# HP3V

**Swash-plate Type**
**Axial Piston Variable Displacement Pump**

Hengli swash-plate axial piston pump HP3V, the key parts of the pump are made of imported materials, quality strictly controlled, suitable for high-pressure hydraulic applications.

| Apply to open hydraulic circuit | | |
|---|---|---|
| Displacements (cc/rev) | 80 | 140 |
| Rated pressure (bar) | 320 | 350 |
| Peaking pressure (bar) | 350 | 400 |

| | |
|---|---|
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- Variable pump in swash-plate design for open circuit.
- High continuous pressure.
- Exceptional self-priming capability.
- Available with American (SAE) and Japanese (JIS) mounting fanges and shafts.
- Excellent reliability and long life.
- High power to weight ratio.
- Variety of control options.
- Optional through drive.
- Quick control response.
- Low pressure pulsation and low noise.
- Developed for engineering, mobile vehicles, Industrial and other industrial application.

## Technical Data

| Size | | HP3V 80 | HP3V 140 |
|---|---|---|---|
| Displacement (cc/rev ) | | 80 | 140 |
| Pressure | Rated pressure (bar | 320 | 350 |
| | Peak pressure (bar | 350 | 400 |
| Rotation speed | Max for self-priming[*1] (rpm) | 2400 | 2150 |
| | Max[*2] (rpm) | 3000 | 2500 |
| Weight (Kg) | | 38.5 | 65 |
| Quantity of oil to fll pump case (L) | | 0.8 | 1.4 |
| Temperature Range ( ) | | -20~95 | |
| Viscosity Range ($mm^2/s$) | | 10-1000[*3]<br>(The best use of viscosity range 16~36 $mm^2/s$) | |

| Ncp k gqqg `jc r fpmsef bpgtc rmposc | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Input shaft code | S2 | S3 | S4 | S5 | D3 | D4 | K3 | K8 |
| Input torque rating (Nm) | 272 | 552 | 925 | 1470 | 990 | 1470 | 430 | 1000 |

1. Steady state suction pressure should be 0 bar and above(at normal condition);
2. If suction pressure less than 0 bar, Boost pressure should be required;
3. In case of 200-1000$mm^2/s$, please allow system to warm up before using machine.

| | | | |
|---|---|---|---|
| | | | |
| | | | |

| | |
|---|---|
| | HP3V |

| | |
|---|---|
| 80 | 140 |

| | |
|---|---|
| | A |

| | |
|---|---|
| | V |
| | N |

# Type introduction

GInsr Kmslrgle _lecq

| | Mounting fanges size | 80 | 140 | Code |
|---|---|---|---|---|
| | SAE C 127-2 | ● | | C2 |
| | SAE C 127-2/4 bolt (same fange) | | ● | C4 |
| | SAE D 152-4 | | ● | D4 |
| | ISO 3019/2-125, 2 bolt | ○ | | I2 |
| | ISO 3019/2-160, 4 bolt | | ○ | I3 |
| | ISO 3019/2-180, 4 bolt | | ● | I4 |
| | ISO 3019/2-125, 2/4 bolt (same fange) | | ○ | I5 |

GInsr Qf_dr

Rfpc_b rwnc md Dj_lec Dgvgle Nmpr

# Type introduction

Aml rpmj rwnc

| | Control type | | 80 | 140 | Code |
|---|---|---|---|---|---|
| | Cover plate, apply to constant displacement pump | | ● | ● | N |
| | Pressure cut-of | Only pressure control | ● | ● | DR |
| | | +Load sensing with orifce R4 | ● | ● | L0 |
| | | +Load sensing without orifce R4 | ● | ● | L1 |
| | | Remotely operated+ Load sensing | ● | ● | P0 |
| | | +Electric proportional displacement | | ● | DR-EDO |
| | Power Control (*) | Pressure cut-of + Load sensing | ● | ● | L1/1 |
| | | Remotely operated+ Pressure cut-of | ● | ● | P0/1 |
| | | Electrically (negative control) +Pressure cut-of + Load sensing | ● | ● | L1/1-E0 |
| | | Hydraulic control + Pressure cut-of + Load sensing | ● | ● | L1/1-H0 |
| | | +Electric proportional displacement + Pressure cut-of | | ● | DR/1-EDO |

Aml l carmp dmp qmjc l mgbq

| | | 80 | 140 | Code |
|---|---|---|---|---|
| | Without solenoid | ● | ● | Blank |
| | AMP Junior timer; 2 contact pin, (without suppressor diode) | ● | ● | A |
| | Deutsch DT04-2P ; 2 contact pin, (without suppressor diode) | ● | ● | D |
| | DIN EN175301-803 3 contact pin, (without suppressor diode) | | ● | H |

