

THM
HYDRAULICS

THM HUADE HYDRAULICS (P) LTD

F-127, PHASE - VIII, FOCAL POINT, LUDHIANA - 141010 (PUNJAB) INDIA

PHONE: +91 88722-42200, +91 88722-42500

E-mail: salesho@thmhuate.com

Website: www.thmhuate.com



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About Us

THM Huade Hydraulics (P) Ltd, Ludhiana, is the Indian arm of Beijing Huade Hydraulics Industrial Group Co., Ltd., which is one of the largest manufacturers of Hydraulics components in China, holding a strong presence and manufacturing base with 5 plants for different product groups with the technology of the group introduced from Germany, the range is comprehensive and includes a full spectrum of valves and pumps.

Beijing Huade Hydraulics, is a large scale Chinese government initiative originally established as a joint venture company in Beijing, PRC during/on July 13th, 1995, named as "Rexroth (Beijing) Hydraulic Co.Ltd."

The joint venture was terminated in 2002 and the company was renamed as Beijing Huade Hydraulics Industrial Group Co. Ltd, hence operating independently across the globe.

Besides representing these quality products, THM-Huade can also design and produce hydraulic systems for various applications. We ensure that our customers are given all the necessary support and taken care of from the day they use our products.

The Vision of the group : "To be the most preferred suppliers in this field of Hydraulics." We are accumulating stocks and appointing dealer network to offer our products and the shelf.

Channel Partner :



THM
HYDRAULICS

Hydraulic Components & Control Systems



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HYDRAULIC PUMPS

OPEN CIRCUIT AXIAL PISTON PUMPS

A2F

Fixed-displacement pump/motor A2F



Size: 10, 12, 23, 28, 45, 55, 63, 80, 107, 125, 160, 200, 250, 355, 500

Note:

Fixed displacement pump/motor A2F is an axial piston of bent axis design, suitable for use in both open and closed circuit hydrostatic drives. Output flow is proportional to the flow of fluid through the pump. Output speed is proportional to the flow of fluid through the motor and inversely proportional to motor displacement. Output torque increase with the pressure drop across the motor between the high and low pressure sides.

Particular Characteristics:
With high performance spheric valve plate rotary group.
Automatic centering
High Efficiency
Long Life
Low Noise

A11VO/A11VLO

Variable displacement pump with axial piston drive



Displacement: 40~260 ml/r

Note:

Variable displacement pump with axial piston drive swash plate design for hydrostatic drives in open circuit

Features:
Variable displacement pump with axial piston drive swash plate design for hydrostatic drives in open circuits. Designed primarily for use in mobile applications. Pump operation either self-priming, with tank charging or charging pump. A comprehensive range of variable units is available for different control functions. Power can be adjusted from the outside, even when the machine is running. The through drive is suitable for attachment of gear pumps and axial piston pumps up to the same size, i.e. 100% through drive. The volume flow is adjustable in proportion to the drive speed.

A2FO

Fixed-displacement bent axis piston pump



Size: 10, 12, 16, 23, 28, 32, 45, 56, 63, 80, 90, 107, 125, 160, 180, 200

Note:

Axial piston pump, bent axis type, fixed displacement suitable for open circuits.

Features:
Fixed displacement pump A2FO of axial piston, bent axis design is made suitable for hydrostatic drives in open circuits, suitable for use in mobile or industrial application, output flow is proportional to drive speed and displacement, the drive shaft bearings are designed to give the service life expect in these areas of operation, careful selection for the displacements offered, permit sizes to be matched to practically every application

A4VSO

Variable displacement pump A4VSO



Size: 40, 71, 125, 180, 250, 300, 355

Note:

Pump A4VSO of swash plate design is design for hydrostatic transmission in an open circuit. Flow is proportional to input speed & displacement, and is infinitely variable by adjustment of the swash plate.

Feature:
Slot-control swash plate design, continuous variable displacement, good suction characteristics, permissible continues operating pressure 350bar, low noise level, long service life, the drive shaft capable of absorbing the axial and radial loads, high power/weight ratio, modular design, the pump combinations possible, pump position optional, mounting position optional, operation on HFC Fluids under reduced operational parameter possible in preparation.

A10V(S)O

Variable displacement Axial Piston Pump

Size: 10, 18, 28, 45, 71, 100, 140



Note:

Axial piston pump, swash plate design for hydrostatic open circuit system used in varied medium duty application in industrial & mobile machines.

Features:
Flow is proportional to drive speed and displacement it can be infinitely varied by adjustment of the swash plate ISO mounting flange, flange connection to SAE metric, 2 case drain port, good suction characteristics, permissible continuous pressure 280 bar, low noise level, long service life, axial and radial loading of drive shaft possible, high power-weight ratio, wide range of controls, short response times, through drive option for multi-circuit system

OPEN CIRCUIT AXIAL PISTON PUMPS

A10VSODFE/DFEE

Control type SYDFE/SYDFFEE



Size: 28, 45, 71, 100, 140

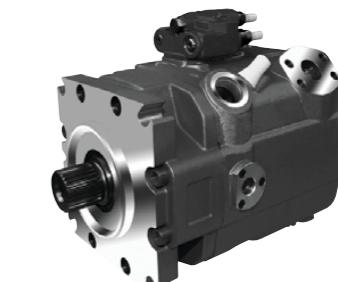
Note:

Axial piston pump, swash plate design for hydrostatic open circuit system used in varied medium duty application in industrial & mobile machines.

Features:
Flow is proportional to drive speed and displacement it can be infinitely varied by adjustment of the swash-plate ISO mounting flange, flange connection to SAE metric, 2 case drain port, good suction characteristics, permissible continuous pressure 280 bar, low noise level, long service life, axial and radial loading of drive shaft possible, high power-weight ratio, wide range of controls, short response times, through drive option for multi-circuit system

A15VSO

Variable Axial Piston Pump



Open circuit
Sizes 110 to 280
Nominal pressure: 350 bar
Maximum pressure: 420 bar

Features:
Variable axial piston pump of swash plate design for hydrostatic drives in open circuit. The flow is proportional to the drive speed and displacement. Compact design High efficiency High power density Low noise level

A7V

Variable displacement pump A7V



Size: 20, 28, 40, 55, 58, 80, 78, 107, 117, 160, 250, 355, 500

Note:

Variable displacement pump, axial piston bent axis design, for hydrostatic transmissions in open circuits. The flow is proportional to the drive speed and the displacement and steplessly variable at constant drive speed. Comprehensive program of control devices for every control and regulating function. Operation on both mineral and fire-resistant fluids

Features:
High performance rotary group, the drive shaft capable of absorbing the radial loads, long life, low noise.

A8V

Variable double pump A8V



Size: 28, 55, 58, 80, 107, 125, 160

Note:
Two variable pumps in a common housing, the splitter box, an SAE flange for direct mounting on to the prime mover and the control device usually summation HP control. Flow is proportional to speed by change the swivel angle.

Features:
The various design options with auxiliary drive and the possibility of multi-circuit control allow optimum matching to individual drive applications. High pressure long service life.

A2VK

Variable Pump



Size: 12, 28, 55, 107

Series 1 and 4, for open circuits

Nominal pressure upto 250 bar

Features:
High metering accuracy and repeatability of the variable flows. Manual control via handwheel with built-in-precision measuring scale or alternatively mechanical rod control, for mounting pneumatic or hydraulic control cylinders (remote control). Operating pressure up to 250 bar. Low suction pressure, even when pumping highly viscous fluids. Very little pulsation of flow.

"A" Series

Variable displacement piston pump



High volumetric efficiency upto 98% and overall efficiency is more than 90%. Low noise level. The "A" Series variable displacement pump accomplish high energy saving characteristics, widely used in plastic injection machinery, machine tools and medium duty industrial application covering a broad segment of the industry requirement. Two kinds of control type, which are pressure compensator type("01" type) and proportional electro-hydraulic load sensing type("04" type).

AR SERIES

Axial Piston Pump



Nominal pressure: 165 bar
Max. Pressure: 210 bar
Features:
Small and light design, space saving. Special alloy material, power saving, low noise, long life. Easy to assemble, clean appearance and light weight. Application for CNC lathe machine, bending machine, punch hydraulic press, high efficiency machine.

Sizes : 10, 16, 22 cc/rev

HY SERIES

Variable displacement axial piston pump



Displacement: 10~320 ml/r
Max. pressure up to 400 bar

Features:
The HY14-1B Hydraulic Pump is of axial piston type with hydrostatic film lubrication of bearing. It makes a feature of compact size, light weight, high efficiency, longer life, simple construction and easy maintenance. This Hydraulic Pump nominal displacement up to (10, 25, 63, 160, 250) ml/r and carries its rating pressure up to 315Bar and a maximum pressure up to 400Bar, and can run with a speed upto 1500rpm.



...in service more than a decade!

OPEN CIRCUIT AXIAL PISTON PUMPS

MV Series

Bi-directional Axial Piston Pump

For Servo Applications



Sizes: 8, 10, 12, 15, 18, 23, 25, 38, 42, 50, 70
Max. Pressure 250 bar

Features:
MV Series pump, new design for changeable angle of swash plate, wide applications. Special design, low noise level during full pressure time. Modular control, easy to design system, advantages are: power saving, small size, low cost. Low power consuming, low oil temperature rising, suitable applications for assembling small power units

CY SERIES

Fixed-displacement pump/motor



Size 1.5....400

Series 14-1B
Nominal pressure up to 350 bar

Features:
CY 14 type axial piston pump is to use the oil pan with oil, piston cylinder axis of rotation between the shoe and the variable because the head, using a hydrostatic equilibrium structures with oil pan and cylinder block, as compared with other types of pumps, it has a simple structure, small size, high efficiency, long life, light weight, strong self-priming capacity. It is suitable for machine tools, forging, metallurgy, engineering, mining and other machinery, and other hydraulic transmission system. The pump just want to change the motor oil pan can also be made using a hydraulic motor.

TP Series

Bi-Directional Axial Piston Pump

Flow: 30, 50, 90, 110, 140, 170, 200, 250, 320, 480;
Max. Pressure: 320 bar



PV

Axial Piston pump



Size: 16.....270
Nominal pressure upto 350 bar

Features:
New type of swash plate and large servo piston with strong bias spring achieves fast response, reduce the noise due to active decompression of system at down stroke. Wide application in automobile industrial, ships, forging machines, tire machines, injection moulding machines, machine tools, special purpose machine. Nine pistons and new pre-compression technology (pre-compression filter volume) result in unbeaten low outlet flow pulsation. Rigid and FEM - optimized body design for lowest noise level.

PVB

Axial piston pump



Sizes: 5, 6, 10, 15
Max Pressure: 210Bar
Max Flow: 391.6 l/min

Introduction
Variable displacement axial-piston pumps in swashplate design are used for hydraulic actuators combined of pump and motor, operating in closed circuit systems. They are used for driving mobile machines like harvesters or rotating technological equipment like transit mixer drums etc.

K-AP

Bent Axis Piston Pump



Sizes: 22 to 125 cc/rev
Max. pressure up to 350 bar
Maximum Speed: 4300 r/min
Minimum Speed: 1750 r/min

K3V Series

Axial Piston Pump



Open circuit
Displacement: 65~280 cm³/rev
Rated Pressure: 340 Bar

K7V Series

Axial Piston Pump



Open circuit
Displacement: 65~140 cm³/rev
Rated Pressure: 350 Bar



HYDRAULIC PUMPS

CLOSED CIRCUIT AXIAL PISTON PUMPS

A4VTG

Variable Displacement Axial Piston Pump



Size: 71,90

Note:

Axial piston pump, swash plate design for hydrostatic close loop circuit system used in varied medium duty application in industrial & mobile machines.

Features:

flow is proportional to drive speed and displacement it can be infinitely varied by adjustment of the swash plate ISO mounting flange, flange connection to SAE metric, 2 case drain port, good suction characteristics, permissible continuous pressure 280 bar, low noise level, long service life, axial and radial loading of drive shaft possible, high power-weight ratio, wide range of controls, short response times, through drive option for multi-circuit system.

A4VG

Variable displacement axial piston pump



Displacement: 40~125 ml/r
Flow: 160~356 l/min
Max. pressure up to 450 bar

Features:

Axial piston variable displacement pump of swash plate construction for hydrostatic pressure in closed circuit transmission. The flow is proportional to the drive speed and displacement and can be adjusted steplessly. Output flow increases from zero to maximum with swash plate swing angle. When the swash plate passes through the neutral position, the hydraulic oil flow direction will change smoothly. A variety of highly compatible control devices, providing various control and adjustment functions. Each high pressure side is equipped with two relief valves to prevent hydrostatic transmission(pump and motor) overload.

A4VSG

Variable displacement axial piston pump



Displacement: 40~750 ml/r
Nominal pressure up to 400 bar
Max. pressure up to 450 bar

Features:

Axial piston variable displacement pump of swash plate construction for hydrostatic pressure in closed circuit transmission. The flow is proportional to the drive speed and displacement and can be adjusted steplessly. Output flow increases from zero to maximum with swash plate swing angle. When the swash plate passes through the neutral position, the hydraulic oil flow direction will change smoothly. A variety of highly compatible control devices, providing various control and adjustment functions. Each high pressure side is equipped with two relief valves to prevent hydrostatic transmission(pump and motor) overload.

PVH & PVH2 SERIES

Variable Displacement Axial piston pump, Swashplate Design



Displacement:
PVH: 33 to 110 cc/rev.
PVH2: 75 to 112 cc/rev.

Rated pressure: 420 bar

Features:

Variable displacement axial-piston pump for hydraulic systems with closed circuit. They are used in hydrostatic transmission of stroke drive or operating equipment of combines, road and construction mobile machines.

Applications:

Combines
Concrete mixer trucks
Road rollers

A22VG

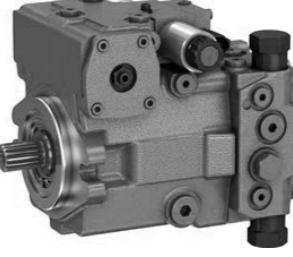
Axial Piston Variable Double Pump



For Closed Circuit
Size: 45cc/rev
Nominal Pressure: 380 bar
Maximum pressure: 420 bar

A10VG

Axial Piston Variable pump



Medium pressure pump for closed-circuit applications
Size 18 ... 63
Nominal pressure 300 bar
Maximum pressure 350 bar
Closed circuit



HYDRAULIC MOTORS

AXIAL PISTON MOTORS

A2FM

Fixed displacement Bent Axis Piston Motor



Size: 16...180
Nom. Pressure: 400 bar

Features:

Fixed displacement motor A2FM of axial piston, bent axis design suitable for hydrostatic drives in open and closed circuits, use in mobile and industrial applications, output speed is proportional to input flow and inversely proportional to displacement, drive torque increases with the pressure drop across the unit, careful selection of the displacement offered, permit sizes to be matched to practically every application, favorable power/weight ratio compact design optimum efficiency, economical conception, one piece piston with piston rings.

A2FE

Fixed-displacement plug-in motor A2FE



Note:
It is mainly installed in the mechanical gearbox, e.g. track drive gearbox.

Features:

The design of the motor with the mounting flange in the center of the housing allows it to be almost fully integrated into a mechanical gearbox to give an extremely compact unit. You can just plug the motor into the gearbox without considering the tolerance.

