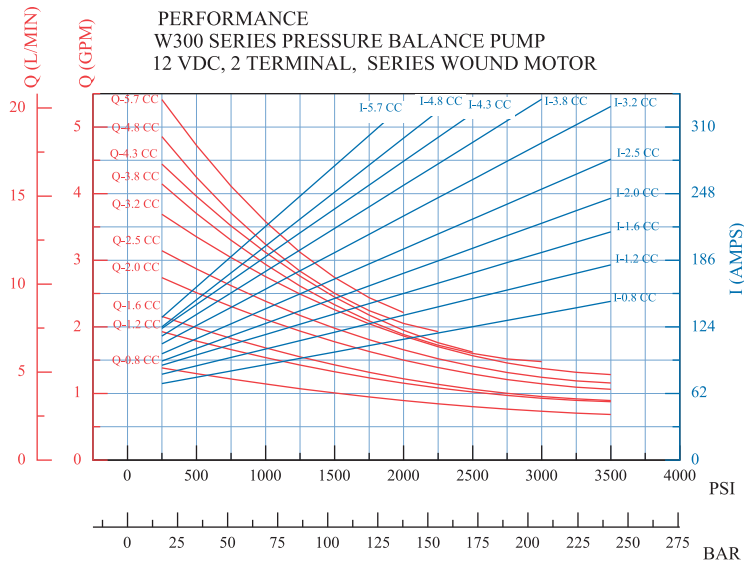
“Working pressure” should always be at or below the cracking pressure for maximum efficiency.

Performance for HE 2000 12 VDC Single Terminal Series Wound Motor, P/N 1300027



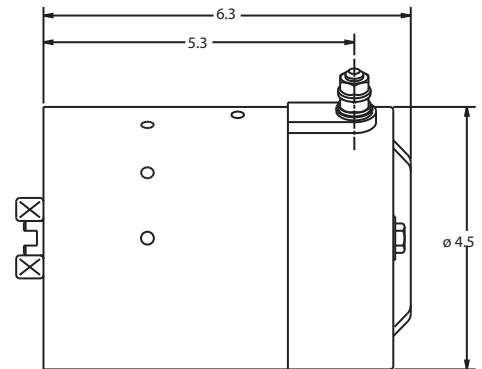
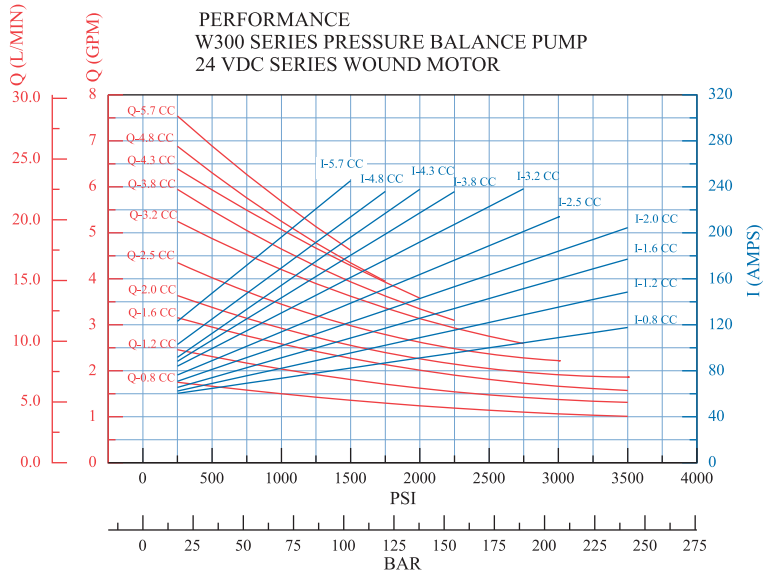
Note: Motor damage may result from operation outside the curve parameters as shown above.
CONCENTRIC AB-HEPOWERPACKS-US-2011-7

Performance for HE 2000 12 VDC Double Terminal Series Wound Motor, P/N 1300618

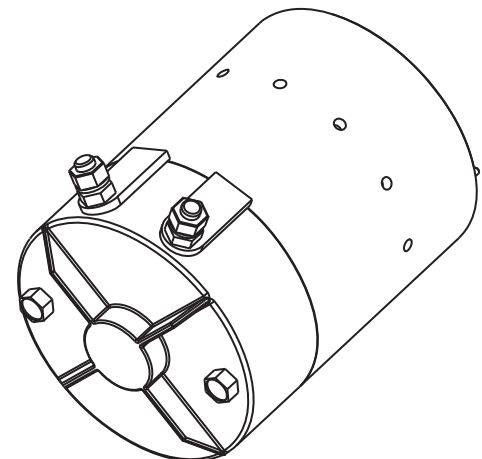
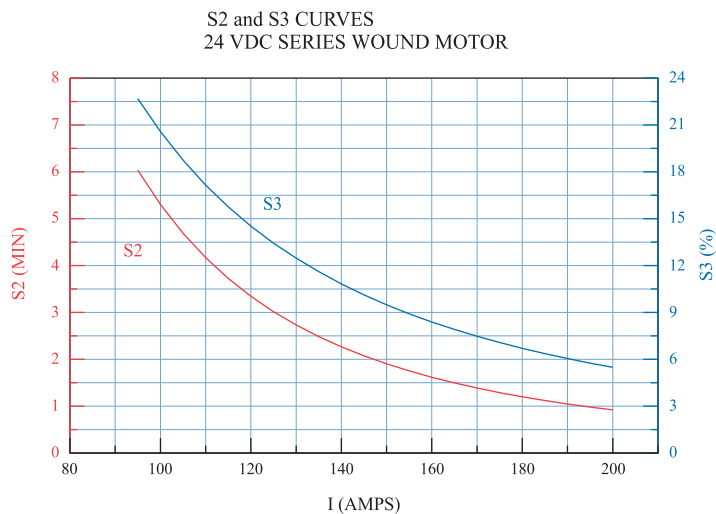
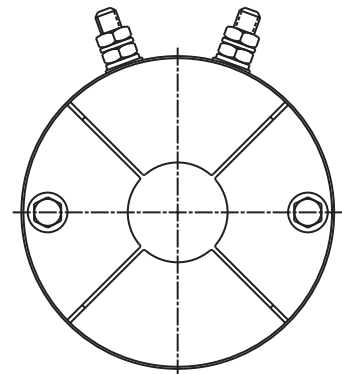
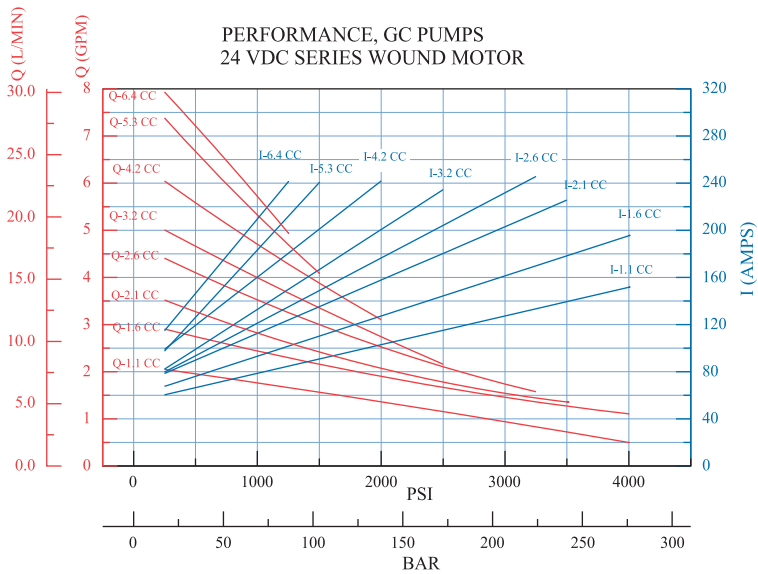


Note: Motor damage may result from operation outside the curve parameters as shown above.

Performance for HE 2000 24 VDC Double Terminal (P/N 1300619) and Single Terminal (P/N 1300912) Series Wound Motors

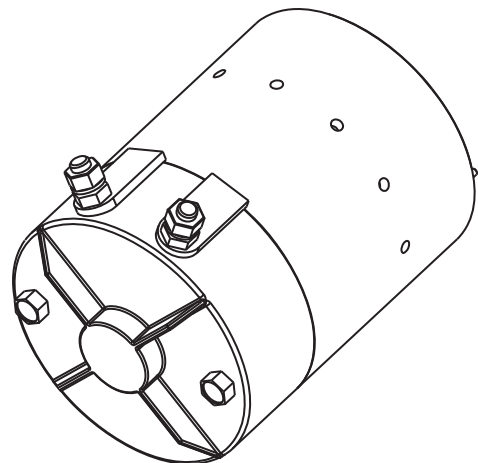
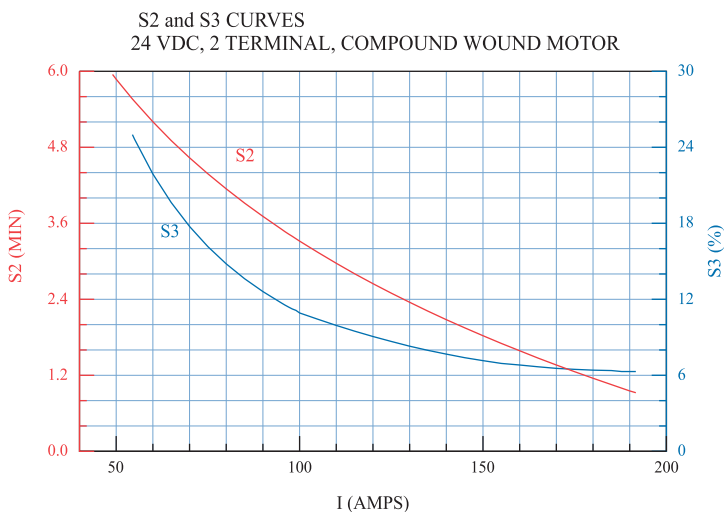
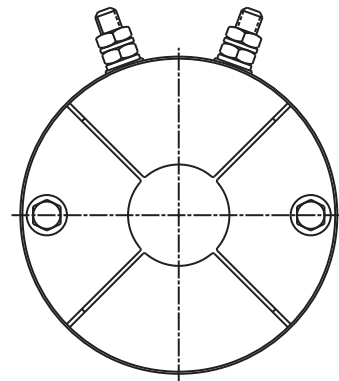
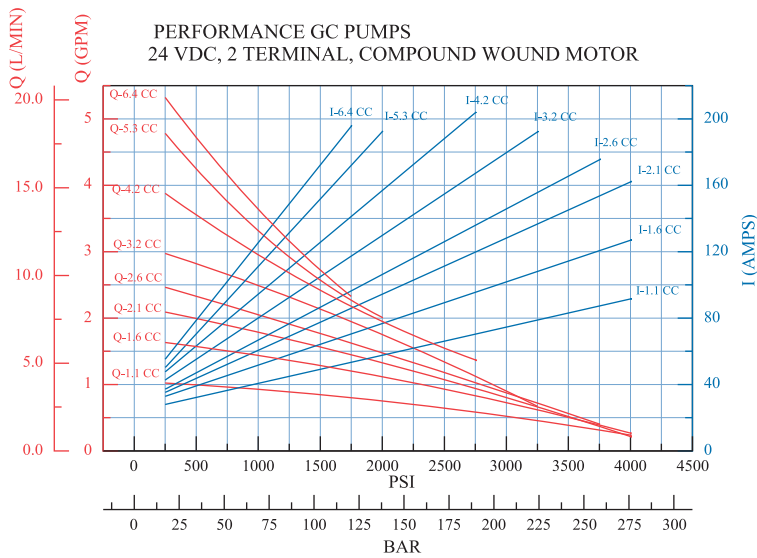
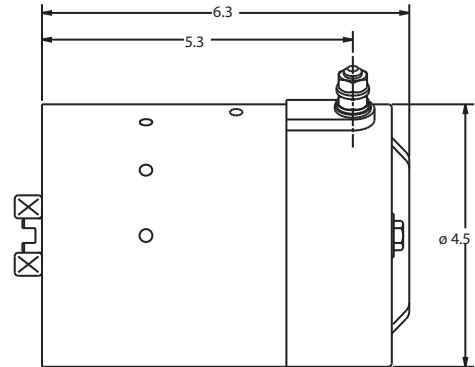
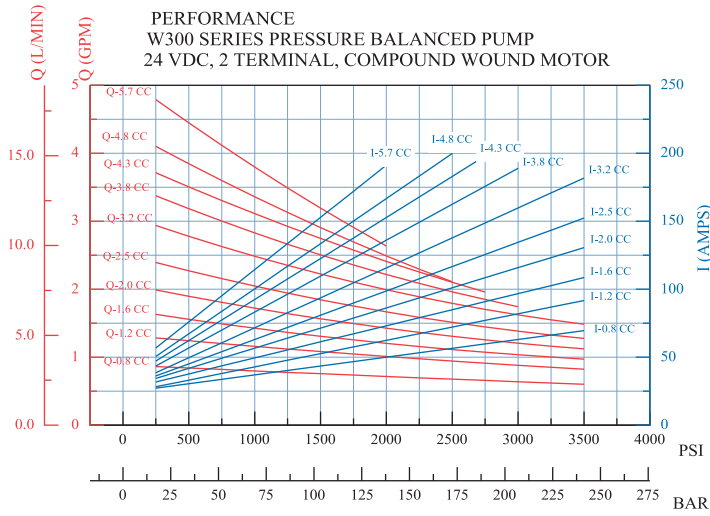


NOTE:
1300912 IS THE SAME AS A
1300619 WITH A GROUND STRAP
ON EITHER MOTOR TERMINAL.



