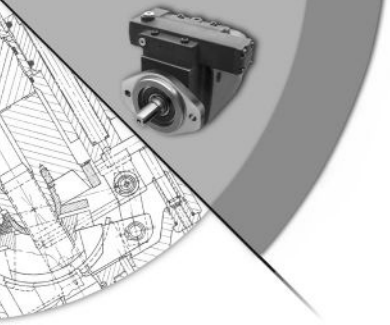
Oilgear

# PVWW Open Loop Pumps

## For Fluids Containing Water

Bulletin 47013A



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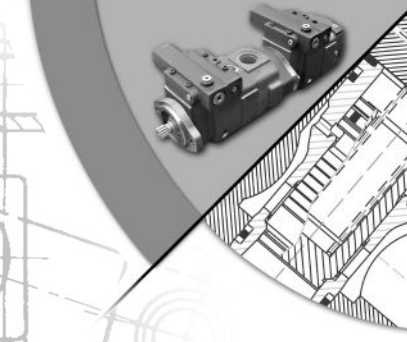


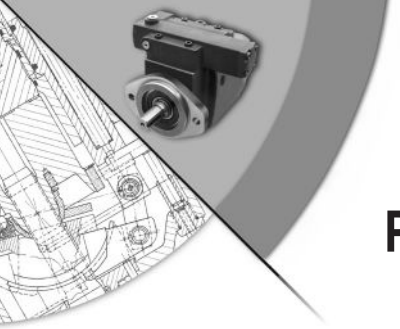
# PERFORMANCE ASSURANCE –
## STANDARD WITH EVERY OILGEAR PUMP

Every Oilgear product is shipped to you with our Performance Assurance — a corporate commitment to stay with your installation until our equipment performs as specified.

Hydraulic equipment and systems have been Oilgear's primary business since 1921. For decades, we have developed hydraulic techniques to meet the unique needs and unusual fluid power problems of machinery builders and users worldwide, matching fluid power systems to a tremendous range of applications and industries. Our exclusive Performance Assurance program is built upon that strong foundation.

As a customer, you also benefit from access to Oilgear's impressive technical support network. You'll find factory trained and field-experienced application engineers on staff at every Oilgear facility. They are backed by headquarters staff who can access the records and knowledge learned from decades of solving the most difficult hydraulic challenges.

When your design or purchase is complete, our service is just beginning. If you ever need us, our Oilgear engineers will be there, ready to help you with the education, field service, parts and repairs to assure that your installation runs smoothly — and keeps right on running.



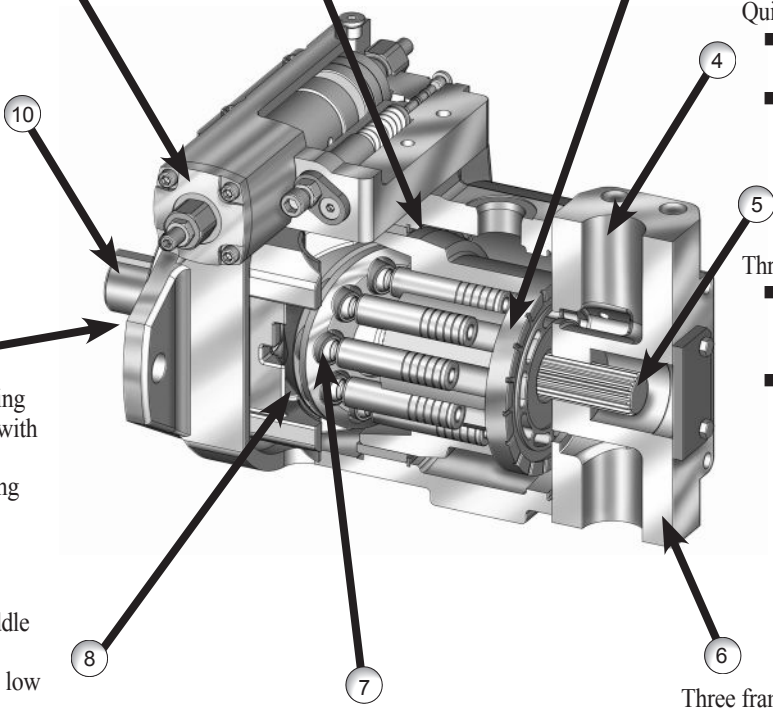
# PVWW Open Loop Pumps



Multiple control types
- Field interchangeability without disconnecting from drive or system piping

Cylinder mounted polymerous journal bearing
- Allows operation with special fluids
- Provides infinite bearing life
- Permits compact design

Hardened cylinder surface running on hardened valve plate ("hard-on-hard")
- Provides greater resistance to contamination
- Provides longer life
- Allows operation with special fluids




Quiet valve plate design
- Minimizes noise at typical electric motor speeds
- Rear or side port connections available

SAE keyed or
SAE splined shaft
- Heavy duty belt drive shafts

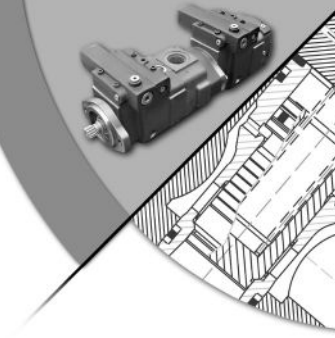
Thru-shaft availability
- Allows for multiple pump installation from a single drive shaft
- Allows pumps to drive auxiliary devices

Sealed front shaft bearing
- Allows operation with special fluids
- Permits side loading

Special polymerous saddle bearings
- Allows running on low viscosity or other special fluids
- Permits consistent control reaction
- Eliminates troublesome yoke bearings
- Provides long life

Steel shoes with specially treated faces for increased fluid retention, running on hardened swashblock surface
- Provides a higher degree of contamination resistance
- Allows higher pressure operation with long life
- Allows operation with water base, low viscosity or other special fluids
- Provides longer life

Three frame sizes
- Seven capacity ranges allowing greater flexibility to selectively match pressure and capacity
- Low flow/high pressure to low pressure/high flow from the same frame sizes



# SPECIFICATIONS

## SINGLE PUMP

Based on 27 – 30 ssu viscosity fluid

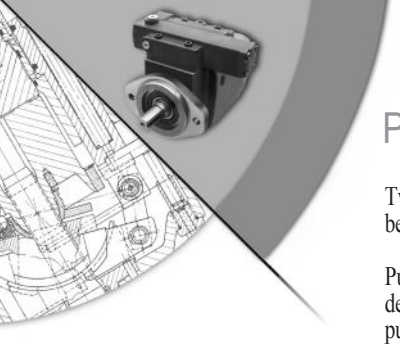
| FRAME SIZE | UNIT SIZE | THEORETICAL MAXIMUM DISPLACEMENT | | RATED CONTINUOUS PRESSURE* | | PEAK PRESSURE* | | FLOW RATE at 1800 rpm, rated continuous pres. & 14.7 psia (1.0 bar) inlet condition | | MINIMUM INLET PRESSURE psia (bar) | | | MAXIMUM SPEED | POWER INPUT at rated cont. pres. & 1800 rpm | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $in^3$/rev | ml/rev | psi | bar | psi | bar | gpm | l/min | 1200rpm | 1500rpm | 1800rpm | rpm | hp | kw |
| A | 014 | 0.86 | 14,1 | 3000 | 205 | 3500 | 240 | 5.5 | 20,8 | 5.5 (,38) | 5.9 (,41) | 6.4 (,44) | 1800 | 12.9 | 9,6 |
| | 022 | 1.35 | 22,1 | 2000 | 135 | 2500 | 175 | 9.0 | 34,1 | 5.5 (,38) | 6.0 (,41) | 7.0 (,48) | 1800 | 13.3 | 9,9 |
| B | 034 | 2.06 | 33,8 | 3000 | 205 | 3500 | 240 | 12.7 | 48,1 | 7.0 (,48) | 7.6 (,52) | 8.4 (,58) | 1800 | 30.4 | 22,7 |
| | 046 | 2.83 | 46,4 | 2000 | 135 | 2500 | 175 | 20.3 | 76,9 | 7.2 (,50) | 7.9 (,54) | 9.0 (,62) | 1800 | 27.8 | 20,7 |
| C | 076 | 4.67 | 76,5 | 3000 | 205 | 3500 | 240 | 32.6 | 123,6 | 8.0 (,55) | 8.6 (,59) | 9.6 (,66) | 1800 | 68.4 | 51,0 |
| | 098 | 6.00 | 98,3 | 2000 | 135 | 2500 | 175 | 42.8 | 162,2 | 7.6 (,52) | 8.6 (,59) | 9.8 (,68) | 1800 | 59.7 | 44,5 |
| | 130 | 7.94 | 130,2 | 1200 | 85 | 1500 | 105 | 56.5 | 214,2 | 8.0 (,55) | 9.3 (,64) | 14.5 (1,00) | 1800 | 51.1 | 38,1 |

Note: Minimum speed 600 rpm.

* Higher pressure available – consult factory.

These units are designed to run with fluids in the 27 to 2000 SSU range.

For units to be run with conventional (oil) hydraulic fluids, please refer to Oilgear Bulletin 47085 (PVWJ Pumps)



# PUMP COMBINATIONS

Two or more Oilgear axial piston variable delivery pumps can be integrally coupled together and driven from a single shaft.

Pump deliveries can be combined for large volume circuits or deliveries can be used individually. See page 5 for individual pump ratings.

The front pump can be used at full rated output while the rear pumps are governed by the thru-shaft torque listed in the table below.

