

PROSPERING
SPARES
GLOBALLY



HYDRO-MECHANICS HOUMANI

 Hydro-Mechanics Houmani

 houmanihydraulic



OUR STORY

In 1986, Mr. Hassan Houmani decided to make a drastic change in his life by quitting his job as a maintenance technician at a very young age and starting his own business, Houmani Spares. Mr. Hassan Houmani's mission and goals were to provide his customers with fast, responsive services using his innovative ideas to help them run their business. Since he had a well established profession in working with industrial and mechanical spares, he finally set clear objectives on how to grow and develop his business in the marketplace.

Through our family business, we are still cherishing Mr. Hassan's values and holding on to his goals by providing the best solutions that satisfy our customers' needs after 35 years of dedication and hard work.



ABOUT US

Our aim is to provide our customers with the spare parts and repairs of high quality as quickly as possible to minimize their downtime and keep their businesses running without any delays.

We value quality and great customer service which is why we employ the best experts & engineers, to make sure all of our customers have the most thorough sourcing team tracking down their hard-to-find obsolete parts.

AT HM Houmani Sales, our strengths lie in our proven ability to respond quickly and effectively to

experience and a database of over 1,000 suppliers including reliable and reputable contacts in Germany, China, Italy, Japan and USA.

This allows us to source high-quality spare parts directly from the manufacturer resulting in fast delivery with competitive prices.

WHO DO WE WORK WITH?

Heavy-Duty Machinery | Food Industry | Pharmaceutical | Technology
Plastic Industry | Construction





OUR PRODUCTS



AUTOMATION & ELECTRICAL

Electrical & Automation System

Hydro-Mechanics Houmani provide a wide range of automation spares from all major brands.

- General Automation
- HMI Operator Panels & Accessories
- Power Supplies
- Sensor & Switches
- Variable Speed Drive
- Servo Drives
- Programmable Logic Controllers (PLC)
- Relays & Circuit Breakers

Every part we sell comes with a minimum of a 1 year warranty and we can help ship worldwide.



Brands:

Siemens Delta Keyence Omron ABB Schneider Sick B&R

General Automation

Industrial automation is the use of control systems, such as computers or robots, and information technologies for handling different processes and machineries in an industry to replace a human being. It is the second step beyond mechanization in the scope of industrialization.

Some of the examples of automated industrial processes are:

Packaging and material handling.

Quality control and inspection.

Metal fabrication; machining, welding, cutting, cladding etc.

Food and beverage processing.

Planning and decision making.

Industrial automation components include controllers including different types like Programmable Logic Controllers PLC, Distributed Control System DCS, field industrial devices, industrial communication and networking, Human-Machine Interface HMI, Supervisory Control and Data

Acquisition SCADA, power distribution, motor control and drives, safety system, and personal computers. Industrial automation systems are categorized based on their integration level and flexibility in the manufacturing processes and operations. Different types of automation systems include:

Fixed Automation:

Fixed automation systems are utilized in high volume production settings that have dedicated equipment. The equipment has fixed operation sets and is designed to perform efficiently with the operation sets. This type of automation is mainly used in discrete mass production and continuous flow systems like paint shops, distillation processes, transfer lines and conveyors. All these processes rely on mechanized machinery to perform their fixed and repetitive operations to achieve high production volumes.

Programmable Automation:

Programmable automation systems facilitate changeable operation sequences and machine configuration using electronic controls. With programmable automation, non-trivial programming efforts are required to reprogram sequence and machine operations. Since production processes are not changed often, programmable automation systems tend to be less expensive in the long run. This type of system is mainly used in low job variety and medium-to-high product volume settings. It may also be used in mass production settings like paper mills and steel rolling mills.

Flexible Automation:

Flexible automation systems are utilized in computer-controlled flexible manufacturing systems. Human operators enter high-level commands in the form of computer codes that identify products and their location in the system sequence to trigger automatic lower-level changes. Every production machine receives instructions from a human-operated computer. The instructions trigger the loading and unloading of necessary tools before carrying out their computer-instructed processes. Once processing is completed, the end products are transferred to the next machine automatically. Flexible industrial automation is used in batch processes and job shops with high product varieties and low-to-medium job volumes.

Integrated Industrial Automation Integrated Automation

Integrated industrial automation involves the total automation of manufacturing plants where all processes function under digital information processing coordination and computer control. It comprises technologies like:

Computer-aided process planning
Computer-supported design and manufacturing
Flexible machine systems
Computer numerical control machine tools
Automated material handling systems, like robots
Automatic storage and retrieval systems
Computerized production and scheduling control
Automated conveyors and cranes

Additionally, an integrated automation system can integrate a business system via a common database. That is, it supports the full integration of management operations and processes using communication and information technologies. Such technologies are utilized in computer integrated manufacturing and advanced process automation systems.

When considering the right system for your business, the degree of industrial automation required for any manufacturing facility should be determined by the labor conditions, competitive pressure, manufacturing and assembly specifications, work requirements and the cost of labor.

By taking these factors into consideration, you can ensure that your industrial software automation investment will be justified by a consistent profit increase. Hydro-Mechanics Houmani will do it all for you, and make the studies, supplying the needed components, programming, and run.

HMI Operator Panels & Accessories

A Human-Machine Interface (HMI) is a user interface or dashboard that connects a person to a machine, system, or device. While the term can technically be applied to any screen that allows a user to interact with a device.

A well-designed HMI System does more than just present control functions and information; it provides an operator with active functions to perform, feedback on the results of those actions, and information on the system's performance. Line operators, managers and supervisors in industry rely on HMIs to translate complex data into useful information. For example, they use HMIs to monitor machinery to make sure it's working properly.

There are three basic types of HMIs: the pushbutton replacer, the data handler, and the overseer. Most modern control systems employ a PLC (Programmable Logic Controller) as a means to control motors, pumps, valves and various other equipment used in a process.

Computer based HMI (Human Machine Interface) products provide the means by which process personnel interact with the PLC control system.



Power Supplies

The basics: used to convert AC input voltage into low-voltage DC output. DC voltage is used to power everything from sensors to controllers so you will find power supplies popular in industrial automation applications.

To obtain electricity, we use commercial AC power that is sent from power plants. But the integrated circuits and electronic components used inside office automation equipment, factory automation equipment, and other electronics cannot be operated with the AC voltage, and they will be damaged by the high voltages.

Stable DC voltages are required to operate these integrated circuits and electronic components.

The device that converts commercial AC power to regulated DC power is called a regulated DC Power Supply.

There are two main methods for controlling regulated DC Power Supplies.

Switch-mode Power Supplies and Linear Power Supplies are regulated DC Power Supplies, which are generally referred to as Power Supplies.

Currently, Switch-mode Power Supplies are the most common because they are compact, lightweight, and highly efficient.

At HMH you can ask for any power supply that you may request for your machine or projects.

Programmable logic controllers (PLC)

A Programmable Logic Controller, or PLC, is a ruggedized computer used for industrial automation. These controllers can automate a specific process, machine function, or even an entire production line.

The PLC receives information from connected sensors or input devices, processes the data, and triggers outputs based on pre-programmed parameters.

Depending on the inputs and outputs, a PLC can monitor and record run-time data such as machine productivity or operating temperature, automatically start and stop processes, generate alarms if a machine malfunctions, and more. Programmable Logic Controllers are a flexible and robust control solution, adaptable to almost any application. At Hydro-Mechanics Houmani you can get any PLC from major brands like Delta, Siemens, Omron, Eaton, and many others with programming features and services from our automation engineers.

Relays & Circuit Breakers

A Relay is a switch acting as a sensing device whereas, circuit breaker is used for disconnection and isolation of the circuit. A relay operates on low power and voltage input signals whereas, circuit breakers can be used for low as well high power circuit as its operation is automatic on load devices. Basically, a relay is a device with contacts that opens and closes a switch as the result of an input signal (voltage or current) applied to a coil. Classification of relay can be mainly into two types: mechanical relays and solid state relays.

There are different types of relays like:

- Electromagnetic Relays
- Latching Relays
- Electronic Relays
- Non-Latching Relays
- Reed Relays
- High-Voltage Relays
- Small Signal Relays
- Time Delay Relays
- Multi-Dimensional Relays
- Thermal Relays
- Differential Relays
- Distance Relays
- Automotive Relays
- Frequency Relays
- Polarized Relays
- Rotary Relays
- Sequence Relays
- Moving Coil Relays
- Buchholz Relays
- Safety Relays
- Supervision relays
- Ground Fault Relays

All these and many other relays are classified based on their function, application type, configuration or structural features, etc. Now, let us take a look at various types of relays, which are more popularly used in many applications.

Circuit breakers act as resettable fuses. These are automatically operated electrical switches that protect electrical circuits from overloading or short circuiting. They detect faults and then stop the flow of electricity.

There are three basic circuit breaker varieties: standard breakers (which include both single-pole and double-pole circuit breakers), ground fault circuit interrupter circuit breakers (GFCIs) and arc fault circuit interrupter circuit breakers (AFCIs).



Sensor & Switches

In the current state of factory operations, sensors are key components to data acquisition and instrument measurement. In its simplest terms, an industrial automation sensor is defined as an input device that provides an output signal with respect to a physical quantity (input).

Sensor/Detectors/Transducers are electrical, opto-electrical, or electronic devices composed of specialty electronics or otherwise sensitive materials, for determining if there is a presence of a particular entity or function. Many types of sensors, detectors, and transducers are available including those for detecting a physical presence such as flame, metals, leaks, levels, or gas and chemicals, among others.

Some are designed to sense physical properties such as temperature, pressure, or radiation, while others can detect motion or proximity. They operate in a variety of manners depending on the application and may include electromagnetic fields, or optics, among others. Many applications over a wide range of industries use sensors, detectors, and transducers of many kinds to test, measure, and control various processes and machine functions.

Types of sensors:

- Vision and Imaging Sensors
- Temperature Sensors
- Radiation Sensors
- Proximity Sensors
- Pressure Sensors
- Position Sensors
- Photoelectric Sensors
- Particle Sensors
- Motion Sensors
- Metal Sensors
- Level Sensors
- Leak Sensors
- Humidity Sensors
- Gas and Chemical Sensors
- Force Sensors
- Flow Sensors
- Flaw Sensors
- Flame Sensors
- Electrical Sensors
- Contact Sensors
- Non-Contact Sensors

The simplest type of switch is a single-pole, single-throw (SPST) device that functions as an on-off switch. Double-pole, double-throw (DPDT) switches are commonly employed as internal polarity reversing circuits. Switches of up to four poles and three throws are common and some have breaks.

Servo Drives

The servo drive controls the servomotor according to instructions from a PLC or other controller and performs feedback control with signals from an encoder or other component. A power transmission mechanism that decreases motor speed and increases torque. Variable-Frequency Drive is also a motor controller but works in a different way than a servo drive. While a servo drive needs a command signal given to the motor in order to compare the real and desired position of the motor, a VFD directly controls the voltage and frequency supplied to the motor.

The servo drives can connect to a wide range of motion controllers through I/O or dedicated communication networks such as EtherCAT or alternatively, take control of the automation system through the drives integrated motion controller.

A servo drive receives a command signal from a control system, amplifies the signal, and transmits electric current to a servo motor in order to produce motion proportional to the command signal. Typically, the command signal represents a desired velocity, but can also represent a desired torque or position. A sensor attached to the servo motor reports the motor's actual status back to the servo drive. The servo drive then compares the actual motor status with the commanded motor status. It then alters the voltage, frequency or pulse width to the motor so as to correct for any deviation from the commanded status.

In a properly configured control system, the servo motor rotates at a velocity that very closely approximates the velocity signal being received by the servo drive from the control system. Several parameters, such as stiffness (also known as proportional gain), damping also known as derivative gain), and feedback gain, can be adjusted to achieve this desired performance. The process of adjusting these parameters is called performance tuning.

Servo systems can be used in CNC machining, factory automation, and robotics, among other uses. Their main advantage over traditional DC or AC motors is the addition of motor feedback. This feedback can be used to detect unwanted motion, or to ensure the accuracy of the commanded motion. The feedback is generally provided by an encoder of some sort. Servos, in constant speed changing use, have a better life cycle than typical AC wound motors. Servo motors can also act as a brake by shunting off generated electricity from the motor itself.

Although many servo motors require a drive specific to that particular motor brand or model, many drives are now available at Hydro-Mechanics Houmani that are compatible with a wide variety of motors.

Variable Speed Drives

What is difference between VFD and VSD?

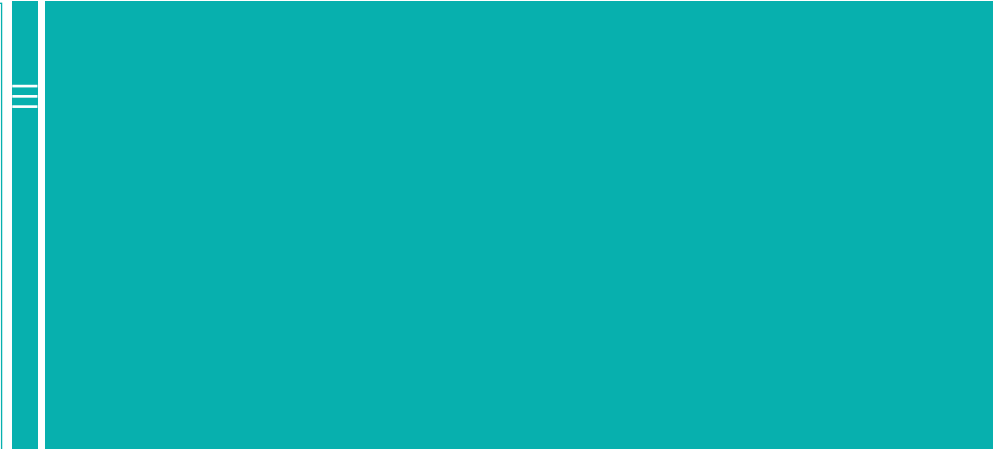
VSD is the acronym for variable speed drive. This all-encompassing term describes drives which are used for controlling both AC and DC motors, and technically, even mechanically control. It's commonly used in the context of AC or DC electric drives. VFD is the term for a variable frequency drive.

VSD or VFD:

Variable frequency drives also control the speed of a motor, but they do so by changing the voltage and frequency and can thus only be used with AC motors. A DC motor VSD can consist of a very simple circuit, which makes them generally less expensive than VSDs. Unlike the traditional stop-and-go motor, the use of a VFD enables optimizes a process, by making changes in a process. This allows starting at reduced speed, and allows remote adjustment of speed by programmable controller or process controller. Control, in an industrial sense, is always a big bonus for production!

Types of variable speed drives:

There are three general types of variable speed drives- DC Motor drives, Eddy Current Drives, and AC Motor drives. Each type of variable speed drive can be divided into different variations. Every variable speed drive system will include an electric motor and a speed control unit.



PNEUMATIC SPARES

Pneumatic & Accessories Spares

Get in touch with our engineers to help you find your best replacement from our wide stock of most known brands internationally provided by largest EUROPEAN & KOREAN FACTORIES:

- Fitting & Accosseries
- Air Treatment Filters & Units
- Gauges & Regulator
- Directional Valves, Solenoid Valves, Check Valves, ETC..
- Pneumatic Piston Cylinders
- Air Compressors Spares
- Pipes & Tubes

As Pneumatic Automation is leading industry today in our fields you can ask us about our new products.



