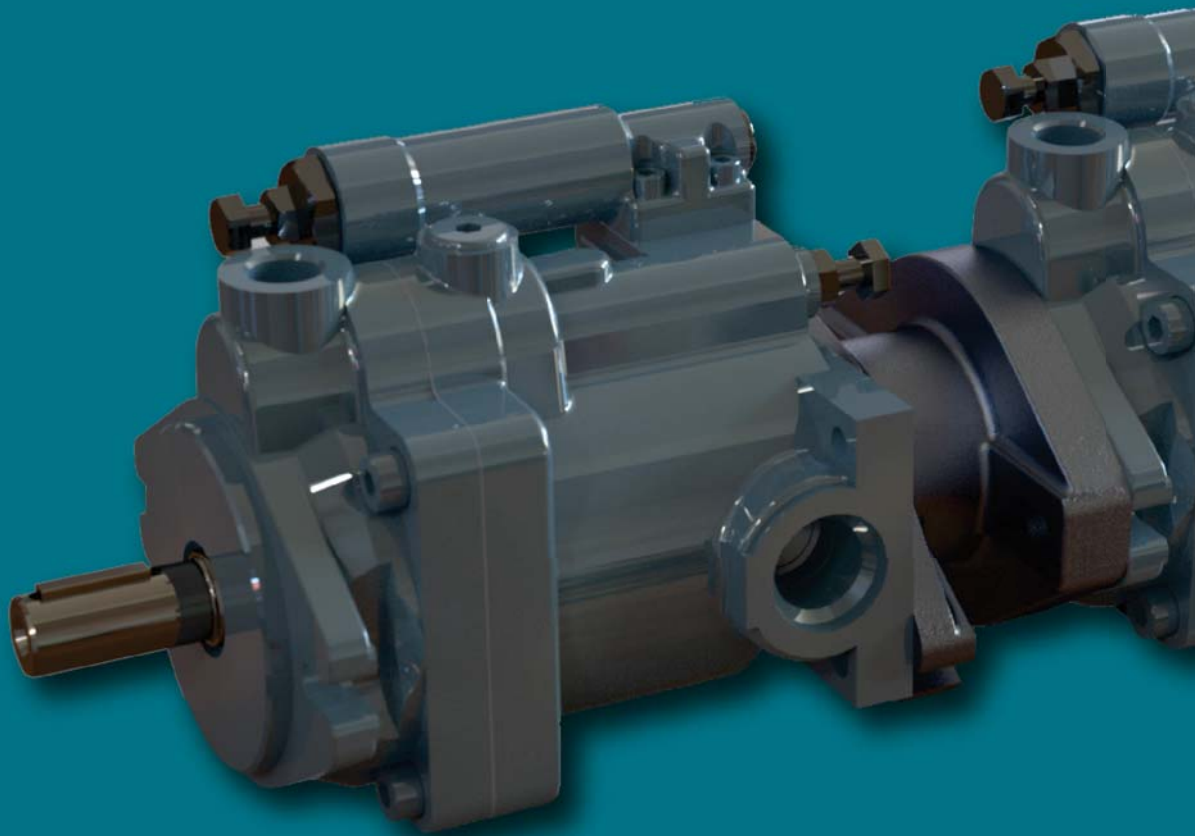


NACHI

PVS PISTON PUMP THRU SHAFT SERIES KEY & SPLINE SHAFT OPTIONS

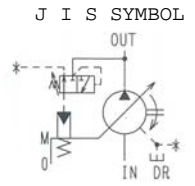


NACHI AMERICA INC.

