

NACHI

NACHI EUROPE GmbH

**OUR SYNERGY
YOUR PERFORMANCE**

NSP-SERIES

HYDRAULIC UNIT

CELEBRATE THE POLE POSITION



**TOP
ECO
LEADER**

Energy-efficient
with 46%
energy savings

NSP-Series

Energy saving unit – environmentally friendly

The power source for machine tools – compact, lightweight and economical – plus about 46% energy savings compared to standard units (in-house comparison at constant pressure). The NSP-Series is an environmentally friendly range of hydraulic pumps that offer increased energy efficiency compared to conventional units.

► Improved energy saving effect

Energy savings of approx. 46% compared to the standard NACHI units, due to increased energy efficiency.

► Compact design

By using a variable vane pump directly mounted on the electric motor, the space requirement has been minimised.

► Easy handling and maintenance

Simple design and outstanding reliability guarantee easy handling and maintenance.



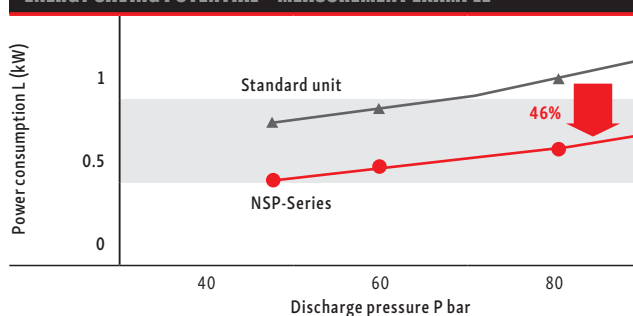
► Lower heat generation at higher efficiency

The pump and motor are distinguished by high efficiency and low heat generation, especially during pressure holding operations, so that the high accuracy of the connected machine is ensured.

► Resource-saving efficiency

Due to the low heat generation, a small reservoir volume is already sufficient. This feature makes a significant contribution to saving the Earth's resources.

ENERGY SAVING POTENTIAL – MEASUREMENT EXAMPLE



When pressure is held (full cutoff):
Motor/Number of poles: 2.2kW – 4P

Voltage/Frequency: 200V – 60Hz

NSP - 10 - 07 V 0 A2 - F2T - 14

Explanation of Model Code

Design number*¹

Option (in alphabetical order):

F□R□: Block mounted (Details are given below)

T: Oil level gauge with thermometer

Pressure adjusting range:

A2: 15 – 40bar

A3: 35 – 60bar

A4: 55 – 80bar

Flow rate control range (maximum capacity):*²

0: 8cm³/rev

1: 16cm³/rev

2: 26cm³/rev

Pump: variable vane pump

Electric motor capacity:

07: 0.75kW

22: 2.2kW

15: 1.5kW

37: 3.7kW

Oil reservoir size:

10 litre

20 litre

30 litre

40 litre

Note: There is a restriction to the combination, for example, between pump capacity and motor capacity. For details, see the description in the column of precautions for selection.