BVD

Counterbalance valve



Size NG20, 25
Nominal pressure 350 bar
Peak pressure 420 bar
for travel drives, winch drives and track drives

TDDG250, 300 & 350 Series

Servo Motor with Gear Box for plastic machines



Max. Torque:

TDDG250: 1402 to 4586 Nm
TDDG300: 5821 to 13230 Nm (193 rpm)
TDDG300: 4057 to 16317 Nm (113 rpm)
TDDG350: 14611 to 22650 Nm

Power: 25 to 393 kW

Features:

- High Torque
- Long Life
- High Efficiency
- Saving Energy
- Small Volume and light weight
- Patented Oil cooling system, will not increase Motor temperature
- IP65 Protection
- Smooth housing surface, easy to clean



A6V

Variable displacement motor A6V



Note:
Variable displacement motor A6V is design for hydrostatic drive. The displacement of infinitely variable in the range Vmax/Vmin = 3.47
Special Features:
Wide control range for hydrostatic drives. Various control regulating devices. Cost saving through elimination of gearbox and possibility of using smaller pumps. Compact, low unit power. Good starting characteristics. Low inertia.

A6VE

Variable displacement plug-in motor A6VE



Note:
It is mainly installed in the mechanical gearbox. e.g. track drive gearbox.
Features:
The design of the motor with the mounting flange in the centre of the housing allows it to be almost fully integrated into a mechanical gearbox to give an extremely compact unit. You can just plug the motor into the gearbox without considering the tolerance.

A6VM

Variable Axial Piston Motor



Sizes: 107, 160
Flow: 380, 496 L/min
Max. pressure: 400 Bar

Features:

Wide control range with hydrostatic transmissions
Wide selection of control devices
Small swing torque
High power density
Good starting characteristics
Cost savings through elimination of gear shifts and possibility of using smaller pumps
Compact, robust motor with long service life
For use in mobile applications.

ORBITAL MOTORS

BMM (OMM)



Displacement(cc/rev): 8, 12.5, 20, 32, 40, 50
Maximum pressure drop continuous: 100 bar
Maximum flow continuous: 20 l/min
Maximum Torque continuous up to 46 Nm

BMP (OMP)



Displacement : 50, 80, 100, 125, 160, 200, 250, 315, 400
Maximum Pressure drop continuos 125 bar
Maximum flow continuous 60 lpm
Maximum Torque continuos upto 334Nm

BMR (OMR)



Displacement(cc/rev): 36, 50, 80, 100, 125, 160, 200, 250, 315, 375
Maximum pressure drop continuous: 175 bar
Maximum flow continuous: 20 l/min
Maximum Torque continuous up to 46 Nm

BMSY(OMS/BM3Y)



Displacement : 80, 100, 125, 160, 200, 250, 315, 400
Maximum Pressure drop continuos 225 bar
Maximum flow continuos 75 lpm
Maximum Torque continuos up to 560Nm

BMT (OMT/BM4U)



Displacement : 160, 200, 250, 320, 400, 500
Pressure Drop continuos 200 bar
Flow continuos 100 lpm
Max. Torque continuos upto 1121 Nm

BMV (OMV/BM5U)



Displacement: 315, 400, 500, 630, 800, 985
Maximum pressure drop continuos 200 bar
Maximum flow up to 150 lpm
Maximum torque continuos 1900 Nm

BMH (OMH)



Displacement(cc/rev): 200, 250, 315, 400, 500
Maximum pressure drop continuous: 175 bar
Maximum flow continuous: 75 l/min
Maximum Torque continuous up to 850 Nm

BMK2/BMK6



Eaton 2000 and 6000 series motor

BMK2
Displacement(cc/rev): 65, 80, 100, 125, 160, 200, 250, 315, 400, 475
Maximum pressure drop continuous: 210 bar
Maximum flow continuous: 75 l/min
Maximum Torque continuous up to 845 Nm



BMK6
Displacement(cc/rev): 200, 250, 315, 400, 500, 630, 800, 1000
Maximum pressure drop continuous: 200 bar
Maximum flow continuous: 150 l/min
Maximum Torque continuous up to 1675 Nm

BMR-BK01



Displacement(cc/rev): 50, 80, 100, 125, 160, 200, 250, 315, 375
Maximum pressure drop continuous: 140 bar
Maximum flow continuous up to 65 l/min
Maximum Torque continuous up to 465 Nm

BMRYB



Dual Shaft Hydraulic Orbital Motor
Sizes: 80-400 cc/rev
Max. flow up to 75 l/min
Max. pressure up to 225 bar
Max. Torque up to 680 Nm
Max. output power up to 25 kW

NEW!

THM
HYDRAULICS
QUALITY
ASSURED

ABER

Manufacturing Hydraulic Excellence since 1972



MADE IN
PORTUGAL
EUROPE



EXAMPLE OF APPLICATIONS



HYDRAULIC PUMPS

AXIAL PISTON PUMPS



VDP Series

Variable Displacement Pumps



Displacement: 40.1, 60.6, 76.4, 92.6, 109.4

Operating pressure 410 Bar

Max. Pressure 450 bar

ABER's VDP. Designed with care for the needs and applications in the hydraulic trucks industry, it can be used for a wide range of applications.

Features:

- Adaptable pressure
- Fast Reaction
- Flow Reset
- High Pressure
- Long Service Life
- Low Noise
- Compact Design
- High Efficiency
- Efficient Cooling

BIF Series

Iron Cast Bent Axis Piston Pumps



Displacement: 17, 26, 32, 42, 50, 60, 81

Operating pressure 350 Bar

Max. Pressure 400 bar

Iron cast BIF series pumps were designed to be very compact. The BIF series configuration, gives particular advantage on mobile applications such as trucks with high collision probability between the rear axle truck transmission and the hydraulic pump

Features:

- Higher Pressure
- Less Pulse
- Maximum Efficiency
- Compact Design
- Fits on ZF Astronic Gearbox Transmissions

BI Series

Single Bent Axis Piston Pumps



Displacement: 17, 26, 32, 42, 50, 60, 80, 81, 108, 126, 136, 142, 156, 172

Operating Pressure 350 Bar

Peak Pressure 400 Bar

BI Series allow a change in the rotation way in an easy and safe way for all the pump components.

Features:

- Maximum Efficiency
- Less Pulse
- Switchable Sense of Rotation
- Reversible

BID Series

Double Bent Axis Piston Pumps



Displacement: 57+28, 38+37, 80+38, 58+60, 70+66

Operating pressure 350 Bar

Max. Pressure 400 bar

Operating rotation speed: 1650rpm

Max Rotation Speed: 2300 rpm

Bent Axis Piston Pump with two outlets, which work on independent pressure and on independent circuits, when use to serve two independent oil circuits.

Features:

- Two Oil Outlets
- Maximum Efficiency
- Switchable Sense of Rotation
- Reversible

BH Series

Straight Piston Pumps



Displacement: 14, 19, 25, 32, 40, 45, 50, 52, 60, 80, 86, 110

Operating Pressure 350 Bar

Peak Pressure 400 Bar

ABER BH Series are very robust. They are equipped with radial and axial bearings. To manufacturer this pumps, ABER uses high resistant material in strategic points.

Features:

- Maximum Efficiency
- Robustness
- Great Performance
- Low Noise
- Continuous Flow
- Bidirectional

BHD Series

Double Straight Piston Pumps



Displacement: 20+20, 25+25, 30+30, 40+40, 45+45, 50+50, 53+53, 60+30, 65+22, 72+38, 80+21, 80+27, 83+42

Operating pressure 400 Bar

Max. Pressure 450 bar

Straight Piston Pump with two outlets, which work on independent pressure and on independent circuits, when use to serve two independent oil circuits.

Features:

- Two Oil Outlets
- Robustness
- Bi-directional

HYDRAULIC GEAR PUMP

B2 Series

Oil Hydraulic Gear Pump



Displacement: 12, 16, 20, 26, 32, 39
Operating pressure 280 Bar
Max. Pressure 300 bar

Features:
Small
Fast to Mount
Bidirectional

B3 Series

Oil Hydraulic Gear Pump



Displacement: 38, 45, 52, 61, 70,
82, 91, 102, 116, 125
Operating pressure 300 Bar
Max. Pressure 335 bar

Features:
Medium Size
Fast to Mount
Bidirectional

B3D Series/Tandem Pumps

Oil Hydraulic Tandem Gear Pump



Displacement: 17, 26, 32, 42, 50, 60, 80, 81,
108, 126, 136, 142, 156, 172

Operating Pressure 350 Bar
Peak Pressure 400 Bar
Tandem gear pump with bidirectional sense of flow,
with side outlet, prepared for mounting of UNI gear pumps.

Features:
Medium Size
Fast
Assembled up to Three Pumps
Bidirectional

B35 Series

Double Bent Axis Piston Pumps



Displacement: 64.5, 74.7, 83.8, 94.0, 104.2,
114.5, 124.7, 133.7, 154.2
Operating pressure 300 Bar
Max. Pressure 320 bar

The B35 series brings another dimension to our range of products, it is a high performance pump, double support by taper roller bearings on the main shaft, built to endure extreme working conditions.

Features:
High Performance
Long Life Period
Stronger
Reinforced
Bidirectional

HYDRAULIC MOTORS

MBI Series

Bent Axis Piston Motors



Displacement: 17, 26, 32, 42, 50, 60, 80, 81,
108, 126, 136, 142, 156, 172

Operating pressure 350 Bar
Max. Pressure 400 bar
Features:
Excellent Performance
Low Noise
High Efficiency
Bidirectional

PV Series

Hydraulic Gear Pumps with Integrated Valve



Displacement: 82, 105
Max. Pressure 210 Bar

Features:
Sensitive Valve
Quick Relief
Efficient Cylinder Protection
Easy to Apply
Fast to Mount

MBIF Series

Iron Cast Bent Axis Piston Motor



Displacement: 17, 26, 32, 42, 50, 60, 81
Operating pressure 400 Bar

Max. Pressure 450 bar
Features:
Higher Pressure
Compact Design
High Reliability
Bidirectional

MB3 Series

Hydraulic Gear Motor



Displacement: 38, 45, 52, 61, 70, 82, 91,
102, 116, 125

Operating Pressure 300 Bar
Peak Pressure 335 Bar
Features:
Medium Size
Fast to Mount
Bidirectional

HAND PUMPS



NEW!

Displacement: 20, 50, 70
Max. Pressure 350 Bar
Features:
Double acting, for single acting circuit,
with lowering valve;
Lever connection Ø27;
Cast iron body;
Standard color black;
Nipoly treated piston, white zinc plated
support lever and external parts.

ACCESSORIES



PNEUMATIC ACCESSORIES

Pneumatic Controls



Pneumatic Kits Vacuum kits



POWER TAKE OFF'S & GEARBOXES



PTO'S

We have an extended range of Power Take Off's, (PTO'S)
always working to adapt to the needs of our clients.

Gearboxes

Continuous Torque: 800 Nm
Power at 1000 rpm: 82 kW



GEAR PUMPS

HIGH PRESSURE GEAR PUMPS

TPF2G0.5-M

High Pressure Gear Pump



Series: 11 to 19
Flow: 0.19 to 2.00cc

Max. Operating pressure: 210 bar

Features:

Unique sealing design to operate up to 250 bar continuous, special alloy bush with unique lock design for maximum rigidity modified gear tooth to lower operating torque, 100% testing on computerized test bench, long service life, pump in "V" option available to operate up to -10 degree C and 120 degree C, "G"-BSP ports as per ISO228/1 as standard and other threaded and flange port available, new principle of hydraulic gap compensation

TPF2G1-M

High Pressure Gear Pump



Series: 11 to 19
Flow: 1.4 to 13.8cc

Max. Operating pressure: 250 bar

Features:

Unique sealing design to operate up to 250 bar continuous, special alloy bush with unique lock design for maximum rigidity modified gear tooth to lower operating torque, 100% testing on computerised test bench, long service life, pump in "V" option available to operate up to -10 degree C and 120 degree C, "G"-BSP ports as per ISO228/1 as standard and other threaded and flange port available, new principle of hydraulic gap compensation.

TPF2G2-M

High Pressure Gear Pump



Series: 11 to 19 or 30 to 39

Flow: 3 to 30cc

Max. Operating pressure: 270 bar

Features:

Unique sealing design to operate up to 250 bar continuous, special alloy bush with unique lock design for maximum rigidity modified gear tooth to lower operating torque, 100% testing on computerized test bench, long service life, pump in "V" option available to operate up to -10 degree C and 120 degree C, "G"-BSP ports as per ISO228/1 as standard and other threaded and flange port available, new principle of hydraulic gap compensation

TPF2G2.6

High Pressure Gear Pump



Series: 11 to 19
Flow: 10 to 45cc

Max. Operating pressure: 270 bar

Features:

Unique sealing design to operate up to 250 bar continuous, special alloy bush with unique lock design for maximum rigidity modified gear tooth to lower operating torque, 100% testing on computerized test bench, long service life, pump in "V" option available to operate up to -10 degree C and 120 degree C, "G"-BSP ports as per ISO228/1 as standard and other threaded and flange port available, new principle of hydraulic gap compensation

TPF2G3-M

High Pressure Gear Pump



Series: 11 to 19

Flow: 20 to 71cc

Max. Operating pressure: 250 bar

Features:

Unique sealing design to operate up to 250 bar continuous, special alloy bush with unique lock design for maximum rigidity modified gear tooth to lower operating torque, 100% testing on computerised test bench, long service life, pump in "V" option available to operate up to -10 degree C and 120 degree C, completely manufactured on CNC machines, threaded and flange port available, covers applications for high pressures, substituting costly piston pump application, new principal of hydraulic gap compensation.

HIGH PRESSURE GEAR PUMPS

TPF2G4-M

High Pressure Gear Pump



Size: 80 , 90, 100

Features:

Unique sealing design to operate up to 250 bar continuous, special alloy bush with unique lock design for maximum rigidity modified gear tooth to lower operating torque, 100% testing on computerized test bench, long service life, pump in "V" option available to operate up to -10 degree C and 120 degree C, completely manufactured on CNC machines, threaded and flange port available, covers applications for high pressures, substituting costly piston pump application, new principle of hydraulic gap compensation.

CBB



The CB-B gear pump is a power component in a hydraulic system. The pump uses high-precision gears, high-strength cast iron shells and other structures. The mechanical energy transmitted by the motor is converted into a hydraulic energy conversion device by intermeshing gears. In the hydraulic system to provide a fixed hydraulic energy. The pump has the advantages of simple structure, reliable operation, convenient maintenance, good adaptability to impact load, widely used in the hydraulic system of the machine tool, and can be used in hydraulic systems of other machines.