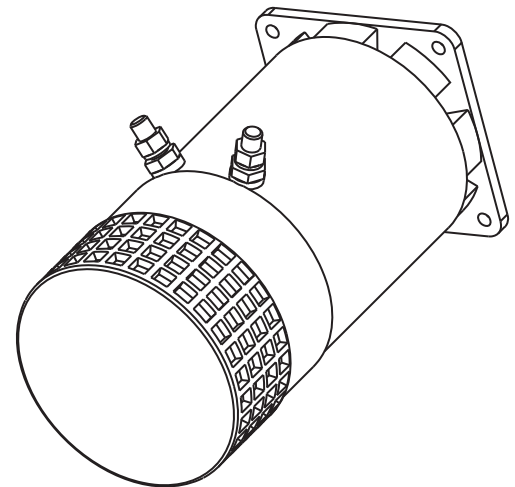
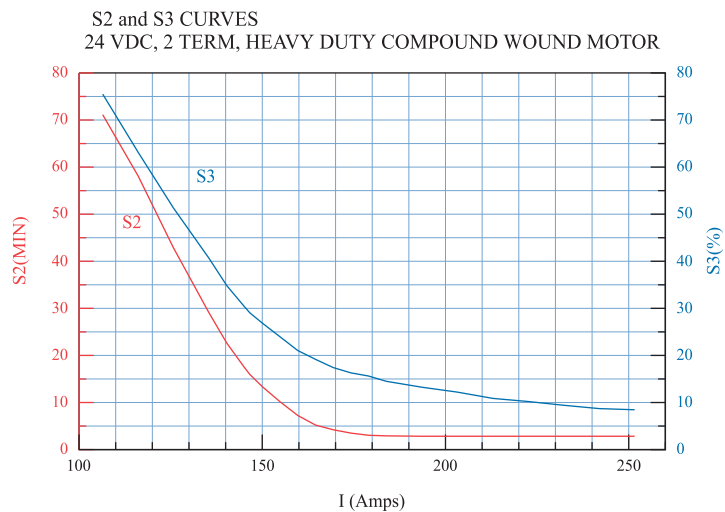
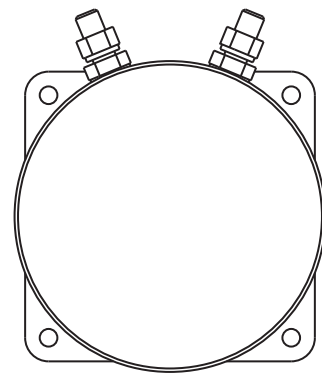
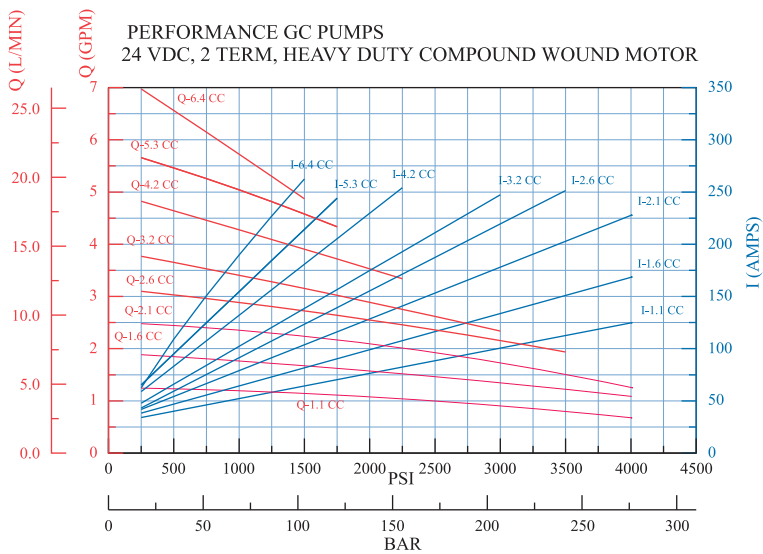
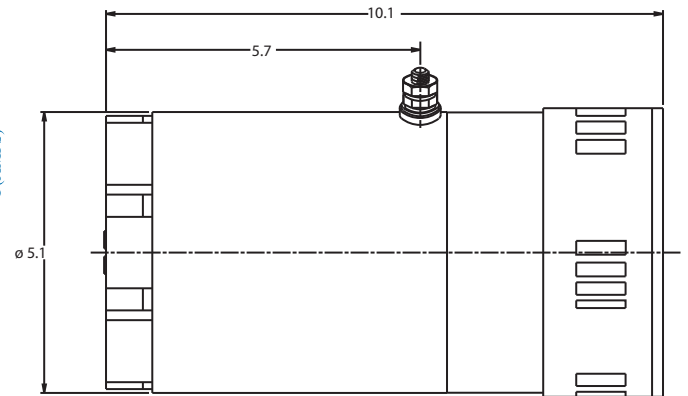
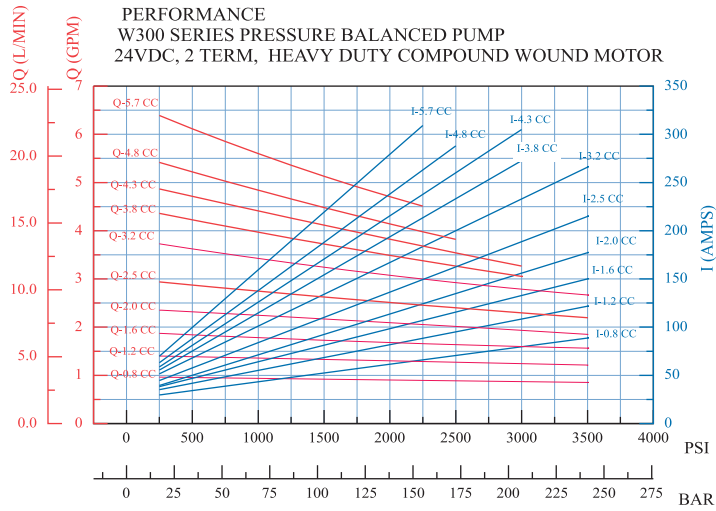
Note: Motor damage may result from operation outside the curve parameters as shown above.
CONCENTRIC AB-HEPOWERPACKS-US-2011-7

Performance for HE 2000 24 VDC Double Terminal Low Speed Compound Wound Motor, P/N 1300913



Note: Motor damage may result from operation outside the curve parameters as shown above.
CONCENTRIC AB-HEPOWERPACKS-US-2011-7

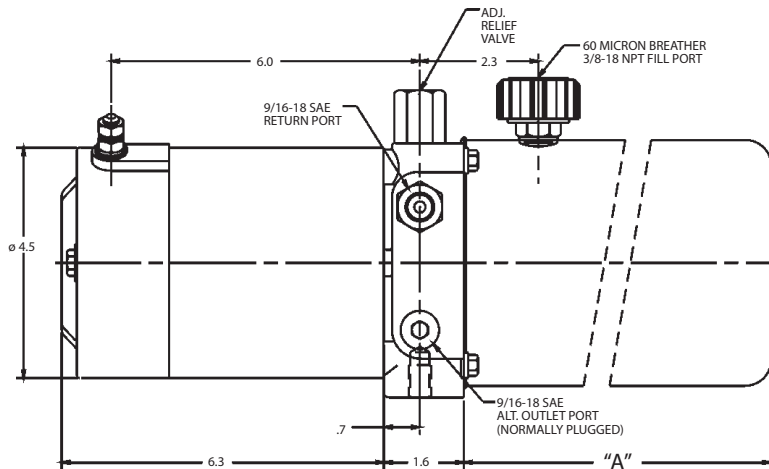
Performance for HE 2000 24 VDC Double Terminal Heavy Duty Compound Wound Motor, P/N 1303551



Note: Motor damage may result from operation outside the curve parameters as shown above.

HE 2000 DC Power Pack Dimensions

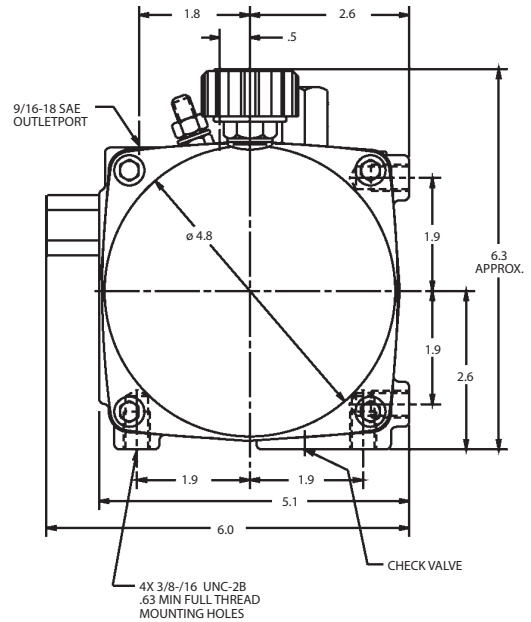
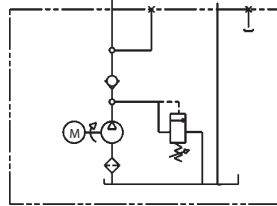
Power Pack with 4.8 Inch Cylindrical Reservoir



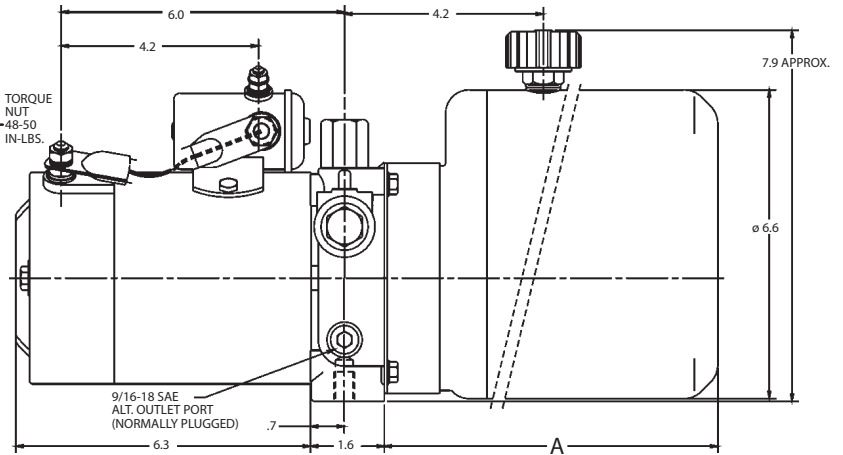
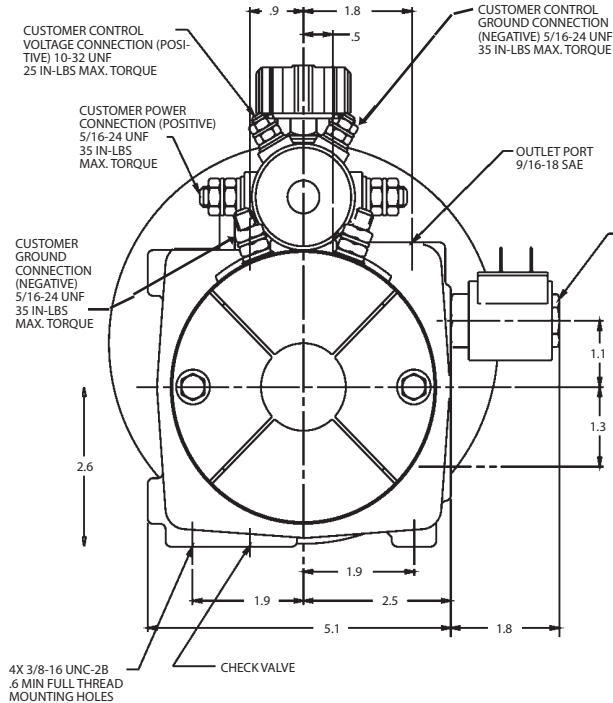
CAPACITY / TYPE	"A" (INCHES)
1.0 QT. CYLINDRICAL	5.6
1.5 QT. CYLINDRICAL	7.5
2.0 QT. CYLINDRICAL	9.0
3.0 QT. CYLINDRICAL	12.0

INSTALLATION NOTES: Motors, center adapters and reservoirs may be rotated in many combinations of 90 degree increments for maximum flexibility.

See Model Code XI for Tube Options - page 39.