NACHI

PVS Series Variable Volume Piston Pump Thru-shaft Series

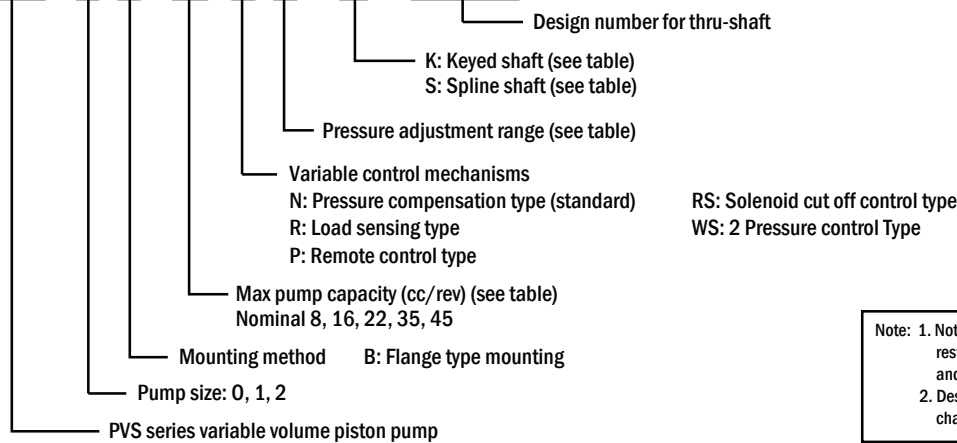
.48 to 2.74 cu in/rev
3045 psi



Model Code

How to Order

PVS - 1 B - 16 - N - 2 - (*) - E5737A



Note: 1. Note that there are certain restrictions on pump capacity and motor capacity combinations.
2. Design numbers are subject to change without notice.

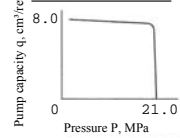
Model No.	Volume in ³ /rev (cm ³ /rev)	Discharge volume at no-load gpm				Pressure range psi	Permitted peak pressure psi	Front shaft	Rear shaft	Rotating speed min ⁻¹		Mass lbs
		1000min ⁻¹	1200min ⁻¹	1500min ⁻¹	1800min ⁻¹					Min.	Max.	
PVS-0B-8*0-(*)-E5737A 1 2 3	.18 - .48 (3.0 - 8.0)	2.1	2.5	3.2	3.8	290 to 507 290 to 1015 435 to 2030 435 to 3045	3625	K: SAE (AH) 19-1 (3/4) S: SAE (A) 16-4 (5/8)	SAE (A) 16-4 (5/8)	500	2000	17
PVS-1B-16*0-(*)-E5737A 1 2 3	.3 - 1.0 (5.0 - 16.5)	4.4	5.2	6.5	7.8	290 to 507 290 to 1015 435 to 2030 435 to 3045	3625	K: SAE (AH) 19-1 (3/4) S1: SAE (AH) 19-4 (3/4) S3: SAE (B) 22-4 (7/8)	SAE (A) 16-4 (5/8)	500	2000	24
PVS-1B-22*0-(*)-E5737A 1 2 3	.42 - 1.34 (7.0 - 22.0)	5.8	7.0	8.7	10.5	290 to 507 290 to 1015 435 to 2030 435 to 3045	3625	K: SAE (AH) 19-1 (3/4) S1: SAE (AH) 19-4 (3/4) S3: SAE (B) 22-4 (7/8)	SAE (A) 16-4 (5/8)	500	2000	24
PVS-2B-35*0-(*)-E5737A 1 2 3	.48 - 2.1 (8.0 - 35.0)	9.2	11.1	13.9	16.6	290 to 507 290 to 1015 435 to 2030 435 to 3045	3625	K: SAE (B-B) 25-1 (1") S1: SAE (B) 22-4 (7/8) S3: SAE (B-B) 25-4 (1")	SAE (AH) 19-4 (3/4)	500	2000	46
PVS-2B-45*0-(*)-E5737A 1 2 3	.67 - 2.74 (11.0 - 45.0)	11.9	14.3	17.9	21.5	290 to 507 290 to 1015 435 to 2030 435 to 3045	3625	K: SAE (B-B) 25-1 (1") S1: SAE (B) 22-4 (7/8) S3: SAE (B-B) 25-4 (1")	SAE (AH) 19-4 (3/4)	500	2000	46

Note: Direction of rotation is clockwise when viewed from the shaft end.

	Front pump	Rear pump (Keyed)	Coupling	Adapter
NACHI part number	PVS 0B or PVS 1B Series	SAE (A) 5/8 shaft SAE (AH) 3/4 shaft	EZSP-0050-003 EZSP-0050-002	(SAE A) EZSP-0050-001
	PVS-2B Series	SAE (A) 5/8 shaft SAE (AH) 3/4 shaft SAE (B) 7/8 shaft	EZSP-0051-002 EZSP-0051-003 EZSP-0052-002	(SAE A) EZSP-0051-001
	PVS-2B Series	SAE (A) 5/8 shaft SAE (AH) 3/4 shaft SAE (B) 7/8 shaft SAE (B-B) 1" shaft	EZSP-0051-002 EZSP-0051-003 EZSP-0052-002 EZSP-0052-003	(SAE B) EZSP-0052-001