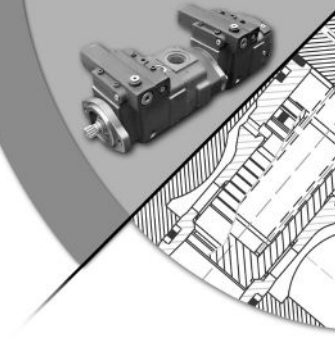
## THRU-SHAFT SIZING/COMPATIBILITY

| PISTON PUMP FRAME SIZE | PUMP SIZE | INPUT TORQUE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RATED PRESSURE | | INPUT TORQUE ($T_R$) @ RATED PRESSURE | | PEAK PRESSURE | | INPUT TORQUE @ PEAK PRESSURE | | ALLOWABLE THRU-SHAFT TORQUE | |
| | | psi | bar | in-lb | Nm | psi | bar | in-lb | Nm | in-lb | Nm |
| A | 014 | 3000 | 205 | 452 | 51,0 | 3500 | 240 | 527.3 | 59,5 | 1290 | 145,1 |
| | 022 | 2000 | 135 | 466 | 52,6 | 2500 | 175 | 582.5 | 65,8 | | |
| B | 034 | 3000 | 205 | 1064 | 120,2 | 3500 | 240 | 1241.3 | 140,2 | 2250 | 253,1 |
| | 046 | 2000 | 135 | 973 | 110,0 | 2500 | 175 | 1216.3 | 137,4 | | |
| C | 076 | 3000 | 205 | 2395 | 270,6 | 3500 | 240 | 2794.2 | 315,7 | | |
| | 098 | 2000 | 135 | 2090 | 236,1 | 2500 | 175 | 2612.5 | 295,2 | 6400 | 720,0 |
| | 130 | 1200 | 85 | 1790 | 202,2 | 1500 | 105 | 2236.3 | 252,7 | | |

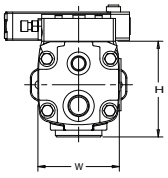
ACTUAL INPUT TORQUE CALCULATION

$$T_A = T_R \times \left(\frac{\text{ACTUAL OPERATING PRESSURE}}{\text{RATED PRESSURE}}\right) \times \left(\frac{\text{\% FULL DELIVERY}}{100\%}\right)$$

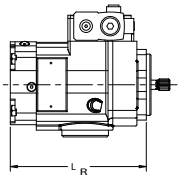
NOTE: Total input torque to the front unit may not exceed the values given in the table. The torque may be divided between the units in any fashion as long as the total does not exceed the table value.



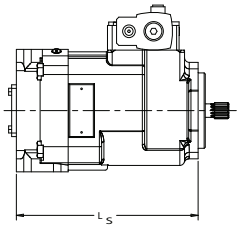
All Pumps



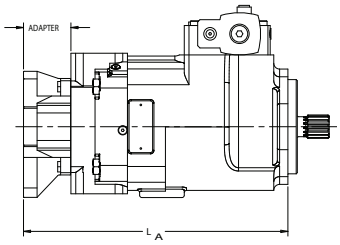

Single Pump w/Rear Ports




Single Pump w/Side Ports w/wo Thru-shaft




Single Pump w/Side Ports w/Thru-shaft & w/Adapter




## DIMENSIONS and WEIGHTS W/O CONTROLS

| FRAME SIZE | PVWW PUMP SIZE | HEIGHT | | WIDTH | | LENGTH | | | | | | WEIGHT | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H | | W | | $L_R$ | | $L_S$ | | $L_A$ | | SINGLE PUMP W/REAR PORTS | |
| | | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | lb | kg |
| A | 014, 022 | 4.50 | 114,3 | 4.32 | 109,7 | 7.20 | 182,9 | 9.62 | 244,3 | 10.94 | 277,9 | 32 | 14,5 |
| B | 034, 046 | 6.11 | 155,2 | 5.80 | 147,3 | 8.50 | 215,9 | 9.63 | 244,6 | 12.36 | 313,9 | 68 | 30,9 |
| C | 076, 098, 130 | 7.18 | 182,4 | 6.76 | 171,7 | 10.44 | 265,2 | 11.50 | 292,1 | 14.00 | 355,6 | 103 | 46,8 |

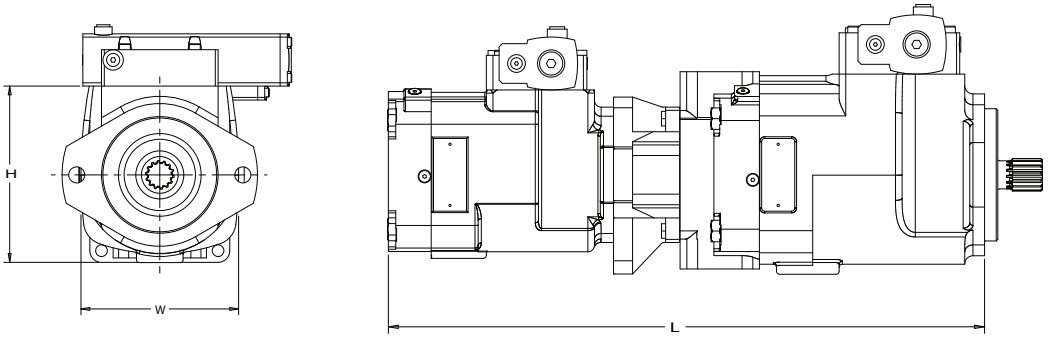
See appropriate data sheet for further details.
All dimensions are approximate. For detailed dimensions, contact your Oilgear representative.

**Length Example:**
SINGLE PUMP
* With rear ports
PVWW - 034 - A1UV - RSAY - P - 1NNNN
Size 034 ($L_R$) length = 8.50 inches (215,9 mm)

* With side ports, with or without thru-shaft
PVWW - 034 - A1UV - RDFY - P - 1NNNN
Size 034 ($L_S$) length = 9.63 inches (244,6 mm)

* With side ports, with thru-shaft adapter
PVWW - 034 - A1UV - RDFY - P - 1NNNN
Size 034 ($L_A$) length = 12.36 inches (313,9 mm)

# DUAL PUMP




## DIMENSIONS and WEIGHTS W/O CONTROLS

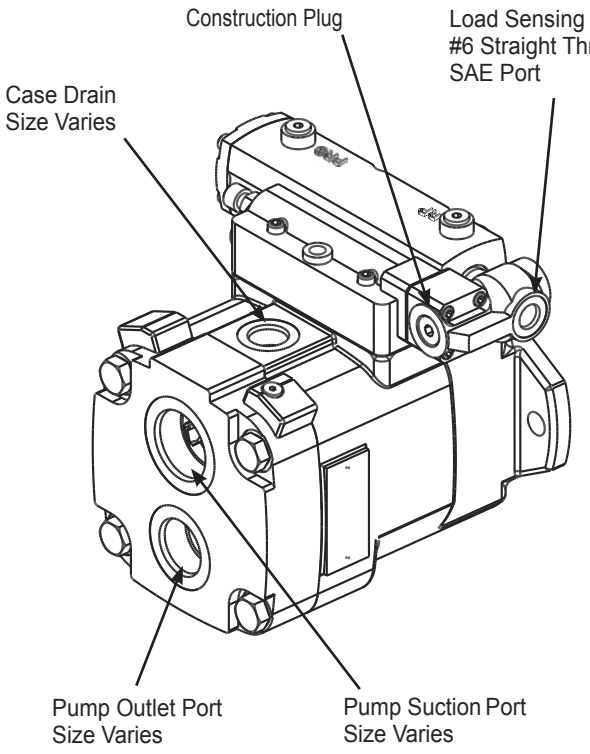
| FRAME SIZE | PVWW DUAL PUMP SIZES | H HEIGHT | | W WIDTH | | L LENGTH | | WEIGHT | |
|---|---|---|---|---|---|---|---|---|---|
| | | inch | mm | inch | mm | inch | mm | lb | kg |
| **A/A** | 014 or 022 & 014 or 022 | 4.50 | 114,3 | 4.32 | 109,7 | 18.12 | 460,2 | 72 | 33 |
| **B/A** | 034 or 046 & 014 or 022 | 6.11 | 155,2 | 5.80 | 147,3 | 19.56 | 496,8 | 108 | 49 |
| **B/B** | 034 or 046 & 034 or 046 | 6.11 | 155,2 | 5.80 | 147,3 | 20.86 | 529,8 | 144 | 66 |
| **C/A** | 076, 098 or 130 & 014 or 022 | 7.18 | 182,4 | 6.76 | 171,7 | 21.20 | 538,5 | 143 | 65 |
| **C/B** | 076, 098 or 130 & 034 or 046 | 7.18 | 182,4 | 6.76 | 171,7 | 22.50 | 571,5 | 179 | 82 |
| **C/C** | 076, 098 or 130 & 076, 098 or 130 | 7.18 | 182,4 | 6.76 | 171,7 | 24.44 | 620,8 | 214 | 97 |

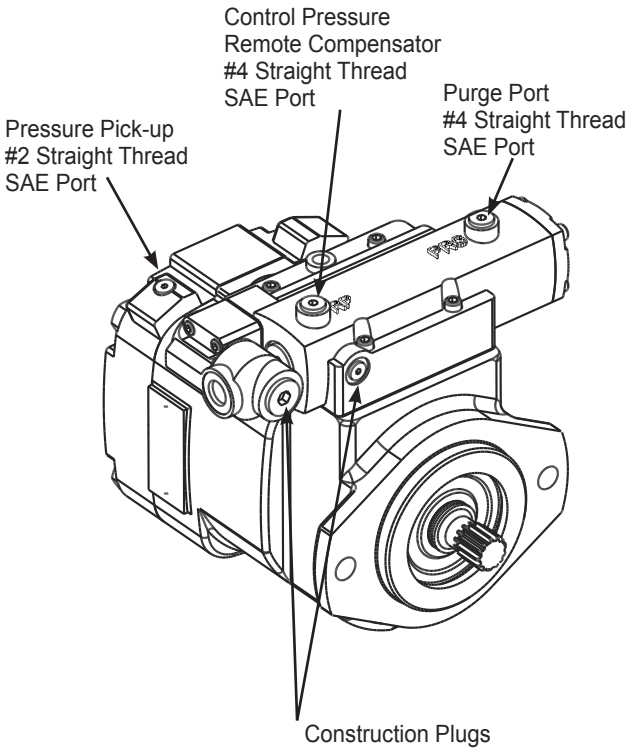
Length dimensions are for a rear ported dual pump. For further dimensions of these or other multiple combinations including other types of auxiliary pumps, contact your Oilgear representative.

