



Vertical Power Unit

NACHI Standard Vertical Hydraulic Power Units offer standard systems complete with:

- Reservoir, Pump, Pump Motor Adaptor, Electric Motor, Flexible Coupling, Pressure Control Relief Valve for Gear Pumps.
- Remote Compensator for Pressure

Features

Noise Levels:

Noise levels are well below the 90db (a) specified under the WALSH-HEALY ACT.

Standard Units:

Standard units can be ordered using the simple model codes. Optional selections can be obtained with the same codes. Custom units can be manufactured using standard unit components.

Capacities:

Reservoir capacities available from 5 gallon to 30 gallons (specials upon request). Reservoir capacities vs. pump

Compensated Piston or Vane pumps.

- Pressure Gauge w/Shut Off, Air Breather/Filter Combination, Sight Gauge w/Thermometer, Drain Plug, Pressure and Return Connections, Suction Strainer w/3PSI By-Pass (except on 5 gallon) and check valve.

flow can vary depending on specific applications. Generally a 2:1 reservoir to pump ratio is acceptable. Pressures at specific pump flow will determine the hydraulic horsepower required. Refer to "TABLE A", below.

Quality:

Quality components and high manufacturing standards make these factory assembled units fit virtually any application. The wide variety of pumps, motors, reservoirs, manifolds and choice of options enable you to match

your application requirements for optimum productivity and Cost-Effective operation.

Reliability:

Strict control of accepted hydraulic assembly practices, testing procedures, plus high quality components assure successful operation in a variety of industrial applications.

Low Cost:

Production line assembling, combined with minimal piping offers compact systems at low cost.

Operating Instructions

Fill reservoir with new premium grade hydraulic fluid (Mobil DTE26 or equal). It is highly recommended to filter all hydraulic fluid before filling the reservoir. Fluid level gauge will indicate proper level. Electric motor wiring must conform to the motor wiring nameplate. Jog motor to check proper rotation, indicated by the rotation arrow on the unit. Incorrect rotation can be reversed by interchanging any two lines on a three phase motor.

Relief or compensator control valve should be set at lowest pressure setting for startup. Decrease pressure by turning the adjusting screw counterclockwise. If pump does not prime, vent pump pressure line to atmosphere and into an open container to establish flow. After pump has primed, reconnect pressure line and run at lowest pressure setting to purge air from the system piping. Recheck the fluid level in the reservoir, as some fluid could be lost in the filling of piping and components. Most foreign material and contaminants will be trapped by the return line filter after a few hours of operation. The return line filter element should be replaced when gauge indicates. Most industrial applications should operate at a temperature below 140 degrees fahrenheit. At higher temperatures, problems are often experienced in maintaining reliable and consistent hydraulic control. Component service life is also reduced and hydraulic oil deteriorates. If the system tends to operate at an elevated temperature level, steps must be taken to reduce this elevated operating temperature.

Once a year or every 4000 hours of operation, the reservoir's air breather filter and the suction strainer should be replaced. The reservoir oil should be drained, and the reservoir cleaned. Dusty or contaminated environments may require more frequent cleaning and maintenance.

Pressures shown will load AC electric motors to their nameplate horsepower rating. Pressures shown should not be exceeded when system must be started at full pressure. Momentary pressures higher than those listed can be applied if sufficient operating time at lower pump

pressure or lower motor load during the cycle will provide for motor cooling. Dead head pressure loading would require full motor HP using a constant displacement gear pump. Dead head pressure with a pressure compensated Piston or Vane pump would require a small percentage of the full flow loading, consequently generating less heat. Actual HP requirements depend on the duty cycle and operating conditions. This is many times best determined by actual testing by the customer.

The components and piping are designed for the use of petroleum base fluids.

THEORETICAL PRESSURE TABLE (PSI)

Table "A"

GPM	HORSEPOWER REQUIREMENTS ▲								
	1	1.5	2	3	5	7.5	10	15	20
GEAR PUMPS									
1.6	1071	1607	2143	*					
2.4	714	1071	1428	2143	*				
3.0	571	857	1143	1714	2857	*			
5.2		494	659	989	1648	2472	*		
7.0		367	490	735	1224	1836	2449	*	
9.0			381	571	952	1428	1904	2857	*
10.4				494	824	1236	1648	2472	*
12.3				418	697	1045	1393	2090	*
PISTON PUMPS									
3.8	451	677	902	1353	2255	*			
7.8	220	330	439	659	1099	1648	2197	*	
10.5	163	245	326	490	816	1224	1632	*	
VANE PUMPS									
7.9		325	434	651	1085	1627	*		
10.5		245	325	490	816	*			
14.2			241	362	604	905	1207	1811	*

▲ 5 Horsepower and larger can only be used on 10 gallon and larger reservoirs.