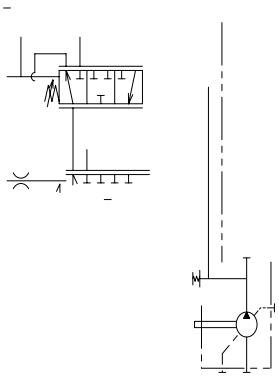
G l nsr Tmjr_ec

| | | |
|---|---|---|
| | Without solenoid | Blank |
| | 12VDC | ! |
| | | |

?nnjga_rgm l Aml bgrgm l q

| | | 80 | 140 | Code |
|---|---|---|---|---|
| | Apply to excavator | ● | ● | T |
| | Other mobile machinery, construction machinery, industrial application | ● | ● | Blank |

Remark ● = available ○ = On request

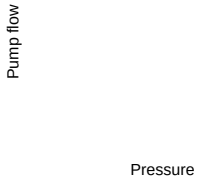


# Regulators introduction

**Code:** □ **/1**

**Control Type :**

**1. Load sensing**
Standard setting: 15bar
Adjustment range: 10bar-21bar
(It can be set to 38 bar at most, but it is not recommended to set it too high. If you need other settings, please consult our company.)
**2. Pressure Cut-off**
Standard setting: 320 bar
Adjustment range: 21 bar-320 bar
**3. Torque limiting**




**Function and Features:** **_/1 Load Sense and Pressure Cut-off with Torque limiting**

The L0/L1 control functions as previously noted. In response to a rise in delivery pressure the swash plate angle is decreased, restricting the input torque. This regulator prevents excessive load against the prime mover.

The torque limit control module is comprised of two springs that oppose the spool force by the system pressure. By turning an outer and inner spring adjustment screw, the appropriate input torque limit can be set.

**Hydraulic Circuit:**

# Regulators introduction

**Code:** □ **/1-E0**

**Control Type :**

**1. Load sensing**
Standard setting:15bar
Adjustment range:10bar-21bar
(It can be set to 38 bar at most, but it is not recommended to set it too high. If you need other settings, please consult our company.)
**2. Pressure Cut-off**
Standard setting: 320bar
Adjustment range: 21bar-320bar
**3. Port Pr pressure**: 20bar~45bar
**4. Electromagnet characters**

| Voltage(V) | Current(A) | Resistence(Ω) | Insulation grade |
|---|---|---|---|
| 12 | 0.89 | 7.3 ± 10%(20 ) | H(180 ) |
| 24 | 0.75 | 21.2 ± 10% | UP to IP6K6/IPX9K |

**5. Connector** (deutsch or Amp)
DEUTSCH: DT04-2P-E005
AMP: 174354-2 173706-1

**Function and Features:** **_/1-E0 Load Sense and Pressure Cut-off with Torque limiting**
The L0/L1 control functions as previously noted. It controls the input torque of the pump by changing different current, specific current is related to certain input torque, thus satisfy needs of different torque on excavator

**Hydraulic Circuit:**

**Code:** □ **/1-H0**

**Control Type :**

**1. Load sensing**
Standard setting:15bar
Adjustment range:10bar-21bar
(It can be set to 38 bar at most, but it is not recommended to set it too high. If you need other settings, please consult our company.)
**2. Pressure Cut-o f**
Standard setting: 320bar
Adjustment range: 21bar-320bar
**3. Port Pr pressure**: 0bar~39bar

**Function and Features:**

**Hydraulic Circuit:**

**Code:** ***-EDO**

**Control Type :**

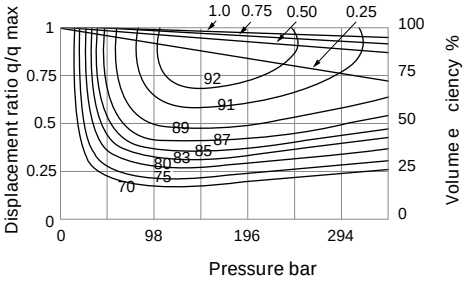
**Function and Features:**

**Hydraulic Circuit:**

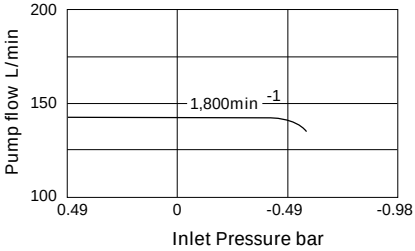
## Performance curves

FN1T 6. Ncpdmp k_ lac asptcq

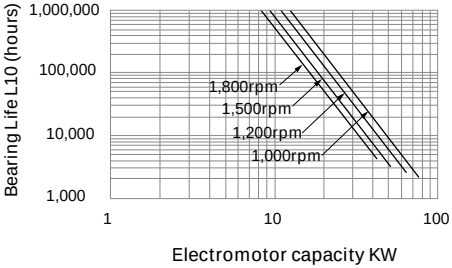
Pump e ciency (%)