**Length Example:**

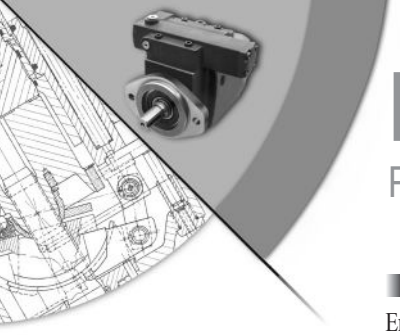
DUAL PUMP
Two Variable Delivery Pumps
PVWW-098-A1UV-LDFS-P-1NNSN-AN/PVWW-046-LSAS-P-1NNNN
Size 098 pump ($L_A$) length = 14 inches (355,6 mm) plus
Size 046 pump ($L_R$) length = 8.5 inches (215,9 mm) = 22.50 inches (571,5 mm)

TRIPLE PUMP
Three Variable Delivery Pumps
PVWW-098-A1UV-LDFS-P-1NNSN-BN/PVWW-046-A1UV-LDFS-P-1NNSN-AN/
PVWW-022-A1UV-LDAS-P-1NNSN-CP
Size 098 pump ($L_A$) length = 14 inches (355,6 mm) plus
Size 046 pump ($L_A$) length = 12.36 inches (313,9 mm) plus
Size 022 pump ($L_S$) length = 9.62 inches (244,3 mm) = 35.98 inches (913,9 mm)




NOTE: Pump shown in illustration above is a PVWW B frame with fixed load sense control (P-1NN/F), RH (CW) rotation. Port size and/or location can vary with different pump size or configuration. Refer to the proper installation drawings for your specific pump . A listing of standard installation drawings can be found on page 21.

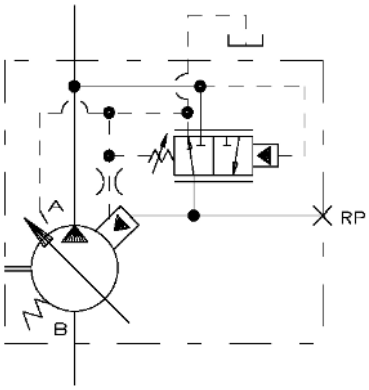


# Pump Controls

## PRESSURE*

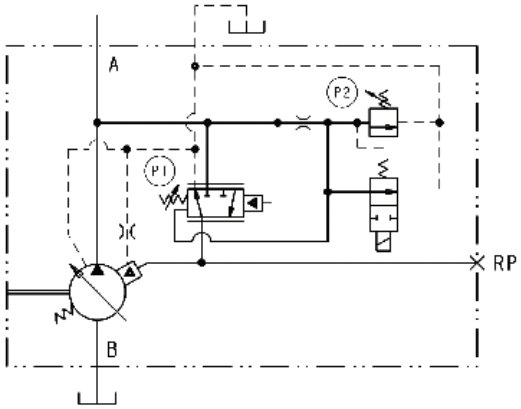
### Pressure Compensator "P-1NN" "P-LNN"

Ensures maximum pump flow until unit reaches preset control pressure setting then regulates output flow to match the requirements of the system while maintaining preset output pressure. Can be adjusted from 750 psi (52 bar) working pressure up to the maximum pressure rating of the applicable pump. **"P-LNN"** control provides a lower minimum pressure. Can be adjusted from 250 psi (17 bar) working pressure up to a maximum of 1500 psi (105 bar).



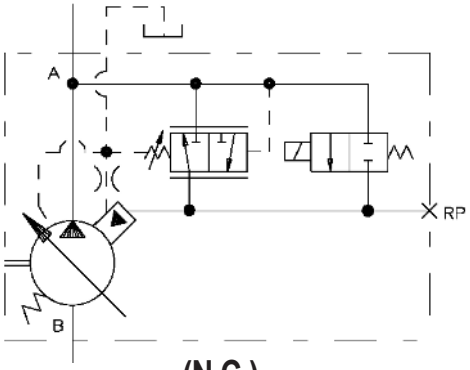

### Dual Pressure Compensator "P-2NN"

Works the same as the "P-1NN" control except it provides two independently adjustable pressure compensated settings as selected by an integral solenoid.




### Soft Start Pressure Compensator "P-KNN"

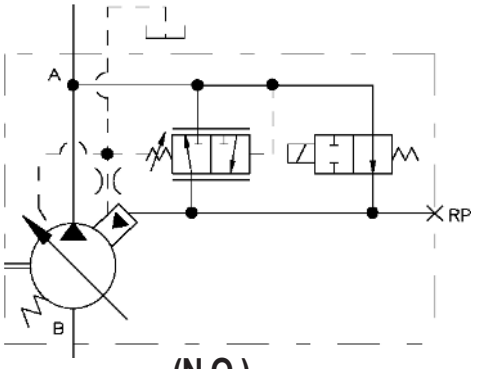
Pump starts "softly" by going quickly at low pressure to a reduced flow setting, thereby reducing start up torque requirements. The "P-KNN" control uses a normally closed cartridge that will unload the pump at the minimum pressure setting with the solenoid energized.




(N.C.)

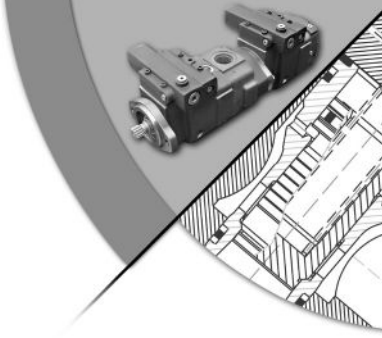
### Soft Start Pressure Compensator "P-CNN"

Pump starts "softly" by going quickly at low pressure to a reduced flow setting, thereby reducing start up torque requirement. The "P-CNN" control uses a normally open cartridge that will unload the pump at the minimum pressure setting with no power to the solenoid.



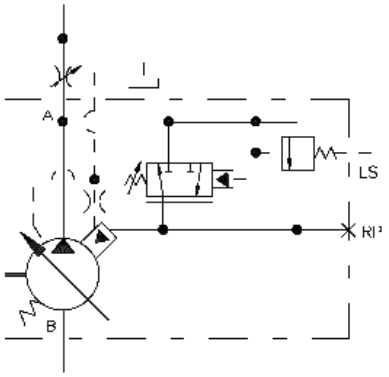

(N.O.)

* Be sure system and pumps are protected against overloads with a high-pressure relief valve.



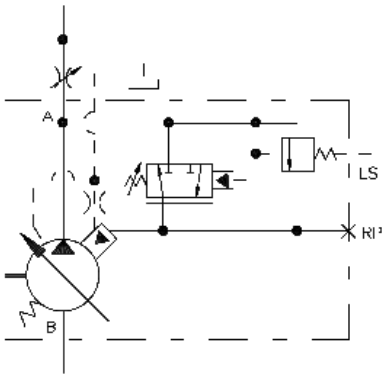
## Fixed Load Sense w/Pressure Compensator "P-1NN/F"

A constant flow output is maintained for a given flow control valve setting regardless of changes in drive speed and/or working pressure. The pressure compensator control over rides the load sense control when system pressure reaches the preset control pressure. Control pressure can be adjusted from 750 psi (52 bar) up to the maximum pressure rating of the applicable pump. Load sense differential is set at 170 PSID (11,7 bar).
See page 13 for remote control options.



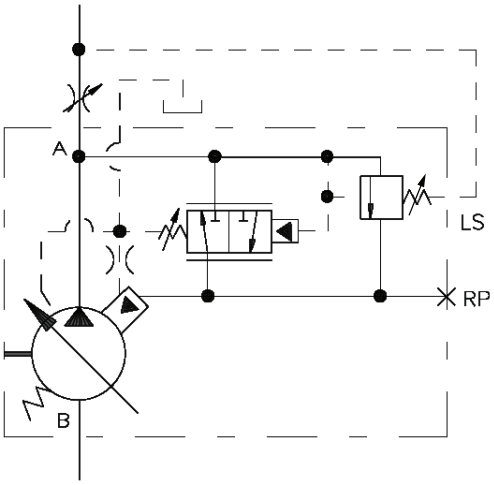

## Fixed Load Sense w/Low Pressure Compensator "P-LNN/F"

Works the same as the P-1NN/F control except it provides a lower minimum pressure. It can be adjusted from 250 psi (17 bar) working pressure up to a maximum of 1500 psi (105 bar). Load sense differential is set at 170 PSID (11,7 bar).
See page 13 for remote control options.

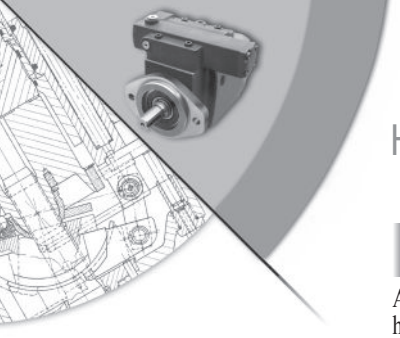



## Adjustable Load Sense w/Pressure Compensator "P-1NN/J" & "P-1NN/K"

Same as the "P-1NN/F" and "P-LNN/F" controls except the load sense differential is externally adjustable. The adjustment range for the **"P-1NN/J"** control is 100 to 220 PSID (7 to 15 bar). The adjustment range for the **"P-1NN/K**" control is 225 to 350 PSID (15,5 to 24 bar).



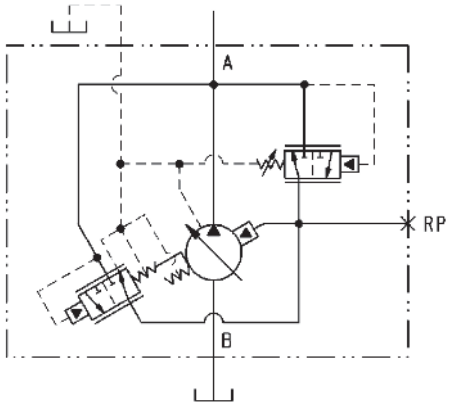

* Be sure system and pumps are protected against overloads with a high-pressure relief valve.