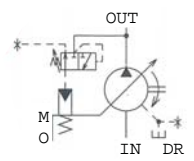
PVS-0B-8N*-E5737A

P-q Characteristic

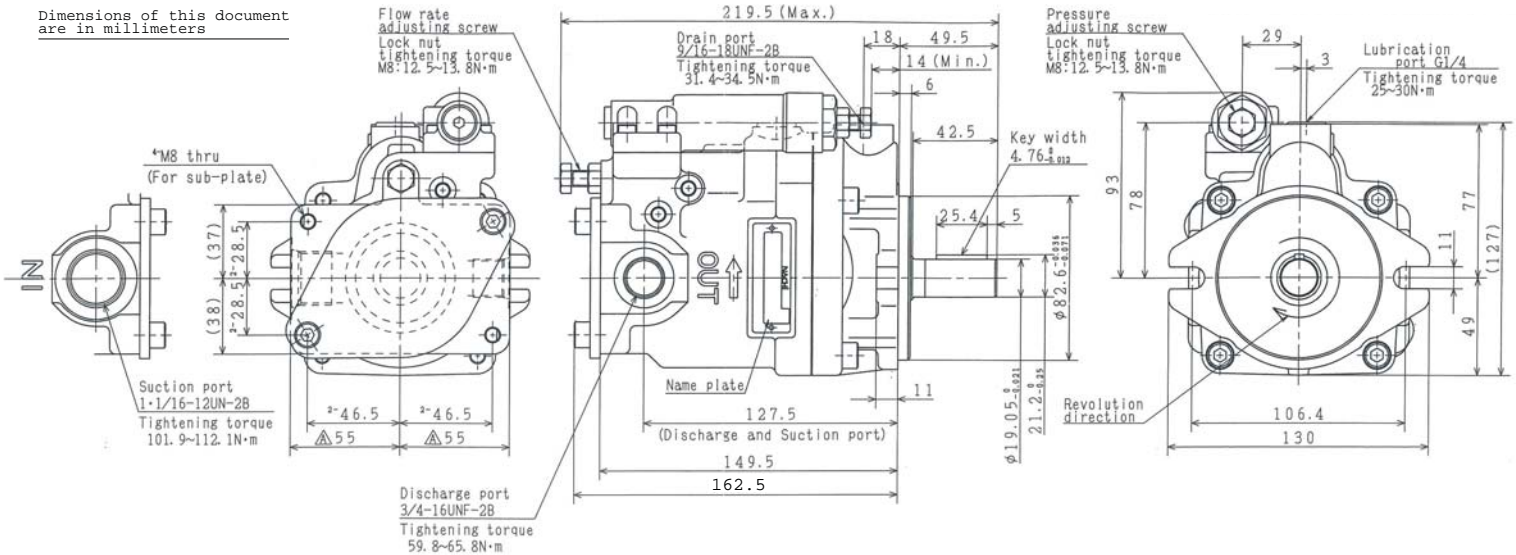


Setting of pressure and the displacement upon shipment
 P: Minimum pressure q: Maximum pump capacity

J I S SYMBOL



Dimensions of this document are in millimeters



Specifications

Variable volume piston pump:
 Pump capacity (Max.)
 Rated operating pressure
 Allowable peak pressure
 Rotating speed (Max./Min.)
 Revolution direction

8cm³/rev
 21.0MPa
 25.0MPa
 2000/500 min⁻¹
 Clockwise

Note 2)

(View from shaft end)
 Mounting direction Parallel to pump shaft
 Control type Pressure compensation type (manual mode)
 Mass 8kg
 Color of pump Nachi standard color (Munsell 5B6/3)

Handling

- Fluid R&O Anti-wear ISO VG32~68 NAS10 below
- Kinematic viscosity 20~200mm²/s
- Fluid temperature range 5~60°C
- Suction pressure min. -0.03MPa
- Drain back pressure max. 0.1MPa
- Peak peak 0.2MPa
- Filteration Suction 150 mesh
Line 10µm

Note

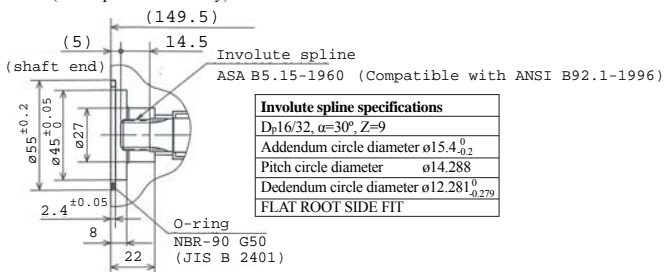
- Before starting up the pump, fill the pump case with clean hydraulic operating fluid through the lubrication port. (220cm³)
- The maximum pressure (set pressure + surge pressure) that can be momentarily allowed.
- Please refer to the standard catalog and instruction manual for the instruction of this pump.