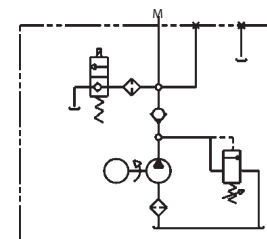
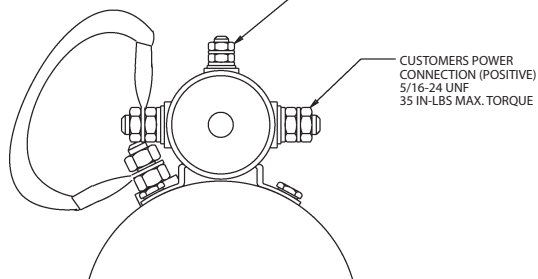
Power Pack with 6.6 Inch Single Piece Cylindrical Reservoir



CAPACITY	"A"
1.0 GAL. (3.9 L.)	8.34 IN. (212 MM)
1.5 GAL. (5.7 L.)	12.6 IN. (320 MM)
2.0 GAL. (7.6 L.)	15.3 IN. (390 MM)
3.0 GAL. (11.3 L.)	22.3 IN. (566 MM)

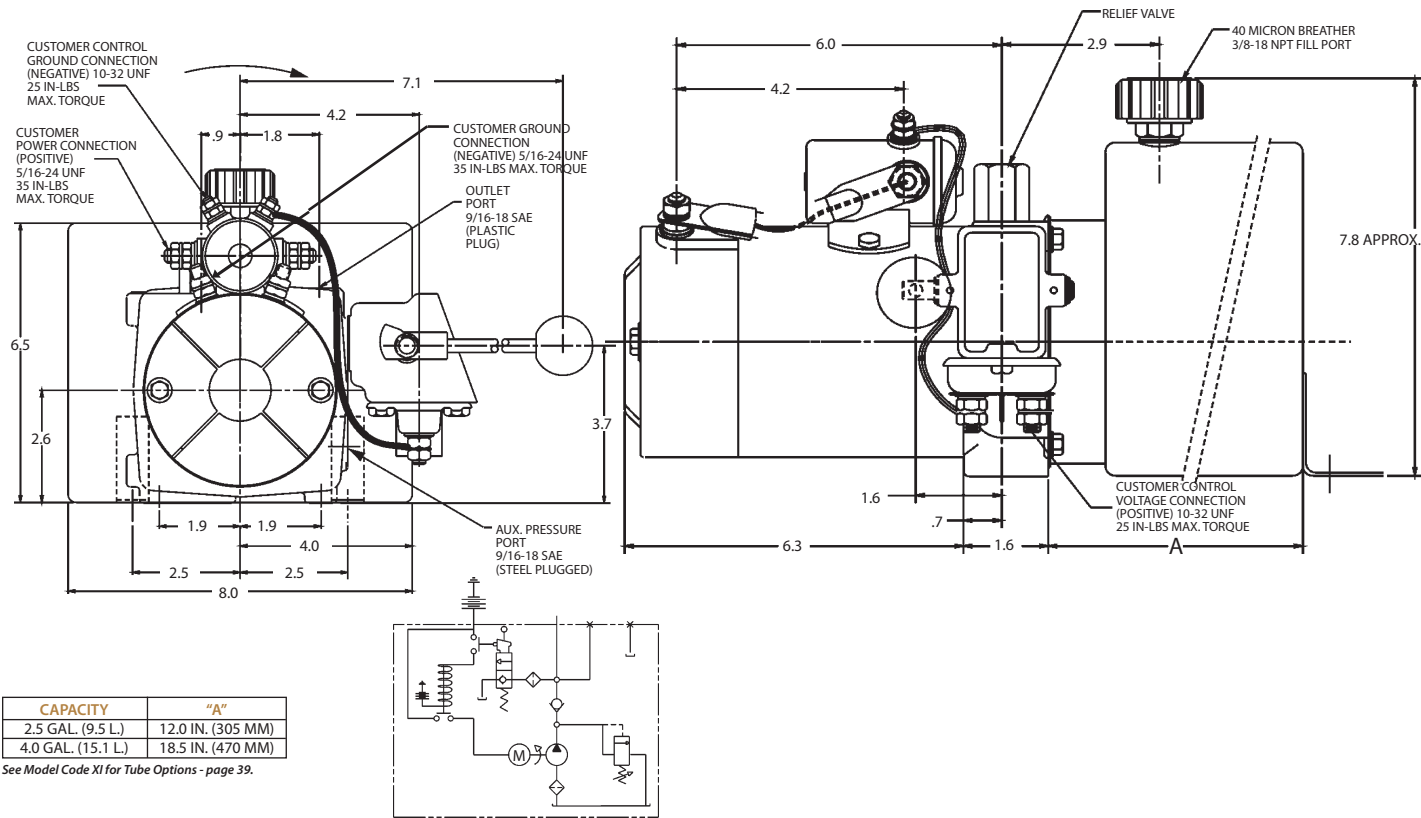
See Model Code XI for Tube Options - page 39.

NOTE:
FOR SINGLE TERMINAL
MOTORS, GROUNDING
OCCURS WHEN THE
UNIT IS BOLTED TO THE
VEHICLE.



HE 2000 DC Power Pack Dimensions (continued)

Power Pack with Rectangular Reservoir



HE 2000 Pump and AC Motor Selection / Combinations

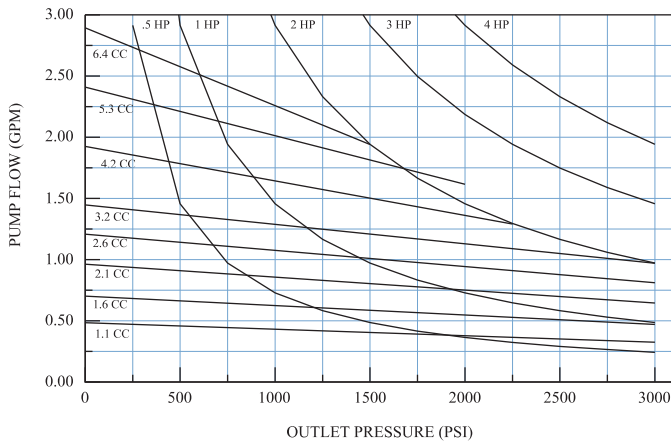
The following charts and curves provide all the information required to specify a pump and AC motor for the HE 2000. The nominal rated horsepower for TENV motors is based on a 30 minute duty cycle. The nominal rated horsepower for TEFC motors is based on continuous duty. For 50 Hz operation, pump flow and horsepower shown below need to be derated by approximately 20%.

Model Code	Catalog P/N	HP	Phase	Hz	Voltage	Encl.	RPM	60 Hertz Ratings										Dimensions		
								HP 5 min. Rated	HP 15 min. Rated	HP 30 min. Rated	Line Voltage	Low Voltage	Max. cc/rev. Starting at 2500 psi Low Voltage	Pullup Torque at Line Voltage Ft.-lbs.	Breakdown Torque at Line Voltage Ft.-lbs.	5 Min. Duty HP Nominal Amp Draw				
								L	H	K										
60	1300916	.5	three	50/60	208-230/460	TENV	1425/1725	1	0.75	0.5	230	188	1.6	6.2	9.0	3.5 A @ 230 V	5.8	6.8	4.0	
62	1300918	1	three	50/60	208-230/460	TENV	2850/3450	2.5	1.8	1	230	188	1.6	6.4	6.7	8.4 A @ 230 V	5.8	6.8	4.0	
63	1300919	1	three	50/60	208-230/460	TEFC*	2850/3450	2.5	1.8	1	230	188	1.6	6.4	6.7	8.4 A @ 230 V	7.5	7.3	4.0	
64	1300920	1	single	60	115/208-230	TENV	3450	2.5	1.8	1	115	99	1.6	5.7	6.9	28.6 A @ 115V	7.8	8.8	4.3	
65	1300921	1	single	50/60	115/208-230	TEFC*	2850/3450	2.5	1.8	1	115	99	1.6	5.1	6.0	28.6 A @ 115V	9.5	8.8	4.3	
66	1300922	1	three	50/60	208-230/460	TENV	1425/1725	3	2	1	230	188	3.2	12.3	17.1	8.4 A @ 230 V	6.8	6.8	5.0	
67	1300923	1	single	60	115/208-230	TENV	1725	2	1.5	1	115	99	3.2	9.1	10.8	8.5 A @ 230 V	9.3	9.0	5.8	
68	1300924	2	single	60	115/208-230	TENV	3450	4	3	2	115	99	2.1	7.4	7.7	27 A @115V	9.8	8.8	6.2	
69	1300925	2	single	50/60	115/208-230	TEFC*	2850/3450	3	2.5	2	115	99	2.1	5.4	8.0	30.2 A @ 115V	11.0	8.8	5.8	
70	1300926	2	three	50/60	208-230/460	TENV	1425/1725	4	3.5	2	230	188	6.4	24.0	26.5	5.7 A @ 230V	8.8	6.8	5.3	
71	1300927	2	single	60	115/208-230	TENV	1725	3	2.5	2	115	99	4.8	17	19	35 A @ 115 V	9.8	8.6	6.3	
72	1300928	3	three	50/60	208-230/460	TENV	2850/3450	4.9	3.8	3	230	188	3.2	12.6	14.6	13.7 A @ 230 V	6.8	6.8	3.3	
73	1300929	3	three	50/60	208-230/460	TEFC*	2850/3450	4.9	3.8	3	230	188	3.2	12.6	14.6	13.7 A @ 230 V	9.5	6.8	4.3	
74	1300930	2.5	single	50/60	208-230	TENV	2850/3450	3.5	3	2.5	230	188	3.7	9.3	10.7	20.1 A @ 230 V	9.8	9.1	6.2	

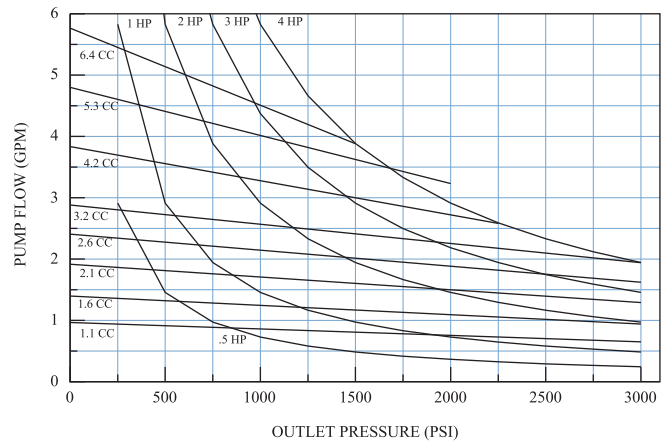
* NOTE: For TEFC motors the 30 minute rated horsepower is a continuous rating.

The curves below demonstrate the relationship between flow and pressure to determine horsepower required. Once horsepower required is determined, refer to the above chart to determine the appropriate motor for the required duty cycle.

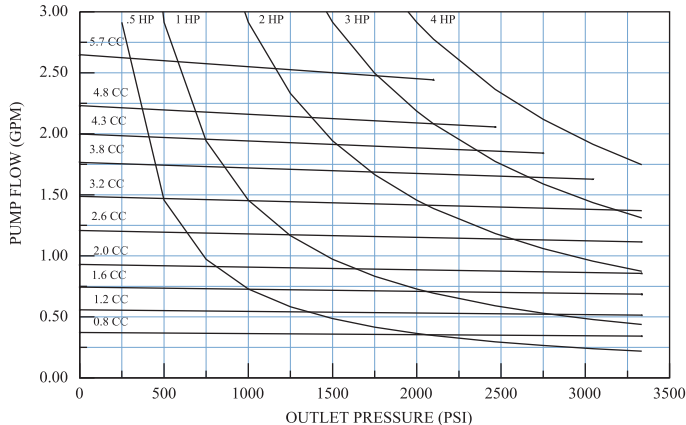
PERFORMANCE - GC SERIES PUMPS
1725 RPM - 60 Hz - 200 SUS FLUID



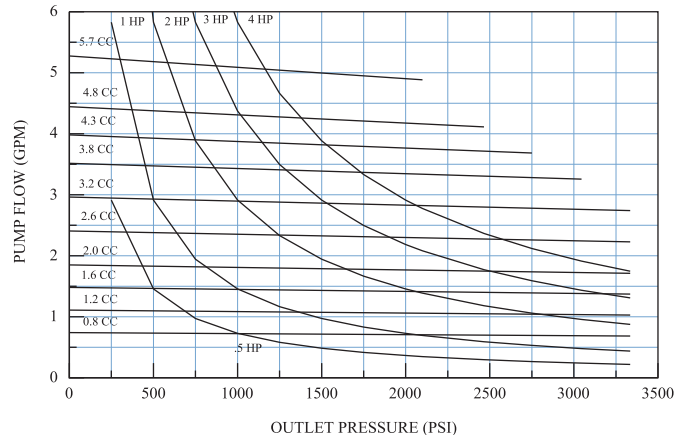
PERFORMANCE - GC SERIES PUMPS
3450 RPM - 60 Hz - 200 SUS FLUID