Brands:

Festo SMC E.MC Stand-A XCPC Camozzi

Air Compressors Spares

Air compressors are some of the most necessary appliances found at construction sites, as they can be used as a power source for electric tools.

There are many different types of air compressors, each with their own unique capabilities and drawbacks.

Air compressors are categorized as either positive displacement or dynamic displacement, based on their internal mechanisms. The four most common types of air compressors you will see are:

General important parts of air compressor are as follows:

- | | | |
|---|-----------------------------------|--|
| 1. Cylinder Head | 7. Piston | 13. Lubricating Oil strainer |
| 2. Suction/ Intake valve | 8. Connecting rod | 14. Stage relief valves |
| 3. Delivery valve | 9. Crank shaft | 15. Intercoolers |
| 4. Cylinder liner/ Wall/ cooling water jacket | 10. Main Bearings | 16. After-coolers |
| 5. Compressor casing | 11. Bed plate or Bottom structure | 17. Suction filter |
| 6. Crank case | 12. Foundation | 18. Electrical panel, and other minor components |

Air Treatment Filters & Units

Filters, regulators & lubricators

View our range of air filters (F), regulators (R), and lubricators (L) used to treat air in compressed air systems, including FR and FRL combined units. Treating air is important because air supplied by compressors is contaminated with dirt, oil, or water, at the incorrect pressure, un-lubricated for your pneumatic tools or equipment. If treated improperly, it can be harmful to equipment and reduce their lifespan and decrease performance. Proper selection of air treatment units on the other hand will ensure smooth performing equipment with increased reliability and life span.

Units can be purchased individually or as a combined unit, such as an air filter regulator (FR) or air filter regulator lubricator combo (FRL). Filters remove unwanted particles from the air system and are often the first component installed after the compressor. Pressure regulators continuously control the output pressure to a fixed level, even if the input pressure is varying. Regulating the pressure to the correct level is important to guarantee optimal performance of the down-line components. The regulator is usually installed after the filter, because the filter introduces a small pressure drop. Lubricators reduce the internal friction in tools or equipment by releasing a controlled mist of oil into the compressed air and are installed after the regulator or directly before the component requiring lubrication. Please note that modern systems do not require lubrication most of the times. Most equipment is greased and do not require maintenance over their lifetime. However, once extra lubrication is started it must be continued because the oil washes out the grease. Depending on the application requirements, some or all of the components of an FRL system will be required. However, it is recommended to always have a filter and regulator. The need for a lubricator is dependent on whether or not the equipment requires lubrication.



Pneumatic Fittings

Pneumatic fittings are parts used to connect sections of pipe, tube, and hose in pneumatic (pressurized gas) systems. Compared to hydraulic fittings, pneumatic fittings are typically characterized by tighter seals and lower pressure requirements. They are frequently used in pneumatic logic control systems and instrumentation.

Pneumatic fittings often are rated for certain temperature and pressure ranges based on what they are designed to handle.

Operating pressure range is the working range of pressures or the pressure ratings at which the fitting was designed to operate, typically measured in pounds per square inch (psi). Operating above or below this rating could cause the fitting to fail (i.e. break, leak, lose its seal). Operating temperature range is the working range of temperatures or the temperature ratings at which the fitting was designed to operate, measured in degrees Fahrenheit (°F) or degrees Celsius (°C). Operating above or below this rating could cause the fitting to fail.

Major Pneumatics Fittings types:

- Adapter
- Union
- Plug
- Tee
- Reducer
- Valve
- Coupling
- Cap
- Elbow
- Cross
- Nipple

Pneumatic Gauges

A pressure gauge is the instrument used for measuring fluid pressures in both hydraulic and pneumatic circuits, and generally determines the difference in pressure between the fluid and the local pressure.

Given that most pressure gauges measure the difference between the pressure of the liquid and the local atmospheric pressure, the latter must be added to the value indicated by the pressure gauge to find the absolute pressure. A negative reading on the gauge is caused by a partial vacuum.

Pressure gauges are used to measure gauge pressures that vary between 0–1 kg/cm² and between 0–10,000 Kg/cm², and to measure vacuum. The gauge accuracy may be between 0.1 and 2% of full scale, depending on the material, design and precision of the parts. Pressure gauges are usually installed on pumps, portable compressors, industrial equipment, hydraulic and pneumatic systems instrumentation and pressurised containers, and various aspects must therefore be considered when selecting a gauge:



TYPE:

The different types of pressure gauges available come in a series of copper alloys, stainless steels and nichrome. Copper alloys give better results in some respects, but stainless steels offer greater resistance to corrosion. Nickel iron alloys are also used. Their coefficient of expansion is very small, meaning that the pressure reading is not affected by the temperature of the instrument. Mechanical and pneumatic instruments have an accuracy of 0.5% of the scale.

SIZE:

Hydraulic pressure gauges have diameters of 63 and 100 mm, while pneumatic gauges come in diameters of 40, 50 and 63 mm.

ASSEMBLY

Pressure gauges can be vertical or back mounted, and can also be designed for mounting on a panel using a frontal ring or flange. Each of these details affects the selection of the ideal gauge.

Factors like the level of accuracy required, appropriate dial size for readability, durability of material to suite environment and process conditions , mounting options available and the range of pressure that it can measure and pressure type to be measured determine what kind of gauge may be right for you to use. If you choose Hydro-Mechanics Houmani who gives you a wide variety of gauges to choose from choosing the right one will be an uncomplicated process.







Hydraulic pressure gauges have scales from 0–0.6 bar to 0–1000 bar (depending on the model), while the ranges for pneumatic gauges are 0-1 bar and 0-20 bar.

For vacuum gauges, the scales for vacuum, vacuum/pressure or pressure are usually -1-0 bar or -1-3 bar. Precision class (3-2-3%) 1 or 1.6. Manufactured in accordance with ASME / ANSI 40-1, B.1985. Ranges to 30"Hg/6000 psi.

Pneumatic Pipes & Tubes

The basic function of pneumatic tubing and hose is to convey pressurized air to actuators, valves, tools and other devices. But there are countless types and sizes of tubing and hose on the market, so engineers should consider a number of important factors to select the right one for a given task.

The air supply and application set a baseline for the necessary product performance. Flow requirements help determine hose or tubing size. Tubing is generally specified by OD and wall thickness, while hose is specified by ID. Regardless, choosing too small an inner diameter "chokes" flow and results in pressure losses, inefficiency and excessive fluid velocity that can shorten service life. Too large a diameter, on the other hand results in higher than necessary weight, size and cost.

ITEM CODE								
	I.D	O.D	W.P		B.P		Bending radius	Length
	mm	mm	psi	bar	psi	bar	mm	m/roll
PU2030	2	3	145	10	464	32	8	200
PU2040	2.5	4	145	10	464	32	10	200
PU3050	3	5	145	10	464	32	8	200
PU4060	4	6	116	8	348	24	15	200
PU5080	5	8	145	10	464	32	20	100
PU5580	5.5	8	116	8	348	24	20	100
PU6080	6	8	87	6	261	18	23	100
PU6510	6.5	10	116	8	348	24	25	100
PU8010	8	10	87	6	261	18	30	100
PU8012	8	12	116	8	348	24	35	100
PU9012	9	12	87	6	261	18	40	100
PU1014	10	14	116	8	348	24	45	100
PU1216	12	16	116	8	348	24	70	100
PU1316	13	16	87	6	261	18	80	100

When choosing the ideal hose for your application, selecting the right material is key. Here we share some main Types of Pneumatic hoses and its features:

1-Polyurethane (also known as PU) is a type of plastic, commonly used in the design and manufacturing of hoses. It has a number of resistant features that make it one of the more popular materials to be used.

Features include:

- Abrasion resistance – Polyurethane hoses are less prone to abrasions, due to the tougher material.
- Pressure resistance – Hoses made from PU are able to withstand higher amounts of pressure, unlike less durable hoses that can weaken.
- Temperature resistance – PU hoses are able to withstand more extreme temperatures. They are able to hold their flexibility in low temperatures and are able to withstand higher temperatures without the risk of abrasions.
- Chemical resistance – PU has a high chemical resistance to many chemicals and solvents (with the exception of acidic media), making it ideal for industrial and pneumatic applications.

Unless WRAS approved, polyurethane tubing is generally not food safe, nor is it suitable for drinking water applications.

PU hoses are more likely to transfer odours and tastes to the substance it is conveying, compared to other materials, such as PVC.

2-Nylon (PA) tubing is resistant to solvents, alkalies, oils, greases, petroleum products, fungus and molds. Nylon (PA) tubing also resists crushing, abrasion and cracking. It has generally good resistance to dilute mineral and organic acid. Nylon tubing will not become brittle or swell because of water and it is resistant to flexural fatigue, tube vibration and movement. And nylon tubing is lightweight with excellent bend radii and pressure ratings.

Nylon Pneumatic Tubing PA12 tube most suitable for: compressed air system, lubrication system, oil flammable fluid lines, hydraulic lines part Chemical fluid, the fluid light food product quality, resistant to moisture, salt water, sea water, good aging resistance, resistance to sun and light exposure, ten through nylon tubes are generally used for hydrocarbons, aromatics, aliphatic solvents, oils, fuels and refrigerants intolerance strong Acid, alkali, and phenols; commonly used transmission fluid: 40 degrees carbonated soda, carbonated water 40 degrees-20 to 40 degrees alcohol, distilled Distilled water, water, oil. ETC...

Features include:

- PA hose has superior mechanical strength
- Excellent abrasive resistance, oil resistance, superior cold resistance
- The nylon air hose is high precision of inside and outside diameter, suitable for various kinds of fittings.
- It is high resistance to hydrocarbons oils and chemical products.
- Temperature: -40°C(-104°F) to +121°C(+250°F)

3-PVC Air Hose remains flexible down to -40 degrees Fahrenheit and offers up to 300 PSI. Designed for use with power tools, filling tires with air and other compressed air applications, PVC Air Hose is UV, oil and abrasion resistant. This hose is great for everyday use in construction, automotive, industrial, agriculture and fleet applications.

Features include:

- High tensile polyester reinforced
- Work under high pressure 300psi
- Strong peeling adhesion between fibre and pvc
- Light, flexible, non-kinking, non-twisting
- UV and ozone resistant, weather resistant
- Can be used for jackhammer hose
- PVC Air Hose Temperature: -10°C(-50°F) to 65°C(+150°F)

Pneumatic Piston Cylinder

In many industries, creation of a linear motion during an operation sequence is often required. A pneumatic cylinder, which is also referred to as an air cylinder, is one of the simplest, most cost-efficient solutions. Pneumatic cylinders are mechanical devices that convert the energy of compressed air to a linear motion.

There are three main types of pneumatic cylinders, these include:

- Single acting pneumatic cylinders.
- Double acting pneumatic cylinders.
- Telescoping pneumatic cylinders

1-Single-acting cylinder:

In a single-acting cylinder (SAC), air is only supplied to one side of the piston and is responsible for the movement of the piston in only one direction. The movement of the piston in the opposite direction is performed by a mechanical spring. A single-acting cylinder can be designed to be with base position minus (spring return) or base position plus (spring extend) depending on whether the compressed air performs the out stroke or the in-stroke respectively. In case of pressure or power loss, a single-acting cylinder has the advantage of returning the piston to a base position.

A downside of single-acting cylinders is the inconsistent output force through a full stroke due to the opposing spring force. Furthermore, the stroke of a single-acting cylinder can be limited due to the space the compressed spring takes up and spring length availabilities. The construction length of a single-acting cylinder is therefore longer than its actual stroke.

2-Double-acting cylinder

In a double-acting cylinder (DAC), air is supplied to chambers on both sides of the piston. Higher air pressure on one side can drive the piston to the other side. Double-acting cylinders are the most common type, as they give the user full control.

The advantages of double-acting cylinders are their longer strokes (up to several meters) and constant output force through a full stroke.

These cylinders provide relatively better control and operate at higher cycling rates. The drawbacks of double-acting cylinders are their need for compressed air for movement in both directions and a lack of a defined position in case of a power or pressure failure.

3-Telescoping cylinder function

Telescoping cylinders also known as telescopic cylinders, these pneumatic cylinders are available in both double and single acting. They include a piston rod which, when activated, 'telescopes' as a segmented piston, providing an extended reach. Telescoping cylinders are often used in applications where minimal pressure is applied.

Here is a list of characteristics to consider when selecting a pneumatic cylinder:

- Tube ID / bore
- Stroke length
- Max and min operating pressure
- Air port size
- Rod end shape
- Mounting styles
- Cushioning
- Position detectors
- Available speed range
- Force in and out

The pneumatic cylinder selection should depend on the desired application and a certain shape, material and size will be suitable for the specific role. Certain considerations should be taken when choosing the material for a pneumatic cylinder. For example, if the application requires the machinery to operate at high temperatures, stainless steel cylinders should be considered.

Hydro-Mechanics Houmani stock a wide range of pneumatic cylinders, suitable for specific applications.

Pneumatic Valves

Pneumatic valves are particular type of components which are used for controlling the pressure, amount and rate of air when it move through pneumatic system by controlling the material at its source and then by regulating the passage according to the requirement in pipes, tubes. To transmit power pneumatic systems depend upon the force of compressed air and are used in different industrial applications like diesel engines or pneumatically operated power tools etc.

Opening and closing of pneumatic valves are done with the help of the actuation components in different ways like manually, pneumatically or electrically. The control mechanism on the valve uses air while water, oil or any other fluid are the media which are made to flow through the valve. So, this valve is working to provide control of flow in valve, but the fluid which is being controlled is not air. The air just works as a control media passed in a pneumatic actuator to close open or control the flow. With the help of actuators and positioners these valves reduce the pressure in a controlled manner. Pressure fluctuations are sensed by the controllers and they regulate the signal for air supply to pneumatic positioner. Pneumatic positioner supply air to diaphragm which leads to opening of valve while spring is used for opposing force which results in the closing of the valve.



Types of Pneumatic Valves:

1-They are also known as direction control valves. They can be differentiated on the following basis:

- On the basis of number of entry and exit they have
- On the basis of flow paths or switching positions they possess
- On the basis of the mechanism used for opening and closing the ports
- On the basis of the valve position when in unactuated state
- On the basis of their respective function
 - a-Directional control valves
 - b-Non return valves
 - c-Flow control valves
 - d-Pressure control valves

Direction of air flow is controlled by the functional directional control valve and it is a large class of pneumatic valve which houses multiple variants. In any hydraulic system they can be used in various ways like for connecting or disconnecting the main compressed air supply from system

2-Spring offset Pneumatic Valves

In this valve, for each and every port to be in open or closed position a valve spool is moved into position by an actuator. A spring releases the spool to free the valve spool and to return the pneumatic valve back to its previous condition. When a two way directional valve perform in this way then it is known as spring offset valve.

3-Two-way Directional Control Pneumatic Valves

They pass the air in two directions with the help of two ports which can be opened or closed. When the valve ports are closed then the air flow through valves is restricted and when the valve ports are open then the air can flows from first port through valve in the opposite direction.

4-Three-way Directional Control Pneumatic Valves

Three way directional control pneumatic valves have three ports and all of them are used for different purposes. First port is used for connecting the valve to actuator, second port is used for airflow and third port is provided for serving as exhaust exit. When first and second ports are opened and third port is closed then air can move through the valve to device. When first port and third port is open and the second port is closed then actuator can vent exhaust.