## HORSEPOWER LIMITING*

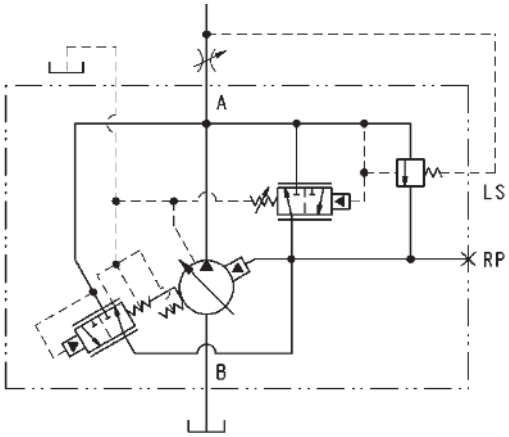
### Horsepower Limiter w/Pressure Compensator "P-1NN/H"

Automatically reduces delivery, as unit pressure rises, to limit horsepower consumption. The pressure compensator control over rides the horsepower control when system pressure reaches the preset control pressure. Control pressure can be adjusted from 750 psi (52 bar) up to the maximum pressure rating of the applicable pump.




### Horsepower Limiter w/Load Sense "P-1NN/G," "P-1NN/C," & "P-1NN/D"

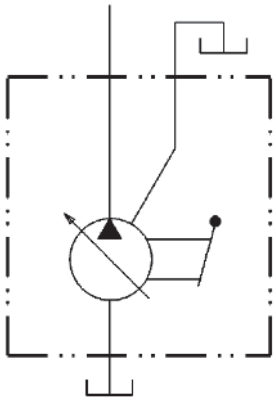
A constant flow output is maintained for a given flow control valve setting regardless of changes in drive speed and/or working pressure until (limited) horsepower setting is reached. Control then automatically reduces delivery, as unit pressure rises, to limit horsepower consumption. **P-1/G** has fixed load sense differential set at 170 PSID (11,7 bar). **P-1/C** has variable load sense differential adjustable from 100-220 PSID (7 to 15 bar). **P-1/D** is variable with differential adjustable from 225-350 PSID (15,5 to 24 bar).




## MANUAL*

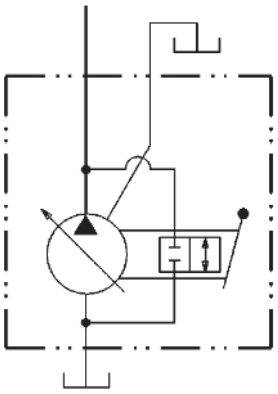
### Lever Operated "M-N"

Varies displacement proportional to the rotation of a pintle.



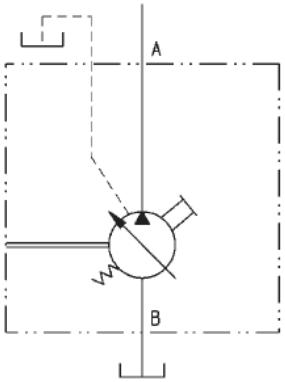
### Lever Operated w/Neutral Bypass "M-S"

Varies displacement proportional to the rotation of a pintle which is equipped with a neutral bypass to prevent creep when centered.

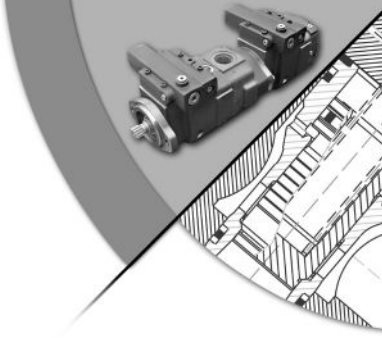


### Handwheel "M-H"

Provides simple handwheel adjustment of delivery.



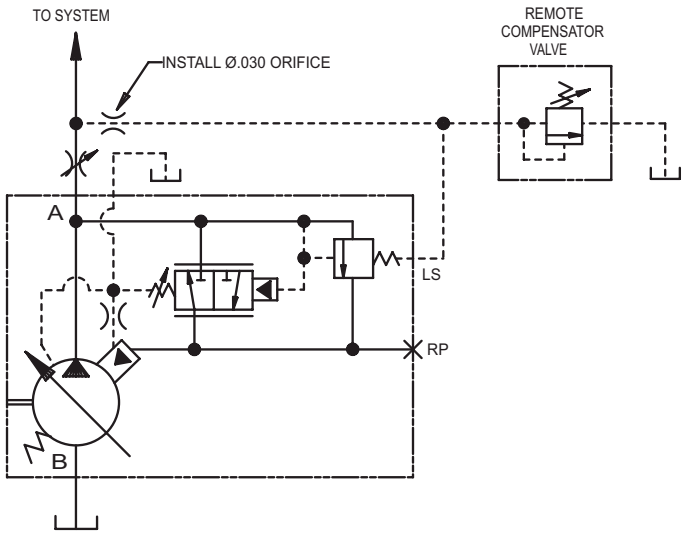

* Be sure system and pumps are protected against overloads with a high-pressure relief valve.



# LINE MOUNTED REMOTE PRESSURE CONTROL FOR SINGLE & MULTIPLE PUMPS

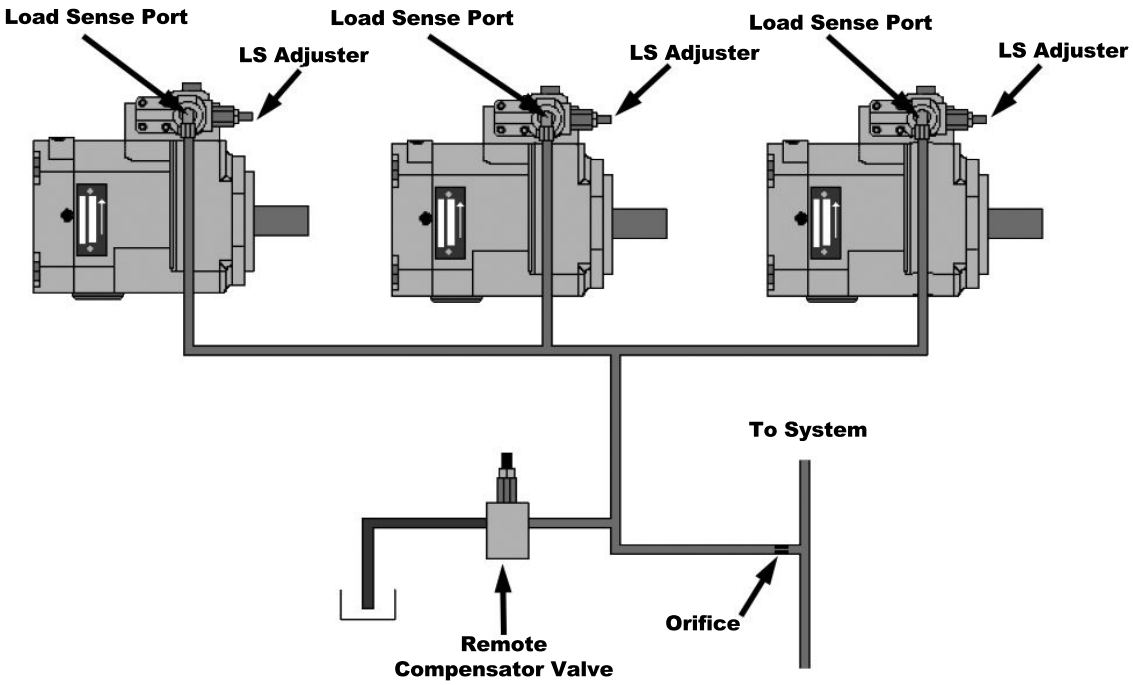
Remote operation of pumps with load sense controls can be accomplished by installing a Remote Compensator Valve at the location shown in the control circuits.

SINGLE PUMP

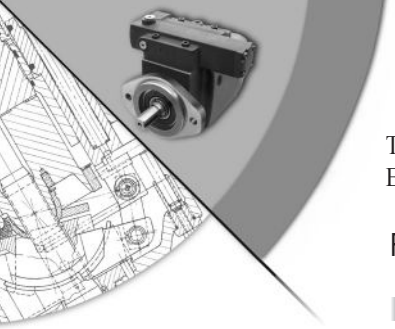



Refer to Data Sheet 47491

MULTIPLE PUMPS



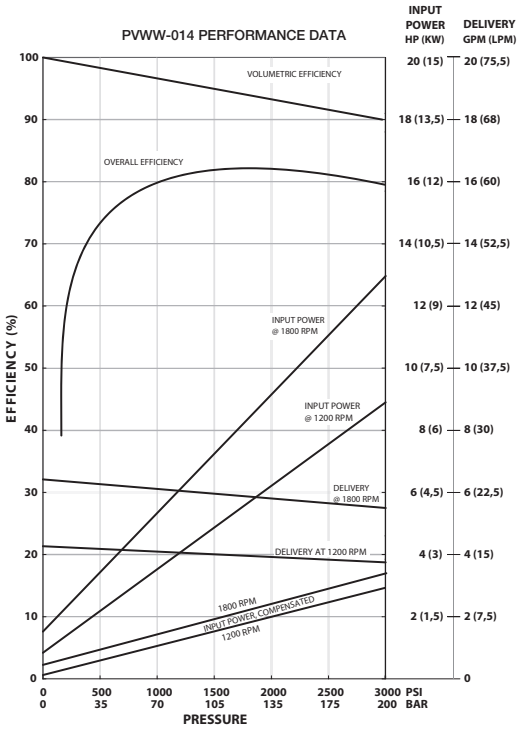

Refer to Data Sheet 47974



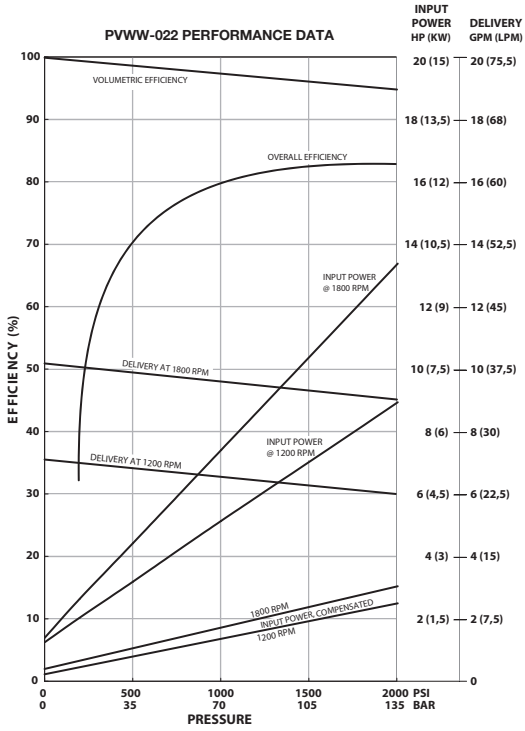
The following single pump curves are based on an oil temperature of 95º F (27 SSU) and 14.7 psia (1 $bar_{abs}$). Efficiency curves are based on pump running at 1800 rpm.