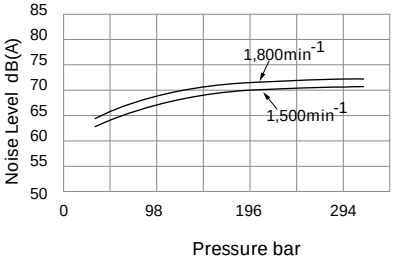

Self-priming Capability

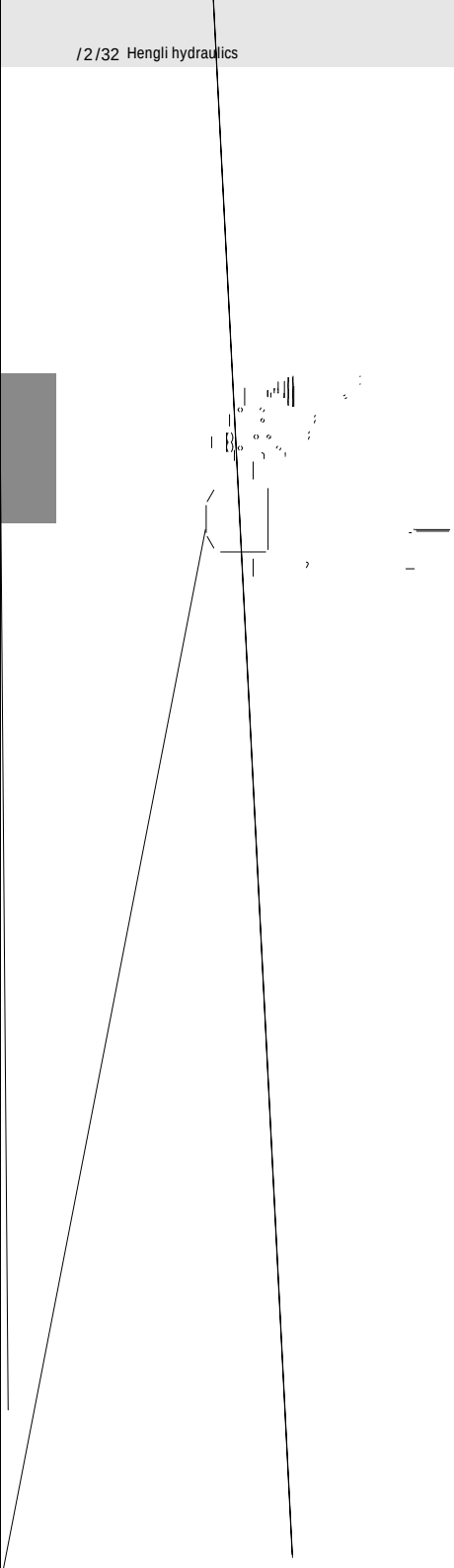


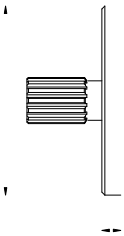

Bearing Life




Noise Level

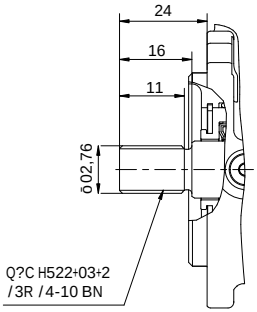




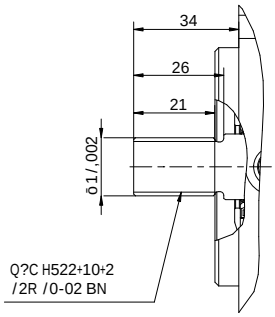


# Installation size

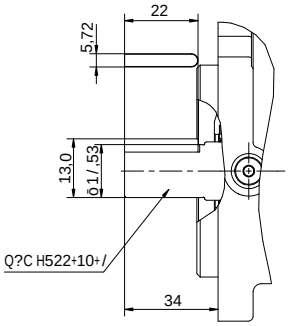
## HP3V80 Input Shaft type



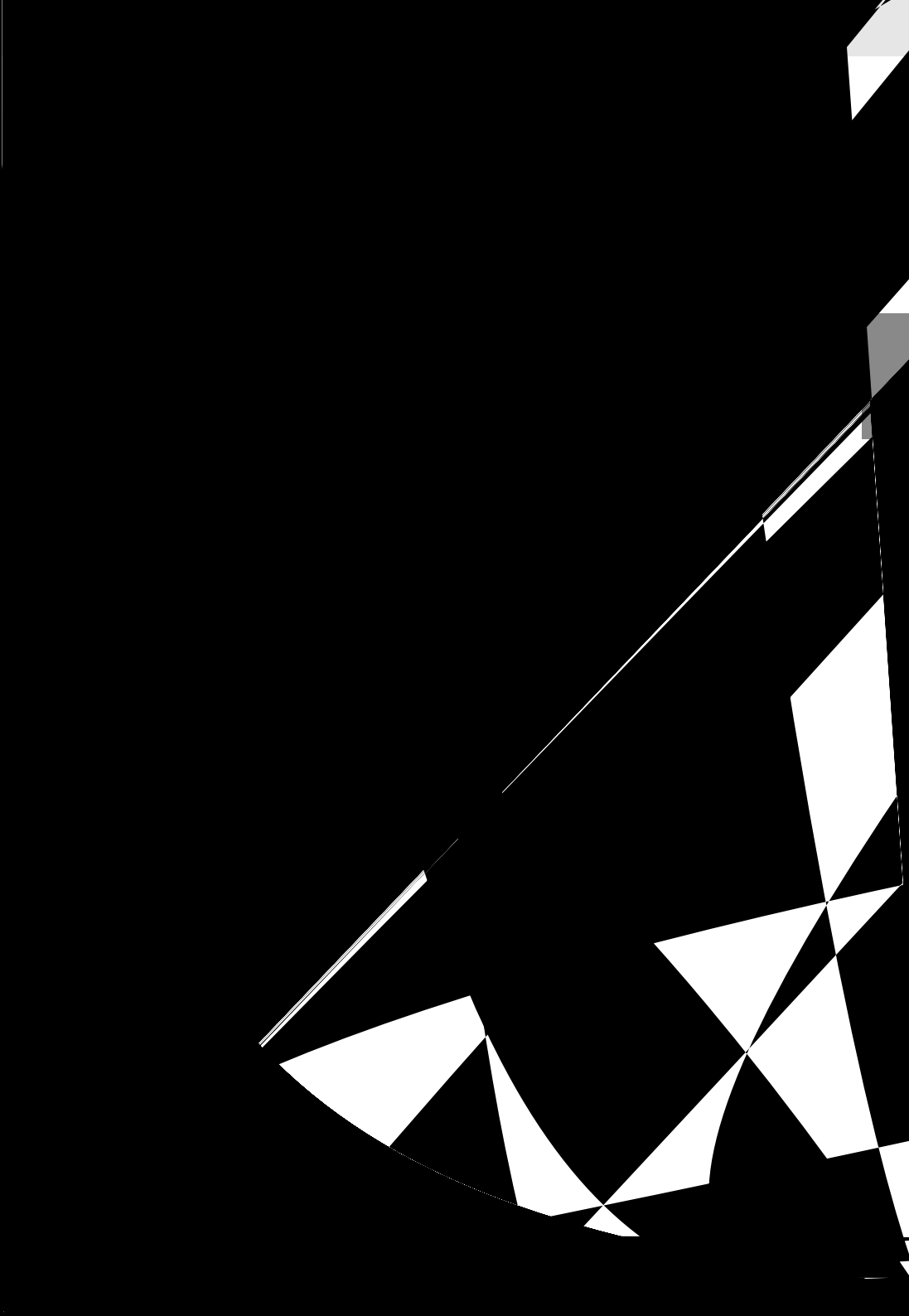

"S2" type spline shaft

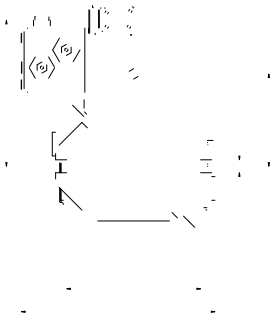



"S3" type spline shaft



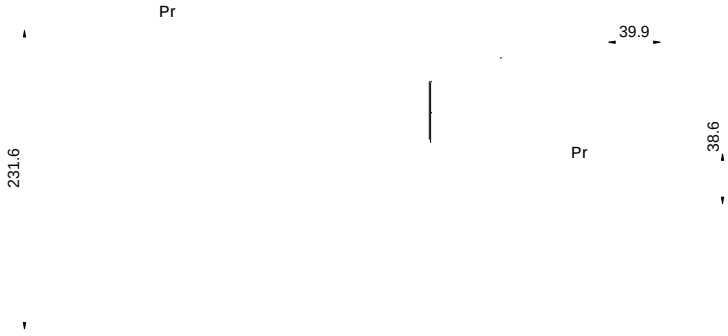

"K3" type straight shaft