Specification of pump <standard pump: PVS-0B-8N3-E30>

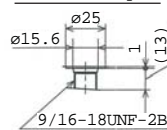
- It's possible to install a tandem-pump on the head side.

Tandem-pump installation

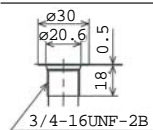
(A sub-plate is necessary)



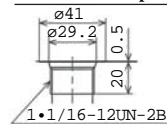
Detail of drain port



Detail of discharge port



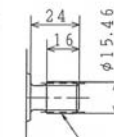
Detail of suction port



{PVS S Series}

Detail of shaft

(SAE J744c 16-4(A)5/8)



Involute spline

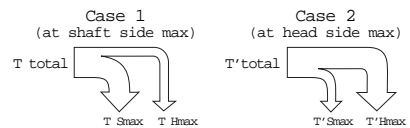
ASA B5.15-1960
 (Compatible with ANSI B92.1-1996)

Involute spline specifications

D ₁ 16/32, α=30°, Z=9
Addendum circle diameter ø15.46
Pitch circle diameter ø14.288
Dedendum circle diameter ø12.281 _{-0.279}
FLAT ROOT SIDE FIT

Thru-drive allowable torque

(T_S: Shaft side pump, T_H: Head side pump)



PVS K Series

Case	Torque N·m		Case	Torque N·m	
	T _{total}	T _{Hmax}		T _{total}	T _{Hmax}
1	95.5	35.5	1	95.5	35.5
2	60.0	60.0	2	60.0	60.0

- Shaft side torque plus head side torque must be less than total torque.
- Total torque minus shaft side torque must be less than head side torque.

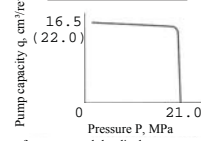
{PVS S Series}

Case	Torque N·m		Case	Torque N·m	
	T _{total}	T _{Hmax}		T _{total}	T _{Hmax}
1	42.5	35.5	1	42.5	13.5
2	7.0	29.0	2	29.0	29.0

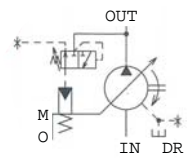
- Shaft side torque plus head side torque must be less than total torque.
- Total torque minus shaft side torque must be less than head side torque.

PVS-1B-16¹⁶/₂₂ N*-*-E5737A

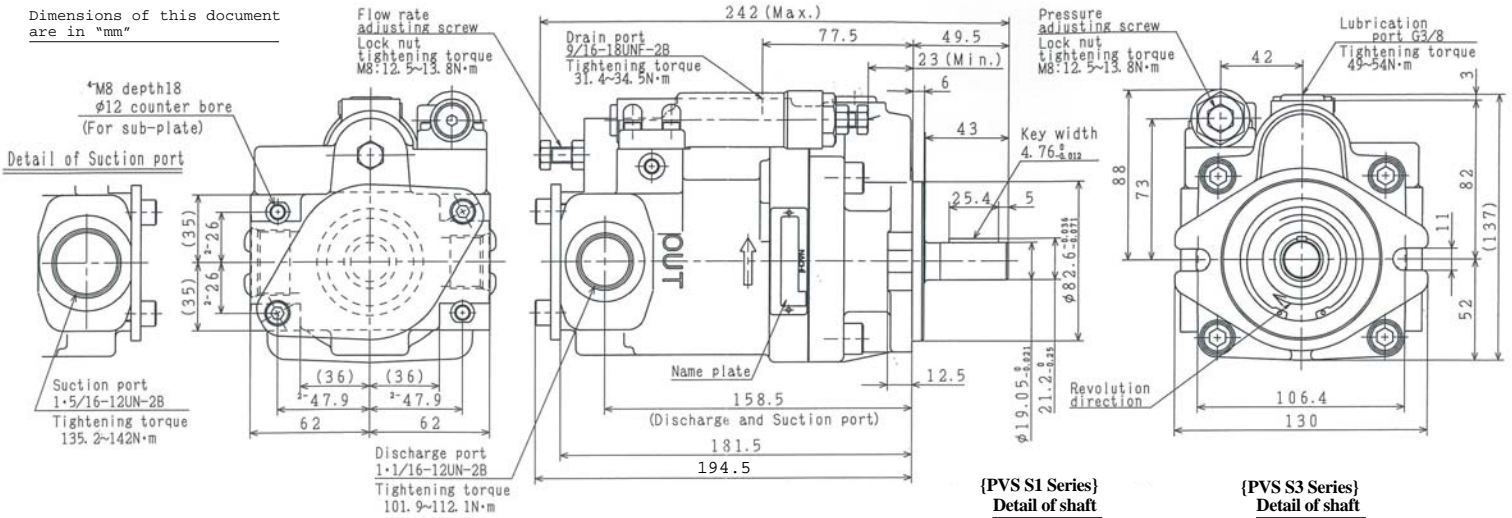
P-q Characteristic



J I S SYMBOL

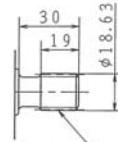


Dimensions of this document are in "mm"



