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HYDRAULIC & ELECTROHYDRAULIC TRAINING KIT

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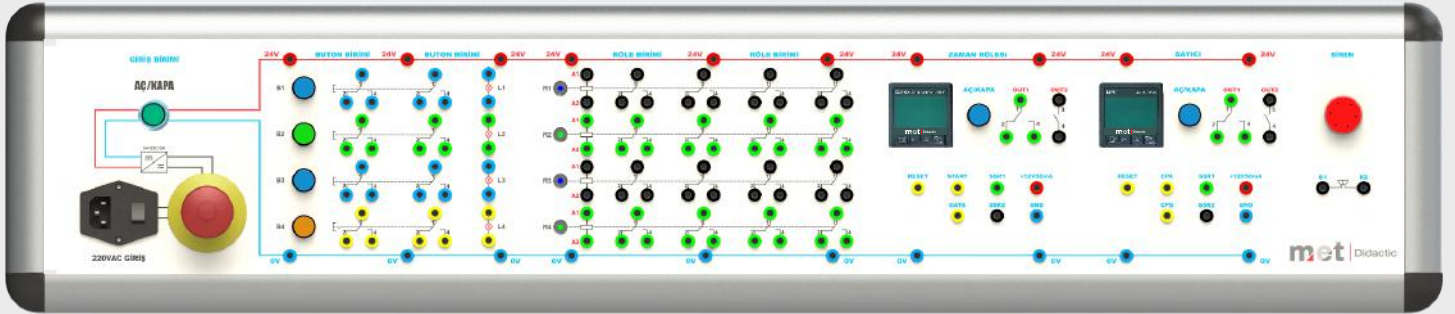


TROLLEY OF THE TRAINING KIT

1210mm (L), 800mm (W), 1850mm (H)

- The dimension of the main column is 90x90mm
Modular anodized aluminium
- Impact-resistant laminate table
Lockable swivel caster
- Portable and stationary use
Can be used as one-sided or double-sided
- Lockable and relocatable metallic drawer
All equipments including the trolley and
control panel have CE certificate.





CONTROL AND MONITORING PANEL

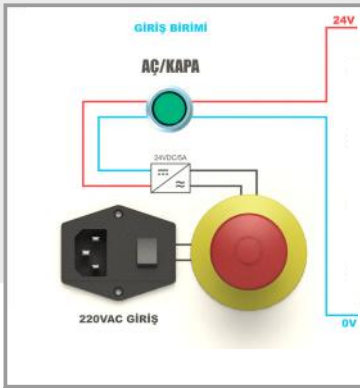
- 1- Input unit
- 2- Button and lamp unit
- 3- Relay unit
- 4- Digital timing relay unit
- 5- Digital counter unit
- 6- Encoder unit
- 7- DC motor, step motor, encoder unit
- 8- PLC module
- 9- Proportional directional control valve unit
- 10- Proportional pressure control valve unit
- 11- Touch panel unit

The panel consists of 11 different units. The set can include all the listed units or the units can be added or removed according to user's needs.

The control elements on the units are assembled on an insulated 3mm-thick metal panel.

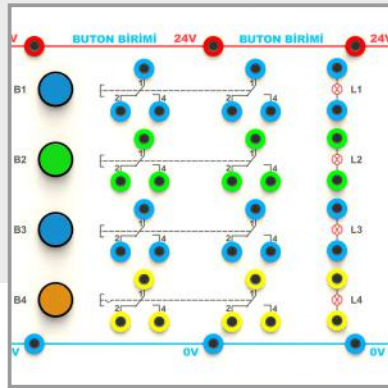
The control panel can be disassembled within seconds from the trolley with the help of its assembly.

3 sides of the panel are surrounded by an insulated material to avoid dust formation. 4mm dimensioned binding posts are used on the panel. Thus, all the electrical bondings can be made easily with the help of 4mm dimensioned banana cables. Insulated sockets or cables can be used due to user's choices.



1. INPUT UNIT

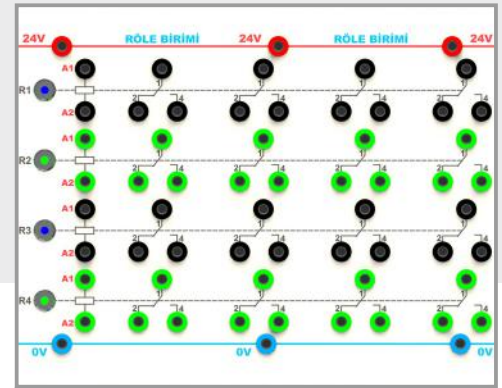
230 VAC input and 24 VDC output, short circuit protected power supply. The input unit consists of an on / off switch, emergency stop button and signal lamp.



