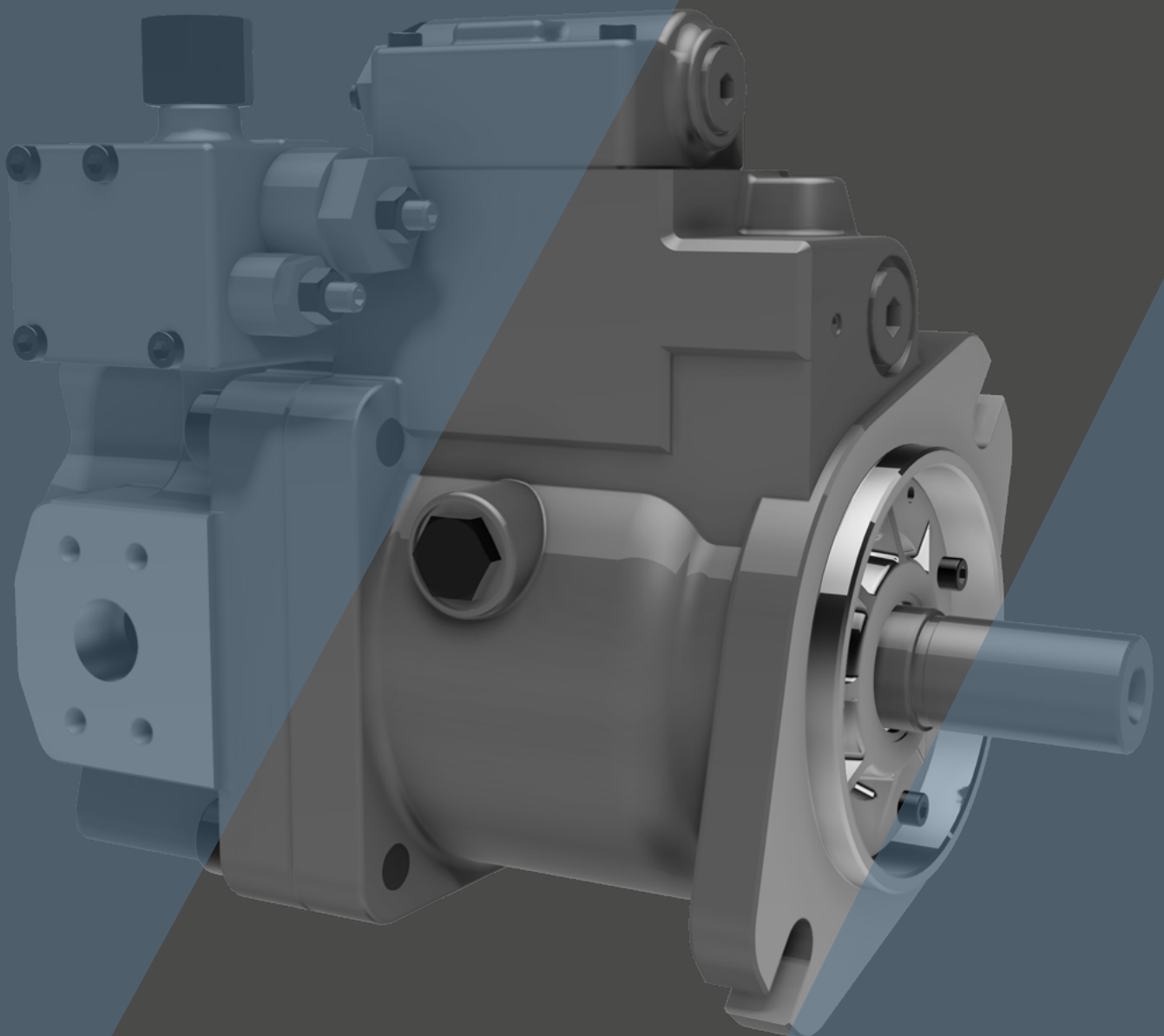


Swash-plate Axial Piston Pump **K3VL Series**



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The following must be taken into consideration before use.

1. The operating condition of the products shown in this catalog varies depending upon each application. Therefore, the product suitability must be judged by the designer of the hydraulic system and/or the person who finalizes the technical specifications of the machine after analysis and testing. The product specification shall be determined based on the latest catalog and technical documents. The system must be designed taking into account the possibility of machine failure to ensure that all safety, warning, and application requirements are met.
2. For the proper use of the products, descriptions given in the SAFETY PRECAUTIONS must be observed.
3. The technical information in this catalog represents typical characteristics and performance of the products as of the published date.
4. If the intended use of the products is included in the following, please consult with Kawasaki in advance.
 - (1) Use the product in the operating conditions or environments other than those described in the technical documents.
 - (2) Use the product in the nuclear sector, aviation sector, medical sector, and/or food sector.
 - (3) Use the product in applications which may cause substantial harm to others and their property, and especially in applications where ensuring safety is a requirement.
5. The information described in this catalog is subject to change without notice. For the latest information, please contact Kawasaki.






Safety Precautions

Before using the product, you **MUST** read this catalog and **MUST** fully understand how to use the product. To use the product safely, you **MUST** carefully read all Warnings and Cautions in this catalog.








1. Cautions related to operation

-  - Use the personal protective equipment to prevent injury when the product is in operation.
-  - Some components are heavy. Handle the product carefully not to hurt your hands and lower back.
-  - Do not step on, hit or drop, or apply strong force to the product, as these actions may cause operation failure, product damage, or oil leakage.
-  - Wipe off any oil on the product or the floor completely, as oil can create slippery conditions that may cause drop of the product and personal injury.






2. Warnings and cautions related to installation and removal of the product

-  - Installation, removal, piping, and wiring must be done by a qualified technician.
-  - Make sure that the hydraulic power unit is turned off and that the electric motor or engine has completely stopped before starting installation or removal. You must also check that the system pressure has dropped to zero.
-  - Make sure that the power source is turned off before installing electric components to reduce the risk of electric shock.
-  - Clean the threads and the mounting surface to prevent damage or oil leakage. Inadequate cleaning may cause insufficient torque and broken seals.
-  - Use the designated bolts and fasten them with prescribed torque when installing the product. Use of undesignated bolts, and excessive or insufficient tightening torque may induce operation failure, damage, or oil leakage.

3. Warnings and cautions for operation

-  - Always equip the product with explosion or ignition protection if it is used in potentially explosive or combustible atmospheres.
-  - Shield rotary parts, such as the motor and pump shaft, to avoid injury.
-  - Stop operation immediately, and take proper measures when the abnormality such as unusual noise, oil leakage, and smoke is found. Continuing operation under such condition may bring about damage, a fire hazard, or injury.
-  - Make sure that all pipes, hoses, and connecting points with pipes or hoses, are correctly connected and tightened before starting operation.
-  - Use the product under the operating conditions and limitations described in the catalog, drawings, and specification sheets.
-  - Do not touch the product in operation. to reduce the risk of skin burn.
-  - Use the proper hydraulic oil and maintain the filtration at the recommended level to prevent premature wear and damage.

4. Cautions related to maintenance

-  - Never modify the product without approval from Kawasaki.
-  - Disassembly of the product may void the warranty.
-  - Keep the product clean and dry when storing or transporting.
-  - The seals may need to be replaced if the product has been stored for an extended period of time.
-  - Making adjustments of this product will result in the warranty being null and void.

Handling Precautions

1. Operating Fluid and Temperature Range

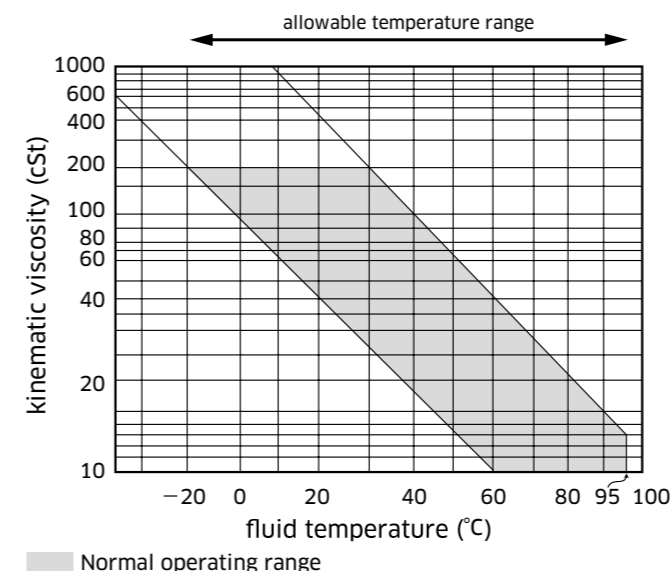
1) Operating Fluid

Values shown in this catalog are based upon using mineral oil based anti-wear hydraulic fluid. To ensure optimal performance use of mineral oil based anti-wear hydraulic fluid is recommended.

2) Viscosity and temperature range

To minimize both oil and seal deterioration, a maximum operating temperature of 60°C should be considered. Please note that the regulator may become slow to respond when operating at low temperatures (below 20°C) in extreme cold environments. At such low temperature it is strongly suggested that a warm up cycle is introduced until an operating temperature of 20°C is achieved.

| | Normal operating range | Allowable range |
|-------------------------------------|-------------------------|-----------------|
| Viscosity [mm ² /s(cSt)] | 10 to 200 | 10 to 1,000 |
| Fluid temperature [°C (°F)] | -20 to +95 (-4 to +203) | |



2. Filtration and Contamination Control

1) Filtration of working oil

The most important means to prevent premature damage to the pump and associated equipment and to extend its working life, is to ensure that hydraulic fluid contamination control of the system is working effectively.

This begins by ensuring that at the time of installation that all piping, tanks etc. are rigorously cleaned in a sanitary way. Flushing should be provided using an off line filtration system and after flushing the filter elements should be replaced.

A full flow return line filter of 10 micron nominal should be utilised to prevent contaminant ingress from the external environment, a 5 to 10 micron filter with the tank's breather is also recommended.

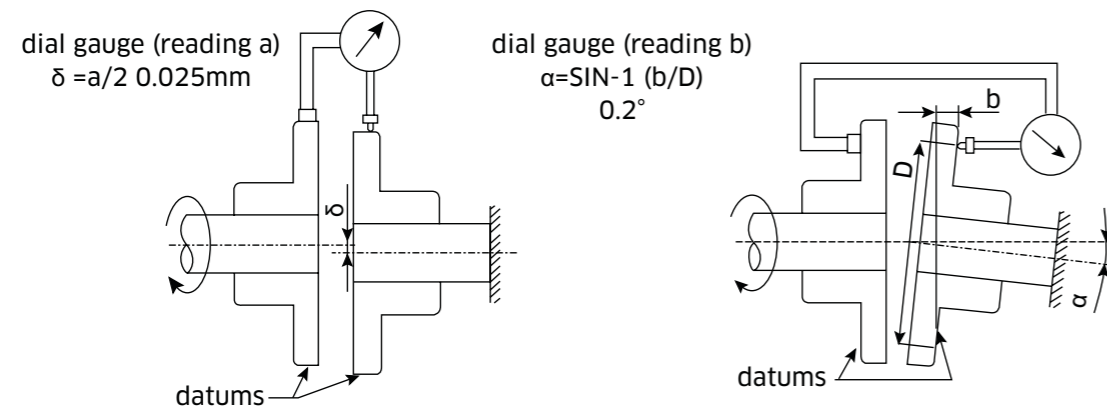
2) Suggested acceptable contamination level

The relationship between contamination level and pump life is very difficult to predict as it depends on the type and nature of the contaminant present in the system. Sand or Silica in particular, due to its abrasive nature, does significantly reduce the expected life of a pump. Based on the precondition that there is no significant presence of Silica type substances then a minimum Cleanliness level of -/18/15 ISO 4406 or SAE AS 4059E Table 1 Class 9 (NAS 1638 Class 9).

3. Drive Shaft Coupling

Alignment between the prime mover and the pump shaft should be within 0.05 mm TIR*. In case the pump is directly coupled to the engine flywheel, use a flexible coupling.

*TIR = Total Indicator Reading



4. Oil Filling and Air Bleeding

1) Pump case filling

Be sure to fill the pump casing with oil through the drain port, filling only the suction line with oil is totally insufficient. The pump contains bearings and high-speed sliding parts including pistons with shoes and a spherical bush that need to be continuously lubricated. Part seizure or total premature failure will occur very quickly if this procedure is not rigidly followed.

2) Air bleeding

Run the pump unloaded for a period to ensure that all residual air within the system is released.

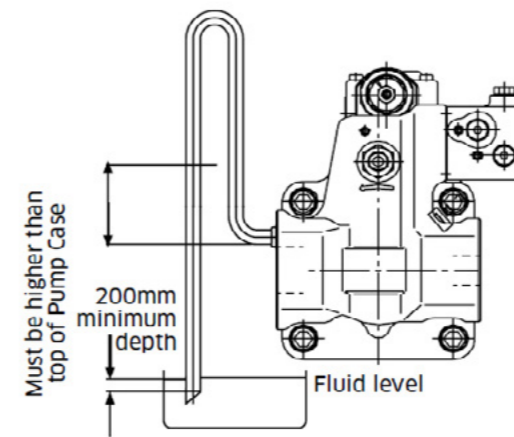
3) Long term out of usage

It is undesirable to leave the pump out of use for a long period e.g. a year or more. In such a situation it is recommended that the pump is run for a short period on a more frequent basis even if it is just unloaded. With regard to a pump held in storage then rotating the shaft on a frequent basis is sufficient. If the pump is left out for more than the suggested time it will require a service inspection.

5. Drain Piping

1) Installation of drain line

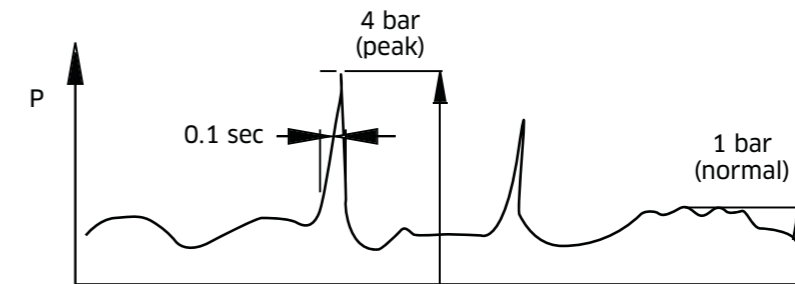
It is the preferred option to mount the pump with the case drain piping initially rising above the pump before continuing to the tank. Do not connect the drain line to the inlet line.



Cautions

- A) Inlet and drain pipes must be immersed by 200 mm minimum from the lowest level under operating conditions.
- B) Height from the oil level to the centre of the shaft must be within 1 meter maximum.
- C) The oil in the pump case must be refilled when the pump has not been operated for one month or longer.

The uppermost drain port should be used and the drain piping must be larger in size than the drain port to minimise pressure in the pump case. The pump case pressure must not exceed 1 bar as shown in the illustration below. (Peak pressure must never exceed 4 bar.)

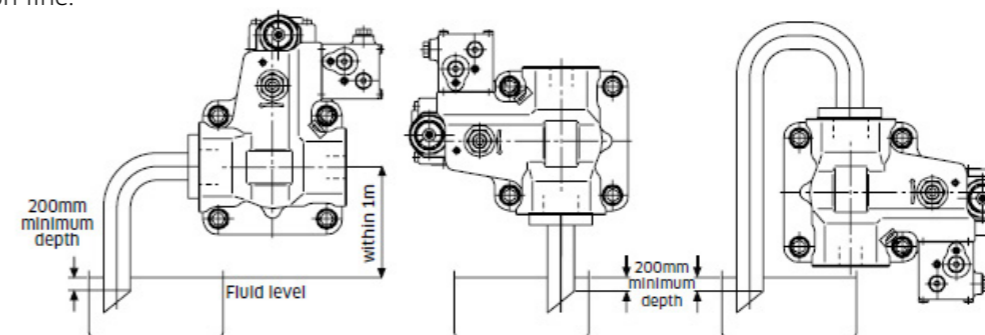


2) Size of drain hose or drain pipe

The internal bore size of the drain hose or drain pipe must be larger than that of the drain port. Arrange the drain line as short as possible.

6. Mounting the Pump Above the Tank

Suction line.



Conversion Factors, Formula and Definition

7. Mounting the Pump Vertically (shaft up)

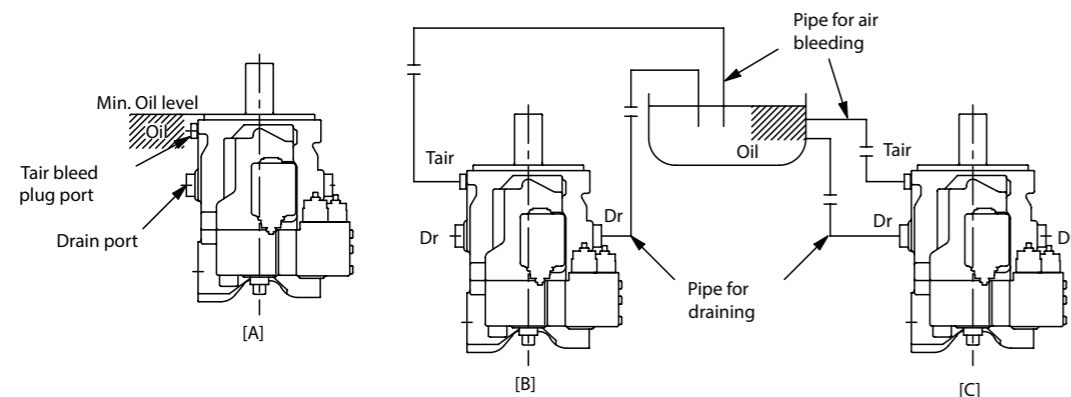
Note: Both the Tair and one case drain port must be used.

For applications requiring vertical installation (shaft up) please remove the Tair bleed plug and connect piping as shown in the illustration below.

When installing the pump in the tank and submerged in the oil, open the drain port and Tair bleed port to provide adequate lubrication to the internal components. See illustration [A].

The oil level in the tank should be higher than the pump-mounting flange as shown in illustration [A] below. If the oil level in the tank is lower than the pump mounting flange then forced lubrication is required through the Tair bleed port 1 ~ 2 l/min.

If the drain or Tair bleed piping rise above the level of oil (see illustration [B]). Fill the lines with oil before operation, then confirm pump case pressure is within specification during commissioning. When installing the pump outside the tank, run piping for the drain and Tair bleed ports to tank (see illustration [C]).



8. Shaft Loading and Bearing Life

Although K3VL pumps are equipped with bearings that can accept some external thrust and radial forces, application of such loads will affect bearing life. Depending on the load magnitude, the load position, and the load orientation, bearing life may be significantly reduced.

Conversion Factors

| | Formula | Note |
|---------------------|---|-----------|
| Displacement | 1 cm ³ = 0.061 in ³ | |
| Pressure | 1 MPa = 145 psi | |
| Flow | 1 L/min = 0.264 gpm | US gallon |
| Torque | 1 Nm = 0.74 lb ft | |
| Power | 1 kW = 1.341 hp | |
| Weight | 1 kg = 2.205 lb | |

Formula

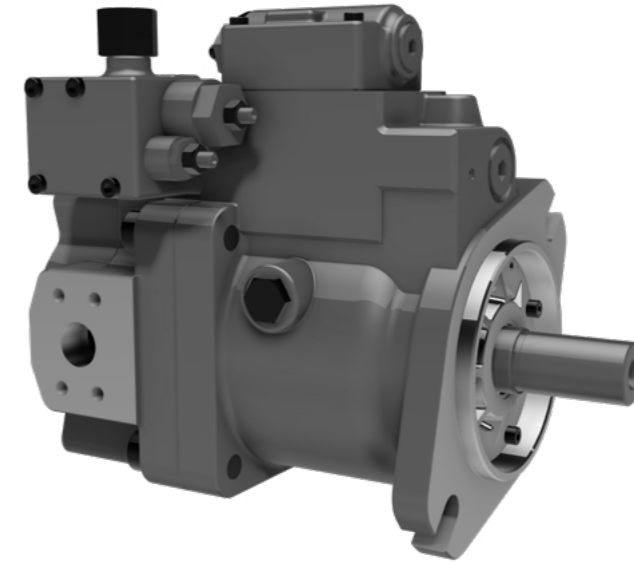
| | Metric system | | Imperial system | |
|---------------------|---|-------|---|---------|
| Output flow | $Q = q \times N \times \eta_v / 1000$ | L/min | $Q = q \times N \times \eta_v / 231$ | gal/min |
| Input torque | $T = q \times \Delta P / 2\pi / \eta_m$ | Nm | $T = q \times \Delta P / 24\pi / \eta_m$ | lbf ft |
| Input power | $L = T \times N / 9550 = Q \times \Delta P / 60 / \eta_t$ | kW | $L = T \times N / 5252 = Q \times \Delta P / 1714 / \eta_t$ | hp |

Definition

| | | |
|------------------|-----------------------------------|------------------------------------|
| q | = Pump displacement | cm ³ (in ³) |
| L | = Input power | kW (hp) |
| N | = Speed | min ⁻¹ (rpm) |
| ΔP | = P _d - P _s | MPa (psi) |
| P _d | = Pump delivery pressure | MPa (psi) |
| P _s | = Pump suction pressure | MPa (psi) |
| P _L | = Load sensing pressure | MPa (psi) |
| P _{dr} | = Pump case pressure | MPa (psi) |
| P _r | = Power shift pressure | MPa (psi) |
| P _{sv} | = Servo pressure | MPa (psi) |
| T | = Input torque | Nm (lbf-ft) |
| T _{max} | = Maximum input torque | Nm (lbf-ft) |
| η _v | = Pump volumetric efficiency | |
| η _m | = Pump mechanical efficiency | |
| η _t | = Pump total efficiency | |

K3VL Series

Swash-plate Axial Piston Pump



■ General Descriptions

The K3VL series Swash Plate Type Axial Piston Pumps are designed to satisfy the marine, mobile and industrial markets where a medium/high pressure variable displacement pump is required.

K3VL pumps are available in nominal displacements ranging from 28 to 200 cm³/rev with various pressure, torque limiter, and combination of load sensing control options.

| Pump Type | Capacity (cm ³ /rev) | Rated pressure (bar) | Maximum self-priming speed (rpm) |
|-----------|---------------------------------|----------------------|----------------------------------|
| K3VL28 | 28 | 320 | 3,000 |
| K3VL45 | 45 | 320 | 2,700 |
| K3VL60 | 60 | 250 | 2,400 |
| K3VL80 | 80 | 320 | 2,400 |
| K3VL112 | 112 | 320 | 2,300 |
| K3VL140 | 140 | 320 | 2,200 |
| K3VL200 | 200 | 320 | 1,900 |
| K3VL200H | 200 | 320 | 2,200 |

■ Features

- 320 bar continuous pressure rating (250 bar for K3VL60)**
- 350 bar peak pressure (280 bar for K3VL60)**
- High overall efficiency (>90% peak)**
- Exceptional self priming capability**
- SAE and ISO mounting and shaft**
- Excellent reliability and very long service life**
- High power to weight ratio**
- Numerous control options**
- Highly responsive controls**
- Low pulsation and noise emissions**
- Integral unloading or proportional pressure relief valves available**
- High speed version with integral impeller (K3VL200H)**

1 Ordering Code

1-1 Pump Options

| | | | | | | | | | | | | | | | |
|------|-----|---|---|---|---|---|---|---|----|----|----|-----|----|----|------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
| K3VL | 200 | / | B | - | 1 | N | R | M | M | - | LN | 24D | B | /1 | -H** |

| | |
|--|--------------------------------------|
| 1. K3VL Series Pump | Preferred product range |
| K3VL Series, Variable Displacement, Axial Piston, Open Loop Pump | ● AVAILABLE |
| | ◐ NOT AVAILABLE IN COUNTER CLOCKWISE |
| | ○ PLEASE CONTACT KPM UK |
| | - NOT AVAILABLE |

| | | | | | | | | | | |
|----------------------|----------------------|--------------|----|----|----|----|-----|-----|-----|------|
| 2. Pump Size | | | | | | | | | | |
| Maximum Displacement | cm ³ /rev | (H-Impeller) | 28 | 45 | 60 | 80 | 112 | 140 | 200 | 200H |
| | | | ● | ● | ● | ● | ● | ● | ● | ● |

| | | | | | | | | |
|-------------------------|---|---|---|---|---|---|---|---|
| 3. Design Series | | | | | | | | |
| B Series | - | ● | ● | ● | ● | ● | ● | ● |
| C Series | ● | - | - | - | - | - | - | - |

| | | | | | | | | | |
|--------------------------------|---|---|---|---|---|---|---|---|---|
| 4. Hydraulic Fluid Type | | | | | | | | | |
| - | Mineral Oil, Nitrile seal + Viton Shaft Seal | ● | ● | ● | ● | ● | ● | ● | ● |
| V | Viton Seal Throughout | ○ | ○ | ○ | ● | ● | ● | ○ | ○ |
| W | Water Glycol (Nitrile Seal & Nitrile Shaft Seal) *1 | - | ○ | ○ | ○ | ○ | ○ | - | - |

| | | | | | | | | | |
|------------------------|--------------|---|---|---|---|---|---|---|---|
| 5. Circuit Type | | | | | | | | | |
| 1 | Open Circuit | ● | ● | ● | ● | ● | ● | ● | ● |

| | | | | | | | | | |
|---------------------------------------|--|---|---|---|---|---|---|---|---|
| 6. Through Drive & Porting | | | | | | | | | |
| 0 | Without Through Drive | ◐ | ◐ | ◐ | ◐ | ◐ | ◐ | ◐ | - |
| A | SAE-A Through Drive, Side Ported | ● | ● | ● | ● | ● | ● | ● | ● |
| B | SAE-B Through Drive, Side Ported | ● | ● | ● | ● | ● | ● | ● | ● |
| BB | SAE-BB Through Drive, Side Ported | - | ● | ● | ● | ● | ● | ● | ● |
| C | SAE-C, 2 Bolt, Through Drive, Side Ported | - | - | - | ● | ● | ● | ● | ● |
| C4 | SAE-C, 4 Bolt, Through Drive, Side Ported | - | - | - | ● | ● | ● | ● | ● |
| CC | SAE-CC, 2 Bolt, Through Drive, Side Ported | - | - | - | ● | ● | ● | ● | ● |
| D | SAE-D Through Drive, Side Ported | - | - | - | ● | ● | ● | ● | ● |
| E | SAE-E Through Drive, Side Ported | - | - | - | - | - | ● | ● | ● |
| R | Single Pump, Rear Ported | - | ● | ● | ● | ● | ● | - | - |
| N | Single Pump with Steel Cover, Side Ported | ● | ● | ● | ● | ● | ● | ● | ● |

| | | | | | | | | | |
|---------------------------------|----------------------------|---|---|---|---|---|---|---|---|
| 7. Direction of Rotation | | | | | | | | | |
| R | Clockwise Rotation | ● | ● | ● | ● | ● | ● | ● | ● |
| L | Counter Clockwise Rotation | ● | ● | ● | ● | ● | ● | ● | ● |