PERFORMANCE - W300 SERIES PUMPS
1725 RPM - 60 Hz - 200 SUS FLUID

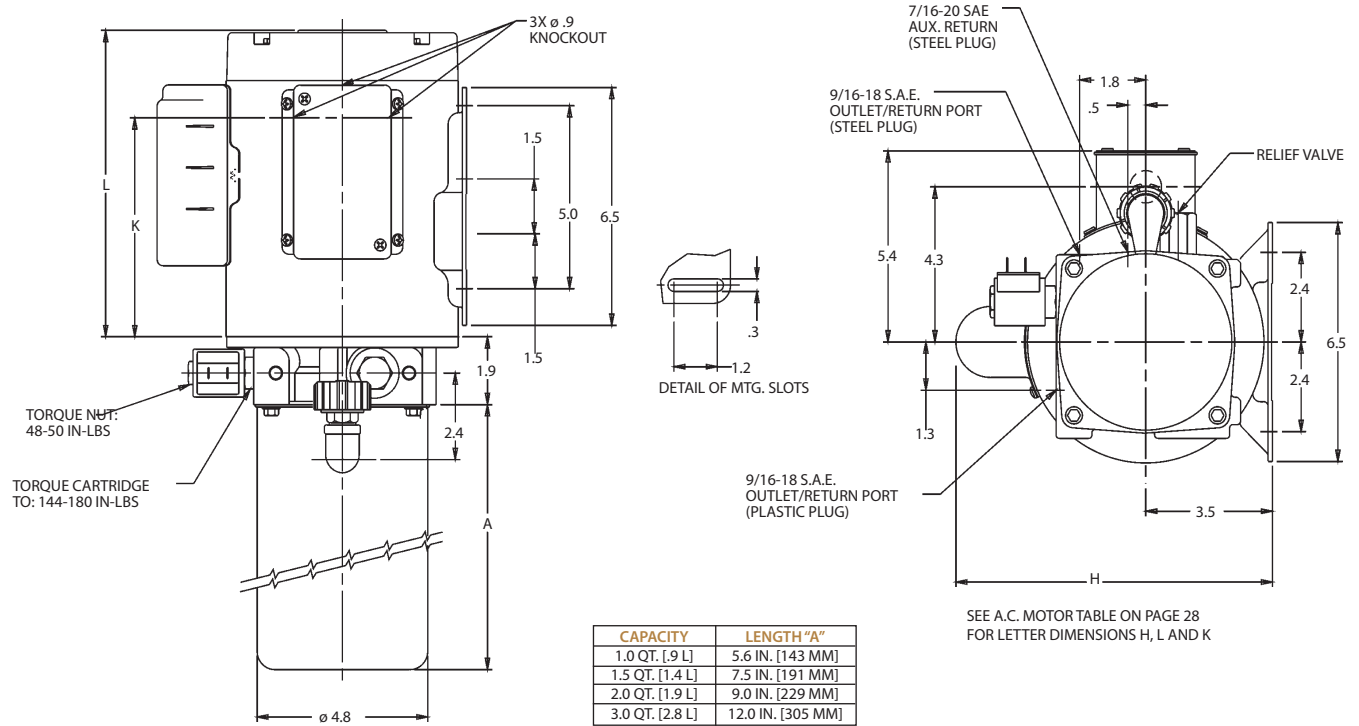


PERFORMANCE - W300 SERIES PUMPS
3450 RPM - 60 Hz - 200 SUS FLUID

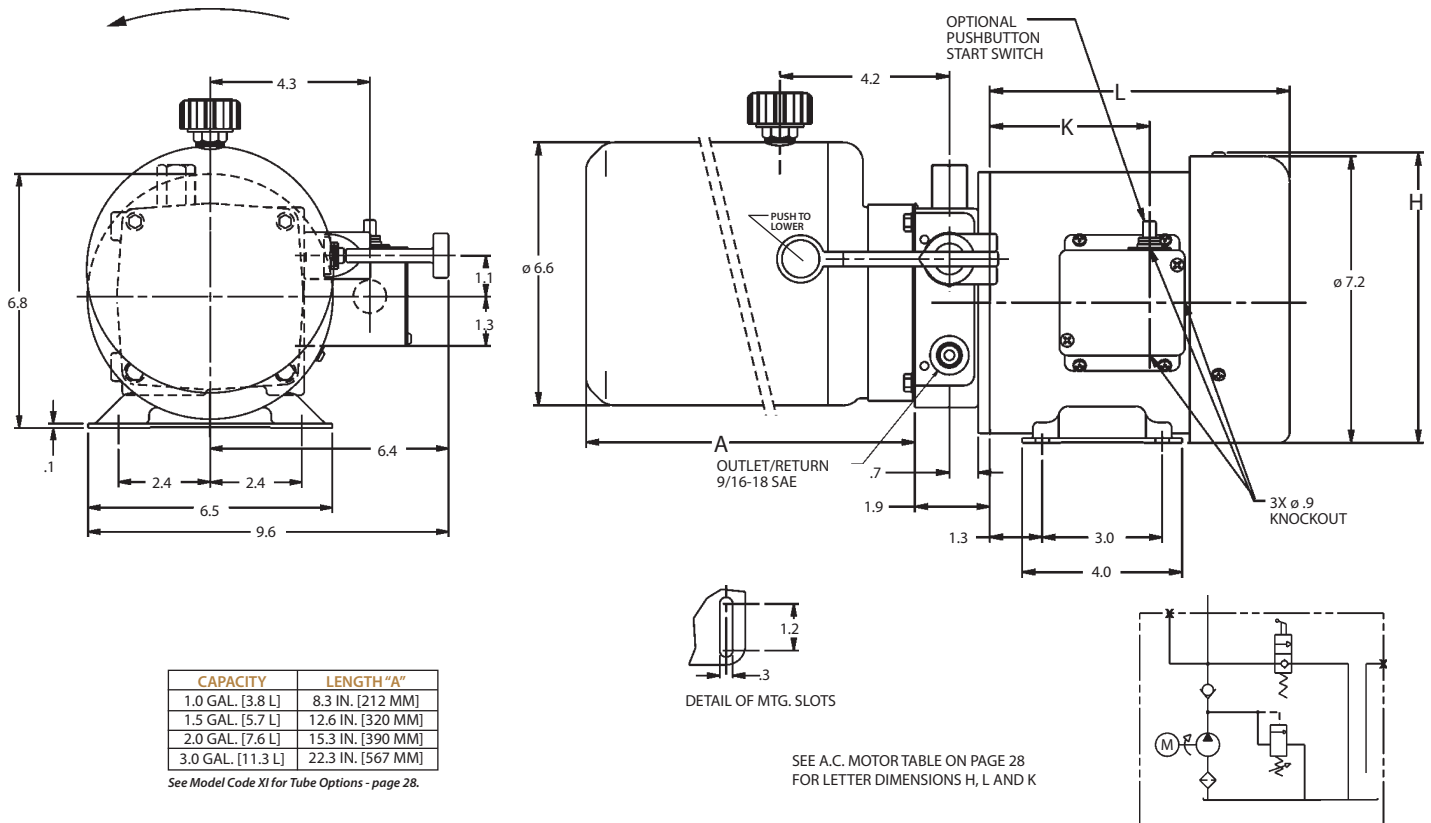


HE 2000 AC Power Pack Dimensions

Power Pack with 4.8 Inch Cylindrical Reservoir

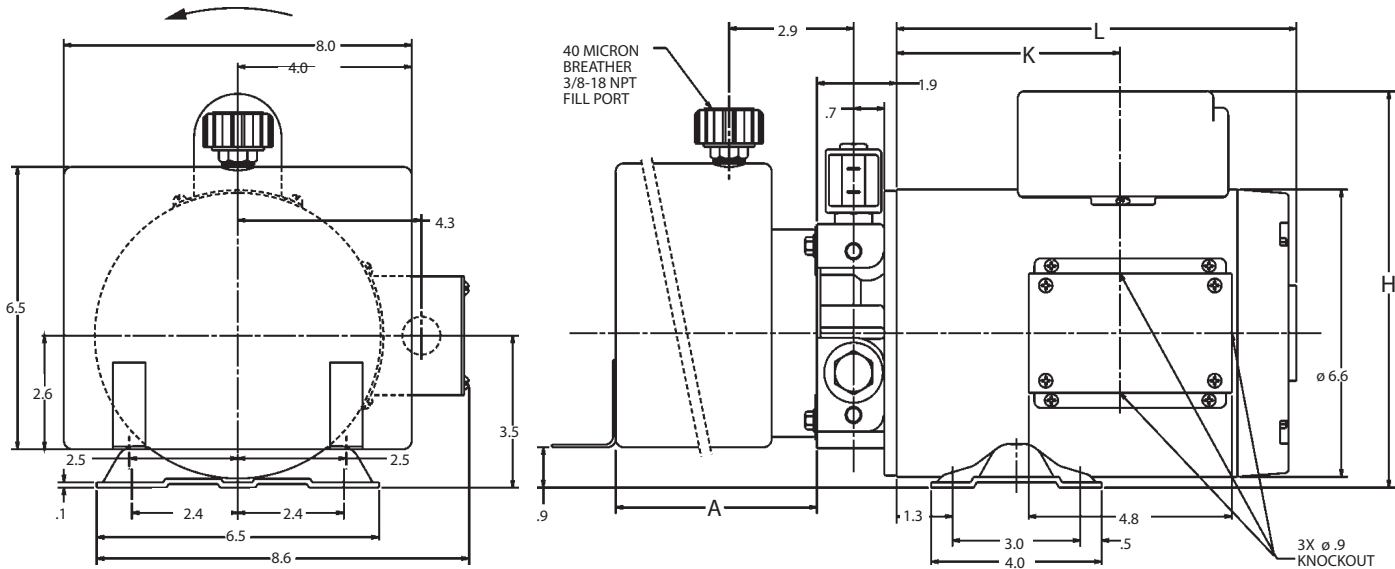


Power Pack with 6.6 Inch Single Piece Cylindrical Reservoir



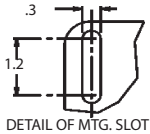
HE 2000 AC Power Pack Dimensions (continued)

Power Pack with Rectangular Reservoir



CAPACITY	LENGTH "A"
2.5 GAL. [9.5 L]	12 IN. [305 MM]
4.0 GAL. [15.1 L]	18.5 IN. [470 MM]

See Model Code XI for Tube Options - page 28.



SEE A.C. MOTOR TABLE ON PAGE 28 FOR LETTER DIMENSIONS H, L AND K

HE 1000 Technical Information

	Symbols	SI-units	Equations	Common units	Equations
Flow	Q	m³/s	$Q = v \times A$	l/min	$Q = 0,06 \times v \times A$
Operating pressure	p	Pa	$p = \frac{F}{A}$	bar	$p = \frac{F}{0,1 \times A}$
Internal diameter, hydraulic cylinder	d	m		mm	
Area of hydraulic cylinder	A	m²	$A = \frac{\pi \times d^2}{4}$	mm²	$A = \frac{\pi \times d^2}{4}$
Piston force	F	N		N	
Piston speed	v	m/s		m/s	
Power requirement for AC motor	Pe	kW	$Pe = p \times Q$	kW	$Pe = \frac{p \times Q}{611}$

Max pressure	p ₁	230 bar
Intermittent	p ₂	255 bar

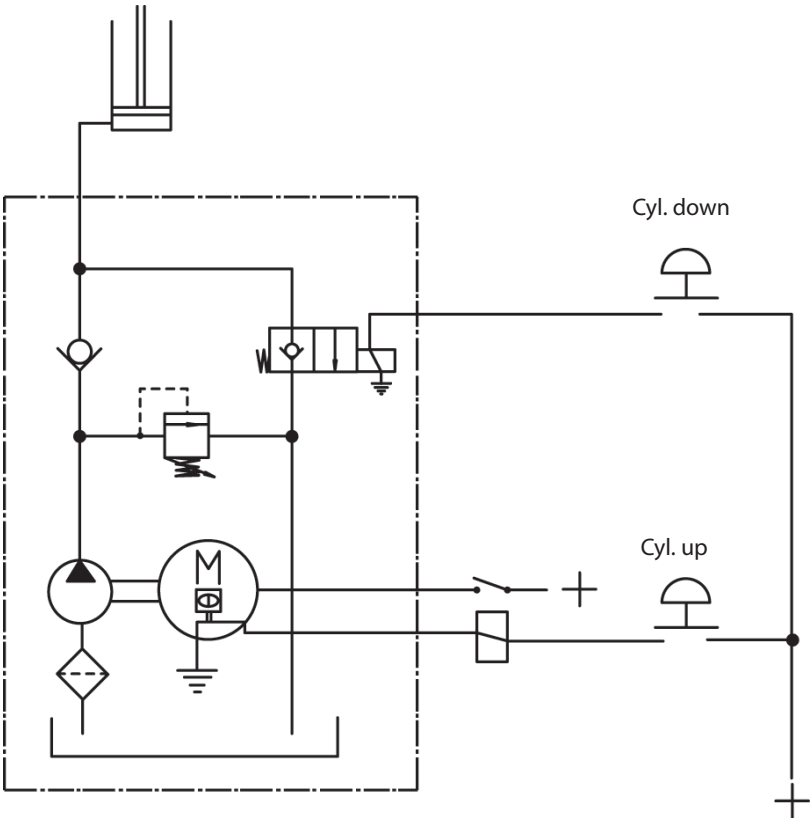
Allowable fluids HL or HLP hydraulic oils according to DIN 51524.
 Biogradable fluids eg. Statoil Bio Pa.
 Before using other types of fluids, contact factory.

