

KVM 16

monoblock directional control valve

monoblok hidrolik yön kontrol valfi



Index - İçindekiler

Product Features	72
<i>Ürün Özellikleri</i>	
General Specifications	72
<i>Genel Özellikler</i>	
Order Coding	73
<i>Sipariş Kodlama</i>	
Dimensional Data	74
<i>Ölçüsel Bilgi</i>	
Performance Data	75
<i>Performans Eğrileri</i>	
Hydraulic Specification	76
<i>Hidrolik Devre</i>	
Inlet Options	77
<i>Basınç (P) Hattı Opsiyonları</i>	
Spool Positioners	78
<i>Sürgü Kontrolleri</i>	
Spool Options	83
<i>Sürgü Tipleri</i>	
Auxiliary Valves	85
<i>Yardımcı Valfler</i>	
Lever Types	87
<i>Sap Tipleri</i>	
Outlet Options	90
<i>Tank (T) Hattı Opsiyonları</i>	

General Specifications

Genel Özellikler

Product Features

KVM16 is largest monoblock valve series for nominal flow rate 100 lpm and operating pressures up to 300 bar.

Accessories

Valve is equipped with an adjustable main relief valve
Available in parallel (in standard)
Load Hold Check valves in each section
Auxiliary Valves
Wide range of spool options
Interchangeable Ø19 mm Spools
Carry-over and closed center option

Controls

Manual, Pneumatic, Electro- Pneumatic, Hydraulic, Electro-Hydraulic, Solenoid, Mechanical Joystick and Remote Cable Control

Özellikler

KVM16 serisi 100 lt/dk ve 300bar maksimum çalışma basıncıyla en yüksek geçirgenliğe sahip monoblok serisidir.

Aksesuarlar

Ayarlanabilir Ana Emniyet Valfi
Paralel Devre
Her Dilimde Yük Tutma Valfleri
Yardımcı Valfler
Çeşitli Sürgü Tipleri
Değiştirilebilir Ø19 mm Sürgüler
Carry-over ve Kapalı Merkez İmkânı

Kontrol

Manuel, Pnömatik, Elektro-Pnömatik, Hidrolik, Elektro-Hidrolik, Direk Elektrik, Mekanik Joystik, Halat Kontrol

Standard Material Specifications Standard Malzeme Özellikleri

High Resistance Cast Iron Body Döküm Gövde
Hard Chromium Plated Interchangeable Spools Sertleştirilmiş Krom Kaplama Sürgüler
Steel spring caps Çelik Yay Kapakları
Aluminium Lever Caps Alüminyum Sap Kapakları
NBR Seals NBR Sızdırmazlık Elemanları

Working Conditions Çalışma Şartları

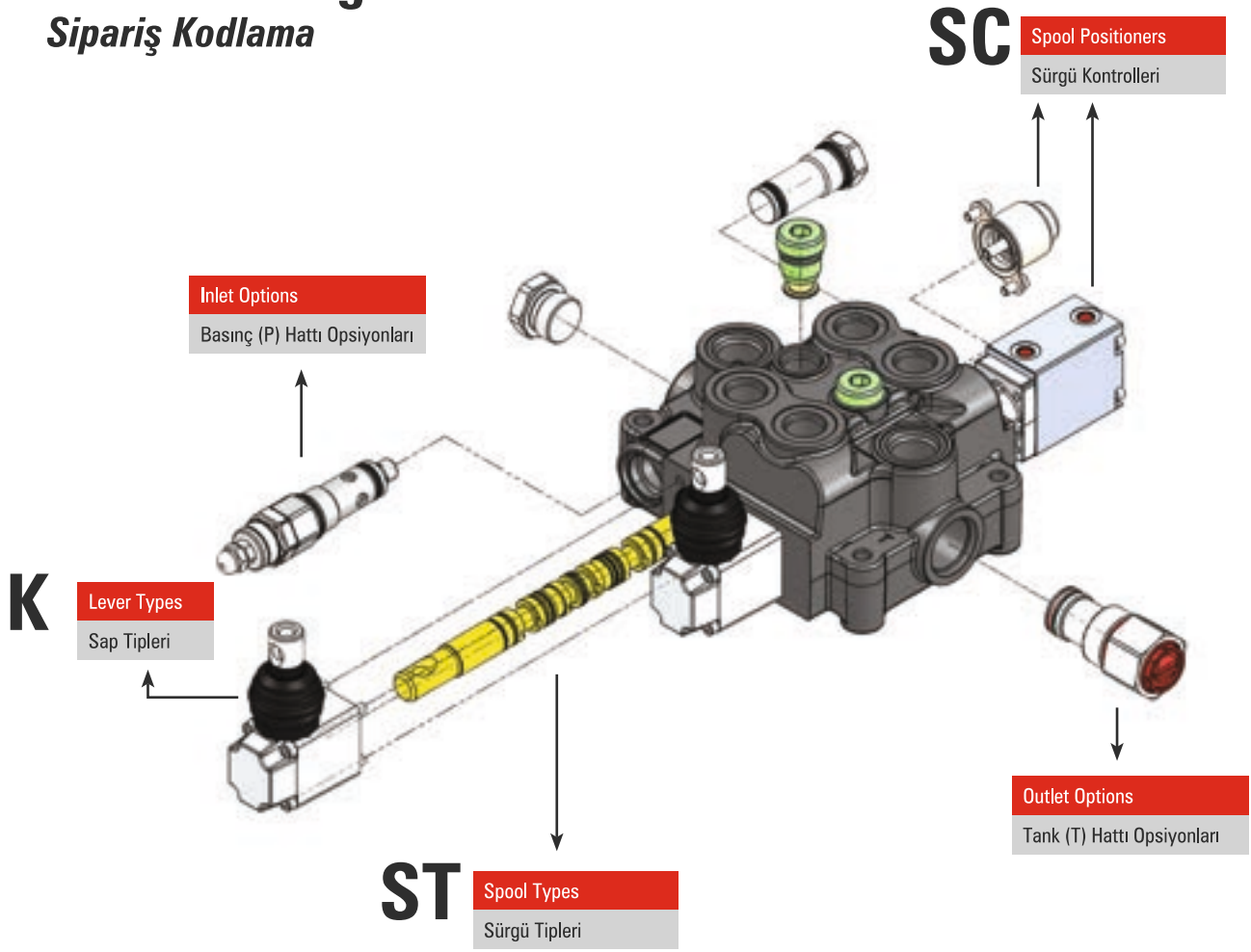
Recommended Oil Viscosity Range Önerilen Yağ Viskozite Aralığı	10 cSt to 75 cSt
Recommended Fluid Temperature Range Önerilen Çalışma Sıcaklığı (°C)	-20 to +80
Environmental Temperature Range Önerilen Ortam Sıcaklığı (°C)	-40 to +60
Maximum Contamination Level Maksimum Kirlilik Seviyesi	Class 10 (NAS 1638) 19/16 (ISO 4406)

Technical Specifications Teknik Özellikler

Nominal Flow Debi	100 lpm	26 US gpm
Number of Spools Dilim Sayısı	2 - 3	
Maximum Working Pressure Maksimum Çalışma Basıncı	300 bar	4400 psi
Maximum Back Pressure Maksimum Tank Hattı Basıncı	30 bar	430 psi
Internal Leakage İç Kaçak Değeri	4 cc - 9 cc (100 Bar; 32 cSt, 40 °C)	0,24 - 0,54 in ³ /m (1450 psi; 32 cSt, 104°F)

Order Coding

Sipariş Kodlama



KVM162C - R(180) - SC1 ST11 K1 / SC15 ST1 K1 / H

1 2 3 4

1

Valve Type Valf Tipi

KVM16 Valve Series Valf Serisi
2 Number of Spools Sürgü Sayısı
C Port Thread Port ölçüleri

2

Inlet Options Pompa (P) Hattı Opsiyonları

R Main Relief Valve Ana Emniyet Valfi
180 Pressure Setting Basınç Değeri

3

Working Section Dilim

SC1 Spool Positioners Sürgü Kontrolleri
ST11 Spool Options Sürgü Tipleri
K1 Auxiliary Valves Yardımcı Valfler
K1 Lever Types Sap Tipleri