*1 : Non through drive only

1-1 Pump Options

| | | | | | | | | | | | | | | | |
|------|-----|---|---|---|---|---|---|---|----|----|----|-----|----|----|------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
| K3VL | 200 | / | B | - | 1 | N | R | M | M | - | LN | 24D | B | /1 | -H** |

| | | | | | | | | | |
|---------------------------------------|-------------------------------------|----|----|----|----|-----|-----|-----|------|
| 8. Mounting Flange & Shaft | | 28 | 45 | 60 | 80 | 112 | 140 | 200 | 200H |
| K | SAE Key & Mount | ● | ● | ● | ● | ● | ● | ● | - |
| M | ISO Key & Mount | - | ● | ● | ● | ● | ● | - | - |
| S | SAE Spline & Mount | ● | ● | ● | ● | ● | ● | ● | ● |
| R | SAE-C Spline & SAE-D Mount | - | - | - | - | ● | ● | - | - |
| C | SAE-C Spline & SAE-C2 Mount | - | - | - | - | ● | ● | - | - |
| X | SAE-C Key & SAE-C2 Mount | - | - | - | - | ● | ● | - | - |
| Y | SAE-CC Key & SAE-C2 Mount | - | - | - | - | ● | ● | - | - |
| W | SAE-CC Spline & SAE-C2 Mount | - | - | - | - | ● | ● | - | - |
| F | SAE-F Spline & SAE-E Mount | - | - | - | - | - | - | ● | ● |
| T | SAE-B Spline & SAE-B, 2 Bolt Mount | - | ● | ● | - | - | - | - | - |
| | SAE-CC Spline & SAE-D, 4 Bolt Mount | - | - | - | - | ● | ● | - | - |

| | | | | | | | | | |
|---------------------------|---|---|---|---|---|---|---|---|---|
| 9. Porting Threads | | | | | | | | | |
| M | Metric Threads | ● | ● | ● | ● | ● | ● | ● | ● |
| S | UNC Thread (Not Available with 'M' ISO Key Shaft & Mount) | ● | ● | ● | ● | ● | ● | ● | ● |

| | | | | | | | | | |
|---------------------------|---|---|---|---|---|---|---|---|---|
| 10. Regulator Type | | | | | | | | | |
| L0 | Load Sense + Pressure Cut-Off (With LS Bleed) | ● | ● | ● | ● | ● | ● | ● | ● |
| L1 | Load Sense + Pressure Cut-Off (With LS Bleed Blocked) | ● | ● | ● | ● | ● | ● | ● | ● |
| LM | Load Sense & Intergral Unload (Normally Open) | - | ● | ● | ● | ● | ● | ● | ● |
| LN | Load Sense & Intergral Unload (Normally Closed) | - | ● | ● | ● | ● | ● | ● | ● |
| LV | Load Sense & Intergral Proportional Relief | - | ● | ● | ● | ● | ● | ● | ● |
| LV2 | Load Sense & Intergral Proportional Relief | - | ● | ● | ● | ● | ● | ● | ● |
| P0 | Pressure Cut-Off | ● | ● | ● | ● | ● | ● | ● | ● |
| PM | Pressure Cut-Off & Intergral Unload (Normally Open) | - | ● | ● | ● | ● | ● | ● | ● |
| PN | Pressure Cut-Off & Intergral Unload (Normally Closed) | - | ● | ● | ● | ● | ● | ● | ● |
| PV | Pressure Cut-Off & Intergral Proportional Relief | - | ● | ● | ● | ● | ● | ● | ● |
| PV2 | Pressure Cut-Off & Intergral Proportional Relief | - | ● | ● | ● | ● | ● | ● | ● |
| PR | Inverse Proportional Electronic Pressure Control (Only with 24V DC) | ○ | ○ | ○ | ○ | - | - | - | - |

| | | | | | | | | | |
|------------------------------|--|---|---|---|---|---|---|---|---|
| 11. Unloader Solenoid | | | | | | | | | |
| Blank | For all other options except PN/PM/LN/LM/PV2/LV2 | - | ● | ● | ● | ● | ● | ● | ● |
| 115A | 115V AC, 50, 60 Hz - DIN 43550 Plug | - | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 230A | 230V AC, 50, 60 Hz - DIN 43550 Plug | - | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 12D | 12V DC - DIN 43550 Plug | - | ● | ● | ● | ● | ● | ● | ● |
| 24D | 24V DC - DIN 43550 Plug | - | ● | ● | ● | ● | ● | ● | ● |

2 Technical Information

1-1 Pump Options

| | | | | | | | | | | | | | | | | |
|------|-----|---|---|---|---|---|---|---|----|----|-----------|-----------|-----------|-----------|-------------|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | | |
| K3VL | 200 | / | B | - | 1 | N | R | M | M | - | LN | 24D | B | /1 | -H** | |

| 12. Additional Control Options | | 28 | 45 | 60 | 80 | 112 | 140 | 200 | 200H |
|--------------------------------|---|----|----|----|----|-----|-----|-----|------|
| Blank | | - | ● | ● | ● | ● | ● | ● | ● |
| A | With Deutsch Connector (Only for PV2/LV2) | - | ● | ● | ● | ● | ● | ● | ● |
| B | With DIN Connector (Only for PV2/LV2) | - | ● | ● | ● | ● | ● | ● | ● |

| 13. Additional Control Options | | | | | | | | | |
|--------------------------------|--|---|---|---|---|---|---|---|---|
| Blank | Without Additional Control | - | ● | ● | ● | ● | ● | ● | ● |
| /1 | Torque Limiter (with provision for torque limiter or displacement control) | - | ● | ● | ● | ● | ● | ● | ● |
| /2 | Torque Limiter & Hydraulic Power Shift | - | - | - | ● | ● | ● | ● | ● |
| /3 | Torque Limiter & Electrical Power Shift, 24V DC - DIN 43550 Plug | - | - | - | ● | ● | ● | ● | ● |

| 14. Torque Limiting & Displacement Control | | | | | | | | | |
|--|--|---|---|---|---|---|---|---|---|
| Blank | Without Additional Control | - | ● | ● | ● | ● | ● | ● | ● |
| -00 | Blanking Plate (only for '/1' type) | - | ● | ● | ● | ● | ● | ● | ● |
| -S# | Low Setting Range (available for '/1' type only) | - | ● | ● | ● | ● | ● | ● | ● |
| -L# | Low Setting Range (available for '/1' type only) | - | ● | ● | ● | ● | ● | ● | ● |
| -M# | Medium Setting Range (available for '/1' type only) | - | ● | ● | ● | ● | ● | ● | ● |
| -H# | High Setting Range (available for all '/1', '/2' & '/3' options) | - | ● | ● | ● | ● | ● | ● | ● |
| -E0 | Electric Displacement Control (Pilot Pressure Required) AMP Flying Lead 24V DC | - | ● | ● | ● | ● | ● | ● | ● |
| -E1 | Electric Displacement Control (Pilot Pressure Required) AMP Moulded 24V DC | - | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| -E2 | Electric Displacement Control (Pilot Pressure Required) Deutsch Moulded 24V DC | - | ○ | ○ | ○ | ○ | ○ | ● | ● |
| -E3 | Electric Displacement Control (Pilot Pressure Required) Deutsch Moulded 12V DC | - | ○ | ○ | ○ | ● | ● | ○ | ○ |
| -Q0 | Pilot Operated Displacement Control | - | ● | ● | ● | ● | ● | ● | ● |

| 15. Special Suffix | | | | | | | | | |
|--------------------|--|--|--|--|--|--|--|--|--|
| Contact KPM UK | | | | | | | | | |

2-1 Specifications

| Pump Model | | K3VL28 | K3VL45 | K3VL60 | K3VL80 | K3VL112 | K3VL140 | K3VL200 | K3VL200H | |
|--|-----------------|---|-----------------------|----------------|---------------------|----------------------------|----------------|------------------------|----------|-------|
| Capacity | cc/rev | 28 | 45 | 60 | 80 | 112 | 140 | 200 | 200 | |
| Pressure ratings | Rated | bar | | 320 | | 250 | | | | |
| | Peak *1 | bar | | 350 | | 280 | | | | |
| Speed ratings | Self prime *2 | rpm | 3,000 | 2,700 | 2,400 | 2,400 | 2,200 | 2,200 | 1,900 | 2,200 |
| | Max. boosted*3 | rpm | 3,600 | 3,250 | 3,000 | 3,000 | 2,700 | 2,500 | 2,200 *5 | 2,200 |
| Minimum operating speed | rpm | 600 | | | | | | | | |
| Case drain pressure | Max. continuous | bar | | 1 | | | | | | |
| | Peak | bar | | 4 | | | | | | |
| Weight | kg | 20 | 27 | 27 | 35 | 65 | 65 | 95 | 130 | |
| Case fill capacity | L | 0.6 | 0.6 | 0.6 | 0.8 | 1.5 | 1.5 | 3.0 | 3.2 | |
| Temperature range | °C | -20 to 95 | | | | | | | | |
| Viscosity range | cSt | 10 to 1,000 - viscosities greater than 200 will require a no load warm up | | | | | | | | |
| Maximum contamination level | | ISO 4406 18/15 | | | | | | | | |
| Standard SAE mounting flange and shaft | Mounting | 2 - bolt SAE B | | 2 - bolt SAE C | 4 - bolt SAE D | | 4 - bolt SAE E | | | |
| | Shaft | SAE B spline or key | SAE B-B spline or key | | SAE C spline or key | SAE D spline or key | | SAE D spline or spline | | |
| Optional SAE mounting flange and shaft | Mounting | - | | | | | | | | |
| | Shaft | - | SAE B spline | SAE B spline | - | SAE C or C-C spline or key | | SAE F spline | | |
| Standard ISO mounting flange and shaft | Mounting | - | 2 bolt ISO 100 | 2 bolt ISO 100 | 2 bolt ISO 100 | 4 bolt ISO 180 | | - | | |
| | Shaft | - | ISO 25mm key | ISO 25mm key | ISO 25mm key | ISO 45mm key | | - | | |
| Input shaft torque rating | | refer to table on page 16 | | | | | | | | |
| Through drive torque rating (Nm) | SAE A | 61 | 123 | | | | | | | |
| | SAE B | 155 | 290 | | 340 | | | | | |
| | SAE B-B | - | 290 | | 550 | | | | | |
| | SAE C | - | | | 400 | 700 | | 990 | | |
| | SAE C-C | - | | | 700 | | 990 | | | |
| | SAE D | - | | | 700 | | 990 | | | |
| | SAE E *4 | - | | | 990 | | | | | |

*1 : The instant allowable surge pressure as defined by DIN24312. Life and durability of the pump will be affected.

*2 : Steady state inlet pressure should be greater or equal to 0.9 bar absolute.

*3 : Steady state inlet pressure should be greater or equal to 1.3 bar absolute. The maximum boost pressure should not exceed 10 bar.

*4 : SAE E through drive uses the SAE D shaft.

*5 : Please contact KPM UK to operate at speeds of above 1900 rpm for design suffix to be created.

2-1 Specifications (cont)

◆ Input Shaft Torque Ratings

| SAE Splined Shafts | | | | | | |
|--------------------------|-------|---------|-------|---------|---------|-------|
| Shaft Designation | SAE B | SAE B-B | SAE C | SAE C-C | SAE D/E | SAE F |
| Input Torque Rating (Nm) | 171 | 272 | 552 | 925 | 1,470 | 1,950 |

| SAE Keyed Shafts | | | | | |
|--------------------------|-------|---------|-------|---------|---------|
| Shaft Designation | SAE B | SAE B-B | SAE C | SAE C-C | SAE D/E |
| Input Torque Rating (Nm) | 145 | 230 | 430 | 700 | 1,250 |

| ISO Keyed Shafts | | | |
|--------------------------|----------|----------|-----------|
| Shaft Designation | ISO 25mm | ISO 32mm | ISO 45 mm |
| Input Torque Rating (Nm) | 230 | 430 | 980 |

Note:

The shaft surface will have a finite life due to wear unless adequate lubrication is provided.

#1 Maximum allowable shaft torques are based on achieving an infinite life for a coupling assembly that is lubricated and completely clamped and utilises the full spline/key length as engagement.

The following points therefore need to be fully considered:-

- i)** Lubrication of shaft couplings should be in accordance with the coupling manufacturers instructions.
- ii)** The maximum allowable input shaft torque is based on ensuring an infinite life condition by limiting the resultant combined shaft bending and torsional stress.
- iii)** This allowable input shaft torque can be further increased dependant on the resultant surface stress at the spline interface which is highly dependant on coupling selection and the provision of adequate spline lubrication.

If you have an application that requires higher input torque please consult KPM UK.

#2 Allowable through drive torques are based on the achieving an infinite life for a fully lubricated coupling and full spline engagement with a mineral oil based anti-wear hydraulic fluid.

2-1 Specifications (cont)

Notes:

Rated Pressure

Pressure at which life and durability will not be affected.

Peak Pressure

The instant allowable surge pressure as defined by BS ISO 2944:2000. Life and durability however will be shortened.

Maximum Self Priming Speed

Values are valid for an absolute suction pressure of 0.9 bar. If the flow is reduced and the inlet pressure is increased the speed may also be increased.

Maximum Boosted Speed

Values stated are the absolute maximum permitted speed for which an increased inlet pressure will be required.

Weight

Approximate dry weights, dependant on exact pump type.

Hydraulic Fluid

Mineral anti wear hydraulic fluid - for other fluid types please consult KPM UK.

Viscosity Range

If viscosity is in range 200 to 1,000 cSt, then warming up is necessary before commencing full scale running.

2-2 Technical Data (cont)

Working Fluid Types

Anti-Wear Type Hydraulic fluid

It is generally recommended to use an anti-wear hydraulic fluid like mineral oil when the operating pressure exceeds 210 bar.

Fire-resistant Fluids

Some kind of fire-resistant fluids require special materials for seals, paint and metal finishing. Please consult KPM UK and provide details of the particular fluid specification and the working conditions so that any special requirements can be ascertained.

In general, fire-resistant fluids have a low viscosity index and their viscosity also changes significantly with operating temperature and service life. For this reason, the circuit should be provided with an adequately sized cooler or forced cooling so that temperatures can be stabilised. Due to the inherent water content of some of these fluids the minimum allowable suction pressure will be higher than that of an equivalent mineral oil and so needs to be fully evaluated by KPM UK. The following table provides an overview of the precautions and characteristics that can be expected with these types of fluids.

| Fluid Type Parameter | Mineral Oil | Water Glycol |
|--|----------------|-----------------|
| Maximum Pressure (bar) | 320 | 210 |
| Recommended Temperature Range (deg C) | 20 ~ 60 | 10 ~ 50 |
| Cavitation susceptibility | ○ | △ |
| Expected life expectancy compared to mineral oil | 100% | 20-80% |

○ recommended △ usable (higher density)

Pump Start Up Precautions

Piping & Circuit Checking

Check to see that the piping and full hydraulic circuit is completed and that any gate valves etc. are open.

Direction of Rotation

Check to ensure that direction of rotation is correct and that the inlet and delivery lines are connected correctly.

Start Up

Jog start the motor and check once more for correct rotation. Run the pump unloaded for a period to ensure that all residual air within the system is released. Check for external leakage, abnormal noise and vibrations.

End of Life

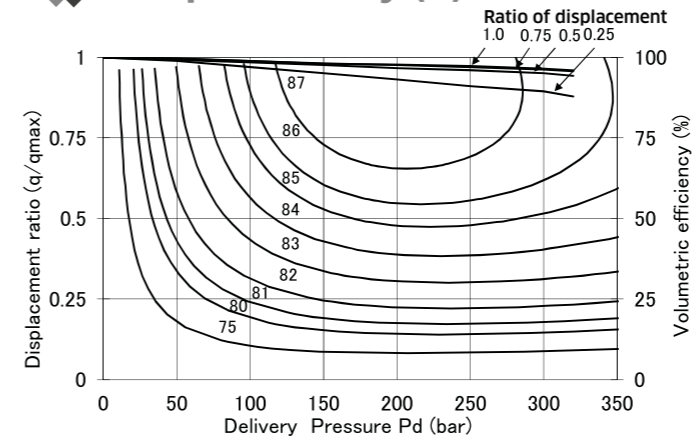
The pump unit, hydraulic fluid and packaging must be disposed of carefully to avoid pollution to the environment. The pump unit must be completely empty upon disposal, it must be disposed of according to national regulations and you must also follow safety information for disposal of the hydraulic fluid.

All individual parts of the pump unit must be recycled. Separate the pump unit parts according to: cast parts, steel, aluminium, non-ferrous metal, electronic waste, plastic, and seals.

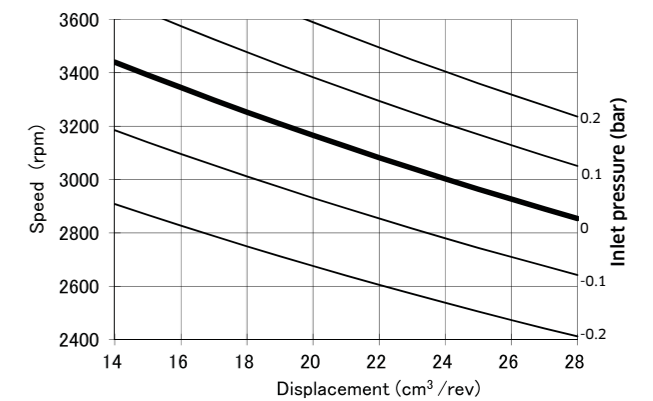
2-3 Performance Data

K3VL28

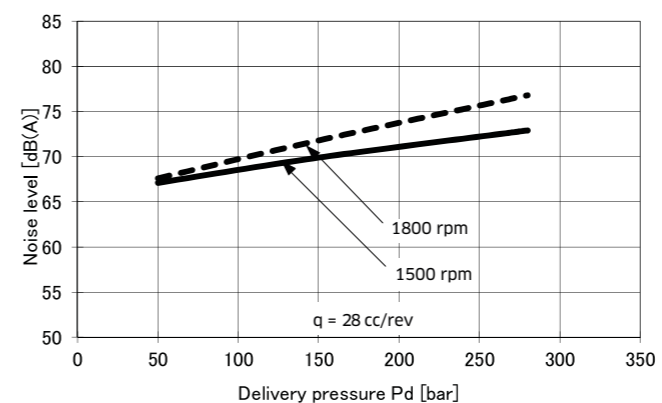
Pump Efficiency (%)



Self Priming Capability



Noise Levels



Noise level measured in an anechoic chamber where distance from microphone to pump is 1 metre. Measurement accuracy +/- 2 dB(A)

Performance Note:

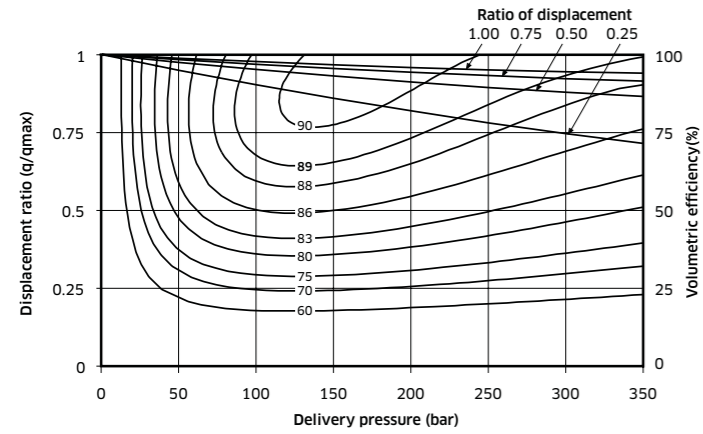
All performance curves are based on the following conditions:

- 1,500 rpm
- ISO VG46 mineral oil
- 50°C oil temperature
- Atmospheric inlet condition (0 bar)

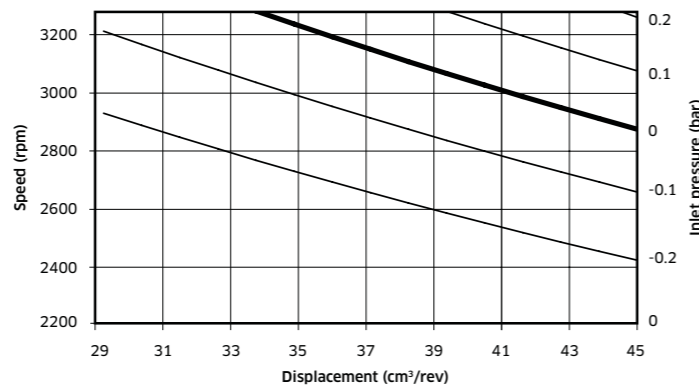
2-3 Performance Data (cont)

K3VL45

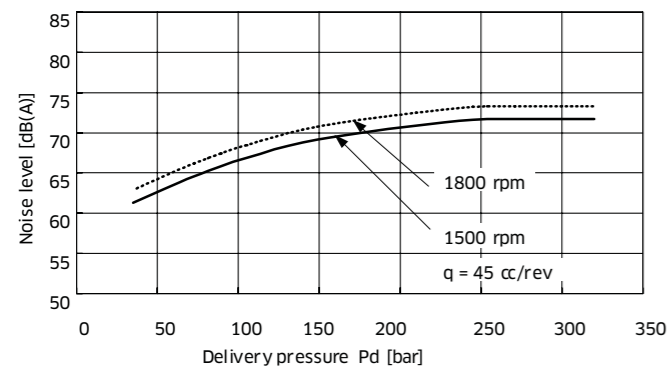
◆ Pump Efficiency (%)



◆ Self Priming Capability



◆ Noise Levels



Performance Note:

All performance curves are based on the following conditions:

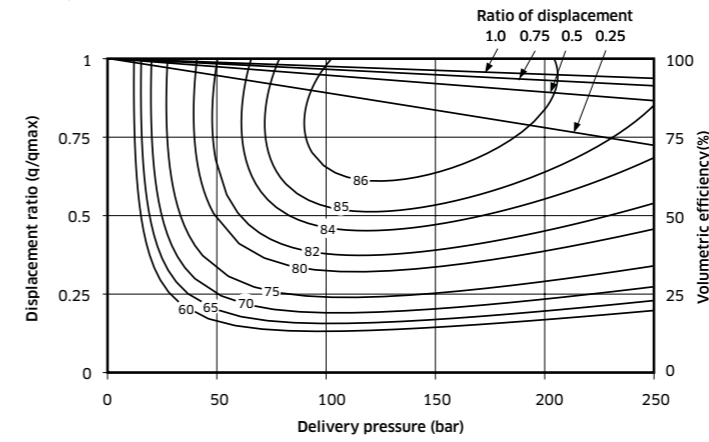
- 1,500 rpm
- ISO VG46 mineral oil
- 50°C oil temperature
- Atmospheric inlet condition (0 bar)

Noise level measured in an anechoic chamber where distance from microphone to pump is 1 metre. Measurement accuracy +/- 2 dB(A)

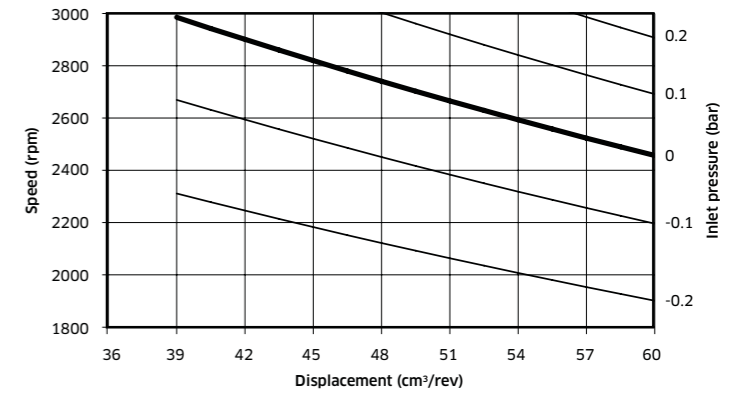
2-3 Performance Data (cont)

K3VL60

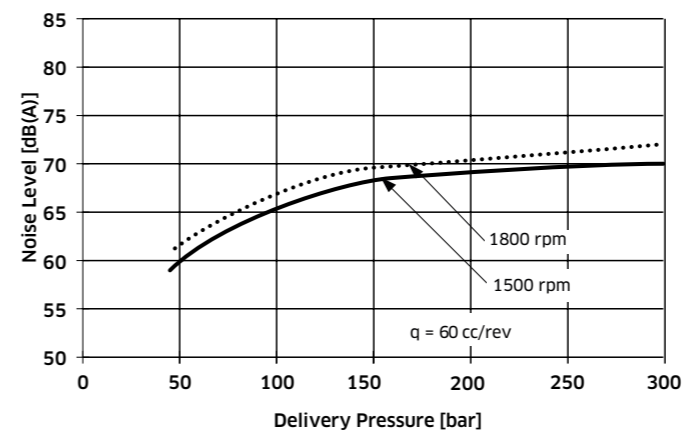
◆ Pump Efficiency (%)



◆ Self Priming Capability



◆ Noise Levels



Performance Note:

All performance curves are based on the following conditions:

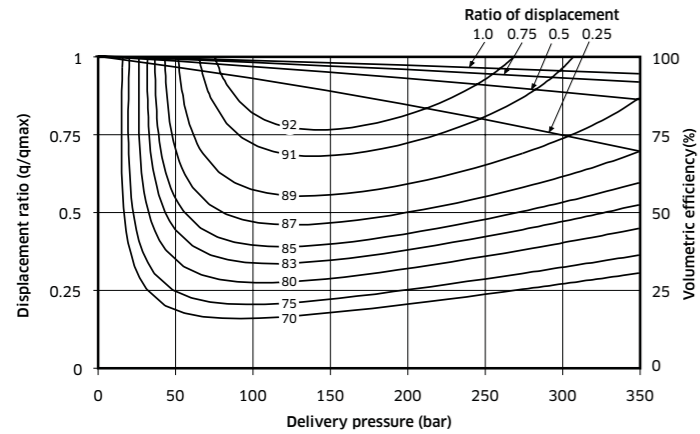
- 1,500 rpm
- ISO VG46 mineral oil
- 50°C oil temperature
- Atmospheric inlet condition (0 bar)

Noise level measured in an anechoic chamber where distance from microphone to pump is 1 metre. Measurement accuracy +/- 2 dB(A)

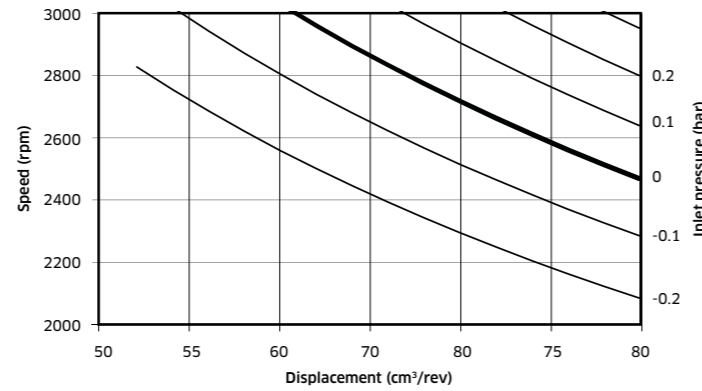
2-3 Performance Data (cont)

K3VL80

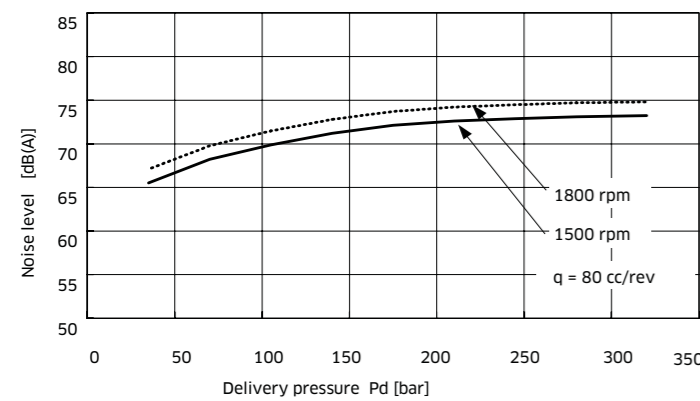
◆ Pump Efficiency (%)



◆ Self Priming Capability



◆ Noise Levels



Performance Note:
 All performance curves are based on the following conditions:

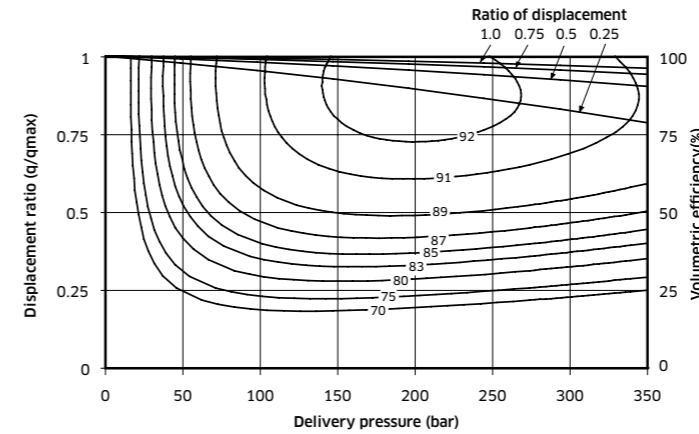
- 1,500 rpm
- ISO VG46 mineral oil
- 50°C oil temperature
- Atmospheric inlet condition (0 bar)

Noise level measured in an anechoic chamber where distance from microphone to pump is 1 metre. Measurement accuracy +/- 2 dB(A)

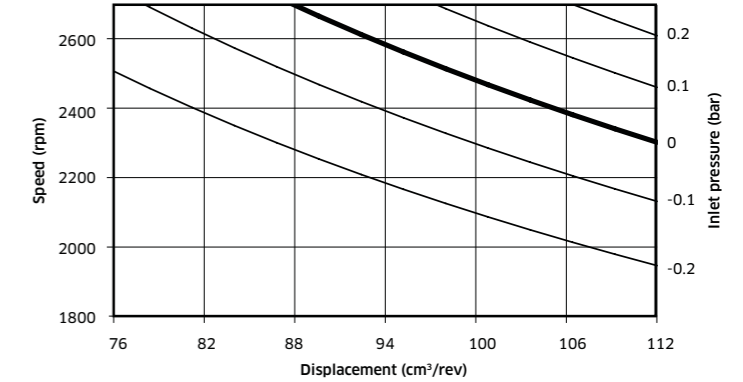
2-3 Performance Data (cont)