Recomended viscosity 40-16mm²/s.
 Permissible cold start viscosity is 2000mm²/s.
 Contact factory before using fluids outside this range.

Temperature min -25°C, max +80°C.

Fluid cleanliness We recommend a cleanliness according to IS4406/1986 Code 18/14 or better to achieve optimal performance and lifetime.

When operating outside these limits, see recommendations in "Allowable fluids".



HE 2000 Installation / Technical Information

FLUIDS

Most premium grade petroleum based fluids can be used. Optimum operating viscosity range is 16 - 63 cSt (80 - 288 SSU).

Minimum recommended viscosity is 12 cSt (66 SSU).

Maximum recommended viscosity is 800 cSt (3600 SSU).

Permissible cold start viscosity is 2000 cSt (9000 SSU). Contact factory before using fluids outside this range.

TEMPERATURES

Minimum recommended temperature is -25°C (-13°F).

Maximum recommended temperature is +80°C (+175°F).

FLUID CLEANLINESS

We recommend a cleanliness according to IS4406/1986 Code 18/14 or better to achieve optimal performance and lifetime.

When operating outside these limits, see recommendations in "FLUIDS".

Technical Information, Formulas and Symbols

Description	Symbols	English		Metric	
		Units	Equations	Units	Equations
Flow	Q	gal/min	$Q = v \times A$	l/min	$Q = 0.06 \times v \times A$
Operating Pressure	p	psi	$p = \frac{F}{A}$	bar	$p = \frac{F}{0.1 \times A}$
Internal diameter, hydraulic cylinder	d	in		mm	
Area of hydraulic cylinder	A	in ²	$A = \frac{\pi \times d^2}{4}$	mm ²	$A = \frac{\pi \times d^2}{4}$
Piston force	F	LB	$F = p \times A$	N	$F = p \times A \times 0.1$
Piston speed	v	in/s	$v = \frac{Q}{A}$	m/s	$v = \frac{Q \times 16.67}{A}$

Supplemental Bolt Kits for Stock

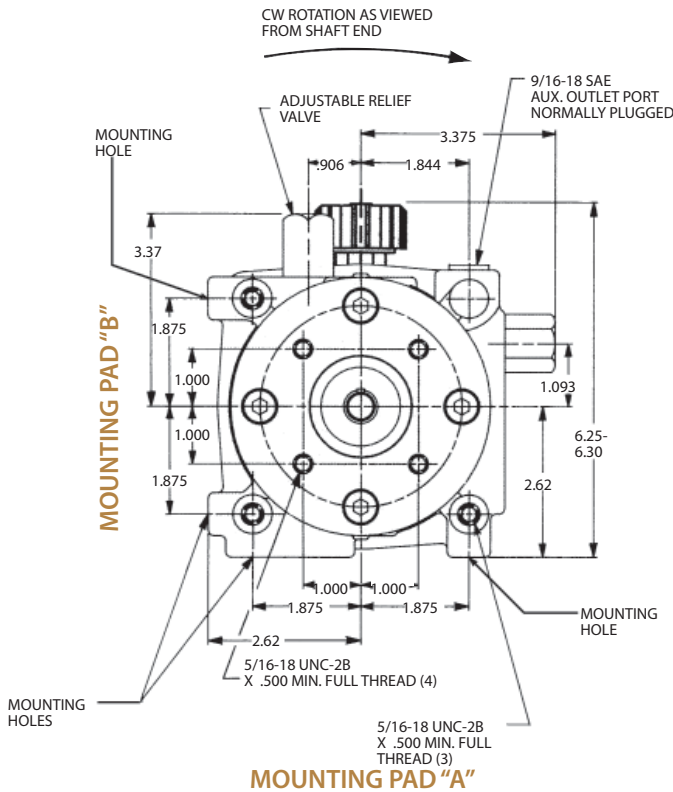
Description	Kit #
Bolt Kit (AC Riser block + D03)	1300857
Bolt Kit (AC Riser block + 2 - D03's)	1300858
Bolt Kit (AC Riser block + Manifold +D03) or (AC Riser block + 2 Manifolds) or (3 Manifolds) or (2 Manifolds + D03)	1300859
Bolt Kit (Manifold)	1300860
Bolt Kit (2 D03's)	1300861
Bolt Kit (3 D03's)	1300862
Bolt Kit (AC Riser block + Manifold) or (2 Manifolds) or (Manifold + D03)	1300863
Bolt Kit (Manifold + 2 D03's)	1300864
Bolt Kit (D03)	1300865

HE 2000 Extended Shaft Drive

The Extended Shaft Drive option allows for replacement of the electric motor drive with a drive of the designer's choice. By allowing for drive shaft side loading with double ball bearing support, the adapter may be used for pulley or belt drives, direct engine drives, or fluid motor drives. In addition, the extended shaft adapter feature enables the designer to adapt to larger electric motors, either DC or AC, 48 frame and larger. Installations of larger motors require a flexible coupling and 4-hole flange adapter with a 1.780" pilot hole and NEMA C face on the other end.

Specifications:

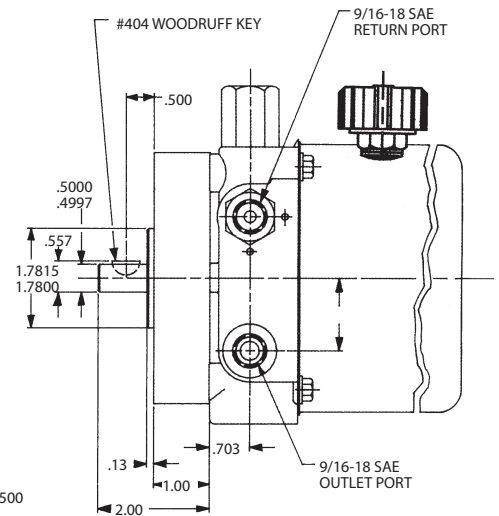
Maximum OHL at center of shaft extension	150 lbs.
Maximum inward thrust	75 lbs.
Maximum outward thrust	50 lbs.
Maximum speed	5000 RPM
Maximum input horsepower	3 HP



MOUNTING HOLE OPTIONS

3/8-24 UNC-2B OR M10 X 1.5-6H X .500 MIN. FULL THREAD

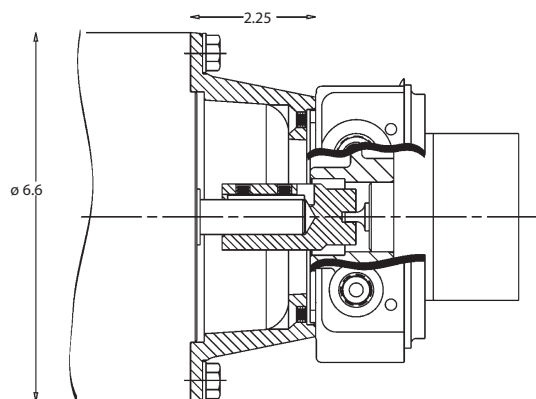
2 MOUNTING HOLES PER MOUNTING PAD AT LOCATIONS SHOWN.



HE 2000 NEMA C Adapter

The Nema C adapter is ideal for custom applications requiring special AC or DC motor voltages.

This adapter allows the HE2000 to mount on any Nema 56 frame motor with an AJ bolt mounting dimension of 5.88 inches; including 143T, 145T, 182, and 184.

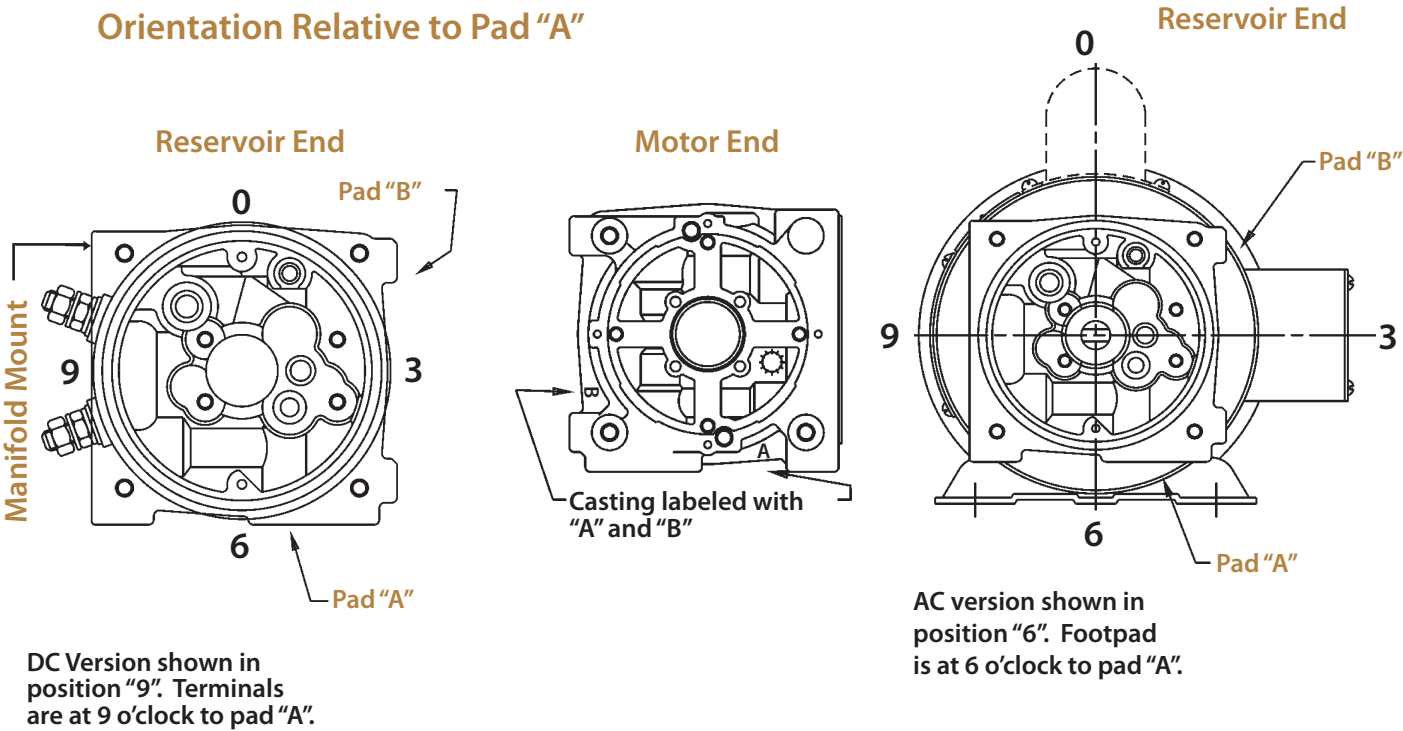


NOTE: Maximum torque rating of coupling connection to pump tang is 10 ft.lbs.

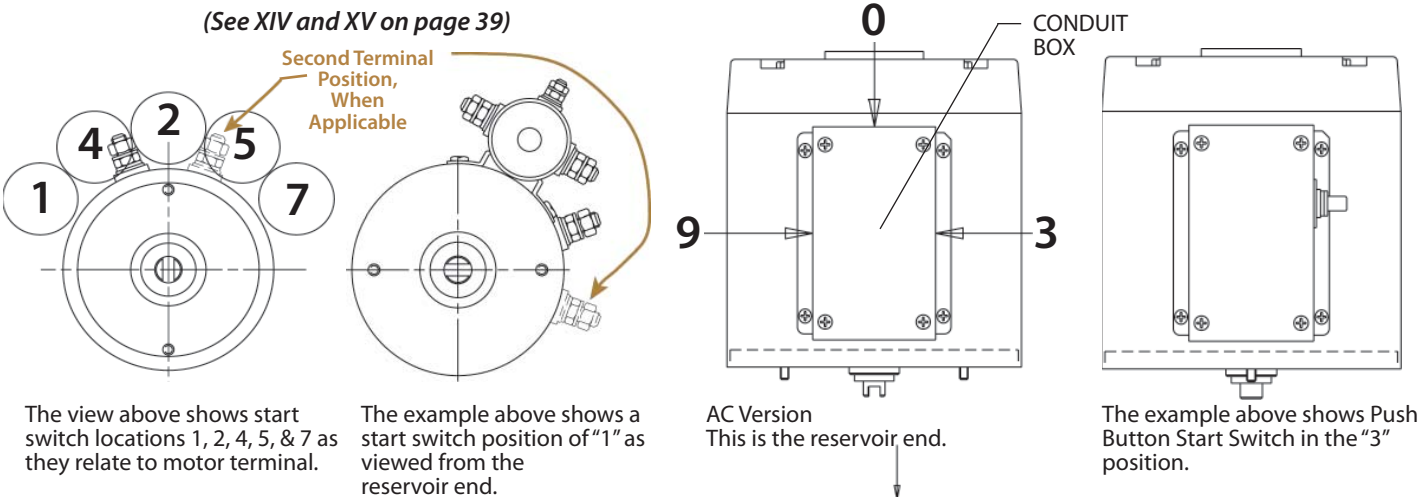
NOTE: Contact factory for continuous pressures less than 250 PSI.