2. BUTTON AND LAMP UNIT

It consists 4 buttons (3 of the buttons are variable and 1 of them is permanent). On each button, there are 2 contacts that can be used as normally open and normally closed.

Besides, all the buttons are designed to be used as lamps. Sockets, which are located on the right side of the button unit, are used for lamp's inputs and outputs.



3 RELAY UNIT

It consists from 4 relays.

On each relay, there are 3 contacts that can be used as normally open and normally closed.

it can be seen if the relay coil is powered or not with the help of 8mm diametered stainless metal bodied lamps.

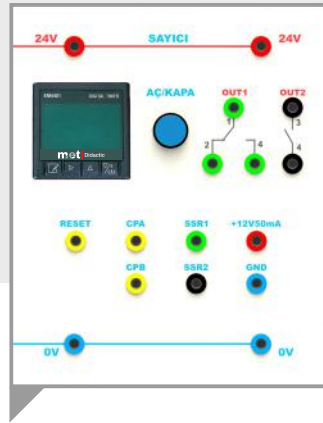


4. DIGITAL TIMING RELAY UNIT

48x48 dimensioned digital timer has features such as; 2x4 digit indicator, 9 step time interval, PNP or NPN typed sensor input, working with or without memory, display count up/down.

The time setting and programming can be made easily with the help of buttons on the screen. The time unit and the reset value can be seen on the lower display.

Front panel has IP60 protection class while back panel has IP20.



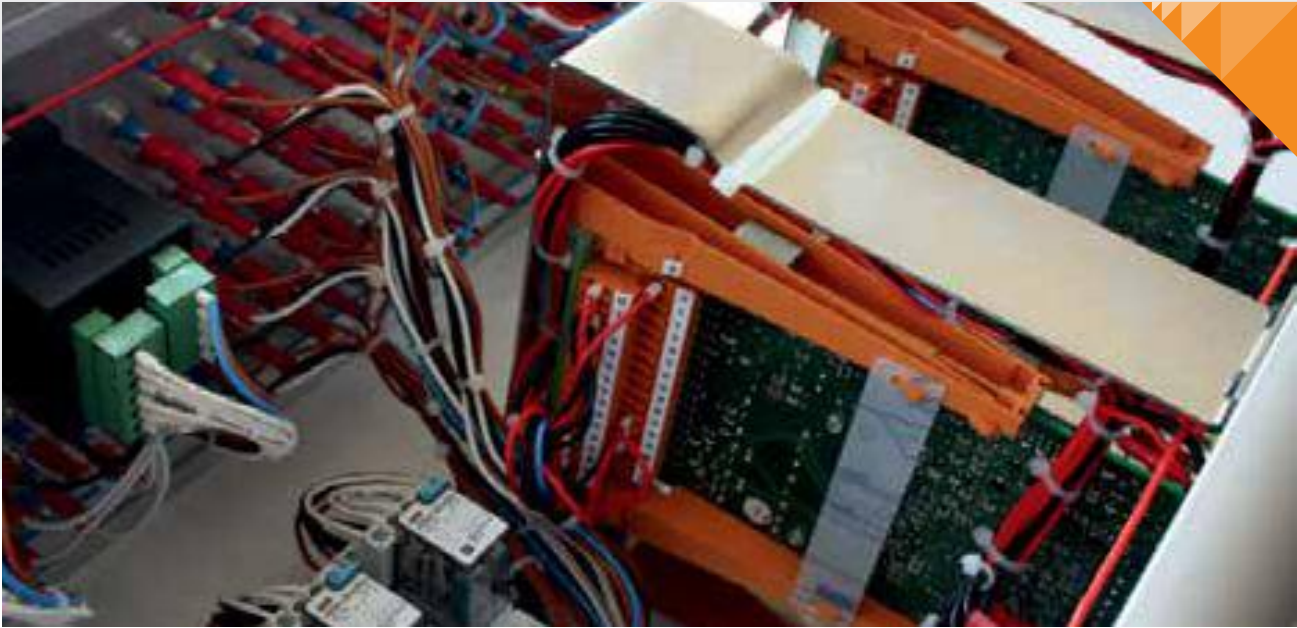
5. DIGITAL COUNTER UNIT

The unit is digital displayed, 48x48 dimensioned and 2x4 digit. there are 2 inputs for counting (max 9999hz, 5V-30V pulse). Counting frequency can be chosen in between 25-9999hz. NO-NC relays for output. Front panel has IP65 protecting class while back panel has IP20. Setting and programming can be made easily with the buttons located on the front panel. Sensor input type can be PNP-NPN or encoders. Counting can be made UP/DOWN.