4

Outlet Options Tank (T) Hattı Opsiyonları

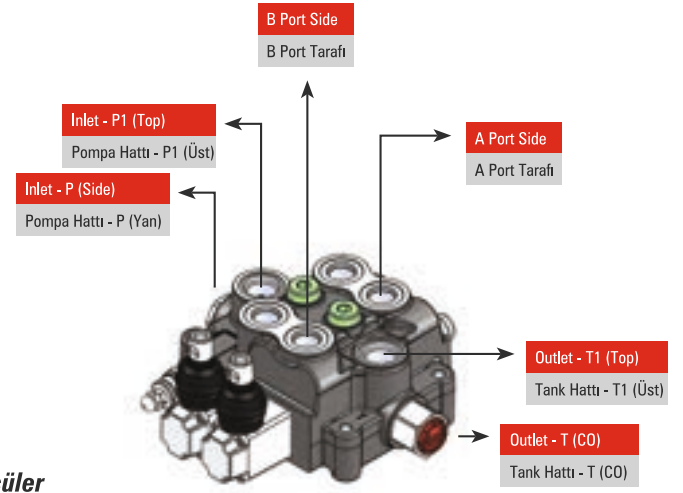
H Outlet Options Tank Hattı Opsiyonları

This part must be coded separately for each working section. If adjacent sections are identical then code the first section and put number of identical sections with a cross. Example for 3 identical sections; KVM163C-R/SC1ST1K1/2XSC4ST1K3/H

Bu bölümdeki kodlama her dilim için ayrı ayrı yapılmalıdır. Eğer birbirini takip eden ve aynı konfigürasyona sahip dilim isteniyorsa, aynı dilimler, dilim sayısı başa getirilip yanına çarpı konacak şekilde kodlanabilir. Örnek Kodlama; KVM163C-R/SC1ST1K1/2XSC4ST1K3/H

Dimensional Data

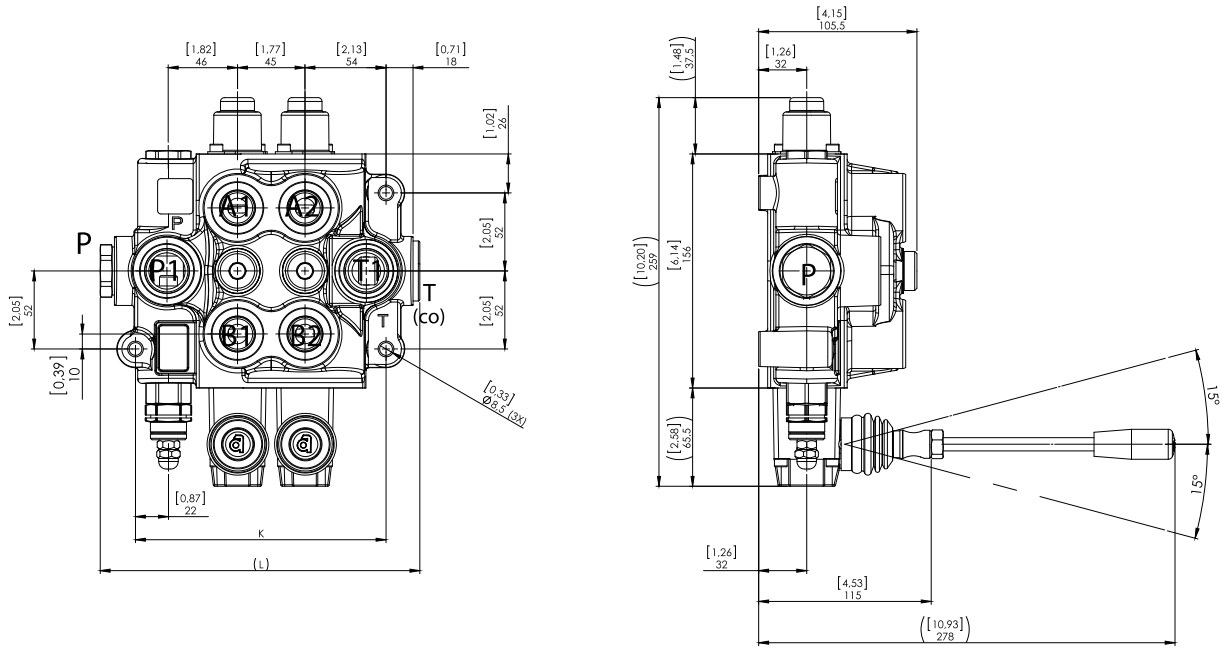
Ölçüsel Bilgi



Standard & Optional Threads Standart ve Opsiyonel Ölçüler

Thread Paso Tipi	Code Kod	P - P1	A/B	T1	T(CO)
BSP(Standard)	C	G 3/4"	G 3/4"	G 3/4"	G 3/4"
UN-UNF	N	1 1/16 - 12 (SAE 12)	1 1/16 - 12 (SAE 12)	1 1/16 - 12 (SAE 12)	G 3/4"
METRIC	Z	M22x1,5	M22x1,5	M22x1,5	G 3/4"

BSP threads are standard threads. Its necessary to code the port thread after valve series during ordering in monoblock valves. Example coding; KVM162C-R(160)/SC1ST1/SC1ST1
Valflerimiz standart olarak BSP Diş üretilmektedir. Talep edilen port ölçüleri monoblok valflerde valf tipi kodlamasından hemen sonra kodlanır. Örnek Kodlama; KVM162C-R(160)/SC1ST1/SC1ST1



Dimensions & Weight Ölçüler ve Ağırlık

Type / Tip	K		L		Weight Ağırlık	
	mm	inc	mm	inc	kg	lb
KVM162	215	8.46	167	6.57	12.75	28.00
KVM163	260	10.23	212	8.34	17.00	37.50

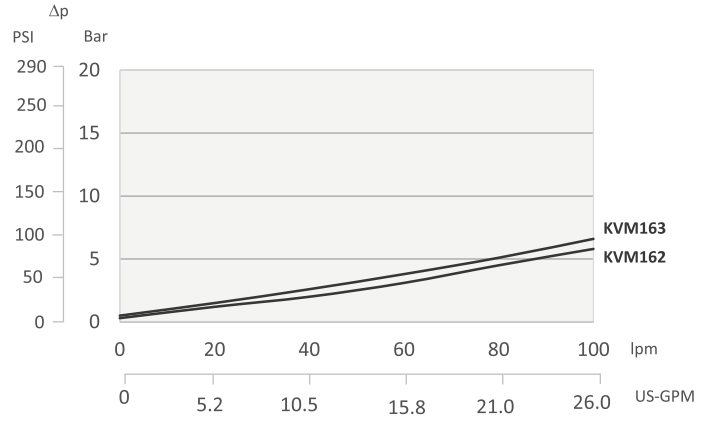
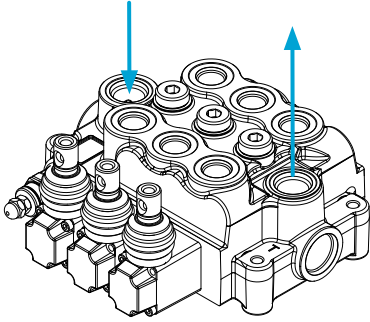
Given weights are for standard configurations.
Ağırlıklar standart konfigürasyon için verilmiştir.

