NACHI

Compact Power Units

Photo	Type	Series	Description	Main Specifications
	Compact Power Units	**NSP**	Compact Power Unit with Variable Volume Vane Uni-Pump	5.3gpm, 3hp

NACHI

NSP Series

Compact Power Unit with
Variable Volume Vane Uni-Pump

NSP Series

Compact Power Unit with Variable Volume Vane Uni-Pump

Compact hydraulic units are widely used as a power source in such machine tool applications as NC lathe chuck opening and closing, tailstock, tool rotation, machining center spindle raise and lower operations, etc. During pressure holding, the new NSP power unit, consisting of our UVN variable volume vane uni-pump, enables machine efficiency that delivers energy savings of approximately 40% when compared with Nachi standard power units.

Features

Space-saving, lightweight design

A smaller tank capacity makes the power unit more compact, and greatly reduces space requirements.

New structure increases efficiency

Based on years of experience, the structure includes an improved pump joint that provides more efficient operation.

Greatly improved cooling capacity

A powerful, energy-efficient built-in cooling system eliminates the need for fan motor wiring and coolant pipes.

Specifications

Item		Model No.	NSP–⋆–⋆V0A⋆	NSP–⋆–⋆V1A⋆
Pump capacity	cm^3/rev.	{in3/rev}	8.0 {0.49}	16.0 {0.98}
Maximum pressure	MPa	{psi}	8.0 {1160} (Full cutoff pressure)	
Motor output	kW	{HP}	0.75 {1}, 1.5 {2}	1.5 {2}, 2.2 {3}
Tank capacity	ℓ	{gallon}	20 {5.28}	
Installation space	mm	{inch}	300 X 400 {11.81 X 15.75}	
Approximate weight	kg	{lbs}	39 {86} (20 ℓ, 1.5kW)	

Model Code

NSP – 20 – 15 V 1 A 3 – 12

- 12 — Design number
- A 3 — Pressure adjustment range (A: Constant volume type)
  - 2: 218 to 580 psi (508 psi)
  - 3: 508 to 870 psi (725 psi)
  - 4: 798 to 1160 psi (1015 psi)
  - Note: Figures in parentheses show factory default full cutoff pressure.
- 1 — Maximum pump capacity
  - 0: 0.49in^3/rev
  - 1: 0.98in^3/rev
  - Note: Factory defaults are maximum values shown above.
- V — Pump type: Variable vane pump
- 15 — Motor capacity
  - 07: 0.75kW {1HP}
  - 15: 1.5kw {2HP}
  - 22: 2.2kW {3HP}
- 20 — Tank capacity : 20 liters {5.28 gallons}
- NSP — NSP series compact hydraulic power unit

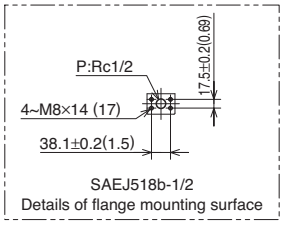
UVN – 1 A – 1 A 3 – 1.5E – 4 M – 11

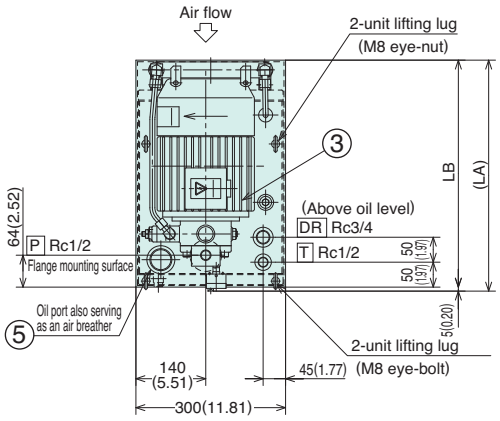
- 11 — Design number
- M — Power supply M: AC230V-60 Hz, G: AC460V-60 Hz
- 4 — Number of motor poles: 4P
- 1.5E — Motor capacity 0.7: 0.75kW, 1.5: 1.5kW, 2.2: 2.2kW
- A 3 — Pressure adjustment range (See NSP)
- 1 — Maximum pump capacity (See NSP)
- A — Mounting method A: Foot mounting
- 1 — Pump size 1
- UVN — UVN series Uni-pump