## Installation size

### HP3V140 With Electrical Control for Torque limit



# Installation size

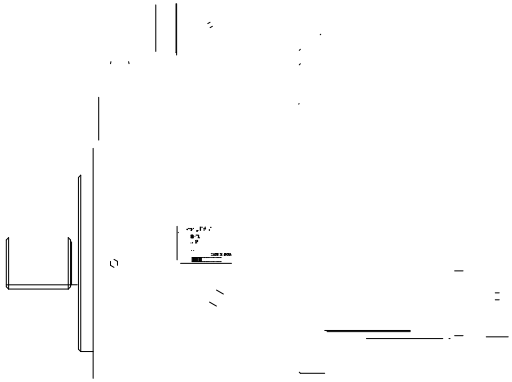
## HP3V140 Electric proportional displacement pump installation size

( Please refer to "Page 11/32" for hydraulic Circuit. )

| | | | | |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

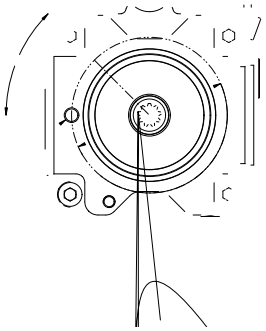
# Through Drive Installation Options

## X Type



Ec_p ns k n g l dmp k _rgm l

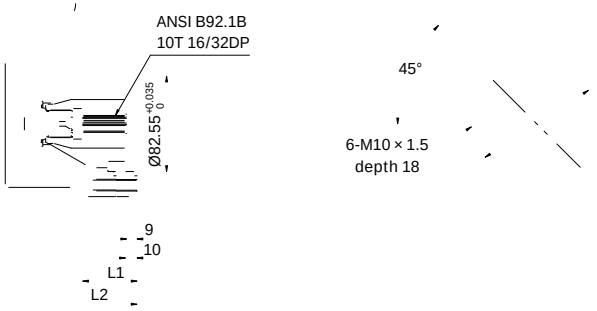
| | Rated pressure | Peak pressure | Theoretical displacement |
|---|---|---|---|
| 6cc/rev | 39bar | 70bar | 6cc/rev |
| 10cc/rev | 39bar | 50bar | 10cc/rev |