CBZTG3

Cast Iron Gear Pump



Displacement: 125, 140, 150, 160, 170, 180, 200 mL/r
Operating pressure: 160 Bar
Max. Pressure: 200 bar
Rated Speed: 2000r/min
Speed range: 600 to 2800 r/min

CBGTAL

Cast Iron Gear Pump



Displacement: 26, 32, 36, 40, 50, 55, 63
Operating pressure 200 Bar
Max. Pressure 250 bar
Minimum speed: 800 r/min
Rated speed: 2000 r/min
Maximum speed: 3000 r/min

CBKP

Single, Double & Triple Gear Pump with roller bearings



CBKP1
Size: 32cc to 100cc
Max Pressure: 250 Bar



CBKP2
First pump : 40cc to 100cc
Second pump : 32cc to 100cc
Max Pressure: 250 Bar



CBKP3
First pump : 50cc to 100cc
Second pump : 32cc to 100cc
Third pump: 32cc to 100cc
Max Pressure: 250 Bar

TP7600-F***P

Cast Iron Gear Pump



Nom Pressure: 200 bar
Max pressure: 250 bar

Features:

Patented 2 Pcs housing design, lower leakage, high efficiency.
Big displacement up to 200cc/r, high pressure design. 45mm parallel shaft specially designed for general applications (splined shaft also available on demand).
High strength gear material for long life.

We perform Best under Pressure!



PUMPS FOR SERVO SOLUTION

IGP 1,2,3 & DIGP

High pressure Internal Gear Pump



Large Suction & Delivery Ports Available
Size: 8, 10, 13, 16, 20, 25, 32, 40, 50, 63, 80, 100, 125, 160
cc/rev: IGP(1)8...20 IGP(2)25...63
IGP(3)80...160
DIGP(11)8...20 DIGP(21)(22)25...63
DIGP(32)(33)80....160

Features:
Low pulsation of oil flow, fixed displacement, Low operating noise, due to sealing gap compensation high efficiency at low speed and viscosity, wide speed ranges can operate up to 3000/min peak pressure up to 350 bar option for double pump.
Double pumps are also available in different combination of sizes.

ITH Series

Internal gear pump with radial and axial seal clearance compensation

Displacement:
2: 8, 11, 13, 16, 20
3: 25, 32, 40, 50, 64
6: 80, 100, 125, 145, 160
Maximum pressure up to 345 Bar



NEW!

IGP05 Series



For Servo applications
High pressure internal gear pump
Sizes: 3.5, 4, 5, 6.3
Flow: 3.6, 4, 5.3, 6.5 mL/r
Max. Pressure: 315 bar

TGR Series

Helical Silent Gear Pump



Displacement : 4 ~ 200 cc/rev
Max. Cont. pressure up to 270 Bar
Max. Peak Pressure up to 300 Bar

NEW!

SMP Series

Internal gear pump



Suitable for 2200 rpm
Displacement: 8~160cc/rev
Max. Operating pressure up to 250 Bar
Single, Double & Triple Pump

NEW!

VPS1,2,3

SERVO VANE PUMP



cc/rev: VPS(1)16...64 VPS(2)64...125 VPS(3)
160...180

The construction of the pump incorporates a leakage line help reducing the pump holding temperature enhancing the life and the stability of the pump. The design enables the pump to perform at low speed and high pressure. Low noise, wide spread range, better resistance to oil contamination. Wide range to displacement 16cc-200cc/rev, speeds upto 2800 rpm, pressure upto 280 bar. Cartridge assembly replacement available as spares. This pump is specially designed for servo system application offering fast and low speed, with excellent response to switching.

Size: 16,20,25,32,40,50,64,70,80,
100,125,160,180

VANE PUMPS

PV2R1,2,3

Fixed Vane Pump

Nom Pressure: 200 bar
Max pressure: 250 bar



Features:

Patented 2 Pcs housing design, lower leakage, high efficiency. Big displacement up to 200cc/r, high pressure design. 45mm parallel shaft specially designed for general applications (splined shaft also available on demand). High strength gear material for long life.

PV2R5

Fixed Vane Pump (Large Flow)

Max pressure: 120 bar

Features:
PV2R5- Series are high performance vane pump with long life for medium pressure application. High volumetric efficiency upto 92% @120bar Maximum operating pressure up to 120bar Twelve Vane Design for quite operation Versatile, rugged and optimized design Compact, Four flow option Cartridge design

Sizes : 230, 272, 320, 348 cc/rev

TCVM...8/12/15/20/30/40/50

Variable Vane pump, Direct Operated



Displacement : 4.4 cc to 28 cc
Max pressure: 70bar

Features:

Good efficiency operation with minimum pressure loss, very low noise during operation, compact and simple design, space saving sturdy structure for high efficiency and long service life, adjustable displacement volumes, highly preferred for CNC and special purpose machines.

V SERIES

High Performance Intravane pumps for Industrial applications



Displacement : 20V: 7.5~45 mL/r
25V: 32.5~67 mL/r
35V: 67~142 mL/r
45V: 138~237 mL/r
Max. pressure up to 210 bar

NEW!

VDN

Variable Volume Vane Pump



Size: 8, 16 cm³/rev
Max. Pressure: 80Bar

Features :

Energy efficient high performance Lightweight, compact design Low noise, long life High volumetric efficiency and low leakage will cause less heat generation and improves the accuracy. Space saving.

HVP

Medium pressure Variable Vane pump



Flow: 16.7, 22.2 cc/rev.
Max. pressure: 140 Bar
Min. speed: 800 r/min
Max. speed: 1800 r/min

Features:
Low noise: It adopts anti-vibration and sound-proof mechanism, and it can effectively eliminate the vibration under high pressure by controlling the special three-point support of the piston and the offset piston, and the operation is quiet;
High sensitivity: pilot-type oil control mode, the flow quickly follows the change of working conditions;
High pressure: using high-quality materials and special pressure control mechanism and forced balance mechanism, the pressure can be effectively and smoothly operated under 140bar.



THM
HYDRAULIC
FOR MACHINE TOOL



THM
HYDRAULICS

*Living our future today
with industry leaders...*



Sumitomo

HIGH-PERFORMANCE INTERNAL GEAR PUMP

WITH THE HIGH-PERFORMANCE INTERNAL GEAR PUMP MANUFACTURED BY THE JAPANESE COMPANY SUMITOMO, THM OFFERS COUNTRY-WIDE SOLUTIONS FOR ALL PRESSURE RANGES. DEVELOPED TO MATCH THE SUMITOMO INTERNAL GEAR PUMP, THM OFFERS AND VALUE ADDS CUSTOMISED APPLICATION-SPECIFIC COMPLETE SOLUTIONS – TO MEET THE REQUIREMENT/DEMAND PROFILE.



STF

HYDRAULIC MOTORS & TRANSMISSION

STF HYDRAULIC TRANSMISSIONS COMPANY LIMITED IS A JOINT VENTURE COMPANY SPECIALISING IN THE RESEARCH, DEVELOPMENT AND MANUFACTURE OF THE HYDRAULIC OPEN & CLOSE LOOPS TRANSMISSION, MOTORS, HYDRAULIC VALVES. WE HAVE GATHERED TOGETHER AN OUTSTANDING MANAGEMENT TEAM, EXCEPTIONALLY QUALIFIED ENGINEERS AND EMPLOYED THE WORLD'S LEADING PRACTICES IN THE DESIGN AND MANUFACTURE OF HYDRAULIC MOTORS, TO BRING YOU ONLY PRODUCTS OF THE HIGHEST STANDARD.



HT

Hilectro
SERVO MOTORS & DRIVES

HILECTRO DRIVE UPHOLDS THE PURPOSE OF HAITIAN GROUP INNOVATION, PUTTING FORWARD THE SLOGAN “INNOVATION DRIVES THE FUTURE”. WE CONSTANTLY IMPROVE PRODUCTS AND SERVICE QUALITY THROUGH INNOVATION, SO AS TO ENHANCE THE OVERALL COMPETITIVENESS OF OUR PRODUCTS. WE FIRMLY BELIEVE GOOD PRODUCTS CAN PUT CUSTOMERS AT EASE AND ALSO THAT GOOD PRODUCTS CAN ENHANCE MARKET COMPETITIVENESS.

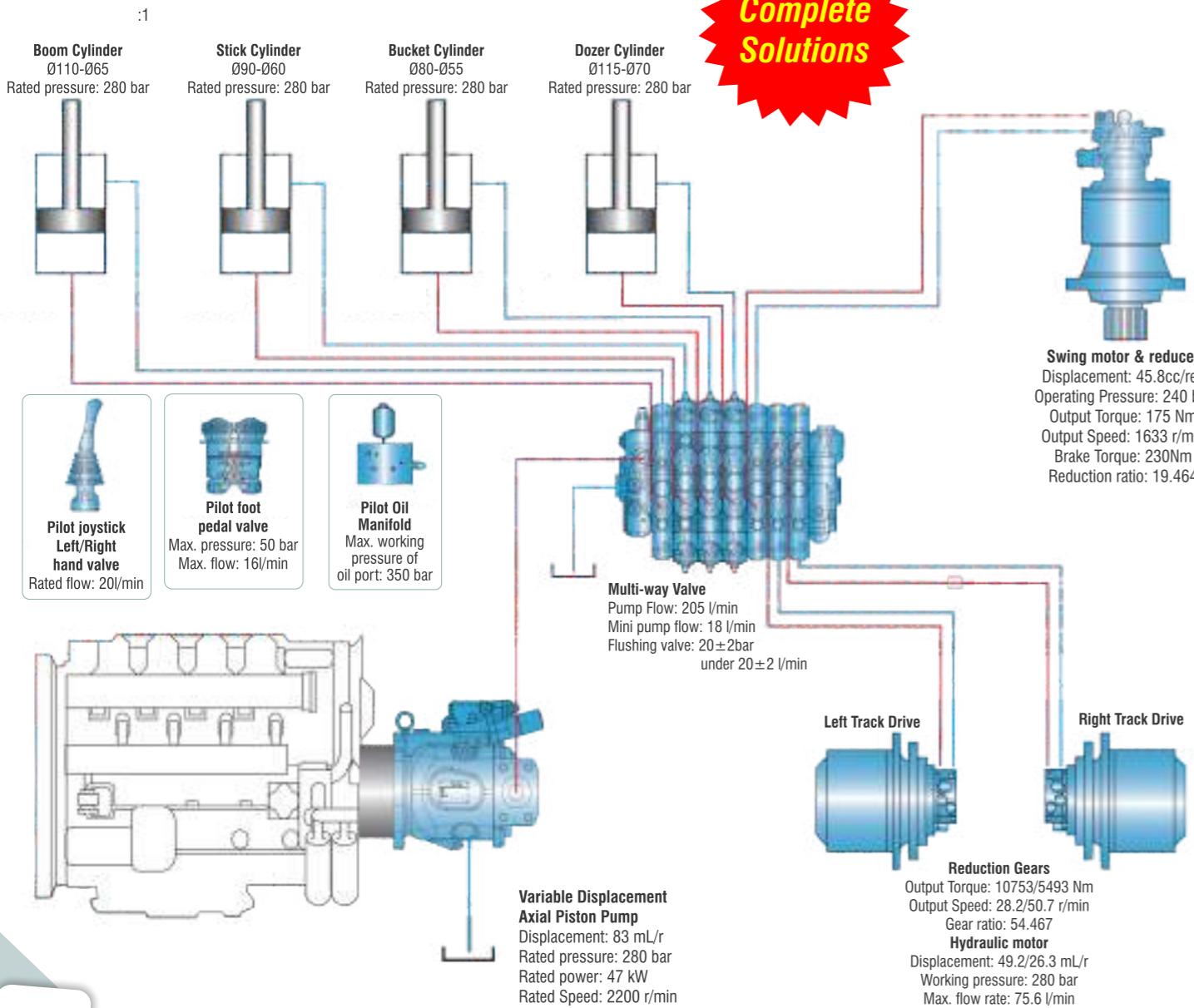


THM HYDRAULIC

COMPONENTS AVAILABLE
FROM 6.5 TONNE TO 45 TONNE
EXCAVATORS ALONG
WITH CYLINDERS

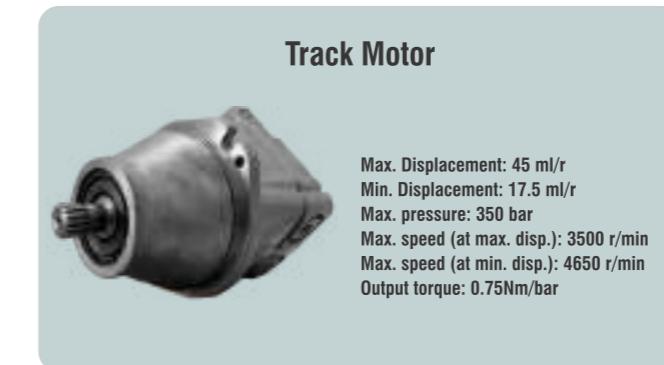


**Complete
Solutions**



Note: The above specs is for Excavators from 6.5 Tonne to 8 Tonne.

Track Drive & Motor for Horizontal Drilling Machines



Track Motor

Max. Displacement: 45 ml/r
Min. Displacement: 17.5 ml/r
Max. pressure: 350 bar
Max. speed (at max. disp.): 3500 r/min
Max. speed (at min. disp.): 4650 r/min
Output torque: 0.75Nm/bar



Track Drive

Max. input speed: 3500 r/min
Max. output torque: 6000 Nm
Reduction Ratio (I): 53
Brake parameters
Static braking torque: ≥220Nm
Minimum cracking pressure: 10-12 bar



Pilot Joystick Left/Right hand valve

Max. input pressure: 100 bar
Max. flow: 16 l/min
Working medium temperature: -20°-100°C
Ambient temperature: -20°C-45°C
Hydraulic Oil Viscosity: 42-74 mm²/s



Pilot Operated Check valve

Opening pressure: 3.5 bar
Max. pressure: 350 bar
Max. flow: 60 l/min
Pilot ratio: 6.5:1



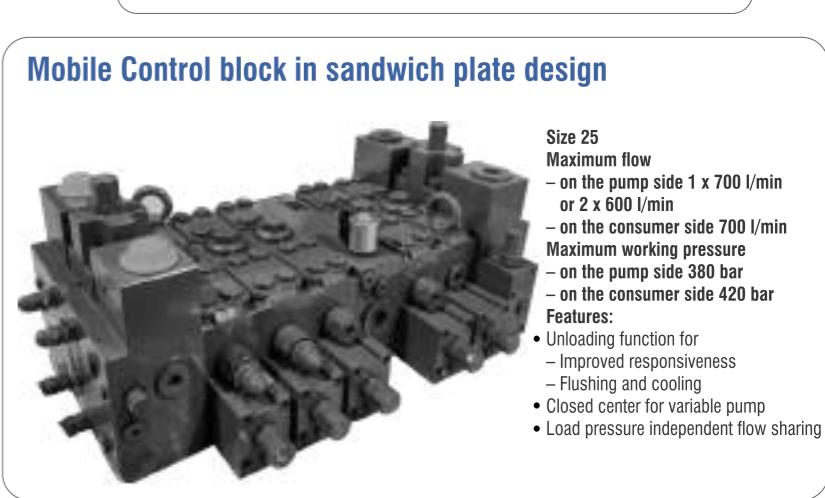
Multi way valve

Nominal pressure: 315 bar
Nominal flow: 160 l/min
Solenoid valve voltage: 12VDC



Two way balance valve

Maximum pressure: 350 bar
Rated flow: 60 l/min
Pilot ratio: 4.2:1
Port Size: G3/8