Performance Data

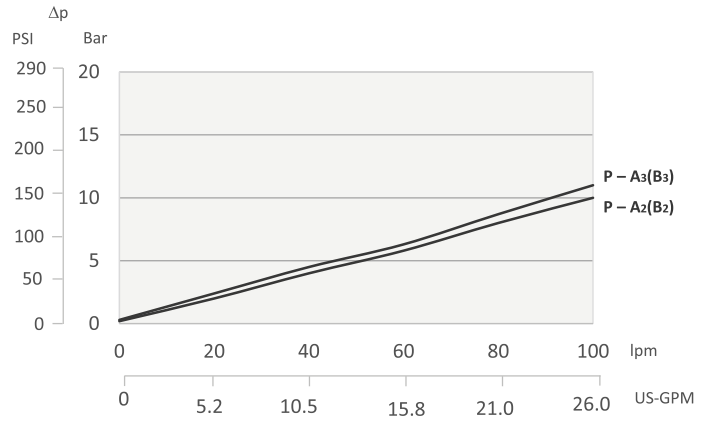
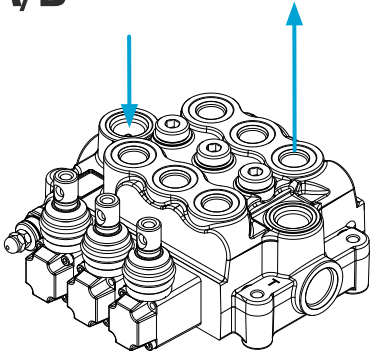
Performans Eğrileri

Pressure Drop Curves Basınç Kayıp Eğrileri

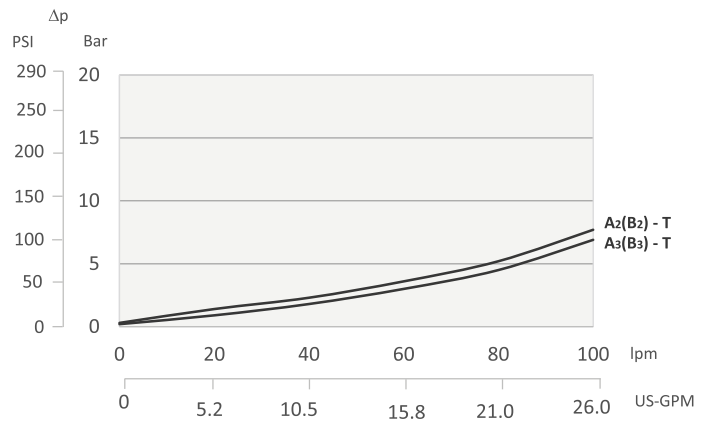
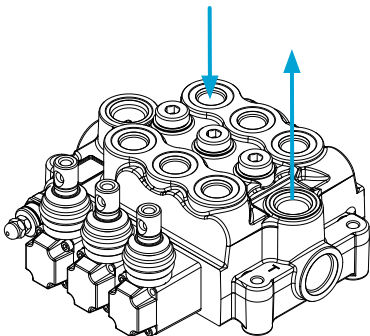
P - T



P - A/B



A/B - T



Measured with spool type ST1 and 32 cSt hydraulic oil @ 40°C.
ST1 sürü ve 32 cSt hidrolik yağ ile 40°C'de ölçülmüştür.

Hydraulic Specifications

Hidrolik Devre

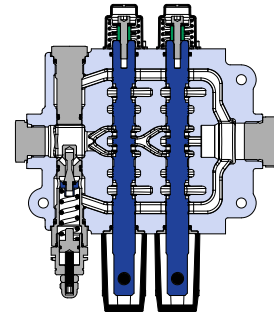
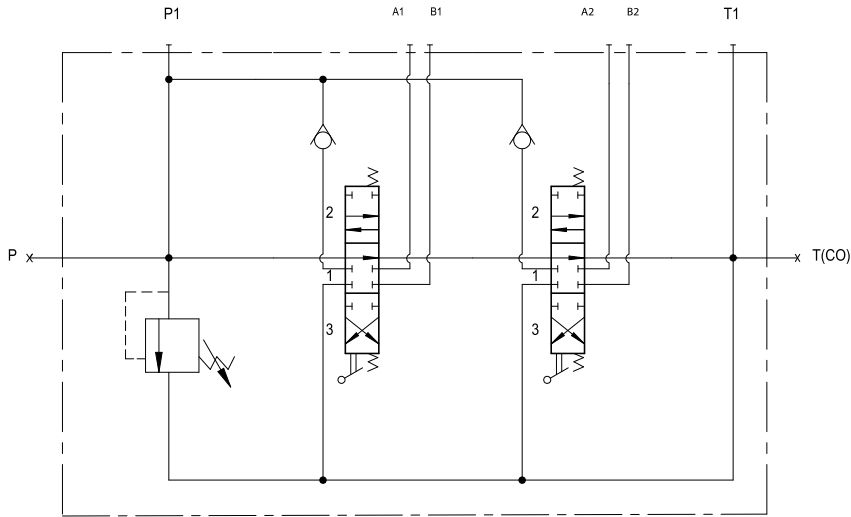
Parallel Circuit Paralel Devre

Code / Kod

NO
CODE

Standard configuration; Parallel circuit with upper inlet and outlet.

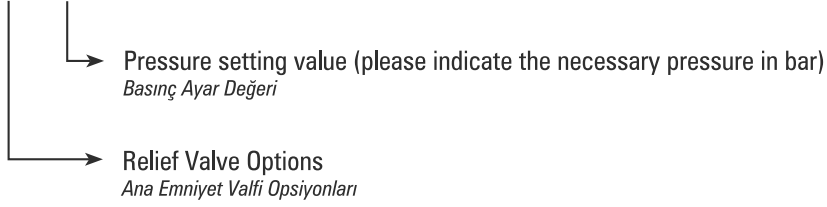
Standart konfigürasyon; Paralel devre, P1 ve T1 açık, P ve T(CO) kör şeklindedir.



Inlet Option

Basınç (P) Hattı Opsiyonları

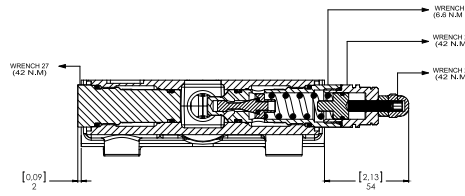
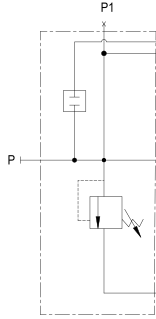
KVM162C - **R(180)** / SC4 ST11 K3 / SC1 ST1 K1 / H



Adjustable Direct Acting Main Relief Valve *Ayarlanabilir Ana Emniyet Valfi (Direk Etkili)*

Code / Kod

R

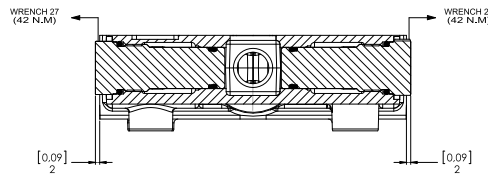
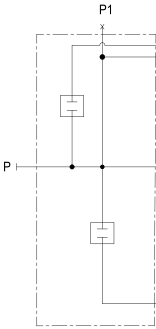


Please indicate the necessary pressure setting value. MRV is preset to 180 Bar at 15 lpm unless otherwise specified.
Lütfen ayarlanmasını istediğiniz basınç değerini bildiriniz. Ürünler standart olarak 15 lt/dk'da 180 Bara ayarlanır.

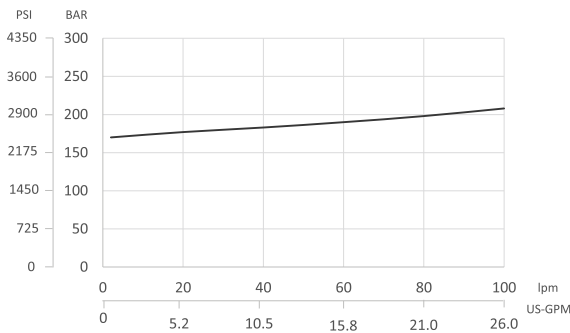
Main Relief Valve Blanking Plug *Emniyet Valfsiz*

Code / Kod

Y



Main Relief Valve Performance Data *Ana Emniyet Valfi Performans Eğrisi*



Measured with 32 cSt hydraulic oil @ 40°C and neglected tank line pressure.
32 cSt hidrolik yağ ile 40°C'de, tank hattı basıncı ihmal edilerek ölçülmüştür.