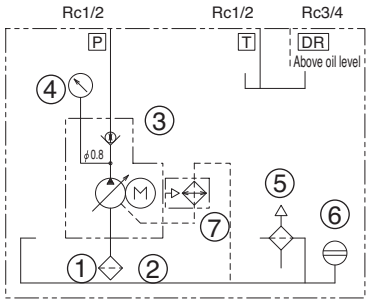
Dimensional Drawings

NSP Power Unit

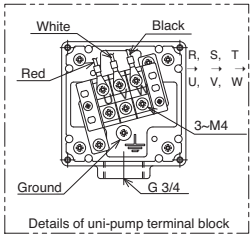
Unit: inch

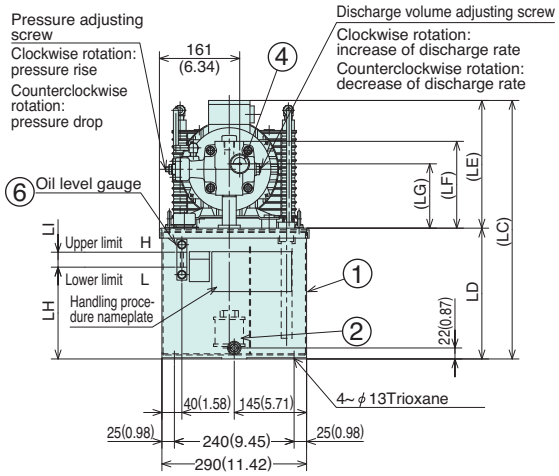


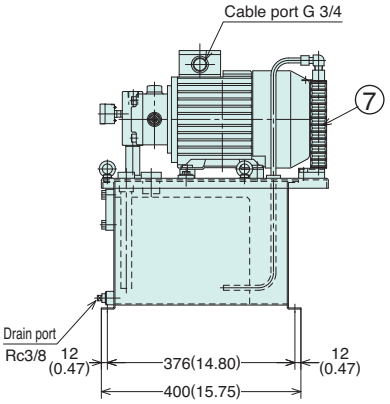




Note: The unit lifting lug (eye-bolt and eye-nut) also serves as a screw for assembling the tank. If it is removed, the tank upper plate will be removed.





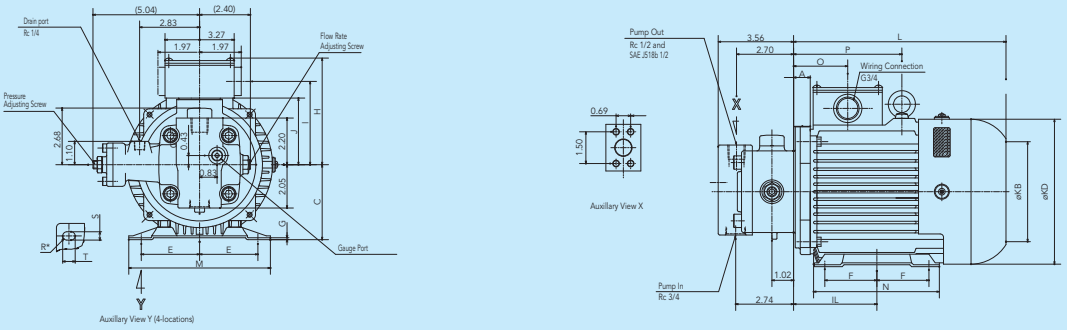


Model	Motor (HP-P)	Dimensions inch											Approximate weight lbs
		LA	LB	LC	LD	LE	LF	LG	LH	LI	H	L	
NSP-20-07V*A*-*-12	1-4	15.94	15.75	19.76	10.31	9.45	6.06	4.29	7.28	1.18	5.28 gal.	4.49 gal.	86.0
NSP-20-15V*A*-*-12	2-4	16.93	16.73	19.84		9.53	6.46	4.69					99.2
NSP-20-22V*A*-*-12	3-4	18.11	17.91	20.63		10.31	6.85	5.08					112.0

(Without hydraulic oil)

UVN Uni-Pump

inch



Model	Dimensions inch																		Approx. weight lbs.
	A	IL	C	KD	E	F	G	H	J	L	M	N	TXS	R*	KB	O	P	I	
UVN-1A-*A*-0.7E-4M-11	0.79	3.54	3.15	6.18	2.46	1.97	0.09	4.72	2.80	9.06	6.10	4.72	0.59X0.39	0.20	4.33	2.56	5.12	3.62	37.5
UVN-1A-*A*-1.5E-4M-11	0.79	3.94	3.54	6.89	2.76	2.46	0.13	5.04	3.07	10.04	6.69	5.91	0.59X0.39	0.20	4.72	2.56	5.12	3.94	46.2
UVN-1A-*A*-2.2E-4M-11	0.79	4.33	3.94	7.68	3.15	2.76	0.13	5.43	3.46	11.22	7.87	6.50	0.67X0.47	0.24	5.28	2.56	5.31	4.33	57.3