Mobile Control block in sandwich plate design

Size 25
Maximum flow
– on the pump side 1 x 700 l/min
or 2 x 600 /min
– on the consumer side 700 l/min
Maximum working pressure
– on the pump side 380 bar
– on the consumer side 420 bar
Features:
• Unloading function for
– Improved responsiveness
– Flushing and cooling
• Closed center for variable pump
• Load pressure independent flow sharing

DIRECTIONAL VALVES

HD-WE

Directional control valve, electrically operated, Type HD-WE



Directional solenoid actuated directional spool valve high performance version
Wet pin DC or AC solenoids with removable coil (it is necessary to open the pressure tight chamber when changing the coil)

Solenoid coil can be rotated through 90 degree
Hand override, optional
Electrical connection as individual connection
Mounting type sub-plate

Size	5	6	10
Type	HD-WE		
Max operating pressure bar	250	350	315
Flow L/min Max	14		120

HD-WE4....20/

Directional control, electrically operated type HD-WE4....20/



Direct solenoid actuated directional spool valve high performance version
Wet pin DC or AC solenoids with removable coil (it is necessary to open the pressure tight chamber when changing the coil)

Solenoid coil can be rotated through 90 degree
Hand override, optional
Electrical connections as individual connection
Mounting type: Sub-plate mounting

Size	4
Type	HD-WE4-20/
Max operating pressure bar	210
Max Flow L/min	30

HD-(H)-WEH/WH

Pilot operated directional valve, Type HD(H)-WEH/WH



Electro-hydraulic operation
Spring or pressure-centered
Stroke adjustment at main spool, optional
Pre-load valve in the P-channel of the main valve, optional
Wet-pin DC or AC solenoids, optional
Electrical connections as individual connection
Manual override, optional
Shifting time adjustment, optional
Mounting type sub-plate mounting

Size	10	16	25	32
Type	HD-(H)-WEH/WE			
Max operating pressure bar	28/350	28/350	28/350	28/350

HD-WMU/R

Roller operated directional valve
Type HD-WMU/R



Directed operated directional spool valve with adjustable roller operation
Roller lever assembly may be stepped in 90 degree increments

Size	6	10
Type	HD-WMUR	
Max operating pressure bar	315	315
FlowL/min Max	60	120

Z4WE6...3XT



4/2 way isolator valve
Size 6
Up to 315 bar
Up to 40 L/min

Features:
Solenoid operated directional spool valve is the standard version.
Porting pattern to DIN 24 340 form A, ISO 4401 and CETOP-RP 121 H,
Free-flow through ports P and T in all switched positions.
Sandwich plate valve
Wet pin AC or DC solenoids
Hand override, (optional)

4WEH-12-SG

Fixed displacement Vane Pump
single excusion



Flow: 30lpm / 40lpm
Voltage: Ac110v / Ac220v / Dc24v

Features:
Solenoid controlled pilot operated direction control valve for shock less type of machine toll application demanding smooth reversal, mechanical screw to adjust the spool shifting time, hence optimizing shocks to the machines, reducing oil hammering / piping vibration / jerks and machine vibration, spool stroke adjustment screw + meter out pilot oil flow adjustment screw + pilot oil tank line throttle adjustment screw makes a combination of valve suitable for these type of application, highly suitable for surface grinding machine applications & others.

HD-M-SEW6/10

Poppet directional valves, solenoid actuated. Type HD-M-SEW6



Direct operated directional poppet valve, solenoid actuated
Closed port is leak free
Switching is ensured even after long periods of being under pressure
Air gap DC solenoids with removable coil (it is not necessary to open the pressure tight chamber when changing the coil)

Solenoid coil can be rotated by 90degree
With protected hand override, optional
Individual electrical connection
Mounting type sub plate mounting

Size	6	10
Type	HD-M-SEW6	
Max operating pressure bar	630	630

M3-SED6/10

3/2- and 4/2-way directional poppet valves with solenoid actuation



Size 6
Max. Pressure up to 350 Bar
Max. flow up to 25L/min

Features:
Direct operated directional poppet valve with solenoid actuation
Closed port is leak-free
Individual electrical connection
With protected manual override, optional
Porting pattern to DIN 24340 form A, ISO 4401and CETOP-RP 121H

HD-WH

Directional valve with fluidic operation, Type HD-WH,



Hydraulic operated spool valve
Spring or pressure-centered
2-way valve with detent, optional
Mounting type: sub-plate mounting

Size	6	10
Type	HD-WH	HD-WH
Max. operating pressure bar	315	315

Max. Flow L/min 60 120

SD4

Monoblock Directional Control Valve



Maximum Flow 45L/min
Operating Pressure up to 315 Bar

Features:
Simple, compact designed, this valve is only one section for open centre and closed centre hydraulic systems. Fitted with a main pressure relief valve. Diameter 16 mm interchangeable spools. Available manual and remote with flexible cables spool control kits.

DCV 140/200 L/min

Sectional Directional Control Valve



Maximum Flow: 140, 200 l/min
Maximum Pressure up to 350 Bar

Features:
DCV directional control valve is designed for high pressure hydraulic system such as drilling machine, sanitation etc. Auxiliary valve: over-load valve, anti-cavitation valve, combined valve etc. Control type: manual, joystick, cable, pneumatic, solenoid, electro-pneumatic, electro-hydraulic etc. Structure: sectional type. Carry-over port as hydraulic source for other parts.



SD8

Sectional Directional Control Valve



Maximum Flow 90L/min
Operating Pressure up to 315 Bar

Features:
Simple, Compact and heavy duty designed sectional valve from 1 to 14 sections for open and closed center hydraulic systems. Fitted with a main pressure relief valve and a load check valve on every working section. Available in manual control only. Optional carry-over port. A wide range of port and circuit valves. Intermediate sections for several types of circuit. Diameter 18mm interchangeable spools. Available with parallel, tandem or series circuit.

Z50

Solenoid Direction Control Valve



Spool: 1 to 6
Max Pressure: 315 Bar
Max Flow: 5 l/min

Features:
Built-in check valve: The check valve inside the valve body is to ensure the hydraulic oil does not return. Built-in relief valve: The relief valve inside the valve body is provided to adjust the hydraulic system working pressure. Oil way: Parallel circuit, power beyond option Coils, Connector ISO440: 12VDC, 24VDC Threads: PT ports - G1/2", A,B ports - G3/8" Valve construction: Monoblock construction, 1-7 spools.

DIRECTIONAL VALVES

HD-LC

2-way cartridge valve for directional control function LC



Mounting type: As cartridge structure, Encased in block
2 area ratio: 2:1=A(annulus area=50%)
14.3:1-B(annulus area=7%)
4 different springs
Valve poppet with or without damping nose

Size	16	25	32	40	50	63
Type	HD-LC					
Max operating pressure bar	420	420	420	420	420	420
Flow L/min	200	550	750	1500	2700	3000

Series S4WE6

Solenoid operated directional valve with spool position monitoring



NEW!

The proximity sensor monitor the working position of spool accurately. Either PNP or NPN can be chosen for the sensor. Rapid response, high factor of safety, long service life. Compact structure make it convenient for building up and wiring. The position of the proximity sensor is suitable for the double solenoid as well as for the single one.

Series LFV

2-way cartridge valves with spool position monitoring



Size: LFV16, 25, 32, 45, 50

2 way cartridge valve with spool position monitoring, provide feedback to inductive switch signal to sensor spool correct position, to secure equipment operating under safety operation according to hydraulic circuit design and detection requirement. When inductive position switch feedbacks error signal, the equipment stop operating immediately to ensure operator safety.

NEW!

Z-TVC

Prefill valve



Max Pressure upto 250 bar
Flow upto 2500 lpm
Sizes: 50, 80, 90, 100, 125, 150

TVS & TVC series of prefill valve allows transfer large volume of fluid from tank or cylinder in short intervals. It can cut down oil movement in valves and piping. Pilot control pressure oil opens and closes the prefill valves on demand according to the application and the hydraulic circuit.

HD-LFA

2-Way control cover for directional control function, Type LFA



Control cover with built-in poppet valve
Control cover with built-in shuttle valve
Control cover for mounting directional spool valves with or without built-in shuttle valve
Control cover for mounting directional poppet valves with or without built-in shuttle valve

Size	16	25	32	40	50	63
Type	HD-LFA					
Max Operating Pressure bar	420	420	420	420	420	420
Pressure bar	420	420	420	420	420	420

23QDF

Ball type solenoid valve



Maximum Pressure upto 315 Bar

The ball type electromagnetic valve is used to realize leak-free pilot control for two-way plug-in valve hydraulic system.

Under the desired pressure drop and flow

Features:

It may also be used as control components for other executive device.
The valve core adopts high quality precision steel ball without axial length.

Size : 06, 10

DCT/DCG

Cam Operated Directional Control Valves

Size: 01, 03

Max Pressure: 210, 250 Bar
Max Flow: 30, 100 l/min



Prefill and Exhaust Valve



Features:
Seat type construction.
Allows free flow from its port A to port B.
Flow from port B to port A can be had by applying pilot pressure to its port X.
Model with decompression feature opens in two stages progressively, allowing smooth and rapid exhaust of the compressed oil.
Opening and closing time of the valve can be influenced by providing Throttle / Check Valves in the X port line.

Sizes : 32 to 80 cc

CHECK VALVES

HD-S

Check free flow valve type HD-S



Preferably closing a flow leak free in one direction and to permit free flow in the opposite direction
5 cracking pressures
3 mounting types: Sub-plate mounting, Threaded connection, Cartridge connection

Size	6	8	10	15	20	25	30
Type	HD-S	HD-SHD-S	HD-SHD-S	HD-S	HD-S		
Max operating pressure bar	315	315	315	315	315	315	315
Flow L/min	18	36	60	150	250	350	450

HPLK

Pilot operated check valve



Introduction :
Flow is allowed to pass from V1 to C1 when pressure at V1 rises above the spring bias pressure and poppet is pushed from its seat.

The valve is allowed closed (checked) from C1 to V1; when sufficient pilot pressure is present at X port, the pilot piston acts to push the poppet from its seat and flow is allowed from C1 to V1
Precision machining and hardening processed allow virtually leak-free performance in the checked condition.

HD-RVP

Check valve type HD-RVP



Preferably closing a flow leak free in one direction and to permit free flow in the opposite direction mounting type-sub plate

HD-SV/SL

Hydraulically pilot operated check valve, Type HD-SV/SL, Series 40



With or without leakage port			
with or without pre-opening			
4 opening pressures			
2 mounting types: Sub-plate mounting, Threaded connection			
Size	10	20	30
Type	HD-SV/SL		
Max operating pressure bar	315	315	315
Flow L/min Max	150	350	550

MCP/MCT

Check Modular valves



Size: 01
Max Pressure: 315 Bar
Max Flow: 35 l/min

CRT/CRG

Right Angle Check Valves



Sizes: 03, 06, 10
Max working pressure: 250 bar
Max. Flow: 250 l/min

CPDT/CPDG/CPDF

Pilot Operated Check valve



Sizes:
CPDT: 04, 06, 10
CPDG: 03, 06, 10
CPDF: 10, 16
Rated Flow: 50, 125, 315, 500 l/min
Max. pressure: 250 kgf/cm²

PRESSURE VALVES

HD-DA/DAW

Pilot operated shut-off valve, Type DA/DAW



Solenoid actuated unloading via a built on directional valve type DAW
 10% version, 17% version
 4 pressure adjustment element optional
 4 pressure ranges (in bar) 50, 100, 200, 315
 For sub plate mounting
 Size 10 20 30
 Type HD-DA/DAW
 Max. operating pressure bar 315 315 315
 Version 10% 40 80 120
 Version 17% 6 120 240

HD-DB....50/....

Pilot operated pressure relief valve,
 Type HD-DB....50/....



5 pressure ranges: 50, 100, 200, 315, 350
 3 pressure adjustment element, optional
 3 mounting types: sub-plate mounting, threaded mounting, manifold mounting
 Size 10 15 20 25 30
 Type HD-DB....50/....
 Max. operating 350 350 350 350 350
 pressure bar
 Max. Flow L/min 250 500 500 500 650

HD-DB.....K

Pilot operated pressure relief valve,
 cartridge connection type HD-DB...K



4 pressure ranges (in bar): 50, 100, 200, 315
 4 pressure adjustment elements, optional
 mounting type: cartridge connection
 Size 6 10 20
 Type HD-DB....K
 Max operating 315 315 315
 pressure bar
 Max Flow L/min 50 120 250

HD-DBW....50/....

Pilot operated pressure relief valve,
 Type HD-DBW....50/....



Solenoid operated unloading via a built on directional spool valve
 5 pressure ranges (in bar) 50, 100, 200, 315, 350
 3 pressure adjustment elements, optional
 3 mounting types: sub-plate mounting, threaded connection, manifold mounting
 Size 10 15 20 25 30
 Type HD-DBW
 Max operating 350 350 350 350 350
 pressure bar
 Max flow L/min 250 500 500 500 650

HD-DB3U10-30...30/...

Pilot operated pressure relief valve,
 with two or three pressure rating
 Type HD-DB3U10-30...30/...



Solenoid operated control via mounted directional valve
 2 pressure ranges (in bar) 100, 315bar
 3 pressure adjustment elements, optional
 3 mounting type: sub-plate mounting, threaded connection, manifold mounting
 Size 10 15 20 25 30
 Type HD-DB3U
 Max operating 315 315 315 315 315
 pressure bar
 max flow L/min 200 200 400 400 600

HD-DR...DP

Direct operated pressure reducing valve
 type HD-DR....DP



Direct operated pressure reduction in 3 ports
 3 or 4 pressure adjustment elements, optional
 5 pressure ranges (in bar): 25, 75, 150, 210, 315
 Mounting type: sub plate mounting
 Size 5 6 10
 Type HD-DR....DP
 Max operating 315 210 210
 pressure bar
 Max flow L/min 15 60 80

HD-DR

Pilot operated pressure reducing valve, Type DR (50 series)



Pilot operated pressure reducing valve
 4 pressure adjustment elements, optional
 4pressure ranges (in bar): 50, 100, 200, 315
 Check valve optional
 2 mounting type: sub-plate mounting
 threaded connection
 Size 10 15 20 25
 Type HD-DR
 Max. Operating 315 315 315 315
 pressure bar
 Max Flow L/min 150 300 300 400

RT/RG/RCT/RCG

Pressure Reducing Valves /
 Pressure Reducing and Check Valves



Sizes: 03, 06, 10
Max pressure: 210 bar
Max. flow: 50, 125, 250 l/min
Introduction:
 Pressure reducing valves are used to set the pressure of a hydraulic circuit below that of the main circuit. In addition, operation under remote control is possible by using the remote control port. Pressure reducing and check valves have check valves, which allow a free flow from the secondary side to the primary.