{PVS S1 Series} Detail of shaft

(SAE J744c 19-4 (AH)3/4)



Involute spline

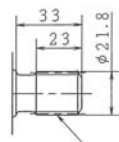
ASA B5.15-1960

(Compatible with ANSI B92.1-1996)

Involute spline specifications	
D_p 16/32, $\alpha=30^\circ$, $Z=11$	
Addendum circle diameter ϕ 18.63	
Pitch circle diameter ϕ 17.462	
Dedendum circle diameter ϕ 15.456 _{±0.279}	
FLAT ROOT SIDE FIT	

{PVS S3 Series} Detail of shaft

(SAE J744c 22-4 (B)7/8)



Involute spline

ASA B5.15-1960

(Compatible with ANSI B92.1-1996)

Involute spline specifications	
D_p 16/32, $\alpha=30^\circ$, $Z=13$	
Addendum circle diameter ϕ 21.8	
Pitch circle diameter ϕ 20.637	
Dedendum circle diameter ϕ 18.631 _{±0.279}	
FLAT ROOT SIDE FIT	

Specifications

Variable volume piston pump:	
Pump capacity (Max.)	16.5cm ³ /rev
Rated operating pressure	21.0MPa
Note 2) Allowable peak pressure	25.0MPa
Rotating speed (Max./Min.)	2000/500 min ⁻¹
Revolution direction	Clockwise
	(View from shaft end)
Mounting direction	Parallel to pump shaft
Control type	Pressure compensation type (manual mode)
Mass	11kg
Color of pump	Nachi standard color (Munsell 5B6/3)

Handling

1. Fluid R&O Anti-wear	ISO VG32~68 NAS10 below
2. Kinematic viscosity	20~200mm ² /s
3. Fluid temperature range	5~60°C
4. Suction pressure	min. -0.03MPa
5. Drain back pressure peak	max. 0.1MPa
6. Filtration	Suction 150 mesh Line 10µm

Note

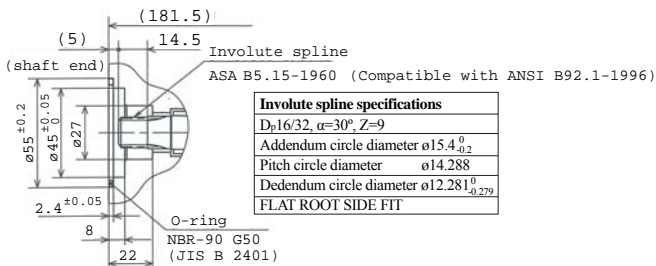
- Before starting up the pump, fill the pump case with clean hydraulic operating fluid through the lubrication port. (300cm³)
- The maximum pressure (set pressure + surge pressure) that can be momentarily allowed.
- Please refer to the standard catalog and instruction manual for the instruction of this pump.

Specification of pump <standard pump: PVS-1B-16N3-E13>

- It's possible to install a tandem-pump on the head side.

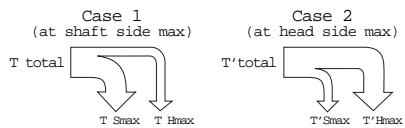
Tandem-pump installation

(A sub-plate is necessary)



Thru-drive allowable torque

(T_s :Shaft side pump, T_H :Head side pump)



PVS K Series

Case 1	Torque N·m		Case 2	Torque N·m	
	T_{total}	T_{Hmax}		T'_{total}	T'_{Hmax}
	105.0	73.0		105.0	45.0
		32.0			60.0

- Shaft side torque plus head side torque must be less than total torque.
- Total torque minus shaft side torque must be less than head side torque.