## Frame Size A

### PVWW-014

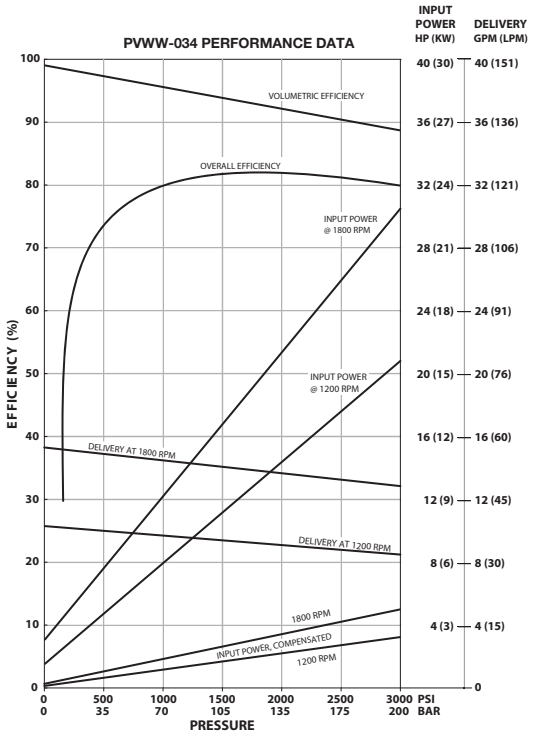



### PVWW-022

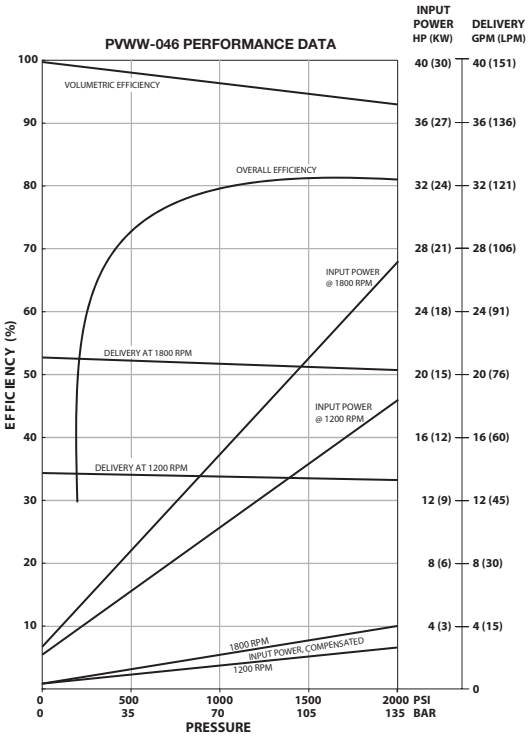


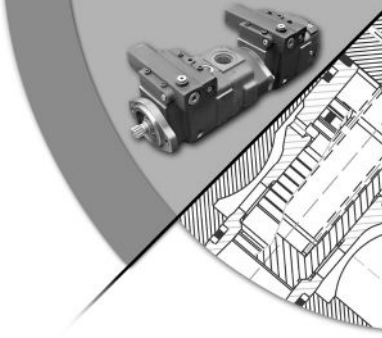

## Frame Size B

### PVWW-034




### PVWW-046

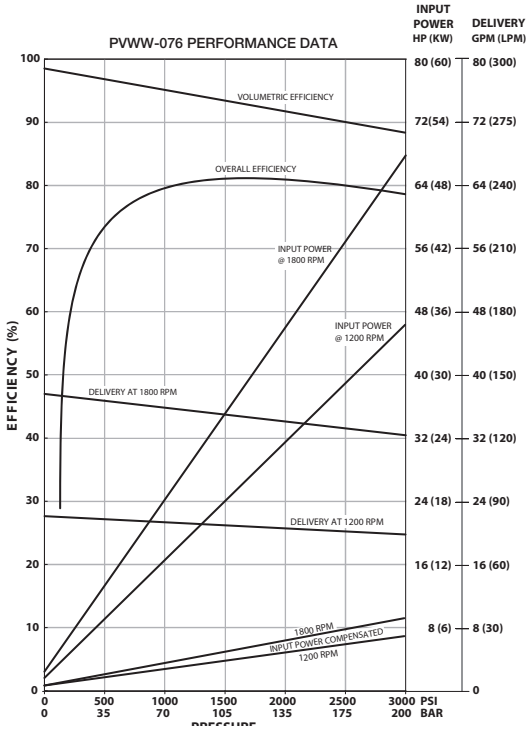




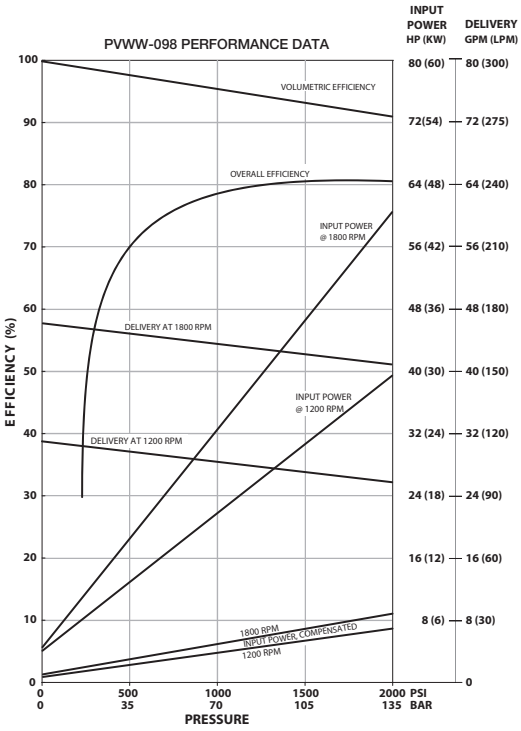
The following single pump curves are based on an oil temperature of 95º F (27 SSU) and 14.7 psia (1 $bar_{abs}$). Efficiency curves are based on pump running at 1800 rpm.