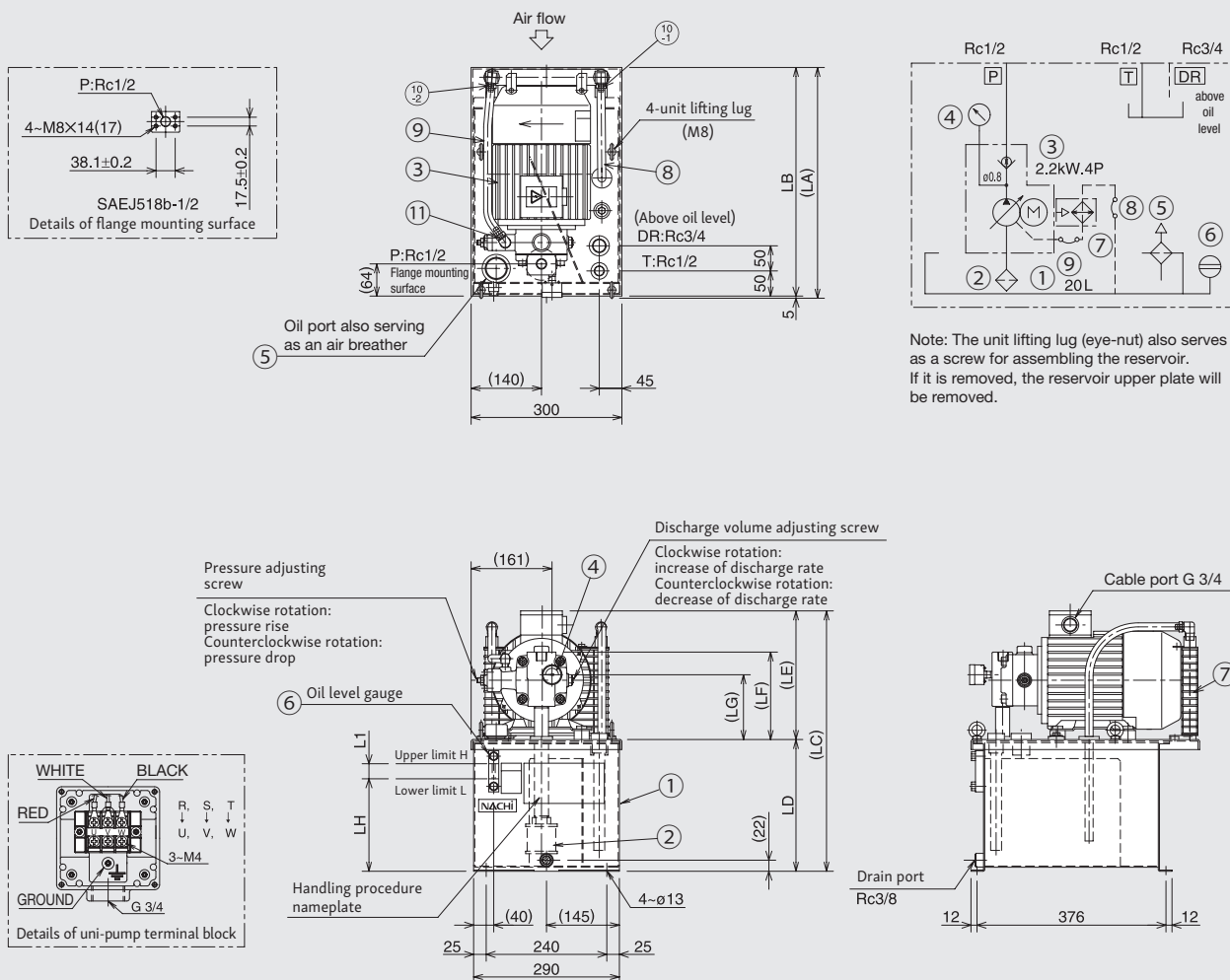
*¹The design number may be subject to change without prior notice due to the change in our policy.

*²Indicates the above-mentioned maximum value at the time of shipment from the factory.

INSTALLATION DIMENSIONS

Model	Motor (kW-P)	Size (mm)											Estimated weight (kg)
		LA	LB	LC	LD	LE	LF	LG	LH	LI	H	L	
NSP-10-07V□A□-□-14	0.75-4	405	400	394	160	234	154	109	102	10	10L	9L	35
NSP-10-15V□A□-□-14	1.5-4	430	425	396		236	164	119					39
NSP-10-22V□A□-□-14	2.2-4	460	455	422		256	174	129					46
NSP-20-07V□A□-□-14	0.75-4	405	400	496	262	234	154	109	185	30	20L	17L	37
NSP-20-15V□A□-□-14	1.5-4	430	425	498		236	164	119					41
NSP-20-22V□A□-□-14	2.2-4	460	455	518		256	174	129					48

