



Horizontal Power Unit

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

- Reservoir, Pump, Pump Motor Adaptor, Electric Motor, Motor Channel, Flexible Coupling, Pressure Control Relief Valve for

Gear Pumps.

- Pressure Compensated Piston or Vane pumps.
- Pressure Gauge w/Shut Off, Air Breather/Filter Combination, Sight Gauge w/Thermometer, Drain Plug, Pressure and

Return Connections, Return Line Filter w/By-pass and Dirt Indicator, Suction Strainer w/3PSI By-Pass.

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 10 gallon to 40 gallons. Reservoir capacities vs. pump 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 from such companies as VESCOR, DAMAN and others, 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. (See pg. 8 for spare element numbers). 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.

PRESSURE TABLE (PSI) AT 1800 RPM
Table "A"

GPM	HORSEPOWER REQUIREMENTS						
	2	3	5	7.5	10	15	20
GEAR PUMPS							
1.6	1821	2732	*				
2.4	1214	1821	*				
3.0	971	1457	2428	*			
5.2	560	841	1401	2101	2802		
7.0	416	624	1041	2101	2802		
9.0	325	486	809	1214	1619		
10.4	280	420	700	1051	1401	2101	2802
12.3	237	355	592	88	1185	1777	2369
PISTON PUMPS							
3.8	767	1150	1917	2876	*		
7.8	374	560	934	1401	1868	*	*
10.5	n/a	416	694	1041	1388	2081	2775
16.6	n/a	n/a	439	658	878	1317	1775
21.5	n/a	n/a	339	508	678	1017	1355
VANE PUMPS							
4.0	728	*					
7.9	369	553	992	1383	1844	*	
10.5	278	416	694	*			
14.2	n/a	309	513	770	1026	1539	*
7.9	n/a	238	396	594	792	*	

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

THEORETICAL PRESSURE TABLE (PSI)

Table "B"

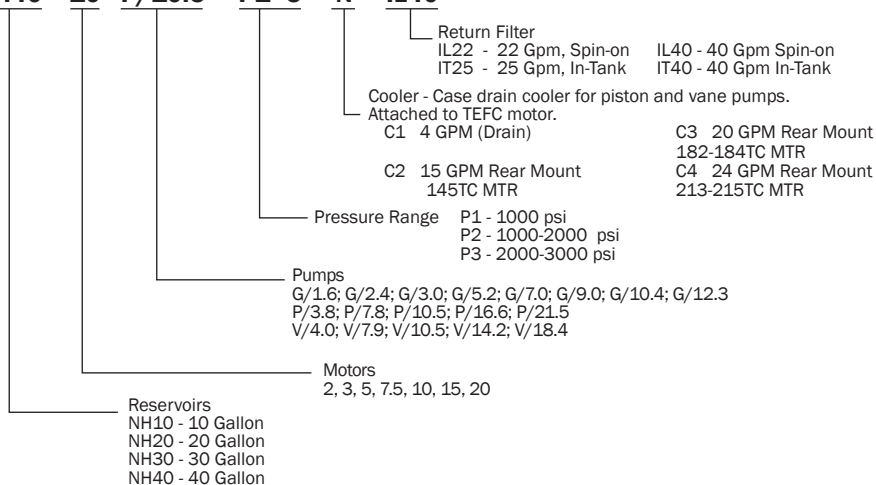
ORDERING CODE	THEORETICAL FLOW (GPM)	DISPLACEMENT CU IN/REV
GEAR PUMPS		
G/1.6	1.63	0.21
G/2.4	2.41	0.31
G/3.0	3.03	0.39
G/5.2	5.22	0.67
G/7.0	7.09	0.91
G/9.0	9.03	1.16
G/10.4	10.44	1.34
G/12.3	12.38	1.59

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
P/16.6	16.60	2.14
P/21.5	21.50	6.10
VANE PUMPS		
V/4.0	4.00	0.51
V/10.5	7.90	1.02
V/14.2	10.50	1.34
V/14.2	14.20	1.83
V/18.4	18.40	2.38

Reservoir Code

How to Order

NH40 - 10 - P/10.5 - P1~3 - N - IL40



Motor Enclosure

Nachi standard horizontal power units come with totally enclosed fan cooled motors (TEFC). These motors are intended for use where moisture, dirt, and/or corrosive materials are present in indoor or outdoor locations.