HD-DBD

Pressure relief valve, direct operated, Type DBD



3 pressure adjustment element, optional
 3 mounting types: cartridge connection, threaded connection, sub plate mounting
 Size 6 8 10 15 20 25 30
 Type HD-DBD
 Working pressure bar 400 400 630 315 315 315 315
 Flow L/min 50 120 120 250 250 350 350

HD-DBT/DBWT

Pressure remote relief valve, Type HD-DBT/DBWT



Remote control in long distance
 3 pressure adjustment elements, optional
 Mounting type: sub-plate mounting
 Type HD-DBT/DBWT
 Max. operating 315
 pressure bar
 Max. Flow L/min 3

HD-DZ...DP

Direct operated sequence valve
 type HD-DZ....DP



-3 or 4 pressure adjustment element,optional
 -5 pressure ranges (in bar)25,75,150,210,315
 -check valve optional
 -For sub-plate mounting

Size 5 6 10
 Type HD-DZ....DP
 Max operating 315 210 210
 pressure bar
 FlowL/min Max 30 60 80

HD-DZ

Pilot operated pressure sequence valve, type HD-DZ



4 pressure adjustment elements, optional
 4 pressure ranges (in bar): 50, 100, 200, 315
 Check valve optional
 For sub-plate mounting
 Size 10 20 30
 Type HD-DZ
 Max operating 315 315 315
 pressure bar
 Max flow L/min 200 400 600

HD-LC DB

2-way cartridge valve for relief
 control function LC...DB



Mounting type: As cartridge structure, encased in block
 With or without throttle element
 poppet valve, spool valve

Size 16 25 32 40 50 63
 Type HD-LC....DB
 Max operating 420 420 420 420 420 420
 pressure bar
 Flow L/min 250 400 600 1000 1600 2500

HD-ZDB/Z2DB

Pilot operated pressure relief valve
 type HD-ZDB/Z2DB



Sandwich plate valve
 With one or two pressure relief cartridges
 4 pressure ranges: 50, 100, 200, 315
 3 pressure adjustment elements, optional
 5 circuit options (size 6) or 6 circuit options (size 10)
 Size 6 10
 Type HD-ZDB/Z2DB HD-ZDB/Z2DB
 Max operating 315 315
 pressure bar
 Flow L/minmax 60 100

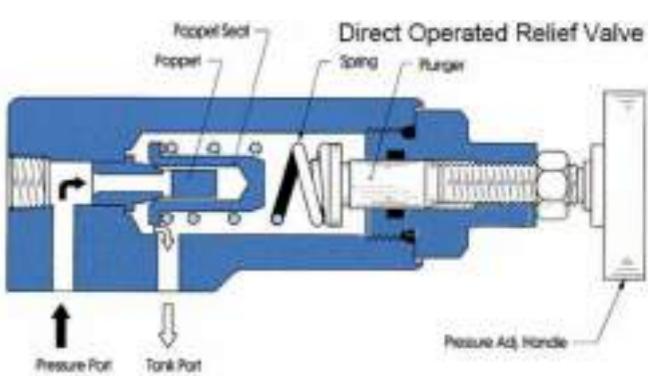
HD-ZDR

Direct operated pressure reducing valve,
 Type HD-ZDR



Sandwich plate design
 4 pressure range (in bar) 25, 75, 150, 210
 4 pressure adjustment element, optional
 Pressure reduction in ports A, B or P
 Check valve optional

Size 6 10
 Type HD-ZDR HD-ZDR
 Max operating 210 210
 pressure bar
 Max flow L/min 30 50



PROPORTIONAL VALVES



Smarter
Faster
Easier

HD-3DREP6

Proportional pressure reducing valve of 3-way design, Type HD-3DREP6

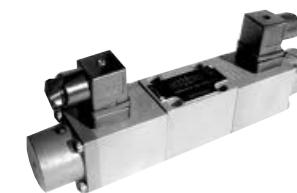


The 3 way pressure reducing valve is directly actuated by proportional solenoids, limiting a system pressure. Wet pin DC proportional solenoids. Both valve and electronic control from one supplier. Mounting type: Sub-plate mounting

Size	6
Type	HD-3DREP6
Max operating pressure bar	100
Max Flow L/min	15
Delay components	<3
Repeatability Precision	<1
Electronic control with 1 ramp times	VT-3000S30
Electronic control with 5 ramp times	VT-3006S30

HD-4WRE

Proportional Directional valves, Type HD-4WRE



Direct actuated proportional valve for controlling the direction and volume flow of a hydraulic fluid. Electrical feedback. Wet pin DC Proportional solenoids. Spring centered control spool. Both valve and electronic control from one supplier. Mounting type: Sub-plate

Size	6 10
Max operating pressure bar	315 315
Max Flow L/min	80 180

PV-3/PV-4 Series

Proportional Valves



Max. Flow: 140 l/min
Max. pressure: 350 bar
Applications:
For Mobile & Industrial hydraulic applications

HD-2FRE

Proportional flow control valve 2-way version, type HD-2FRE



According to electrical command value controlling the volume flow of a hydraulic fluid. With a pressure compensator for the pressure compensated control of a flow. Actuation via a proportional solenoid. With electrical position feedback of the control orifice. Both valve and electronic control from one supplier. Flow control is possible in both directions by using a rectifier sandwich plate. Mounting type: sub-plate mounting

Size	6 10 16
Type	HD-2FRE
Max operating pressure bar	210 315 315
Max Flow L/min	25 60 160

HD-4WRA

Proportional directional valves, Direct actuated, without electrical feedback, type HD-4WRA



Direct actuated proportional valve for controlling the direction and volume flow of the hydraulic fluid. Wet pin DC proportional solenoids. Spring centered control spool. Both valve and electronic control from one supplier. For sub plate mounting:

Size	6 10
Type	HD-4WRA
Max operating pressure bar	315 315
Max flow L/min	43 95

HD-4WRZ...7X

Proportional Directional valve



Pilot operated with integrated electronic
Size: 10, 16, 25, 32
Working pressure bar 315
Max Flow L/min 30

Pilot operated operational directional valve
For sub-plate mounting
The control of direction and rate of flow
Spring centered control spool
Valve and proportional control electronics from a single source

LSPV Series

Load Sensing Proportional Control valve



LSPV 15
Rated pressure: 350 bar (pump side)
420 bar (actuator side)
Rated Flow: 200 L/min
Applications:
Aerial work platform, Forestry machine
Drilling rigs, Mining truck, Mining truck
Crane, Telehandler, Stone Crusher

HD-4WR

Proportional Directional valves pilot operated type HD-4WRZ External pilot operated type HD-4WRH



Pilot (WRZ) and direction (WRH) proportional valve for controlling both direction and flow of a hydraulic fluid. Wet pin DC proportional solenoids. Spring centred control spool. Both valve and electronic control from one supplier. Mounting type: Sub-plate mounting

Size	10	16	25	32
Type	HD-4WR			
Max operating pressure bar	350	350	350	350
Max Flow L/min	270	460	877	1600
Delay components	<6	<6	<6	<6
Repeatability Precision	<3	<3	<3	<3

HD-DBE/DBEM

Proportional pressure relief valve type HD-DBE/DBEM



In relation to the electrical command value the pressure can be limited and be infinitely set. Optional maximum pressure protecting adjustment. Both valve and electronic control from one supplier. Mounting type sub plate mounting, manifold mounting

Size	10	30	20
Type	HD-DB/DBEM		
Max operating pressure bar	315	315	315
Max flow L/min	200	600	400
Delay components	1,5 with buffering	4,5 without buffering	
Repeatability Precision	<+-2	<+-2	<+-2
Electronic control	VT-2000S 40		

HD-DBETR

Proportional pressure relief valve, Type HD-DBETR



Valve for electrical remote control of pressure, limiting in a system pressure. Proportional solenoid actuation with inductive position transducer. Both valve and electronic control from one supplier. Mounting type: Sub-plate mounting

Size	6
Type	HD-DBETR
Max operating pressure bar	25 80 180 315
Max Flow L/min	10 3 3 2
Delay components	<1
Repeatability Precision	<0.5
Electronic control	VT-5003S30

HD-DRE/DREM

Proportional pressure reducing valve type HD-DRE/DREM



Used for the reduction of a working pressure. Optional maximum pressure protecting adjustment. Both valve and electronic control from one supplier. Mounting type sub: plate mounting, manifold mounting

Size	10	20	30
Type	HD-3DREP6		
Max operating pressure bar	315	315	315
Max. Flow L/min	200	400	600
Delay components	1.5 with buffering	4.5 without buffering	
Repeatability Precision	<+-2	<+-2	<+-2
Electronic control	VT-2000S 40		

4WRPEH6/10

Servo Solenoid Proportional Valve



Max. working Pressure : 315 bar
Nominal flow rate 40lpm and 100lpm, max. ($p = 70$ bar)
With control spool and sleeve in servo quality. Operated on one side, 4/4-fail-safe position in switched off state. Electric position feedback and integrated electronics (OBE), calibrated in the factory. Electrical connection 6P+PE. Signal input differential amplifier with interface "A1" ±10V or interface "F1" 4....20mA($R_{sh} = 200\Omega$) Use for electro-hydraulic controls in production and testing systems.

Size : 06, 10

DBETX....1XT

Proportional pressure relief valve



NG6
Max. Pressure 315 bar
Nominal flow 1 lpm
Features :
Direct operated valves for the limiting system pressure. Adjustable by means of the solenoid current, see performance curve, Technical data and selected valves electronics.
Pressure limitation to a safe level even with electric failure (solenoid current $> I_{max}$)
For subplate attachment, mounting hole configuration to ISO4401
External trigger electronics with ramps and value calibration (order separately).

PV-3/PV-4 Series

Proportional Valves



Max. Flow: 140 l/min
Max. pressure: 350 bar
Applications:
For Mobile & Industrial hydraulic applications

LSPV Series

Load Sensing Proportional Control valve



LSPV 15
Rated pressure: 350 bar (pump side)
420 bar (actuator side)
Rated Flow: 200 L/min
Applications:
Aerial work platform, Forestry machine
Drilling rigs, Mining truck, Mining truck
Crane, Telehandler, Stone Crusher

VT-DFP

Pilot Control Valve, 24VDC, 350 bar



Features:
Pilot valve for the pressure and flow control system SYDFE
In conjunction with amplifier VT5041, it controls the swash-plate angle of the pump in either closed loop pressure or flow control
Component series 2X
This valve is to be considered a part and not a complete control
Standard spool design
Radial to the pump axis

EDG-01

Proportional Pressure Relief And Flow Valves
Pilot Operated



This valve consists of a small DC solenoid and a direct-acting relief valve. It serves as a pilot valve for a low flow rate hydraulic system or a proportional electro-hydraulic control valve and controls the pressure in proportion to the input current. Note that this valve is used in conjunction with the applicable power amplifier.

PROPORTIONAL VALVES

EBG 03/06

Electro proportional pressure relief valve



This valve is combined with a proportional electro-hydraulic pilot relief valve and a specially developed low-noise relief valve. Owing to special vent restrictor, this valve can make pressure control more precise and stable.

Size : 03, 06

EFG-02/03/06/10

Proportional Pressure Relief And Flow Valves
Pilot Operated



Pressure and flow is proportional to the input signal of the proportional solenoids. This proportional valve adopts two electrical loops to control pressure and flow of hydraulic system respectively. The power losses is very low and overall efficiency high, hence reduced power consumption. Using very small pressure drop to track load pressure and control the pump pressure. This relief and flow control valve is energy saving type that provide flow and pressure as per programmed for actuator / drive. It is an high efficiency and energy-saving valve.

HD-(Z)DBE and HD-(Z)DBEE

Proportional pressure relief Valve



Features :
Valve for limiting a system pressure
Actuation via proportional solenoids
For sub-plate mounting or sandwich plate design
Valve and control electronics from a single source
Types HD-DBEE and HD-ZDBEE with integrated control electronics:
Low example spread of the command value pressure characteristic curve
Independently adjustable up and down ramps

HD-4WRA(E)6....2X

New Series Proportional Directional valve



Direct operated with integrated electronic
Working pressure bar 315
Max Flow L/min 30
For sub-plate mounting
Direct actuated proportional valve for controlling the direction and volume of a flow
Spring centered control spool
Integrated control electronics, interface A1 or F1 for type 4WRAE
Actuation by means of proportional solenoids with central thread and removable coil
Control electronics for type 4WRA

HD-4WRE(E)...2X

New Series Proportional Directional valve



With integrated electronics and position feedback
Size: 6 and 10
Working pressure bar 315
Flow L/min 180
Directly controlled proportional directional valve for the control of the direction and magnitude of a flow. For sub-plate mounting
Electrical position feedback
Spring centered control spool
Type 4WRE, integrated valve electronics with interface A1 or F1
Actuation is by proportional solenoids with central thread and removable coil
Valve and electronic control from one source

E-510 Series

Plug-in Proportional Valve Amplifier



Introduction : STM Microprocessor Chip, Embedded Digital Amplifier and Software with Intellectual Property, PWM negative current feedback.
Shell is the standard Hirshmann DIN plug with convenient shape, less heat generated and IP65 protection. The maximum output current is 3.3A with current limiting protection.
Two LED indicators of input signal and output current status. Preset PWM frequency parameters, the built-in potentiometers can change bias, ramp and scale parameters.
The inputs are 0-10V, 0-20mA, 4-20mA or on-off input. Provide many options such as enable control, logic control, power limitation and so on.

VT-PPDA1

Plug-in Amplifier Connector for proportional valve



Component Series: 3X
Operating voltage: 12...32V
Features
Plug-in amplifiers are easy to operate and install
Digital proportional amplifier for mobile phone Bluetooth control
Data can be monitored by mobile phone
Users can configure parameters according to actual working conditions
For proportional valves without position control

PROPORTIONAL VALVES

HD-4WRZE10

Proportional Directional Valve



Valves of type 4WRZE10 are pilot operated 4-way directional valves with operation by proportional solenoids. They control the direction and magnitude of flow.

Features:
Pilot operated 2-stage proportional directional valves with integrated electronics (OBE)
Control the direction and magnitude of flow
Manual override
Spring-centered control spool

HD-4WRKE10,16,25,32,35

Proportional Directional Valve, Pilot Operated with Electrical position feedback type



Size 10 16 25 32 35

Flow L/min 170 460 870 1600 3000

Pilot Operated, with integrated electronics
Working Pressure bar 350

Valve for limiting a system pressure
Actuation via proportional solenoids
For sub-plate mounting or sandwich plate design
Valve and control electronics from a single source
Types HD-DBEE and HD-ZDBEE with integrated control electronics:
Low example spread of the command value pressure characteristic curve
Independently adjustable up and down ramps

FLOW CONTROL VALVES

Take Control
High Efficiency
VALVES

HD-2FRM

2-way flow control valve, Type HD-2FRM



For maintaining a continuous set flow, independent of pressure and temperature
Lockable key optional
External closing of the pressure compensator optional. Check valve optional
A rectifier sandwich plate type Z4S should be fitted below to control a flow through the valve in both directions. For sub plate mounting.