5-Four-way Directional Control Pneumatic Valves

Four way directional control pneumatic valves have four different ports and two of them are connected to the actuator, one of them to pressurized airflow and the other is used for the purpose of exhaust pathway. They are also the most common type of pneumatic valves used because they have four ports by which the valve can effectively reverse the motion.

POWER TRANSMISSION BELTS

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- Cogged Belt
- Trapezoidal Belt
- Poly V-Belt
- Synchronous Belt
- Timing Belt
- Heavy Timing Belt
- Dual-tooth Synchronous
- Flat Belt
- Variable Speed Belt

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Brands:

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Power Transmission Belts

Belts are mechanical elements used for power transmission without phase shift. They are loops of flexible materials used to mechanically connect several rotating shafts, most often parallel. Belts can be used as a transmission element, to efficiently transmit power or movement.

In order to make the right choice, you will need to know the type of section and the belt dimensions. In this guide you will find the different sections available on the market, with their advantages and disadvantages.

The type of belt you should use depends on the type of application:

- Torque to be transmitted
- Center distance
- Temperature and lubrication conditions
- Rotational speed
- Reduction ratio

Major types of belts:

1-Flat belts

The simplest type of belt is the flat belt. It has a rectangular cross-section and was often made of leather in the early days. Today, however, steel or high-strength synthetic materials such as polyamide or aramide are used for tension cords.

These force-transmitting cords are embedded in a rubber core between a top cover and a bottom cover. The bottom layer where the belt has contact with the pulley, can be coated with special rubber to increase friction and wear resistance. The top layer on the opposite side only has a protective function.

Due to their design, flat belts can in principle run on both sides around the pulleys. In this case, both sides of the belt are specially coated. The belt can then be used for multiple belt drives and for crossed belt drives.

Flat belts allow high speeds and high torques to be transmitted (and thus high power). To prevent the flat belt from jumping off the pulley, the cross-section of the pulley surface has a slight convex curvature. Depending on the width of the pulley, the bulging height usually ranges between 0.3 mm and 1.2 mm. This achieves self-centering of the belt and prevents it from running off.

Flat belts generally generate very little noise. This also has positive effects on the service life and the efficiency (approx. 98 %) and thus on the maintenance of the belt. Due to the relatively small belt thickness, the belt can be very strongly bent and thus allows the use with relatively small pulleys. A disadvantage of flat belts, however, is the relatively high bearing load caused by the high pretensioning forces.

2-V-belts

The high bearing load when using flat belts can be significantly reduced by using V-belts. The wedge-shaped cross-section leads to high frictional forces on the flanks due to the "wedge effect". Therefore, only relatively low preload forces are necessary to generate the required frictional forces for power transmission. Accordingly, the bearing load is also significantly reduced. Conversely, with the same pretensioning forces, much higher torques can be transmitted when using V-belts instead of flat belts. To further increase the power transmission, two or more V-belts can also be arranged parallel to each other.

The so-called groove angle α is 38° or 32° , depending on the pulley diameter, whereby the belt only has contact with the pulley on the inclined flanks. The V-belt must therefore not touch the groove bottom, as the contact force must only come about by the flanks.

Otherwise there would be no wedge effect! For the same radial force (bearing load), the total friction force is significantly higher for V-belts. Due to the greater belt thickness of V-belts compared to flat belts, the energy required to bend the belt around the pulleys is higher. Therefore, V-belts have a slightly lower efficiency than flat belts (approx. 95 %).

While the transmission ratio for flat belts is determined by the outer diameter of the pulleys, in the case of V-belts the so-called pulley pitch diameter must be taken as a basis for calculating the transmission ratio due to the special geometry. The pitch diameter d is defined by the nominal belt width b_w . The nominal width corresponds to the belt width at the level of the neutral axis. Thus, according to the definition of the neutral axis, the nominal width always remains constant even when the belt is bent (i.e. when rotating around different pulley diameters).

It must be noted that V-belts must run in after initial assembly before they can be put into operation. This requires a correspondingly increased preload of approx. 30 % during initial operation. Over the course of time, different types of V-belts have developed, depending on the application. The most important ones are described in more detail in the following sections.

3-Standard V-belts

"Classical" V-belts are standardized in Germany according to DIN 2215 and have a height to width ratio of 1:1.6. Tension cords made of steel, aramid, polyester or glass are embedded in an elastomer core covered by a top layer. The tension cords run at the level of the nominal width (neutral axis).

To increase friction or wear resistance and to protect the belt from harmful external influences, the V-belt can be covered with a special rubber fabric. This is then referred to as a wrapped V-belt. Such wrapped V-belts are used, for example, in drives for pumps in the chemical industry to convey aggressive media.

If, on the other hand, such a rubber casing is missing, the edges of the belt are "raw", so to speak, and one speaks of a raw edge V-belt. Due to this missing of the relatively stiff sheathing, raw edge V-belts thus have better flexibility. In addition, the force transmission from the pulley to the tension cords does not take place through the sheathing but is transmitted directly through the core. This results in increased power transmission. To improve the transverse rigidity, elastomer fibres are incorporated transversely to the running direction of the belt.

The advantage of raw edge V-belts compared to classical V-belts is the lower wear due to the lack of wear-prone sheathing and the associated low-noise operation. In addition, the raw edges can be ground in comparison to wrapped V-belts so that belts with narrower tolerances can be produced.



4-Narrow V-belts

Compared to standard V-belts, narrow V-belts have a more favourable height to width ratio of 1:1.2. The greater height (at the same width as a classic V-belt) ensures greater power transmission. Conversely, the belt width can be much smaller with the same power transmission. The associated lower belt mass of the narrow V-belt reduces the centrifugal forces occurring during operation, so that higher belt speeds can be achieved.

The increased power transmission combined with the high flexibility of the cogged narrow V-belts results in a relatively space-saving design of such belt drives. In addition, the lower flexural stiffness reduces the deformation energy required when the belt runs around the pulleys, which increases the efficiency compared to the classic V-belt. For this reason, classic V-belts have to give way more and more to (cogged) narrow V-belts.

5-Wide V-belts (variable speed belts)

So-called wide V-belts with a height-width ratio of over 1:2 are used for heavy power transmissions and for applications where large speed changes occur. Therefore they are also referred to as variable speed belts.

Variable speed belts are usually cogged to reduce flexural stiffness. Such belt types are used in continuously variable transmissions in which the pulley diameter is changed by an axial shift to adjust the transmission ratio.

6-Double V-belts (hex-belts)

Double V-belts are basically two V-belts, that are put on top of each other. Both sides of the belt can therefore be used to transmit power.

Due to their cross-sectional shape, double V-belts are also referred to as hex-belts. Hex-belts are able to drive two pulleys with opposite sense of rotation. The double V-belt can also be used when the direction of rotation is to be reversed.

7-Kraftbands

If several individual V-belts are connected to each other by a cover plate, this is referred to as a kraftband ("kraft" = German word for "power" and "band" = German word for ribbon). Such a combination of several V-belts ensures, among other things, that individual V-belts do not jump off the pulley under impact loads. Kraftbands usually consist of cogged narrow V-belts in the raw edge version.



8-Poly V-belts (serpentine belts)

The poly V-belt (also called serpentine belt or V-ribbed belt) is a mixture of a flat belt and a V-belt, whereby the tension cords run over the entire nominal width (neutral axis) in contrast to the kraftband. Such a multiple ribbed belt thus combines the advantages of both belt types to a special degree, i.e. high flexibility combined with high power transmission and relatively low bearing load. Serpentine belts are used, for example, in multiple drives in which one pulley drives several other pulley. This is the case in automobiles, for example, where the engine has to drive not only the alternator but also the pump for the servomotor, the air conditioning compressor, the fan and the water pump.

9-Round belts

Round belts are special belts that are used almost exclusively for motion transmission and less for power transmission. Due to their symmetrical cross section, round belts can very easily be guided in different directions with the aid of guiding pulleys. The figure below shows the motion transmission of a round belt for centripetal force measurement.

10-Timing belts (synchronous belts)

With friction-locking belt types such as flat belts and V-belts, slippage will occur, which reduces the efficiency and control accuracy accordingly. However, this can be prevented by toothed belts, as the teeth attached to the belt surface then transmit the force positively.

Slippage cannot take place. Therefore, toothed belts are always used when precise positioning is required. For this reason toothed belts are also called timing belts or synchronous belts.

They are used, for example, to drive camshafts or for the secondary transmission of some motorcycles. They are also used on many industrial or agricultural machines. Synchronous belts are essential for avoiding any phase shifts. A belt that isn't slotted will always shift due to its elasticity, even if it is very taut.

Polyurethane belts are more resistant to oil, ozone, vibrations and low temperatures than neoprene belts. Polyurethane belts also make it possible to transmit higher power and torque than neoprene ones.



Advantages:

- They guarantee the synchronization of the system and the transmission of movement without slipping.
- Since power transmission is accomplished through gear meshing, unlike other belts, these belts are able to withstand low speeds and require a lower initial tension.

CONVEYOR BELTS

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- Roller Bed
- Horizontal Conveyor
- Incline & Decline Conveyor
- Wire Mesh Conveyor
- Metal Conveyor
- Portable Conveyor
- Brake & Meter Conveyor
- Specialty Conveyors

HM Houmani provides several kinds of conveyors tailored for different applications, although they are not as common as the previous types as Fiberglass, Vacuum, Wash, Magnetic, Cleated, and more. Please specify your application and HM Houmani solutions are there for you.



Brands:

Dunlop Continental Shanghai Metal Kaili-Rubber JBHI Belts

Conveyor Belts

A conveyor belt is an essential tool in the material handling sector. They are the continuous moving strips that are used for carrying different materials from one place to another. Mostly used for conveying a large volume of materials in a short span of time. A conveyor belt is also known as a belt conveyor. These belts are generally made of rubber, PVC, Urethane, Neoprene, Nylon, Nitrile, Polyester, leather and others.

The industrial conveyor belts are made up of multiple layers of material. Most of the material transporting belts comprise of two layers. The underneath layer is known as Carcass and it gives the linear strength and shape.

The Carcass is made up of Polyester, nylon and cotton. The upper layer is known as the cover. Diverse variants of rubber or plastic compounds are utilised to make the cover.

Presently, a sophisticated technology is used in the Industrial Conveyor Belts over the simple belt conveyor systems. Advanced belts are opted based on their application by the industries. For instance, a simple metal belt would not be able to handle stones which could be precious or sensitive materials. Material handling Industries completely understand the types of conveyor belts.

On the basis of their applications, they choose the safer, less time consuming, efficient belt conveyor systems as per their requirement.

The most widely used Industrial Conveyor Belts and their applications:

1. Roller Bed Conveyor Belts

A roller bed setup is suitable for when items are loaded onto the belt with gravity. This is because manual loading can cause mechanical shock and damage the rollers. Roller bed conveyor belts are also a good option for transporting items over long distances as they reduce friction, making it easier for products to move along the belt.

Applications: You can use these conveyor belts for packing, sorting, assembling, inspecting, and transporting items. Common applications of roller bed conveyor belts include postal sorting offices and airport baggage handling systems.



2. Flat Belt Conveyors

The flat belt conveyor belt is one of the most prevalent conveyor systems in use today. Flat belts are useful for internal conveyance, i.e. transporting items within a facility. This type of conveyor belt uses a series of powered pulleys to move a continuous flat belt, which can consist either of natural material or synthetic fabric (ex. polyester, nylon). Items are placed on top of the moving belt and carried from one end to the other. Since its belts can be made of different kinds of materials, this type of conveyor belt is incredibly versatile.

Optional features include center drives and nose bars depending on the requirements of a given application.

Applications: Flat belt systems are often the conveyor of choice for industrial environments, wash down areas, and slow assembly lines. Fitted with the right belt, it can also convey small, soft, or irregularly shaped items without damaging them.

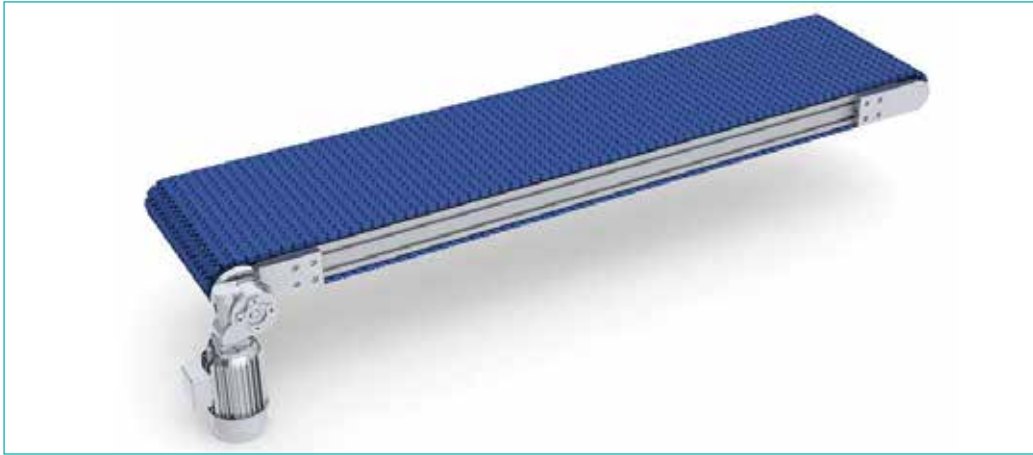


3. Modular Belt Conveyors

Modular conveyor belt systems use a single loop made of countless interlocked pieces, usually made of hard plastic. These segments can be removed and replaced individually, in contrast to having to discard the entire belt. They are also easier to wash, as well as more resistant to sharp and abrasive materials. This makes modular belt conveyors simpler to maintain and repair than their flat belt counterparts.

Modular belt conveyors are well-suited to applications that involve travelling around corners. In fact, they can travel straight, go around a corner, and incline and decline using a single belt and the same motor all throughout. Technically, other types of conveyors can also accomplish this feat, but only with much customization and additional costs. Plastic modular belts also allow specific conveyor designs without compromising belt tracking. An example of this is a belt with greater width than length, which provides the support required to handle soft plastic bags, cardboard boxes, and shrink wrapped goods.

Applications: This type of conveyor belt can be used to carry food products because it is easy to clean. Spacing between plastic segments are adjustable for applications where fluid should be either drained or retained as it is carried on the conveyor. The segments plastic composition also makes this conveyor belt useful for metal detection.



4. Cleated Belt Conveyors

Cleated belt conveyors feature vertical cleats or barriers in their designs. These cleats can keep loose materials secure during inclines and declines, to provide consistent spacing between items, and more. Furthermore, cleats come in different shapes, each with its own application.