K3VL112

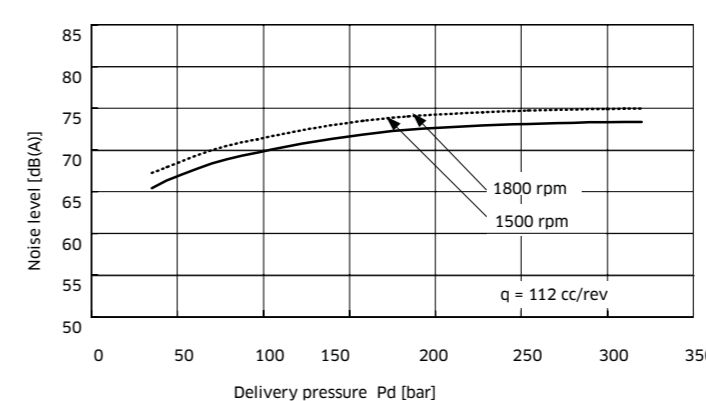
◆ Pump Efficiency (%)



◆ Self Priming Capability



◆ Noise Levels



Performance Note:
 All performance curves are based on the following conditions:

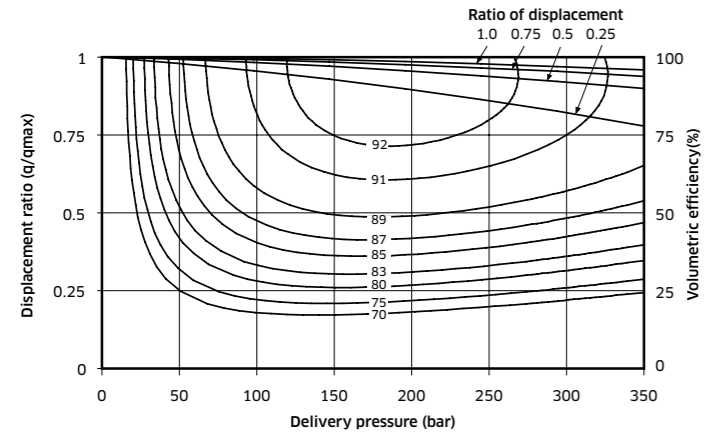
- 1,500 rpm
- ISO VG46 mineral oil
- 50°C oil temperature
- Atmospheric inlet condition (0 bar)

Noise level measured in an anechoic chamber where distance from microphone to pump is 1 metre. Measurement accuracy +/- 2 dB(A)

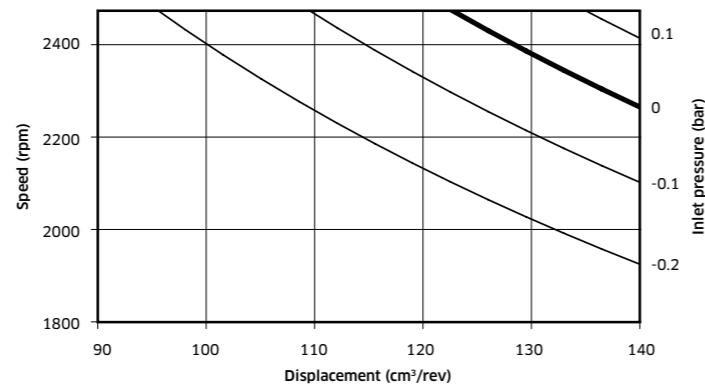
2-3 Performance Data (cont)

K3VL140

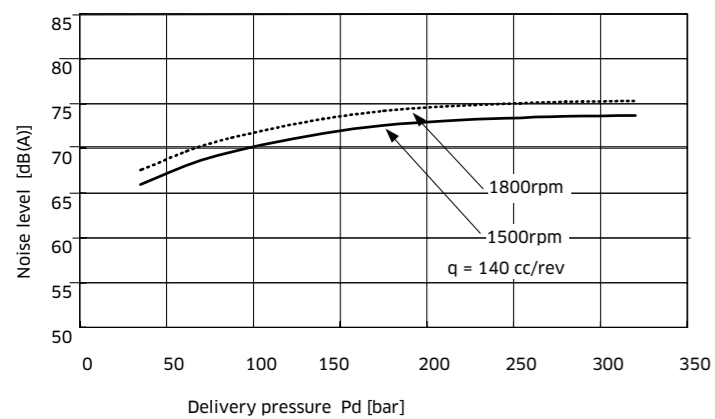
◆ Pump Efficiency (%)



◆ Self Priming Capability



◆ Noise Levels



Noise level measured in an anechoic chamber where distance from microphone to pump is 1 metre. Measurement accuracy +/- 2 dB(A)

Performance Note:

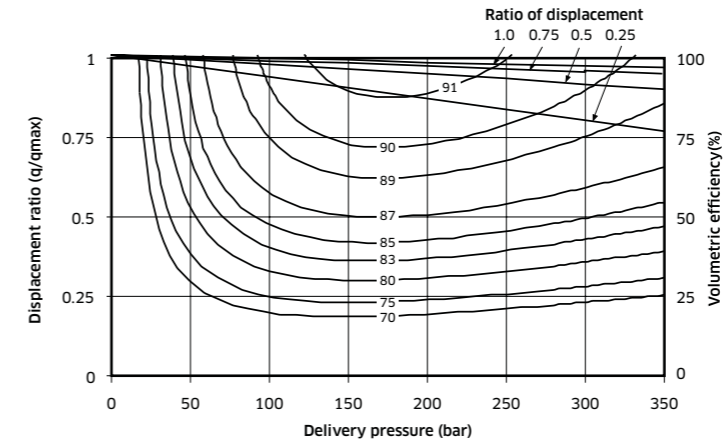
All performance curves are based on the following conditions:

- 1,500 rpm
- ISO VG46 mineral oil
- 50°C oil temperature
- Atmospheric inlet condition (0 bar)

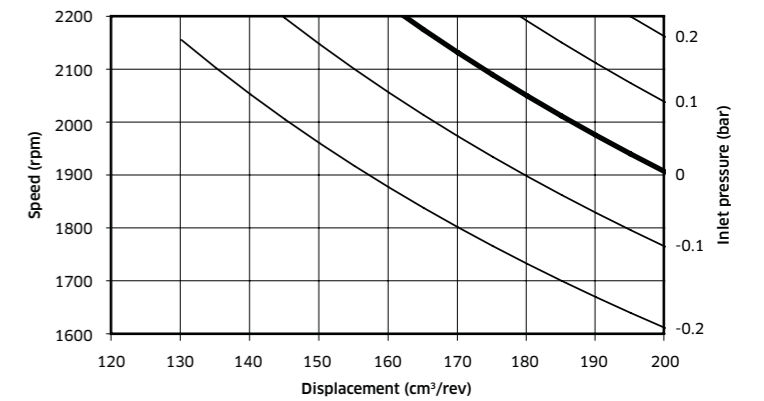
2-3 Performance Data (cont)

K3VL200

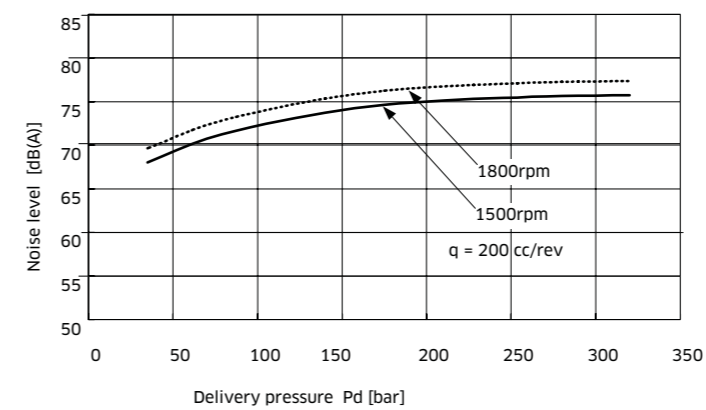
◆ Pump Efficiency (%)



◆ Self Priming Capability



◆ Noise Levels



Noise level measured in an anechoic chamber where distance from microphone to pump is 1 metre. Measurement accuracy +/- 2 dB(A)

Performance Note:

All performance curves are based on the following conditions:

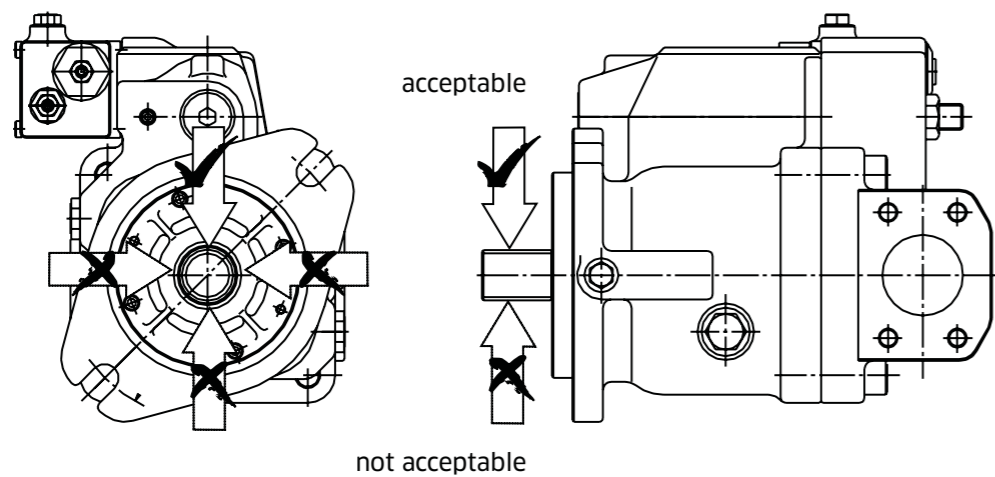
- 1,500 rpm
- ISO VG46 mineral oil
- 50°C oil temperature
- Atmospheric inlet condition (0 bar)

2-4 Radial Loading Capacity

No axial shaft loading possible, radial loading is achievable but in specific orientation:-

Radial shaft loading can be allowed provided that its orientation is such that the front bearing takes the additional load (see diagram below).

Note: In this case bearing life will be reduced.



2-5 Functional Description of Regulator

| Key to Hydraulic Circuit Annotations | |
|--------------------------------------|---|
| Annotations | Description |
| A | Main pump delivery |
| A1 | Auxillary pump delivery |
| B1 | Gear pump inlet |
| B | Main pump inlet |
| Dr | Drain |
| Pc | Remote pilot port, Pressure compensator |
| PI | Pilot port displacement control |
| PL | Load sense port |
| Tair | Air bleed port |
| P _f | Hydraulic power shift |
| P _{sv} | Servo assist |

| Regulator Code | Control Curves | Hydraulic Circuit |
|---|----------------|-------------------|
| <p>L0/L1 Load Sense and Pressure Cut-off</p> <p>Pump displacement is controlled to match the flow requirement as a function of the system differential pressure (load pressure vs delivery pressure). In addition, there is a pressure cut off function incorporated into the control with the L1 option, the bleed-off orifice R4 is plugged.</p> | | |
| <p>LN Load Sense and Pressure Cut-off with Integrated Unloading Valve (Normally Closed)</p> <p>An integrated unloading valve is sandwiched between the Load Sense regulator and pump to effectively de-stroke and swashplate when an electric signal is provided.</p> | | |

2-5 Functional Description of Regulator (cont)

| Regulator Code | Control Curves | Hydraulic Circuit |
|---|----------------|-------------------|
| <p>LM Load Sense and Pressure Cut-off with Integrated Unloading Valve (Normally Open)</p> <p>An integrated unloading valve is sandwiched between the Load Sense regulator and the pump. An electrical signal must be provided to prevent the Load Sense line from draining.</p> | | |
| <p>LV/LV2 Load Sense and Pressure Cut-off with Integrated Proportional Relief Valve</p> <p>An integrated proportional relief valve is sandwiched between the Load Sense regulator and pump to control the maximum pressure setting by varying an electric signal to the valve.</p> <p>A separate amplifier is required.</p> <p>Note: LV has improved control characteristic.</p> | | |
| <p>L0/1 Load Sense and Pressure Cut-off with Torque Limiting</p> <p>In response to a rise in delivery pressure the swashplate angle is decreased, restricting the input torque. This regulator prevents excessive load against the prime mover.</p> <p>The torque limit control module is comprised of two springs that oppose the spool force generated by the system pressure. By turning an outer and inner spring adjustment screw, the appropriate input torque limit can be set.</p> | | |

*1 : L0/L1 control functions are stated on page 27.

2-5 Functional Description of Regulator (cont)

| Regulator Code | Control Curves | Hydraulic Circuit |
|---|----------------|-------------------|
| <p>/2-** Hydraulic Power Shift with Load Sensing</p> <p>This function, as with the /1 type can be used with Pressure compensation, Load sense and additional control options such as unloader functions. The control has the same function as standard torque limit option. In response to a rise in delivery pressure the swashplate angle is reduced, restricting input torque.</p> <p>However if a pilot pressure is applied to the Pf port on the regulator, the torque setting can be further reduced proportionally to the pilot pressure applied. The input torque can be reduced by approximately 40% .</p> | | |
| <p>/3-** Electronic Power Shift with Load Sensing</p> <p>This function, as with the /1 type can be used with Pressure compensation, Load sense and additional control options such as unloader functions. The control has the same function as standard torque limit. In response to a rise in delivery pressure the swashplate angle is reduced, restricting input torque. However a constant pressure of 40 bar is required, applied to the Psv port of the regulator. The torque setting can be further reduced proportionally to a 24VDC electrical signal applied to the proportional valve on the regulator.</p> | | |
| <p>P0 Pressure Cut-off</p> <p>As system pressure rises to the cutoff setting, the swashplate de-strokes to prevent the system pressure from exceeding the compensator setting. It is imperative that a safety relief valve be installed in the system.</p> <p>Note: By connecting the Pc port to a remote pressure control, variable pump pressure control can be achieved.</p> | | |

2-5 Functional Description of Regulator (cont)

| Regulator Code | Control Curves | Hydraulic Circuit |
|---|----------------|-------------------|
| <p>PN Pressure Cut-off with Integrated Unloading Valve (Normally Closed)</p> <p>An integrated unloading valve is sandwiched between the Pressure Cut-off regulator and pump to effectively de-stroke the swashplate when an electric signal is provided.</p> | | |
| <p>PM Pressure Cut-off with Integrated Unloading Valve (Normally Open)</p> <p>An integrated unloading valve is sandwiched between the Pressure Cut-off regulator and the pump. An electrical signal must be provided to prevent the Pc line from draining.</p> | | |
| <p>PV/PV2 Pressure Cut-off with Integrated Proportional Relief Valve</p> <p>An integrated proportional relief valve is sandwiched between the Pressure Cut-off regulator and the pump to control the maximum pressure setting by varying an electric signal to the valve. A separate amplifier is required. Note: PV has improved control characteristic</p> | | |

2-5 Functional Description of Regulator (cont)

| Regulator Code | Control Curves | Hydraulic Circuit |
|---|----------------|-------------------|
| <p>P0/1 Pressure Cut-off with Torque Limiting</p> <p>P0/1 control functions as previously noted. In response to a rise in delivery pressure the swashplate angle is reduced, restricting the input torque. This regulator prevents excessive load against the prime mover.</p> <p>Note: By connecting the Pc port to a remote pressure control, variable pump pressure control can be achieved.</p> | | |
| <p>/1-E0 Electrical Displacement Control</p> <p>Varying the input current signal to the pump controller's electronic proportional pressure reducing valve (PPRV) allows the user to control the pump displacement. As the current signal to the PPRV increases, the pump displacement increases proportionally.</p> <p>Note: An external pressure supply of 40 bar is required at the PSV Port (50 bar max).</p> | | |
| <p>/1-Q0 Pilot Operated Displacement Control</p> <p>Varying the input pressure signal to the Pi port allows the user to control the pump displacement. As the pressure signal to the Pi increases, the pump displacement increases proportionally.</p> <p>Note: An external pressure supply of up to 40 bar is required at the Pi Port (50 bar max).</p> | | |

2-5 Functional Description of Regulator (cont)

| Regulator Code | Control Curves | Hydraulic Circuit |
|---|----------------|-------------------|
| <p>/2-** Hydraulic Power Shift with Pressure Compensation</p> <p>This function, as with the /1 type can be used with Pressure compensation, Load sense and additional control options such as unloader functions. The control has the same function as standard torque limit option. In response to a rise in delivery pressure the swashplate angle is reduced, restricting input torque. However if a pilot pressure is applied to the Pf port on the regulator, the torque setting can be further reduced proportionally to the pilot pressure applied. The input torque can be reduced by approximately 40%.</p> | | |
| <p>/3-** Electronic Power Shift with Pressure Compensation</p> <p>This function, as with the /1 type can be used with Pressure compensation, Load sense and additional control options such as unloader functions. The control has the same function as standard torque limit. In response to a rise in delivery pressure the swashplate angle is reduced, restricting input torque. However a pilot pressure of 40 bar is required, applied to the PSV port of the regulator. The torque setting can be further reduced proportionally to a 24VDC electrical signal applied to the proportional valve on the regulator.</p> | | |

2-6 Torque Limiter Settings

The following tables show the power limitation at various electric motor speeds for a specific frame size of pump. When selecting a control setting please ensure that the power limitation of a particularly sized electric motor to your national standard is not exceeded.

| K3VL45 | | | | |
|--------|-----|------|------|------|
| KW | 970 | 1150 | 1450 | 1750 |
| 3.7 | S3 | S4 | - | - |
| 5.5 | L3 | S1 | S3 | S4 |
| 7.5 | L1 | L2 | L4 | S2 |
| 11 | M1 | M3 | L1 | L2 |
| 15 | H3 | H4 | M2 | M4 |
| 18.5 | - | H2 | H4 | M2 |
| 22 | - | - | H3 | H4 |
| 30 | - | - | - | H1 |
| 37 | - | - | - | - |
| 45 | - | - | - | - |
| 55 | - | - | - | - |
| 75 | - | - | - | - |
| 90 | - | - | - | - |
| 110 | - | - | - | - |
| 132 | - | - | - | - |

| K3VL60 | | | | |
|--------|-----|------|------|------|
| KW | 970 | 1150 | 1450 | 1750 |
| 3.7 | - | - | - | - |
| 5.5 | S2 | S2 | - | - |
| 7.5 | L4 | S1 | S3 | - |
| 11 | M4 | L2 | S1 | S2 |
| 15 | M2 | M3 | L2 | L3 |
| 18.5 | H2 | M1 | M3 | L1 |
| 22 | - | H2 | M2 | M3 |
| 30 | - | - | H2 | H3 |
| 37 | - | - | - | H1 |
| 45 | - | - | - | - |
| 55 | - | - | - | - |
| 75 | - | - | - | - |
| 90 | - | - | - | - |
| 110 | - | - | - | - |
| 132 | - | - | - | - |

| K3VL80 | | | | |
|--------|-----|------|------|------|
| KW | 970 | 1150 | 1450 | 1750 |
| 3.7 | - | - | - | - |
| 5.5 | S2 | S4 | - | - |
| 7.5 | L6 | S1 | S3 | - |
| 11 | L2 | L4 | L6 | S1 |
| 15 | M4 | L1 | L3 | L5 |
| 18.5 | M1 | M3 | L1 | L3 |
| 22 | H3 | M1 | M4 | L1 |
| 30 | H1 | H2 | H4 | M2 |
| 37 | - | - | H2 | H4 |
| 45 | - | - | H1 | H2 |
| 55 | - | - | - | H1 |
| 75 | - | - | - | - |
| 90 | - | - | - | - |
| 110 | - | - | - | - |
| 132 | - | - | - | - |

| K3VL112 | | | | |
|---------|-----|------|------|------|
| KW | 970 | 1150 | 1450 | 1750 |
| 3.7 | - | - | - | - |
| 5.5 | - | - | - | - |
| 7.5 | S5 | S6 | - | - |
| 11 | S1 | S3 | S5 | S6 |
| 15 | L3 | L4 | S2 | S4 |
| 18.5 | M4 | L2 | L4 | S2 |
| 22 | M2 | M4 | L3 | L4 |
| 30 | H4 | M1 | M3 | L1 |
| 37 | H2 | H3 | M1 | M3 |
| 45 | - | H2 | H4 | M1 |
| 55 | - | - | H2 | H4 |
| 75 | - | - | - | H1 |
| 90 | - | - | - | - |
| 110 | - | - | - | - |
| 132 | - | - | - | - |

| K3VL140 | | | | |
|---------|-----|------|------|------|
| KW | 970 | 1150 | 1450 | 1750 |
| 3.7 | - | - | - | - |
| 5.5 | - | - | - | - |
| 7.5 | - | - | - | - |
| 11 | S2 | S4 | - | - |
| 15 | L6 | S1 | S3 | - |
| 18.5 | L3 | L5 | S1 | S3 |
| 22 | L1 | L3 | L6 | S1 |
| 30 | M2 | M3 | L2 | L4 |
| 37 | H4 | M1 | M3 | L2 |
| 45 | H2 | H4 | M2 | M3 |
| 55 | - | H2 | H4 | M2 |
| 75 | - | - | H1 | H3 |
| 90 | - | - | - | H1 |
| 110 | - | - | - | - |
| 132 | - | - | - | - |

| K3VL200 | | | | |
|---------|-----|------|------|------|
| KW | 970 | 1150 | 1450 | 1750 |
| 3.7 | - | - | - | - |
| 5.5 | - | - | - | - |
| 7.5 | - | - | - | - |
| 11 | - | - | - | - |
| 15 | - | - | - | - |
| 18.5 | S1 | - | - | - |
| 22 | L4 | S1 | - | - |
| 30 | L2 | L3 | L5 | S2 |
| 37 | M3 | L1 | L3 | L5 |
| 45 | M1 | M3 | L2 | L3 |
| 55 | H5 | M1 | M3 | L2 |
| 75 | H1 | H3 | H6 | M2 |
| 90 | - | H1 | H4 | H6 |
| 110 | - | - | H2 | H4 |
| 132 | - | - | - | H2 |

2-6 Torque Limiter Settings (cont)

◆ Torque Limiter Control - Setting Table

| K3VL frame size | Prime Mover Input Torque (Nm) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|-------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 30 | 36 | 41 | 46 | 49 | 53 | 61 | 73 | 82 | 91 | 100 | 107 | 121 | 146 | 154 | 163 | 182 | 200 | 216 | 246 | 298 | 307 | 367 | 409 | 450 | 492 | 540 | 610 | 618 | 711 | 752 |
| 45 | S4 | S3 | S2 | S1 | L4 | L3 | L2 | L1 | M4 | M3 | M2 | M1 | H4 | H3 | H2 | H1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 60 | - | - | - | S4 | S3 | S2 | S1 | L4 | L3 | L2 | L1 | M4 | M3 | M2 | H3 | H2 | H1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 80 | - | - | - | S4 | S3 | S2 | S1 | L6 | L5 | L4 | L3 | L2 | L1 | M4 | M3 | M2 | M1 | H4 | H3 | H2 | H1 | - | - | - | - | - | - | - | - | - | - |
| 112 | - | - | - | - | - | - | S6 | S5 | S4 | S3 | S2 | S1 | L4 | L3 | L2 | L1 | M4 | M3 | M2 | M1 | H4 | H3 | H2 | H1 | - | - | - | - | - | - | - |
| 140 | - | - | - | - | - | - | - | - | - | S4 | S3 | S2 | S1 | L6 | L5 | L4 | L3 | L2 | L1 | M3 | M2 | M1 | H4 | H3 | H2 | H1 | - | - | - | - | - |
| 200 & 200H | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | S2 | S1 | L5 | L4 | L3 | L2 | L1 | M3 | M2 | M1 | H6 | H5 | H4 | H3 | H2 | H1 |

Note: Highlighted options show power shift

◆ Power Shift Control - Setting Table

| /2 Hydraulic Spring Setting | K3VL80 | | | | K3VL112 | | | | K3VL140 | | | | K3VL200(H) | | | | | | |
|-----------------------------|--------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|------------|-----|-----|-----|-----|-----|-----|
| | H4 | H3 | H2 | H1 | H4 | H3 | H2 | H1 | H4 | H3 | H2 | H1 | H6 | H5 | H4 | H3 | H2 | H1 | |
| Pf Pressure (bar) | 0 | 200 | 216 | 246 | 298 | 298 | 307 | 367 | 409 | 367 | 409 | 450 | 492 | 492 | 540 | 610 | 618 | 711 | 752 |
| | 10 | 167 | 183 | 209 | 252 | 252 | 255 | 309 | 349 | 309 | 349 | 383 | 421 | 421 | 453 | 517 | 524 | 610 | 648 |
| | 20 | 138 | 152 | 175 | 210 | 210 | 208 | 256 | 292 | 256 | 292 | 322 | 356 | 356 | 374 | 432 | 439 | 517 | 553 |
| | 30 | 111 | 123 | 145 | 173 | 173 | 167 | 209 | 241 | 209 | 241 | 266 | 298 | 298 | 303 | 355 | 361 | 433 | 465 |

| /3 Electric Spring Setting | K3VL80 | | | | K3VL112 | | | | K3VL140 | | | | K3VL200(H) | | | | | | |
|----------------------------|--------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|------------|-----|-----|-----|-----|-----|-----|
| | H4 | H3 | H2 | H1 | H4 | H3 | H2 | H1 | H4 | H3 | H2 | H1 | H6 | H5 | H4 | H3 | H2 | H1 | |
| Current (mA) | 0 | 200 | 216 | 246 | 298 | 298 | 307 | 367 | 409 | 367 | 409 | 450 | 492 | 492 | 540 | 610 | 618 | 711 | 752 |
| | 336 | 167 | 183 | 209 | 252 | 252 | 255 | 309 | 349 | 309 | 349 | 383 | 421 | 421 | 453 | 517 | 524 | 610 | 648 |
| | 473 | 138 | 152 | 175 | 210 | 210 | 208 | 256 | 292 | 256 | 292 | 322 | 356 | 356 | 374 | 432 | 439 | 517 | 553 |
| | 595 | 111 | 123 | 145 | 173 | 173 | 167 | 209 | 241 | 209 | 241 | 266 | 298 | 298 | 303 | 355 | 361 | 433 | 465 |

2-7 Installation

◆ Moment of Inertia and Torsional Stiffness

| Frame Size | Moment of Inertia | | Torsional Stiffness (N m/rad) |
|------------|------------------------|---------------------------------------|-------------------------------|
| | I (kg.m ²) | GD ² (kgf.m ²) | |
| K3VL28 | 2.09x10 ⁻³ | 8.36-10 ⁻³ | 2.20 x 10 ⁴ |
| K3VL45 | 3.85x10 ⁻³ | 1.54-10 ⁻² | 3.59 x 10 ⁴ |
| K3VL60 | 3.83x10 ⁻³ | 1.53-10 ⁻² | 3.59 x 10 ⁴ |
| K3VL80 | 7.30x10 ⁻³ | 2.92-10 ⁻² | 4.83 x 10 ⁴ |
| K3VL112 | 2.02x10 ⁻² | 8.06-10 ⁻² | 9.33 x 10 ⁴ |
| K3VL140 | 2.02x10 ⁻² | 8.06-10 ⁻² | 9.33 x 10 ⁴ |
| K3VL200 | 4.58x10 ⁻² | 1.83-10 ⁻¹ | 1.54 x 10 ⁵ |
| K3VL200H | 4.58x10 ⁻² | 1.83-10 ⁻¹ | 1.54 x 10 ⁵ |

◆ Through Drive Limitations

| Pump over all length (LPX) (mm) | |
|---------------------------------|--------------------|
| Frame size | Single pump type N |
| K3VL28 | 219 |
| K3VL45 | 244 |
| K3VL60 | 244 |
| K3VL80 | 272 |
| K3VL112 | 307 |
| K3VL140 | 307 |
| K3VL200 | 359 |
| K3VL200H | 424 |

| Frame size | Maximum Permissible Bending Moment |
|------------|------------------------------------|
| K3VL28 | 137 |
| K3VL45 | 137 |
| K3VL60 | 137 |
| K3VL80 | 244 |
| K3VL112 | 462 |
| K3VL140 | 462 |
| K3VL200 | 930 |
| K3VL200H | 930 |

2-7 Installation (cont)

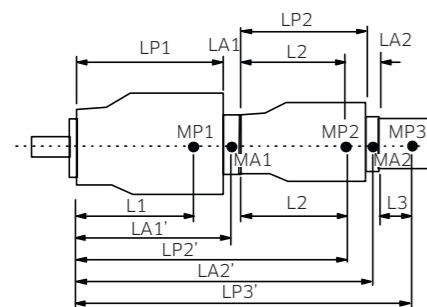
◆ Through Drive Limitations (cont)

| Frame size | Pump approx weight (MPX)(Kg) | |
|------------|------------------------------|---------------------|
| | Single pump type N | |
| | Without Torque Limitor | With Torque Limitor |
| K3VL28 | 20 | na |
| K3VL45 | 27 | 29 |
| K3VL60 | 27 | 29 |
| K3VL80 | 35 | 37 |
| K3VL112 | 65 | 67 |
| K3VL140 | 65 | 67 |
| K3VL200 | 95 | 97 |
| K3VL200H | 130 | 132 |

| Frame size | Pump CofG from mount (Lx) (mm) |
|------------|--------------------------------|
| | Single pump type N |
| K3VL28 | 115 |
| K3VL45 | 120 |
| K3VL60 | 120 |
| K3VL80 | 130 |
| K3VL112 | 150 |
| K3VL140 | 150 |
| K3VL200 | 190 |
| K3VL200H | 223 |

| Adaptor Kits Weights (MAX) & Width (LAX) | | | |
|--|----------------------|-----------------|----------------|
| Frame Size | Adaptor Kit | Weight (MAX) Kg | Width (LAX) mm |
| K3VL28 | SAE 'A' | 0 | 0 |
| | SAE 'B' | 2 | 20 |
| K3VL45 & 60 | SAE 'A' | 0 | 0 |
| | SAE 'B' & 'BB' | 2 | 20 |
| K3VL80 | SAE 'A' | 0 | 0 |
| | SAE 'B' & 'BB' | 3 | 20 |
| | SAE 'C', 'CC' & 'C4' | 4 | 24.5 |
| K3VL112 & 140 | SAE 'A' | 0 | 0 |
| | SAE 'B' & 'BB' | 3 | 25 |
| | SAE 'C', 'CC' & 'C4' | 5 | 30 |
| | SAE 'D' | 10 | 43 |
| K3VL200 | SAE 'A' | 1 | 6 |
| | SAE 'B' & 'BB' | 8 | 25 |
| | SAE 'C', 'CC' & 'C4' | 8 | 30 |
| | SAE 'D' | 10 | 38 |
| | SAE 'E' | 15 | 38 |

Apart from predefined maximum throughput limitations, one must also ensure that to prevent a possible excessive bending moment occurring that the maximum combined bending moment of the combination is not exceeded as determined in the following expression.