Size	5	6	10	16
Type		HD-2FRM		
Max operating	210	315	315	315
Pressure bar				
Flow L/min Max	15	25	50	160

HD-2FRM6....31/

2-Way flow control valve, type HD-2FRM6....31/



For maintaining a continuous set flow, independent of pressure and temperature
Lockable, Key optional
External closing of the pressure compensator optional. Check valve optional
A rectifier sandwich plate type Z4S should be fitted below to control a flow through the valve in both directions. For sub plate mounting

Size	6
Type	HD-2FRM-...31/
Max operating	315
pressure bar	
Flow L/min Max	32

HD-DV/DRV

Throttle check valve, type HD-DV/DRV



For setting and shut-off flow of fluid
Throttle valve type DV and throttle check valve type DRV
2 mounting type sub-plate mounting
threaded connection

Size	6	8	10	12	16	20	25	30	40
Type									
Max operating	350	350	350	350	350	350	350	350	350
pressure bar									
Flow L/min Max	20	50	60	85	180	300	300	300	300

HD-FD

Check Q meter valve,
Type HD-FD



Pilot operated check valve leak-free
2 mounting type : sub plate mounting, threaded connection
By pass valve, free flow in opposite direction
Optional built-on secondary pressure relief valve (only for valve with flange connection)
3 mounting type manifold mounting (cartridge valve),
sub plate mounting, SAE flange connections.

Size	12	16	25	32
Type				
Max operating	315	315	315	315
pressure bar				
Flow L/min Max	80	200	320	560

FLOW CONTROL VALVES

HD-MG/MK

Throttle and throttle check valve, Type HD-MG/MK



Suitable for direct in line mounting
Pressure and viscosity dependent
Throttle valve type MG and throttle check valve type MK
Mounting type: Threaded connection

Size	6	8	10	15	20	25	30
Type	HD-MG/MK						
Max operating pressure bar	315	315	315	315	315	315	315
Flow L/min Max	15	30	50	125	200	300	400

LFA



Flow control valve
Size: NG30
Max. Pressure upto 210 Bar
Max. Flow upto 300L/min
Features:
It consist of pressure compensator and throttle valve
Flow rate is adjusted by the handle regulated with in a range of 120
The pressure relief valve can be with or without stroke regulator.

HD-Z2FS

Double throttle check valve, Type HD-Z2FS



For limiting the main or pilot fluid flow of 2 actuator connections
For meter-in or meter-out control
Sandwich plate valve

Size	6	10	16	22
Type	HD-Z2FS			
Max operating pressure bar	315	315	315	315
Max. Flow L/min	15	50	125	200



ACCESSORIES

HD-AF6E

Pressure gauge-Isolator valve
type HD-AF6E



3-way longitudinal valve
Push button operated
Mounting type: Sub-plate mounting, Threaded connection
Size 6
Type HD-AF6E
Max operating pressure bar 315

WMAP

Pressure switches with fixed differential



Max. Pressure upto 350 Bar
Pressure switches are designed to operate in hydraulics systems with hydraulic mineral oil or synthetic fluid having similar lubricating characteristics.

HD-HED1

Hydro-electric pressure switch,
type HD-HED1



For changing the pressure signal to electrical signal
With or without drain port, optional
With or without control lamp
Type HD-HED1
Max operating pressure bar 500

HD-HED4/HED8

Hydro-electric pressure switch
type HD-HED4/HED8



For changing the pressure signal to electrical signal
3 Max. setting pressures
3 Mounting type: sub plate mounting, threaded connection, as vertical stacking element
Type HD-HED4/HED8
Max operating pressure bar 350

ACCESSORIES

HD-MS2A

Multi-circuit gauge isolator,
type HD-MS2A



Valve housing with threaded connections
6 measuring points
With built-in pressure gauge
Flange mounting

Size	6
Type	HD-MS2A
Max operating pressure bar	315

ET-02

Check valve manufacturer ET-02 lift valve



Flow: 20L/min
Max Pressure: 210bar
Features:
Spool position: normally close; Used in hydraulic lifting platform under solenoid valve voltage of AC220V, AC110V or DC24V., the whole lift process can be done stable and the rate of the decline will not be influenced by the load.

KHB/KHM

Ball Valves



Features :
THM 2-way High pressure Ball Valves are of a compact construction.
Working temperature depending upon sealing material - 20 degree C to + 250 degree C.
Easy handling even at high pressure (switching through 90 degree).
Working pressure up to 450bar.
Individual pressure testing of valves ensures safety.
If the ball valve are to be used for gas, oxygen or any other special application, please give full details when ordering with temperature and pressure. Also manufactured in stainless steel.

OSPT

Hydraulic Steering Unit



Flow: 40lpm
Max Pressure: 175 bar
Displacement: 50 to 400cc/rev

Features:
High efficiency, long service life, compact and convenient low pressure drops & steering torque ports available to DIN, ISO or SAE Size 50 to 400cc/rev available with built-in valve functions shock, inlet check suction and relief valves, according to European & US standards, extensively used in forklift, tractor, combines and loaders.

Bell Housing Bracket

Servo Assembly Spares



Size: DL100, DL150, DL250,
DL350, DL450, DL650



Sizes: G3/4, G1, G1 1/4, G1 1/2, G2, G2 1/2, G3

Minimess coupling



Applications:
Monitoring/ testing of pressure
Lubrication
Air bleeding
Oil sampling

Acessories- Joysticks



Applications:
For Monoblock Directional control valves and Sectional Directional control valves



THM
HYDRAULICS
QUALITY ASSURED

ELECTRONIC COMPONENTS

T-FTC-400

Electronic Temperature Switch split-type



Introduction :
Type T-FTC-400 is a temp. controlling unit, gathering displaying and controlling functions. It is high in precision, small in volume, which can be matched with temp. sensor with oil tank (TGFW-100) mainly control the temp. In hydraulic and lubricate drive system.
It has one or two switch value outputs (transistor output), selecting standard-analogue valve output of one way (4~20mA), and wiring with upper computer and PLC controlling system, you can set the switch point and prolongation by pushing button.

TMRPD

Amplifier card



Suitable for the control of variable piston pump (type A4VSO and A4VSG)
Powerful 32-bit processor
Command 0...10 V
2 PWM output ports
Enable
Fault diagnosis function, power supply voltage, coil short circuit, open circuit or other abnormal conditions prompted
35mm rail mounting or screw holes

TFPC-400

Electronic Pressure Switch



Features

Type TFPC is a compact electronic pressure switch with built in digital display in three digits. The switching point and the corresponding hysteresis can be adjusted via keypads. It is high in precision, small in volume. Switching points and switch-back hysteresis can be adjusted independently. Accuracy class 1% TFPC can be used in carrying one or two switching output or one analogue signal output besides directly measure the pressure value. Four different output models are available : With one switching point, with two switching points and both models can also have an additional analogue output signal 4...20mA. It can mainly be used in exactly monitoring pressure of hydraulic and pneumatic system. It can be used in places which needs high switching frequency with high precision where the normal mechanical pressure relay/switch cannot fulfill the demands.

TEDS-3xx Series

Pressure switch with digital display



Pressure up to 400 bar
Voltage 20...32 VDC
Output 4-20mA/ Switching

Features:

The TEDS 3xx is a compact, electronic pressure switch with integrated digital display. The integrated pressure sensor is based on a measurement cell with thin-film strain gauge on a stainless steel membrane. Four different output models are available: with one switch point or with two switch points and both models can also have an additional analogue output signal 4 ... 20 mA.

SPARES AND SEAL KITS



Rotary cartridge for Vane Pumps T6C/D/E and 20V/25V/30V/35V



Rotary group and spares for A2FO



Rotary group and spares for A10VO/VSO

AIR COOLERS

AJ0510

AC/DC fan motor series



Rate of flow 10L/min

Max Working Pressure 15 Bar

Fan Power 48 Bar

Fan Voltage 220V~ 240V

Used in: Very suitable for machine tools, special purpose machine tools and small power packs.

AW0607-FMA2

AC/DC fan motor series



Used in: Very suitable for machine tools, special purpose machine tools and small power packs.

Features:

Application for cooling of the oil drain pipes of variable vane and piston pumps and small hydraulic power packs, the cooler is assembled with a high-performance axial flow electric fan with tightly structured high heat dissipation type fins, single-fan and double-fan cooling is available according to the heat generated in a hydraulic system, standard ports for inlet and outlet are available with PT and BSP screw threads operating voltages available are DC 12v, DC 24v, AC 110v and AC 220v.

AH608L

AC/DC fan motor series



Used in: Very suitable for machine tools, special purpose machine tools and small power packs.

Features:

Application for cooling of the oil drain pipes of variable vane and piston pumps and small hydraulic power packs, the cooler is assembled with a high-performance axial flow electric fan with tightly structured high heat dissipation type fins, single-fan and double-fan cooling is available according to the heat generated in a hydraulic system, standard ports for inlet and outlet are available with PT and BSP screw threads operating voltages available are DC 12v, DC 24v, AC 110v and AC 220v.

AH1012,AH1245

AC/DC fan motor series



Used in: Very suitable for machine tools, special purpose machine tools and small power packs.

Features:

Application for cooling of the oil drain pipes of variable vane and piston pumps and small hydraulic power packs, the cooler is assembled with a high-performance axial flow electric fan with tightly structured high heat dissipation type fins, single-fan and double-fan cooling is available according to the heat generated in a hydraulic system, standard ports for inlet and outlet are available with PT and BSP screw threads operating voltages available are DC 12v, DC 24v, AC 110v and AC 220v.

EH SERIES

Oil Cooler with Hydraulic Motor



Model: EH24D-HM

Gear motor displacement: 12.6 mL/r

Motor Max. pressure: 250 bar

Air Oil Cooler flow: 380 L/min

Cooler Max. pressure: 24 bar

AH1417-1890

Oil-air Cooler, AC fan motor series



Used in: Machine tools, special-purpose machinery, engineering machinery, tunnel and port machinery, hydraulic power station & lubricating system.

Features:

The product is designed to achieve the best cooling effect with 35 bar dynamic axial flow fan and tightly structured high-efficiency fan, single-fan cooling or double fan cooling is available according to the heat generation of the system, standard for oil inlet and outlet: PT(RC) screw thread; other threads can be custom-made, operating voltage: AC 110V, AC220V, AC 380V, DC 12V and DC 24V, in case that special voltage is required please contact THM



HYDRAULIC CYLINDERS

THM-OB/OD Series

OB/OD Medium Duty Tie Rod Hydraulic Cylinder



Working pressure: 140 bar
Bore size(mm): Ø40, Ø50, Ø63, Ø80, Ø100, Ø125, Ø150, Ø180, Ø200
Standard Stroke(mm): 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000

We Can Provide
Customised Cylinders

Modular Valves NG16, NG22, NG32

ZRP/ZRA/ZRB

Pressure Reducing Modular Valves



Size: NG16, NG22, NG32
Max. operating pressure up to 350 bar
Max. flow up to 800 L/min.

ZERP/ZERA/ZERB

Reducing modular proportional valve



Sizes: 01, 03
Rated Flow: 30, 70 l/min
Max. pressure: 250 bar

Introduction:

The valve combines the advantages of a superposition valve and a proportional valve is easy to install and can adjust the secondary side pressure in proportion to the input current of the proportional electromagnet.

ZSW/ZSA/ZSB

Throttle check Modular Valves



**First Time
in India**

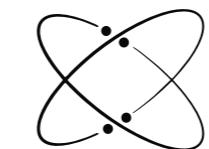
Size: NG16, NG22, NG32
Max. operating pressure up to 350 bar
Max. flow up to 800 L/min.

ZPW/ZPA/ZPB

Pilot operated check Modular Valves



Size: NG16, NG22, NG32
Max. operating pressure up to 350 bar
Max. flow up to 800 L/min.



ATOM METRIC

FINEST MEASUREMENTS, HIGHEST PRECISION

**NEW
ARRIVAL**

RH/RP Displacement Sensor Analog Output



RH/RP Displacement Sensor SSI Output



MH Series – Magnetostrictive Displacement Sensors



HP Position Sensor



EP Displacement Sensors



ED Displacement Sensors



MEGMEET®

Controller for IMM Operations

GK Series Controller



Models: GK8E, GK10M, GK10E, GK12E,

GK10V, ET10V

Configuration Features

- Various appearance styles can be selected: horizontal screen.
- Vertical screen and aluminium alloy frame integrated electric box.
- Multiple screen sizes are available for a wide range of applications.
- A variety of theme backgrounds, new visual upgrades.

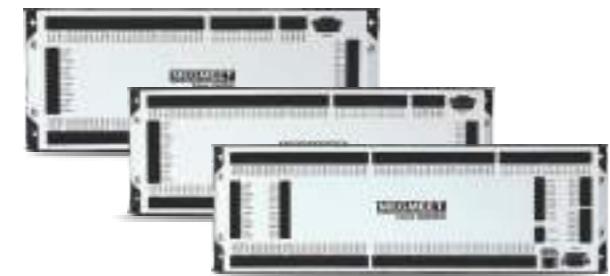
Operation style

- The key layout is reasonable and easy to operate.
- New operation interface, accord with the market mainstream operation habits.

Function Introduction

- Use U disk to achieve program upgrade, data upload and download, screen capture and other functions.
 - Support network expansion function to achieve remote monitoring.
 - I/O points, analog quantities and electronic ruler user-defined features.
 - Output points are programmable.
 - The database function built by the manufacturer is convenient for debugging by customers.
 - More secure and efficient staged encryption algorithm
- Built in 9 languages: Chinese, English, Korean, Russian, French, Spanish, Portuguese, Vietnamese and Arabic.

MCP Series Controller



Models: MCP1000, MCP2000

MCP3000, MCP6000

Features

The control cycle is 250us, which can realize faster, more accurate and more stable control.
Shrapnel type pressing terminal, convenient and quick user connection
Multi-core control, rich hardware resources, to meet all injection molding machine configuration requirements.
Full isolation design, strong anti-interference ability, output point short-circuit protection.
Intelligent opening and closing algorithm: easy debugging, fast, flexible accurate and stable control.
Self learning temperature control algorithm: accurate temperature control.



Introducing the latest Make in India hydraulic valves!

Engineered for optimal performance, these valves showcase cutting-edge technology, precision manufacturing, and adhere to international quality standards. Enhance your hydraulic systems with our reliable and efficient valves, proudly made in India to meet the diverse needs of Industries.