* Using this horsepower could cause pump to exceed maximum rated pressure

THEORETICAL PRESSURE TABLE (PSI)

Table "B"

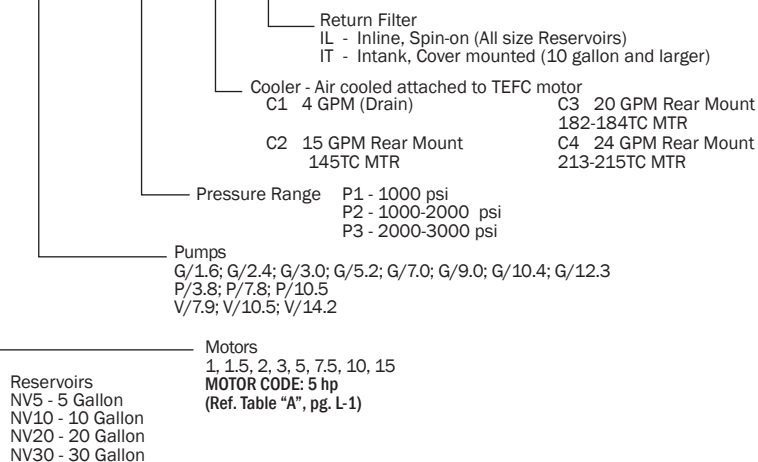
ORDERING CODE	THEORETICAL FLOW (GPM)	DISPLACEMENT CU IN/REV
GEAR PUMPS		
G/1.6	1.63	0.21
G/2.4	2.41	0.31
G/3.0	3.03	0.39
G/5.2	5.22	0.67
G/7.0	7.09	0.91
G/9.0	9.03	1.16
G/10.4	10.44	1.34
G/12.3	12.38	1.59

ORDERING CODE	THEORETICAL FLOW (GPM)	DISPLACEMENT CU IN/REV
PISTON PUMPS		
P/3.8	3.80	0.49
P/7.8	7.80	1.01
P/10.5	10.50	1.34
VANE PUMPS		
V/7.9	7.90	1.02
V/10.5	10.50	1.34
V/14.2	14.20	1.83

Reservoir Code

NV20 - 5 - G/5.2 - P1~3 - N - IL

How to Order



NOTE: Piston and Vane Pumps must use 10 gallon or larger reservoir

Replacement Items:

FILTER ELEMENT (INLINE)	#72-001
FILTER ELEMENT (INTANK)	#72-015
AIR BREATHING FILTER	#42-001
SUCTION STRAINER (5GPM)	#70-001
SUCTION STRAINER (8GPM)	#70-002
SUCTION STRAINER (10GPM)	#70-003
SUCTION STRAINER (20GPM)	#70-004

Motor Enclosure

Totally enclosed motors (TEFC) are intended for use where moisture, dirt, and/or corrosive materials are present in indoor or outdoor locations.

Motor Voltage

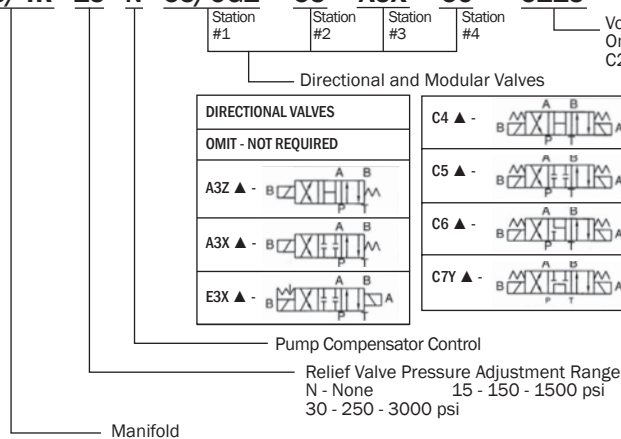
3 PHASE - 208-230/460V, 60HZ
(Special voltages upon request)

*Combination of reservoir and pumps are generally a 2:1 reservoir to pump flow ratio. Smaller pump and motor combinations may be mounted on larger reservoirs.