Motor Voltage

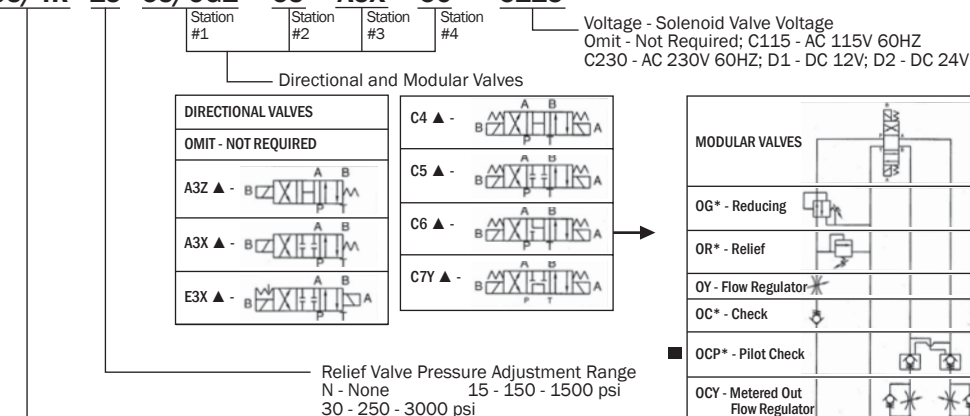
All standard horizontal power units come with 3 PHASE - 208-230/460V, 60HZ (Single phase and special voltages available upon request)

*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

How to Order

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



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

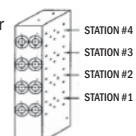
Cracking Pressure
1: 29 PSI
2: 71 PSI

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

▲ ADD "F" FOR OPTIONAL HYDRAULIC SHOCKLESS SOLENOID

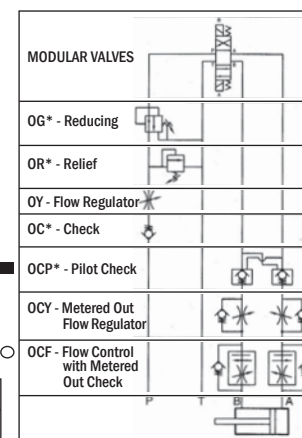
■ "D03" SIZE ONLY

○ "D03" & "D05" SIZE ONLY



ALUMINUM MANIFOLD BLOCKS

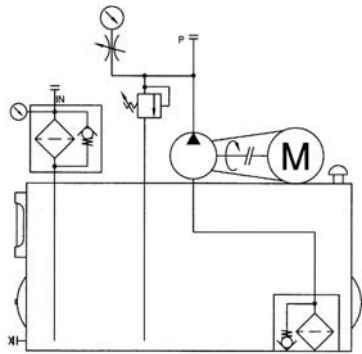
D03/*R - D03 Directional valve manifold with relief valve. (*Number of valve stations required, 6 maximum. Consult factory if more stations are required.)	D08/*R - D08 Directional valve manifold with relief valve. (*Number of valve stations required, 2 maximum. Consult factory if more stations are required.)
D05/*R - D05 Directional valve manifold with relief valve. (*Number of valve stations required, 6 maximum. Consult factory if more stations are required.)	N - No Manifold, Pressure Connection at Pump (Piston and Vane Pumps Only)
	RV1 - No Manifold with 50 - 1000 PSI Relief Valve (Required for Gear Pumps)
	RV2 - No Manifold with 500 - 3000 PSI Relief Valve (Required for Gear Pumps)



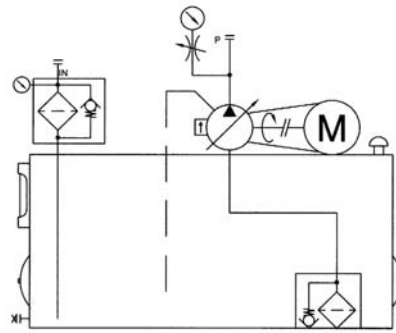
Note: "A" and "B" port connections on "D03" and "D05" manifolds are #8SAE (3/4 - 16 UNF).

Consult factory for additional configurations.

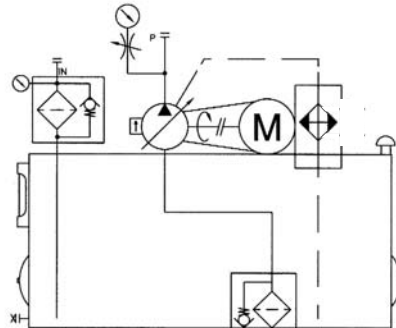
Schematics



Gear Pump Unit
with Manifold Option "RV*"



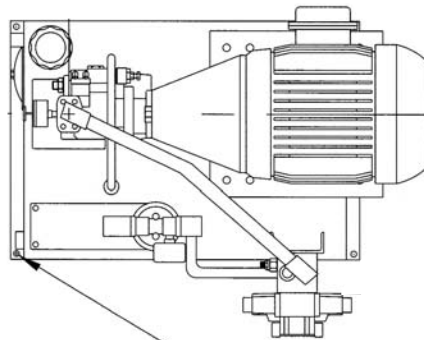
Piston/Vane Pump Unit
with Manifold Option "N"