4WE 6,10
Solenoid Operated
Direction Control Valve



ZDR6, 10
Pressure Reducing
Valve



Z2S6, 10
Pilot Operated
Check Valve



S Type 6 to 30
Check Valve
Threaded Mounting



DPRH 6, 10
Direct Operated
Pressure Relief valve



Z2FS6, 10
Double throttle
and check valves



PCM
Pressure Control Module



1PS10/1PS
Pressure Switch



**"Empower Your Machinery:
Make in India Hydraulic Valves
Where Reliability Meets Revolution."**

Introducing THM's **HYBRID SERVO HYDRAULIC SOLUTION**

Electro-hydraulic Servo Drive

THSD-23 Series

Power :- 5.5~400kW; Single and Three Phase



Hydraulic Servo Motor **THH Series**

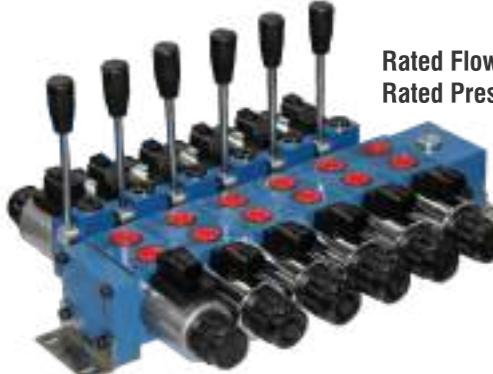
Power :- 5.5~61.8kW; Rated Speed: 1500-1700-2000 rpm

*"Step into the future of automation with our THM Servo System.
Get ready to experience unparalleled accuracy and efficiency
like never before."*

NEW ARRIVAL

DCF6

Electromagnetic multi way valve
Solenoid Proportional Control/
Manually Proportional Control



Rated Flow: 40 l/min
Rated Pressure: 250 Bar

THM
HYDRAULICS
QUALITY
ASSURED

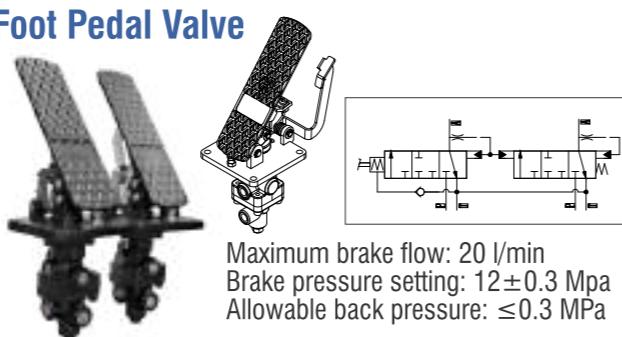
VBS0

Dual counterbalance valve



Sizes: 6, 10, 15, 20
Flow Rate: 30, 40, 60, 80 L/min
Max. Working pressure up to 350 Bar

Foot Pedal Valve



Maximum brake flow: 20 l/min
Brake pressure setting: 12 ± 0.3 Mpa
Allowable back pressure: ≤ 0.3 Mpa

USDAS1

User Manual



Supply Voltage: 8-32 VDC
Command Input: 4-20 mA

MSE02

Hydraulic Motor



Direct drive motor up to 22 kW ideal for wheel motor or tool drive, from 172 to 398cc, from 400 to 450 bar max (max torque 2500 N.m) and high speed reached at 900 rpm with multispeed conception. The modular design ease the use on all demanding application for the most demandable market as construction equipment, material handling, agricultural, environment, mining, on rail, marine, industry...

MSE18

Hydraulic Motor



Direct drive motor up to 70 kW ideal for wheel motor or tool drive, from 1091 to 2812cc, from 400 to 450 bar max (max torque 17900 N.m) and high speed reached at 170 rpm with multispeed conception. The modular design ease the use on all demanding application for the most demandable market as construction equipment, material handling, agricultural, environment, mining, on rail, marine, industry

ROTARY ACTUATOR



**NEW
ARRIVAL**



SAM Series

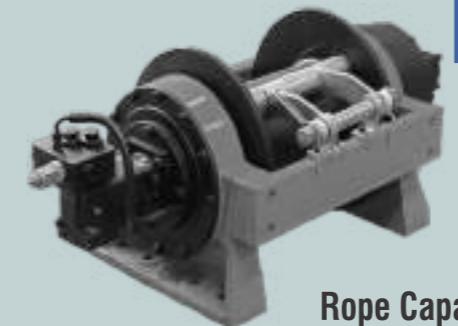
Rotary Actuator
Displacement: 155, 256, 513, 827, 1253 cc/rev

SAM series rotary actuator is mainly designed for all kinds of aerial work platform. Customized product solutions according to customer requirements for different equipment can also be realized.

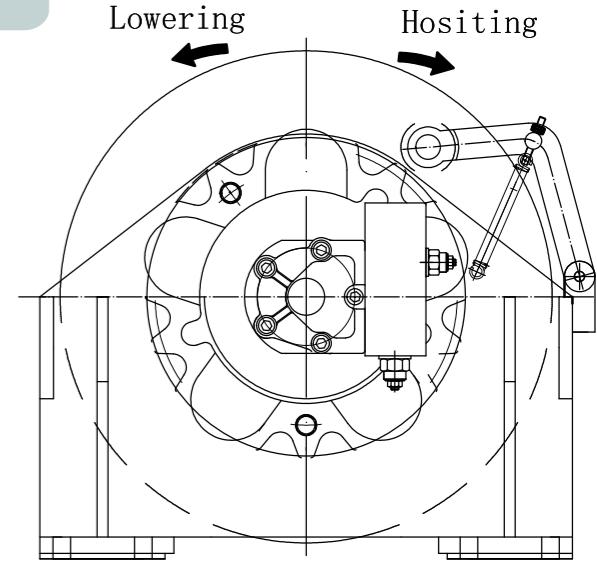
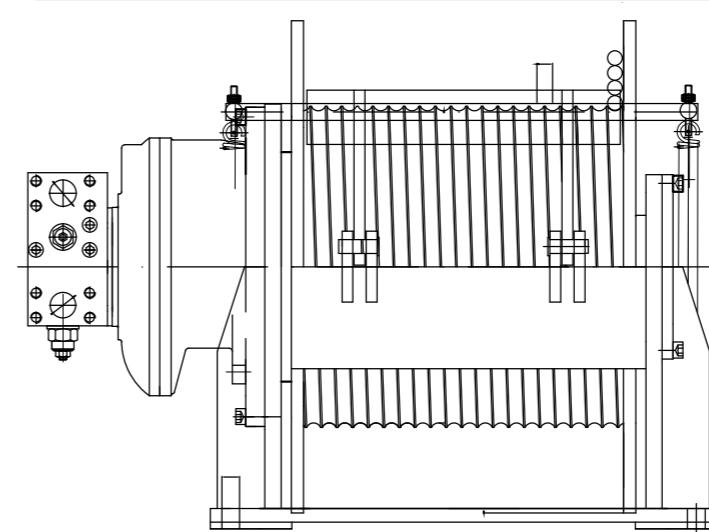
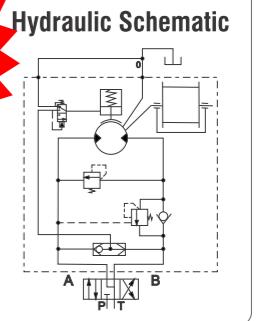


HYDRAULIC WINCH

**NEW
ARRIVAL**



Rope Capacity: 2.5, 5, 10 Tonne



Hydraulic valves For Mobile Applications



Back Pressure Valve
Flow rate: 300 L/min
Opening Pressure: 3 Bar



Oil Return Check Valve
Flow rate: 500 L/min
Rated Pressure: 50 Bar
Opening pressure: 3.5 ± 0.2 bar



Back Pressure Valve
Flow rate: 600 L/min
Opening Pressure: 4.5 ± 0.45 Bar



2 Position 8 way switching valve
Flow rate: 20 L/min
Rated Pressure: 100 Bar



Flow rate: 60 L/min
Rated Pressure: 450 Bar
Opening pressure: 0-30 bar



Double Overcenter Balancing Valve
Flow rate: 60 L/min
Rated Pressure: 350 Bar



2 Position 6 way solenoid valve
Flow rate: 60 L/min
Rated Pressure: 250 Bar



Flow rate: 10 L/min
Rated Pressure: 100 Bar



Selector Valve
Flow rate: 50 L/min
Rated Pressure: 315 Bar



2-link-2 Position 6 way solenoid valve
Flow rate: 25 L/min
Rated Pressure: 250 Bar



2 Position 6 way solenoid valve
Flow rate: 120 L/min
Rated Pressure: 350 Bar

Aerial Work Platform (Scissor-Lift)



NEW ARRIVALS

BCW Series

Orbital Hydraulic Motor

Sizes: 120 to 620 cm³/rev
Max. Cont. Speed up to 374 r/min
Max. Cont. Flow up to 83 l/min

Introduction:
The BCW series orbital hydraulic motor, which boasts superior mass-to-power ratio, has been extensively used in all kinds of mobile and rotary conditions, particularly for low flow and large torque load starting conditions.

BBK Series

Hydraulic Brake

Min. Static Torque: 1150, 1500 Nm
Brake Release pressure: 28 Bar
Max. Bearing capacity: 250 Bar
Max. Speed: 250 r/min

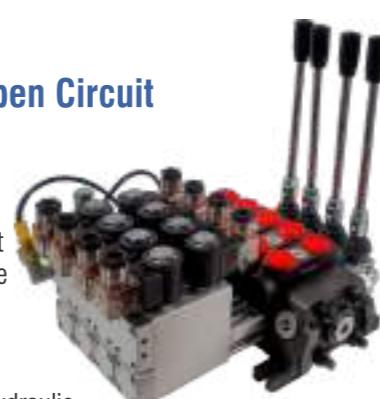
Introduction:
The BBK series brakes are normally-off oil wet static hydraulic brakes, which utilize spring action to produce the braking force, while oil pressure is used to release the brake.

CVM Series

Multi-way Control valve Open Circuit

Rated Flow up to 80 l/min

Features:
Low pressure loss for energy saving
Sandwich structure, flexible adjustment
Secondary pressure valve, charge valve equipped
Small size and light weight
Various control methods like manual, pneumatic, electrical control, electro-hydraulic



TKC Series

Axial Piston Variable Displacement
Motor apply to open or close circuit

Size : 25 | 38 | 45
Nominal pressure : 210 | 210 | 175
Max pressure : 415 | 415 | 350



TMCR/TMCRE Series

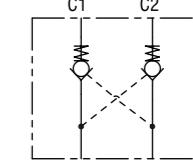
Hydraulic Motor
Frame Sizes: 03, 05, 10



VRDE

Double acting pilot

HYDRAULIC CIRCUIT :



NEW ARRIVALS
WEMM

Solenoid Operated Directional Valve
with Emergency Handle

Size 6 to 10
Max. working pressure 350 bar
Max. working flow rate 120 L/min


1RC

Radial Piston Pump
Max. Pressure up to 350 Bar


Features:

- Radial piston arrangement, with 3, 5 or 7 pumping elements.
- Oil immersed or external mounting type.
- Face mounting, Valve controlled, Fixed delivery.
- Bi-directional rotation of shaft. Available with extension shaft for through drive.
- With extension bracket assembly for coupling a low pressure pump having standard flange

PUMPING UNIT

Motor plus Pump Assembly
(Variable Vane Pump / Gear Pump)

Motor Size: 0.5HP, 1HP, 2HP, 3HP, 5HP, 7.5HP, 10HP
Variable Vane Pump Size: 8 cc & 16 cc



Features :
High efficiency - Combining high efficient motor (complies with IE3 requirement) can save 20% more energy compared to normal motors and pumps
Low temperature
High volumetric efficiency and low leakage will cause less heat generation and improves the accuracy.
Space -saving, Long Working life, Low noise

FC/FCR Series

Full range Pressure Compensating Variable Flow Control Valve
Max. Flow Setting up to 114 l/min


Features:

In order to vary the flow of fluid, the full range pressure compensating variable flow control valve is designed so that the orifice area varies as the lever is rotated. It has compensator spool inside the valve body. No matter how the pressure varies, that is, no matter the orifice area varies from closed to open, the outlet flows will be constant and stable.

THAD Series

Diaphragm Accumulators



Sizes: 0.075Ltr~3.5Ltrs
Max. Working pressure up to 330 Bar


AB330 Series

Bladder Accumulators
Operating Pressure: 315Bar
Nominal Volume: 4~50L


Description:

Bladder accumulators are a very versatile and cost effective option for numerous types of hydraulic systems involving energy storage, shock absorption, pulsation dampening, leakage loss compensation and volume compensation. They are a first choice for a great variety of general applications and have the widest range of standard sizes and model options. Bladder accumulators also have very quick shock response characteristics in sizes much larger than diaphragm accumulators.

TSR Series

Screw Pump

Shaft Speed up to 3600 rpm
Flow up to 8000 l/min
outlet pressure 0~80 Bar
Inlet pressure -0.7~3 Bar


TPN Series

Brush Less Motor



Voltage: 12, 24V
Rated Power up to: 120W
Rated Current up to: 7.2A
Rated Speed up to: 3000 rpm
Rated Torque up to: 0.382Nm
Motor Life: 2000 Hours

TA10

Linear Actuator



Input : 12V & 24V
Load Force: Max. 1500N/150Kg/330lbs
Speed: Max. 90mm/s
Operation temperature: -26°C ~ +65°C

TA14

Linear Actuator



Input : 12V & 24V
Load Force: Max. 4000N/400KG/880LBS
Speed: Max. 26mm/s
Operation temperature: -26°C ~ +65°C

ADAPTERS

- 3/4 SHORT ADAPTER
- 3/4 SHORT ASAE ADAPTER
- 3/4 SHORT TRC ADAPTER
- 3/4 SHORT FLANGE ADAPTER
- 3/4 ADAPTER WITH SHORT BEARING AND FLANGE
- 3/4 LONG ADAPTER
- 3/4 LONG FLANGE ADAPTER

- SAE A - ISO ADAPTER
- SAE B - ISO ADAPTER
- ISO - ASAE ADAPTER



NEW ARRIVALS
T-D1FP & T-D3FP

Direct-acting high-frequency response servo directional valve electrical position feedback and integrated amplifier



Size: NG6 & NG10
Maximum pressure: 350 Bar
Rated Flow:
NG6 : 3~40 L/min
NG10: 50~100l/min
($\Delta p = 70\text{bar}$)

TGR Series

Helical Silent Gear Pump



Max. Continuous pressure up to 270 bar
Max. Peak pressure up to 300 bar

VBCD Series

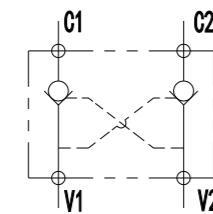
Single & Double Counterbalance valve



Sizes: 6, 10, 15, 20
Flow Rate: 30, 40, 60, 80 L/min
Max. Working pressure up to 350 Bar

VRPDB

Double Pilot Check Valve



Operating Pressure: 3.5 Bar
Maximum pressure up to 350 Bar
Maximum flow up to 100 L/min

T-D*1FP

Pilot-operated three-position four-way servo directional valve
VCD voice coil motor driver
With electrical position feedback with integrated amplifier



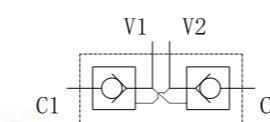
Sizes: 10~27
Maximum pressure: 350bar
Rated flow: 60~600L/min

Single Counterbalance Valve


Flow Range: 60~200 L/min
Pressure Range: 250~315 Bar

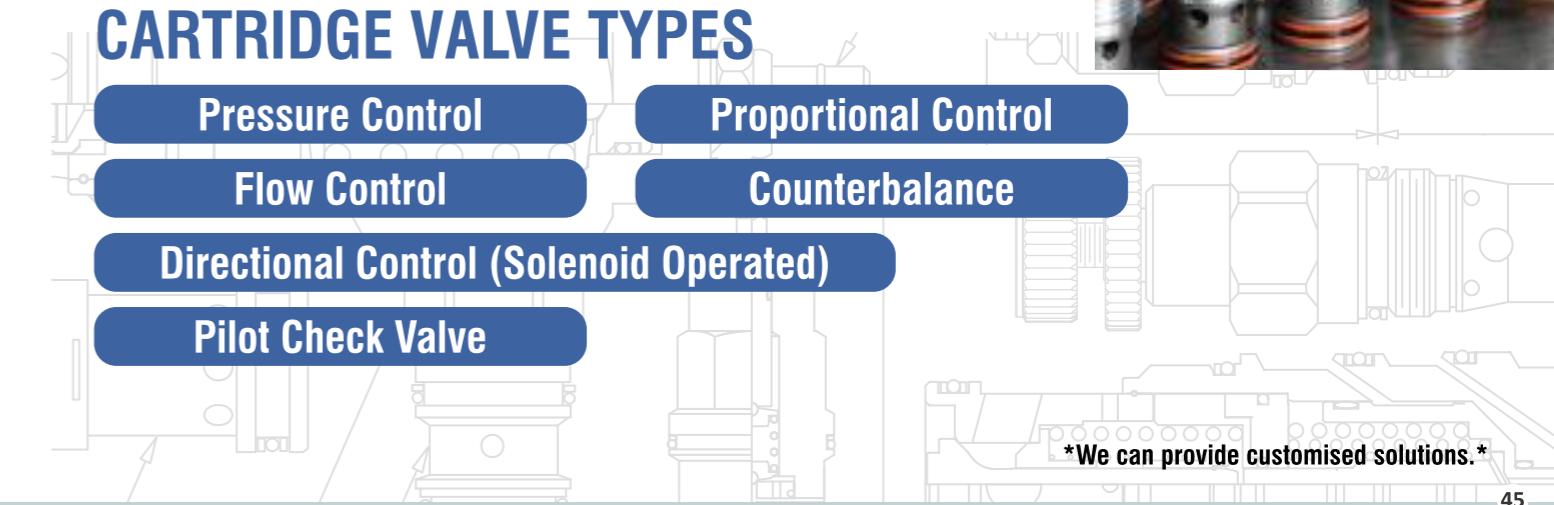
DPOCV

Double Pilot Check Valve



Operating Pressure: 3.5 Bar
Maximum pressure up to 350 Bar
Maximum flow up to 80 L/min

NEW ARRIVALS
"Advanced Hydraulic Cartridges for
Mobile and Industrial Systems: Powering Performance

CARTRIDGE VALVE TYPES
Pressure Control
Flow Control
Directional Control (Solenoid Operated)
Pilot Check Valve
Proportional Control
Counterbalance


We can provide customised solutions.