Manifold Code

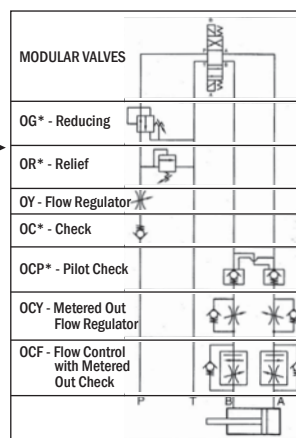
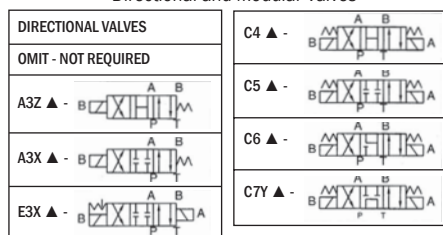
D05/4R - 15 - N - C5/OG1 - C5 - A3X - C6 - C115

How to Order



Voltage - Solenoid Valve Voltage
Omit - Not Required; C115 - AC 115V 60HZ
C230 - AC 230V 60HZ; D1 - DC 12V; D2 - DC 24V

EASY WIRING: Directional control valves come standard with a large waterproof wiring box with terminal screws, solenoid indicator light(s) and (2) PF 1/2 conduit connections.



Pressure Adjusting Range
C: 21 - 500 PSI (D03 & D05 ONLY)
1: 114 - 1000 PSI
2: 500 - 2286 PSI

Pressure Adjusting Range
1: 0 - 1000 PSI
3: 500 - 3000 PSI

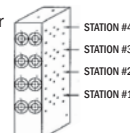
Cracking Pressure
1: 5.7 PSI
2: 50 PSI
3: 71 PSI

Cracking Pressure
1: 29 PSI
2: 71 PSI

Station #1 is closest to reservoir on a multiple station manifold

▲ ADD "F" FOR OPTIONAL HYDRAULIC SHOCKLESS SOLENOID

■ "D03" SIZE ONLY



ALUMINUM MANIFOLD BLOCKS

D03/*R - D03 Directional valve manifold with relief valve.
(*Number of valve stations required, 4 maximum. Consult factory if more stations are required.)



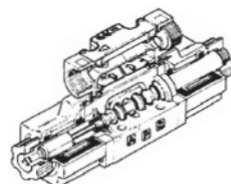
PB3R - Pressure block (#8SAE pressure connection) with relief valve for gear pumps.
PB3C - Pressure block (#8SAE pressure connection) with compensator control for piston and vane pumps.



D05/*R - D05/(D02) Directional valve manifold with relief valve.
(*Number of valve stations required, 4 maximum. Consult factory if more stations are required. 8 gallon and larger reservoir only)



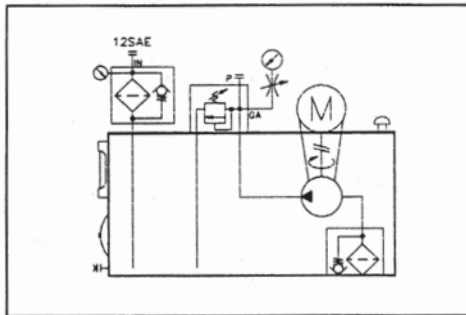
PB5R - Pressure block (#12SAE pressure connection) with relief valve for gear pumps. (8 gallons and larger reservoir only)
PB5C - Pressure block (#12SAE pressure connection) with compensator control for piston and vane pumps. (8 gallons and larger reservoir only)



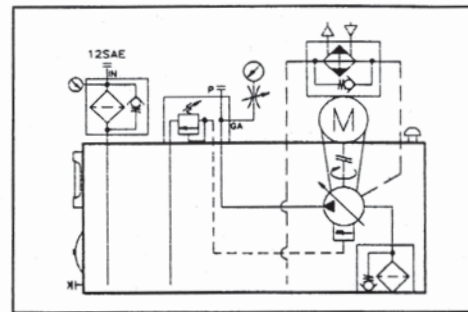
Note: "A" and "B" port connections on "D03" and "D05" manifolds are #8SAE (3/4 - 16 UNF).

Consult factory for additional configurations.