- An offshoot of the cleated belt is the elevator belt. Designed with regularly spaced partitions or scoops, it is designed to carry loose materials up a steep incline.
- Inverted Capital T- This type of cleat stands perpendicular to the belt surface, providing support and flexibility to handle delicate items. It is suited for light-duty jobs, such as transporting small parts, packaged items, and food products.
- Forward-Leaning Capital L- The wide base of this cleat makes it more resistant to leverage forces. Some cleats with this shape also have curved faces, which enables them to scoop granules. This type of cleat is designed to carry light- to medium-weight bulk material up steeper inclines.
- Inverted V-Cleats with this shape are usually 2 inches or less in height to allow for a troughing effect. They're best for transporting abrasive, heavy, or large-piece bulk materials, as they can withstand heavy impacts.
- Lugs and Pegs. These kinds of cleats accommodate specific needs. For instance, they can promote run-off of liquids when used to transport washed fruit or vegetables. They're also a cost-efficient cleat type for items that don't need to be supported throughout the full belt width, such as rods and cartons. They can even be positioned to selectively move products exceeding a given size or to hold individual products in place.



5. Curved Belt Conveyors

This type of belt conveyor uses a curved frame to carry items around corners, make tight transfers, or maximize available floor space. These belts curves can go up to 180°. True curved conveyors that do not have any straight runs can only use flat belts, as modular plastic belts require straight runs before and after curves.

Applications: Curved belt conveyors are often used in bag handling systems to change items conveying direction.

6. Incline/Decline Belt Conveyors

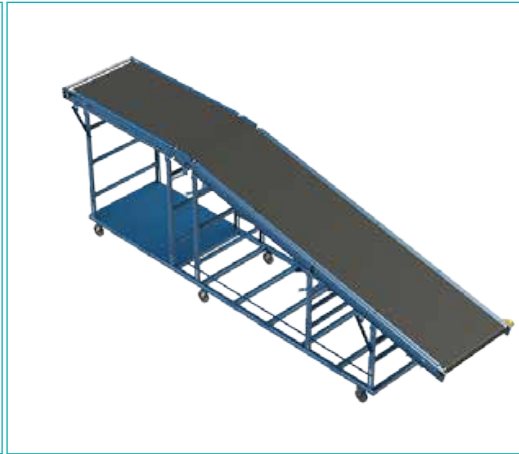
Incline belt conveyors feature a center drive, gear motor, and take-up with a single or double nose. And instead of using a smooth-surfaced belt, this type of conveyor has a rough surface on the belt, ideal for carrying products up or down.

Applications: These systems can cross over with cleated belt conveyors to transport products to different elevations while keeping them from falling off the line. Aside from transferring objects between floors, these conveyor belts are also suitable for boosting gravity flow systems.

7. Sanitary and Washdown Conveyors

Sanitary or washdown conveyors are specially designed to withstand the sanitary procedures for these applications. Conveyors under this type are usually fitted with flat wire belts, which are rugged and easy to clean.

Applications: These conveyor belts can carry objects with extreme temperatures straight out of furnaces or freezers. In addition, machines in the food industry, in particular, must survive running through glaze, breading, or hot oil. Because they can securely handle both wet and greasy items, larger washdown conveyors with flat wire belts are also suited for offloading break bulk goods, like oil drums and crates, from ships.



8. Specialty Conveyor Belts

There are several other kinds of conveyors tailored for different applications, although they are not as common as the previous types. Some of these are:

- Fiberglass Conveyor Belts -As the name implies, this type of conveyor belts are made of fiberglass. They are useful for tasks that require extreme temperatures.
- Metal Nub Conveyor Belts -This particular conveyor belt is fitted with metal nubs to better handle complex machines and their parts.
- Narrow-width Conveyor Belts -This type of conveyor belt is the best choice for handling small items.
- Back-lit Conveyor Belts -They come with a light fixture on the belt to aid with quality control.
- Vacuum Conveyor Belts - This particular conveyor belt creates suction to keep light products (sheets of paper, leaflets, etc.) on the line despite inclines and high speeds.
- Magnetic Conveyor Belts -This type of conveyor belt can transport materials that contain iron through equally spaced electromagnets that are placed within the bed of the conveyor.
- Sandwich Belt Conveyors -They use two face-to-face belts to securely carry items at steep inclines or even up a vertical run.

BEARINGS

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- Angular Bearing
- Needle Roller Bearing
- Bearing Blocks (UCF , UCP , UCT..)

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Brands:

SKF FAG KOYO DPI NTN NSK NACHI

There are many different types of bearings, each used for specific purposes and designed to carry specific types of loads, radial or thrust

1- Ball bearings

Ball bearings are extremely common because they can handle both radial and thrust loads, but can only handle a small amount of weight. They are further classified into:

- **Deep-Groove Ball Bearings:** The most widely used roller bearing type in the world due to their versatility and overall performance. They are characterized by having deep raceway grooves in which the inner and outer rings have circular arcs of slightly larger radius than that of the balls. They also have non-separable rings.
- **Angular Contact Ball Bearings:** Angular contact ball bearings can withstand high radial-axial loads and reach high speeds. They are asymmetrical for manufacturing reasons and can withstand unidirectional axial loads only. Angular bearings are usually mounted in a group of two or more opposed preloaded units with rigid or elastic spacers.

- Self-Aligning Ball Bearings: In a self-aligning bearing, the inner ring has two raceways and the outer ring has a single spherical raceway with its centre of curvature coincident with the bearing axis. This allows the axis of the inner ring, balls and cage to deflect around the bearing centre to automatically correct misalignment caused by housing and shaft machining or installation error.

Application:

- Household Items: Bicycles, Skateboards, Sewing Machines, Washing Machines, Tumble Dryers, Food Processors, Hair Dryers, DVD Players, Fishing Rods.
- Office Equipment: Photocopiers, Fax Machines, Hard-Drives, Fans, Air-Conditioners
- Industries: Elevators, Assembly Lines, Escalators, Medical and Dental Equipment, High-speed Machine Tooling Equipment, Paper Making Machinery, Chain Saws, Power Tools, Pumps / Compressors. Toy Manufacturing, Trains, Wind Turbines.
- Automotive: Engines, Steering, Driveshaft and Driveline, Electric Motors, Gear Boxes, Transmissions

2-Tapered roller bearings

Tapered angles allow the bearings to efficiently control a combination of radial and thrust loads. The steeper the outer ring angle, the greater ability the bearing has to handle thrust loads. To provide a true rolling motion of the rollers on the raceways, the extensions of the raceways and the tapered surfaces of the rollers come together at a common point, the apex, on the axis of rotation.

Applications: Agriculture, construction and mining equipment, sports robot combat, axle systems, gearbox, engine motors and reducers, propeller shaft, railroad axle-box, differential, wind turbines, etc.



3-Spherical roller bearings

A spherical roller bearing is a rolling-element bearing that permits rotation with low friction and permits angular misalignment. Typically, these bearings support a rotating shaft in the bore of the inner ring that may be misaligned with respect to the outer ring.

The misalignment is possible due to the spherical internal shape of the outer ring and spherical rollers. Despite what their name may imply, spherical roller bearings are not truly spherical in shape. The rolling elements of spherical roller bearings are mainly cylindrical in shape but have a profile that makes them appear like cylinders that have been slightly over-inflated.

Applications: Gearboxes, wind turbines, continuous casting machines, material handling, pumps, mechanical fans and blowers, mining and construction equipment, pulp and paper processing equipment, marine propulsion and offshore drilling, off-road vehicles.

4-Cylindrical roller bearings

Cylindrical Roller Bearings are designed to carry heavy loads. The primary rolling element is a cylinder, which means the load is distributed over a larger area, enabling the bearing to handle larger amounts of weight. This structure, however, means the bearing can handle primarily radial loads, but is not suited to thrust loads. For applications where space is an issue, a needle bearing can be used.

Needle bearings work with small diameter cylinders, so they are easier to fit in smaller applications.

Applications: Mining, petroleum production, power generation, power transmission, cement processing, aggregate crushing, and metal recycling, Briquetting machines, rubber mixing equipment, rolling mills, rotary dryers, or pulp and paper machinery, construction equipment, crushers, electric motors, blowers and fans, gears and drives, plastics machinery, machine tools and traction motors and pumps.



5-Needle roller bearings

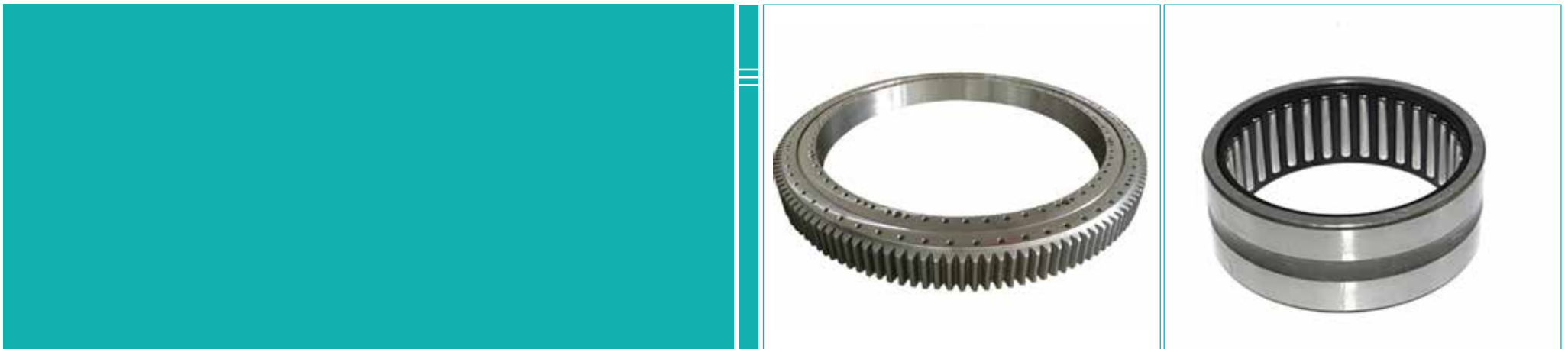
A needle roller bearing is a special type of roller bearing which uses long, thin cylindrical rollers resembling needles. Ordinary roller bearings rollers are only slightly longer than their diameter, but needle bearings typically have rollers that are at least four times longer than their diameter.

Applications: Needle bearings are heavily used in automobile components such as rocker arm pivots, pumps, gearboxes, automotive power transmission systems, two and four stroke engines, planetary gear sets and air compressors.

6-Slewing bearings

A slewing bearing or slewing ring is a rotational rolling-element bearing that typically supports a heavy but slow-turning or slow-oscillating load, often a horizontal platform such as a conventional crane, a swing yarder, or the wind-facing platform of a horizontal-axis windmill. (To -slew-means to turn without change of place.) Slewing bearings are often made with gear teeth integral with the inner or outer race, used to drive the platform relative to the base.

Applications: Construction: Cranes for Bulk/Scrap handling, shocks vibration ,Handling container Rubber tyre - gantry crane & Reach Stackers, Concrete Pumps and Mixers, Medical: Radiotherapy applications, pharmaceutical industry for all production steps, mixing, filling, cleaning, etc.



7-Thrust Ball Bearings

A thrust bearing permit rotation between parts, but they are designed to support a high axial load while doing this (parallel to the shaft). Higher speed applications require oil lubrication. Generally,they are composed of two washers (raceways) which may be grooved the rolling balls elements which are typically caged. As opposed to roller thrust bearings, ball thrust bearings can generally operate at higher speeds but at lower loads.

Roller thrust bearings, much like ball thrust bearings, handle thrust loads. The difference, however, lies in the amount of weight the bearing can handle: roller thrust bearings can support significantly larger amounts of thrust load, and are therefore found in car transmissions, where they are used to support helical gears. Gear support, in general, is a common application for roller thrust bearings.

Applications: Thrust bearings are commonly used in automotive, marine, and aerospace applications. They are also used in the main and tail rotor blade grips of RC (radio controlled) helicopters, forward gears in modern car gearboxes, radio antenna masts to reduce the load on an antenna rotator, in an automobile the clutch -throw ouT-bearing, sometimes called the clutch release bearing.

8. Plain bearings

Plain bearings are the simplest type of bearing and are composed of just the bearing surface with no rolling elements. They have a high load-carrying capacity, are generally the least expensive and, depending on the materials, have much longer lives than other types.

Applications: Turbomachines, such as power plant steam turbines, compressors operating in critical pipeline applications, ship propeller shafts, etc..

9. Specialized bearings

There are, of course, several kinds of bearings that are manufactured for specific applications, such as magnetic bearings and giant roller bearings.



-Magnetic Bearings

A magnetic bearing is a type of bearing that supports a load using magnetic levitation. Magnetic bearings support moving parts without physical contact. For instance, they are able to levitate a rotating shaft and permit relative motion with very low friction and no mechanical wear. Magnetic bearings support the highest speeds of all kinds of bearing and have no maximum relative speed.

Applications: Magnetic bearings are used in several industrial applications such as electrical power generation, petroleum refinement, machine tool operation and natural gas handling. They are also used in the Zippe-type centrifuge, for uranium enrichment and in turbomolecular pumps, where oil-lubricated bearings would be a source of contamination.

-Jewel bearings

Jewel Bearing is a plain bearing in which a metal spindle turns in a jewel-lined pivot hole. The hole is typically shaped like a torus and is slightly larger than the shaft diameter. The jewel material is usually synthetic sapphire or ruby (corundum). Jewel bearings are used in precision instruments where low friction, long life, and dimensional accuracy are important.

Applications: largest use is in mechanical watches.

-Fluid bearings

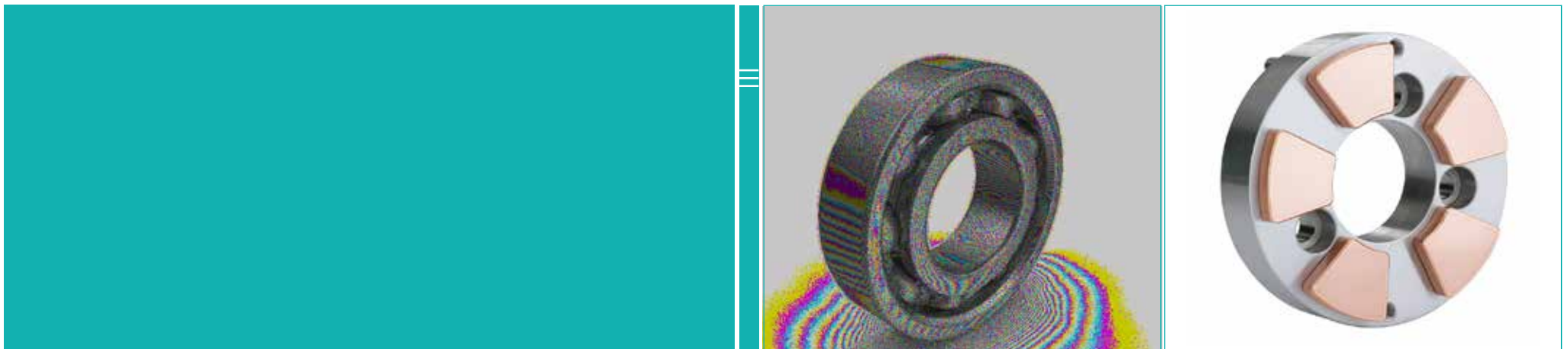
Fluid Bearings are bearings in which the load is supported by a thin layer of rapidly moving pressurized liquid or gas between the bearing surfaces. Since there is no contact between the moving parts, there is no sliding friction, allowing fluid bearings to have lower friction, wear and vibration than many other types of bearings.

Applications: Heavy-duty rotating equipment, including in hydroelectric plants to support turbines and generators, heavy machinery such as marine propeller shafts.