MPX = mass of pump [kg]
 LPX = length of pump [mm]
 LX = distance of CofG from pump mounting face [mm]
 MAX = mass of adaptor kit [kg]
 LAX = width of adaptor kit [mm]

$$\text{Bending Moment} = \frac{((L1 \cdot mP1) + (LA1' \cdot mA1) + (LP2' \cdot mP2) + (LA2' \cdot mA2) + LP3' \cdot mP3) + \dots}{102} \text{ [Nm]}$$

$$+ \frac{((L1 \cdot mP1) + (LP1 + (LA1/2)) \cdot mA1) + (LP1 + LA1 + L2) \cdot mP2 + (LP1 + LA1 + LP2(LA2/2)) \cdot mA2 + (LP1 + LA1 + LP2 + LA2) \cdot mP3 + \dots}{102}$$

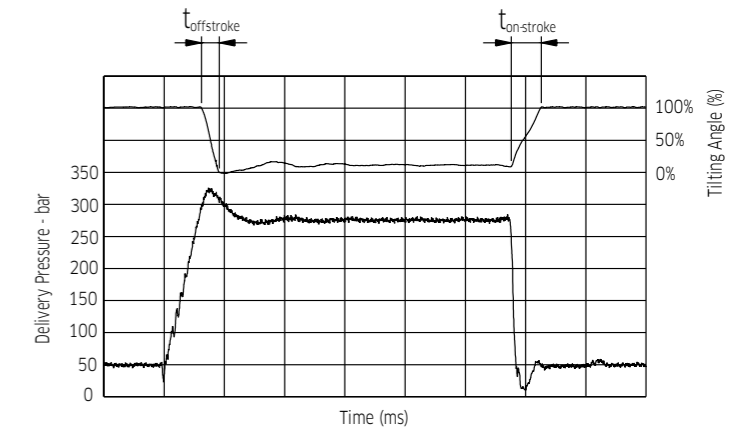
2-7 Installation (cont)

◆ Response times

Pressure Cut-off Dynamic Response 50 to 280 bar

| Unit | t _{off-stroke} | t _{on-stroke} |
|-------------|-------------------------|------------------------|
| | mS | |
| K3VL28 | 20 | 40 |
| K3VL45/60 | 60 | 100 |
| K3VL80 | 95 | 170 |
| K3VL112/140 | 90 | 140 |
| K3VL200/H | 110 | 210 |

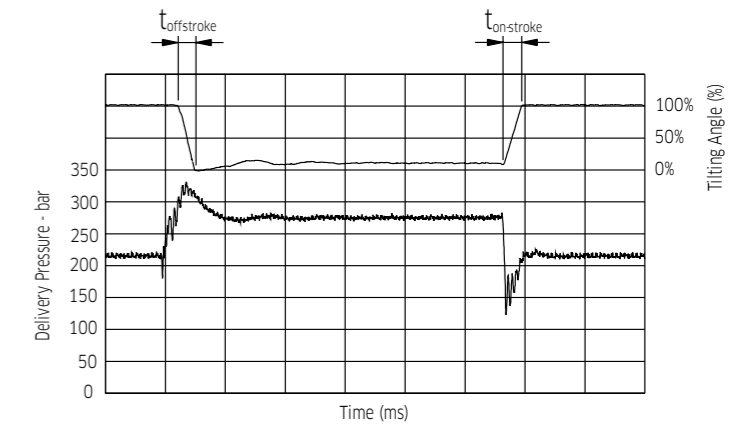
Test conditions:
 Pump speed = 1800 rpm
 Inlet Condition = 0 bar
 Oil Type = ISO VG46
 Oil Temperature = 50°C
 Compressed oil volume = 5 litres



220 to 280 bar

| Unit | t _{off-stroke} | t _{on-stroke} |
|-------------|-------------------------|------------------------|
| | mS | |
| K3VL28 | 20 | 40 |
| K3VL45/60 | 60 | 70 |
| K3VL80 | 100 | 110 |
| K3VL112/140 | 100 | 120 |
| K3VL200/H | 110 | 220 |

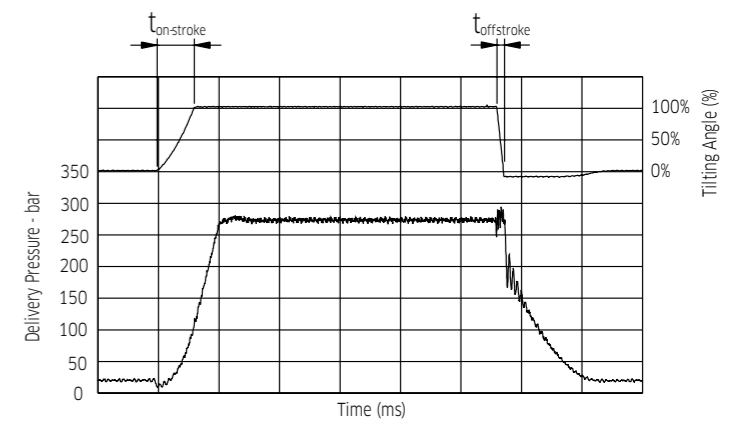
Test conditions:
 Pump speed = 1800 rpm
 Inlet Condition = 0 bar
 Oil Type = ISO VG46
 Oil Temperature = 50°C
 Compressed oil volume = 5 litres



Load Sensing Dynamic Response 20 to 280 bar

| Unit | t _{off-stroke} | t _{on-stroke} |
|-------------|-------------------------|------------------------|
| | mS | |
| K3VL28 | 20 | 70 |
| K3VL45/60 | 20 | 115 |
| K3VL80 | 55 | 155 |
| K3VL112/140 | 55 | 195 |
| K3VL200/H | 65 | 190 |

Test conditions:
 Pump speed = 1800 rpm
 Inlet Condition = 0 bar
 Oil Type = ISO VG46
 Oil Temperature = 50°C
 Compressed oil volume = 5 litres



Note:
 The response values shown in the table above are typical of those experienced in the laboratory. Actual response time will vary with different hydraulic circuits.

3 Dimensions

2-7 Installation (cont)

Electrical and Pilot Operated Displacement Control (Type E0, E1, E2, E3 & Q0)

Type E0 - In order for the electronic displacement control to function, a pilot pressure of 40 bar must be supplied to the Pi port on the regulator. A gear pump attached to the rear of the K3VL pump or an external pressure source can be used to provide the required pilot pressure.

Type Q0 - In order for the Q0 displacement control to function, a variable pilot pressure between 0 and 40 bar is required to be supplied to the Pi port on the regulator.

Proportional Pressure Reducing Valve Specification

- Maximum Pilot Pressure : 50 bar (if higher pressure required contact KPM UK)
- Max Flow: : 10 l/min
- Hydraulic oil : Mineral oil
- Oil temp range : -20~+90°C
- Viscosity range : 5~500 cSt

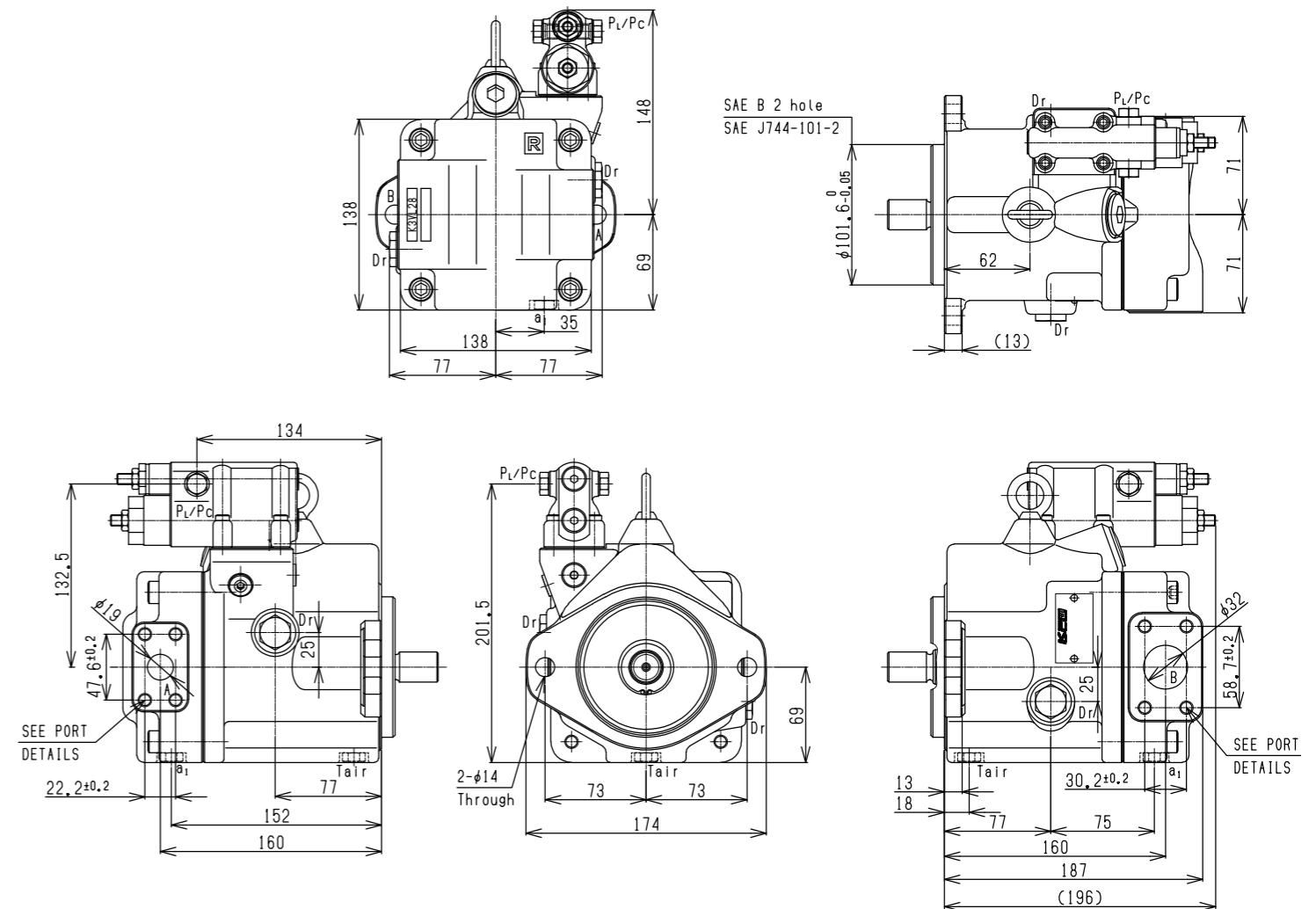
Electrical Specifications

| | E0, E1, E2 24V DC | E3 12V DC |
|---------------------------|--|--|
| Rated Current | 700 mA | 1,400 mA |
| Recommended Dither | 80 Hz/200 mAp-p | 80 Hz/200 mAp-p |
| Coil Resistance | 17.5 Ω | 3.2 Ω |
| Ambient Temperature Range | -30 ~+95°C | -30 ~+95°C |
| Water Resistance | According to JIS D 0203 S2 SAE J575 | According to JIS D 0203 S2 SAE J575 |
| IP Rating | IPX6 | IPX6 |

3-1 K3VL28 Installation

◆ K3VL28 with Cut-Off / Load Sense Control (Clockwise Rotation)

Inlet and outlet ports reversed for counter clockwise rotation.



◆ K3VL28 Porting Details

Main SAE Flanged Ports

| Des. | Port Name | Port Size | Tightening Torque (Nm) | Flange Threads |
|------|-----------|-----------|------------------------|----------------|
|------|-----------|-----------|------------------------|----------------|

UNF Threaded Version ('S' in position 9 of model code)

| | | | | |
|---|---------------|---|----|------------------------|
| A | Delivery Port | SAE J518C Std pressure (code 61) 3/4" | 40 | 4-3/8-16UNC-2B x 18mm |
| B | Suction Port | SAE J518C Std pressure (code 61) 1 1/4" | 60 | 4-7/16-14UNC-2B x 24mm |

Metric Version ('M' in position 9 of model code)

| | | | | |
|---|---------------|---|----|----------|
| A | Delivery Port | SAE J518C Std pressure (code 61) 3/4" | 57 | M10 x 17 |
| B | Suction Port | SAE J518C Std pressure (code 61) 1 1/4" | 57 | M10 x 17 |

Auxillary Ports

| Des. | Port Name | Port Size | Tightening Torque (Nm) |
|------|-----------|-----------|------------------------|
|------|-----------|-----------|------------------------|

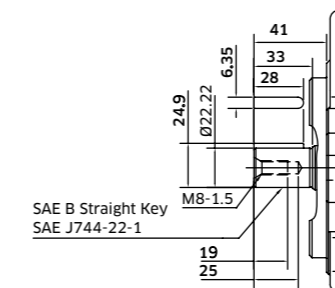
SAE Version ('S' or 'K' in position 8 of model)

| | | | |
|--------------------------------|--|---------------------------------------|----|
| Dr | Drain Port (x2) | 3/4-16UNF-2B-14.3 (ISO 11926-1:1995) | 98 |
| P _L /P _C | Load Sensing Port Pressure Control Port | 7/16-20UNF-2B-11 (ISO 11926-1:1995) | 12 |
| T _{air} | Air Bleeder Port | 7/16-20UNF-2B-11.5 (ISO 11926-1:1995) | 12 |
| a1 | Gauge Port | 7/16-20UNF-2B-11.5 (ISO 11926-1:1995) | 12 |

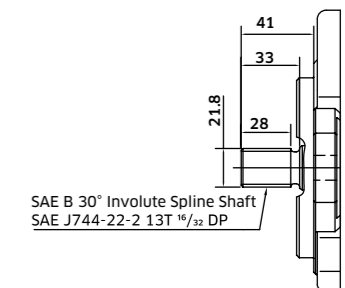
3-1 K3VL28 Installation (cont)

◆ K3VL28 Shaft & Through Drive Options

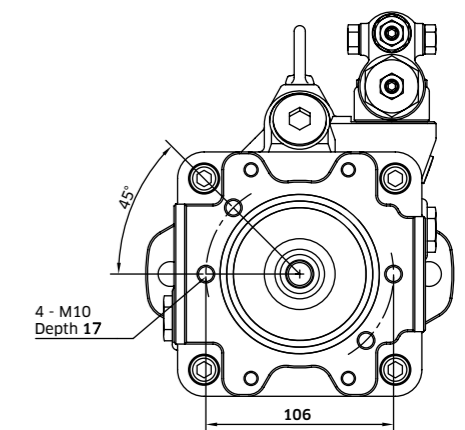
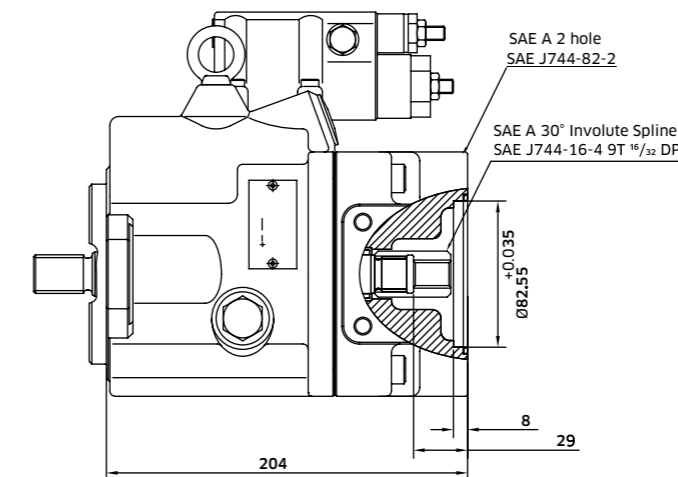
Model Code Option 'K' Shaft



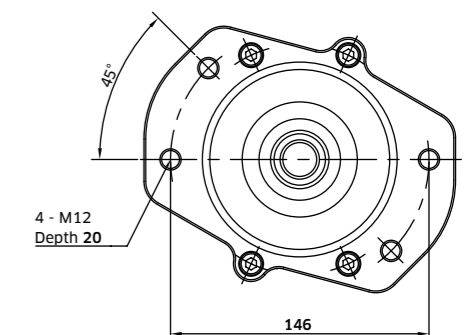
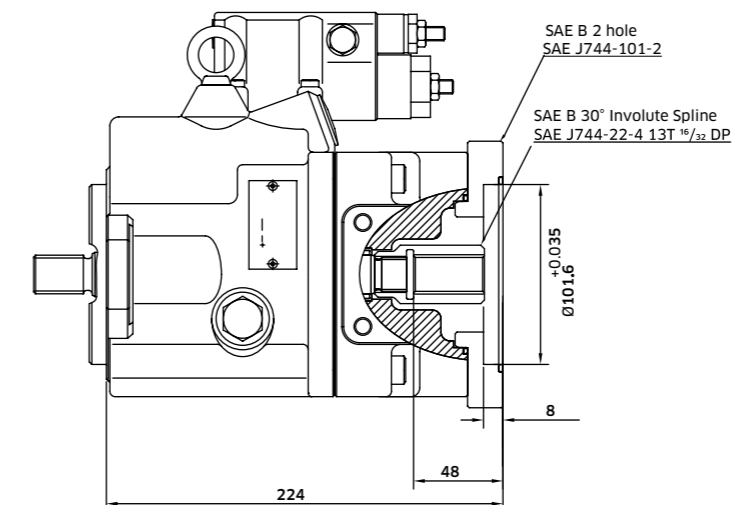
Model Code Option 'S' Shaft



Through Drive SAE 'A'

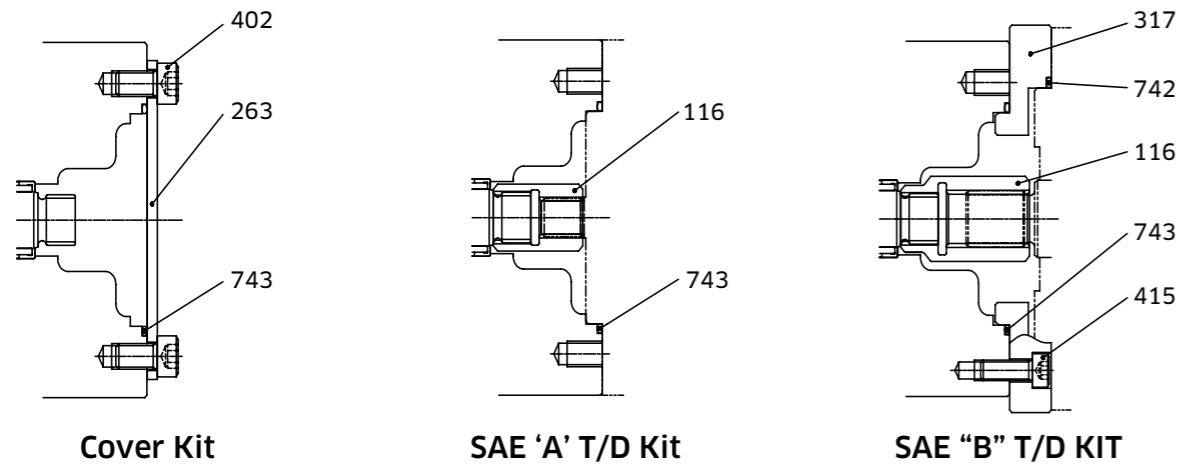


Through Drive SAE 'B'



3-1 K3VL28 Installation (cont)

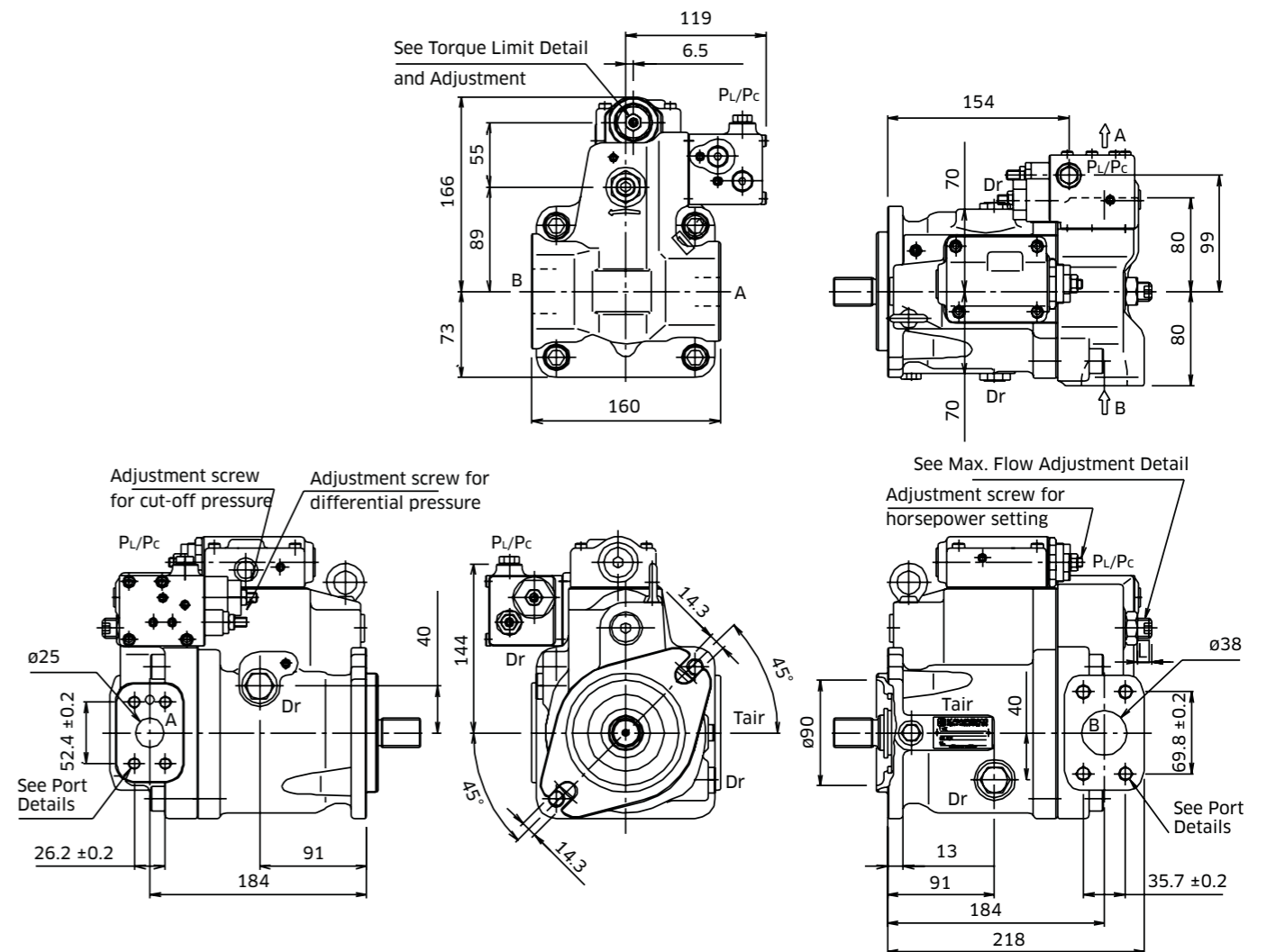
◆ K3VL28 Adaptor Kits



| Part Name | Qty | Cover Kit | SAE 'A' T/D Kit | SAE 'B' T/D Kit |
|---------------|-----|-----------|-----------------|-----------------|
| T/D | - | 29L8TN | 29L3TA | 29L3TB |
| O-Ring | 1 | Item 743 | Item 743 | Item 743 |
| O-Ring | 1 | - | - | Item 742 |
| Screw Hex SHC | 4 | - | - | Item 415 |
| Screw Hex SHC | 2 | Item 402 | - | - |
| Subplate | 1 | - | - | Item 317 |
| Cover | 1 | Item 263 | - | - |
| Coupling | 1 | - | Item 116 | Item 116 |

3-2 K3VL45/60 Installation

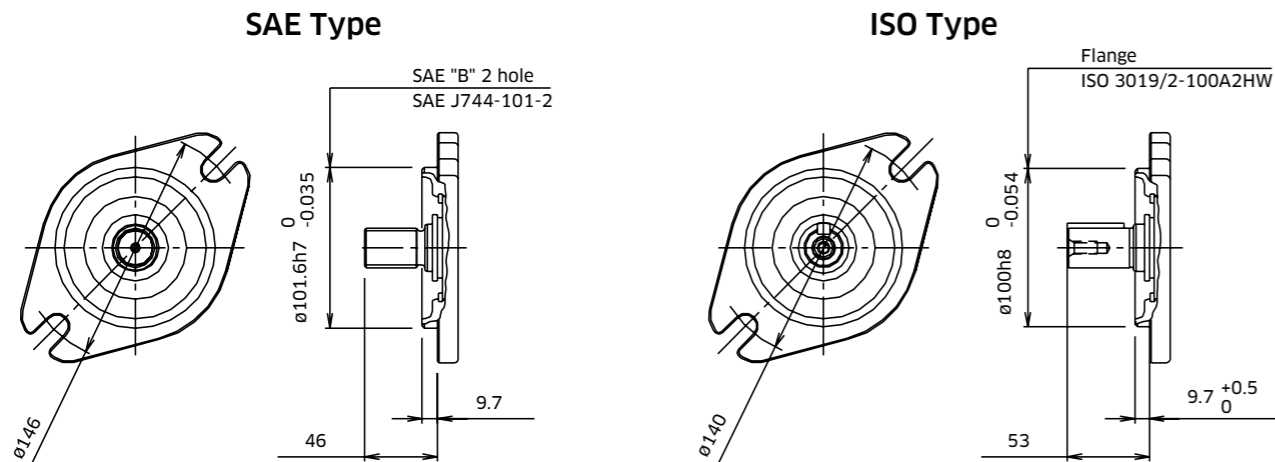
◆ K3VL45/60 with Cut-Off / Load Sense Control & Torque Limit Module (Clockwise Rotation)



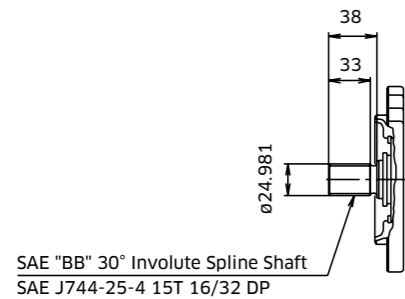
Note: for counter clockwise rotation, the inlet port 'B' and the delivery port 'A' are reversed.