Spool Positioners

Sürgü Kontrolleri

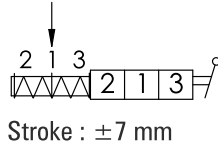
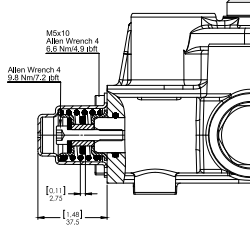
KVM162C - R(180) / **SC4** ST11 K3 / SC1 ST1 K1 / H



Spool Positioners with Spring Return *Yay Dönüşlü Sürgü Kontrolleri*

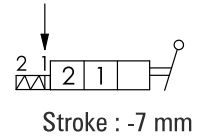
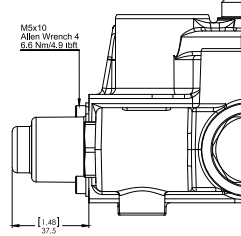
SC1

3 Positions Spring Return
3 Pozisyon Yaylı



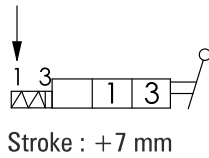
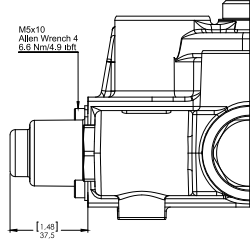
SC5

2 Positions Spring Return
2 Pozisyon Yaylı



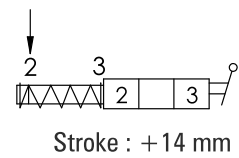
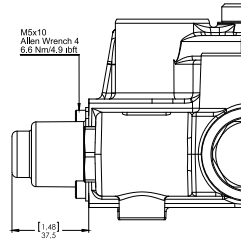
SC6

2 Positions Spring Return
2 Pozisyon Yaylı



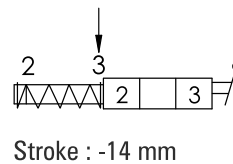
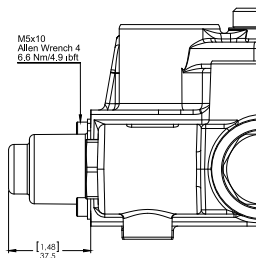
SC11

2 Positions Spring Return in 3rd Position
2 Pozisyon, 3. Pozisyona Yaylı



SC12

2 Positions Spring Return in 2nd Position
2 Pozisyon, 2. Pozisyona Yaylı

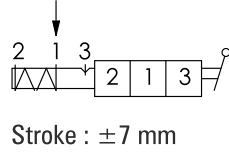
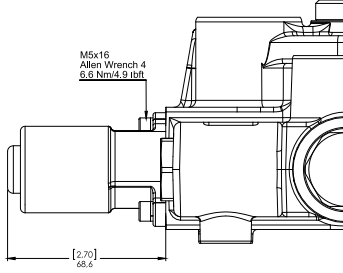


Spool Positioners with Detent *Detanlı Sürgü Kontrolleri*

SC2

3 Position Spring Return, Detent in Pos. 3

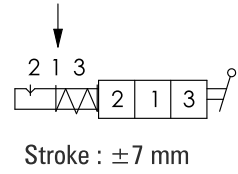
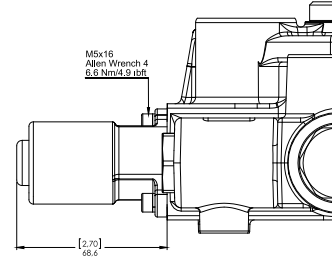
3 Pozisyon Yaylı, 3. Pozisyon Detanlı



SC3

3 Position Spring Return, Detent in Pos. 2

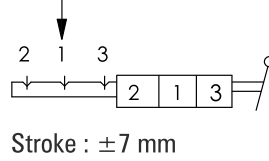
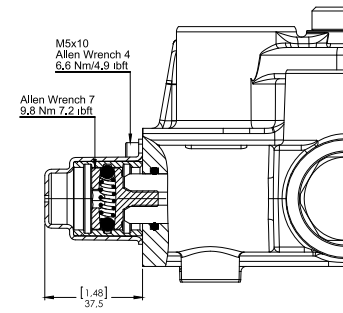
3 Pozisyon Yaylı, 2. Pozisyon Detanlı



SC4

3 Position Detent in All Positions

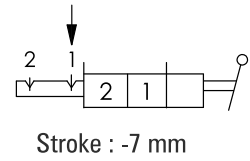
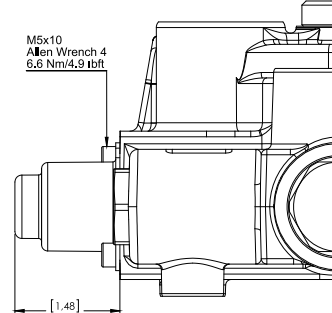
3 Pozisyon Detanlı



SC7

2 Position Detent

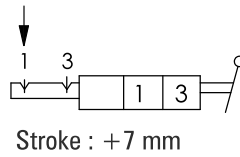
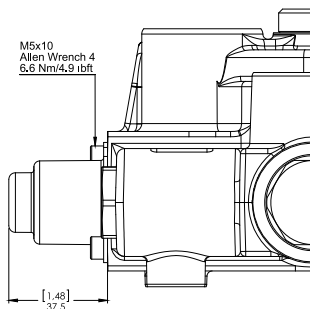
2 Pozisyon Detanlı



SC8

2 Position Detent

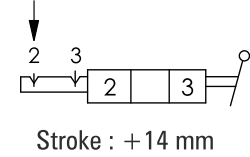
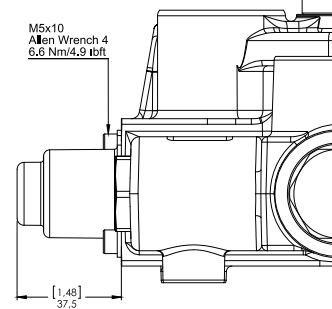
2 Pozisyon Detanlı



SC13

2 Position Detent

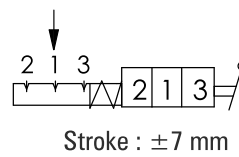
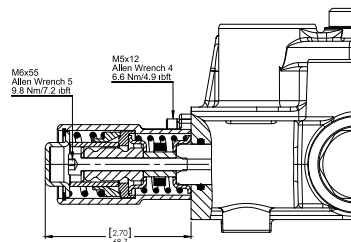
2 Pozisyon Detanlı



SC28

3 Position Spring Centered with Detent

3 Pozisyon Yaylı ve Detanlı

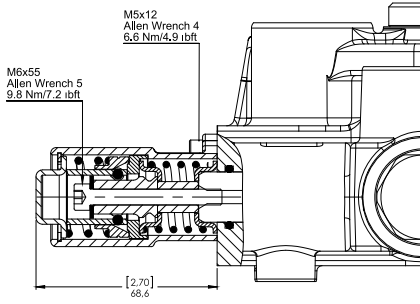


4 Position a Side Spool Positioners 4 Pozisyon A Tarafı Sürgü Kontrolleri

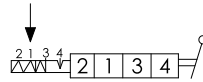
SC9

4 Position Spring Return, Detent in 4th Pos.

4 Pozisyon Yaylı, 4.Pozisyon Detantlı



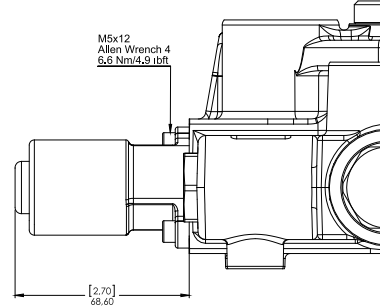
Used with Spool ST9B
ST9B Sürgü ile kullanılır



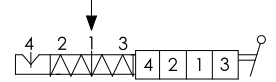
SC23

4 Position Spring Return, Detent in 4th Pos.

4 Pozisyon Yaylı, 4.Pozisyon Detantlı



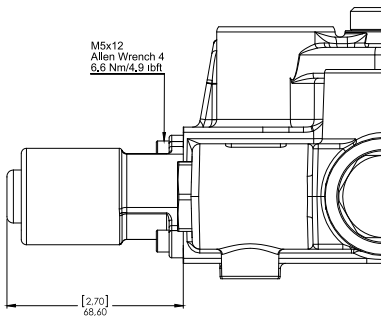
Used with Spool ST9A
ST9A Sürgü ile kullanılır