6. BUZZER UNIT

The unit is 24V DC flasher lighted-up buzzer.



7. DC MOTOR, STEP MOTOR AND ENCODER UNIT

The encoder unit has 50 mm diametered aluminum injectioned body. The unit has 100 pulse. The spindle on the unit is 8 mm and made from stainless steel. The rpm is 4000 and supply voltage is 24 VDC . The unit has IP50 protection class and it is 6 cabled.

Power supply for the drive is 24 VDC and 50w maximum voltage ratio including standing wave is in between 20-40v. It has reverse polarity protection. The PWM is short-circuit protected. Maximum selenoid current is 1,6A and short-circuit protected. Minimum ramp-time is 50ms and it can be adjusted in between 50ms-5s. The deadband prevention is 25% of the spool stroke. The drive circuit has NEMA4 protection class. 0-10v analogue input signal which is sent by drive circuit tranfers to proportional valve's selenoid through the potentiometer. It is possible to change the input signals with the help of potentiometer. Besides direction control, flow rate can also be adjusted sensitively with electrical signals.

DRIVER CONTAINS BELOW FEATURES

- Zero point
- Avoiding the deadband
- Gain Functions
- Ramp functions
- Electronic overload protection with automatic reset
- Pulse width modulation (PWM) for high efficiency
- Monitoring the current and voltage input signals
- Standard input and output signals.

CARD HOLDER



DRIVER

LEDS

- 24V voltage supply, green
- 15V voltage control, green
- Enabling solenoid output, yellow
- Overload solenoid output, red
- LVDT failure, red
- Driving the solenoid, yellow

POTENTIOMETERS

- Avoiding the deadband, flow from P to B
- Avoiding the deadband, flow from P to A
- Gain, flow from P to B
- Gain, flow from P to A