NEW ARRIVALS

TKC Series

Axial Piston Variable Displacement Motor
Apply to open or close circuit



Size: 25, 38, 45
Nom. pressure up to 210 Bar
Max. pressure up to 415 Bar

QL Series Remote controller

Transmitter and receiver



Models:
Transmitter QL-02-SC001
Transmitter QL-04-SC001
Transmitter QL-05-SC001
Transmitter QL-06-SC001
Transmitter QL-04-SC003(P)
Receiver

* Both Transmitter and Receiver Support Customization

TF Series

Tank Mounted suction filter
Maximum flow up to 1300 l/min



DF Series

Pressure Line Filter
Rated flow: 160, 256 l/min



2FRE Series

2-Way Proportional Flow Control Valve



Size 6

Maximum working pressure 210bar
Maximum working flow 25 L/min

SG Series

Swing Reducer



SG Series Swing Reducer
used for 6-50 ton Excavator

GFT Series

Planetary Gearbox

- Features:**
- Compact, space-saving planetary gearbox design
 - Planet wheel carried in full-complement bearings
 - Robust bearing system absorbing the forces exerted by the cable pull
 - Simple mounting
 - Integrated multiplate parking device
 - GFT winch drives are used in all kinds of winches mobile and crawler cranes, railroad cranes, shipboard, dockside and container cranes.

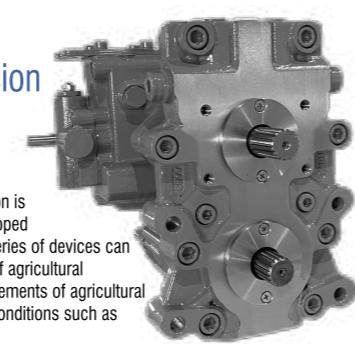


HT S10 Series

Hydrostatic Transmission

Displacement: 56 mL/r
Rated pressure: 320 Bar
Maximum pressure: 390 Bar

The HT S10 series hydrostatic transmission is an integrated unit of pump + motor developed for the agricultural machinery field. This series of devices can give full play to the driving performance of agricultural machinery and meet the application requirements of agricultural machinery customers for harsh working conditions such as high pressure and high speed.



THTM Series

Travel Motor



Sizes: THTM01~THTM200
Capacity up to 98 ton

A17FO Series

Axial piston fixed pump



- High-pressure pump for use in commercial vehicles
- Sizes 23 to 107
- Nominal pressure/maximum pressure 350/400 bar
- Bent-axis design
- Open circuit

VUBA Series

Hose Burst Cartridge Valves



Sizes: G1/4", G3/8", G1/2", G3/4", G1"
Max. Flow: 30, 50, 80, 110, 180 L/min
Max. pressure up to 350 Bar

NEW ARRIVALS

HYDRAULIC QUICK RELEASE COUPLINGS

Hydraulic quick couplings are connectors designed for easy and fast connection and disconnection of fluid lines in hydraulic systems, often without the need for tools. These couplings are crucial in applications where frequent or quick fluid line connections are needed, reducing downtime and improving efficiency. Below are the common subheadings under a detailed section on hydraulic quick couplings:

TYPES OF HYDRAULIC QUICK COUPLINGS

- **Threaded Couplings:**
Ideal for high-pressure systems
- **Non-Spill Couplings:**
Prevents fluid spillage during connection/disconnection
- **Flat-Face Couplings:**
Common in mobile and industrial applications
- **Ball and Sleeve Couplings:**
Used in various hydraulic applications for durability
- **Push-to-Connect Couplings:**
Easy and tool-free connection

THM-FF Flat face type
hydraulic quick coupling (steel)



THM-S1 Close type
hydraulic quick coupling (steel)



THM-S1SS
hydraulic quick coupling (Stainless-steel)



THM-S4 Ball type
Hydraulic quick coupling (steel)



THM-KZE-B Thread lock type
Hydraulic quick coupling (steel)



THM-S5 & S5C Push & Pull type
Hydraulic quick coupling (steel)



NOTE: FOR MORE REQUIREMENT PLEASE CONTACT THM.

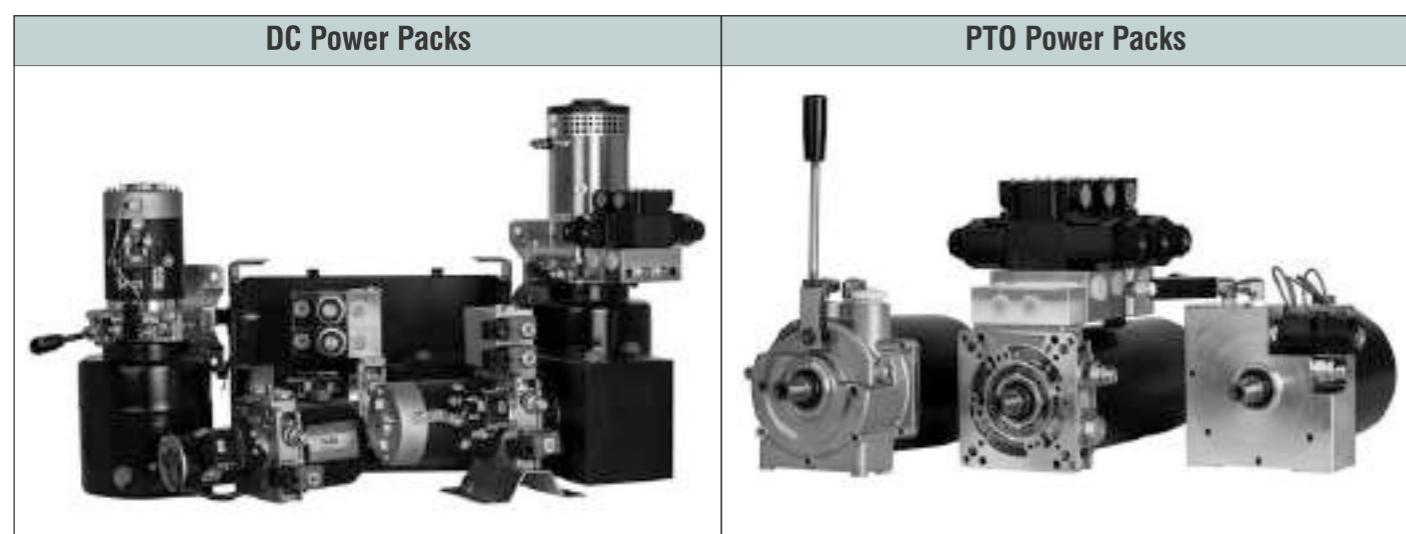
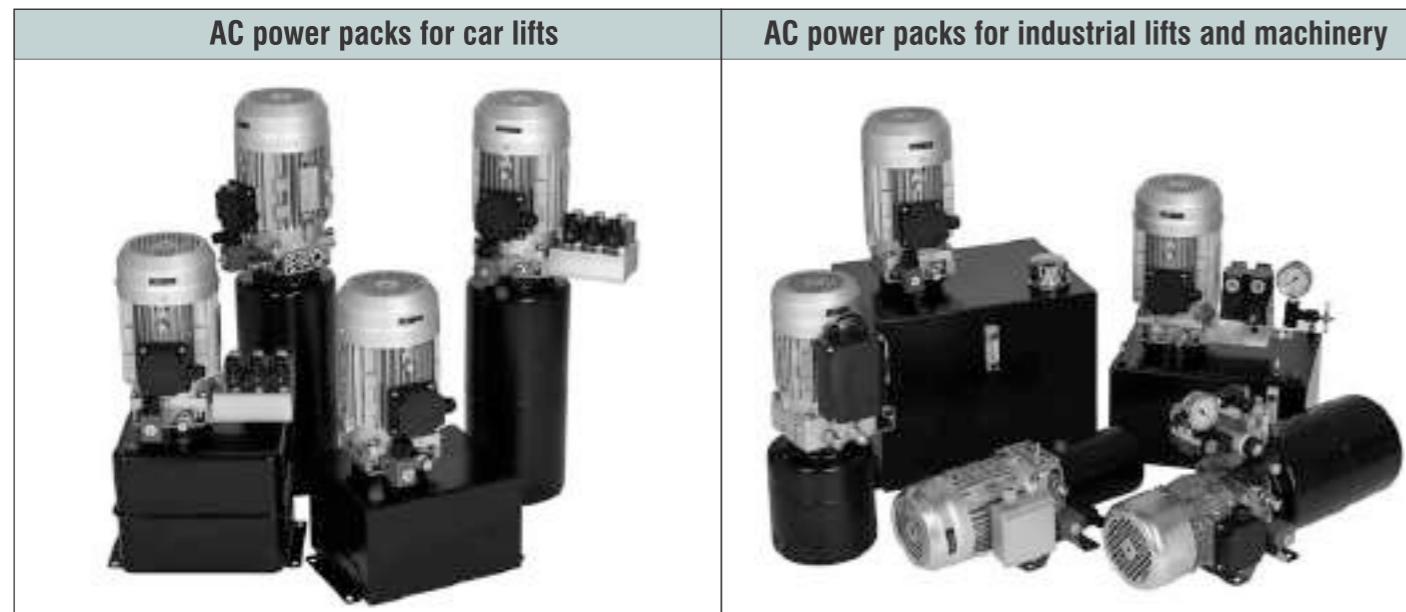
Hydraulic Quick Couplings:

*Efficient Connectors for Fast and Secure
Hydraulic System Connections*

COMPACT POWER UNIT

Applications

- Wing Body truck
- Tipper truck
- Stacker
- Dock leveler
- Table lift
- Carrier for Agriculture
- Tire changer
- CAN Press
- Wheel Chair Lift
- 4 Post Car Lift
- 2 Post Car Lift
- Scissor Lift
- Tail Lift
- Aerial work platform
- Wheel alignment scissor lift
- Man Lift
- Solar panel
- Elevator
- Parking system
- Farm machinery



*Any other Specific Requirement Please Contact THM

HYDRAULIC SPARE PARTS

Replacement for Rexroth, Kawasaki, Hitachi, Caterpillar, Sauer, Vickers, Nachi etc.



Komatsu	PC50/60/100/120/150/200/220/300/400(-1/2/3/4/5/6/7)/650; PC45R-8swing motor A10V(S)010/16/18/28/45/63/71/85/100/140 (H & E first products) A2F10/12/23/28/45/55/63/80/107/125/160/200/225/250/355/500/915/1000; (A2VK...)
Rexroth	A2F010/12/16/23/28/32/45/56/63/80/90/107/125/160/180/250/355 A2FE28/32/45/56/63/80/90/107/125/160/180/250/355 A4V(SO)40/45/50/56/71/90/125/180/250/355/500 A4VG25/28/40/45/50/56/71/90/125/140/180/250 A6V(M)28/55/80/107/140/160/200/250/355/500 A7V(O)28/55/80/107/140/160/200/250/355/500/1000 A8V(O)28/55/80/107/140/160/200/250/355/500 A10VG028/45/63 A11V(L)050/60/75/95/130/145/160/190/250/260 A11VG50
Uchida	A8V86; A10VD17/43/71; AP2D14/21/25/36; PSVD2-19E/21E/27E
Sauer	SPV20/21/22/23/24/25/26; SPV6/119; MPV046; PV90R30/42/55/75/100/250
Eaton	3331; 3932; 4621/31; 5421/23/31; 6421/23/31; 7620/21 PVXS-066/090/180
Vickers	PVB5/6/10/15/20/29 PVE19/21; TA1919; MFE15/19 PVH57/74/98/131; PVM028 SPV15/18
Cat	12G/14G/16G/215/225/235/245/992/963; CAT320(AP-12); CAT320C; CAT330B
Caterpillar	Caterpillar SPK10/10(E200B); E200B NEW TYPE; SPV10/10; CAT120
Liebherr	LPVD35/45/64/75/90/100/125/140/165
Yuken	A37/40/45/56/70/90/120/140/145
Linde	BPR105/140/186/260; BPV35/50/70/100/200; B2PV35/50/75/105; H3.0/H4.5 travel HPR75/90/100/130/160; BMV50/55/75/105; BMF35/75/105/140/186/260; MPF55, MPR63
Hitachi	HPV091/102/105/116/130/135/145
Kawasaki	K3V45/63/112/140/180/280; K5V80/140/200 K3SP36; K3SP30; KVC925/930/932; DNB08; NVK45DT; SBS120/140 NV64/84/90/111/137/172/270; NX15; BE725 MX150/173/500; M2X63/96/120/128/146/150/170/210; M5X130/180
Kobelco	SK30/60/100-7/200-1/3/6/7/220-2/3/320; HD450V; LUCAS400/500
Kayaba	MAG150/170; MSF85/PSVS-90C; PSVL-54; KYB87,KMF90; MSF23
Hawe	V30D75/95/140/250; V60
Tadano	100
Parker	PAVC100; PV040/092/140; P200Q; PVP16/76
Denison	PV29/74; PVT38
Toshiba	SG025/04/08/20
Sumitomo	PSV2-55T/63
Nachi	PVD-2B-32/34/36/100; PVD-3B-54P; PVK-2B-505
Daikin	V15; V38/-50/80; V70
Volvo	F11, F12
Kyokuto	MKV23/33
Kato	311
Others	MF16(type/motor); MF500; PVG130; 3V-SH-2B and More