-Flexure bearings

Flexure Bearings are engineered to be compliant in one or more angular degrees of freedom. Flexure bearings are often part of compliant mechanisms. Flexure bearings serve much of the same function as conventional bearings or hinges in applications which require angular compliance. However, flexures require no lubrication and exhibit very low or no friction.

Application: Door Hinges, Lids for Pez dispensers, Flip-top covers, etc.



Bearing Codes Explained

Type Code	Bearing Name
1	Self Aligning Ball Bearing
2	Spherical Roller Bearing
3	Double Row Angular Contact Ball Bearing
4	Double Row Ball Bearing
5	Thrust Ball Bearing
6	Single Row Deep Groove Ball Bearing
7	Single Row Angular Contact Bearing
8	Felt Seal Bearing
32/T	Tapered Roller Bearing
R	Inch Bearing
N	Cylindrical Roller Bearing
NN	Double Row Roller Bearing
NA	Needle Roller Bearing
BK	Needle Roller Bearing With Closed End (Drawn Cup)
HK	Needle Roller Bearing With Open End (Drawn Cup)
C	CARB Toroidal Roller Bearings
K	Needle Roller And Cage Thrust Assembly
QJ	Four-Point Contact Ball Bearings

Series Code	Toughness Description
0	Extra Light
1	Extra Light Thrust
2	Light
3	Medium
4	Heavy
8	Extra Thin Section
9	Very Thin Section

Last Digits	Bore Size (04 and up: Multiply Last Two Numbers By 5 to get bore in MM)
00	10
01	12
02	15
03	17
04	(x5)=20
05	(x5)=25
06	(x5)=30 and so on.

Internal Clearance		Noise/Vibration level	
C2	Tight	Z1V1	Good
C0	Normal	Z2V2	Better Than Z1V1
C3	Loose	Z3V3	Better Than Z2V2
C4	Extra Loose	Z4V4	Best

Shield/Seal Code	Description
z	Single Side Metal Shield
zz	Both Sides Metal Shield
RS	Single Rubber Seal
2RS	Both Sides Rubber Seal
V	Single Non-Contact Seal
VV	Double Non-Contact Seal
DDU	Double Contact Seal
NR	Snap Ring And Groove
M	Brass Cage

6 **0** **02** **ZZ** **C3** **Z1V1**

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- Internal Gear
- Bevel Gear
- Helical Gear
- Single Sprocket
- Double Sprocket
- A,B,C,KB Type Sprocket
- Taper lock Pulley
- HTD Pulley
- M-Lock Pulley
- Pilot Bore Pulley

Gear or Sprocket or Pulley are mostly used & replaced spares in industrial and heavy duty machines. Ask our experts & engineers about type, application, and conditions to help you get your right sizes, type, and specifications from our global manufacturers.



Brands:

PPI Singasong Wajax Iwis Diamond Chain

Gears and their mechanical characteristics are widely employed throughout industry to transmit motion and power in a variety of mechanical devices, such as clocks, instrumentation, and equipment, and to reduce or increase speed and torque in a variety of motorized devices, including automobiles, motorcycles, and machines. Other design characteristics, including construction material, gear shape, tooth construction and design, and gear pair configuration, help to classify and categorize the various types of gears available. Each of these gears offers different behaviors and advantages, but the requirements and specifications demanded by a particular motion or power transmission application determine the type of gear most suitable for use.

Different types of gears and uses

Spur Gears

The simplicity of the spur gear tooth design allows for both a high degree of precision and easier manufacturability. Other characteristics of spur gears include lack of axial load (i.e., the thrust force parallel to the gear shaft), high-speed and high-load handling, and high efficiency rates. Some of the disadvantages of spur gears are the amount of stress experienced by the gear teeth and noise produced during high-speed applications.

This type of gear is used for a wide range of speed ratios in a variety of mechanical applications, such as clocks, pumps, watering systems, power plant machinery, material handling equipment, and clothes washing and drying machines. If necessary for an application, multiple (i.e., more than two) spur gears can be used in a gear train to provide higher gear reduction.

Helical Gears

The angled design of helical teeth causes them to engage with other gears differently than the straight teeth of spur gears. As properly matched helical gears come in contact with one another, the level of contact between corresponding teeth increases gradually, rather than engaging the entire tooth at once. This gradual engagement allows for less impact loading on the gear teeth and smoother, quieter operation. Helical gears are also capable of greater load capabilities but operate with less efficiency than spur gears. Further disadvantages include the complexity of the helical tooth design, which increases the degree of difficulty in its manufacturing (and, consequently, the cost) and the fact that the single helical gear tooth design produces axial thrust, which necessitates the employment of thrust bearings in any application which uses single helical gears. This latter necessity further increases the total cost of using helical gears.

As helical gears are also capable of handling high speeds and high loads, they are suitable for the same types of applications as spur gears, such as pumps and generators. Their smoother, quieter operation also suits them for automobile transmissions where spur gears are typically not used.

Bevel Gears

Bevel gears are cone-shaped gears with teeth placed along the conical surface. These gears are used to transmit motion and power between intersecting shafts in applications which require changes to the axis of rotation. Typically, bevel gears are employed for shaft configurations placed at 90-degree angles, but configurations with lesser or greater angles are also manageable.

There are several types of bevel gears available differentiated mainly by their tooth design. Some of the more common types of bevel gears include straight, spiral, and Zerol bevel gears.

Worm Gears

Worm gear pairs are comprised of a worm wheel (typically a cylindrical gear) paired with a worm (i.e., a screw-shaped gear). These gears are used to transmit motion and power between non-parallel, non-intersecting shafts. They offer large gear ratios and capabilities for substantial speed reduction while maintaining quiet and smooth operation.

One distinction of worm gear pairs is that the worm can turn the worm wheel, but, depending on the angle of the worm, the worm wheel may not be able to turn the worm. This characteristic is employed in equipment requiring self-locking mechanisms. Some of the disadvantages of worm gears are the low transmission efficiency and the amount of friction generated between the worm wheel and worm gear which necessitates continuous lubrication.

Rack and Pinion Gears

Some of the advantages of a rack and pinion gear pair are the simplicity of the design (and the low cost of manufacturing) and high load carrying capacities. Despite the advantages of this design, gears which employ this approach are also limited by it. For example, transmission cannot continue infinitely in one direction as motion is limited by the designated length of the gear rack. Additionally, rack and pinion gears tend to have a greater amount of backlash (i.e., additional space between mated gear teeth) and, consequently, the teeth experience a significant amount of friction and stress.

Some of the common applications of rack and pinion gear pairs include the steering system of automobiles, transfer systems, and weighing scales.



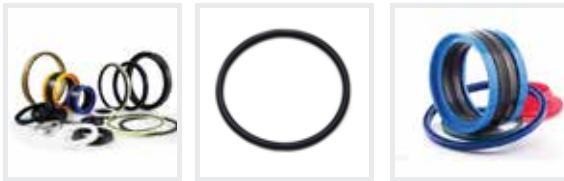
HYDRAULIC & MECHANICAL SEALS

Hydraulic & Mechanical Oil Seals

Contact our engineers and experts now to know better your seals replacement or need, knowing what seal type fits your requirements and conditions as HM Houmani offers all types as O-ring, piston seal, rod seal, wiper, PU-seal, mechanical seal, and gaskets.

- Y-Seal
- UNS , UHS
- UPI, UPH, UN, USH
- IDI, IDU, IUH
- Oil Pump Gasket
- RS, SPN, SPNO, VES
- KDAS, SPGO, SPGW
- GA, DHS, DKB
- HBY, WR
- Water Pump Gasket
- O-Ring, D-Ring
- Rotary Shaft Seal
- Pneumatic Cylinder Gasket
- Hydraulic Cylinder Gasket
- Diesel Pump Gasket
- Hydraulic Motor Gasket

Proper hydraulic-cylinder operation hinges on choosing the best seal for the job. A good working knowledge of available seal options-and what ultimately causes their failure-helps achieve that goal. Ask us about our customized special seals and seal gaskets assembled as your request.



Brands:

SKF NOK Parker Polypack CAT JCB Komatsu CTP USA Bissan Burca Kaucuk Hallita

Types of hydraulic seals

Hydraulic and Pneumatic Seals are moulded according to working temperature, cylinder speed, cylinder operating pressure, working application, and medium.

They are usually non-metallic, quite soft rings placed in a housing, or arranged in a mixture of rings creating a sealing unit. This is to separate or block liquid in applications that involve reciprocating motion. Hydraulic seals are crucial in machinery equipment. Their use is vital when it comes to enabling the transformation of liquid into linear motion.

Hydraulic Seals are generally made out of a variety of materials, including Rubber, PTFE and Polyurethane (AU). Compatibility of the

materials is decided upon the particular operating medium or restraints due to pressure, fluid type, temperature or chemical compatibility.

Static Hydraulic Seals are positioned in a housing where there is only within their limited space imotion involved they are sealing only within their limited space

Dynamic Hydraulic Seals are Rod Seals and Piston Seals. Rod Seals are exposed to the motion on their inner diameter along the rod or shaft of a hydraulic cylinder. However, Piston Seals are exposed to the motion on their outer diameter along the bore or tube of a hydraulic cylinder.

Major types of hydraulic seals:

Piston Seals

Piston Seals guarantee liquid or other media do not pass round the piston due to the system pressure pushing the piston down the cylinder amid a stress course. They are generally single-acting seals. which means the stress acts only on one side, and double-acting seals, which means the stress acts on both sides.

Rod Seals

Rod Seals are deliberated to be the most substantial component of a cylinder sealing configuration. As the rod rotates back and forth, they avert the leakage of the liquid from inside of a hydraulic cylinder to the outside (dynamic stress sealing). Therefore, Rod Seals function in conjunction with Wiper Seals to guard a hydraulic configuration against outer contaminants including dust, dirt and outside atmospheric circumstances .

Wiper Seals

Wiper Seals (also called Scraper Seals) generally are used together with other sealing components. They generate a tight fit whilst still permitting a reciprocating rod to travel via the inner seal bore .

Wear Rings

Wear Rings are used to retain the piston centralised. This grants for equal and even wear, and stress allotment on the seals.Rod and piston installations use Wear Rings

Our Hydraulic & Pneumatic range allows a full scope of operating cycles. General applications include cylinders, forming machines, hydraulic presses, and movable cylinders.

We supply Hydraulic & Pneumatic seals for single and double acting cylinders, composite piston seals, compact seals, independent wear rings, bonded seals, static seals (O Rings), and symmetrical seals. Manufactured properties include Ultra-low friction, wide temperature range, water resistance, and ultra-long life.



Criteria for seal selection

The selection of the right seal profile and material for a given application requires consideration of many factors. This section supports the selection of the right seal for typical hydraulic seal applications and existing cylinder designs. For any application factors outside of the ordinary, or to specify sealing systems in new hydraulic cylinder designs, a certain amount of expertise may be required. The hydraulic seal experts at HM Houmani can assist in selecting the right sealing system for new cylinder designs.

Before seals can be selected certain application parameters and information should be collected. The following most common application considerations are nearly always required when selecting hydraulic seals:

-Fluid Pressure Range

The range of operating fluid system pressure, as well as frequency and severity of pressure peaks.

-Temperature Range

The range of the fluid and cylinder assembly, both when operating and at rest

-Speed

The stroking speed of the reciprocating piston rod.

-Fluid Media

The type and viscosity of fluid used in the system.

-Hardware Dimensions

The rod and bore diameters, seal groove dimensions and gaps (if already specified), cylinder overall length and stroke length as well as surface finish specifications (if already specified)

-Application Of The Cylinder

The type of equipment the cylinder will be used on and how the cylinder will operate in the equipment as well as installation, duty cycles and environmental factors (external temperature, contaminants).



Types of mechanical seals

Mechanical seals are distinct from other types of seals because it involves a rotating part, a stationary part and a spring. The seal is the interface between the moving and stationary parts. Sealing the junction of a moving and a stationary part is a challenge, to say the least, and the spring is there to ensure adequate pressure on the parts to maintain the seal despite the movement. To be effective, mechanical seals must fit the specific application where they are used. Those applications can vary considerably. Mechanical seals must have the precise measurements and be made of appropriate materials to withstand whatever temperature extremes or chemicals are involved, or the seal will fail. We can group seals into general types, which raises the question at how many types of mechanical seals there are.

Major types of component mechanical seals

1-Seals and gaskets are sometimes custom-made to service unique applications, but we can group most seals that prevent leakage at the interface of a moving part and a stationary part into eight main types of component mechanical seals.

2-Wave Spring Mechanical Seals.:Principally used for liquids of high viscosity, wave spring mechanical seals are popular for pharmaceutical, dairy, brewery and food processing applications. They are often fitted to the shaft with grub screws and in the case of high viscosity media would also have stationaries with ant-rotation pins. Some designs are specially constructed to work in shallow, confined seal housings.

3-Water Pump Seals: Because water is such a poor lubricant of seal faces, it is critical that water pump seals use excellent materials for applications such as shower pumps, irrigation, heating systems. Swimming pools and spas.

4-Bellows Mechanical Seals: Compact, versatile, extremely reliable seals suitable for a wide range of applications. Available with either O Ring Mounted or Boot mounted Stationaries in DIN and Non-Din sizes. Recommended for media containing solids and are widely used in Pumps, mixers, compressors etc...

5-Diaphragm Seals: Featuring parallel springs, diaphragm seals are used in very diverse applications including agitators, compressors, mixers, pumps and other rotary shaft equipment. The diaphragm in the rotary head rotary seals on the shaft so they are not affected by rotational direction.

6-Balanced Diaphragm Seals: Similar to Diaphragm seals but are also hydraulically balanced to reduce heat and friction at the seal interface, an innovative patented design protects against seal failure in applications where thin metal drive components are prone to cut into the retainer.

7-Conical Mechanical Seals: This is an extremely versatile and popular mechanical seal. Available in a wide range of materials to suit a variety of environments, they are robust and durable. However these seals are rotation dependent and come with either left hand or right hand springs.

8-Parallel Mechanical Seals. Parallel seals are a heavy duty single spring seal. They can use different methods of providing the face to the seal and can be supplied with either left- or right-hand wound springs. A good general-purpose seal, they are used in marine pumps, waste water, pulp and paper and textile applications as well as refrigeration compressors.

9- Multi Spring Seals: Proven effective design, PTFE wedge styles are often used in chemical the chemical industry for arduous applications such as corrosive process fluids .

With so many types of mechanical seals, it can be difficult to know if you are choosing the absolute best one for your equipment. If you are unsure which type of mechanical seal is the best for your specific application, don't hesitate to get in touch Our experts can review how many types of mechanical seals would work in the specific application and which ones are best suited for it.

HYDRAULIC SPARES

Hydraulic Components & Spares

Our main spares category is hydraulic components with a 35 years of experience in retail. service and manufacturing, we offer all hydraulic parts and components related as pumps, hoses, valves, compact-systems, blocks, fittings, filters, gauges, accumulators, heavy-duty machinery and more. Ask our experts and engineers about our hydraulic diagnosis service and solutions.

- Fittings & Accessories
- High Pressure Connectors
- Oil Filters & Units
- Gauges & Regulators
- Accumulators
- Hydraulic Piston Cylinders
- Heavy Duty Machinery Spares
- Fuel Hoses & Accessories
- Hydraulic Compact Units
- Hydraulic Oil Motors
- Hydraulic Oil Pumps-
- Flow, Speed, Pressure Control
- Hoses, Pipes & Tubes
- Hose Crimping Machines & Tools
- Directional , Solenoid , Check Valves ETC...