LED

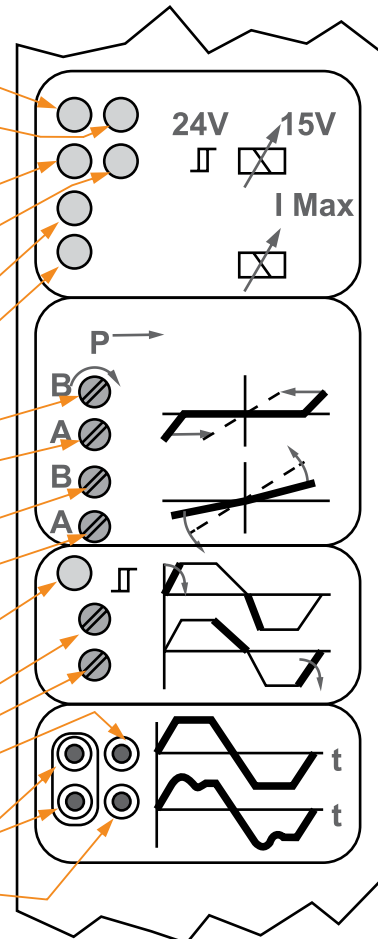
- Ramps enabled, yellow

POTENTIOMETERS

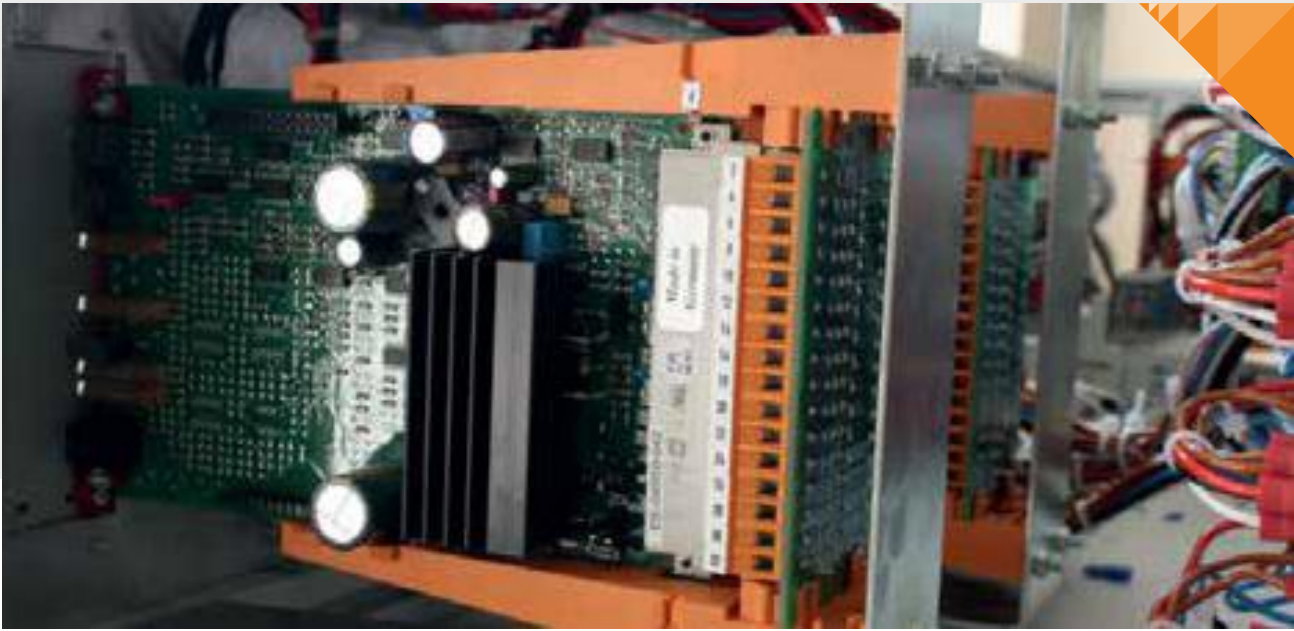
- Acceleration of ramp
- Deceleration of ramp

MONITORING POINTS

- Condition of the MP1 control signal
- Common ground 0V
- MP2 Spool position



FRONT PANEL OF PROPORTIONAL DRIVER



7. PROPORTIONAL DRIVER

The proportional drive circuit is used to run the proportional pressure valve which is sized as ISO 4401-03. The proportional drive card is assembled on the panel with the help of card holder. The driver's front panel can be seen comfortably from outside. Thus, the user has chance to watch and make adjustments easily.

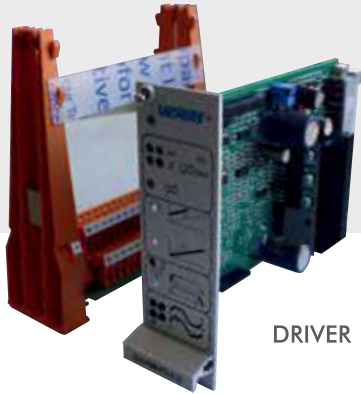
Power supply for the drive is 24VDC and 40W. Max voltage ratio including standing wave is in between 20-34V. It has reverse polarity protection. Max solenoid current is 1,A and short-circuit protected. Min ramp-time is 20ms and it can be adjusted in between 20ms-2s. The drive circuit has NEMA4 protection class. The power amplifier has 5 voltage input signals and 4-20mA current input signal. The "set minimum" and "gain" adjustments allow the amplifier to be easily tuned to the proportional pressure control valve. The ramp potentiometer on the front panel simultaneously adjusts the output acceleration and deceleration. The ramp function is normally enabled. It can be permanently disabled by an external wire link or by an enabled/disabled switch. Status of the input signals which is sent for panel can be seen on monitoring points of front panel (min settings, gaining, ramp-settings and solenoid current)

PROPORTIONAL DRIVER CONTAINS BELOW FEATURES

- Controls and settings can be made on the driver's front panel
- Overload protection with automatic reset
- Pulse width modulation (PWM) for high efficiency
- Value of the pressure can be decreased or increased with the ramp function
- Input signals can be chosen as current or voltage
- Wider supply voltage allows the increasement of ripple tolerance
- Undervoltage protection
- Gain functions cannot effect the ramp functions
- Correction signal for avoiding deadband



CARD HOLDER



DRIVER



11. TOUCH PANEL (HMI UNIT)

65536 colourful TFT DISPLAY TOUCH PANEL. 7" sized, programming through computer with profinet interface and communication with PLC by using the same interface. There are 8 pcs programming menu buttons on the panel.