3-2 K3VL45/60 Installation (cont)

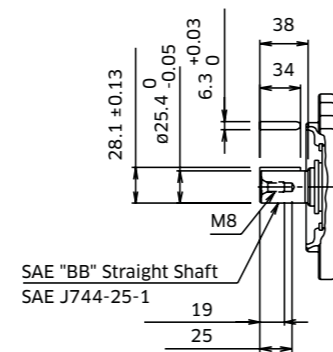
◆ K3VL45/60 Mounting Flange and Shaft Options



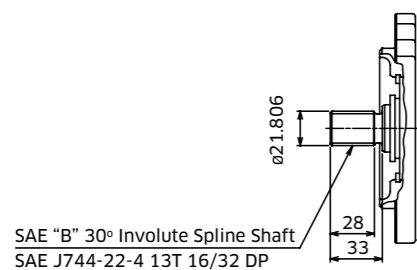
SAE 'BB' Spline Shaft - Option 'S'



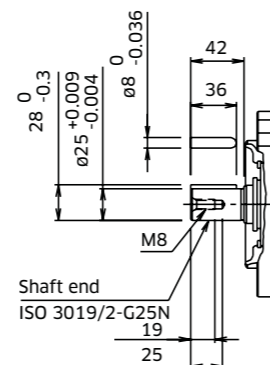
SAE 'BB' Straight Shaft - Option 'K'



SAE 'B' Spline Shaft - Option 'T'

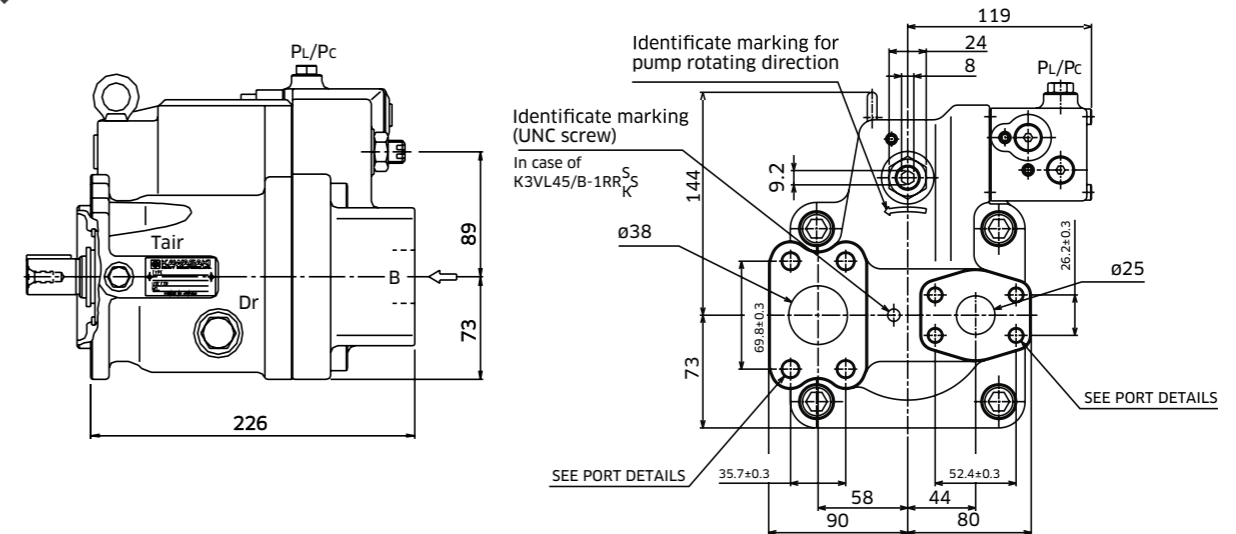


ISO Straight Shaft - Option 'M'



3-2 K3VL45/60 Installation (cont)

◆ K3VL45/60 Rear Port



◆ K3VL45/60 Porting Details

Main SAE Flanged Ports

| Des. | Port Name | Port Size | Tightening Torque (Nm) | Flange Threads |
|---|---------------|---------------------------------------|------------------------|----------------------|
| UNF Threaded Version ('S' in position 9 of model code) | | | | |
| A | Delivery Port | SAE J518C Std pressure (code 61) 1" | 57 | 3/8-16UNC-2B x 18 mm |
| B | Suction Port | SAE J518C Std pressure (code 61) 1.5" | 98 | 1/2-13UNC-2B x 22 mm |

Metric Version ('M' in position 9 of model code)

| | | | | |
|---|---------------|---------------------------------------|----|----------|
| A | Delivery Port | SAE J518C Std pressure (code 61) 1" | 57 | M10 x 17 |
| B | Suction Port | SAE J518C Std pressure (code 61) 1.5" | 98 | M12 x 20 |

Auxiliary Ports

| Des. | Port Name | Port Size | Tightening Torque (Nm) |
|--|---|-------------------------------------|------------------------|
| SAE Version ('S', 'K', or 'T' in position 8 of model) | | | |
| Dr | Drain Port (x2) | 3/4-16UNF-2B-14.3 (ISO11926-1:1995) | 98 |
| PL/Pc | Load Sensing Port Pressure Control Port | 7/16-20UNF-2B-14 (ISO11926-1:1995) | 12 |
| T _{air} | Air Bleeder Port | 7/16-20UNF-2B-14 (ISO11926-1:1995) | 12 |

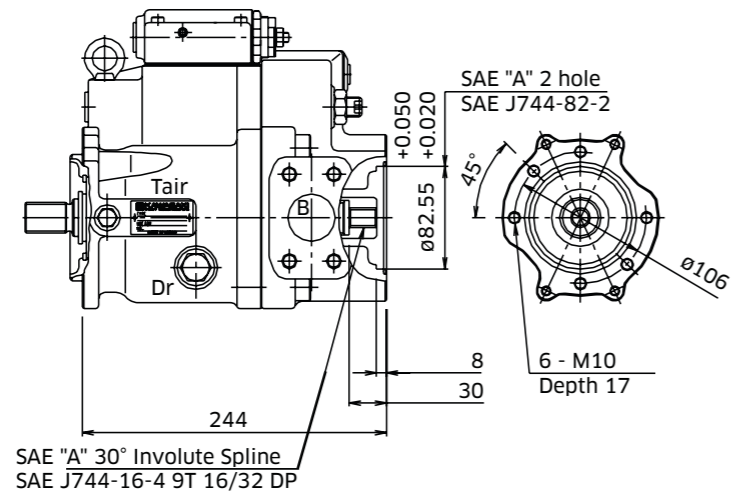
ISO Version ('M' in position 8 of model code)

| | | | |
|------------------|---|-------------------------|----|
| Dr | Drain Port (x2) | M22 x 1.5-14.5 DIN 3852 | 98 |
| PL/Pc | Load Sensing Port Pressure Control Port | M14 x 1.5-12.5 DIN 3852 | 25 |
| T _{air} | Air Bleeder Port | M14 x 1.5-12.5 DIN 3852 | 25 |

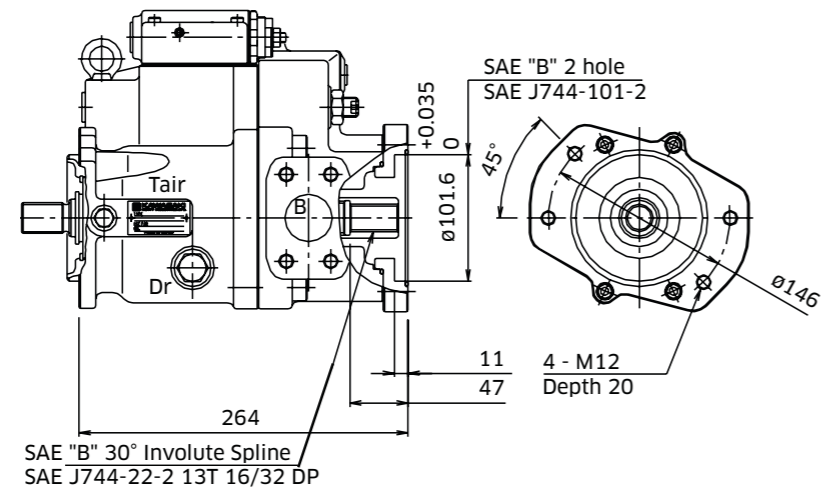
3-2 K3VL45/60 Installation (cont)

◆ K3VL45/60 Through Drive Options

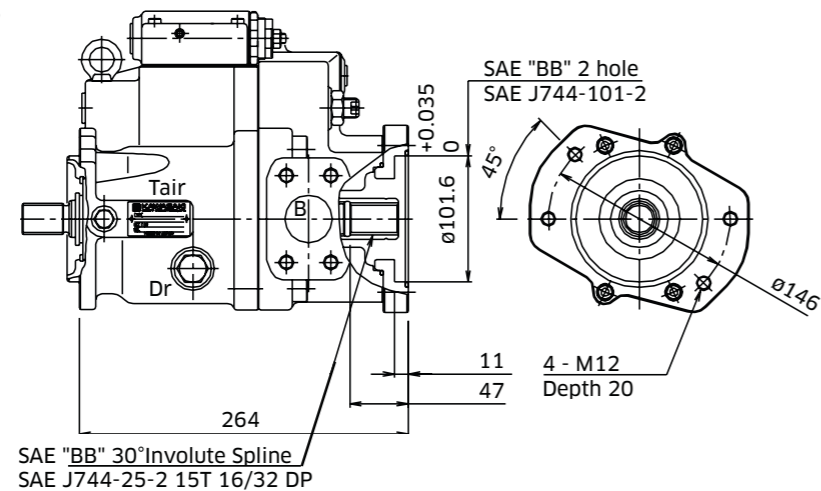
Through Drive 'A'



Through Drive 'B'

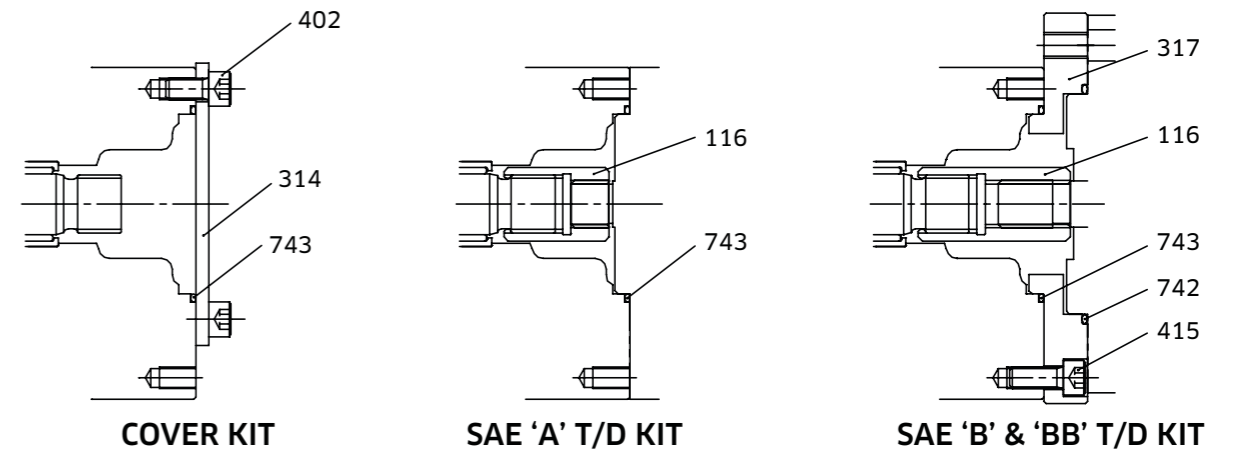


Through Drive 'BB'



3-2 K3VL45/60 Installation (cont)

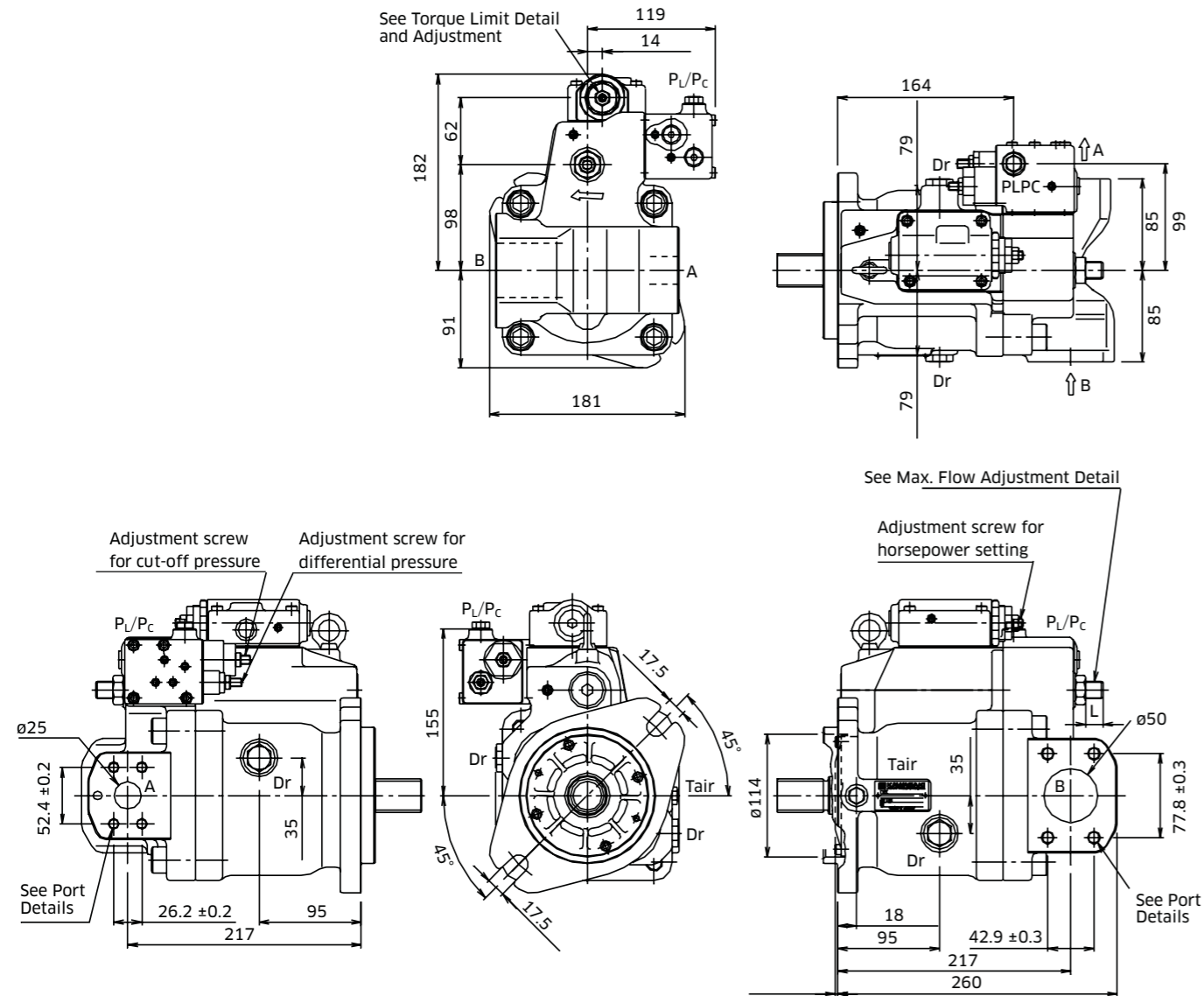
◆ K3VL45/60 Adaptor Kits



| Part Name | Qty | Cover Kit | SAE 'A' T/D Kit | SAE 'B' T/D Kit | SAE 'BB' T/D Kit |
|---------------|-----|-----------|-----------------|-----------------|------------------|
| T/D | - | 29L8TN | 29L4TA | 29L4TB | 29L4T2 |
| O-Ring | 1 | Item 743 | Item 743 | Item 743 | Item 743 |
| O-Ring | 1 | - | - | Item 742 | Item 742 |
| Screw Hex SHC | 4 | - | - | Item 415 | Item 415 |
| Screw Hex SHC | 2 | Item 402 | - | - | - |
| Subplate | 1 | - | - | Item 317 | Item 317 |
| Cover | 1 | Item 314 | - | - | - |
| Coupling | 1 | - | Item 116 | Item 116 | Item 116 |

3-3 K3VL80 Installation

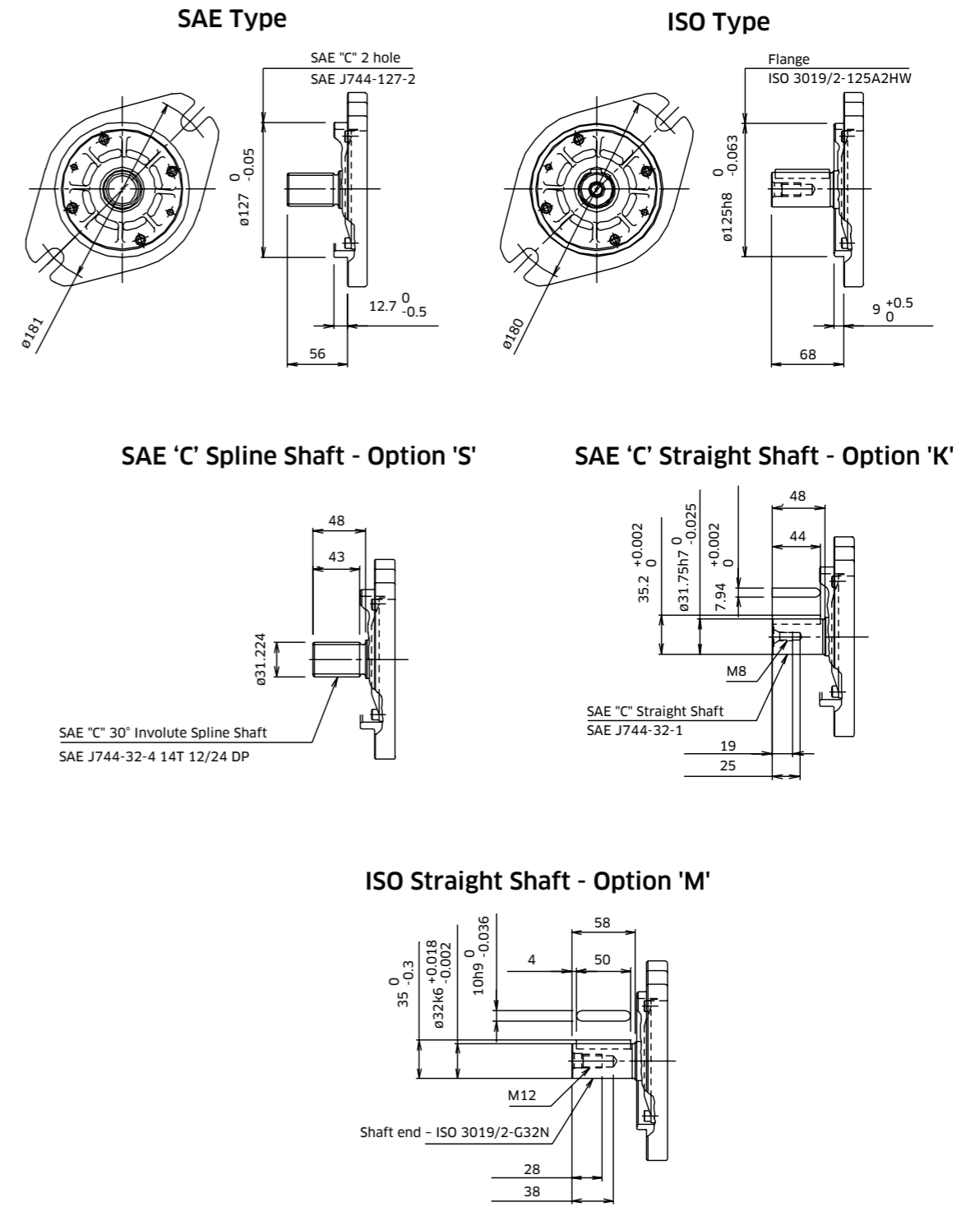
◆ K3VL80 with Cut-Off / Load Sense Control & Torque Limit Module (Clockwise Rotation)



Note: for counter clockwise rotation, the suction port 'B' and the delivery port 'A' are reversed.

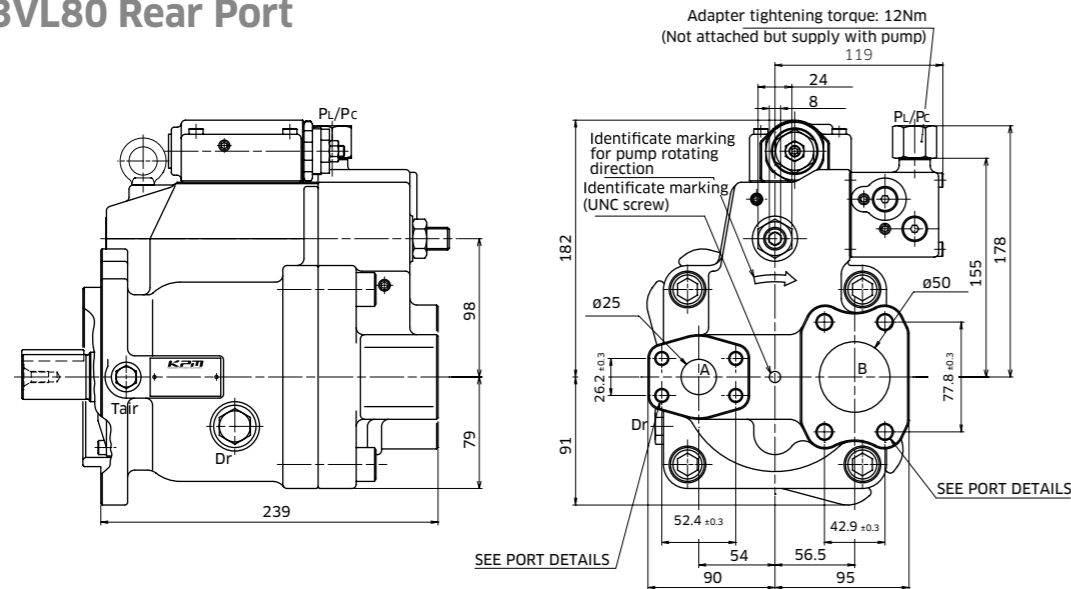
3-3 K3VL80 Installation (cont)

◆ K3VL80 Mounting Flange and Shaft Options



3-3 K3VL80 Installation (cont)

◆ K3VL80 Rear Port



◆ K3VL80 Porting Details

Main SAE Flanged Ports

| Des. | Port Name | Port Size | Tightening Torque (Nm) | Flange Threads |
|---|---------------|-------------------------------------|------------------------|----------------------|
| UNF Threaded Version ('S' in position 9 of model code) | | | | |
| A | Delivery Port | SAE J518C Std pressure (code 61) 1" | 57 | 3/8-16UNC-2B x 18 mm |
| B | Suction Port | SAE J518C Std pressure (code 61) 2" | 98 | 1/2-13UNC-2B x 22 mm |
| Metric Version ('M' in position 9 of model code) | | | | |
| A | Delivery Port | SAE J518C Std pressure (code 61) 1" | 57 | M10 x 17 |
| B | Suction Port | SAE J518C Std pressure (code 61) 2" | 98 | M12 x 20 |

Auxillary Ports

| Des. | Port Name | Port Size | Tightening Torque (Nm) |
|--|--|-------------------------------------|------------------------|
| SAE Version ('S', 'K', or 'T' in position 8 of model) | | | |
| Dr | Drain Port (x2) | 3/4-16UNF-2B-14.3 (ISO11926-1:1995) | 98 |
| P _L /P _c | Load Sensing Port Pressure Control Port | 7/16-20UNF-2B-14 (ISO11926-1:1995) | 12 |
| T _{air} | Air Bleeder Port | 7/16-20UNF-2B-14 (ISO11926-1:1995) | 12 |

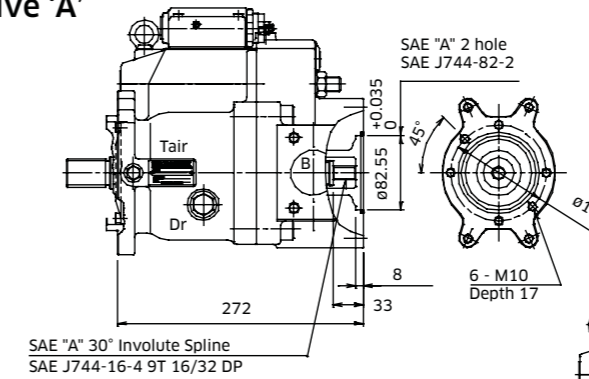
ISO Version ('M' in position 8 of model code)

| | | | |
|--------------------------------|--|-------------------------|----|
| Dr | Drain Port (x2) | M22 x 1.5-14.5 DIN 3852 | 98 |
| P _L /P _c | Load Sensing Port Pressure Control Port | M14 x 1.5-12.5 DIN 3852 | 25 |
| T _{air} | Air Bleeder Port | M14 x 1.5-12.5 DIN 3852 | 25 |

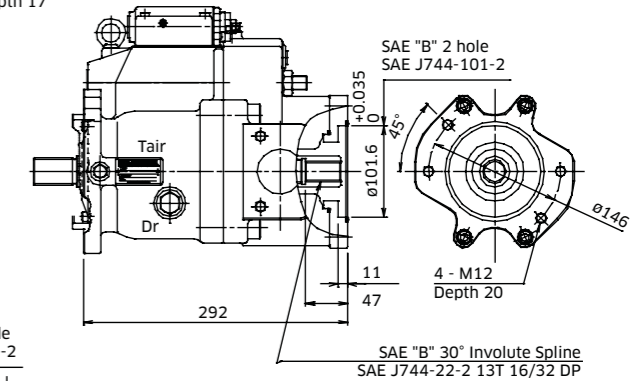
3-3 K3VL80 Installation (cont)

◆ K3VL80 Through Drive Options

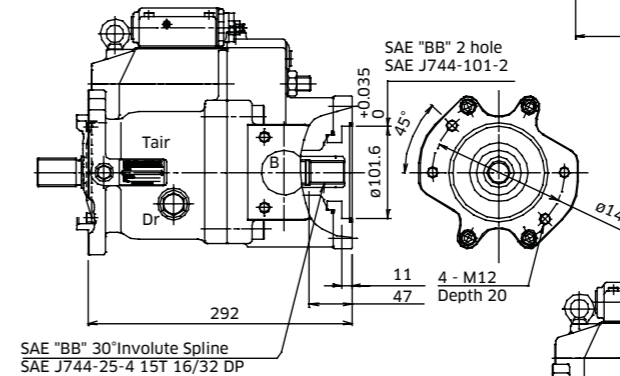
Through Drive 'A'



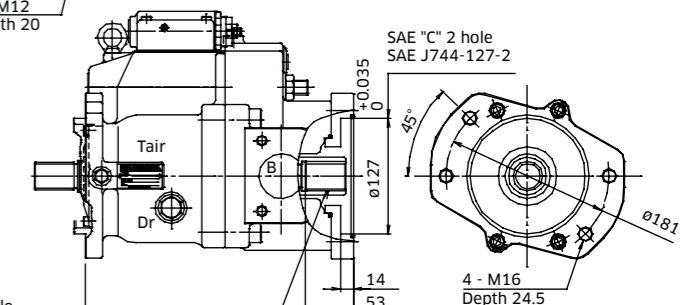
Through Drive 'B'



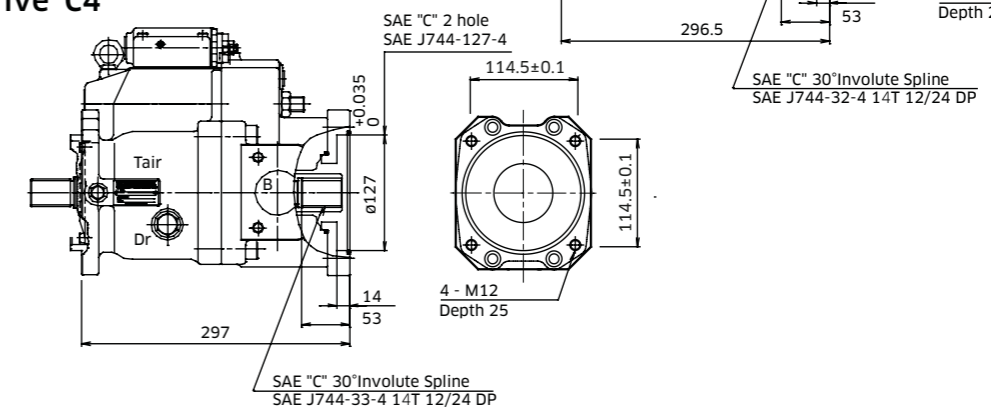
Through Drive 'BB'



Through Drive 'C'

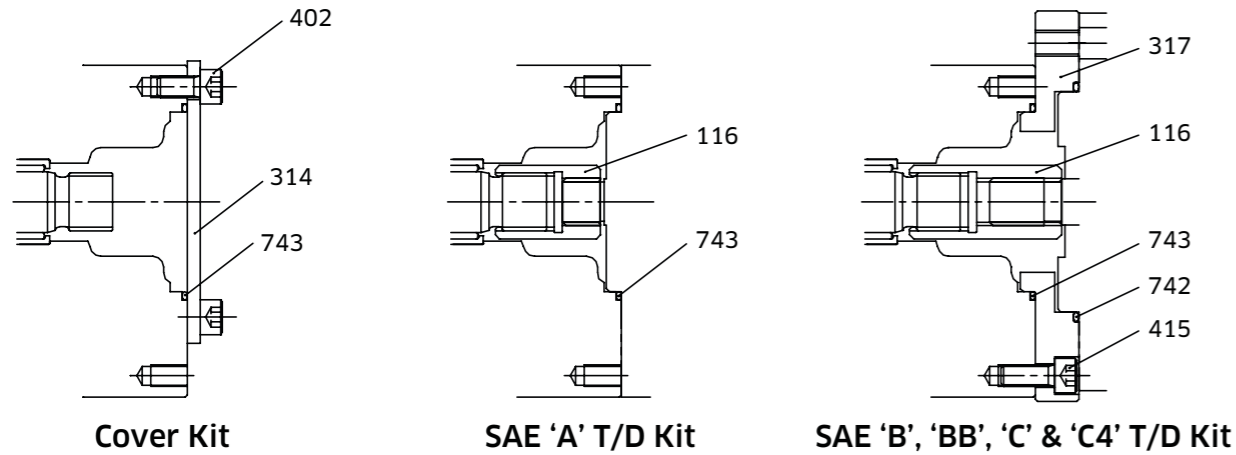


Through Drive 'C4'