## Frame Size C

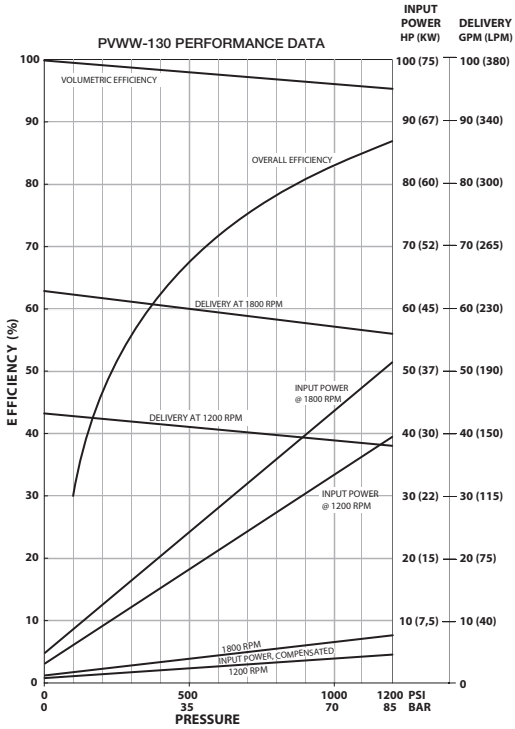
### PVWW-076

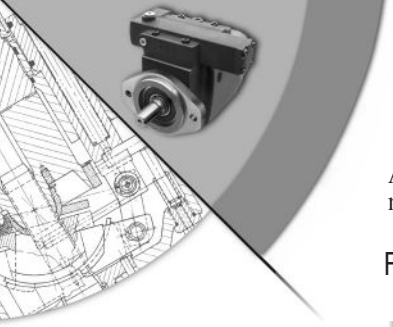



### PVWW-098




### PVWW-130

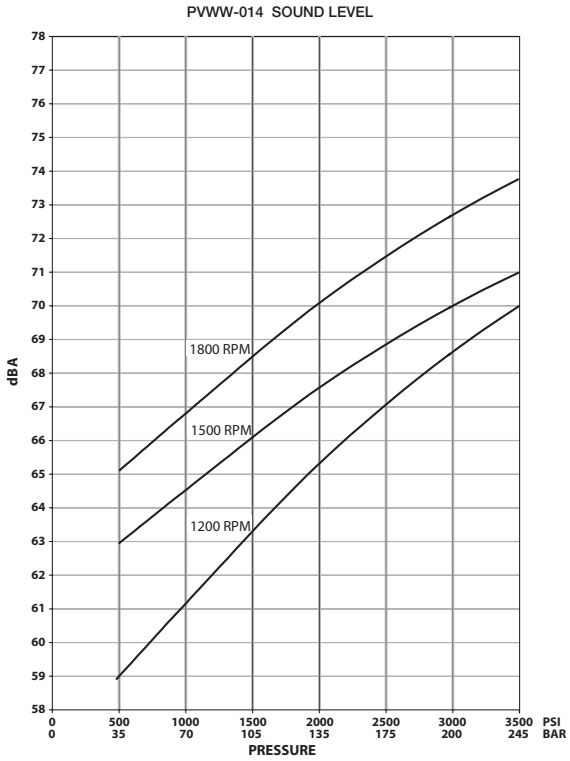




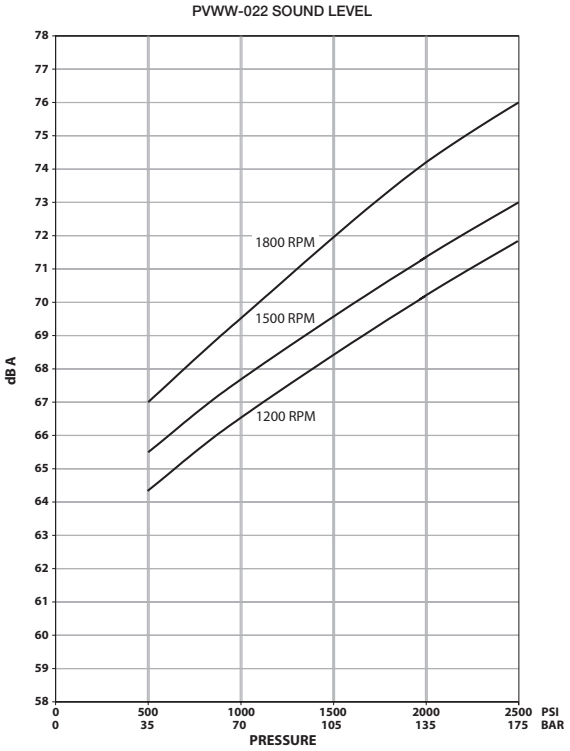
All of the following sound curves are based on the pump delivering full volume from port "A." Single microphone noise taken in semi-reverberant room at three feet from pump surface. Tolerance on curves is +3 dBa.

## Frame Size A

### PVWW-014 - FULL STROKE

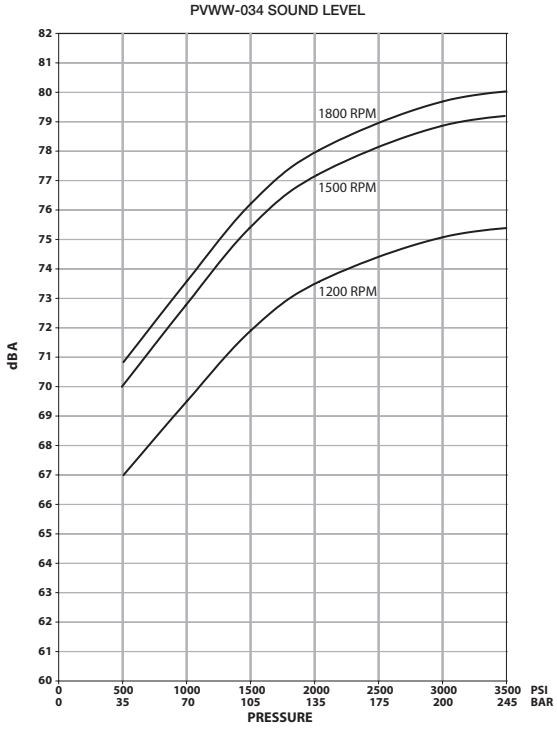



### PVWW-022 - FULL STROKE

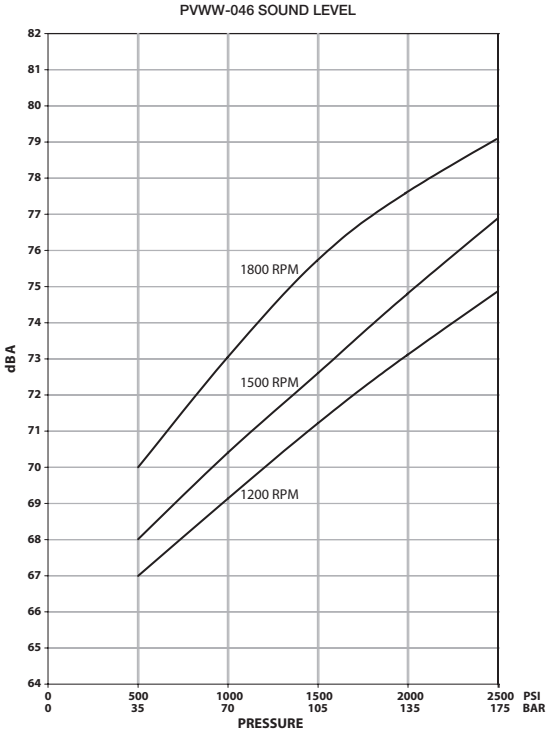


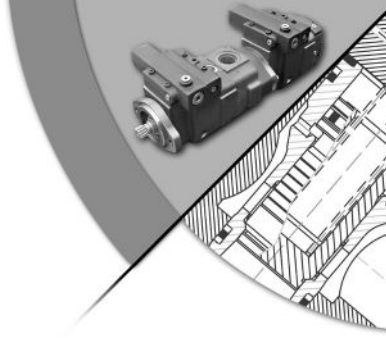

## Frame Size B

### PVWW-034 - FULL STROKE




### PVWW-046 - FULL STROKE

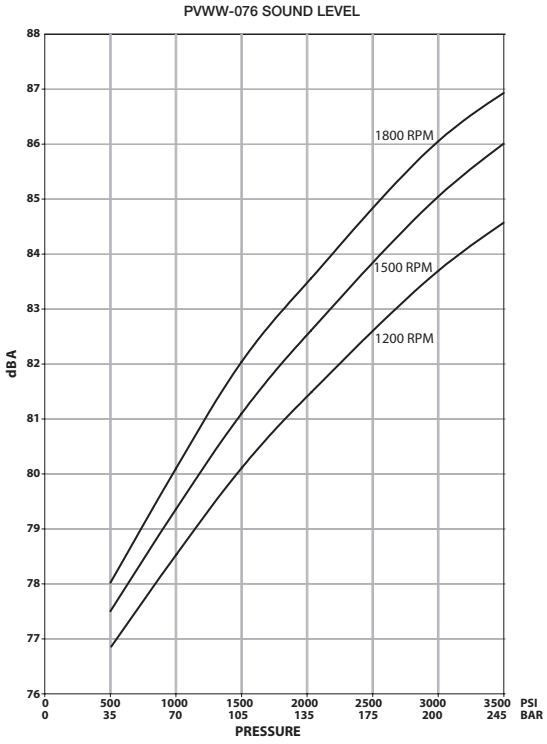




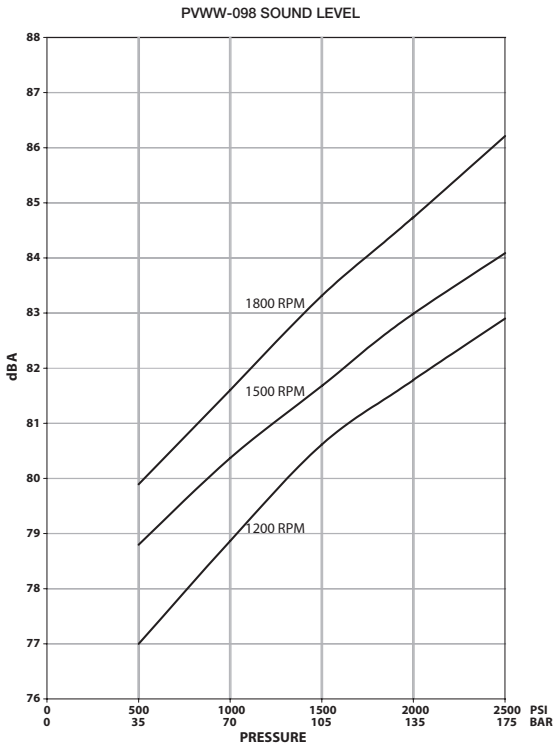
All of the following sound curves are based on the pump delivering full volume from port "A." Single microphone noise taken in semi-reverberant room at three feet from pump surface. Tolerance on curves is +3 dBa.