{PVS S Series}

Case 1	Torque N·m		Case 1	Torque N·m	
	16.5cm ³ /rev	22cm ³ /rev		16.5cm ³ /rev	22cm ³ /rev
T_{total}	83.0	83.0	T_{total}	83.0	83.0
T_{Smax}	73.0	83.0	T_{Smax}	23.0	23.0
T_{Hmax}	10.0	0.0	T_{Hmax}	60.0	60.0

- Shaft side torque plus head side torque must be less than total torque.
- Total torque minus shaft side torque must be less than head side torque.

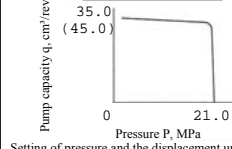
{PVS S3 Series}

Case 1	Torque N·m		Case 1	Torque N·m	
	16.5cm ³ /rev	22cm ³ /rev		16.5cm ³ /rev	22cm ³ /rev
T_{total}	133.0	153.0	T_{total}	133.0	153.0
T_{Smax}	73.0	97.5	T_{Smax}	73.0	93.0
T_{Hmax}	60.0	55.5	T_{Hmax}	60.0	60.0

- Shaft side torque plus head side torque must be less than total torque.
- Total torque minus shaft side torque must be less than head side torque.

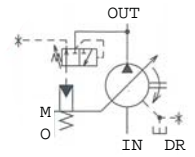
PVS-2B-35 N*-*-E5737A

P-q Characteristic

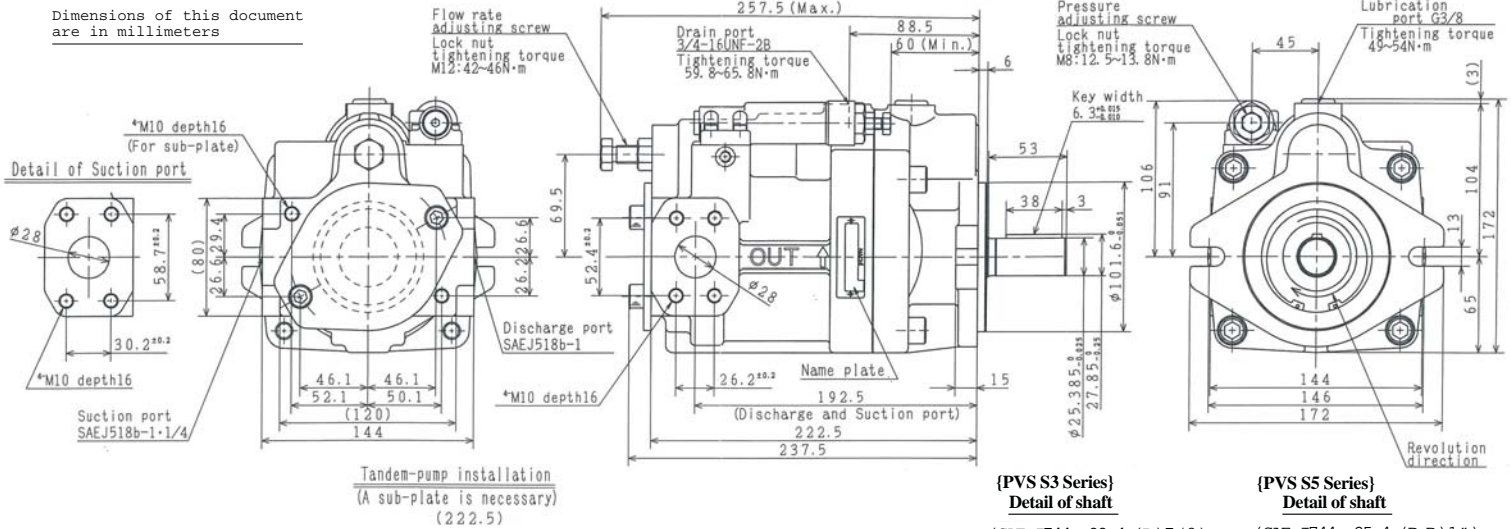


Setting of pressure and the displacement upon shipment
P: Minimum pressure q: Maximum pump capacity

J I S SYMBOL



Dimensions of this document are in millimeters



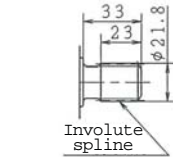
Tandem-pump installation
(A sub-plate is necessary)
(222.5)

{PVS S3 Series} Detail of shaft

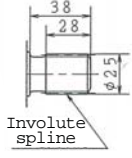
(SAE J744c 22-4 (B) 7/8)

{PVS S5 Series} Detail of shaft

(SAE J744c 25-4 (B-B) 1")

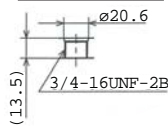


Involute spline
ASA B5.15-1960
(Compatible with ANSI B92.1-1996)