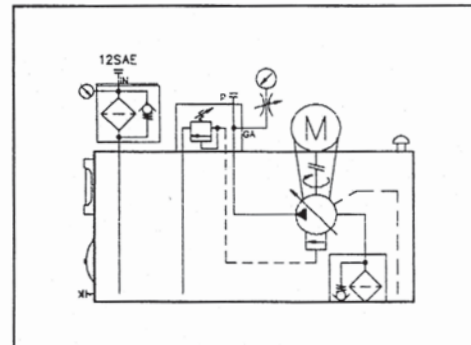
Schematics



Gear Pump Unit
with Manifold Option "PB3R" (8SAE)
or "PB5R" (12SAE)



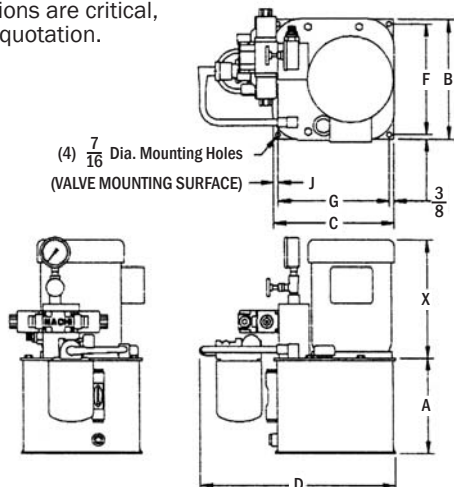
Piston/Vane Pump Unit
with Case Drain Air Cooler with By-Pass



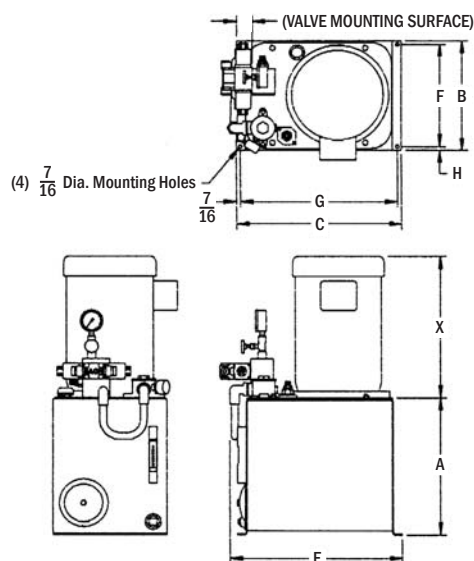
Piston/Vane Pump Unit
with Manifold Option "PB3C" (8SAE)
or "PB5C" (12SAE)

Dimensional Drawings

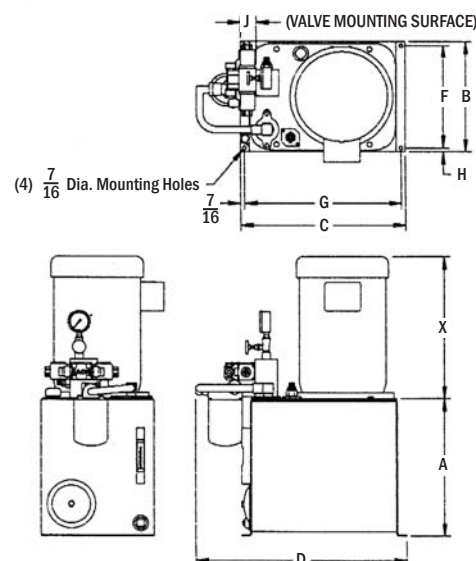
Measurements are approximate.
Where dimensions are critical,
obtain special quotation.



NV5 Gallon w/Inline Filter

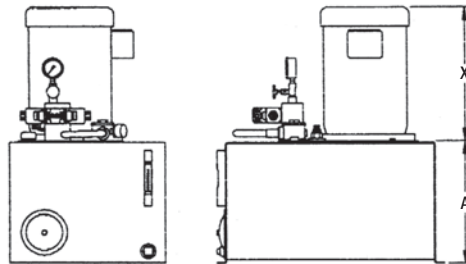
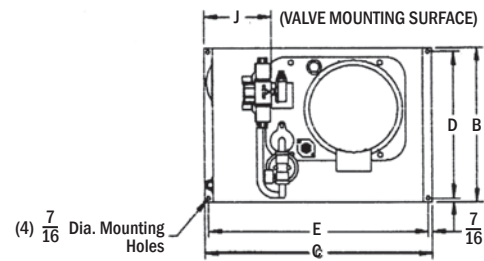
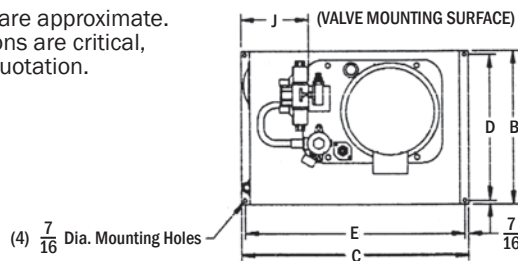


NV10 Gallon w/Intank Filter

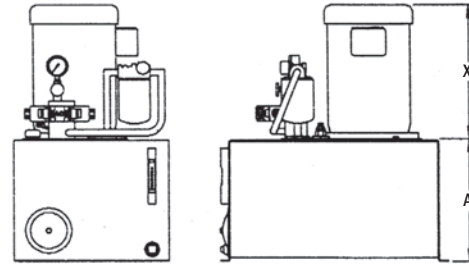


NV10 Gallon w/Inline Filter

Measurements are approximate.
Where dimensions are critical,
obtain special quotation.