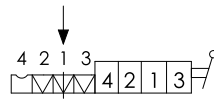
SC21

4 Position Spring Return, Feel Detent in 4th Pos.

4 Pozisyon Yaylı, 4.Pozisyon Hissetmeli Detantlı



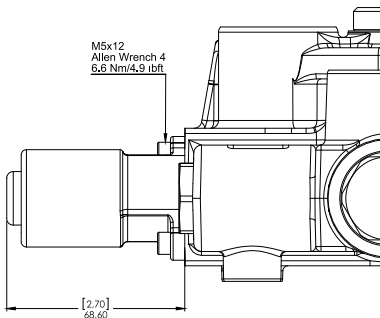
Used with Spool ST10A
ST10A Sürgü ile kullanılır



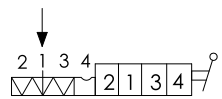
SC22

4 Position Spring Return, Feel Detent in 4th Pos.

4 Pozisyon Yaylı, 4.Pozisyon Hissetmeli Detantlı



Used with Spool ST10B
ST10B Sürgü ile kullanılır



SC15

On-Off Pneumatic Control

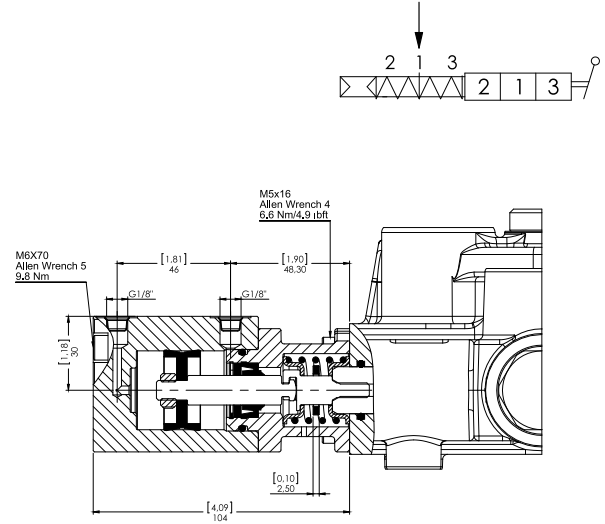
On-Off Pnömatik Kontrol

Pilot Pressure
Pilot Basıncı

Min. 6 Bar / 85 PSI
Max. 12 Bar / 170 PSI

Stroke (mm)
Strok (mm)

± 7 mm



SC30

On-Off Electro-Pneumatic Control

On-Off Elektro-Pnömatik Kontrol

Operation Characteristics Çalışma Özellikleri

Pilot Pressure
Pilot Basıncı

Min. 6 Bar / 85 PSI
Max. 12 Bar / 170 PSI

Coil Characteristics Bobin Özellikleri

Coil Connection Type
Bobin Bağlantı Tipi

DIN 43650

Supply Voltage
Voltaj

12VDC, 24VDC

Protection Type
Koruma

IP65

Nominal Voltage Tolerance
Nominal Voltaj Toleransı

± 10%

Duty cycle
Görev Çevrimi

100%

Absorbed Power
Güç

DC 8W

Coil Insulation Class
Yalıtım Sınıfı

Class "H" coil as from
the IEC 85 standard.
Class "H" wire (200° C).

Maximum Temperatures
Maksimum Çalışma Sıcaklığı

Class "F" 155°C
Class "H" 180°C

Stroke (mm)
Strok (mm)

± 7 mm

Kit Order Code
Kit Sipariş Kodu

12VDC - 2005712000
24VDC - 2005448000

Voltage

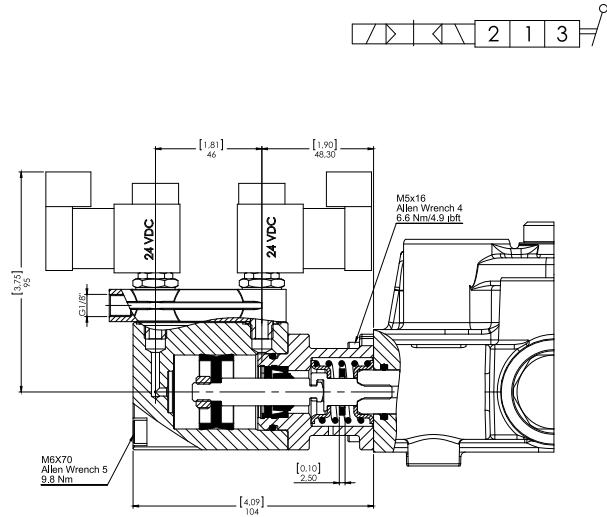
Code / Kod

12VDC

SC302

24VDC

SC304



SC17

On-Off Electro-Hydraulic Control

On-Off Elektro-Hidrolik Kontrol

Operation Characteristics Çalışma Özellikleri

Pilot Pressure
Pilot Basıncı

Min. 10 Bar / 145 PSI
Max. 25 Bar / 360 PSI

Back Pressure
Tank Basıncı

Max. 3 Bar

Coil Characteristics Bobin Özellikleri

Coil Connection Type
Bobin Bağlantı Tipi

DIN 43650

Supply Voltage
Voltaj

12VDC, 24VDC

Protection Type
Koruma

IP65

Nominal Voltage Tolerance
Nominal Voltaj Toleransı

±10%

Duty cycle
Görev Çevrimi

100%

Absorbed Power
Güç

18W

Coil Insulation Class
Yalıtım Sınıfı

Class "F" 155°C

Maximum Temperatures
Maksimum Çalışma Sıcaklığı

100°C

Stroke (mm)
Strok (mm)

±7 mm

Voltage

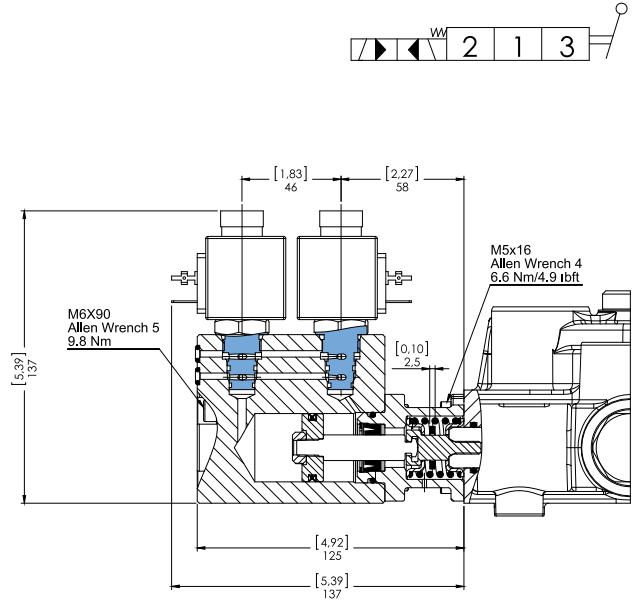
Code / Kod

12VDC

SC172

24VDC

SC174



Spool Options

Sürgü Tipleri

KVM162C - R(180) / SC4 **ST11** K3 / SC1 ST1 K1 / H

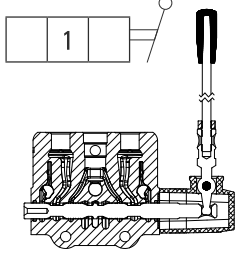
Spool Options
Sürgü Tipleri

Spool Positions Sürgü Pozisyonları

1st Position

1. Pozisyon

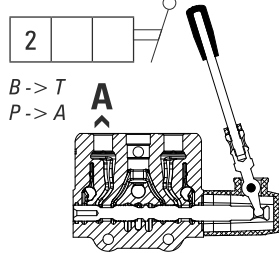
Spool Neutral Position
Nötr



2nd Position

2. Pozisyon

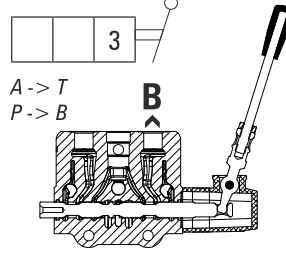
Spool In Position
Mil İçerde



3rd Position

3. Pozisyon

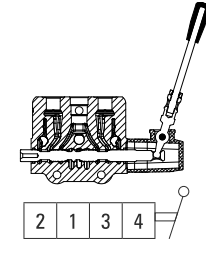
Spool Out Position
Mil Dışarda



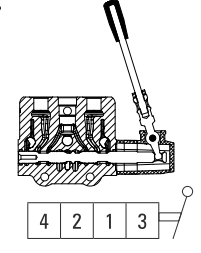
4th Position

4. Pozisyon

4th Pos. Spool Out
4. Pozisyon Mil Dışarda



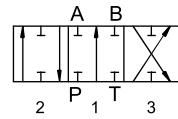
4th Pos. Spool In
4. Pozisyon Mil İçerde