Hydraulic world is a wide industry involved in our daily use and integrated in most of machines, as our stocks and services in hydraulic section are wide you can ask us about any product related or needed from HM Houmani.



Brands:
Manuli Hidramatic Caterpillar JCB Bosh Rexroth Parker Gab-Flex Volvo Komatsu Bondioli & Pavesi Hydro-Pack Eaton New Holland

Hydraulic Valves

A hydraulic valve properly directs the flow of a liquid medium, usually oil, through your hydraulic system. The direction of the oil flow is determined by the position of a spool. A hydraulic system can only function - as per requirements - by using valves. Thus, you should always look for the correct type of hydraulic valve to serve your intended purpose. The required size is determined by the maximum flow of the hydraulic system through the valve and the maximum system pressure.

Hydraulic valves are available in a variety of sizes and according to multiple International Standards. Hydraulic valves are available with many different mounting styles: e.g. mounting in pipe lines, with threaded connection as cartridge valves, subplate mounting or flanged mounting. Hydraulic valves are subdivided into three main categories: directional control valves, pressure control valves and flow control valves. All valves operate a different function in the hydraulic system.

Different valves function in different ways. Check valves permit free flow in one direction and block flow in the opposite direction. The directional control valve is used to pass on the pressure medium (i.e. flow) in an orderly fashion to a particular direction. Pressure control valves switch (or control) at a certain pressure; the switching pressure may be adjusted on the valve. Flow control valves regulate the flow this is done by adjusting the size of the bores (orifices).

1-Directional control valves

Directional control valves can control the start, stop and change in direction of flow of a pressure medium (i.e. hydraulic oil). Hydraulic valves as poppet or spool valve.

Type of directional control valves:

- Directional poppet valves
- Directional spool valves
- Check and non-return valves



2-Pressure control valves

Every pressure control valve switches at a predetermined pressure setting. This occurs either gradually with variable throttle (control) or suddenly with a fixed throttle (switch).

Type of pressure control valves:

- Pressure valves relief function
- Pressure valves reducing function
- Pressure valves fixed throttle

3-Proportional control valves

Proportional hydraulic valves are able to control the opening to flow proportionally instead of gradually,as is the case for most standard hydraulic valves.

Type of proportional control valves:

- Proportional directional control valves
- Proportional pressure control valves
- Proportional flow control valves

4-Flow control valves

Flow control valves manage the flow by decreasing or increasing the opening at the throttling point. This helps to determine speed of movement for the hydraulic actuators.

Type of flow control valves:

- Flow controls pressure compensated valves
- Flow controls throttle valve



Hose & Cable Crimping Machines

Crimping machines used to crimp and attach the fittings to the hoses and cables. we have a wide variety of crimping machine that differs in operating and sizes and types of crimped hoses or cables.

Types of crimping machines:

- Manual Low Pressure Hose Crimping Machine
- Manual Cables Crimping Machine
- Semi-Automatic Horizontal Hose Crimping Machine
- Automatic Horizontal Hose Crimping Machine
- High Pressure Automatic Vertical Hose Crimping Machine
- Caterpillar Hose/Fitting Replacing Machine

Hydraulic Compact Pump Units

Standard hydraulic power packs are characterised by their very flexible design and customer-specific modular adjustment options. It is a combination between Hydraulic Pump with Electric Motor and coupling, adding the liquid tank and valves needed, customized and designed as customer or user request. Units include an AC or DC motor, gear pump, reservoir, internal valving, load hold checks and pressure relief valves...

This type of power packs is connected directly to the hydraulic system.

Markets:

- Industrial
- Medical
- Packaging
- Material Handling
- Manufacturing
- Construction

Hydraulic Flexible Hoses

Hydraulic hoses are critical in almost all hydraulic systems, so imagine the hassle if it suddenly breaks down. Also, the hose's flexibility allows the components of the system to be placed in the most convenient or efficient positions because it can get around corners, limited spaces, and go across any lengths. But these days, selecting the right type of hose can be very challenging because of the vast number of choices. How can you differentiate a kind from the other? Is there a more straightforward way to choose the right type? So, we have made a guide that contains everything that you need to know to find the right hydraulic hose for your needs.

What are hydraulic hoses made of?

Today, hydraulic hoses are composed of three parts: an inner tube (which transports the fluid), a reinforcement layer, and a protective covering/outer layer. The inner tube is usually designed to be flexible, and it needs to be compatible with the specific type of fluid that will pass through it. This part of hydraulic hoses is usually made from synthetic rubber, PTFE (or Teflon), and thermoplastics. On the other hand, the reinforcement layer is made from single or multiple sheaths of braided wire, textile yarn or spiral-wound wire. Lastly, the protective covering is made to be resistant to oil, abrasion, and the elements. So, you will need to choose the specific type of protection that you need depending on the environment that the hose will be used.



How can I choose the right hydraulic hose?

If you want to design a hydraulic system, there are seven factors that you should consider when selecting the right hose and couplings. So, to make your life easier while determining the proper tube for a new application, remember the acronym STAMPED. It stands for size, Temperature, Application, Materials, Pressure, Ends, and Delivery. Here's why these things are essential:

- Size – To choose the right hose, you should measure the interior and exterior diameters of the hose by using high precision tools like a calliper. Aside from that, you should also measure the length of the hydraulic hose. Determining the external diameter of the tube is crucial, especially when you are planning to use hose-support clamps or when the hose is guided through bulkheads. So, you should always check the manual for the individual specification table of each tube to determine their external diameter.
- Temperature – All hydraulic hoses are designed to meet a maximum working temperature, and it ranges from 90°C to 150°C (which is based on the temperature of the liquid). So, when a hose is continually exposed to temperatures that exceed the standard, it can hasten their deterioration and can reduce their flexibility. Also, you need to ensure that you use the right hydraulic oil with the required viscosity to protect the hose from high temperatures. As I've said earlier, you should always follow the instructions set by the manufacturer.

- Application – Will your choice of hydraulic hose meet the required bend radius? You need to ask this because when you go over the bend radius (using a much smaller one), it will damage the hose reinforcement and will warrant repairs or replacement. Also, you need to place hydraulic lines with high-pressure parallel to the contours of the machine if it is possible. By doing so, you will save money because the length of the line is shorter, and the number of hard angles is reduced (it can restrict the flow of the fluid). Aside from that, you can also protect the hoses from damage, and it will be easier to repair in the future.
- Materials – It is necessary to check a compatibility chart to see if the hose assembly is suitable for the fluid that will be used in the system. Due to the elevated temperature, fluid contamination, and liquid concentration will all play a role in the chemical compatibility of the hose and the fluid. Also, almost all hydraulic hoses are made out of petroleum-based oils, and newer, biodegradable or "green" fluids may pose a risk for a limited number of hoses.
- Pressure – The working pressure of the hydraulic hose must always be maintained so that it reaches or exceeds the maximum pressure that the system can handle including pressure spikes. If a pressure spike is above the standard operating pressure, it will likely damage the hydraulic hose and shorten its life.
- Ends – The hose of your choice must have a coupling-to-hose mechanical interface that should be compatible with it. Besides, the right mating thread end must be used for the mating components to be leak-free when sealed. Permanent type couplings are usually used for industrial equipment, large-scale rebuilders, and repair shops while field-attachable couplings allow for more flexibility.
- Delivery – Is the product widely available or is it hard to find? How soon can you have it if you order from the distributor? So, it may be a better idea to consider a lot of options first to select one that offers flexibility and lessen the delays that can stem from choosing parts that are discontinued or in short supply.

1. Reinforced rubber

This type of hydraulic hose is lighter than most metal type counterparts, and it will make it easier to move the hydraulic system. It can also be made more durable by adding a fiberglass or steel mesh which helps minimize bending, bulging, and scratching. Also, it can withstand high temperatures, and it can also be used to link with several hose fittings. Can be used for power units or power applications like winches, windlasses, and furlers. Also, the inner tube is made of synthetic rubber that is reinforced with two braids of steel wire which makes it abrasion-resistant. The hose is also available in cadmium-plated steel, but stainless steel is available if you ask for it.

2. Steel reinforced teflon

There are times that hydraulic hoses made of steel are too cumbersome to use. So, you should try a Teflon (also known as PTFE) hydraulic hose with steel reinforcement because it has all of the benefits of steel hoses. Also, this type has an even higher heat resistance than rubber. If your system involves a boiler or a blast furnace, this type is the one that you should choose. Aside from that, it is very light, which is essential if you're at the field.

It is made from Teflon (PTFE) and is reinforced with one braid of Grade 304 stainless steel wire with high tensile strength. It is recommended for dealing with high-pressure hydraulic oil lines. Also, the hose is chemically pure, nonreactive, and has no leachable additives. Aside from that, it is also highly resistant to high temperatures and open flame because it has a high melting point, thermal damage threshold, and auto-ignition temperature. However, you should avoid using this for fluids and gases because it can generate static electricity which may hasten the hose's degradation.

3. Return lines

Although there is no specific hose that is designed to be a return line, it is still a vital piece in a system. Return lines are responsible for bringing fluids back to the pump where the pressure decreases. So, less expensive hoses can usually get the job done. But don't be too confident! If return lines are not maintained properly, they can cause quite a hassle when they breakdown. It has a tube that is made from synthetic rubber and is oil resistant, and it is reinforced with either one fibre or spiral braid. Also, it is covered with black synthetic rubber that is oil and abrasion-resistant. Aside from that, it meets the 30RS performance requirements that are needed for both Type 1 and Type 2 for transporting fuel. It is also rated to withstand temperatures ranging from -40oC to 100oC. It is easily stored and maintained, this is the type for you. Coiled tubes are ideal for auto repair shops, welding shops, and other businesses that value space and efficiency. Aside from that, professionals like mechanics and engineers prefer this type of hose because they can be pulled, used, and snap back in place to where it was placed.

Recommended hose is made with a bonded twin-line construction and has a self-retracting coil design. The hose is made out of nylon, reinforced with 528N-Aramid fibre, and is covered in polyurethane. Besides, the hose is rated to work at temperatures ranging from -40oC to 100oC, and it has a non-perforated cover.

4. Coiled

It is easily stored and maintained, this is the type for you. Coiled tubes are ideal for auto repair shops, welding shops, and other businesses that value space and efficiency. Aside from that, professionals like mechanics and engineers prefer this type of hose because they can be pulled, used, and snap back in place to where it was placed.

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5. Corrugated and articulated

Corrugated hydraulic hoses function much like expansion joints, but they are meant for use in a hydraulic system. It can accommodate sudden pressure surges or expansion due to fluctuations in the external temperature. On the other hand, articulated hoses similar to corrugated type hoses but they can be maneuvered freely around corners or twist to fit around other components.



Hydraulic hose fittings

Hydraulic hose fittings connect hydraulic hoses to transfer hydraulic fluid, oils, air, and gasoline through a pipe system. They are often used to link hoses that have different thread types or sizes and are ideal for on-site installations and field repairs. Barbed hydraulic hose fittings have raised ridges that grip the insides of hoses to hold them firmly in place. Crimp hydraulic hose fittings are secured to hydraulic hoses with a crimping device for a permanent connection in custom hydraulic hose assemblies. Reusable hydraulic hose fittings attach to hoses with a wrench and are often used for emergency repairs. These hydraulic hose fittings are used to create hose assemblies in a variety of hydraulic applications, including agriculture, mining, energy, road construction, and material handling.

Major types of hydraulic hose fittings:

- | | | | |
|------------|-------------|-------------|-------------------------------|
| 1-Ferrules | 5-ORFC | 9-Grease | 13-BANJO |
| 2-BSP-BSPT | 6-SAF | 10-SAE 3000 | 14-AIR Condition Hose Fitting |
| 3-Mertric | 7-NPTF-NPSM | 11-SAE 6000 | |
| 4-JIC | 8-JIS | 12-SAF 9000 | |

And many other fitting types, please check our Hydraulic spares

Hydraulic Pumps

There are typically three types of hydraulic pump constructions found in mobile hydraulic applications. These include gear, piston, and vane, however, there are also clutch pumps, dump pumps, and pumps for refuse vehicles such as dry valve pumps and Muncie Power Products' Live Pak™.

There are typically three types of hydraulic pump constructions found in mobile hydraulic applications. These include gear, piston, and vane, however, there are also clutch pumps, dump pumps, and pumps for refuse vehicles such as dry valve pumps and Muncie Power Products' Live Pak™.

The hydraulic pump is the component of the hydraulic system that takes mechanical energy and converts it into fluid energy in the form of oil flow. This mechanical energy is taken from what is called the prime mover (a turning force) such as the power take-off or directly from the truck engine.

With each hydraulic pump, the pump will be of either a uni-rotational or bi-rotational design. As its name implies, a uni-rotational pump is designed to operate in one direction of shaft rotation. On the other hand, a bi-rotational pump has the ability to operate in either direction.

Gear Pumps

For truck-mounted hydraulic systems, the most common design in use is the gear pump. This design is characterized as having fewer moving parts, being easy to service, more tolerant of contamination than other designs and relatively inexpensive. Gear pumps are fixed displacement, also called positive displacement, pumps. This means the same volume of flow is produced with each rotation of the pump's shaft. Gear pumps are rated in terms of the pump's maximum pressure rating, cubic inch displacement and maximum input speed limitation.

Generally, gear pumps are used in open center hydraulic systems. Gear pumps trap oil in the areas between the teeth of the pump's two gears and the body of the pump, transport it around the circumference of the gear cavity and then force it through the outlet port as the gears mesh. Behind the brass alloy thrust plates, or wear plates, a small amount of pressurized oil pushes the plates tightly against the gear ends to improve pump efficiency.

Quick Look

- Most common design
- Fewer moving parts, easy to service, more tolerant of contaminants, relatively inexpensive
- Fixed, also called positive, displacement pumps
- Rated in terms of max pressure rating, cubic inch displacement, max input speed limitation
- Used in open center hydraulic systems
- Transports oil around circumference of gear cavity and forces it through outlet port
- Encompasses thrust plates that push against gear ends with small amount of pressurized oil to improve pump efficiency

Piston Pumps

When high operating pressures are required, piston pumps are often used. Piston pumps will traditionally withstand higher pressures than gear pumps with comparable displacements; however, there is a higher initial cost associated with piston pumps as well as a lower resistance to contamination and increased complexity. This complexity falls to the equipment designer and service technician to understand in order to ensure the piston pump is working correctly with its additional moving parts, stricter filtration requirements and closer tolerances. Piston pumps are often used with truck-mounted cranes, but are also found within other applications such as snow and ice control where it may be desirable to vary system flow without varying engine speed.