Motor Selection Method

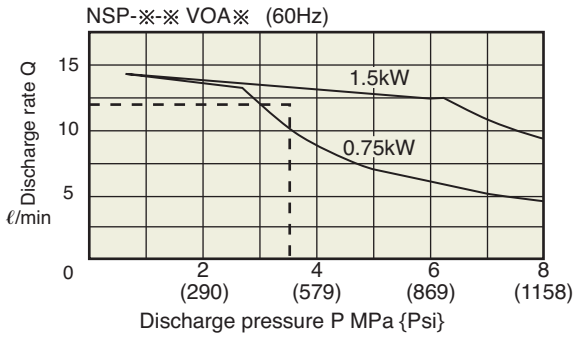
The area under a motor output curve in the graphs below is the operating range for the motor under the rated output for the motor.

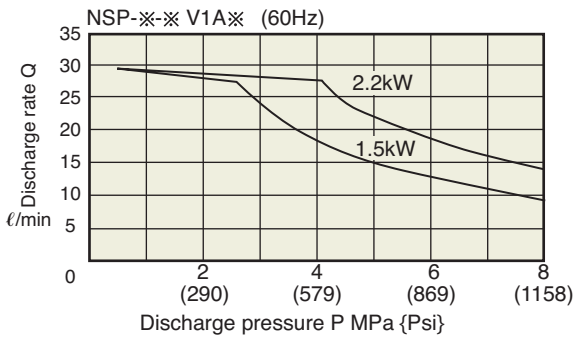
Example

Find the motor to be used at a pressure of 3.5MPa {508psi} and discharge rate of 12ℓ/min {3.2gpm}.

Solution

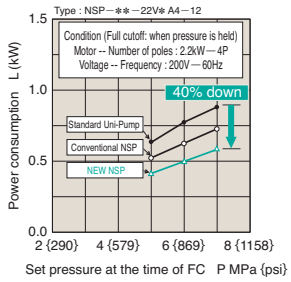
Since the intersection of the two broken lines from a pressure of 3.5MPa {508psi} and discharge rate of 12ℓ/min {3.2gpm} intersect in the area under the 1.5kW curve, it means that a 1.5kW motor should be used.



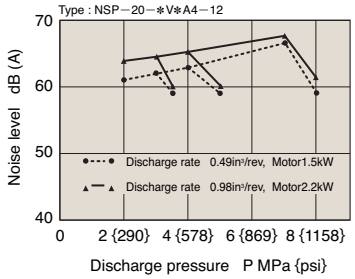


Performance Characteristics

Power Consumption



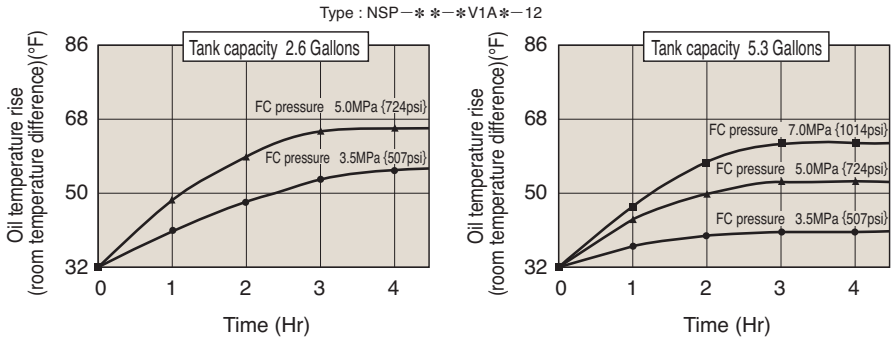
Noise Characteristics



Conditions

The value in the left-hand drawing represents typical characteristics under the following conditions:
Oil used: ISO VG32 or its equivalent
Oil temperature: 104 +/- 41°F
Measuring distance: 3.3 feet around the unit
Note:
The noise characteristics depend on the installation floor base conditions and the presence of the surrounding substance reflecting the sound, and so may be different from the above description in some cases.

Oil Temperature Characteristics



Conditions

The value on the left-hand drawing represents typical characteristics under the following conditions:
Oil used: ISO VG32 or its equivalent
Speed: 1800 min^{-1}
Room temperature: 84°F
Motor: 0.75~2.2kW
Notes:

1. For 5.0MPa (724psi) of a 2.6 gallon tank. It should be noted that there is a big rise in oil temperature under continuous operation. In this case, we recommend use of a 5.3 gallon tank.
2. Rise of oil temperature depends on the conditions of using an actual machine, and so may be different from the above description in some cases.

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