## Through Drive Installation Options

?1 Rwnc

Q?C ? 60+0 ) ?LQ@70,/@ /.R /4-10BN




| Disp.(cc/rev) | 80 | 140 (flange C) | 140 (flange D) |
|---|---|---|---|
| L1 | 47 | — | — |
| L2 | 290 | — | — |

## Through Drive Installation Options

A1 Rwnc

Q?C A /05+2)Q?C H522+10+2 /2R /0-02BN

| Disp.(cc/rev) | 80 | 140 (f ange C) | 140 (f ange D) |
|---|---|---|---|
| L1 | — | 56.5 | 56.5 |
| L2 | — | 367.5 | 337.5 |

A2 Rwnc

Q?C A /05+2)Q?C H522+16+2 /5R /0-02BN

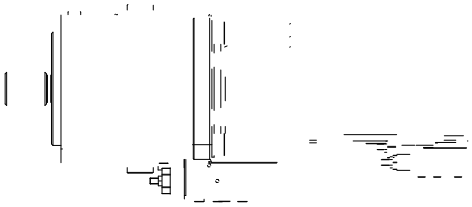
| Disp.(cc/rev) | 80 | 140 (f ange C) | 140 (f ange D) |
|---|---|---|---|
| L1 | — | 62 | 62 |
| L2 | — | 373 | 343 |