## Frame Size C

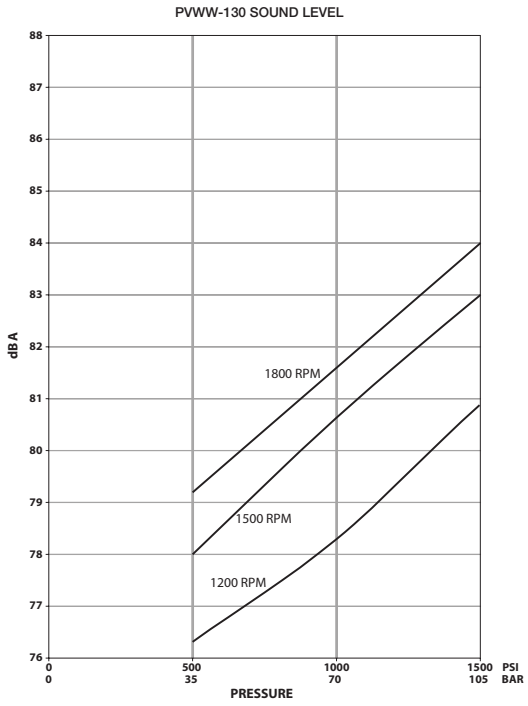
### PVWW-076 - FULL STROKE

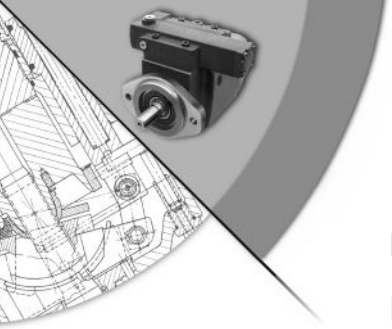



### PVWW-098 - FULL STROKE



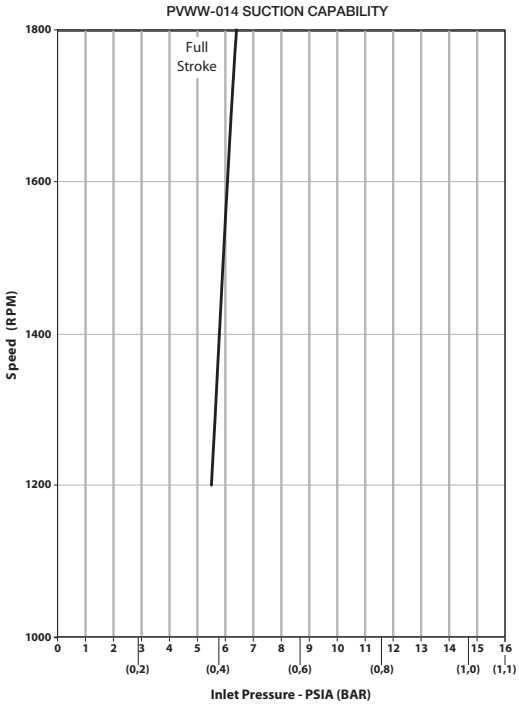

### PVWW-130 - FULL STROKE



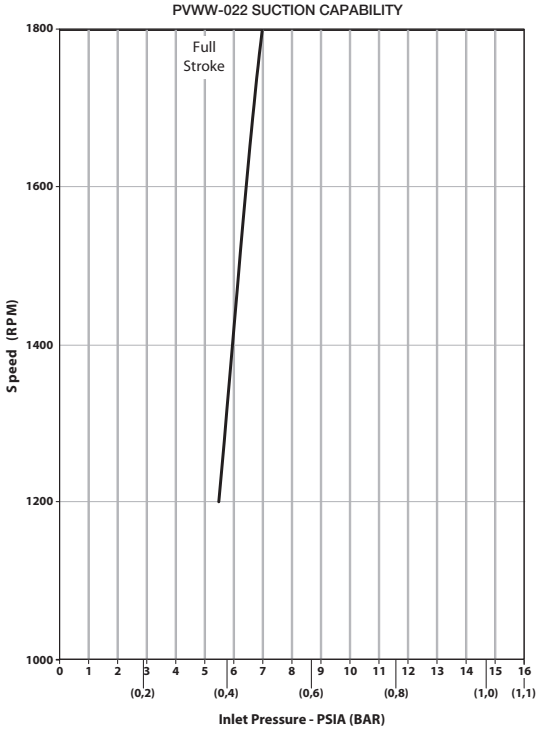


## Frame Size A

### PVWW-014

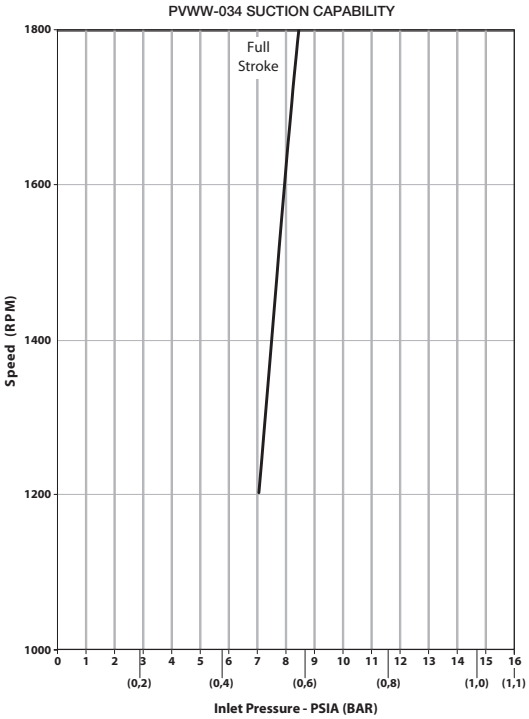



### PVWW-022

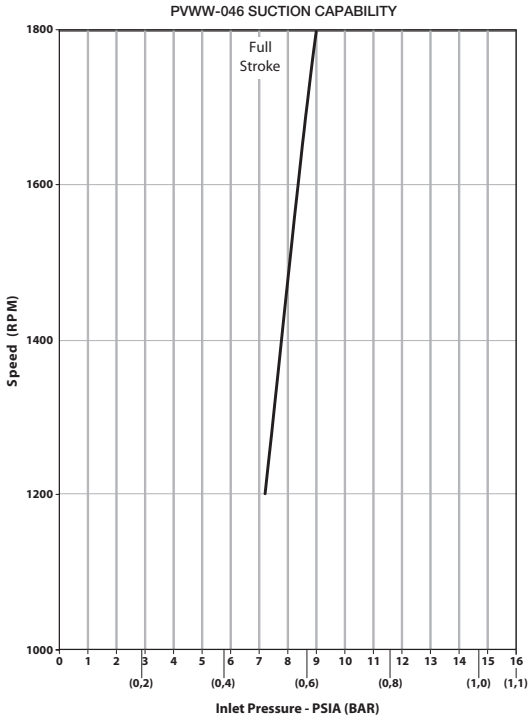


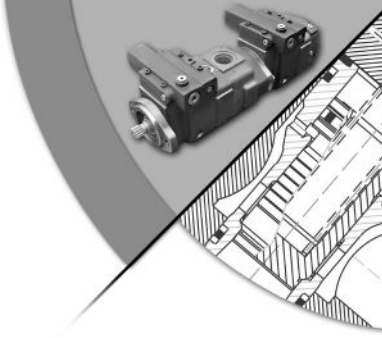

## Frame Size B

### PVWW-034




### PVWW-046

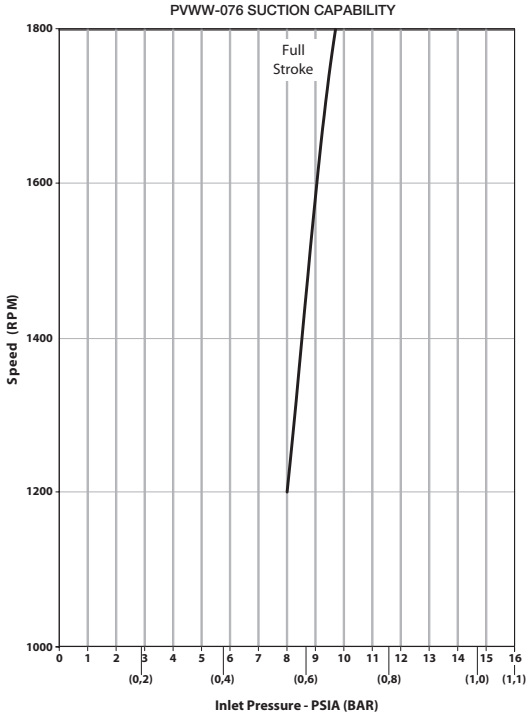




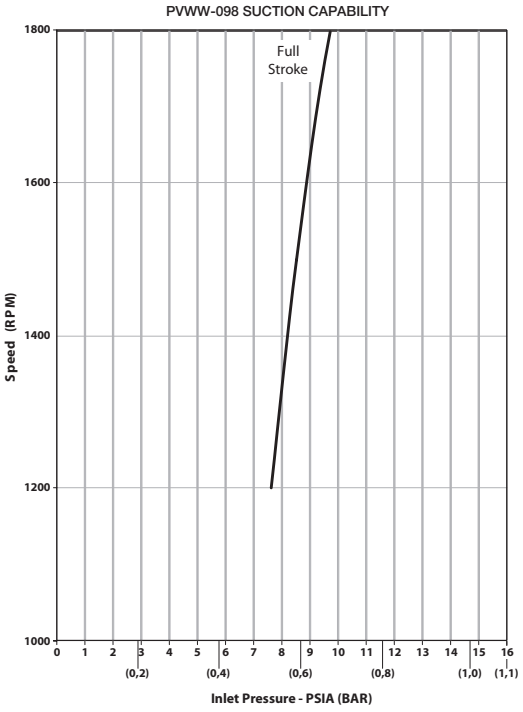


## Frame Size C

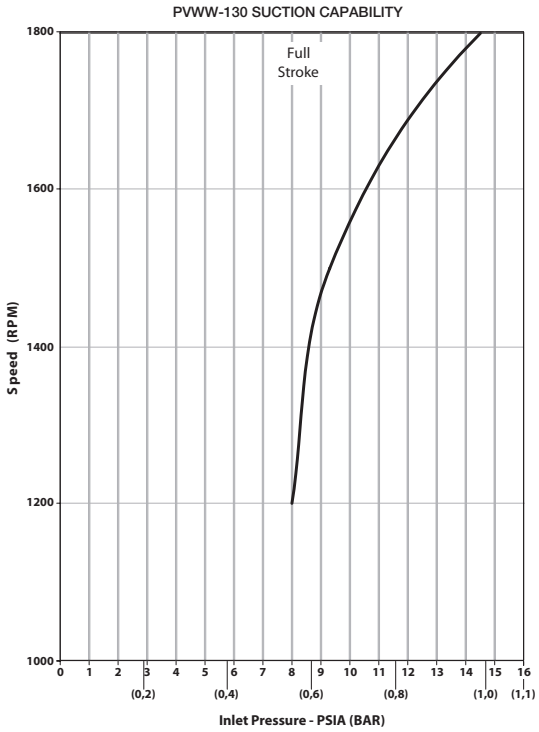
### PVWW-076

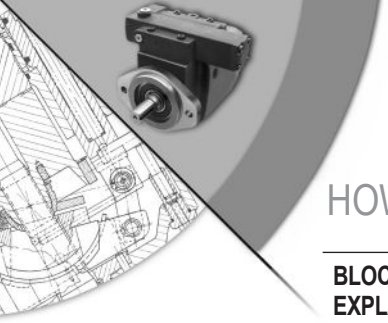



### PVWW-098




### PVWW-130





# HOW TO ORDER

| BLOCK NUMBER EXPLANATION | 1 | 2 | 3 | - | 4 | - | 5 | 6 | 7 | - | 8 | 9 | 10 | 11 | - | 12 | - | 13a | 13b | 13c | 13d | 14 | - | 15 | - | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PVWW Model Code EXAMPLE | P | V | WW | - | 098 | - | A1 | U | V | - | L | D | F | Y | - | P | - | 1 | N | N | /F | SN | - | AN | - | XXX |

1 = UNIT
P = Pump

2 = TYPE
V = Variable

3 = DESIGN TYPE
WW= Pump Series

4 = UNIT SIZE

| | |
|---|---|
| 014 = 14.1 cc/rev (0.86 cipr)<br>022 = 22.1 cc/rev (1.35 cipr) | A Frame |
| 034 = 33.8 cc/rev (2.06 cipr)<br>046 = 46.4 cc/rev (2.83 cipr) | B Frame |
| 076 = 76.5 cc/rev (4.67 cipr)<br>098 = 98.3 cc/rev (6.00 cipr)<br>130 = 130.2 cc/rev (7.94 cipr) | C Frame |

5 = DESIGN SERIES
A1= Current for all displacements

6 = DESIGN SERIES MODIFIER
U = SAE Connections & Mounting

7 = SHAFT & O-RING SEALS
V = Viton

8 = ROTATION
L = Left Hand (CCW)
R = Right Hand (CW)

9 = VALVE PLATE TYPE*
S = Rear Ported
G = Side Ported
D = Thru-Shaft w/Side-Ports
T = Top/Bottom Ported

10 = CONNECTION TYPE
A = SAE Straight Port*
F = SAE Flange
R = SAE Flange w/ Relief Valve

* All combinations of Valve Plate and Connection types not available.
See Valve Plate Table below

11 = SHAFT TYPE
See Shaft Table below.