3-3 K3VL80 Installation (cont)

◆ K3VL80 Adaptor Kits

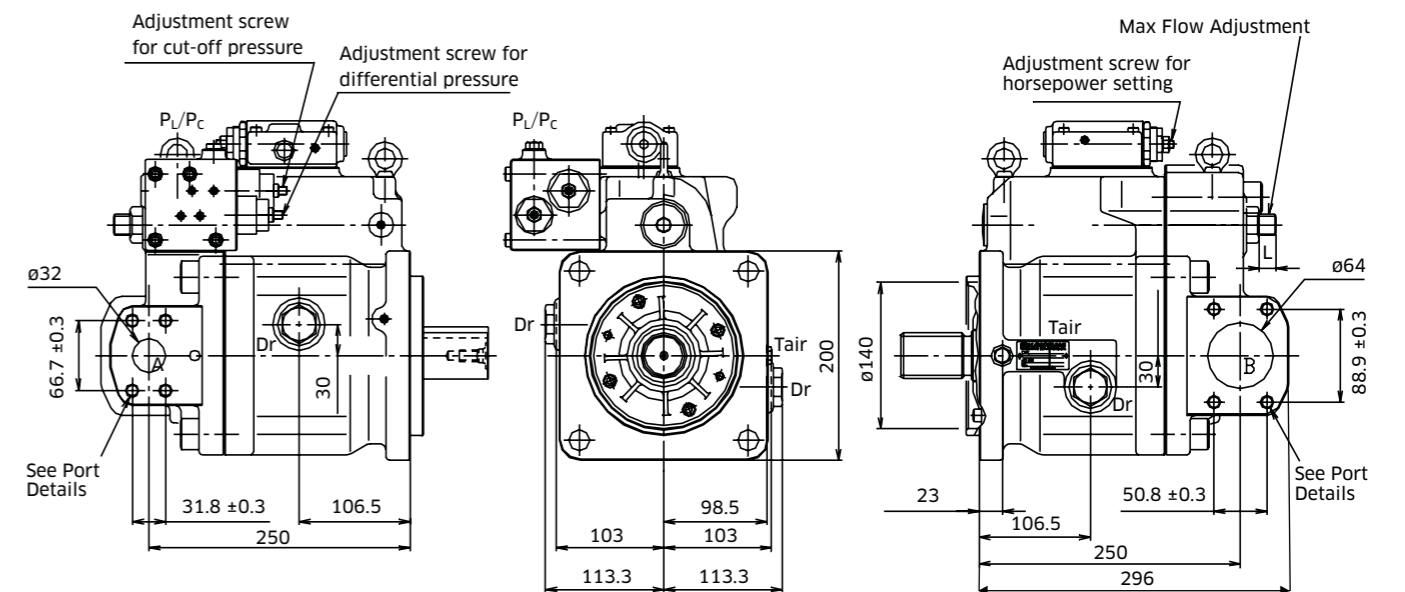
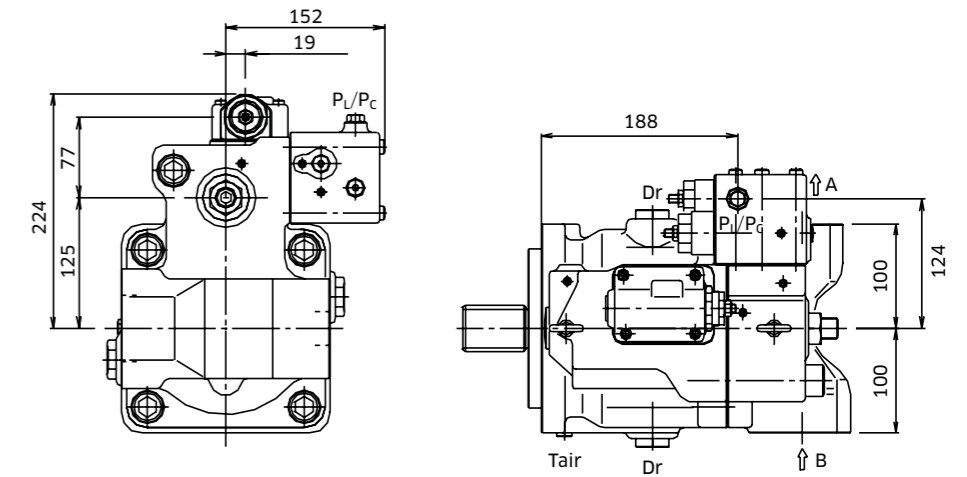


| Part Name | Qty | Cover Kit | SAE 'A' T/D Kit | SAE 'B' T/D Kit |
|---------------|-----|-----------|-----------------|-----------------|
| T/D | - | 29L8TN | 29L8TA | 29L8TB |
| O-Ring | 1 | Item 743 | Item 743 | Item 743 |
| O-Ring | 1 | - | - | Item 742 |
| Screw Hex SHC | 4 | - | - | Item 415 |
| Screw Hex SHC | 2 | Item 402 | - | - |
| Subplate | 1 | - | - | Item 317 |
| Cover | 1 | Item 314 | - | - |
| Coupling | 1 | - | Item 116 | Item 116 |

| Part Name | Qty | SAE 'BB' T/D Kit | SAE 'CC' T/D Kit | SAE 'C4' T/D Kit |
|---------------|-----|------------------|------------------|------------------|
| T/D | - | 29L8T2 | 29L8TC | 29L8TC4 |
| O-Ring | 1 | Item 743 | Item 743 | Item 743 |
| O-Ring | 1 | Item 742 | Item 742 | Item 742 |
| Screw Hex SHC | 4 | Item 415 | Item 415 | Item 415 |
| Screw Hex SHC | 2 | - | - | - |
| Subplate | 1 | Item 317 | Item 317 | Item 317 |
| Cover | 1 | - | - | - |
| Coupling | 1 | Item 116 | Item 116 | Item 116 |

3-4 K3VL112/140 Installation

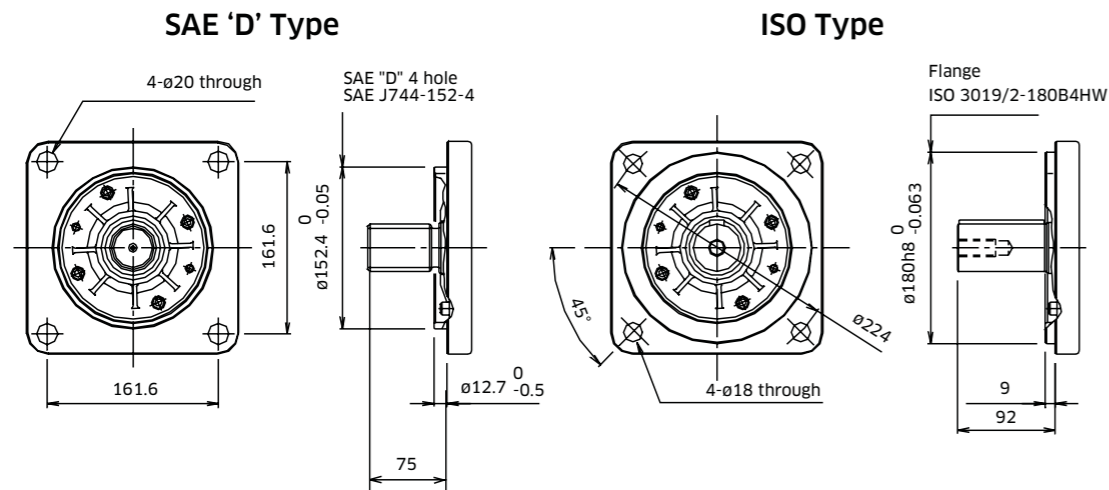
◆ K3VL112/140 with Cut-Off / Load Sense Control & Torque Limit Module (Clockwise Rotation)



Note: for counter clockwise rotation, the suction port 'B' and the delivery port 'A' are reversed.

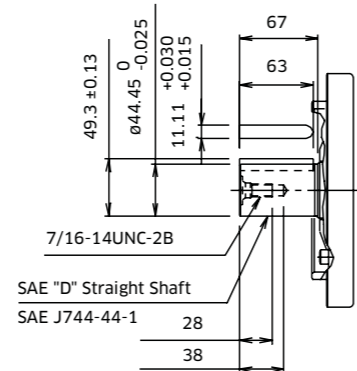
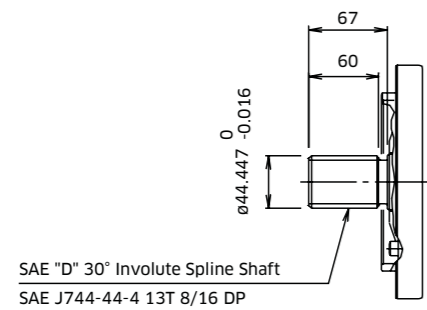
3-4 K3VL112/140 Installation (cont)

◆ K3VL112/140 (SAE D 4 BOLT) Mounting Flange & Shaft Options

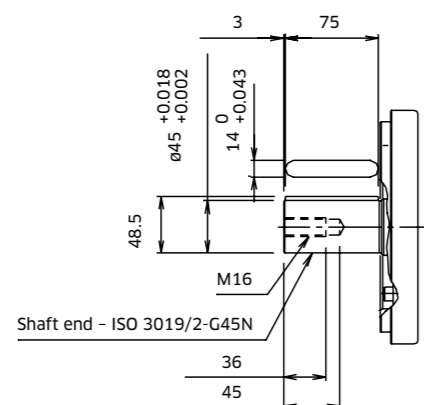


SAE 'D' Spline Shaft - Option 'S'

SAE 'D' Straight Shaft - Option 'K'

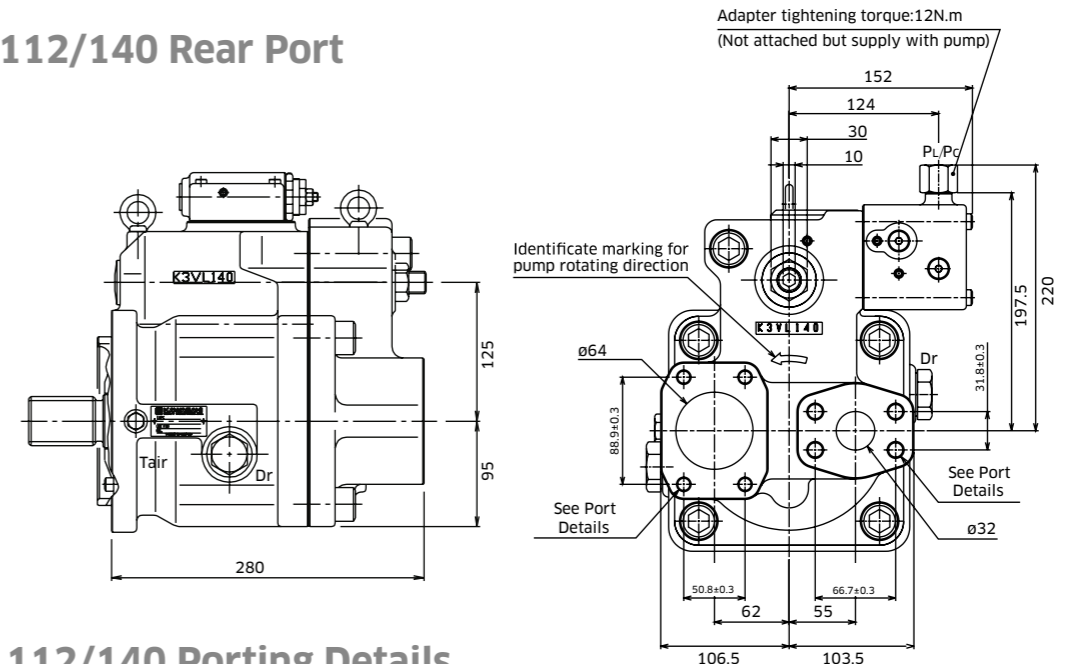


ISO Straight Shaft - Option 'M'



3-4 K3VL112/140 Installation (cont)

◆ K3VL112/140 Rear Port



◆ K3VL112/140 Porting Details

Main SAE Flanged Ports

| Des. | Port Name | Port Size | Tightening Torque (Nm) | Flange Threads |
|---|---------------|--|------------------------|--------------------|
| UNF Threaded Version ('S' in position 9 of model code) | | | | |
| A | Delivery Port | SAE J518C High pressure (code 62) 1 ¼" | 157 | ½-13UNC-2B x 22 mm |
| B | Suction Port | SAE J518C Std pressure (code 61) 2 ½" | 98 | ½-13UNC-2B x 22 mm |
| Metric Version ('M' in position 9 of model code) | | | | |
| A | Delivery Port | SAE J518C high pressure (code 62) 1 ¼" | 157 | M14 x 19 * |
| B | Suction Port | SAE J518C Std pressure (code 61) 2 ½" | 98 | M12 x 17 |

* Note: ISO 6162 quotes M12

Auxiliary Ports

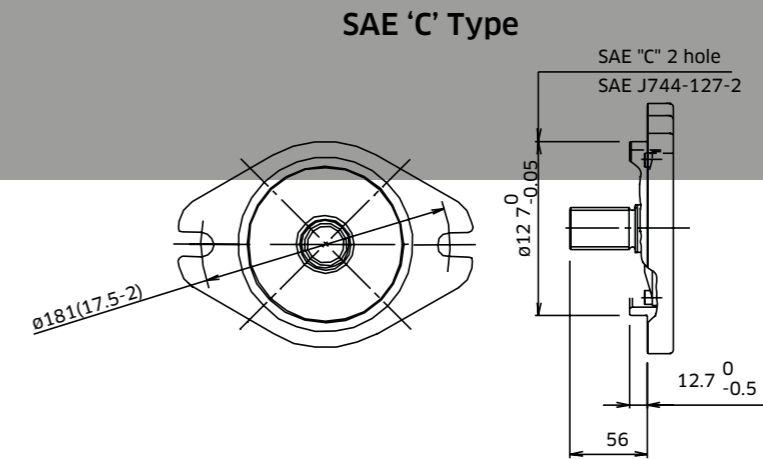
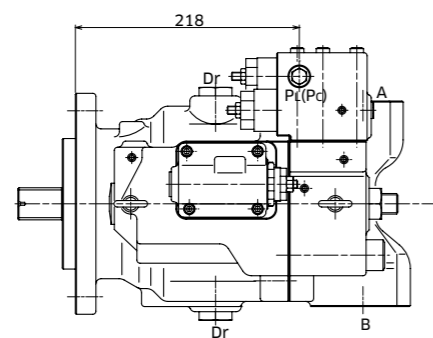
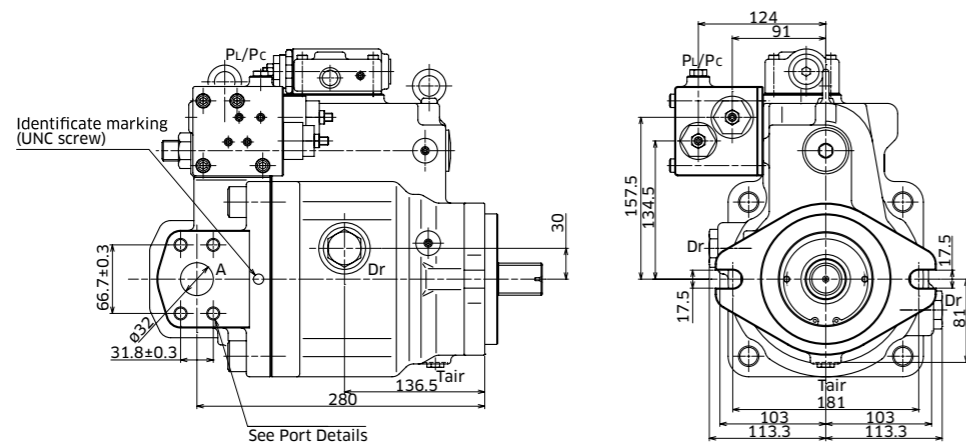
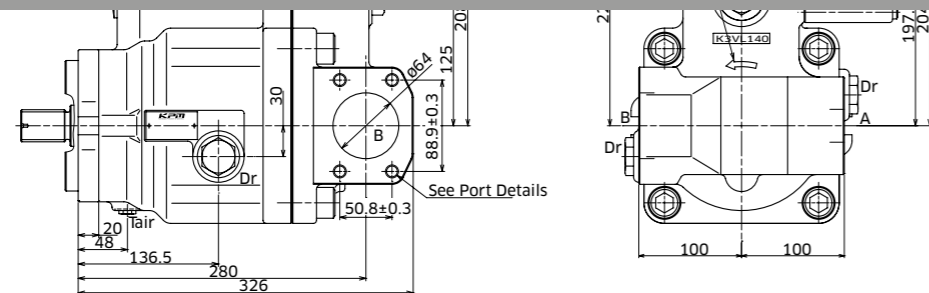
| Des. | Port Name | Port Size | Tightening Torque (Nm) |
|---|--|----------------------------------|------------------------|
| SAE Version ('S', 'K', 'C', 'R', 'U', 'X' or 'T' in position 8 of model) | | | |
| Dr | Drain Port (x2) | 1 ½-12UN-2B-19 (ISO11926-1:1995) | 170 |
| P _L /P _C | Load Sensing Port Pressure Control Port | ¾-20UNF-2B-14 (ISO11926-1:1995) | 12 |
| T _{air} * | Air Bleeder Port | ¾-20UNF-2B-14 (ISO11926-1:1995) | 12 |

ISO Version ('M' in position 8 of model code)

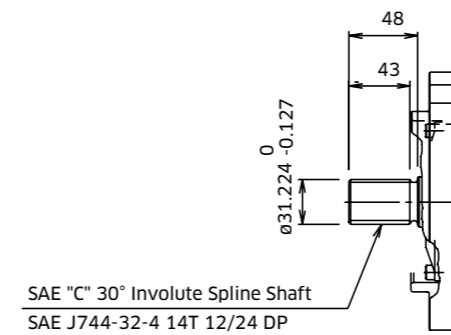
| | | | |
|--------------------------------|--|-------------------------|-----|
| Dr | Drain Port (x2) | M27 x 2-16.5 DIN 3852 | 167 |
| P _L /P _C | Load Sensing Port Pressure Control Port | M14 x 1.5-12.5 DIN 3852 | 25 |
| T _{air} | Air Bleeder Port | M14 x 1.5-12.5 DIN 3852 | 25 |

3-4 K3VL112/140 Installation (cont)

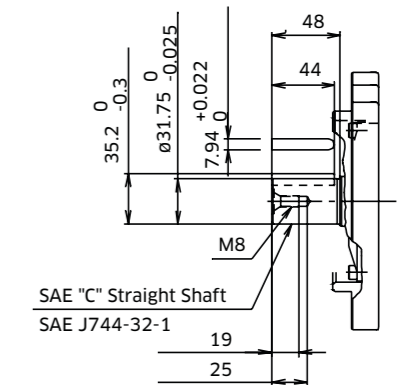
◆ K3VL112/140 Mounting Flange (2 Bolt) and Shaft Options



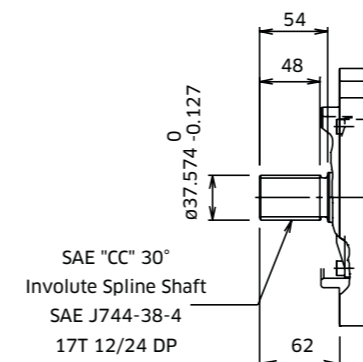
SAE 'C' Spline Shaft - Option 'C' & 'R'



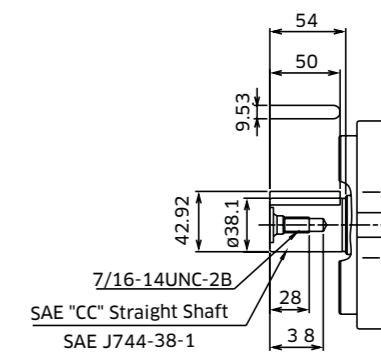
SAE 'C' Straight Shaft - Option 'X'



SAE 'CC' Spline Shaft - Option 'W' & 'T'



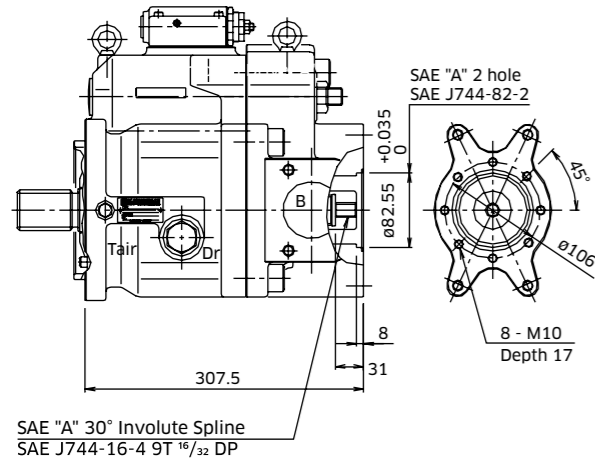
SAE 'CC' Straight Shaft - Option 'Y'



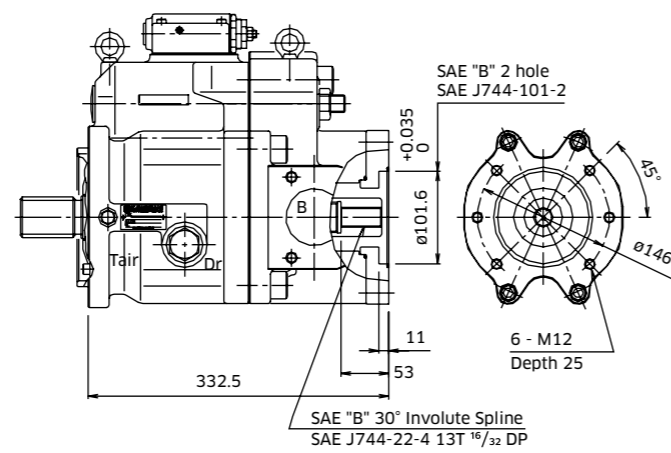
3-4 K3VL112/140 Installation (cont)

◆ K3VL112/140 Through Drive Options

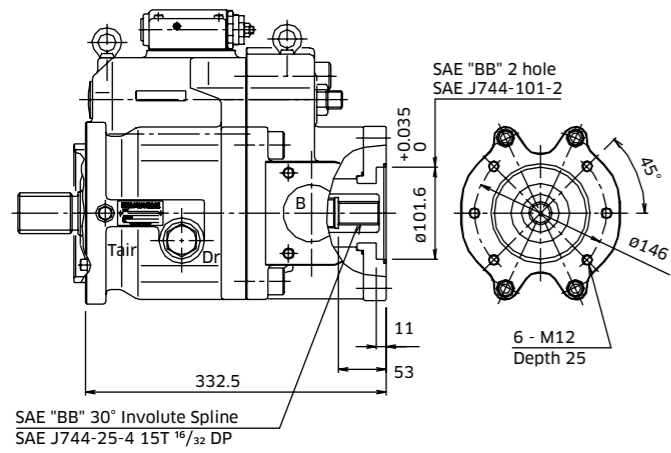
Through Drive 'A'



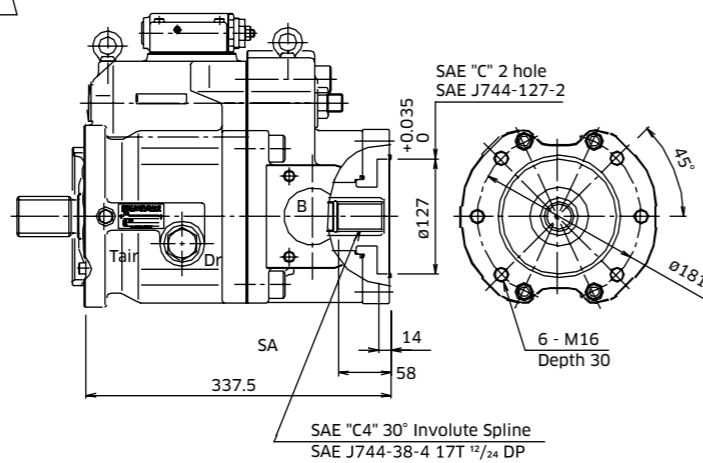
Through Drive 'B'



Through Drive 'BB'



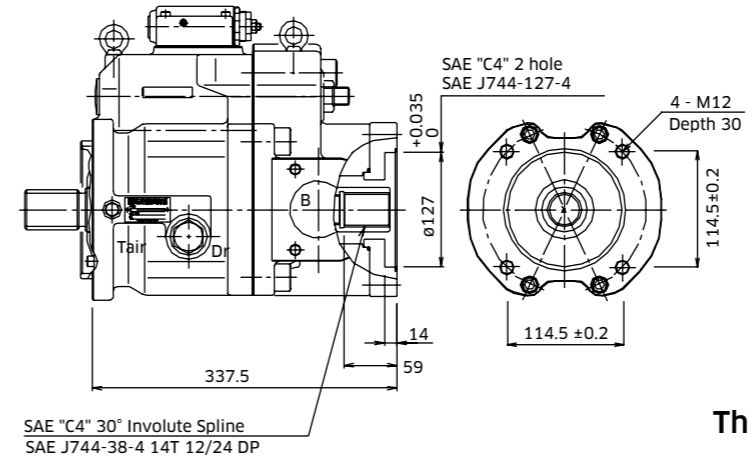
Through Drive 'C'



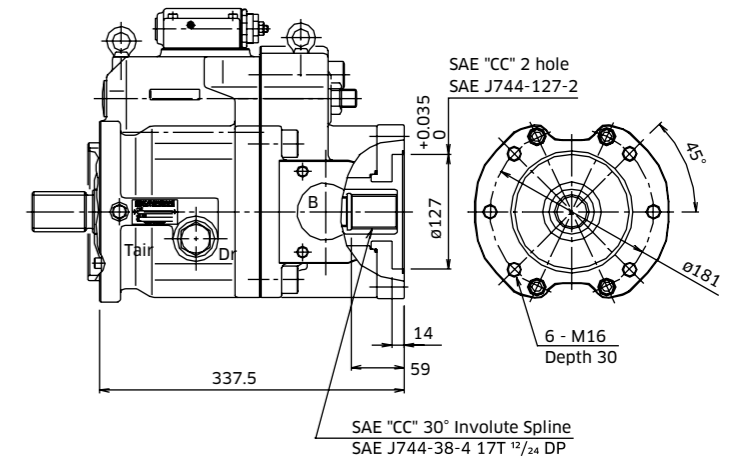
3-4 K3VL112/140 Installation (cont)

◆ K3VL112/140 Through Drive Options

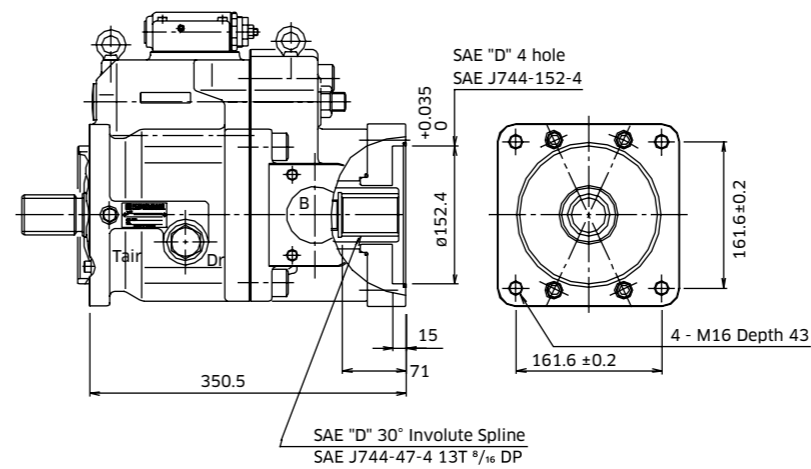
Through Drive 'C4'



Through Drive 'CC'