LEDS

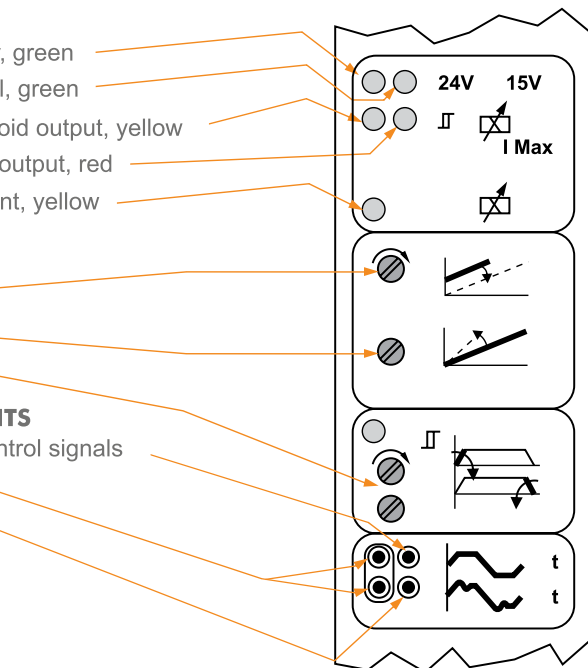
- 24V voltage supply, green
- 15V voltage control, green
- Enabling the solenoid output, yellow
- Overload solenoid output, red
- Output of coil current, yellow

POTENTIOMETERS

- Minimum setting
- Gain
- Ramp setting

MONITORING POINTS

- Condition of the control signals
- Common ground
- Solenoid current



FRONT PANEL OF PROPORTIONAL DRIVER

Aluminum Mounting Panel



- 1060X780mm sized
- Modular, demountable and portable
- Can be used as one-sided or double-sided
- Stainless, impact-resistant anodized aluminum
- T slots for mounting the hydraulic equipments
- Solid-bodied to avoid vibration
- To avoid any kind of job accident, the edges are surrounded by special profile
- Special caps are used to hide the connection bolt and also increase the flexibility
- Can be used separately or mounted on the trolley

MDL-ADO 001-ALP

Hydraulic Hose Set



- Variety of 700mm or 1000mm length
- Quick couplings for connecting easily
- Flexible
- Bendable
- 200 bar working pressure, 800 bar burst pressure
- System 2018 (no oil-leaking during demounting)

Made in Turkey

MDL-ADO 000 1QC

Powerpacks



- Aluminum, injection body
- Tank volume is about 10 lt
- It is mounted on the side of trolley Demountable
- AC 220V, 0,75 kW electrical motor (approximately)
- Fixed displacement gear pump Designed for mobile hydraulic system
- Filling and breathing cup Drain plug
- Safety valve
- Distribution block
- Suitable for check valve and directional valve
- On/off switch

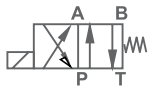
Made in South Korea

MDL-ADO 008-3



4/2 Directional Control Valve

4/2 directional control valve, single solenoid, 24VDC, 4mm socket, with led



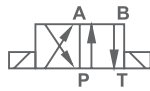
Made in Germany

MDL-ADO 038



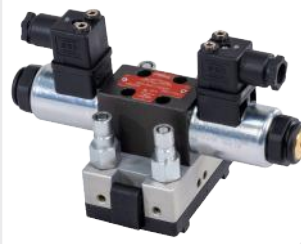
4/2 Directional Control Valve

4/2 directional control valve, double solenoid, 24VDC, 4mm socket, with led



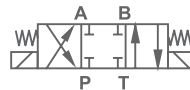
Made in Germany

MDL-ADO 039



4/3 Directional Control Valve

4/3 directional control valve, closed mid-position, double solenoid, 24VDC, 4mm socket, with led



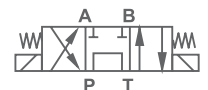
Made in Germany

MDL-ADO 040



4/3 Directional Control Valve

4/3 directional control valve, P-T mid-position, double solenoid, 24VDC, 4mm socket with led



Made in Germany

MDL-ADO 041



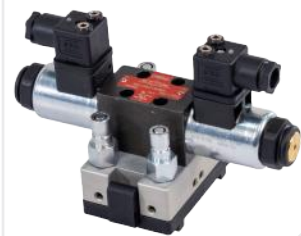
4/3 Directional Control Valve

4/3 directional control valve, A-B-T type mid-position, double solenoid, 24VDC, 4mm socket, with led