unit: mm

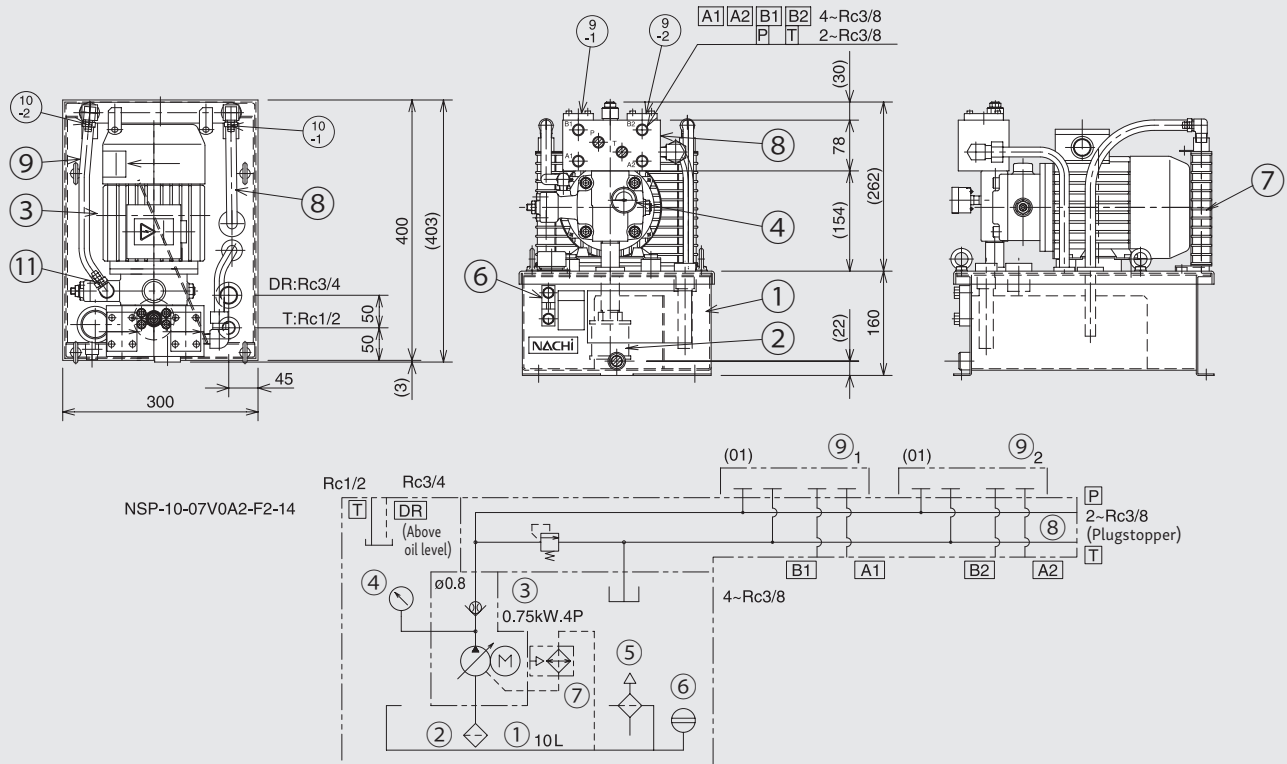


Note: The unit lifting lug (eye-nut) also serves as a screw for assembling the reservoir. If it is removed, the reservoir upper plate will be removed.

