

# KVM 16

monoblock directional control valve

*monoblok hidrolik yön kontrol valfi*



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# 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 İmkanı

### 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

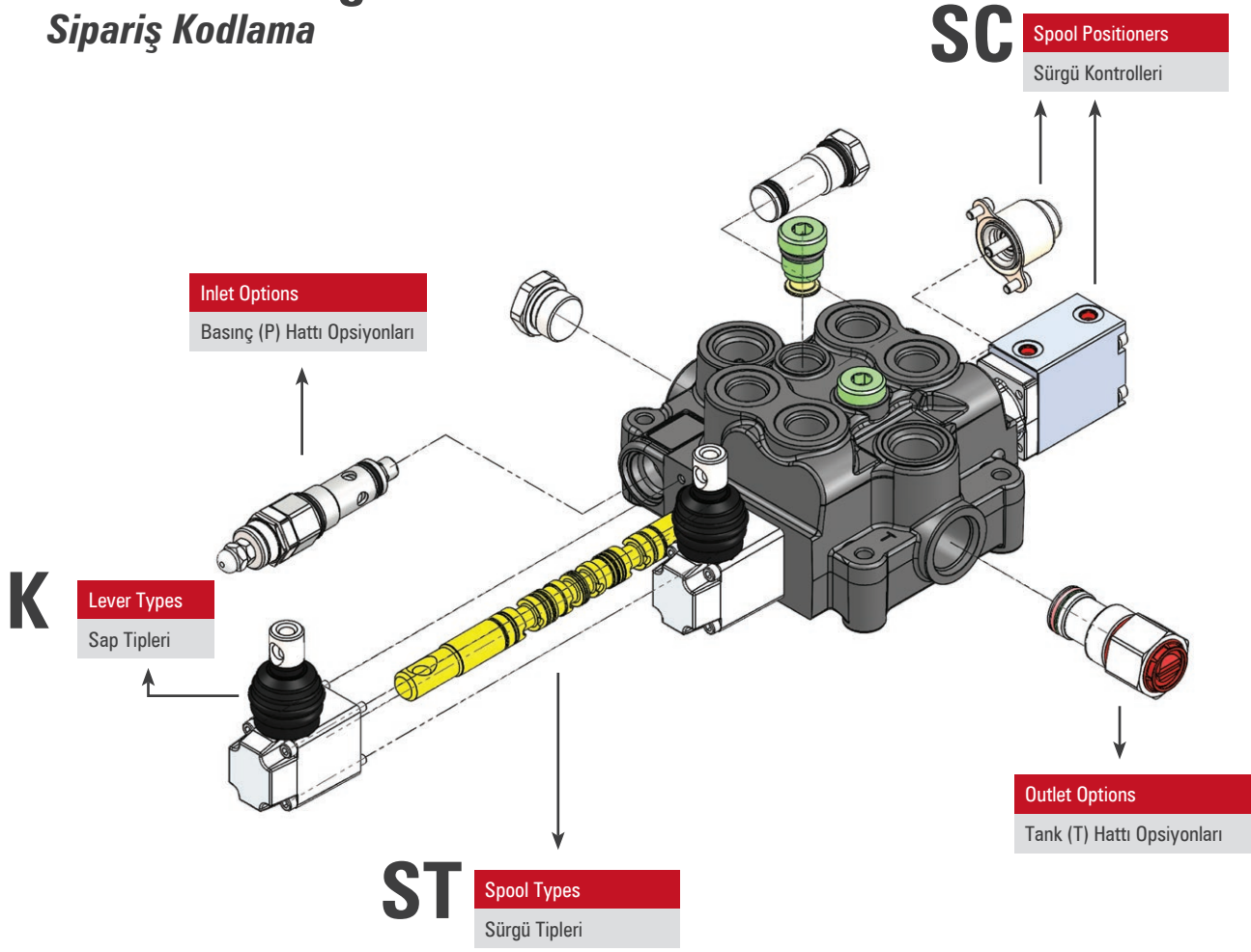
Internal Leakage İç Kaçak Değeri

4 cc - 9 cc  
(100 Bar; 32 cSt, 40 °C)

0,24 - 0,54 in<sup>3</sup>/m  
(1450 psi; 32 cSt, 104°F)