Made in Germany

MDL-ADO 042



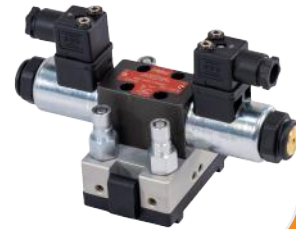
4/3 Directional Control Valve

4/3 directional control valve, P-A-B type mid-position, double solenoid, 24VDC, 4mm socket, with led



Made in Germany

MDL-ADO 043



4/3 Directional Control Valve

4/3 directional control valve, double solenoid, H type mid-position, 24VDC, 4mm socket, with led



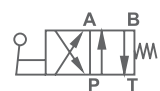
Made in Germany

MDL-ADO 044



4/2 Directional Control Valve

Directional control valve, hand-operated, spring return type



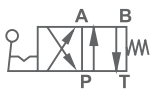
Made in Germany

MDL-ADO 045



4/2 Directional Control Valve

4/2 directional control valve hand lever, with detent



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4/3 Directional Control Valve

4/3 directional control valve hand lever, closed type mid-position



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4/3 Directional Control Valve

4/3 directional control valve hand lever, P-T type mid-position



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MDL-ADO 027



4/3 Directional Control Valve

4/3 directional control valve hand lever, A-B-T type mid-position



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4/3 Directional Control Valve

4/3 directional control valve hand lever, P-A-B type mid-position



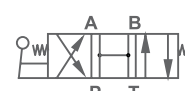
Made in Germany

MDL-ADO 027



4/3 Directional Control Valve

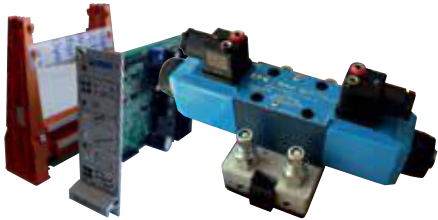
4/3 directional control valve hand lever, H type mid-position



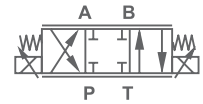
Made in Germany

MDL-ADO 027

4/3 Proportional Valve



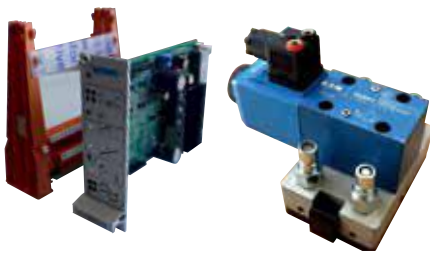
4/3 proportional directional control valve closed mid-position, the valve is standard ISO 4401-03 sized.
 NEMA4 protection class.
 Analogue input signal 0-10V or 4-20 mA.
 Can be used for direction control or very precise flow control.



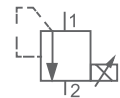
Made in England

MDL-ADO 097

Proportional Pressure Control Valve



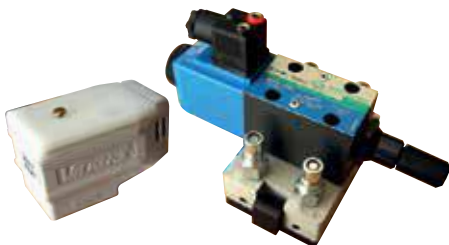
The valve is standard ISO 4401-03 sized.
 NEMA4 protection class.
 Analogue input signal 0-10V or 4-20 mA.
 Can be used to adjust pressure value with electrical signals.



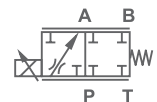
Made in England

MDL-ADO 097

Proportional Flow Control Valve



The valve is standard ISO 4401-03 sized.
 NEMA4 protection class.
 Analogue input signal 0-10V or 4-20 mA.
 Can be used to adjust flow value with electrical signals.



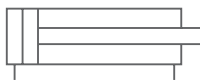
Made in USA

MDL-ADO 097



Hydraulic Cylinder

20x200mm dimensioned, light series, screw coupling system



Made in Germany

MDL-ADO 027



Hydraulic Motor

Gear type, high torque, easy mounting.



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Hydraulic Rotating Cylinder

Gear type, 90-180 rotatable, high torque, 16mm cylinder diameter, 16mm shaft diameter. The rotating cylinder has slotting.



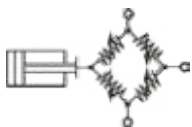
Made in Germany

MDL-ADO 027



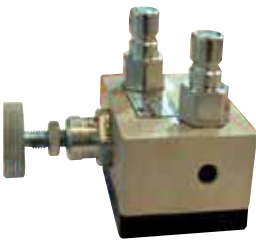
Hydraulic Cylinder And Loadcell Unit

It is used to measure the force that hydraulic cylinder applies. The user will observe the force changes when the pressure within the cylinder changes with the help of proportional or hand lever value.