NV20 Thru NV30 Gallon w/Intank Filter

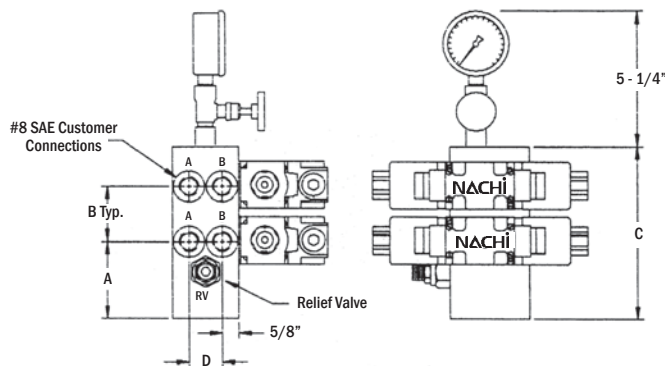


NV20 Thru NV30 Gallon w/Inline Filter

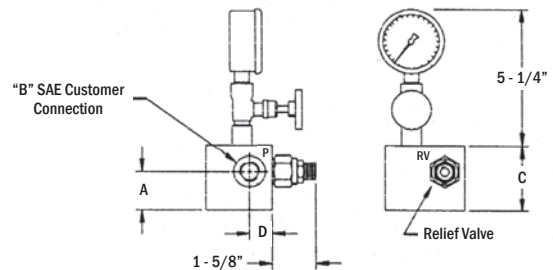
RESERVOIR	UNIT DIMENSIONS (INCHES)								
	A	B	C	D	E	F	G	H	J
NV5	10"	12.5"	14.5"	-	-	10"	13.5"	1.25"	.05"
NV10	19.7"	16.5"	19"	-	-	14"	13.5"	1.25"	.075"
NV20	23.7"	16.5"	19"	-	-	14"	17.5"	1.25"	.075"
NV30	35.7"	16.5"	19"	-	-	14"	17.5"	1.25"	.075"

HORSEPOWER	"X" (TEFC)
1	10 5/8
1.5	10 5/8
2	11 5/8
3	12 1/4
5	14 1/2
7.5	16 1/4
10	18 1/8
15	20 3/8

Manifold Dimensions



Manifold Option "D03/2R" shown

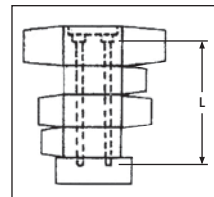


Manifold Option "PB3R" shown

MANIFOLD OPTIONS	MANIFOLD DIMENSION (INCHES)			
	A	B	C	D
PB3*	1.50	8	2.50	.84
PB5*	1.63	12	2.75	1.13

MANIFOLD OPTIONS	MANIFOLD DIMENSION (INCHES)			
	A	B	C	D
D03/1"	1.06"	2.13"	2.13"	1.75"
D03/2"	1.06"	2.13"	4.25"	1.75"
D03/3"	1.06"	2.13"	6.38"	1.75"
D03/4"	1.06"	2.13"	8.50"	1.75"
D05/1"	1.56"	3.25"	3.25"	2.12"
D05/2"	1.56"	3.25"	6.50"	2.12"
D05/3"	1.56"	3.25"	9.75"	2.12"
D05/4"	1.56"	3.25"	13.0"	2.12"

Optional Component Information - Bolt Kit Length



Bolt Length for D03	
Valve - 10 - 24 x 1 3/4	
Valve & module - 10 - 24 x 3 1/4	
Valve & 2 modules - 10 - 24 x 5	
Bolt Length for D05	
Valve - 1/4 - 20 x 2 3/4	
Valve & module - 1/4 - 20 x 5	
Valve & 2 modules - 1/4 - 20 x 7	

Note:

1. Bolt kits to be ordered separately when using modulators.
2. Bolt kits are furnished with directional valves when no modulators are required.
3. All "D03" modulators are 40mm thick.
4. "D05" modulators are 55mm thick.