Involute spline
ASA B5.15-1960
(Compatible with ANSI B92.1-1996)

Detail of drain port



Specifications

Variable volume piston pump:	45cm³/rev
Pump capacity (Max.)	21.0MPa
Rated operating pressure	25.0MPa
Note 2) Allowable peak pressure	2000/500 min ⁻¹
Rotating speed (Max./Min.)	Clockwise
Revolution direction	(View from shaft end)
Mounting direction	Parallel to pump shaft
Control type	Pressure compensation type (manual mode)
Mass	21kg
Color of pump	Nachi standard color (Munsell 5B6/3)

Handling

- Fluid R&O Anti-wear ISO VG32-68 NAS10 below
- Kinematic viscosity 20-200mm²/s
- Fluid temperature range 5-60°C
- Suction pressure min. -0.03MPa
- Drain back pressure max. 0.1MPa
- peak max. 0.2MPa
- Line 150 mesh
- Line 10µm

Note

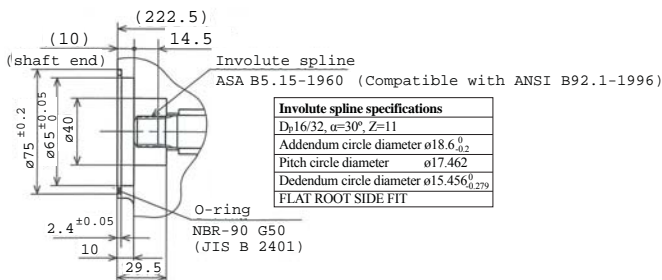
- Before starting up the pump, fill the pump case with clean hydraulic operating fluid through the lubrication port. (650cm³)
- The maximum pressure (set pressure + surge pressure) that can be momentarily allowed.
- Please refer to the standard catalog and instruction manual for the instruction of this pump.

Specification of pump <standard pump: PVS-2B-45N3-E20>

- It's possible to install a tandem-pump on the head side.

Tandem-pump installation

(A sub-plate is necessary)



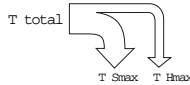
Involute spline specifications	
Dp	16/32, α=30°, Z=13
Addendum circle diameter	ø21.8
Pitch circle diameter	ø20.637
Dedendum circle diameter	ø18.631 _{0,279}
FLAT ROOT SIDE FIT	

Involute spline specifications	
Dp	16/32, α=30°, Z=15
Addendum circle diameter	ø25
Pitch circle diameter	ø23.813
Dedendum circle diameter	ø21.806 _{0,279}
FLAT ROOT SIDE FIT	

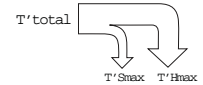
Thru-drive allowable torque

(Ts: Shaft side pump, Th: Head side pump)

Case 1
(at shaft side max)



Case 2
(at head side max)



PVS K Series

Torque N·m	
T total	248.0
T'smax	199.0
T'hmax	49.0

Torque N·m	
T'total	248.0
T'smax	158.0
T'hmax	90.0

- Shaft side torque plus head side torque must be less than total torque.
- Total torque minus shaft side torque must be less than head side torque.

{PVS S3 Series}

Torque N·m	
T total	153.0
T'smax	153.0
T'hmax	0.0

Torque N·m	
T'total	153.0
T'smax	63.0
T'hmax	90.0

- Shaft side torque plus head side torque must be less than total torque.
- Total torque minus shaft side torque must be less than head side torque.