Quick Look

- Withstand higher pressures
- Higher initial cost, lower resistance to contamination and increased complexity
- Additional moving parts, stricter filtration requirements and closer tolerances
- Truck-mounted cranes
- Good when desirable to vary system flow without varying engine speed
- Fixed and variable displacement designs available
- Encompasses cylinder block containing pistons that move in and out – this movement draws oil from the supply port and forces through the outlet
- Angle of swash plate determines the length of the piston's stroke
- Swash plate remains stationary
- Displacement determined by total volume of pump cylinders

Vane Pumps

Vane pumps were, at one time, commonly used on utility vehicles such as aerial buckets and ladders. Today, the vane pump is not commonly found on these mobile (truck-mounted) hydraulic systems as gear pumps are more widely accepted and available. Within a vane pump, as the input shaft rotates it causes oil to be picked up between the vanes of the pump which is then transported to the pump's outlet side. This is similar to how gear pumps work, but there is one set of vanes – versus a pair of gears – on a rotating cartridge in the pump housing. As the area between the vanes decreases on the outlet side and increases on the inlet side of the pump, oil is drawn in through the supply port and expelled through the outlet as the vane cartridge rotates due to the change in area.

Quick Look

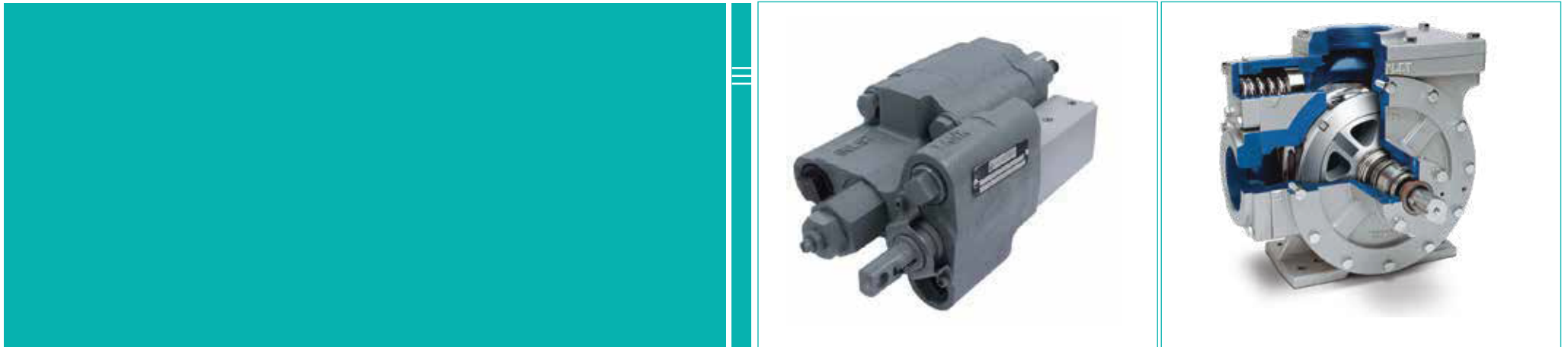
- Used on utility vehicles, but not as common today with gear pumps more widely accepted and available.
- Input shaft rotates, causing oil to be picked up between the vanes of the pump which is then transported to pump outlet side as area between vanes decreases on outlet side and increases on inlet side to draw oil through supply port and expel through outlet as vane cartridge rotates

Clutch Pumps

A clutch pump is a small displacement gear pump equipped with a belt-driven, electromagnetic clutch, much like that found on a car's air conditioner compressor. It is engaged when the operator turns on a switch inside the truck cab. Clutch pumps are frequently used where a transmission power take-off aperture is not provided or is not easily accessible. Common applications include aerial bucket trucks, wreckers and hay spikes. As a general rule clutch pumps cannot be used where pump output flows are in excess of 15 GPM as the engine drive belt is subject to slipping under higher loads.

Quick Look

- Small displacement pumps
- Belt driven
- Aerial bucket trucks, wreckers and hay spikes
- Limited to 15 GPM applications



Dump Pumps

This type of pump is commonly used in dumping applications from dump trailers to tandem axledump trucks. The dump pump is specifically designed for one application – dump trucks – and is not suitable for other common trailer applications such as live floor and ejector trailers.

What separates this pump from the traditional gear pump is its built-in pressure relief assembly and an integral three-position, three-way directional control valve. The dump pump is unsuited for continuous-duty applications because of its narrow, internal paths and the subsequent likelihood of excessive heat generation.

Dump pumps are often direct mounted to the power take-off; however, it is vital that the direct-coupled pumps be rigidly supported with an installer-supplied bracket to the transmission case with the pump's weight at 70 lbs. With a dump pump, either a two- or three-line installation must be selected (two-line and three-line refer to the number of hoses used to plumb the pump); however, a dump pump can

easily be converted from a two- to three-line installation. This is accomplished by inserting an inexpensive sleeve into the pump's inlet port and uncapping the return port.

Many dump bodies can function adequately with a two-line installation if not left operating too long in neutral. When left operating in neutral for too long however, the most common dump pump failure occurs due to high temperatures. To prevent this failure, a three-line installation can be selected – which also provides additional benefits.

- Dump pump most recognizable
- Specifically designed for dump trucks
- Displacement of slightly more than six cubic inches, pressure relief assembly and integral three-position, three-way directional control valve
- Not suited for continuous-duty applications
- Often direct coupled to PTO, need installer-supplied bracket to support
- Two- and three-line installations available (two-line can be converted to three-line)

Refuse Pumps

Pumps for refuse equipment include both dry valve and Live Pak pumps. Both conserve fuel while in the OFF mode, but have the ability to provide full flow when work is required. While both have designs based on that of standard gear pumps, the dry valve and Live Pak pumps incorporate additional, special valving.



1-Dry valve pumps:

Primarily used on refuse equipment, dry valve pumps are large displacement, front crankshaft-driven pumps. The dry valve pump encompasses a plunger-type valve in the pump inlet port. This special plunger-type valve restricts flow in the OFF mode and allows full flow in the ON mode. As a result, the horsepower draw is lowered, which saves fuel when the hydraulic system is not in use. In the closed position, the dry valve allows just enough oil to pass through to maintain lubrication of the pump. This oil is then returned to the reservoir through a bleed valve and small return line. A bleed valve that is fully functioning is critical to the life of this type of pump, as pump failure induced by cavitation will result if the bleed valve becomes clogged by contaminants. Muncie Power Products also offer a butterfly-style dry valve, which eliminates the bleed valve requirement and allows for improved system efficiency.

It's important to note that with the dry valve, wear plates and shaft seals differ from standard gear pumps. Trying to fit a standard gear pump to a dry valve likely will result in premature pump failure.

Quick Look

- Often used on refuse equipment
- Large displacement, front crankshaft-driven pumps
- Encompasses plunger-type valve in the pump inlet port restricting flow in OFF mode, but allows full flow in ON mode lowering horsepower draw to save fuel when not in use
- Fully functioning bleed valve critical to life of this pump.
- Wear plates and shaft seals differ from standard gear pumps – trying to fit standard gear pump to dry valve likely will result in premature pump failure

2-Live pak pumps

Live Pak pumps are also primarily used on refuse equipment and are engine crankshaft driven; however, the inlet on a Live Pak pump is not outfitted with a shut-off valve. With a Live Pak pump, the outlet incorporates a flow limiting valve. This is called a Live Pak valve. The valve acts as an unloading valve in OFF mode and a flow limiting valve in the ON mode. As a result, the hydraulic system speed is limited to keep within safe operating parameters.

Quick Look

- Primarily used on refuse equipment
- Engine crankshaft driven
- Inlet not outfitted with shut-off valve
- Outlet incorporates flow limiting valve called Live Pak valve – acts as an unloading valve in OFF mode and flow limiting valve in ON mode restricting hydraulic system speed to keep within safe operating parameters

PLASTIC INJECTION MACHINE SPARES

- Band Heaters & Runners
- Injection Mold Spring
- Injection Molding Ejector

Band Heaters

Band heaters are commonly used whenever heat is needed around the surface area of a pipe, tube or cylindrical vessel. They provide a fast-acting indirect heat that many industries, especially plastics, find perfect for their needs. There are three main types of band heaters: mica, ceramic and mineral-insulated. Band heaters are ring-shaped heating devices that clamp around a cylindrical element. Heat transfer from band heaters occurs via the conductive method. Most band heaters clamp around the outer diameter of a cylindrical element and heat the element from the outside. Some products clamp around the inner diameter of a pipe. Typically, band heaters are quipped with ceramic or mineral insulation to reduce heat loss to the environment.

Which type of heaters are used for hand injection moulding machine?

Injection molding of plastics is a complex application that sometimes requires many different kinds of heaters. We carry band heaters, heat runners and coil/nozzle heaters for maintaining temperature in conduits and nozzles, as well as cartridge and strip heaters for heating molds and platens. There are three main types of band heaters: mica, ceramic and mineral-insulated. They are all insulators for the heating element. Mica band heaters tend to be used where a lower maximum temperature is required. It's a good insulator for heaters because it's corrosion-resistant and has good dielectric strength. It also resists chemicals and water and can be somewhat elastic and can hold up to some bending. It cannot hold up to higher heat, as we've mentioned. While its max is usually 900°F (480°C), it probably wouldn't last long if it consistently had to stay at or near that temperature.

The mica band heater is less expensive. They can accommodate a variety of cut-out and hole arrangements and they have a lot of terminal-out arrangements available. Ceramic band heaters can handle much more heat. Usually up to 1200-1400°F (650-760°C). The ceramic segments used in these types of heaters make excellent insulators. However, because ceramics tend to be able to conduct heat, they also tend to hold onto the heat, making it a bit difficult to correctly control temperatures. This can cause process problems, particularly in the plastics industry due to overheating. They tend to cost a bit more than mica band heaters. The mineral-insulated heaters are great for high temperature applications, exceeding 2000°F (1094°C) but they usually operate in and around the 1400°F range. They are also considered to have very high watt densities. The typical material used is Magnesium Oxide and it's a compacted mineral that coats the band heater and provides excellent thermal conductivity.

Performance Specifications

Selecting band heaters requires an analysis of performance specifications and features. Parameters to consider include: maximum operating or sheath temperature, AC voltage required, and watts.

- Maximum operating temperature is the maximum temperature that the sheath covering the heater may reach. Note that maximum sheath temperature is not the maximum temperature that a heated substance may reach.
- AC voltage required is the minimum alternating current (AC) voltage required for band heater operation.

Dimensions

Important dimensions to consider for band heaters include the inside diameter, width, and thickness of the band. As a rule, the inside diameter of a band heater should be the same size as the outside diameter of the cylinder to be heated.

Hot Runners

A hot runner system delivers liquid plastic to a number of mold cavities in order to create a plastic product. It is an injection molding assembly that uses a heated manifold to keep plastic in a molten state.

The hot runner injection mold system

A hot runner mold system is an assembly of many different parts:

- Manifold, generally heated by electricity
- A number of controllers, determined by the number of injection points
- Thermostat to control the heat of the manifold
- Plate, where the runners sit.
- This component is also heated



Types of hot runner systems

Hot tip hot runner system

Hot tip is the standard, general-purpose version of the hot runner system that we have discussed thus far. It is more economical than the valve gate system and is the most common hot runner system in use. Hot tip is ideal for mass production of simple parts and products.

Valve gate hot runner system

A valve gate is a style of injection point featuring a mechanical valve that automatically closes when the machine injects plastic into the mold. This results in a smooth closure, leaving no visible nubs or abrasions on the surface of the product. A valve gate system is ideal for products that need to look great; highly aesthetic projects that will be noticed by the customer. This system is even more efficient than the general-purpose hot runner.

Mold springs

The rectangular-sectioned mold spring (mold spring for short) is mainly applied to stamping dies, metal die casting molds, plastic injection molds, and structurally sophisticated mechanical equipment. Mold spring is mainly made of 50CRVA, which features a small installation volume, outstanding elasticity, strong rigidity, high precision, a rectangular material shape, surface color separation coating (plating), and an aesthetic appearance. The standard products available at our company refer to the Japanese B5012 Standard (extra light load; light load; medium load; heavy load; extra heavy load), American Associated Spring Standard (medium duty, medium heavy duty, heavy duty, and extra heavy duty), American ISO Standard (light load; medium load; heavy load; extra heavy load), and German ISO10243 Standard (1S, 2S, 3S, 4S, 5S), offering thousands of specs for the user to choose from. Based on the loading capacity, mold springs mainly fall in the categories of Extra light load (yellow), light load (blue), medium load (red), heavy load (green) and extra heavy load (brown).

Design of return pin spring:

1-Spring design principles

Spring Compression Preload Ejector Stroke; i.e., 30%-40% free length of spring 8%-10% free length of spring Ejector Stroke
Free length of return spring = Ejector Stroke (30% 40% 8% 10%) Load (Load/spring x number of springs) 1.5 of Weight of Ejector Plate.



2. Calculation of spring load:

Load/spring = Constant (kgf/mm) x L (Compression)

3. Calculation of ejector plate load:

Ejector Plate (Upper & Lower Plates) Load = Volume (L*W*H) x Density (7.8/1000)

4. Common spring types:

The return spring usually adopts the SUP material (flat spring), of which the commonly used types include:

DF Extra light load spring (Yellow)

DL Light load spring (Blue)

Note: Please indicate type (DF & DL) and color during selection

A few notes:

The blue rectangular spring is installed next to the ejector return pin, as it has a small inner bore, not suitable to be placed over the pin. A longer spring needs a straight bar installed inside (column pipe location), so as to prevent the spring from deformation.

When the mold base is long and narrow (the length is about twice the width), the number of springs should be increased by two and installed in the middle of the mold.

Color	Code	Load Grade
Green	SJL	Light Load
Blue	SJM	Medium Load
Red	SJH	Heavy Load
Yellow	SJB	Extra Heavy Load



Color	Code	Load Grade
Yellow	TF	Extra Light Load
Blue	TL	Light load
Red	TM	Medium Load
Green	TH	Heavy Load
Brown	TB	Extra Heavy Load



Injection Molding Ejector Pins

Ejector pins are vital in creating parts. They are an integral component of the ejection system in mold, which determines the final outcome of products in an injection molding process. Injection molding is a manufacturing process that involves injecting molten plastic in a metal mold to assume the shape of the mold. Therefore, ejector pins injection molding involves the removal of completed parts from the die molds. The metal mold is made of two parts: A and B sides. Upon cooling of the molten material in the mold, both parts of the metal mold are separated to allow for the removal of the solid plastic. Injection molds are built such that when they are opened, the A-side half is lifted, leaving the formed part and the B-side.

Ejector pins are located on the B-side half of a mold, from which they push the formed part out of the mold. The pin mark of an ejector mold is commonly imprinted on finished products as a dent.

Types of ejector pins

There are many types of ejector pins used in product manufacturing. Below are the commonest types you will find ideal for the process.

Through-hard ejector pins

These ejector pins are heat-treated to ensure consistency in the hardness through the diameter of the pin. Through-hard pins can withstand working temperatures up to 200°C, and it is mostly suitable for plastic ejection system in mold.

Case hardened ejector pins

They are also known as Nitride H13 pins, are much harder pins than the through hard pins, and are suitable for die casting ejection systems in mold. Case hardened pins are nitrated to 65 - 70 HRC and can withstand temperatures above 200°C.

Black ejector pins

Manufacturers developed these ejector pins because of the inability of the Nitride H13 pins to be employed in working temperatures above 600°C. The black ejector pin is coated with a black surface treatment which allows it to be self-lubricating and withstand high temperatures up to 1000°C. It is an expensive ejector pin and is suitable for a metal ejection system in the mold for automobiles.

PRODUCTION LINE SPARES

Production Line Machinery & Spares

We can provide one offs or complete spares packages for your production lines, supplying spares for all types of machine tools, going direct to parts manufacturer, saving time and costs.