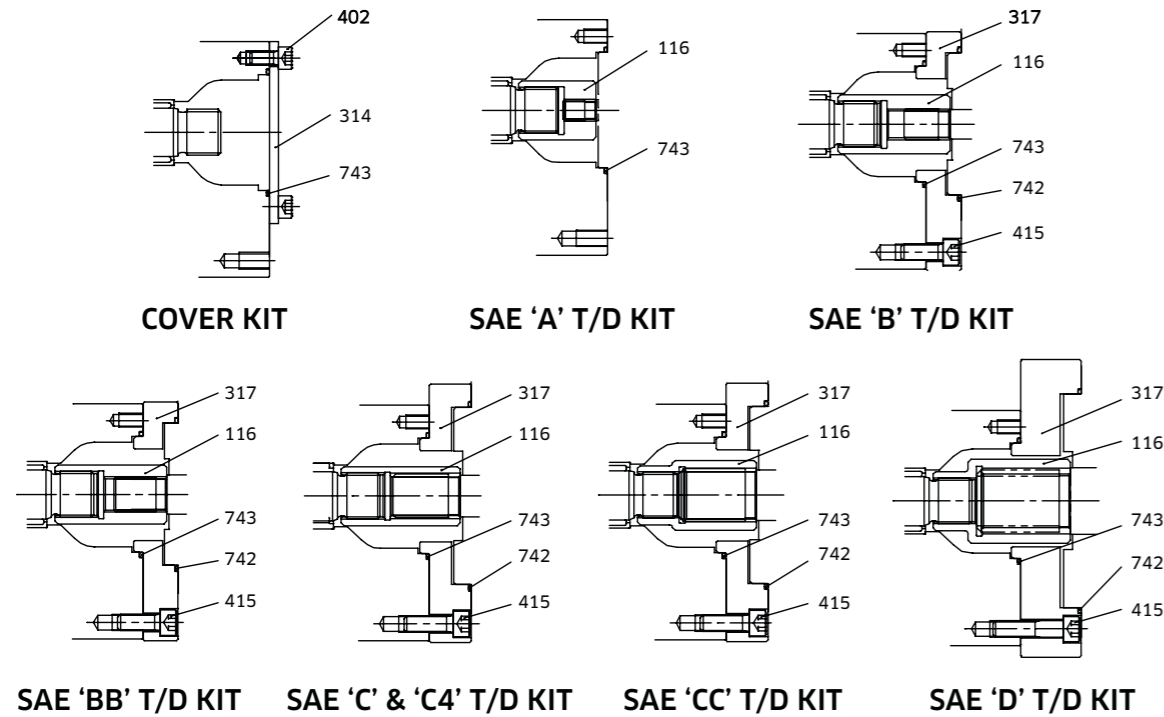


Through Drive 'D'



3-4 K3VL112/140 Installation (cont)

◆ K3VL112/140 Adaptor Kits

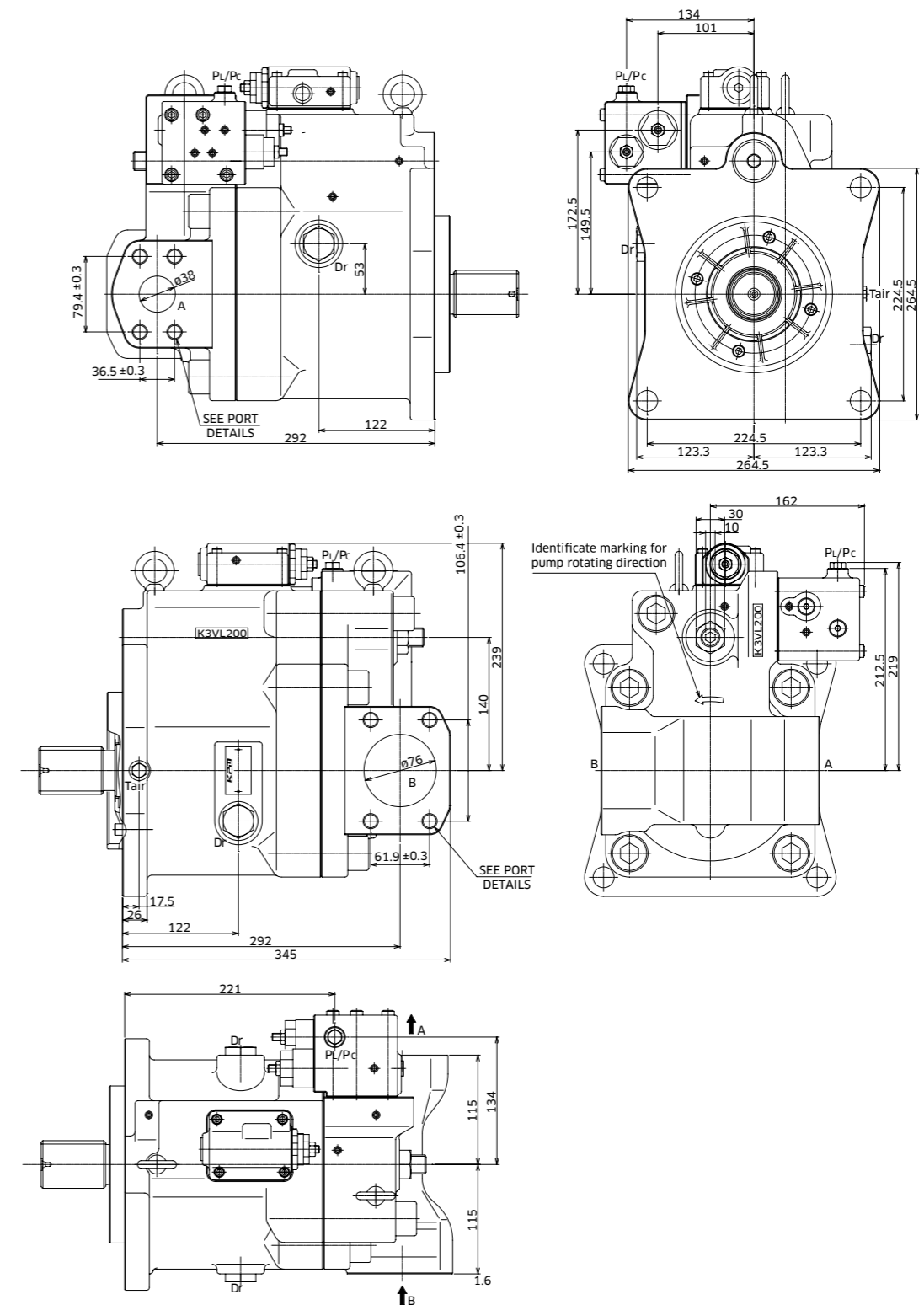


| Part Name | Qty | Cover Kit | SAE 'A' T/D Kit | SAE 'B' T/D Kit | SAE 'BB' T/D Kit |
|---------------|-----|-----------|-----------------|-----------------|------------------|
| T/D | - | 29L8TN | 29LHTA | 29LHTB | 29LHT2 |
| O-Ring | 1 | Item 743 | Item 743 | Item 743 | Item 743 |
| O-Ring | 1 | - | - | Item 742 | Item 742 |
| Screw Hex SHC | 4 | - | - | Item 415 | Item 415 |
| Screw Hex SHC | 2 | Item 402 | - | - | - |
| Subplate | 1 | - | - | Item 317 | Item 317 |
| Cover | 1 | Item 314 | - | - | - |
| Coupling | 1 | - | Item 116 | Item 116 | Item 116 |

| Part Name | Qty | SAE 'C' T/D Kit | SAE 'C4' T/D Kit | SAE 'CC' T/D Kit | SAE 'D' T/D Kit |
|---------------|-----|-----------------|------------------|------------------|-----------------|
| T/D | - | 29LHTC | 29LHTC4 | 29LHT3 | 29LHTD |
| O-Ring | 1 | Item 743 | Item 743 | Item 743 | Item 743 |
| O-Ring | 1 | Item 742 | Item 742 | Item 742 | Item 742 |
| Screw Hex SHC | 4 | Item 415 | Item 415 | Item 415 | Item 415 |
| Screw Hex SHC | 2 | - | - | - | - |
| Subplate | 1 | Item 317 | Item 317 | Item 317 | Item 317 |
| Cover | 1 | - | - | - | - |
| Coupling | 1 | Item 116 | Item 116 | Item 116 | Item 116 |

3-5 K3VL200 Installation

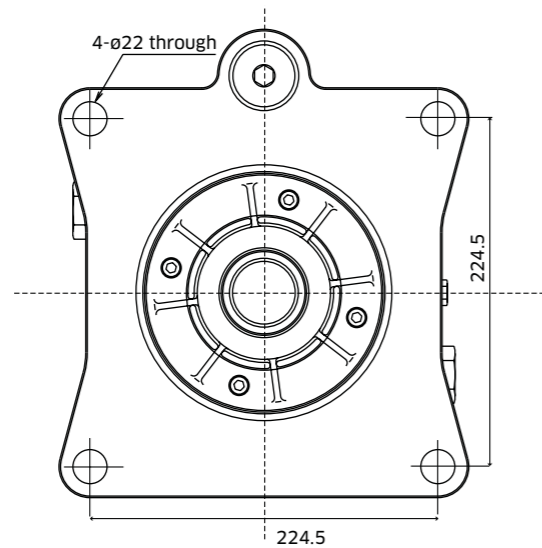
◆ K3VL200 with Cut-Off / Load Sense Control & Torque Limit Module (Clockwise Rotation)



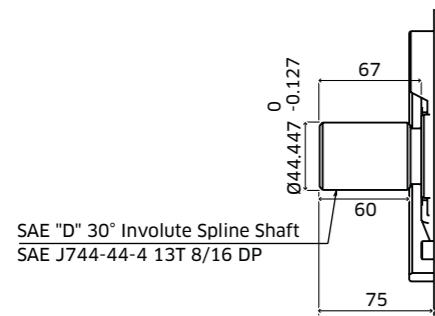
3-5 K3VL200 Installation (cont)

◆ K3VL200 Mounting Flange and Shaft Options

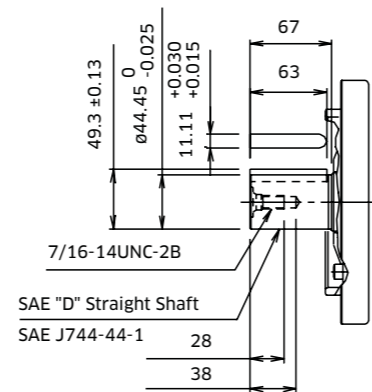
SAE Type



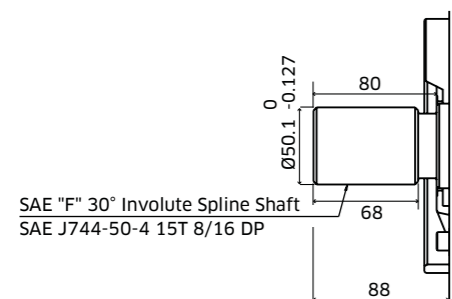
SAE 'D' Spline Shaft - Option 'S'



SAE 'D' Straight Shaft - Option 'K'



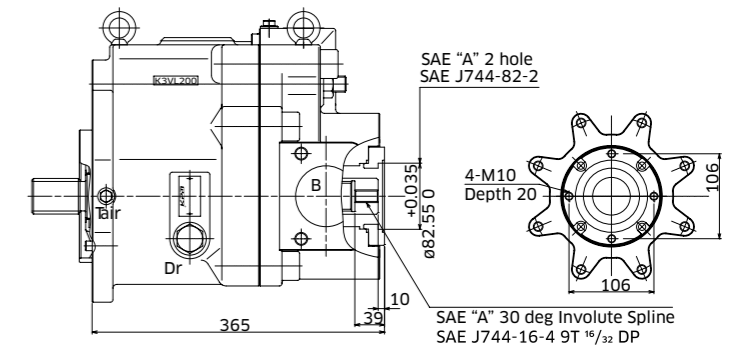
SAE 'F' Spline Shaft - Option 'F'



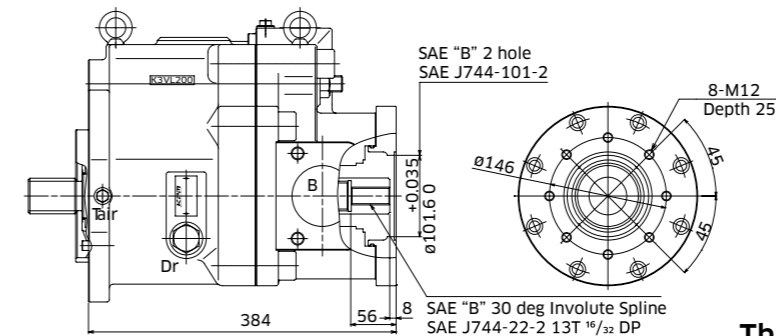
3-5 K3VL200 Installation (cont)

◆ K3VL200 Through Drive Options

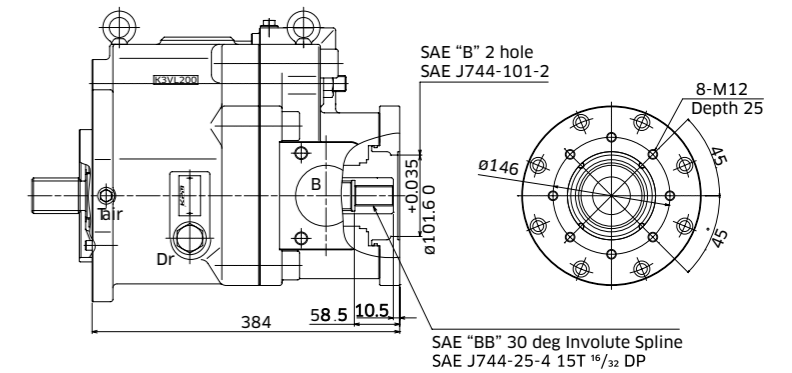
Through Drive 'A'



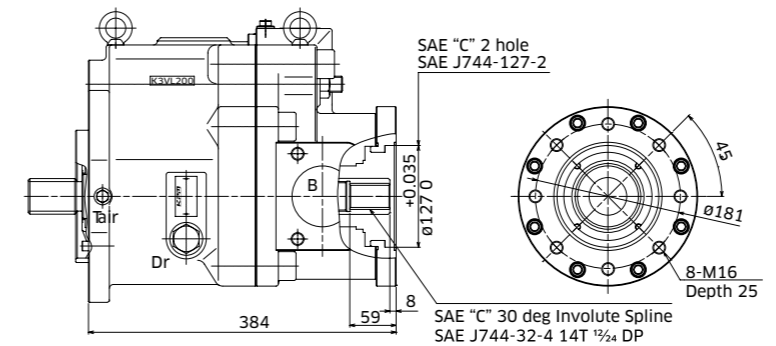
Through Drive 'B'



Through Drive 'BB'



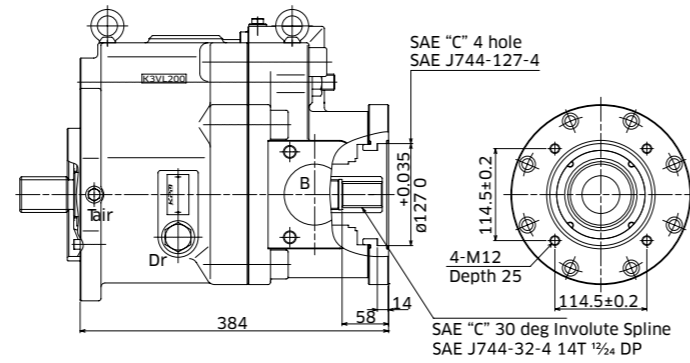
Through Drive 'C'



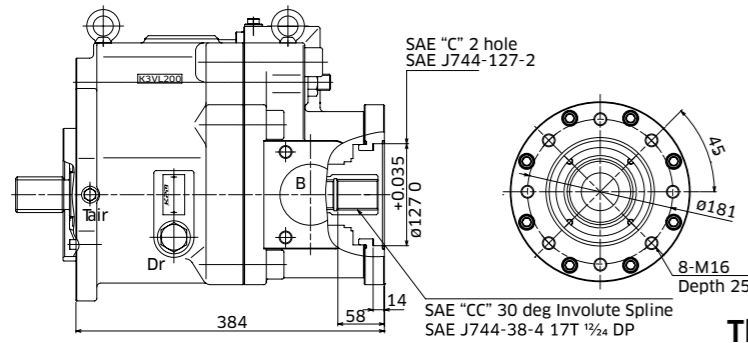
3-5 K3VL200 Installation (cont)

◆ K3VL200 Through Drive Options

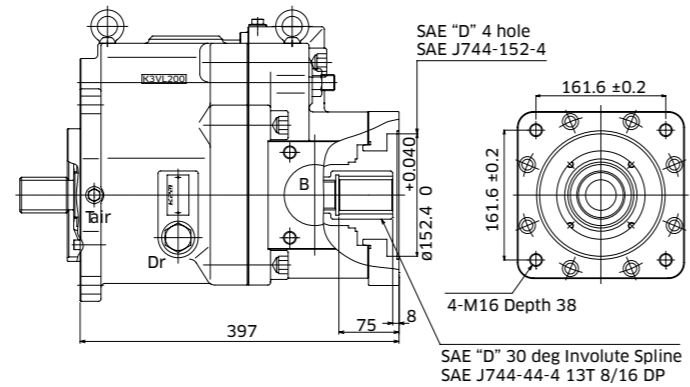
Through Drive 'C4'



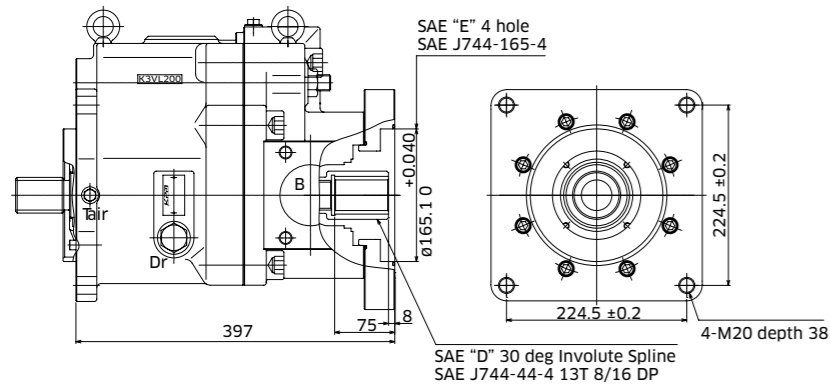
Through Drive 'CC'



Through Drive 'D'



Through Drive 'E'



3-5 K3VL200 Installation (cont)

Main SAE Flanged Ports

| Des. | Port Name | Port Size | Tightening Torque (Nm) | Flange Threads |
|------|-----------|-----------|------------------------|----------------|
|------|-----------|-----------|------------------------|----------------|

UNC Threaded Version ('S' in position 9 of model code)

| | | | | |
|---|-----------------------|---------------------------------------|-----|---------------------|
| A | Delivery Port | SAE J518C High pressure (code 62) 1½" | 235 | 5/8-11UNC-2B x 25mm |
| B | Suction Port | SAE J518C Std pressure (code 61) 3" | 235 | 5/8-11UNC-2B x 25mm |
| B | K3VL200H Suction Port | SAE J518C Std pressure (code 61) 3 ½" | 235 | 5/8-11UNC-2B x 25mm |

Metric Version ('M' in position 9 of model code)

| | | | | |
|---|-----------------------|---------------------------------------|-----|----------|
| A | Delivery Port | SAE J518C High pressure (code 62) 1½" | 235 | M16 x 24 |
| B | Suction Port | SAE J518C Std pressure (code 61) 3" | 235 | M16 x 24 |
| B | K3VL200H Suction Port | SAE J518C Std pressure (code 61) 3 ½" | 235 | M16 x 26 |

Auxillary Ports

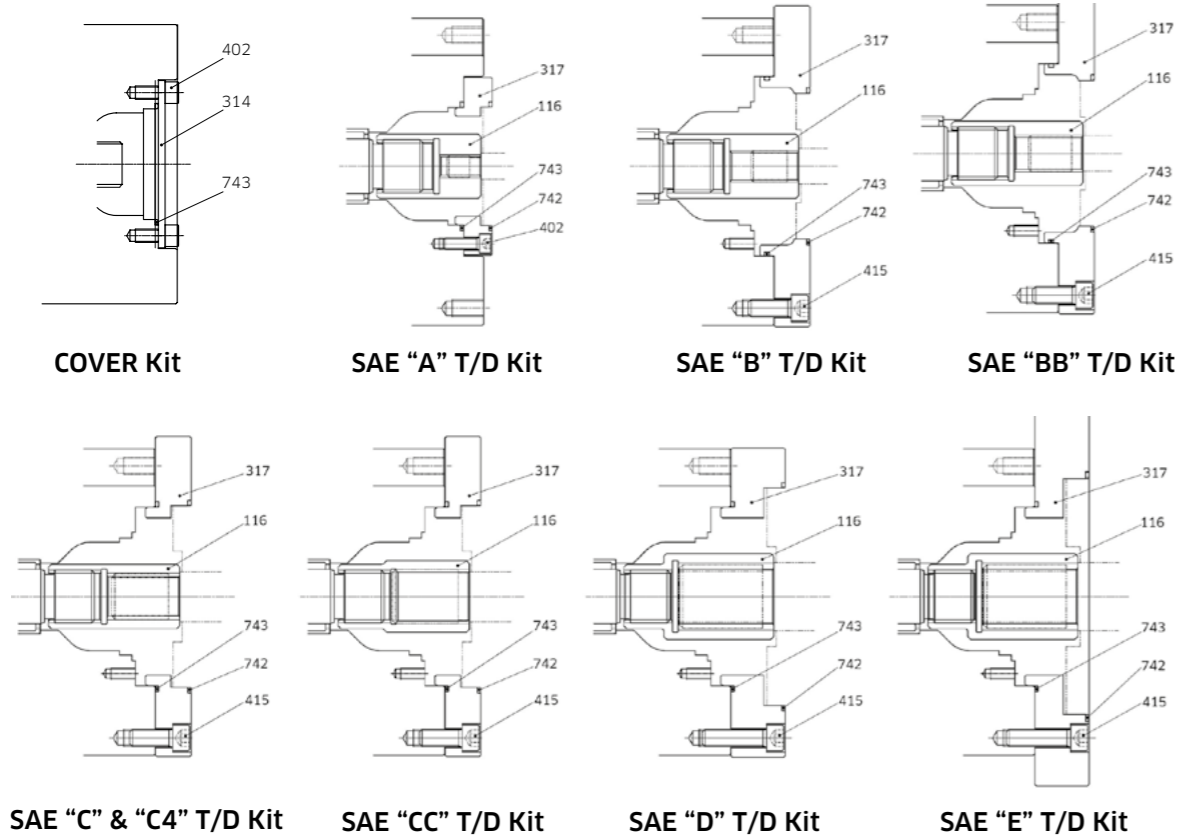
| Des. | Port Name | Port Size | Tightening Torque (Nm) |
|------|-----------|-----------|------------------------|
|------|-----------|-----------|------------------------|

SAE Version ('S', 'K' or 'F' in position 8 of model)

| | | | |
|--------------------------------|--|------------------------------------|-----|
| Dr | Drain Port (x2) | 1 1/8-12UN-2B-19 (ISO11926-1:1995) | 167 |
| P _L /P _C | Load Sensing Port Pressure Control Port | 7/16-20UNF-2B-14 (ISO11926-1:1995) | 12 |
| T _{air} | Air Bleeder Port | 7/16-20UNF-2B-14 (ISO11926-1:1995) | 12 |

3-5 K3VL200 Installation (cont)

◆ K3VL200 Through Drive Kits

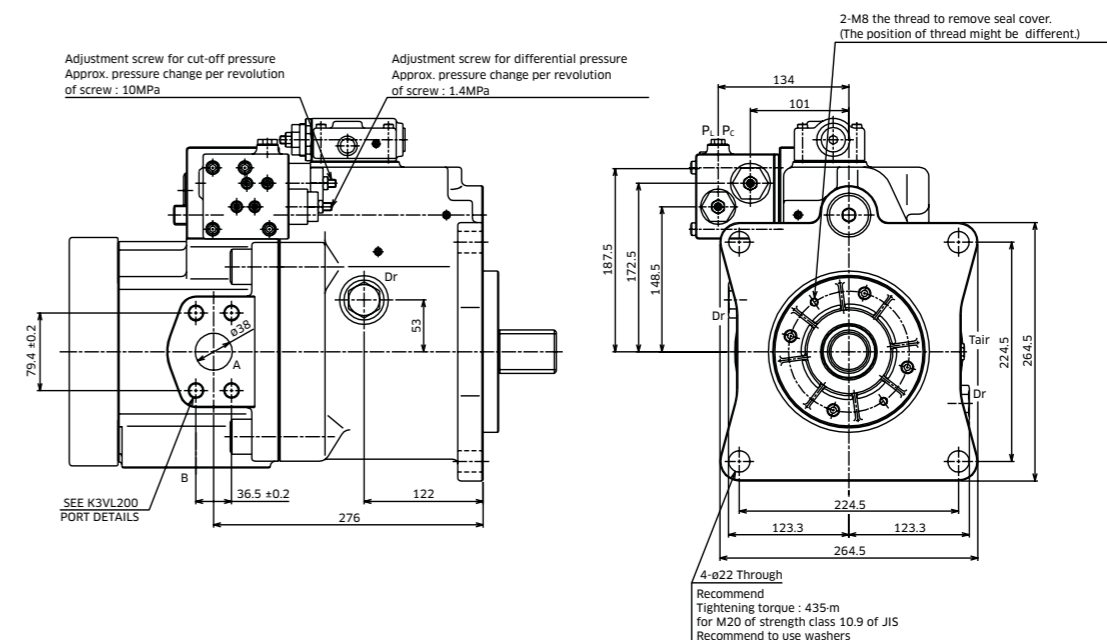
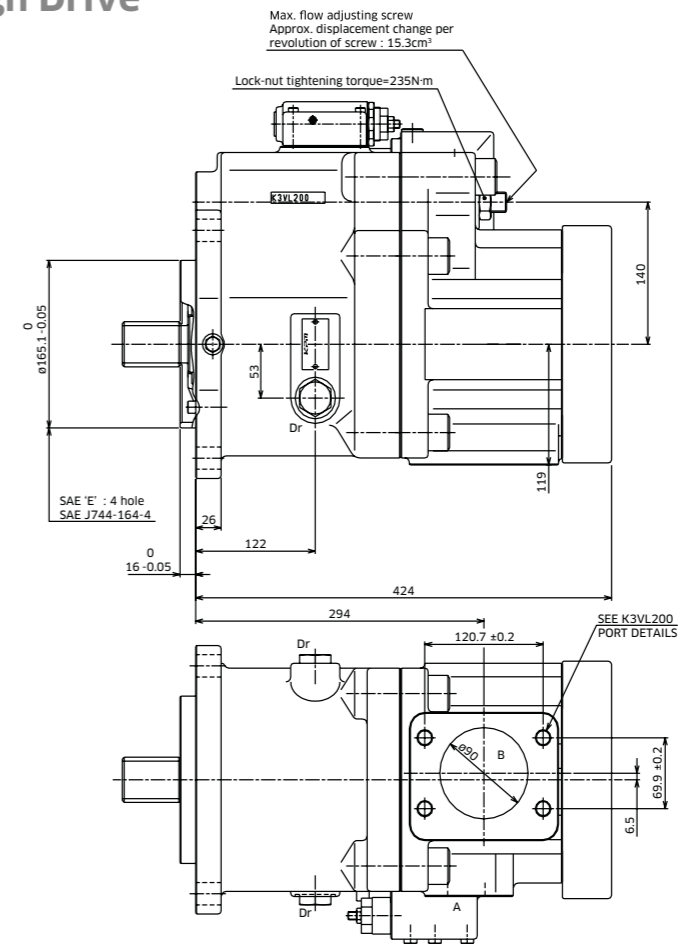


| Part Name | Qty | SAE 'A' | SAE 'B' | SAE 'BB' | SAE 'C' |
|-------------------|-----|----------|----------|----------|----------|
| T/D Kit | - | 29LKTA | 29LKTB | 29LKT2 | 29LKTC |
| Coupling K3VL200 | 1 | Item 116 | Item 116 | Item 116 | Item 116 |
| Sub Plate K3VL200 | 1 | Item 317 | Item 317 | Item 317 | Item 317 |
| SHCS | 8 | Item 402 | Item 415 | Item 415 | Item 415 |
| O-Ring | 1 | Item 743 | Item 743 | Item 743 | Item 743 |
| O-Ring | 1 | Item 742 | Item 742 | Item 742 | Item 742 |

| Part Name | Qty | SAE 'C4' | SAE 'CC' | SAE 'D' | SAE 'E' |
|-------------------|-----|----------|----------|----------|----------|
| T/D Kit | - | 29LKTC4 | 29LKT3 | 29LKTD | 29LKTE |
| Coupling K3VL200 | 1 | Item 116 | Item 116 | Item 116 | Item 116 |
| Sub Plate K3VL200 | 1 | Item 317 | Item 317 | Item 317 | Item 317 |
| SHCS | 8 | Item 415 | Item 415 | Item 415 | Item 415 |
| O-Ring | 1 | Item 743 | Item 743 | Item 743 | Item 743 |
| O-Ring | 1 | Item 742 | Item 742 | Item 742 | Item 742 |

3-6 K3VL200H Installation

◆ N Type Through Drive

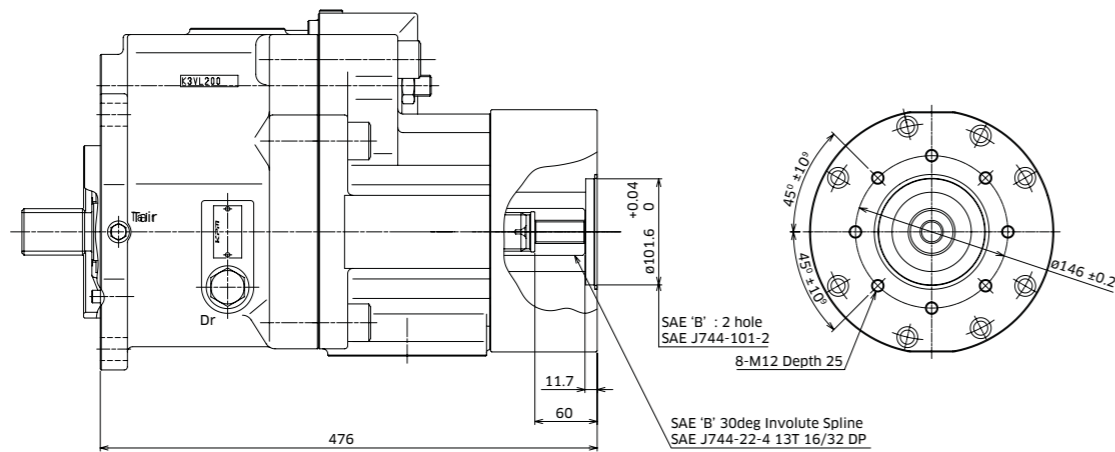


3-6 K3VL200H Installation (cont)

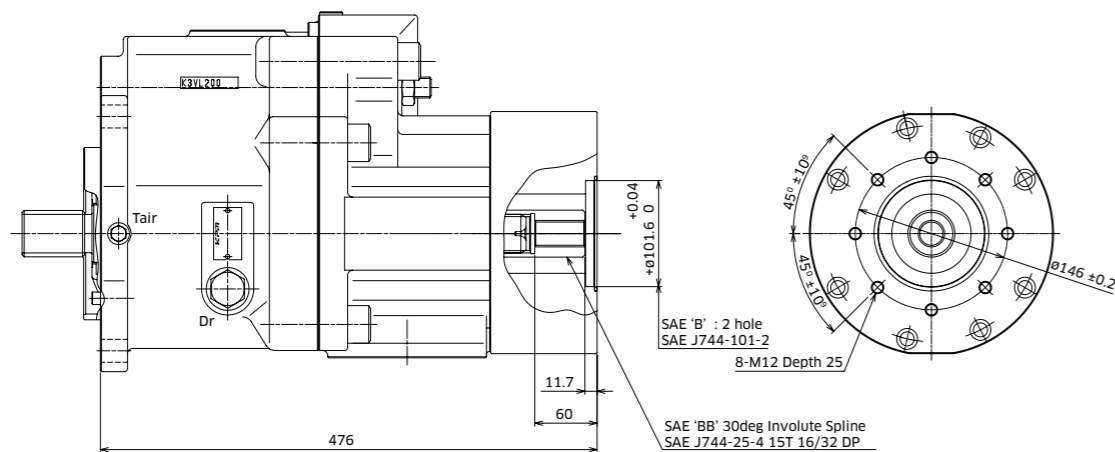
SAE 'A' Throughdrive

Please contact KPM UK for dimensions.