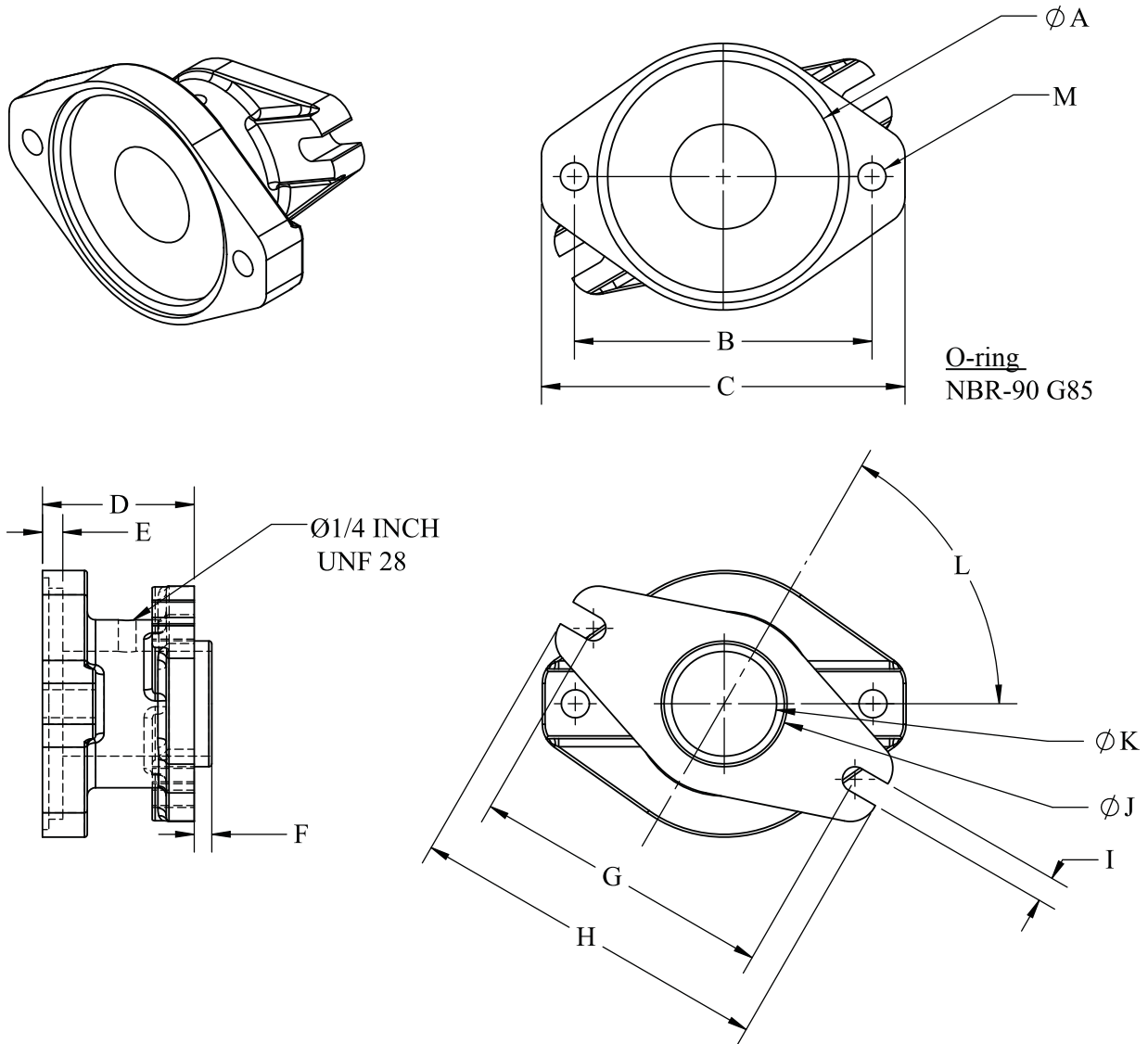
{PVS S5 Series}

Torque N·m	
T total	240.0
T'smax	155.0
T'hmax	85.0

Torque N·m	
T total	240.0
T'smax	150.0
T'hmax	90.0

- Shaft side torque plus head side torque must be less than total torque.
- Total torque minus shaft side torque must be less than head side torque.

PVS Series Pump Adapter



Dimension (mm)	Part Number		
	EZSP-0050-001	EZSP-0051-001	EZSP-0052-001
A	Ø82.60	Ø82.60	Ø101.60
B	106.4	106.4	144
C	130	130	172
D	54.25	52.25	56.75
E	7.25	7.25	7.25
F	6.25	8.25	8.25
G	108	104	104
H	130	130	130
I	9	11	11
J	Ø45	Ø65	Ø65
K	Ø37.50 THRU	Ø52.50 THRU	Ø52.50 THRU
L	60.00°	60.00°	60
M	M10 THRU	M10 THRU	M12 THRU

Calculation of Torque

[Formula]

$P(\text{MPa}) * q(\text{cc/rev}) / 2\pi / \text{efficiency}$
 (1000psi = 7MPa, 1CU in = 16.4cc,
 temporarily efficiency is 80%)

[Example]

Front: 0.4Cu in at 2000 psi
 (Remote control: PVS-0B-8P2-K-E5737Z)

Rear: 0.4Cu in at 500 psi
 (Remote control: PVS-0B-8P1-K-E5737Z)

1) Caused Torque for Front: 18.3Nm

2) Caused Torque for Rear: 4.6Nm < 60Nm

3) Total Torque: 22.8Nm < 95.5Nm



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