SPECIFICATIONS

Model	Pump capacity (cm³/rev)	Maximum pressure (bar)	Motor output (kW)	Oil reservoir capacity (l)	Installation space (mm)	Estimated weight (kg)
NSP-□-□V0A□	8.0	80 (full cut-off pressure)	0.75/1.5	10/20	300x400	43 (10L-Oil reservoir, 1.5kW, without option)
NSP-□-□V1A□	16.0		1.5/2.2			
NSP-□-□V2A□	26.0		2.2/3.7	30/40	382x591	max. 90

ADDITIONAL EXAMPLE OF BLOCK (NSP-10-07V0 A2-F2-14)



① Oil reservoir	④ Pressure gauge	⑦ Radiator
② Suction strainer	⑤ Oil port (also serving as air breather)	⑧ Manifold block ^{*1}
③ Uni-pump	⑥ Oil level gauge	⑨ Shut-off plate ^{*1}

^{*1}Optional. When mounted on the block, shut-off plate is included as a standard.

Motor selection method

The flow rate and pressure values available with a specific motor power are shown as curves in the diagrams.

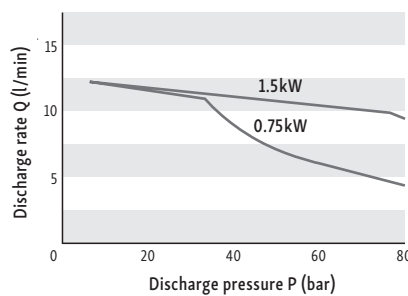
Example:

You are looking for a motor using a frequency of 60Hz that delivers a pressure of 35bar at a flow rate of 12l/min.

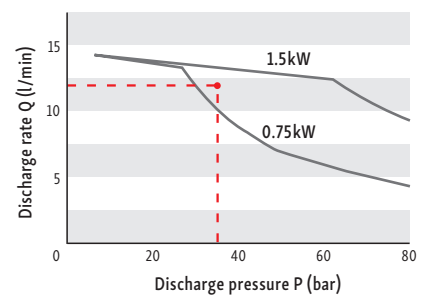
Solution:

As indicated by the dashed lines, you need a motor that is above the intersection of the lines for 35bar pressure and for a flow rate of 12l/min.

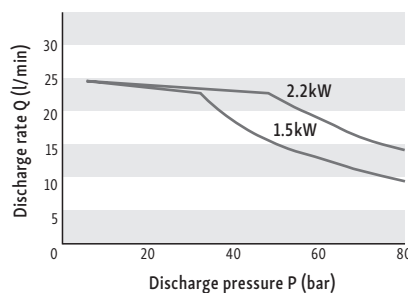
NSP-□-□V0A□ (50Hz)



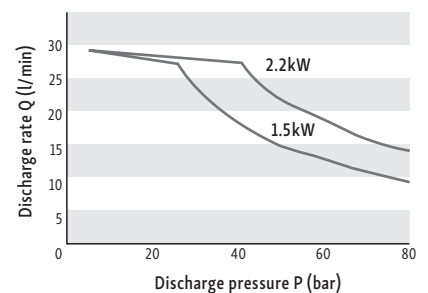
NSP-□-□V0A□ (60Hz)