HE 2000 Orientation Page

VIII: DC Motor Terminal / AC Motor Foot Bracket
Orientation Relative to Pad "A"



X: DC - Start Switch Orientation Relative to Terminals
AC - Push Button Start Switch or Accessory Location on Conduit Box



NOTE: When a manifold is added to the adapter, start switch location is critical in reference to the motor terminals. The chart shown below shows the "approved" locations. Interference will occur in any other position.

Motor Terminal Location	Start Switch Approved Location
3	1, 4, 2, 5, 7
6	1, 4, 2
9	None
12	2, 4, 7

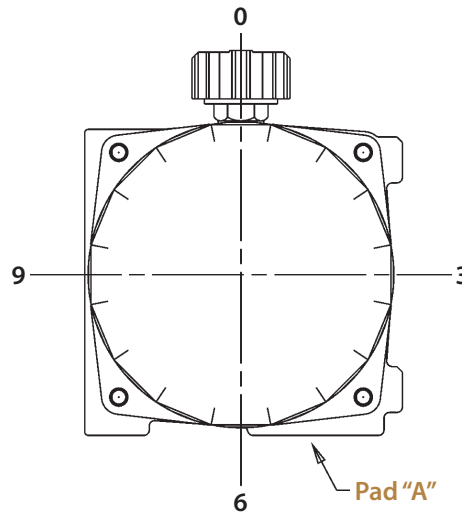
DC - Location relative to pad "A" viewing from reservoir end AC - Location relative to reservoir end			
Model Code	DC Version	Model Code	AC Version
1	= 10 O'Clock (motor terminals)	0	= 12 o'clock w/reservoir end down
4	= 11 O'Clock (motor terminals)	3	= 3 o'clock w/reservoir end down
2	= 12 O'Clock (motor terminals)	9	= 9 o'clock w/reservoir end down
5	= 1 O'Clock (motor terminals)		
7	= 2 O'Clock (motor terminals)		
A = no switch or push button			

Orientation Page (cont.)

XII: Breather Orientation Relative to Pad "A" (Reservoir End View)

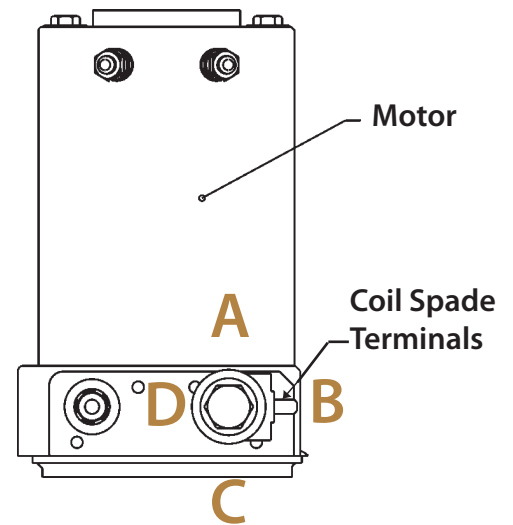
Model Code	
0	= 12 o'clock
3	= 3 o'clock
6	= 6 o'clock
9	= 9 o'clock

Shown:
0 = 12 o'clock
to pad "A"



XIII: Coil Termination (Spade Terminal or Wire Leads) Relative to Motor for Solenoid Acting Release Valves

Note: The "Model Code" chart shown below applies to both "Coil Termination" and "Lever Orientation". Either "Coil Termination" or "Lever Orientation" must be selected for Option XIII, not both.

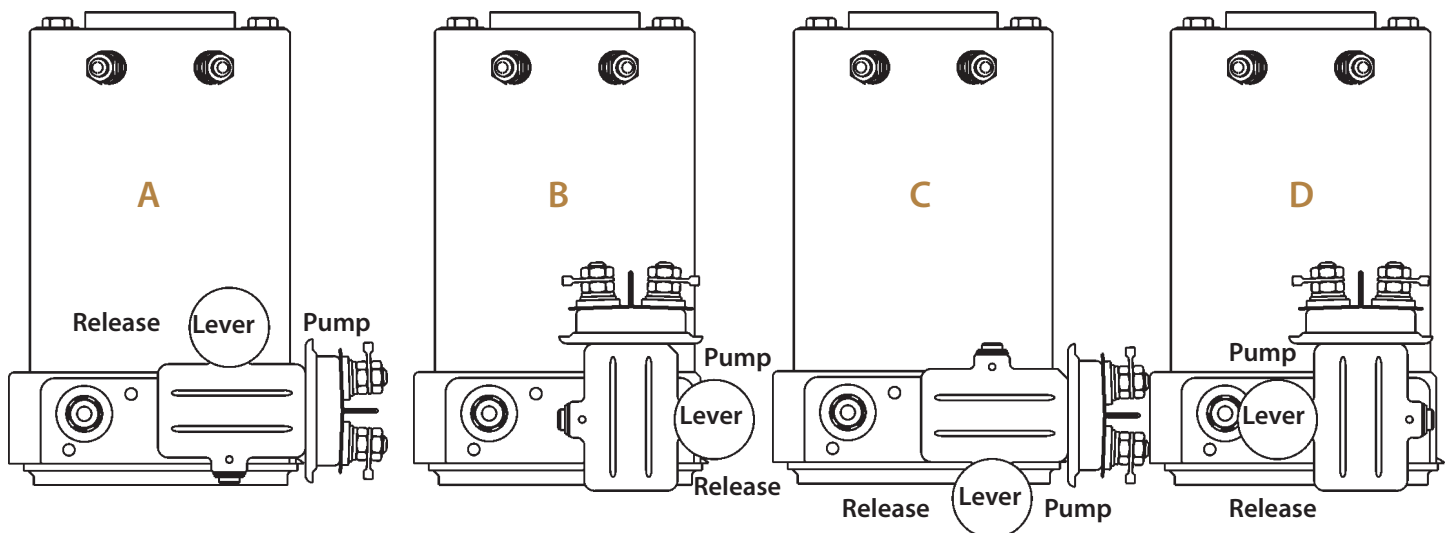


The example above shows the coil spade terminal at the "B" position.

Model Code	
A	= 12 o'clock = Toward Motor
B	= 3 o'clock = Away from Center
C	= 6 o'clock = Toward Reservoir
D	= 9 o'clock = Toward Center
N	= None

XIII: Lever Orientation Relative to Motor for Manual Release Valves

Location relative
to motor viewing
from top of coil or
top of manual
release switch box



PUMPS & MOTORS

Cast Iron Pumps

Heavy Duty



GC Series Pumps

Displacements

0.065 to 0.711 cu. In. (1.06 to 11.65 cc)

GC Series High/Low Pumps

High Pressure Displacements

0.065 to 0.258 cu. In. (1.06 to 4.22 cc)

Low Pressure Displacements

0.258 to 0.776 cu. In. (4.22 to 12.71 cc)

Maximum Pressure

4,000 psi (276 bar)

Maximum Speed

4,000 rpm



F12 & F15 Ferra Series Pumps

F12 Displacements

0.976 to 2.502 cu. In. (16 – 41 cc)

F15 Displacements

1.159 to 3.051 cu. In. (19 to 50 cc)

Maximum Pressure

4,000 psi (276 bar)

Maximum Speed

3,600 rpm



F20/F30 Pumps & F20-LS/F30-LS Load Sense Ferra Series Pumps

Displacements

1.41 to 9.82 cu. In. (23 to 161 cc)

Maximum Pressure

4,000 psi (276 bar)

Maximum Speed

3,600 rpm



D Series Pumps

Displacements

0.232 to 1.395 cu. In. (3.80 to 22.85 cc)

D Series High/Low Pumps

High Pressure Displacements

0.465 cu. In. (7.62 cc)

Low Pressure Displacements

0.930 to 1.395 cu. In. (15.24 to 22.86 cc)

Maximum Pressure

3,000 – 4,000 psi (207 – 276 bar)

Maximum Speed

3,600 – 4,000 rpm

Aluminum Pumps

Medium/Light Duty



W-Series Pumps

W100 Displacements

0.031 to 0.122 cu. In. (0.50 to 2.00 cc)

W300 Displacements

0.049 to 0.347 cu. In. (0.80 to 5.70 cc)

W600 Displacements

0.244 to 0.732 cu. In. (4 to 12 cc)

W900 Displacements

0.305 to 1.891 cu. In. (5 to 31 cc)

W1200 Displacements

1.526 to 2.014 cu. In. (25 to 33 cc)

W1500 Displacements

1.159 to 3.051 cu. In. (19 to 50 cc)

Maximum Pressure

4,000 psi (276 bar)

Maximum Speed

500 to 4,000 rpm



WK900 CALMA Pumps

Displacements

0.305 to 1.648 cu. In. (5 to 27 cc)

Maximum Pressure

3,336 psi (230 bar)

Maximum Speed

4,000 rpm

Fluid Motors



Cast Iron

Displacements

0.065 to 9.82 cu. In. (1.06 to 161 cc)

Speed

Up to 10,000 rpm

Aluminum

Displacements

0.244 to 3.050 cu. In. (4 to 50 cc)

Speed

Up to 4,000 rpm

Flow Dividers



GC & D Series

GC Displacements

0.097 to 0.517 cu. In. (1.58 to 8.47 cc)

D Displacements

0.232 to 0.813 cu. in. (3.8 to 13.32 cc)

Maximum Pressure

4,500 psi (310 bar)

Maximum Input Flow Per Section

14 gpm (53 lpm)



Call us for more information

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Visit our web site: <http://www.concentricAB.com>

E-mail us: info.usro@concentricAB.com

HE 1000 Power Packs Order Code

To order a complete power pack, simply work through the options below, creating a model number as shown in the example. All location positions are viewed from the reservoir end.

Example of Order Code Structure: HE1-NE024-05-150-C-15-AD-0-C-2-AA-0-A-00-00

Code HE 1	HE 1000 Adaptor Size	
	HE 1000 adaptor	
NA000	HE 1000 Coil Voltage+ Valve Type Adaptor Kit for P & T Ports or Block Mounted Valves	HE 1000 Kit No. 1303653
NE012 Or NE024	Valve Kit (12VDC Lift-Hold-Lower Solenoid Release Valve)	1300023
And	Valve Kit (24VDC Lift-Hold-Lower Solenoid Release Valve)	1300024
	Adaptor Kit (Lift-Hold-Lower Circuit)	1303654
NL012 Or NL024	2-Position, 4-Way Valve Kit w/12VDC Coil	1303655
And	2-Position, 4-Way Valve Kit w/24VDC Coil	1303656
	Adaptor Kit (2-Position, 4-Way Valve)	1303657
NO012 Or NO024	Valve Kit (12VDC Lift-Hold-Lower Solenoid Release Valve w/Manual Override)	1300783
And	Valve Kit (24VDC Lift-Hold-Lower Solenoid Release Valve w/Manual Override)	1300784
	Adaptor Kit (Lift-Hold-Lower Circuit)	1303654
Code	HE 1000 Pump	HE 1000 Kit No.
02	0.015 in ³ (0.24 cm ³)	1303431
05	0.029 in ³ (0.48 cm ³)	1303432
08	0.051 in ³ (0.84 cm ³)	1303433
12	0.074 in ³ (1.22 cm ³)	1303434
15	0.100 in ³ (1.50 cm ³)	1303580
17	0.900 in ³ (1.75 cm ³)	1303581
20	0.122 in ³ (2.00 cm ³)	1303582
Code ***	HE 1000 Relief Valve Setting 50-250 bar, eg 150 bar	HE 1000 Kit No. 1303525
Code	HE 1000 Flow Control Valve	HE 1000 Kit No.
A	None	
C	.53 gpm (2 l/min)	1303446
D	.79 gpm (3 l/min)	1303447
E	1.0 gpm (4 l/min)	1303448
F	1.3 gpm (5 l/min)	1303449
Code	HE 1000 Motor	HE 1000 Kit No.
10	12 VDC, 2 Terminal, 3" Motor (80 mm)	1303454
15	24 VDC, 2 Terminal, 3" Motor (80 mm)	1303456
82	12 VDC, 2 Terminal, 4.5" Motor (112 mm)†	1300618
84	24 VDC, 2 Terminal, 4.5" Motor (112 mm)†	1300619
80	12 VDC, 1 Terminal, 4.5" Motor (112 mm)†	1300027
†	Requires Motor Mounting Kit (Skanes #40599-00)	1303658