ST1

3 Position, Double Acting

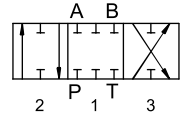
3 Pozisyon, Çift Etkili



ST4

3 Position, Closed Center

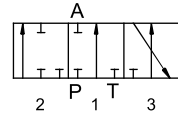
3 Pozisyon, Kapalı Merkez



ST2

3 Position, A Port Single Acting

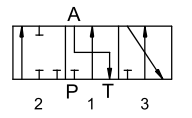
3 Pozisyon, A Port Tek Etkili



ST5

3 Position, A Port Single Acting and to Tank

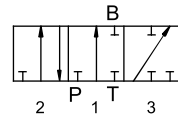
3 Pozisyon, A Port Tek Etkili ve Tanka Açık



ST3

3 Position, B Port Single Acting

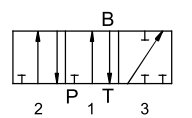
3 Pozisyon, B Port Tek Etkili



ST6

3 Position, B Port Single Acting and to Tank

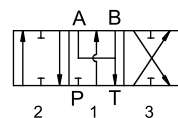
3 Pozisyon, B Port Tek Etkili ve Tanka Açık



ST11

3 Position, Double Acting, A/B to Tank

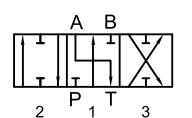
3 Pozisyon, Çift Etkili A ve B Tanka Açık



ST7

3 Position, Double Acting A to Tank

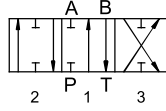
3 Pozisyon, Çift Etkili ve A Tanka Açık



ST8

3 Position,
Double Acting B to Tank

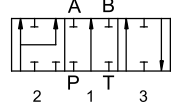
3 Pozisyon,
Çift Etkili ve B Tanka Açık



S12A

3 Position, Double Acting With
Regenerative in 3rd Position
(2nd Position Spool In)

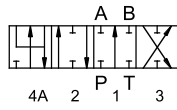
3 Pozisyon, Çift Etkili
3. Pozisyonda Rejeneratif
(Mil İçerde 2. Pozisyon)



ST9A

4 Position, Double Acting with
Float in 4th Position
(4th Position Spool In)

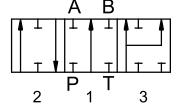
4 Pozisyon, 4. Pozisyonda Float
(Mil İçerde 4. Pozisyon)



ST12B

3 Position, Double Acting With
Regenerative in 2nd Position
(3rd Position Spool Out)

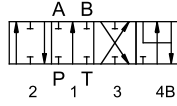
3 Pozisyon, Çift Etkili
2. Pozisyonda Rejeneratif
(Mil Dışarda 3. Pozisyon)



ST9B

4 Position, Double Acting with
Float in 4th Position
(4th Position Spool Out)

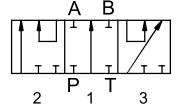
4 Pozisyon, 4. Pozisyonda Float
(Mil Dışarda 4. Pozisyon)



ST19

3 Position, Series Spool

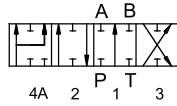
3 Pozisyon, Seri Sürgü



ST10A

4 Position, Double Acting with
Regenerative in 4th Position
(4th Position Spool In)

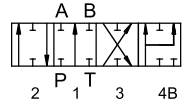
4 Pozisyon,
4. Pozisyonda Rejeneratif
(Mil İçerde 4. Pozisyon)



ST10B

4 Position, Double Acting With
Regenerative in 4th Position
(4th Position Spool Out)

4 Pozisyon,
4. Pozisyonda Rejeneratif
(Mil Dışarda 4. Pozisyon)



Auxiliary Valves

Yardımcı Valfler

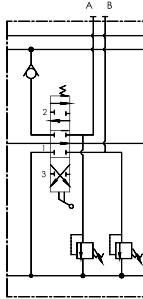
KVM162C - R(180) / SC4 ST11 **V13** K3 / SC1 ST1 K1 / H

Auxiliary Valves
Yardımcı Valfler

V1

Antishock valves on A & B ports

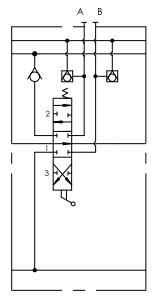
A & B portlarında antişok valfi



V4

Anticavitation valves on A & B ports

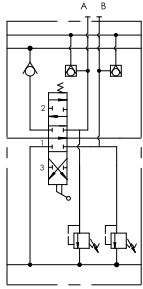
A & B portlarında antikavitasyon valfi



V7

Antishock & anticavitation valves on A & B ports

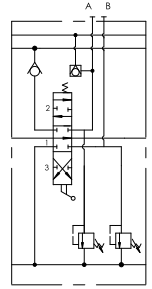
A & B portlarında antişok & antikavitasyon valfi



V8

Antishock & anticavitation valve on port A & antishock valve on port B

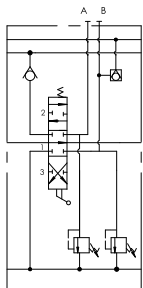
A portunda antişok & antikavitasyon valfi & B portunda antişok valfi



V9

Antishock valve on port A & antishock & anticavitation valve on port B

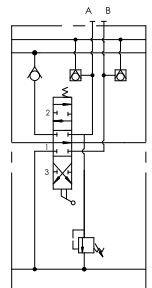
A portunda antişok valfi & B portunda antişok & antikavitasyon valfi



V12

Antishock & anticavitation valve on port A & anticavitation valve on port B

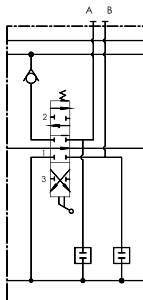
A portunda antişok & antikavitasyon valfi & B portunda antikavitasyon valfi



V13

Port relief cavity plug on A & B ports

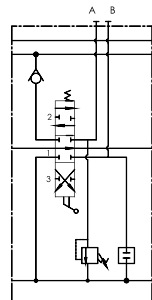
A & B portlarında kör tapa



V17

Antishock valve on port A & port relief cavity plug on port B

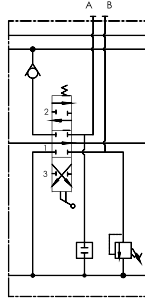
A portunda antişok & B portunda kör tapa



V18

Port relief cavity plug on port A
& antishock valve on port B

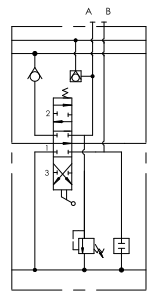
A portunda kör tapa
& B portunda antişok valfi



V19

Antishock & anticavitation valve
on port A & port relief cavity plug
on port B

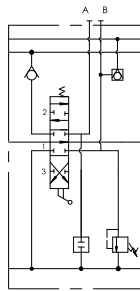
A portunda antişok
& antikavitasyon valfi
& B portunda kör tapa



V20

Port relief cavity plug on port A
& antishock & anticavitation valve
on port B

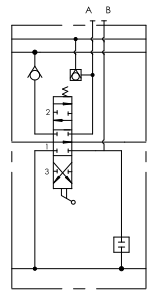
A portunda kör tapa
& B portunda antişok
& antikavitasyon valfi



V21

Anticavitation valve on port A
& port relief cavity plug on port B

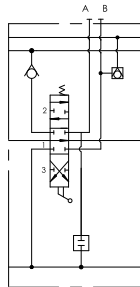
A portunda antikavitasyon valfi
& B portunda kör tapa