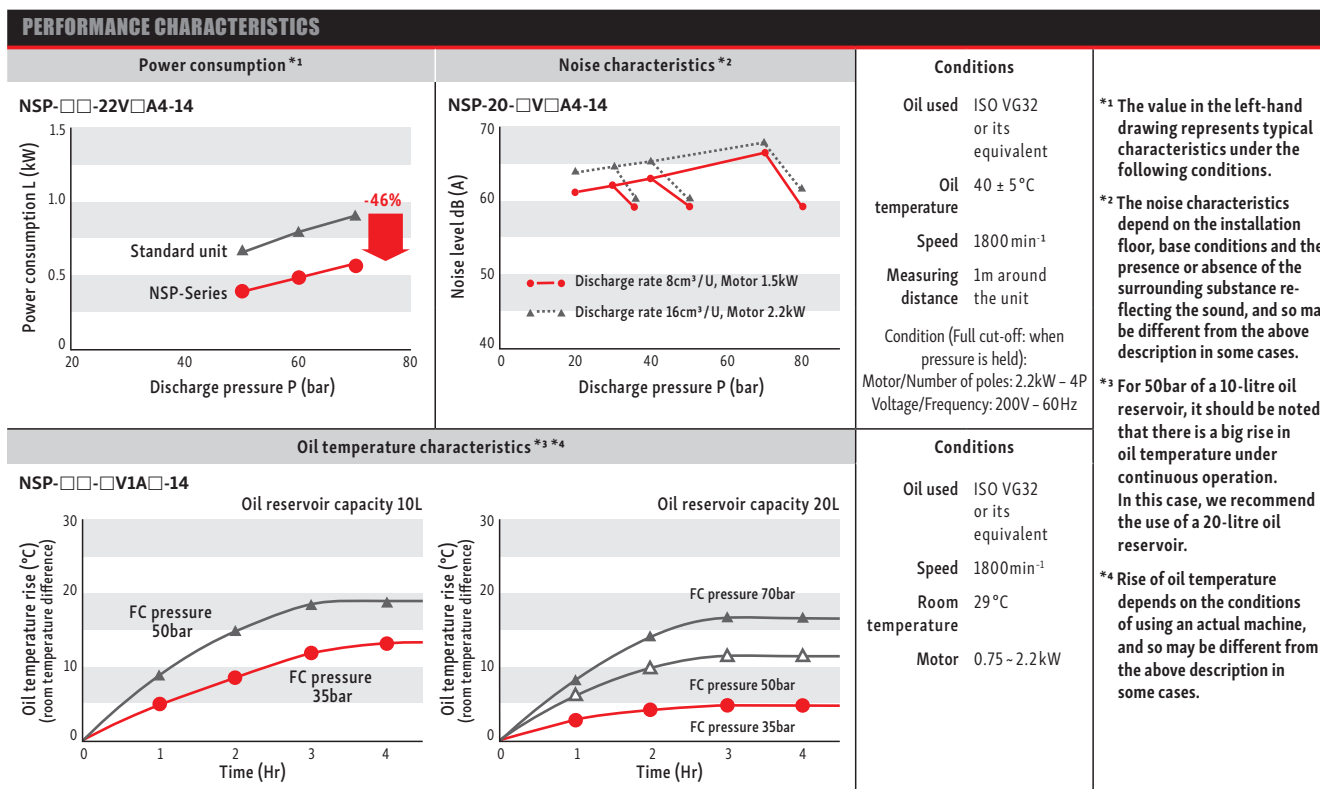


NSP-□-□V1A□ (50Hz)



NSP-□-□V1A□ (60Hz)





Precautions for selection

Type combination

- ▶ The table shows the standard combination of pumps and motors.
- ▶ An oil reservoir capacity of 30 litres is optional.
- ▶ The block mounting type is provided with a shut-off plate.

Pump	Motor (kW)		
	0.75	1.5	2.2
0A□	●	●	
1A□		●	●

Mounted manifold block *

- ▶ When a manifold block (optional) is mounted on the pump, the total weight of the block and valve should not exceed 15kg.

Type of block	F1 · R1	F2 · R2	F3
Weight of block kg	4.5	6.5	8.5
Allowance for additional mounting kg	10.5	8.5	6.5

Circuit configuration

- ▶ The basic configuration comprises a NACHI unit (NSP-□□) as a standard product plus external manifold (circuit).
- ▶ Piping should be arranged with a sufficient deflection between the NACHI unit and external manifold.
- ▶ We recommend the use of a hose having a normal pressure of 140bar and a length of about 1 through 2 meters.
- ▶ The maximum peak pressure (set pressure + surge pressure) should not exceed 140bar.
- ▶ When the pressure rises above 140bar, install a relief valve for surge cutting on the circuit side.