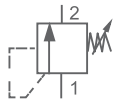
Made in Germany

MDL-ADO 027



Pressure Safety Valve

Cartridge type, pressure value is adjustable. When the system reaches the settled pressure value, the fluid's transfer to the tank starts.



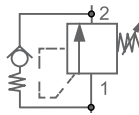
Made in Germany

MDL-ADO 054



Pressure Sequence Valve

Cartridge type, pressure valve is adjustable. The valve is used to work 2 receivers at different times.



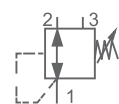
Made in Germany

MDL-ADO 057



Pressure Reducing Valve

The pressure valve is adjustable, cartridge type, 3 lined.



Made in Germany

MDL-ADO 058



2 Way Flow Control Valve

Flow control valve is adjustable. 2 lines.



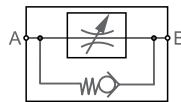
Made in Germany

MDL-ADO 069



One Way Flow Control Valve

Flow control valve is adjustable. 2 lines.



Made in Germany

MDL-ADO 068



One Way Precision Flow Control Valve

Flow control valve is adjustable. 2 lines and load unaffected.



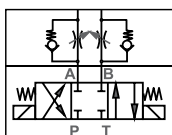
Made in Germany

MDL-ADO 071



Modular Flow Control Valve Group

Cartridge type, flow value is adjustable. When the system reaches the settled pressure value, the fluid's transfer to the tank starts.



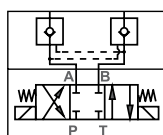
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MDL-ADO 154



Modular Blocking Valve Group

Cartridge type, pressure valve is adjustable. The valve is used to work 2 receivers at different times.



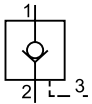
Made in Germany

MDL-ADO 155



Check Valve With Pilot

Cartridge type blocking valve



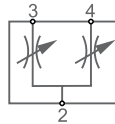
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Flow Divider Valve

Cartridge type



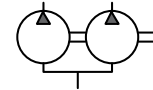
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Flow Divider Valve

Gear type



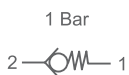
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Check Valve

One way valve that cracking pressure 1 bar



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Minimes Manometer

When you want to find the pressure value you can use it.



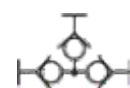
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T Connection

It is used to increase the connection amount. With or without socket.



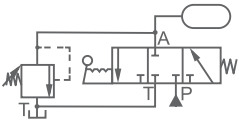
MDL-ADO 182

Made in Germany



Accumulator Group

0,75 lt volume bladder type Accumulator block. Safety valve (fixed pressure valve for safety). Globe-type on/off valve. Manometer with glycerin.



Made in Turkey

MDL-ADO 066



Pressure Filter

Variety of 10 or 20 micron. Suitable body for high operation pressure. Visual or electrical type clogging indicator. Easy mounting or demounting.



Made in Turkey

MDL-ADO 153



Pressure Gauge (Manometer)

0-160 bar, Ø63mm, with glycerin. Line distributor. Can be used for P (pressure line) or T (tank line)



Made in Turkey

MDL-ADO 074



Pressure Bleeding Equipment

The pressure that stayed in coupling does not let the coupling connection. Bleeder plug should be assembled on male coupling and the air will be bleeding manually.



Made in Turkey

MDL-ADO 156



Weight

Almost 10 kg iron weight. Stainless. It is used by connecting to the cylinder.



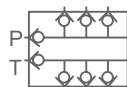
Made in Turkey

MDL-ADO 157



Distributor

It can be used in P-T lines. 4 connections for P, 4 connections for T.



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MDL-ADO 107



Organizer

It is designed to organize equipments. 600x400x330 mm. Made of resistant plastic.



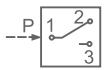
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MDL-ADO 180



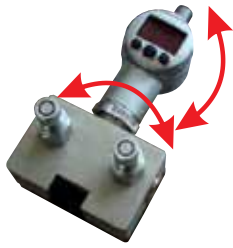
Pressure Switch

It has micrometric division which shows pressure value. Can be used as normally open / normally closed Output signals Pressure value is



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MDL-ADO 085



Digital Manometer

2ways rotatable digital display. Signaling at the min or max pressure. Adjustable hysteresis value. Analogue or digital output signal.