V22

Port relief cavity plug on port A
& anticavitation valve on port B

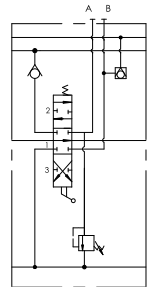
A portunda kör tapa
& B portunda antikavitasyon valfi



V27

Antishock valve on port A
& anticavitation valve on port B

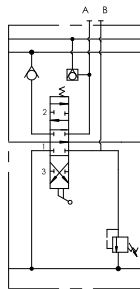
A portunda antişok
& B portunda antikavitasyon valfi



V28

Anticavitation valve on port A
& antishock valve on port B

A portunda antikavitasyon valfi
& B portunda antişok valfi



Lever Types

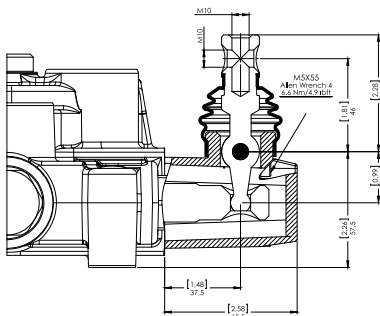
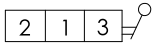
KVM162C - R(180) / SC4 ST11 **K3** / SC1 ST1 K1 / H

Lever Types

Sap Tipleri

**NO
CODE**

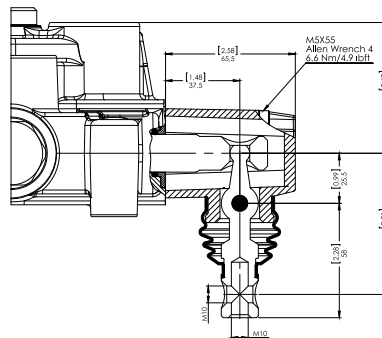
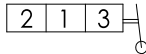
Standard Lever Kit



K1

Reverse Lever Kit

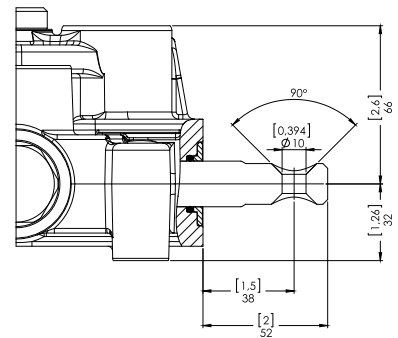
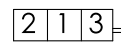
Ters montaj Sap Kapağı



K2

No Lever

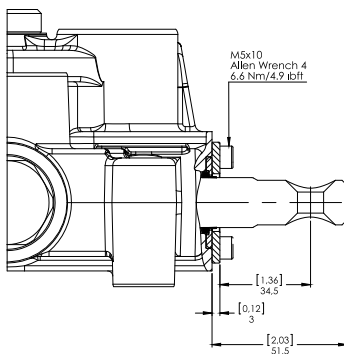
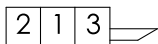
Sap Kapaksız



K3

Dust Proof Plate Kit

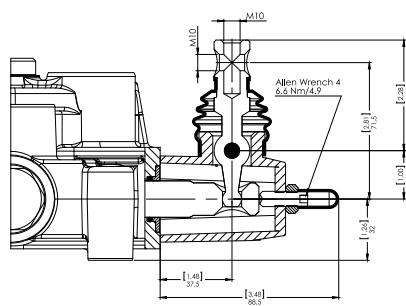
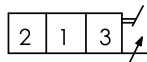
Toz Kapaklı



K5

Lever Cap with Spool Limiter

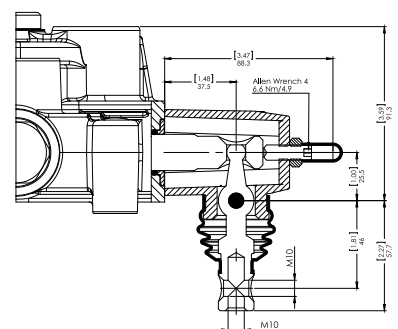
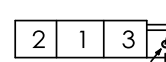
Sürgü Strok Kısıtlayıcı

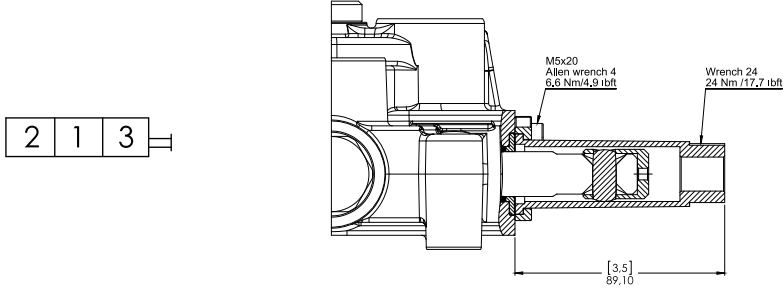


K6

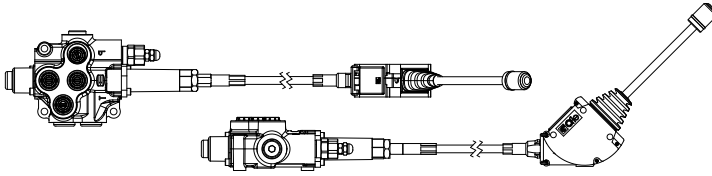
Rev. Lever Cap with Spool Limiter

Ters Montaj Sürgü Strok Kısıtlayıcı



KT**Cable Connection Kit****Kablo Bağlantı Kiti**

Lever Cable Remote Control *Halat Kontrol*



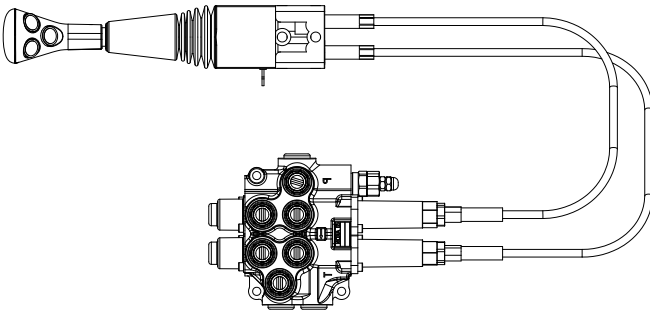
Cable remote control for Group of Levers *Halat Kontrol Grubu*



Lever cable remote control and cable remote control for group of levers are a modular system offering unlimited number of levers together through screws, also with many different configurations and cable lengths. Assembled on the valve only on request and extra charge. Please contact our sales department for details.

Halat kontrol ve halat kontrol grubu için farklı uzunlukları mevcuttur. Halat Kontrol grubu ise talebe göre çeşitli dilim sayıları için ve çeşitli uzunluklarda temin edilir. Kontrol grubu birbirine saplamalarla bağlanmaktadır. Lütfen detaylı bilgi için satış departmanımızla bağlantıya geçiniz.

Remote Joystick Control *Joystik Halat Kontrol*



Remote joystick control is available with several options. Please indicate the cable length demanded and contact our sales department for further demands.

Joystik halat kontrol farklı çeşit ve uzunluklarda mevcuttur. Lütfen satış departmanımızla bağlantıya geçiniz.