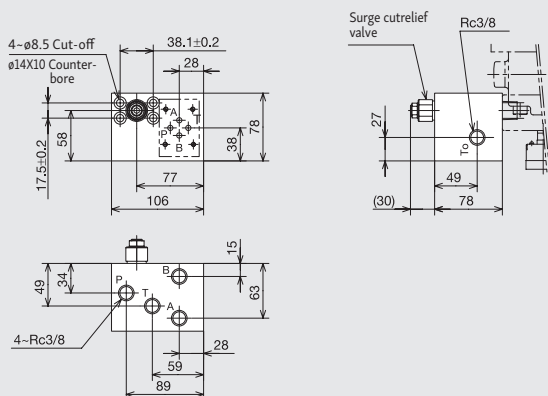
Specifications for painting *

- ▶ The inner and outer sides of the reservoir and motor portion are provided with melamine resin baking, and the pump portion is provided with lacquer blowing. Their colour conforms to NACHI-FUJIKOSHI standard colour (Munsell NO.5B6/3).

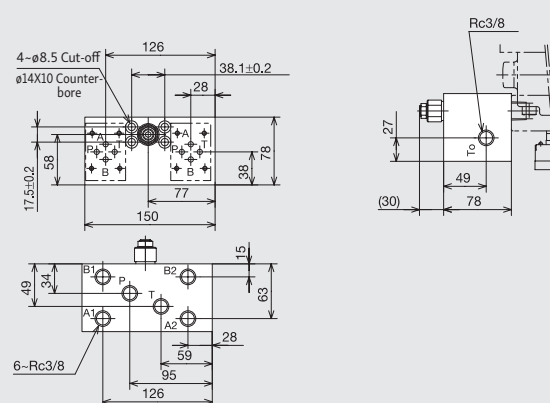
*Consult our company when you want to install the circuit or for the colour of exterior features.