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MDL-ADO 075



Digital Manometer

Digital display. Signaling at the min or max pressure. Adjustable hysteresis value. Analogue or digital output signal.



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MDL-ADO 033



Pressure Switch

It converts the pressure value to electrical signal. Analogue output signal. Socket connection.



Made in Germany

MDL-ADO 068



Temperature Transmitter

It converts the temperature value to electrical signal. Analogue output signal. Socket connection.



Made in Germany

MDL-ADO 087



Limit Switch

Electrical limit switch with lever roller. Can be actuated from right or left side. Panel sockets are used for cable connections. Can be used as normally open or normally closed



Made in Germany

MDL-ADO 090



Flow Transmitter

It converts the flow rate to the electrical signal. Analogue output signal. Socket connection.



Made in Germany

MDL-ADO 088



Handheld Terminal

It converts the flow rate to the electrical signal. Analogue output signal. Socket connection.



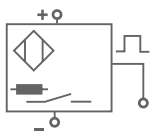
Made in Germany

MDL-ADO 089



Inductive Sensor

Can detect only metal material. Wide detection range. Can be used as normally open or normally closed. 24VDC. Possibility of connection with the help of banana cables.



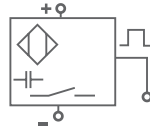
Made in France

MDL-ADO 161



Capacitive Sensor

Can detect all kind of material. Wide detection range. Can be used as normally open or normally closed. 24VDC. Possibility of connection with the help of banana cables.



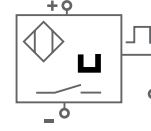
Made in France

MDL-ADO 162



Magnetic Sensor

Can detect only magnetic material. Wide detection range. Can be used as normally open or normally closed. 24VDC. Possibility of connection with the help of banana cables.



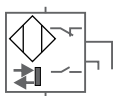
Made in France

MDL-ADO 177



Optic Sensor
(With Material Reflected)

Can detect all kind of material. Wide detection range. Can be used as normally open or normally closed. 24VDC. Possibility of connection with the help of banana cables.



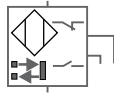
Made in France

MDL-ADO 163



Optic Sensor
(With Material Reflector)

Can detect all kind of material. Wide detection range. Can be used as normally open or normally closed. 24VDC. Possibility of connection with the help of banana cables.



Made in France

MDL-ADO 164



Fiber Optical Sensor

Can detect all kind of material. Wide detection range. Can be used as normally open or normally closed. 24VDC.



Made in France

MDL-ADO 165



Eğitim Bilgi Didactic Ortantı Tasarruf
Endüstri 4.0 Dijital sektör de Hareket Mesleki Sanayi Ders Kü Yöntem Sistem ARIZA Teknoloji Holografik
Uzman Kontrol Makina Verimlilik Ölçü Aktarım Dinamik VERİ Enerji Üretim Lojik Sürec Optimun Rulman Sürç operatör Çalışma Tecrübe Proje Akademi Teknoloji Deneyim sistem Beceri Teknik Odak ENÜSTRİ 4.0 AKademi
Hidrolik Montaj Dişli mesleki Üretim Mekanizma Endüstriyel İleri Seviye Kestirimci Bakım Sanal Fabrika Operatör Otomasyon Sertifika Basınc Valf Elektronik İleri Mekanik ÖĞRENİM Sanayi Tecrübe PROCES Makina Seviye Ölçme Rulman ÖNGÖRÜ Personel Akademik Sistem uygulama Optimun Sanayi Dijital Dinamik Zaman Enerji farkındalık Deneyim Bağlantı Fabrika Eğitim fikir Set Zaman DERS Tecrübe Öğrenim ARIZA Parkur okul YÖNTEM VERİM Pnömatik Deneme Beceri teknoloji Mesleki Silindir Sistem Aktarım yöntem Yorum Panel Teknoloji Yağ Servo Takım Deneyim Proje Aksam Temel Seviye Sistem Rulman Tasarruf Otomasyon şema Gerçeklik Bağlantı Makina Tasarruf Simülasyon Kurumsal Sürec Uzman Basınc Yol ENÜSTRİYEL Fikir Güç Teknik Temel Seviye MÜHENDİS Sürec Mekanik Valf Kavram makina Hidrolik Online UZMANLIK Bakım Elektropnömatik okul Çuç servis Bilgi Uygulama Kavram makina Teknoloji Uzmanlık Bakım Modüler Uzman ÇÖZÜM Deneyim Servo Yağ akademi Tecrübe Holografik Vizyon Pnömatik Hidrolik



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