Code	HE 1000 Reservoir	HE 1000 Kit No.
AA	.13 gal. (0.5 l) usable, horizontal, plastic	1303484
AB	.13 gal. (0.5 l) usable, vertical, plastic	1303485
AC	.26 gal. (1.0 l) usable, horizontal, plastic	1303486
AD	.26 gal. (1.0 l) usable, vertical, plastic	1303487
AE	.40 gal. (1.5 l) usable, horizontal, plastic	1303488
AF	.40 gal. (1.5 l) usable, vertical, plastic	1303489
AG	.53 gal. (2.0 l) usable, horizontal, plastic	1303490
AH	.53 gal. (2.0 l) usable, vertical, plastic	1303491
AJ	.66 gal. (2.5 l) usable, horizontal, plastic	1303492
AK	.66 gal. (2.5 l) usable, vertical, plastic	1303493
AL	1.0 gal. (4.0 l) usable, horizontal, plastic	1303494
AM	1.0 gal. (4.0 l) usable, vertical, plastic	1303495
Code	HE 1000 Motor Terminal Position	
0	Terminals at 12 o'clock to pad "A"	
3	Terminals at 3 o'clock to pad "A"	
6	Terminals at 6 o'clock to pad "A"	
9	Terminals at 9 o'clock to pad "A"	
Code	HE 1000 Start Switch	HE 1000 Kit No.
A	None	
B	12V, 4 Pole (2 Terminal Motors)	1300937
C	24V, 4 Pole (2 Terminal Motors)	1300938
D	12V, 3 Pole (1 Terminal Motor)	1300939
Code	HE 1000 Start Switch Position	
2	12 o'clock to motor terminals	
1	10 o'clock to motor terminals	
4	11 o'clock to motor terminals	
5	1 o'clock to motor terminals	
7	2 o'clock to motor terminals	
Code	HE 1000 Tube Kit	
AA	Tube kit included in reservoir kit	
Code	HE 1000 Breather Position	
0	12 o'clock to pad "A"	
1	1:30 to pad "A"	
3	3 o'clock to pad "A"	
4	4:30 to pad "A"	
6	6 o'clock to pad "A"	
7	7:30 to pad "A"	
9	9 o'clock to pad "A"	
5	10:30 to pad "A"	
Code	HE 1000 Coil Terminals Position on Solenoid Valve (as viewed from side)	
A	12 o'clock (towards motor)	
B	3 o'clock (towards reservoir)	
C	6 o'clock (towards pad "A")	
D	9 o'clock (away from pad "A")	
Code	HE 1000 Accessory 1	HE 1000 Kit No.
00	No accessories	
26	Single Acting Pendant	1303569
Code	HE 1000 Accessory 2	HE 1000 Kit No.
00	No accessories	
10	Boots	1303554

HE 2000 Power Packs Order Code

To order a complete power pack, simply work through the options below, creating a model number as shown in the example.

STANDARD POWER PACK																
EXAMPLE	I		II		III		IV		V		VI		VII		VIII	
	ADAPTER SIZE		ADAPTOR OPTIONS		PUMP TYPE/SIZE		RELIEF VALVE SETTING		FLOW CONTROL VALVE		MOTOR		RESERVOIR		MOTOR POSITION	
HE2	BH012	26	150	E	82	AF	6	H	2	KC	0	N	00	00	A3	
Your Options	HE2				*** DO NOT LEAVE ANY BLANK FIELDS ***											A3

THE HE 2000 POWER PACK EXAMPLE SHOWN ABOVE consists of a 3-position / 4-way valve, dual pilot-operated check valves, a 2.6 cc/rev. pressure-balanced pump, a 12 volt two terminal DC motor with start switch, and a 1.3 quart plastic reservoir. The relief valve has been set at 150 BAR (2175 PSI) and the power pack has a 1 gallon per minute (GPM) / 4 liter per minute (LPM) flow control valve incorporated into the return line circuit. The power pack is intended to be mounted in a vertical position with the motor terminals and breather cap opposite to PAD A.

- I. ADAPTER SIZE
HE2 = HE 2000

Pick a valve type and corresponding coil voltage, if applicable.

Valve Type	KIT #	+ COIL VOLTAGE	KIT #			
BA Adapter, P & T Ports, Relief Valve & Check Valve	Adapter 1303649 Port Plug 1300191	BA000				
CA Adapter, P & T Ports, Relief Valve & Check Valve	Adapter 1303649 Port Plug 1300191 AC Motor Adapter 1303549	CA000				
BB Solenoid Lowering Adapter	Adapter 1303649 Solenoid Release Valve 1303534	BB012* 12 Volt DC BB024* 24 Volt DC	1300914 1300915			
CB Solenoid Lowering Adapter	Adapter 1303649 Solenoid Release Valve 1303534 AC Motor Adapter 1303549	CB115* 115 Volt AC CB230* 230 Volt AC CB012* 12 Volt DC CB024* 24 Volt DC	1303576 1303577 1300914 1300915			
BE Manual Lowering Adapter w/DC Contactor	Adapter 1303649 Manual Release Valve w/Pilot Contactor 1300192	BE000				
CE AC Manual Lowering Valve Adapter	Adapter 1303649 Manual Release Valve 1303533 AC Motor Adapter 1303549	CE000				
Motor Spool (DC Version, AC Version and DC Version w/Double P.O. Check)						
BF Manifold Adapter w/3-Pos. 4-Way Valve (Motor Spool) DC Version	Adapter 1303650 Manifold 1300866 Motor Spool Valve 1303382 Cavity Plug 1303540	BF012+ 12 Volt DC BF024+ 24 Volt DC	1300914 1300915			
	BH Manifold Adapter w/3-Pos. 4-Way Valve (Motor Spool) DC Version w/Double P.O.	Adapter 1303650 Manifold 1300866 Motor Spool Valve 1303382 Double P.O.Check 1303538	BH012+ 12 Volt DC BH024+ 24 Volt DC	1300914 1300915		
		CF Manifold Adapter w/3-Pos. 4-Way Valve (Motor Spool) AC Version	Adapter 1303650 Manifold 1300866 Motor Spool Valve 1303382 Cavity Plug 1303540 Riser Block 1300855 AC Motor Adapter 1303549	CF115+ 115 Volt AC CF230+ 230 Volt AC CF012+ 12 Volt DC CF024+ 24 Volt DC	1303576 1303577 1300914 1300915	
			Tandem Center Spool (DC and AC Versions)			
BJ Manifold Adapter w/3-Pos. 4-Way Valve (Tandem Center Spool) DC Version			Adapter 1303650 Manifold 1300866 Tandem Center Valve 1303530 Cavity Plug 1303540	BJ012+ 12 Volt DC BJ024+ 24 Volt DC	1300914 1300915	
	CJ Manifold Adapter w/3-Pos. 4-Way Valve (Tandem Center Spool) AC Version		Adapter 1303650 Manifold 1300866 Tandem Center Valve 1303530 Cavity Plug 1303540 Riser Block 1300855 AC Motor Adapter 1303549	CJ115+ 115 Volt AC CJ230+ 230 Volt AC CJ012+ 12 Volt DC CJ024+ 24 Volt DC	1303576 1303577 1300914 1300915	
			Solenoid Operated, 2-Position, 4-Way Normally Open Valve (DC and AC Versions)			
		BR Manifold Adapter w/Sol. Operated, 2-Pos., 4-Way Valve DC Version	Adapter 1303650 Manifold 1300866 Normally Open Valve 1303529 Cavity Plug 1303540	BR012* 12 Volt DC BR024* 24 Volt DC	1300914 1300915	
CR Manifold Adapter w/Sol. Operated, 2-Pos., 4-Way Valve AC Version			Adapter 1303650 Manifold 1300866 Normally Open Valve 1303529 Cavity Plug 1303540 Riser Block 1300855 AC Motor Adapter 1303549	CR115* 115 Volt AC CR230* 230 Volt AC CR012* 12 Volt DC CR024* 24 Volt DC	1303576 1303577 1300914 1300915	
			BS Manifold Adapter w/Sol. Operated, 2-Pos., 4-Way Valve DC Version w/P.O. Check	Adapter 1303650 Manifold 1300866 Normally Open Valve 1303529 Single P.O. Check 1303539	BS012* 12 Volt DC BS024* 24 Volt DC	1300914 1300915
				Single D03 Valve Manifold (DC and AC Versions) / Double D03 Valve Manifold (AC Version Only)		
	DA Manifold Adapter w/ Single D03 Valve Manifold DC Version	Adapter 1303650 D03 Manifold 1300854 Bolts 1300865		DA000		
		DB Manifold Adapter w/ Single D03 Valve Manifold AC Version	Adapter 1303650 D03 Manifold 1300854 Bolts 1300857 Riser Block 1300855 AC Motor Adapter 1303549	DB000		
DC Manifold Adapter w/ Double D03 Valve Manifold AC Version Only			Adapter 1303650 D03 1300854 Manifolds (2) (2) Bolts 1300858 Riser Block 1300855 AC Motor Adapter 1303549	DC000		
	DM Manifold Adapter (DC Version)		Adapter 1303650	DM000		
	AM Manifold Adapter (AC Version)		Adapter 1303650 AC Motor Adapter 1303549	AM000		

PUMP TYPE/SIZE (/REV.)				MAX. PRESSURES			
Order Code	Cm. ³	In. ³	Kit #	Continuous		Intermittent	
W Series Pumps				PSI	BAR	PSI	BAR
08	0.8	.049	1303435	3335	230	3698	255
12	1.2	.073	1303436	3335	230	3698	255
16	1.6	.098	1303437	3335	230	3698	255
20	2.0	.122	1303438	3335	230	3698	255
26	2.6	.153	1303439	3335	230	3698	255
32	3.2	.195	1303440	3335	230	3698	255
38	3.8	.232	1303441	3045	210	3335	230
43	4.3	.262	1303442	2755	190	3045	210
48	4.8	.293	1303443	2465	170	2712	187
57	5.7	.348	1303444	2103	145	2320	160
GC Series Pumps				PSI	BAR	PSI	BAR
70	1.06	.065	1300174	3000	207	4000	276
71	1.59	.097	1300176	3000	207	4000	276
72	2.12	.129	1300171	3000	207	4000	276
73	2.65	.162	1300625	3000	207	4000	276
74	3.18	.194	1300169	3000	207	4000	276
76	4.24	.259	1300172	2300	159	4000	276
77	5.30	.323	1300931	1900	131	3000	207
78	6.36	.388	1300932	1600	110	2500	172

RELIEF VALVE SETTINGS		
BAR	SETTING RANGES	Kit #
***	014 - 033 BAR (200 - 500 PSI)	1303659
	034 - 103 BAR (501 - 1500 PSI)	1303660
	104 - 173 BAR (1501 - 2500 PSI)	1303661
	174 - 276 BAR (2501 - 4000 PSI)	1303662
Eg.	150 Bar (2175 PSI)	

FLOW CONTROL VALVE		
Description		Kit #
A	None	N/A
E	4 LPM (1 GPM)	1303448
K	8 LPM (2 GPM)	1303450
M	10 LPM (2.5 GPM)	1303453
N	11 LPM (3 GPM)	1303451
R	15 LPM (4 GPM)	1303452

MOTOR		Kit #
54	EXTENDED SHAFT ADAPTER	1300335
55	AC FLANGE "NEMA C" ADAPTER	1303543
60	1/2 HP (30 min.), 3 PH, 50/60 Hz, 208-230/460 VAC, TENV, 1425/1725	1300916
62	1 HP (30 min.), 3 PH, 50/60 Hz, 208-230/460 VAC, TENV, 2850/3450	1300918
63	1 HP (30 min.), 3 PH, 50/60 Hz, 208-230/460 VAC, TEFC, 2850/3450	1300919
64	1 HP, 1 PH, 60 Hz, 115/208-230 VAC, TENV, 3450	1300920
65	1 HP, 1 PH, 50/60 Hz, 115/208-230 VAC, TEFC, 2850/3450	1300921
66	1 HP, 3 PH, 50/60 Hz, 208-230/460 VAC, TENV, 1425/1725	1300922
67	1 HP (30 min.), 1 PH, 60 Hz, 115/208-230 VAC, TENV, 1725	1300923
68	2 HP (30 min.), 1 PH, 60 Hz, 115/208-230 VAC, TENV, 3450	1300924
69	2 HP, 1 PH, 50/60 Hz, 115/208-230 VAC, TEFC, 2850/3450	1300925
70	2 HP (30 min.), 3 PH, 50/60 Hz, 208-230/460 VAC, TENV, 1425/1725	1300926
71	2 HP (30 min.), 1 PH, 60 Hz, 115/208-230 VAC, TENV, 1725	1300927
72	3 HP (30 min.), 3 PH, 50/60 Hz, 208-230/460 VAC, TENV, 2850/3450	1300928
73	3 HP, 3 PH, 50/60 Hz, 208-230/460 VAC, TEFC, 2850/3450	1300929
74	2.5 HP (30 min.), 1 PH, 50/60 Hz, 208-230 VAC, TENV, 2850/3450	1300930
80	12 VDC Single Term. - Standard Duty	1300027
82	12 VDC Double Term. - Medium Duty	1300618
83	24 VDC Single Term. - Medium Duty w/Ground Strap	1300912
84	24 VDC Double Term. - Medium Duty	1300619
85	24 VDC Double Term. - Med. Duty - Low Speed Compound	1300913
86	24 VDC Double Term. - Heavy Duty	1303551

HE 2000 Power Packs Order Code (continued)

RESERVOIR			Kit #
AA	0.7 LTR (1 QT) STEEL		1300897
AB	1.2 LTR (1.5 QT) STEEL		1300898
AC	1.9 LTR (2 QT) STEEL		1300899
AD	2.9 LTR (3 QT) STEEL		1300900
AE	0.9 LTR (1.0 QT) PLASTIC*		1300901
AF	1.4 LTR (1.5 QT) PLASTIC*		1300902
AG	1.9 LTR (2.0 QT) PLASTIC*		1300903
AJ	3.8 LTR (1 GAL) STEEL		1300904
AK	5.7 LTR (1.5 GAL) STEEL		1300905
AL	7.6 LTR (2 GAL) STEEL		1300906
AM	11.4 LTR (3 GAL) STEEL		1300907
AN	9.5 LTR (2.5 GAL) STEEL, RECTANGULAR		1300908
AP	15.2 LTR (4 GAL) STEEL, RECTANGULAR		1300909

* Maximum allowable fluid temperature for plastic reservoirs is 175°F (79°C).