- Motors
- Sanitary & Accessories
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- Tanks & Pumps
- HVAC Systems
- Generators
- Air Compressor Units
- Factory Tools
- Special Machines Spares
- Customized Metal Works
- Production Line Monitoring
- Panel Tools
- Safety Tools

We can assist you with all your requests regarding the industrial market. We have partners from different countries like Germany, Italy, USA, United Kingdom, Turkey, China and India who are ready to provide you with the best service and quality.



Brands:

Atlas Copco Compressor OSKAR Locks Tramec Motors Pedrollo Pumps Siemens Motors Carrier Chiller Perkins Generator Fini Compressor

STEAM BOILERS

- Steam Boiler (Biomass, Burner)
- RO Water Treatment
- Weishaupt Burners
- Vertical Water Pump
- Burners (Diesel, GAS, Fuel)
- Armstrong Steam Accessories
- Safety Valves
- Steam System
- Steam Valves
- Manholes



Brands:

Weishaupt Monarch Armstrong Pedrollo

What is a steam boiler?

A boiler (also known as a steam boiler) is a closed vessel in which fluid (typically water) is heated. The fluid does not necessarily boil. The heated or vaporized fluid exits the boiler for use in various processes or heating applications, such as cooking, water or central heating, or boiler-based power generation. Boilers (or more specifically steam boilers) are an essential part of thermal power plants.

Working principle of boiler

The basic working principle of boiler is very very simple and easy to understand. The boiler is essentially a closed vessel inside which water is stored. Fuel (generally coal) is burnt in a furnace and hot gasses are produced. These hot gasses come in contact with water vessel where the heat of these hot gases transfer to the water and consequently steam is produced in the boiler. Then this steam is piped to the turbine of thermal power plant. There are many different types of boiler utilized for different purposes like running a production unit, sanitizing some area, sterilizing equipment, to warm up the surroundings etc.

Types of boiler

- There are mainly two types of boiler, water tube boiler and fire tube boiler.
- In fire tube boiler, there are numbers of tubes through which hot gasses surround these tubes.
- Water tube boiler is reverse of the fire tube boiler. In water tubes and hot gasses surround these tubes. These are the main two types of boiler but each of the types can be sub divided into many which we will discuss later.

Fire Tube Boiler

As it indicated from the name, the fire tube boiler consists of numbers of tubes through which hot gasses are passed. These hot gas tubes are immersed into water, in a closed vessel. Actually in fire tube boiler one closed vessel or shell contains water, through which hot tubes are passed.

These fire tubes or hot gas tubes heated up the water and convert the water into steam and the steam remains in same vessel.

These fire tubes or hot gas tubes heated up the water and convert the water into steam and the steam remains in same vessel.

Generally it can produce maximum 17.5 kg/cm² and with a capacity of 9 Metric Ton of steam per hour.

Biomass Steam Boiler 15000 KG/HR 15 Bar



STEAM CAPACITY

15,000

WEIGHT

35,000

MAX WORKING PRESSURE

15

TEST PRESSURE

20

Types of fire tube boiler:

There are different types of fire tube boiler likewise, external furnace and internal furnace fire tube boiler. External furnace boiler can be again categorized into three different types-

1-Horizontal Return Tubular Boiler.

2-Short Firebox Boiler.

3-Compact Boiler.

Again, internal furnace fire tube boiler has also two main categories such as horizontal tubular and vertical tubular fire tube boiler. Normally horizontal return fire tube boiler is used in thermal power plant of low capacity. It consists of a horizontal drum into which there are numbers of horizontal tubes. These tubes are submerged of a horizontal drum into which there are numbers of horizontal tubes. These tubes are submerged in water.

The fuel (normally coal) burnt below these horizontal drum and the combustible gasses move to the rear from where they enter into fire tubes and travel towards the front into the smoke box. During this travel of gasses in tubes, they transfer their heat into the water and steam bubbles come up. As steam is produced, the pressure of the boiler developed, in that closed vessel.

Advantages of fire tube boiler

The advantages of fire tube boilers include:

1-It is quite compact in construction.

2-Fluctuation of steam demand can be met easily.

3-It is also quite cheap.

Disadvantages of fire tube boiler

The disadvantages of fire tube boilers include:

1-As the water required for operation of the boiler is quite large, it requires long time for rising steam at desired pressure.

2-As the water and steam are in same vessel the very high pressure of steam is not possible.

3-The steam received from fire tube boiler is not very dry.

What is a water tube boiler?

A water tube boiler is such kind of boiler where the water is heated inside tubes and the hot gasses surround them. This is the basic definition of water tube boiler. Actually this boiler is just opposite of fire tube boiler where hot gasses are passed through tubes which are surrounded by water.

1-Horizontal Straight Tube Boiler.

2-Bent Tube Boiler.

3-Cyclone Fired Boiler.

Horizontal Straight Tube Boiler again can be subdivided into two different types:

1-Longitudinal Drum Water Tube Boiler.

2-Cross Drum Water Tube Boiler.

Bent Tube Boiler also can be subdivided into four different types:

1-Two Drum Bent Tube Boiler.

2-Three Drum Bent Tube Boiler.

3-Low Head Three Drum Bent Tube Boiler.

4-Four Drum Bent Tube Boiler.

Advantages of water tube boiler

The advantages of water tube boilers include:

There are many advantages of water tube boiler due to which these types of boiler are essentially used in large thermal power plant.

1-Larger heating surface can be achieved by using more numbers of water tubes.

2-Due to convectional flow, movement of water is much faster than that of fire tube boiler, hence rate of heat transfer is high which results into higher efficiency.

3-Very high pressure in order of 150 kg/cm² can be obtained smoothly.

Disadvantages of water tube boiler

The disadvantages of fire tube boilers include:

1-The main disadvantage of water tube boiler is that it is not compact in construction.

2-Its cost is not cheap.

3-Size is a difficulty for transportation and construction.

What Are Burners?

Most boilers get their heat from the hot water or steam from the combustion of the fuel that a burner requires.

The burners are to control the fuel and air mixture so that the combustion occurs smoothly and uniformly inside the furnace of the boiler.

The heat transfer from burners is often a complicated process because of the turbulent fluid flow, high-temperature chemical reactions, and spectral gaseous radiation.

The burner controls the amount of air supplied to the fire by some means. The media can vary from a single blade damper to input blades at the fan inlet and can include a VSD (variable speed drive) in the fan motor.

To provide stable combustion, the dampers or VSD must control the air flow without sticking or falling, which produces variations in the air flow. The dampers also have to control the flow without producing distortions in the flow of air to the burner.

Gas Burner:

Gas burners can be pre-mix and post-mix technique. Post-mix means gas and oil combines after they enter the furnace, premix burners are vice-versa. There are two options for the post-mix gas burners, which are usually identified as atmospheric burners or power burners. Atmospheric burners usually do not have fans or blowers to deliver the combustion air to the burner and rarely have draft fans. Pre-mix burners are less used burners, Many operators that went from the burning process equipment to the boiler plant are comfortable with the premix burners.

Oil Burners:

Fuel oil is injected into the burner using oil guns with burner tip at the end. The design and arrangement of the tip and the gun depend on the type of atomization system. There are two types of oil burners.

1-Vaporizing Burners

2-Atomizing burners

Vaporizing Burner:

In the vaporization burners, the volatile fuel passes at low pressure through a tube adjacent to the flame, where the vaporization takes place. The vapour stream issues out of an orifice at a high velocity and entrains primary air.

Atomizing Burner:

Atomizing burners have an arrangement for the atomization of liquid fuels before the actual combustion takes place. For atomization, initially, a jet or a thin film of liquid is obtained and allowed to emerge into the open atmosphere at a suitable velocity. The design and arrangement of the tip and the gun depending on the type of atomization system. Pressure atomizing burners have one or more tips at the end of a tube placed in the burner at the point where the oil must be injected to develop the air/fuel mixture. There may be one or more burner tips with a burner gun. Differential pressure, air atomization and vapor burners need two pipes, one to transport the oil to the tip and another to supply air or steam or return the oil from the tip.

Industrial Steam Valves

The steam flow is controlled by most types of valves, few special service conditions exist with steam regarding pressure and temperature. The most commonly used industrial steam valves are listed:

Angle Valves • Ball Valves • Bellows Valves • Butterfly Valves • Cartridge / Manifold Valves

Angle Valves

Applications:

The angle valves can be used to deliver millions of cycles of operation in demanding applications such as steam, water, and aggressive media. Ideally suited for vacuum applications and can be used in fast-acting applications up to 1000 cycles per hour with an expected life of over 10 million cycles. They are mainly used in industries, including chemical, water, and sewage, food and beverage, oil and gas, etc.

Advantages:

- A high flow rate with low-pressure loss is obtained
- Elimination of water hammer and resistance to backflow
- Provides longer service life than ball valves

Ball Valves

Applications:

- Low-point drains and high-point vents in liquid, gaseous, and other fluid services.
- Cooling water and feedwater systems Steam service.
- Air, liquid, and gaseous applications requiring bubble-tight service.
- Instrument root valves.

Advantages:

- Quick to open and close.
- Lighter in weight and smaller in size than a gate valve.
- Provides bubble-tight service.
- Several designs of ball valves provide the flexibility of selection.
- Can be used in slurry and clean purposes.
- Multi-port design provides versatility and reduces the number of valves required.
- The force required to actuate the valve is smaller than that required for the gate/globe valve.
- Reliable service in high-pressure and high-temperature applications are provided with high-quality ball valves



Bellows Valves

Applications:

- Heat transfer media
- Vacuum/Ultra-high vacuum
- Costly fluids
- Highly hazardous fluids
- Nuclear plant, Heavy water plant

Advantages:

- There is no fluid loss and instead better security of the factory's equipment.
- Durable sealing structures without leakage. Operating life is long with less maintenance and fewer operating cost
- Operating life is long with less maintenance and fewer operating costs.
- Its cost is moderate.
- Adaptable for absolute and differential pressures.
- Able to deliver high force.
- It's good to the low-to-moderate range

Butterfly Valves

Applications:

Among diverse industries and applications, the butterfly valves are widespread such as food pharmaceutical, chemical and oil, wastewater treatment, water supply, gas supply, fuel handling and fire protection. These valves are available in large sizes and are suitable for handling liquids and slurries with relatively large amounts of solids at low pressures.

Advantages:

The butterfly valves are small and when actuated they open and close very quickly. Compared to the ball valve, the disc is lighter, and the valve requires less structural support of comparable diameter. As the butterfly valves are very accurate, they are very advantageous in industrial applications. They require very little maintenance and are quite reliable

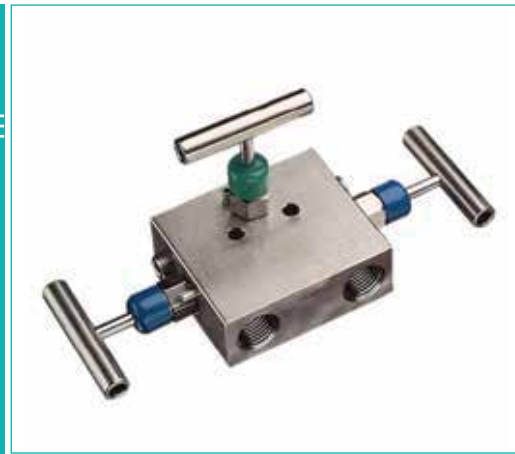
Cartridge / Manifold Valves

Applications:

The industrial hydraulic valves are also known as 2/2-way valves or logic elements, are used for the directional check, pressure, and flow control. They have a complex design that can be used in hydraulic manifold systems for many types of mobile and industrial machinery. These products are suitable for applications that require leak-free control and high flow rates. The term "cartridge" usually refers to directional, pressure, and flow control valves that screw into a threaded cavity. Although some manufacturers have units that will flow more than 100 gpm, these cartridge valves are mostly rated for low flows - 40 gpm or less.

Advantages:

- Lightweight and compact size
- Leakage resistant and efficient
- Economical
- Convenient, neat and easily serviced



RO Water Treatment Plant

Reverse osmosis (RO) is a water purification process that uses a partially permeable membrane to separate ions, unwanted molecules and larger particles from drinking water. In reverse osmosis, and applied pressure is used to overcome osmotic pressure, a colligative property that is driven by chemical potential differences of the solvent, a thermodynamic parameter. Reverse osmosis can remove many types of dissolved and suspended chemical species as well as biological ones (principally bacteria) from water, and is used in both industrial processes and the production of potable water. The result is that the solute is retained on the pressurized side of the membrane and the pure solvent is allowed to pass to the other side. To be "selective", this membrane should not allow large molecules or ions through the pores (holes), but should allow smaller components of the solution (such as solvent molecules, e.g., water, H₂O) to pass freely.

Reverse osmosis machine system. The main equipment:

- | | |
|------------------------|-----------------------------------|
| 1-Silica sand filter | 5-RO(reverse osmosis) |
| 2-Active carbon filter | 6-UV sterilizer, precision filter |
| 3-Sodium ion exchanger | 7-Ozone generator |
| 4-Hollow fiber | 8-Water tank |

The treatment capacity is 0.5-50 ton/hour. It can effectively get rid of muddy organic matter, iron, manganese and oxide, filter suspended substance, colloid, remained oxygen of microorganism and some of heavy metal ion in the water, reduce the hardness of the water to make all specifications of the water quality fully meet the state fresh water standard of fresh drink water.



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Hydro -Mechanics Houmani repair & maintenance services are leading in MENA and AFRICA as our team of engineers and experts is ready to serve you 24/7 virtually and on-site as we appreciate your time and productivity that might be damaged because of delays in repairs or in major malfunctions.

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PRODUCTION LINE UPGRADE

We will give you a reason to do business with us. We can help you upgrade your old equipment with brand new replacements from respected brands, functional and cost-effective.

Our engineers and experts will raise up your productivity to the highest levels with only few modifications and train your production & maintenance teams to guarantee those high rates of productivity that will lead to higher incomes.

TRAIN YOUR TEAM

HM Houmani experts and engineers are ready to train your maintenance and production teams to give you premium services and keep them updated.

UPGRADE YOUR MACHINES

As a consultant we will be pleased to study your production line efficiency and advise you where, how and what to upgrade in your factory to get better and higher productivity.

STOP LOSING MONEY

Most of your machines devices have a long lifetime than you use them and lots of our costumers lose them before it because of none scheduled regular check of maintenance. Ask us for productive maintenance.



SPARES STOCK MANAGEMENT

Benefit of our predictive maintenance and get your spares stock always ready for any unpredictable problem as we can make you supplied with every regular replacement spare.

LOWER YOUR MAINTENANCE COSTS

Getting your stocks, team machines ready and upda decrease your repair and m costs including production rates for fast shipping, boo team, ETC...

LOWEST PRICE/HIGHEST QUALITY

We have international connections with most well known and major brands that supplies us with tons of sp prices offering them to ou customers, so everybody benefits.



3RD PARTY PURCHASING SERVICES

Restrictions on where you can purchase from due to supplier not being on your vendor list, we can purchase on your behalf from any vendor or supplier around the world and take care of shipping and logistics with lowest commissioning rates. Customer comfort is a must! So you don't have to be stressed about getting your spares and all of its complications. HM Houmani and all of its team and capabilities stands by you.







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