## Through Drive Installation Options

B / Rwnc

Q?C B /30+2 ) Q?C H522+22+2 /1R 6- /4BN

## Size of Tandem pumps



Qgxc md R_lbck nsknq

| /,nsknq / 0,nsknq | FN1T6. | | | | | | |
|---|---|---|---|---|---|---|---|
| | a | b | c | d | e | f | g |
| HP3V80 | 272 | 260 | 556.5 | 217 | 513.5 | 217 | 513.5 |
| | FN1T/2. | | | | | | |
| HP3V80 | 307.5 | 260 | 597.5 | 250 | 554.5 | 250 | 554.5 |
| HP3V140 | 307.5 | 296 | 646.5 | 250 | 600.5 | 250 | 600.5 |

## Setting of regulator and Max. displacement

Qcrrgle amlrpmj t_jtc

FN1T6.+/2. Nsk n

| qgxc | ?nnpmv, npcqqspc af_lec ncp pmr_rc qapc u&`_p' | | Setting pressure at delivery:<br>Pressure control : 320bar<br>Di ferential pressure: 15bar |
|---|---|---|---|
| | Npcqqspc asr+m t_jtc | JQ t_jtc | |
| 80 | 80 | 13 | |
| 140 | 92 | 14 | |

Qcrrgle md K_v, bgqnj_ack clr

| qgxc | ?nnpmv, bgqnj_ack bg# ɔ | ?ß ʌ ľ ml ľ | ] ɞ ŏ m Þ |
|---|---|---|---|
| | | | |
| | | | |

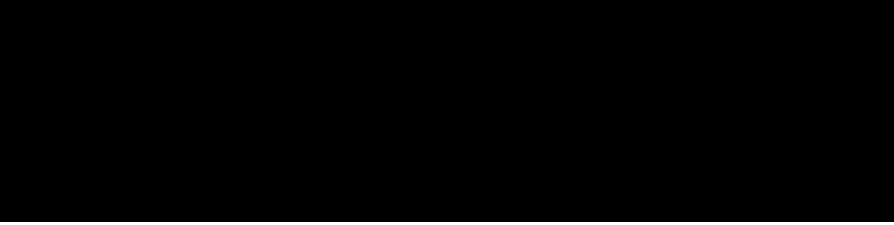
Inaccurate description.

# HP SERIES

## Caution for using

Am l rc l rq


| | |
|---|---|
| 1. Mounting Direction and Drain Piping | 02-03 |
| 2. Filtration | 04 |
| 3. Connection of driving shaft | 05 |
| 4. Fluid | 06 |
| 5. Starting | 06 |
| 6. Case drain pressure | 06 |



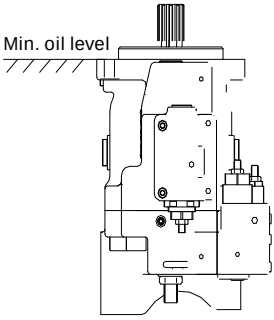
# Caution for using

## 1. Mounting Direction and Drain Piping

**Installation Type 2:** **Vertical installation 1 — Installation within a tank**

**Caution:** Open the drain port and the air bleeder plug port.

**Sketch Diagram:**




**Installation Type 2:** **Vertical installation 2 — Installation outside a tank**

**Caution:**

**Sketch Diagram:**

# Caution for using

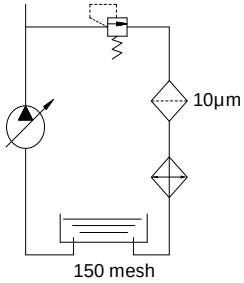
## 2. Filtration

**Caution:**

1) For satisfactory service life of these pumps in application, the operating fluid should be continuously filtered to keep at least the cleanliness level ISO/DIS 18/15 or NAS1638 Class9;

2) A 10μm-filter must be used in the return circuit and an 80~150-mesh strainer in the suction circuit.

**Sketch Diagram:**



# Caution for using

## 4. Fluid

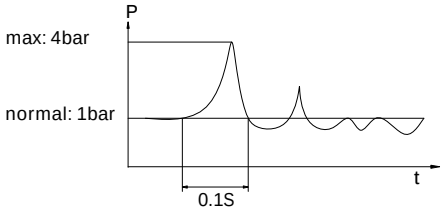
**Caution:** It is recommended to use the anti-wear type hydraulic fuid as mineral oil type when the pressure is higher than 206 bar.

## 5. Starting

**Caution:** 1) Before starting-up, fl Ď 1 ţ chs Ꮲ я c fuis

## 6. Case drain pressure

**Caution:** Please be careful so that the drain pressure in the casing does not exceed 1 bar normally and 4 bar at its peak.

A suitable size of drain hose and drain flter should be selected.

**Sketch Diagram:**