MOTOR TERMINAL POSITION	
A	No Motor
0	12 O'Clock
3	3 O'Clock
6	6 O'Clock
9	9 O'Clock

NOTE: Location relative to Pad "A" as viewed from reservoir end.

START SWITCH			Kit #
A	None		N/A
H	12 VDC - UL RECOGNIZED, 4-POLE		1300937
J	24 VDC - UL RECOGNIZED, 4-POLE		1300938
K	12 VDC, 3-POLE		1300939
L	24 VDC, 3-POLE		1300940
M	12 V, HEAVY DUTY, 4-POLE		1300941
N	24 V, HEAVY DUTY, 4-POLE		1300942
P	1 PH, 115 VAC (only for motors: 64, 65, 67, 68, 69 & 71)		1303546
Q	1 PH, 230 VAC (only for motors: 64, 65, 67, 68, 69 & 71)		1303545
R	1 PH, 230 VAC (only for motor: 74)		1303544
S	3 PH, 230 VAC (only for motors: 60, 62, 63, 66, 70, 72 & 73)		1303548
T	3 PH, 460 VAC (only for motors: 60, 62, 63, 66, 70, 72 & 73)		1303547

START SWITCH POSITION	
A	No Switch or Push Button
DC Units (Relative to Motor Terminals)	
1	10 O'Clock
2	12 O'Clock
4	11 O'Clock
5	1 O'Clock
7	2 O'Clock
AC Units Push Button (Reservoir End Down-Pad "A")	
0	12 O'Clock
3	3 O'Clock
9	9 O'Clock

TUBE KITS							
Order Code	LTR	QTS	MOUNT	SERIES	PAD "A"	Kit #	Material
AB	0.7	1	Horizontal	GC	Down	1300867	Steel
BB	0.7	1	Horizontal	GC/W	@ 9:00	1300868	Steel
CB	0.7	1	Horizontal	W	Down	1300943	Steel
DB	0.7	1	Vertical	GC	N/A	1300875	Steel
EB	0.7	1	Vertical	W	N/A	1300953	Steel
FB	0.76	.8	Horizontal	GC	Down	1300961	Plastic
GB	0.76	.8	Horizontal	GC/W	@ 9:00	1300963	Plastic
HB	0.76	.8	Horizontal	W	Down	1300962	Plastic
JB	0.76	.8	Vertical	GC	N/A	1300973	Plastic
KB	0.76	.8	Vertical	W	N/A	1300974	Plastic
Order Code	LTR	QTS	MOUNT	SERIES	PAD "A"	Kit #	Material
AC	1.2	1.5	Horizontal	GC	Down	1300867	Steel
BC	1.2	1.5	Horizontal	GC/W	@ 9:00	1300868	Steel
CC	1.2	1.5	Horizontal	W	Down	1300943	Steel
DC	1.2	1.5	Vertical	GC	N/A	1300876	Steel
EC	1.2	1.5	Vertical	W	N/A	1300954	Steel
FC	1.2	1.3	Horizontal	GC	Down	1300961	Plastic
GC	1.2	1.3	Horizontal	GC/W	@ 9:00	1300963	Plastic
HC	1.2	1.3	Horizontal	W	Down	1300962	Plastic
JC	1.2	1.3	Vertical	GC	N/A	1300975	Plastic
KC	1.2	1.3	Vertical	W	N/A	1300976	Plastic
Order Code	LTR	QTS	MOUNT	SERIES	PAD "A"	Kit #	Material
AD	1.9	2	Horizontal	GC	Down	1300867	Steel
BD	1.9	2	Horizontal	GC/W	@ 9:00	1300868	Steel
CD	1.9	2	Horizontal	W	Down	1300943	Steel
DD	1.9	2	Vertical	GC	N/A	1300877	Steel
ED	1.9	2	Vertical	W	N/A	1300891	Steel
FD	1.6	1.7	Horizontal	GC	Down	1300961	Plastic
GD	1.6	1.7	Horizontal	GC/W	@ 9:00	1300963	Plastic
HD	1.6	1.7	Horizontal	W	Down	1300962	Plastic
JD	1.6	1.7	Vertical	GC	N/A	1300977	Plastic
KD	1.6	1.7	Vertical	W	N/A	1300978	Plastic

TUBE KIT OPTIONS CONTINUED AT THE TOP OF THE NEXT COLUMN.

TUBE KITS							
Order Code	LTR	QTS	MOUNT	SERIES	PAD "A"	Kit #	Material
AE	2.9	3	Horizontal	GC	Down	1300873	Steel
BE	2.9	3	Horizontal	GC/W	@ 9:00	1300874	Steel
CE	2.9	3	Horizontal	W	Down	1300946	Steel
DE	2.9	3	Vertical	GC	N/A	1300878	Steel
EE	2.9	3	Vertical	W	N/A	1300878	Steel
Order Code	LTR	GAL	MOUNT	SERIES	PAD "A"	Kit #	Material
AF	3.8	1	Horizontal	GC	Down	1300867	Steel
BF	3.8	1	Horizontal	GC/W	@ 9:00	1300868	Steel
CF	3.8	1	Horizontal	W	Down	1300943	Steel
DF	3.8	1	Vertical	GC	N/A	1300891	Steel
EF	3.8	1	Vertical	W	N/A	1300957	Steel
Order Code	LTR	GAL	MOUNT	SERIES	PAD "A"	Kit #	Material
AG	5.7	1.5	Horizontal	GC	Down	1300873	Steel
BG	5.7	1.5	Horizontal	GC/W	@ 9:00	1300874	Steel
CG	5.7	1.5	Horizontal	W	Down	1300946	Steel
DG	5.7	1.5	Vertical	GC	N/A	1300892	Steel
EG	5.7	1.5	Vertical	W	N/A	1300958	Steel
Order Code	LTR	GAL	MOUNT	SERIES	PAD "A"	Kit #	Material
AH	7.6	2	Horizontal	GC	Down	1300873	Steel
BH	7.6	2	Horizontal	GC/W	@ 9:00	1300874	Steel
CH	7.6	2	Horizontal	W	Down	1300946	Steel
DH	7.6	2	Vertical	GC	N/A	1300893	Steel
EH	7.6	2	Vertical	W	N/A	1300959	Steel
Order Code	LTR	GAL	MOUNT	SERIES	PAD "A"	Kit #	Material
AJ	11.4	3	Horizontal	GC	Down	1300873	Steel
BJ	11.4	3	Horizontal	GC/W	@ 9:00	1300874	Steel
CJ	11.4	3	Horizontal	W	Down	1300946	Steel
DJ	11.4	3	Vertical	GC	N/A	1300894	Steel
EJ	11.4	3	Vertical	W	N/A	1300960	Steel
Order Code	LTR	GAL	MOUNT	SERIES	PAD "A"	Kit #	Type
AK	9.5	2.5	Horizontal	GC	Down	1300873	Rectangle
BK	9.5	2.5	Horizontal	GC/W	@ 9:00	1300874	Rectangle
CK	9.5	2.5	Horizontal	W	Down	1300946	Rectangle
Order Code	LTR	GAL	MOUNT	SERIES	PAD "A"	Kit #	Type
AL	15.2	4	Horizontal	GC	Down	1300873	Rectangle
BL	15.2	4	Horizontal	GC/W	@ 9:00	1300874	Rectangle
CL	15.2	4	Horizontal	W	Down	1300946	Rectangle

BREATHER POSITION	
0	12 O'Clock
3	3 O'Clock
6	6 O'Clock
9	9 O'Clock

NOTE: Location relative to Pad "A" as viewed from reservoir face.

COIL TERM./LEVER POSITION	
A	12 O'Clock = Toward Motor
B	3 O'Clock = Away from Center
C	6 O'Clock = Toward Reservoir
D	9 O'Clock = Toward Center
N	None

NOTE: Location relative to motor as viewed from top of coil or top of manual release switch box.

ACCESSORY (Maximum of 2 can be specified.)		
XIV.	00	No Accessories
XV.	10	DC - Rubber Terminal Boots (Qty of 4)
	11	AC - Plain Pigtail (Exits box from orientation "3")
	12	AC - Plain Pigtail (Exits box from orientation "0")
	13	AC - Plain Pigtail (Exits box from orientation "9")
	14	AC - Pigtail w/115 VAC Male Wall Plug (Exits box from orientation "3")
	15	AC - Pigtail w/115 VAC Male Wall Plug (Exits box from orientation "0")
	16	AC - Pigtail w/115 VAC Male Wall Plug (Exits box from orientation "9")
	17	AC - Pigtail w/115 VAC Male Twist Lock Plug (Exits box from orientation "3")
	18	AC - Pigtail w/115 VAC Male Twist Lock Plug (Exits box from orientation "0")
	19	AC - Pigtail w/115 VAC Male Twist Lock Plug (Exits box from orientation "9")
	20	AC - Pigtail w/115 VAC Male/Female Twist Lock Plug (Exits box from orientation "3")
	21	AC - Pigtail w/115 VAC Male/Female Twist Lock Plug (Exits box from orientation "0")
	22	AC - Pigtail w/115 VAC Male/Female Twist Lock Plug (Exits box from orientation "9")
	23	AC - Single Acting Pendant (Exits box from orientation "3")
	24	AC - Single Acting Pendant (Exits box from orientation "0")
	25	AC - Single Acting Pendant (Exits box from orientation "9")
	26	DC - Single Acting Pendant
	27	DC - Double Acting Pendant

NOTE: "Box" refers to conduit box. See page 20 for conduit box locations.

DESIGN SERIES	
A	Major Change to form, fit or function
3	Minor Design Change

Note: Design Series is assigned by the factory at the current level.

TOOLS AVAILABLE:	W300 Stud Driver	1303583
	Relief Valve Seat Installation Socket	1303584

For more information, application assistance or detailed literature on any Concentric product line, call us Toll Free 1-800-572-7867, e-mail us (info.usro@concentricAB.com), or visit our website at <http://www.concentricAB.com>

PRODUCT RANGE

HE Powerpacks

12/24/48 VDC 0.3 – 4.5 kW and
0.75 – 3 kW AC modular power packs

HE Box Powerpacks

12/24/48 VDC modular powerpacks
in weatherproof boxes

Pressure Switches

5 - 350 bar, connecting/disconnecting

W100 Hydraulic pumps

0,5 - 2,0 cc 227 bar

W300 Hydraulic pumps

0,8 – 5,7 cc 230 bar

W600 Hydraulic pumps / motors

3 – 12 cc 276 bar

W900 Hydraulic pumps / motors

5 – 31 cc/section 276 bar

Calma The new quiet pumps

6,2 - 23,7 cc/section 250 bar

WQ900 The quiet pumps

5 - 23 cc/section 230 bar

WP900X Hydraulic pumps

16 - 31 cc/section 276 bar

W1500 Hydraulic pumps / motors

19 - 50 cc/section 276 bar

F12 FERRA Heavy duty pumps

16 - 41 cc/section 276 bar

F15 FERRA Heavy duty pumps

19 - 50 cc/section 276 bar

F20/F30 (LS) Hydraulic pumps / motors

23 – 161 cc/section 276 bar

GPA Internal Gear pumps

1,7 – 63 cc/section 100 bar

GC Hydraulic pumps / motors

1,06 – 11,65 cc/section 276 bar

D Hydraulic pumps

3,8 – 22,9 cc/section 207 bar

H Hydraulic pumps

9,8 – 39,4 cc/section 207 bar

II-Stage Hydraulic pumps

4,2 – 22,8 cc/section 276 bar

Rotary Flow Dividers

3,8 – 13,3 cc/section 300 bar

Transmission pumps

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