Details to the options

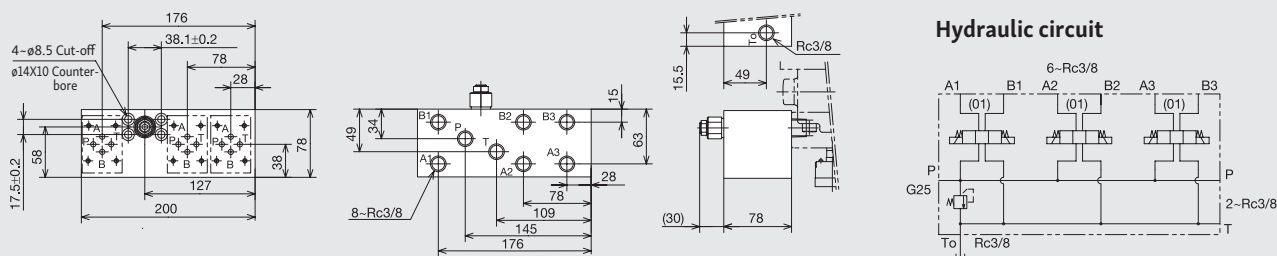
F1



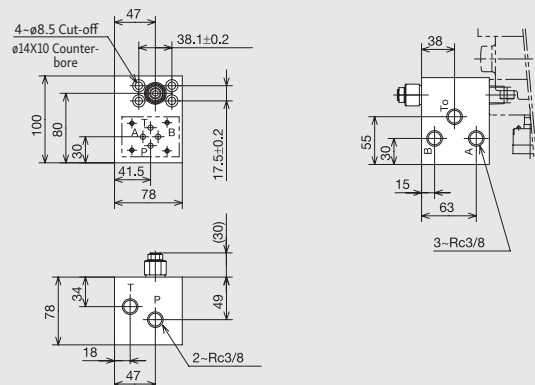
F2



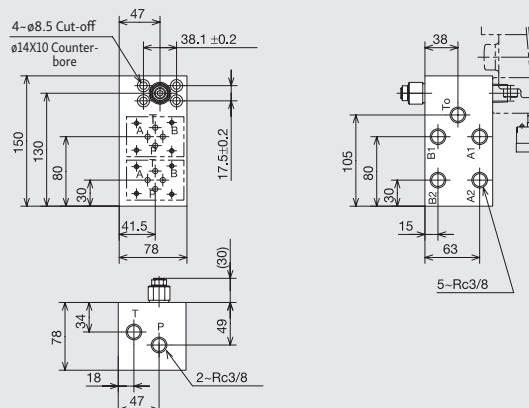
F3



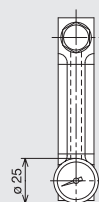
R1



R2



OIL LEVEL GAUGE T WITH THERMOMETER



Note

- Adjustment of the surge cut relief valve is strictly prohibited.
- Block B should be selected from among the above-mentioned five types from F1 to R2.

Handling procedure

Precautions in startup

- ▶ Check if the reservoir is filled with hydraulic oil up to the specified level. (Upper limit, Yellow mark: specified oil level (nominal capacity). Lower limit, Red mark: minimum oil level)
- ▶ Hydraulic oil: Based on general mineral oil, ISO VG32 or its equivalent.
- ▶ The electric connection should be made correctly according to the following procedure:

Phases of motor side and power supply side

U → R
V → S
W → T

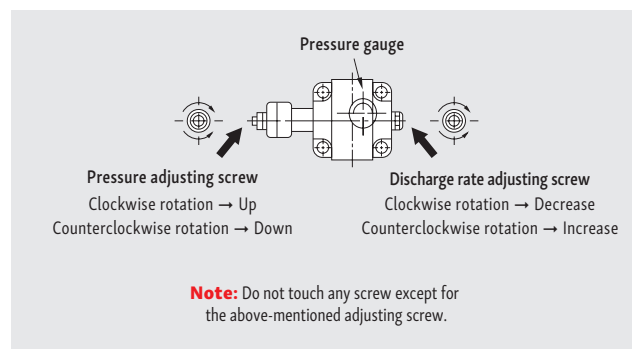


If the electric connection is incorrect:

- ▶ The motor pump rotates in the reverse direction without discharging oil. If the operation is continued, the pump may be damaged.
- ▶ Use the pressure gauge mounted on the discharge side and make sure that pressure rises.

- ▶ Repeat the procedure of starting and stopping the motor. Remove air from inside the pump and suction pipe. (You can remove air more quickly if you remove loads from the circuit.)

Pressure and discharge rate adjustment procedure



Maintenance and inspection

- ▶ Oil temperature: Use it at the temperature from 10 to 60°C.
- ▶ Hydraulic oil replacement interval: Replace hydraulic oil three months after the start of operation in the beginning. Then replace it whenever contamination has been observed or after the lapse of one year.
- ▶ Inspection and cleaning of reservoir interior and strainer: Every 6 months or every 4000 hours (whichever comes first)

Ambient temperature

- ▶ Temperature: 10 to 35°C
- ▶ Keep the unit away from water-soluble cutting fluid mist.

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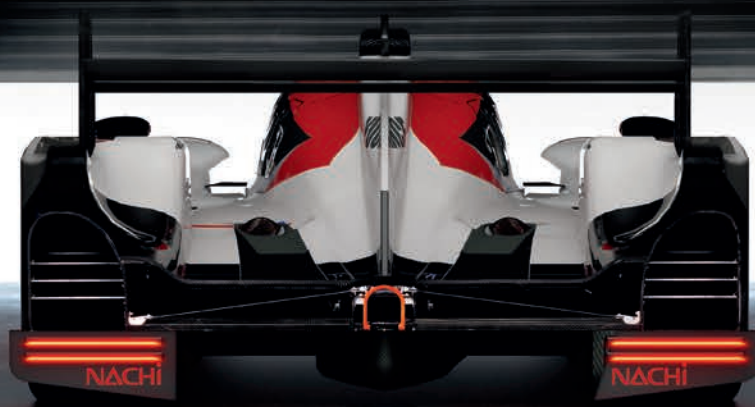
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