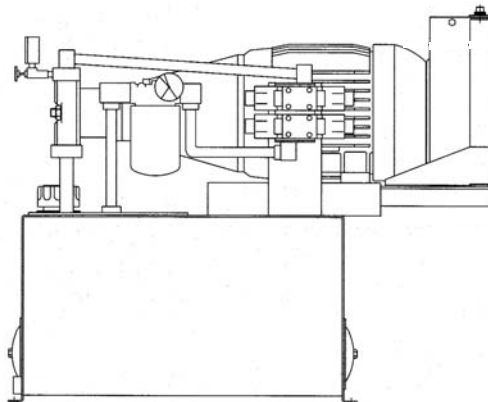
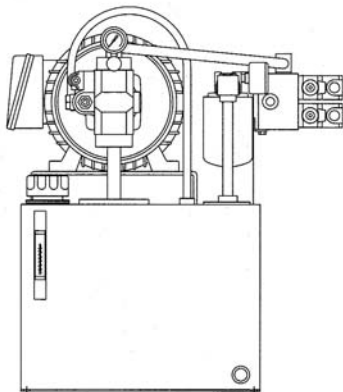
Piston/Vane Pump Unit
with "AO*" Cooler Option

Dimensional Drawings

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



(4) 7/16" DIA. MOUNTING HOLES



Dimensional Information

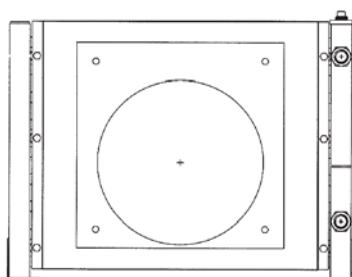
UNIT DIMENSIONAL INFORMATION

NHID	BASIC RESERVOIR DIMENSIONS						
	A	B	C	D	E	F	G
NH10	26	16	9.5	25.2	15	3.38	7
NH20	26	16	15.5	25.2	15	3.38	7
NH30	26	16	21.5	25.2	15	3.38	7
NH40	26	16	27.5	25.2	15	5.38	9.25

NHID	MANIFOLD ASSEMBLY HEIGHT (L DIMENSION)		
	D03	D05	D08
1 Station	12.00	12.00	CONSULT FACTORY
2 Station	12.00	12.00	
3 Station	12.00	12.00	
4 Station	12.00	15.25	
5 Station	14.25	18.50	
6 Station	16.25	21.75	

	MOTOR HORSEPOWER						
	2	3	5	7.5	10	15	20
J	9.95	11.88	11.88	13.50	13.50	16.59	16.59
K	7.04	8.08	8.08	9.31	9.31	10.96	10.96

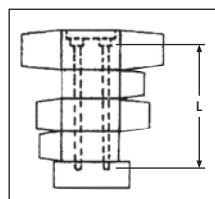
		PUMP/MOTOR ASSEMBLY LENGTH CHART (H DIMENSION)						
		MOTOR HORSEPOWER						
		2	3	5	7.5	10	15	20
AVAILABLE PUMPS	G/1.1	17.58						
	G/1.6	17.68	20.26					
	G/2.4	17.8	20.38					
	G/3.0	17.48	19.62	20.62				
	G/5.2	17.8	19.94	20.94	24.03	25.53		
	G/7.0	17.8	19.94	20.94	24.03	25.53		
	G/9.0	18.06	20.18	21.18	24.27	25.77	28.98	
	G/10.4	18.14	20.25	21.25	24.34	25.84	29.05	30.8
	G/12.3	18.14	20.25	21.25	24.34	25.84	29.05	30.8
	P/3.8	21.64	23.09	24.09	27.75			
	P/7.8	22.84	24.29	25.29	28.95	30.45	33.09	
	P/10.5	N/A	24.29	25.29	28.95	30.45	33.09	34.84
	P/16.6	N/A	N/A	27.44	30.29	31.79	34.43	36.18
	P/21.5	N/A	N/A	27.44	30.29	31.79	34.43	36.18
	V/4.0	16.75						
	V/7.9	17.26	18.96	19.96	23.05	24.55		
	V/10.5	17.26	18.96	19.96				
	V/14.2	N/A	19.74	20.74	23.83	25.33	27.97	
	V/18.4	N/A	19.74	20.74	23.83	25.33	27.97	



Air/Oil Return Oil Cooler

	GPM	Max Hp Removed
A01	15	.85 HP
A02	20	1.50 HP
A03	24	2.50 HP
A04	24	2.85 HP

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.