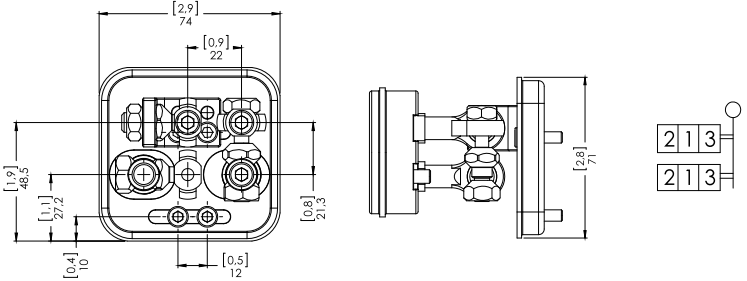
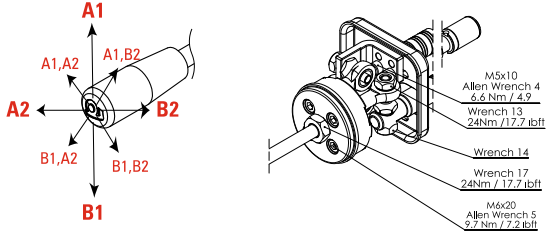
Joystick Control

Joystik Kontrol

K7

Manual Joystick with pivot on top left

Manuel Joystick Kontrol (Pivot Sol Üst)

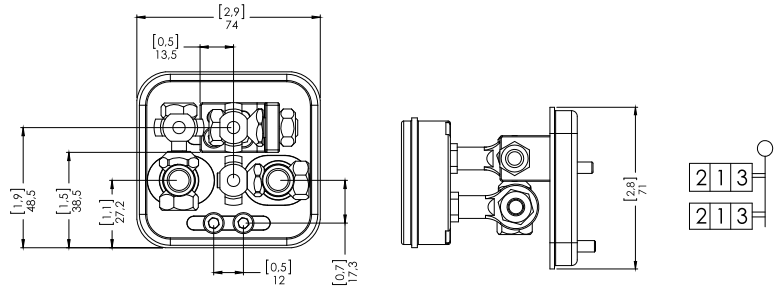
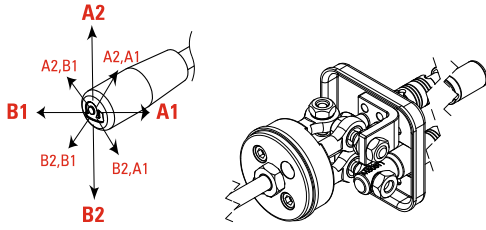


K7 is standard configuration unless otherwise specified.
Aksi belirtilmedikçe K7 standart konfigürasyondur.

K7B

Manual Joystick with pivot on top right

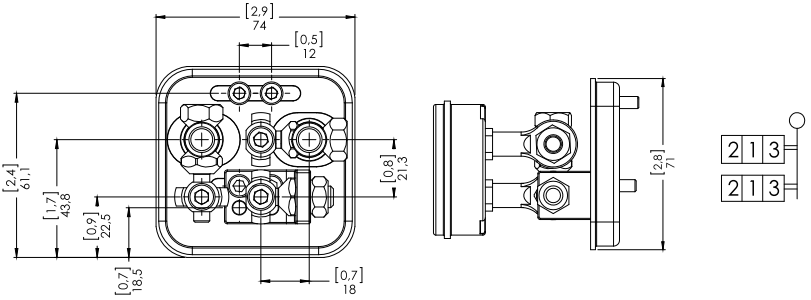
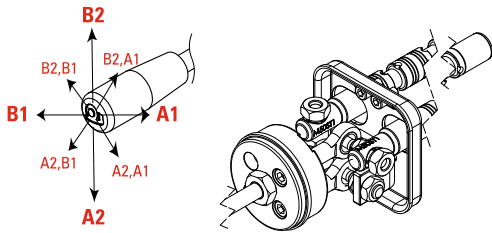
Manuel Joystick Kontrol (Pivot Sağ Üst)



K7C

Manual Joystick with pivot on bottom right

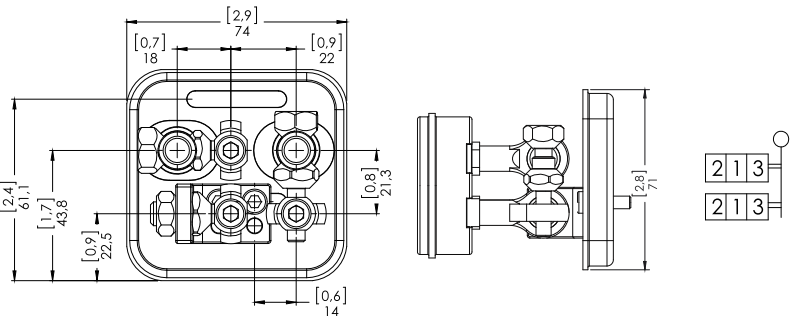
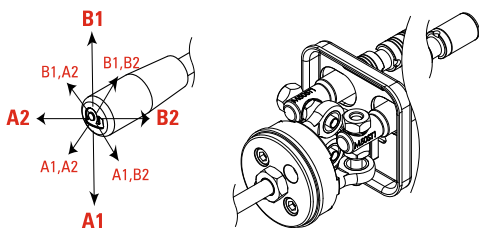
Manuel Joystick Kontrol (Pivot Sağ Alt)



K7D

Manual Joystick with pivot on bottom left

Manuel Joystick Kontrol (Pivot Sol Alt)



Outlet Options

Tank (T) Hattı Opsiyonları

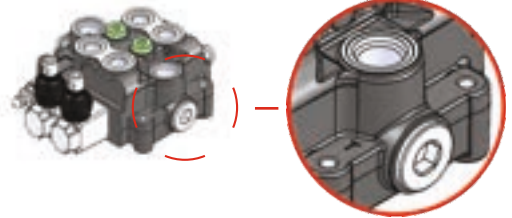
KVM162C - R(180) / SC4 ST11 K3 / SC1 ST1 K1 / **H**

Outlet Options
Tank (T) Hattı Opsiyonları

Standard Open Center Upper Outlet (T1 open, T(CO) plugged)

Standart Açık Merkez (T1 açık, T(CO) kör)

Code / Kod
**NO
CODE**



Please contact our Sales Department for other outlet options.
Özel talepleriniz için lütfen Satış Departmanımızla bağlantıya geçin.

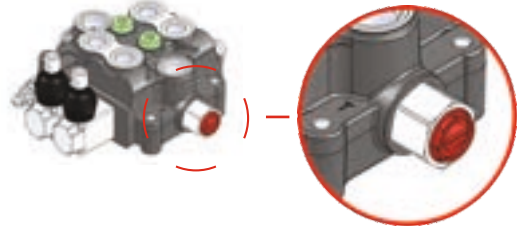
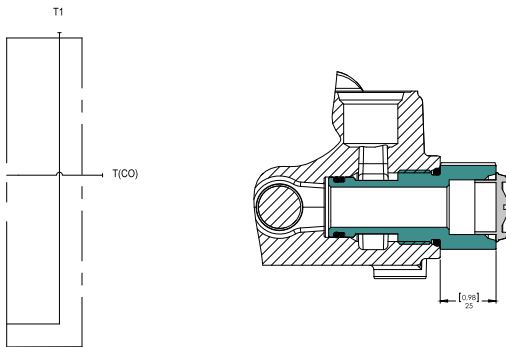
Outlet with Carry-Over

Carry-Over

When Carry-Over is used for series connection with another valve, T1 of the first valve must be connected to the tank.

Carry-over kullanıldığında, 1.valfin tank hattı (T1) mutlaka tanka bağlanmalıdır.

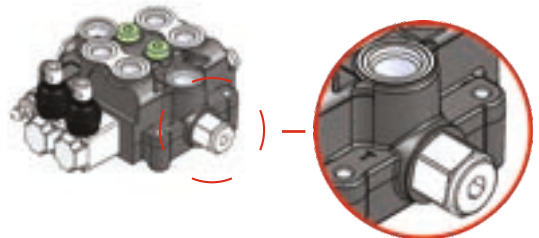
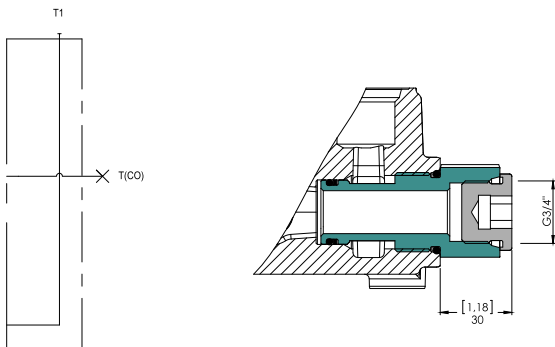
Code / Kod
H



Outlet with Closed Center Plug

Kapalı Merkez

Code / Kod
K





www.akon.com.tr

export@akon.com.tr
sales@akon.com.tr