SAE 'B' Throughdrive



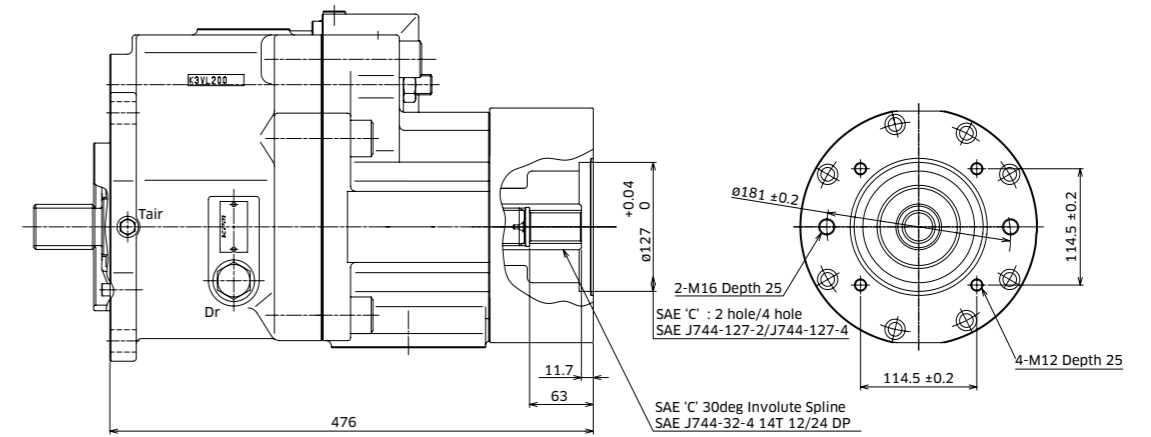
SAE 'B-B' Throughdrive



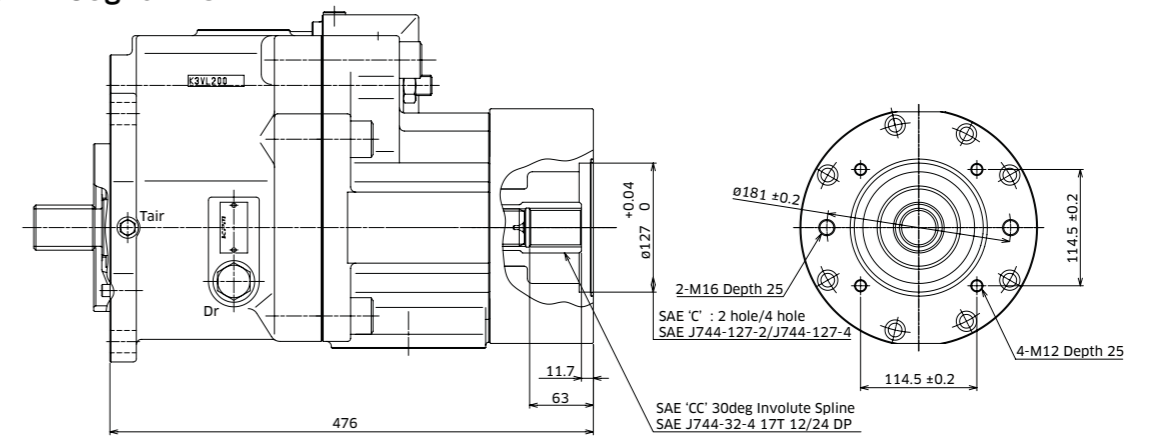
Note: For K3VL200H shaft options please refer to page 62.

3-6 K3VL200H Installation (cont)

SAE 'C' Throughdrive



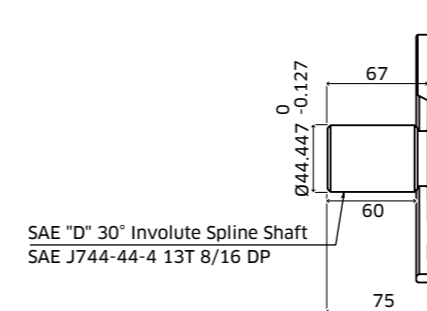
SAE 'C-C' Throughdrive



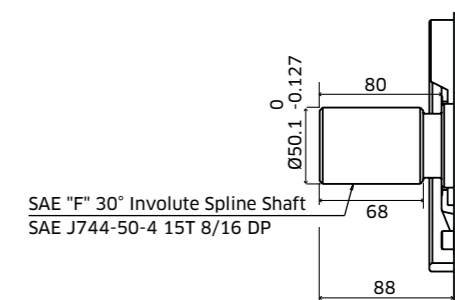
SAE 'C4' Throughdrive - Please contact KPM UK for dimensions.

◆ Shaft Options

SAE 'D' Spline Shaft - Option 'S'

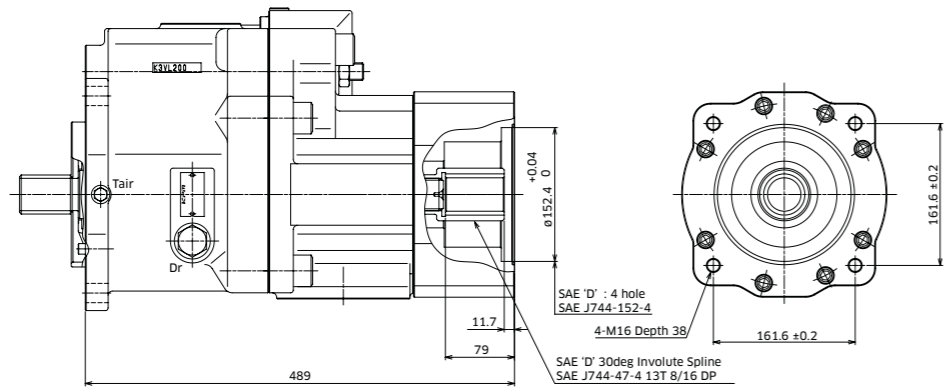


SAE 'F' Spline Shaft - Option 'F'

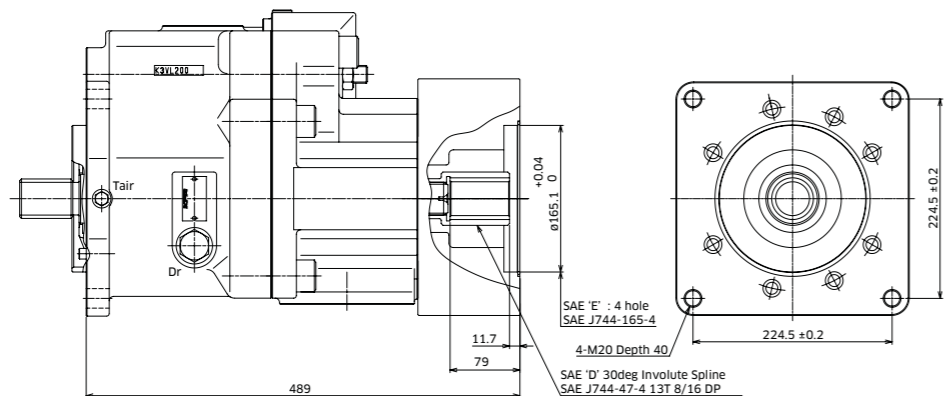


3-6 K3VL200H Installation (cont)

SAE 'D' Throughdrive



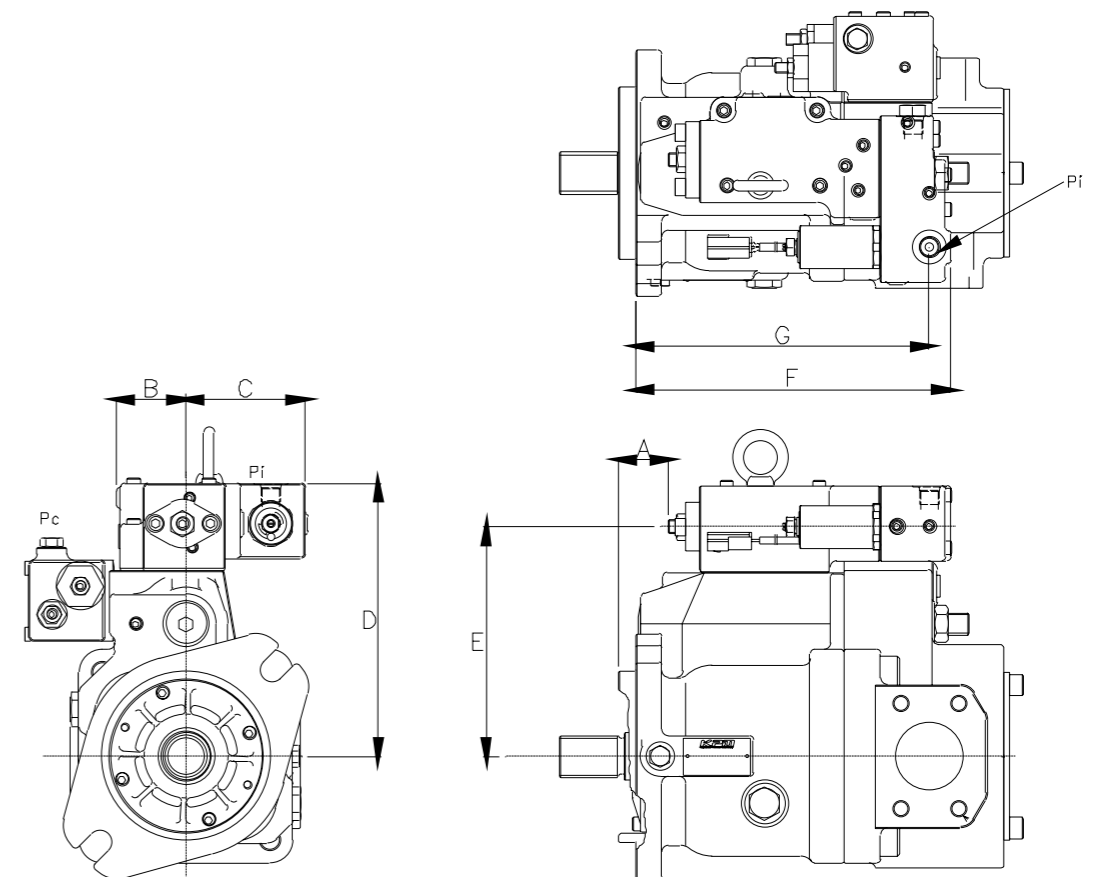
SAE 'E' Throughdrive



| Part Name | Qty | SAE 'A' | SAE 'B' | SAE 'BB' | SAE 'C' |
|-------------------|-----|----------|----------|----------|----------|
| Coupling K3VL200 | 1 | Item 116 | Item 116 | Item 116 | Item 116 |
| Sub Plate K3VL200 | 1 | Item 317 | Item 317 | Item 317 | Item 317 |
| SHCS | 8 | Item 407 | Item 407 | Item 407 | Item 407 |
| O-Ring | 1 | Item 743 | Item 743 | Item 743 | Item 743 |
| O-Ring | 1 | Item 742 | Item 742 | Item 742 | Item 742 |

| Part Name | Qty | SAE 'C4' | SAE 'CC' | SAE 'D' | SAE 'E' |
|-------------------|-----|----------|----------|----------|----------|
| Coupling K3VL200 | 1 | Item 116 | Item 116 | Item 116 | Item 116 |
| Sub Plate K3VL200 | 1 | Item 317 | Item 317 | Item 317 | Item 317 |
| SHCS | 8 | Item 407 | Item 407 | Item 407 | Item 407 |
| O-Ring | 1 | Item 743 | Item 743 | Item 743 | Item 743 |
| O-Ring | 1 | Item 742 | Item 742 | Item 742 | Item 742 |

3-7 Electrical & Hydraulic Displacement Control Installation (Type Q0, E*)



Installation Dimensions (mm)

| Pump Size | A | B | C | D | E | F | G |
|-------------|----|----|----|-----|-----|-----|-----|
| K3VL45/60 | 21 | 52 | 90 | 187 | 157 | 226 | 210 |
| K3VL80 | 25 | 59 | 83 | 202 | 172 | 233 | 217 |
| K3VL112/140 | 38 | 64 | 78 | 244 | 214 | 247 | 231 |
| K3VL200(H) | 57 | 61 | 80 | 258 | 229 | 257 | 249 |

3-8 Unloading & Proportional Pressure Control Installation

Unloading valve module (Type N, M)

| Pump Size | A | B |
|-------------|-----|-----|
| K3VL45/60 | 169 | 155 |
| K3VL80 | 169 | 166 |
| K3VL112/140 | 202 | 190 |
| K3VL200(H) | 212 | 205 |

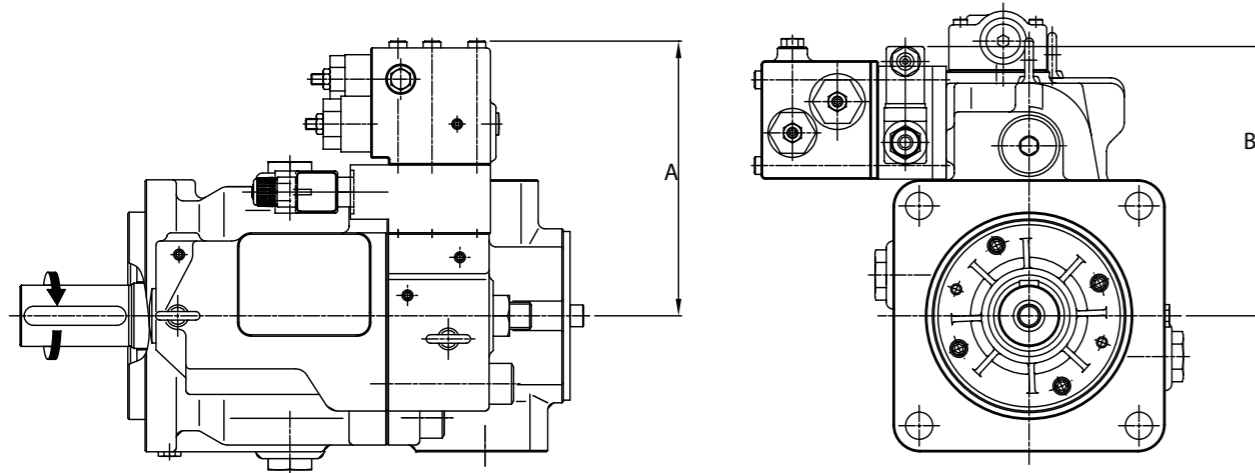
Proportional pressure module (*V)

| Pump Size | A | B |
|-------------|-----|-----|
| K3VL45/60 | 179 | 233 |
| K3VL80 | 179 | 244 |
| K3VL112/140 | 212 | 280 |
| K3VL200(H) | 222 | 295 |

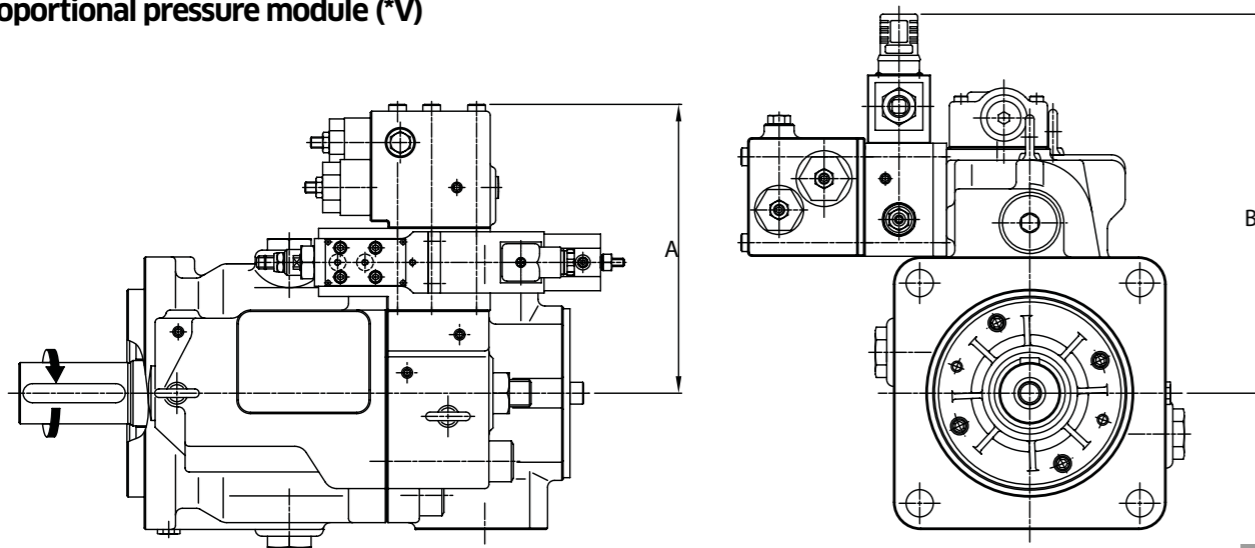
A: Distance between the centre line of the pump and the top of the bolt head for the cut off regulator.

B: Distance between the centre line of the pump and top of the solenoid valve.

Unloading valve module (Type N, M)



Proportional pressure module (*V)



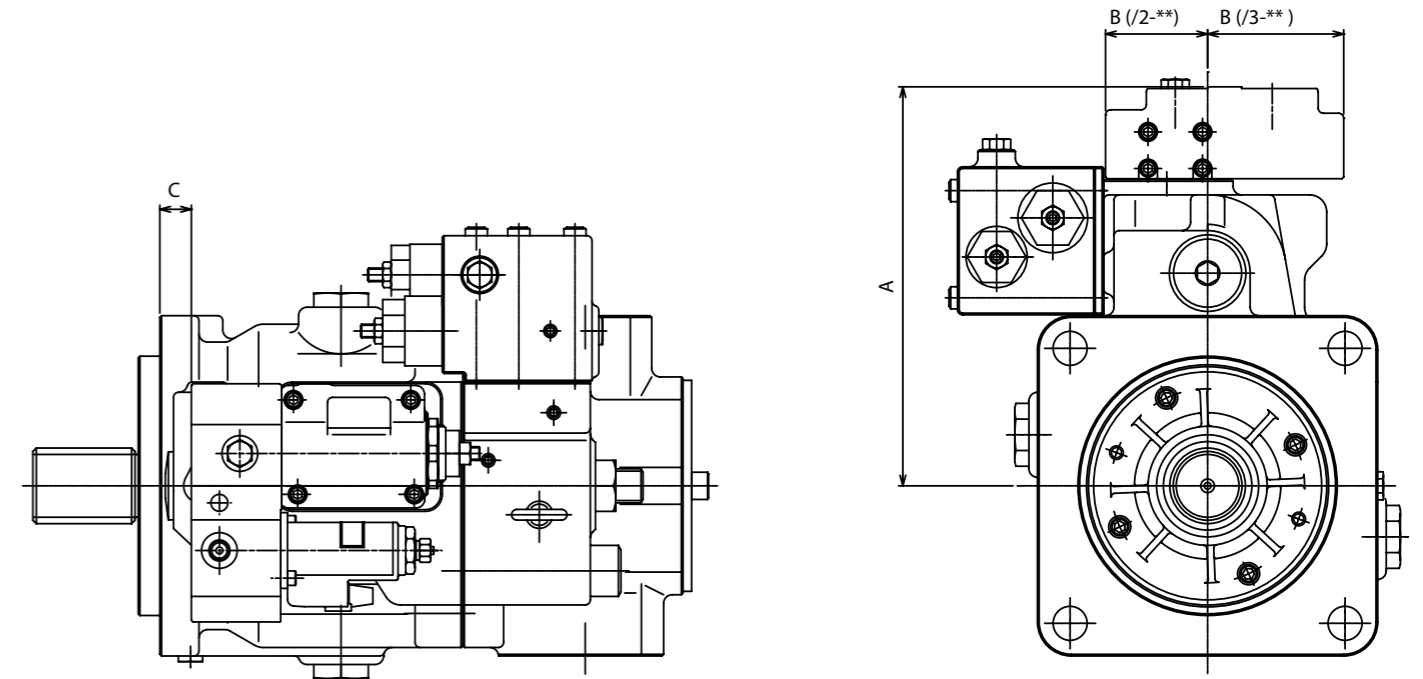
3-9 Power Shift Control Installation

/2-** Hydraulic Power Shift

| Pump Size | A | B | C |
|-------------|-----|----|---------|
| K3VL80 | 182 | 59 | 5 |
| K3VL112/140 | 224 | 59 | 4B 33.7 |
| | | | 2B 63.7 |
| K3VL200(H) | 239 | 59 | 51.5 |

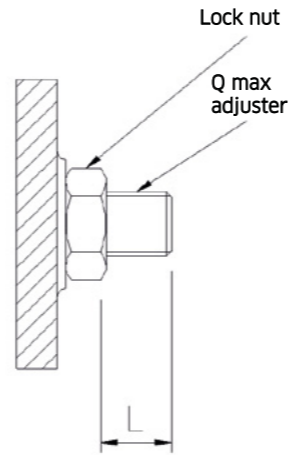
/3-** Electronic Power Shift

| Pump Size | A | B | C |
|-------------|-------|----|---------|
| K3VL80 | 193 | 80 | 3.5 |
| K3VL112/140 | 235 | 80 | 4B 18.5 |
| | | | 2B 48.5 |
| K3VL200(H) | 249.5 | 80 | 36 |

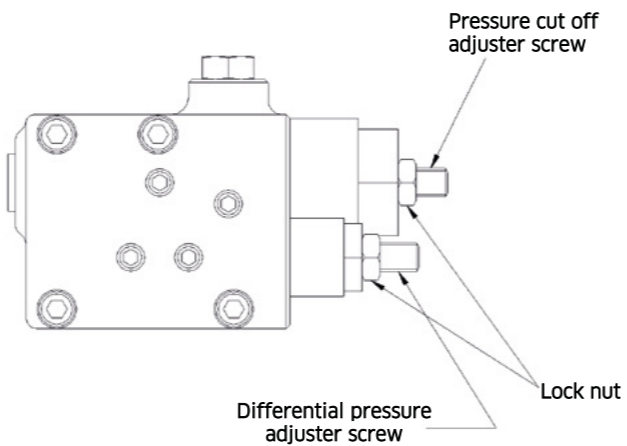


3-10 Pump Adjustments

| Max displacement adjustment | Pump | K3VL45 | K3VL60 | K3VL80 | K3VL112 | K3VL140 | K3VL200(H) |
|----------------------------------|-----------------|----------|----------|----------|---------|---------|------------|
| Adj. screw Allen key size | mm | 8 | 8 | 8 | 10 | 10 | 10 |
| Displacement change per turn | cm ³ | 4.9 | 6.1 | 6.0 | 11.5 | 12.0 | 15.3 |
| Adjustable range of displacement | cm ³ | 16-45 | 24-60 | 35-80 | 56-112 | 70-140 | 100-200 |
| Length of adjustment range (L) | mm | 0.5-12.1 | 0.5-12.1 | 0.5-15.0 | 3.8-16 | 1.0-16 | 8.9-25.3 |
| Lock nut size | mm | 24 | 24 | 24 | 30 | 30 | 30 |
| Lock nut tightening torque | Nm | 128 | 128 | 128 | 235 | 235 | 235 |



| Regulator Adjustment | Pump | K3VL28/45/60/80 | K3VL112/140/200 |
|---------------------------------------|------|-----------------|-----------------|
| Adjustment screw Allen key size | mm | 4 | 4 |
| Pressure cut off change per turn | bar | 80 | 100 |
| Differential pressure change per turn | bar | 13 | 14 |
| Lock nut size (across flats) | mm | 8 | 8 |
| Lock nut tightening torque | Nm | 16 | 16 |

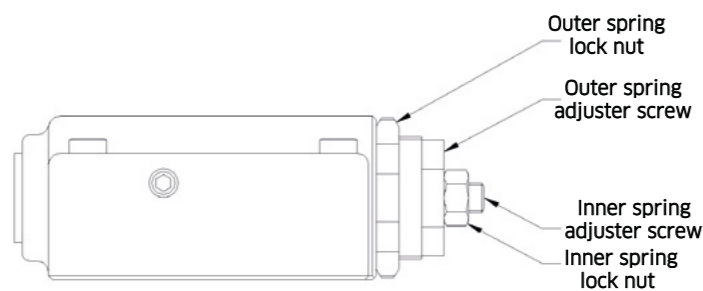


*1 Clockwise rotation of a screw produces an increase of the adjustment

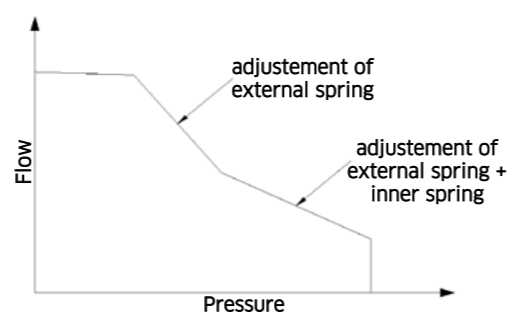
Torque limiter adjustments

| | | |
|---|----|-----|
| Outer spring adjuster screw: external hex | mm | 27 |
| Outer spring lock nut size | mm | 41 |
| Outer spring lock nut tightening torque | Nm | 102 |
| Inner spring adjuster screw: internal hex | mm | 4 |
| Inner spring lock nut size | mm | 13 |
| Inner spring lock nut tightening torque | Nm | 16 |

Torque limiter module



Torque limiter curve



NOTES

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Data sheet: P-2001/08.18