12 = CONTROL TYPE
P = Pressure Compensating
M = Manual Stroking

13a = CONTROL OPTIONS

**Pressure Controls**
1 = Single PC Setting (standard)
2 = Dual PC Setting
L = Low PC Setting
C = Single PC w/Soft Start, NO
K = Single PC w/Soft Start, NC
H = High - Low PC

**Manual Controls**
N*= Pintle w/o Neutral Bypass
S*= Pintle w/ Neutral Bypass
H = Handwheel w/ Neutral Bypass
* for A and B frame only

13b = SOLENOID VOLTAGE
N for non-electrical control options
0 = 115/60 - 110/50 VAC
1 = 230/60 - 220/50 VAC
2 = 12 VDC
3 = 24 VDC

13c = CONNECTOR
N = No Connector for non-electrical control options
R = .500 NPT w/o Lite
W = .500 NPT w/Lite
S = PG-11 w/o Lite
L = PG-11 w/Lite
E = Integral Deutsch DT04-2P

13d = CONTROL MODIFIER
Blank unless required option
/F = Fixed Load Sense 170 psi (11,7 bar)
/J = Adjustable Load Sense 100 - 220 psi (7 - 15 bar)
/K = Adjustable Load Sense 225 - 350 psi (15,5 - 24 bar)
/H = Horsepower Limiter
/G = Horsepower Limiter w/ Fixed Load Sense
/C = Horsepower Limiter with Adjustable Load Sense 100 - 220 psi (7 - 15 bar)
/D = Horsepower Limiter with Adjustable Load Sense 225 - 350 psi (15,5 - 24 bar)

13e = Horsepower Setting
Blank unless required option
Input Horsepower at 1800 rpm
(i.e. 045 = 45 horsepower)
To Calculate:
(1800 rpm / Actual rpm) X Required Horsepower
OR
(1800 rpm / Actual rpm X (Required kW X 1.34)

14 = STROKE LIMITER OPTION
NN = None
SN = Adjustable Max. Volume Stop
SA = Adjustable Min. Volume Stop
SB = Adjustable Min. & Max. Volume Stops

15 = AUXILIARY ADAPTORS
(required for all thru-shaft units, leave blank for all rear & side ported units)
CP = Cover Plate
AN = SAE A Adaptor & Coupling
BN = SAE B Adaptor & Coupling
CN = SAE C Adaptor & Coupling
NN = No Adaptor or Coupling

16 = SPECIAL PUMP MODIFIER
XXX = Special Pump Modifier (Factory Assigned)
Blank = Standard Unit

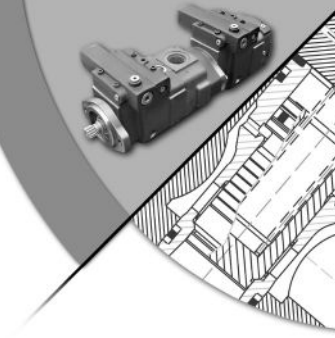
Valve Plate Table (X = Available)

| | SA | GA | DA | GF | DF | DR | TA |
|---|---|---|---|---|---|---|---|
| -014 | X | X | X | | | | X |
| -022 | X | X | X | | | | X |
| -034 | X | | | | X | X | |
| -046 | X | | | | X | X | |
| -076 | X | | | X | X | X | |
| -098 | X | | | X | X | X | |
| -130 | X | | | X | X | X | |

Shaft Table

| Shaft Code | PVWW-014/022 | PVWW-034/-046 | PVWW-076/-098/-130 |
|---|---|---|---|
| Y | .75" Keyed | .875" Keyed | 1.25" Keyed |
| B | .875" Keyed | 1.00" Keyed | — |
| S | SAE A Spline | SAE B Spline | SAE C Spline |
| C | SAE B Spline | SAE B-B Spline | — |
| D** | SAE A Spline | SAE B Spline | SAE C Spline |

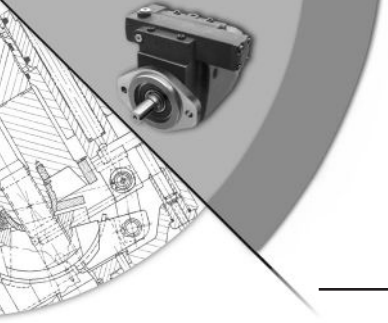
** D shafts are "industrial" versions of S shafts



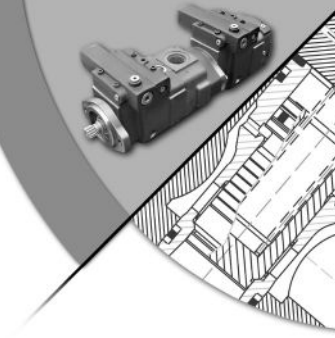
| Installation Drawings | 014, 022 | 034, 046 | 076,098,130 |
|---|---|---|---|
| **Pumps** | | | |
| Basic Pump Rear Ported | DS-47480 | DS-47483 | DS-47487 |
| Basic Pump Side Ported (Top and Bottom) | DS-47481 | DS-47484 | DS-47489 |
| Basic Pump Thru Shaft | DS-47482 | DS-47485 | DS-47489 |
| Dual Pump Adapter | | DS-47490 | |
| **Controls** | | | |
| P-1NN,P-LNN Single Pressure Compensator | DS-47984 | DS-47985 | DS-47986 |
| P-1NN,P-LNN /F, /J, /K Single Pressure Compensator w/Load Sense | DS-47987 | DS-47988 | DS-47989 |
| P-1NN/H Single Pressure Compensator w/Horsepower Limiter | | DS-48112 | DS-48113 |
| P-1NN/G,/C,/D Single Pressure Comp w/Horsepower Limiter w/Load Sense | | DS-48115 | DS-48116 |
| P-C, P-K Single Pressure Soft Start | DS-47990 | DS-47991 | DS-47992 |
| P-2 Dual Pressure Compensator | DS-48105 | DS-48106 | DS-48107 |
| M-N, M-S Lever Operated | DS-47993 | | |
| M-H Handwheel | DS-47996 | DS-47997 | DS-47998 |

For additional technical information refer to the Application Guidelines bulletin 847013.

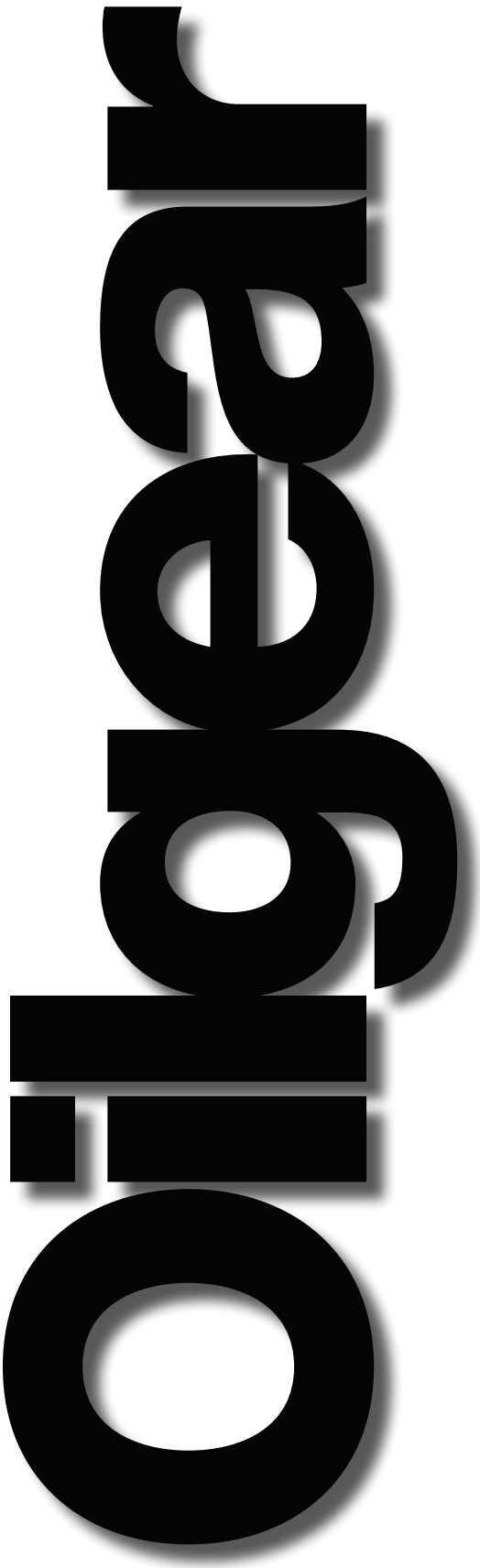
Information in this bulletin subject to change without notice. Current versions of the documents referenced in this bulletin may have a letter at the end to denote the revision level. The latest release of any of any document, including this one, can be found on the Oilgear website or by contacting your Oilgear representative.



Notes



Oilgear Notes



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