# Order Coding

## Sipariş Kodlama



KVM162 - 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*  
Auxiliary Valves *Yardımcı Valfler*  
**K1** Lever Types *Sap Tipleri*

4

### Outlet Options *Tank (T) Hattı Opsiyonları*

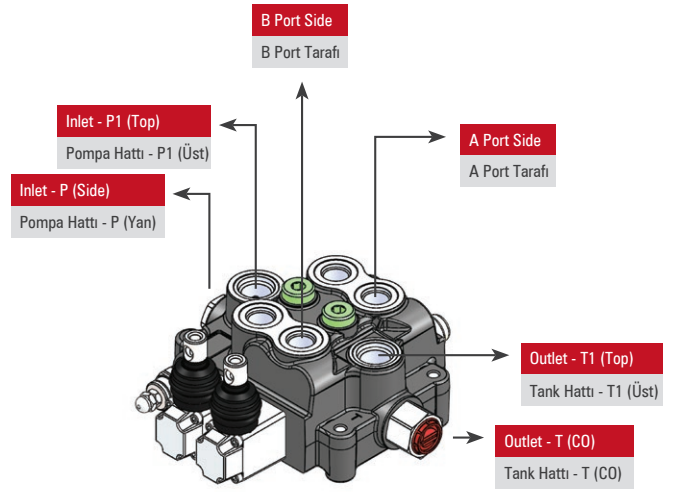
**H** Outlet Options *Tank Hattı Opsiyonları*

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

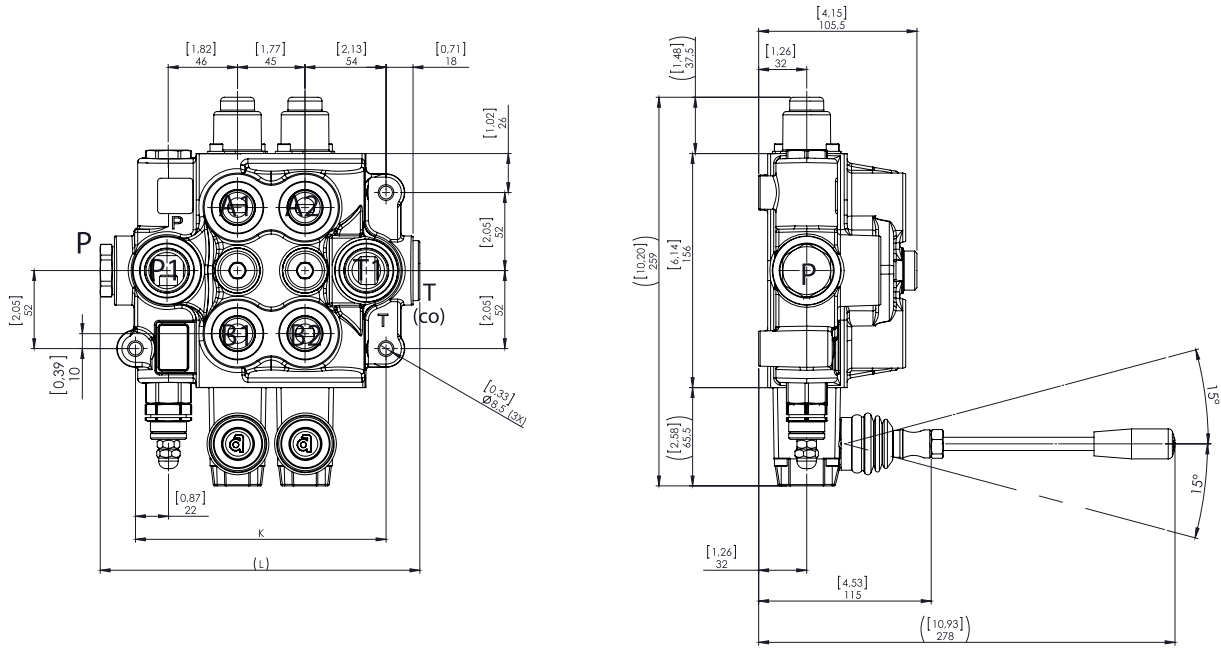
## Ölçüsel Bilgi



### 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  
Valflerimiz standart olarak BSP Diş üretilmektedir. Talep edilen port ölçüleri monoblok valflerde valf tipi kodlamasından hemen sonra kodlanır. Örnek Kodlama; KVM162C-R(160)/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

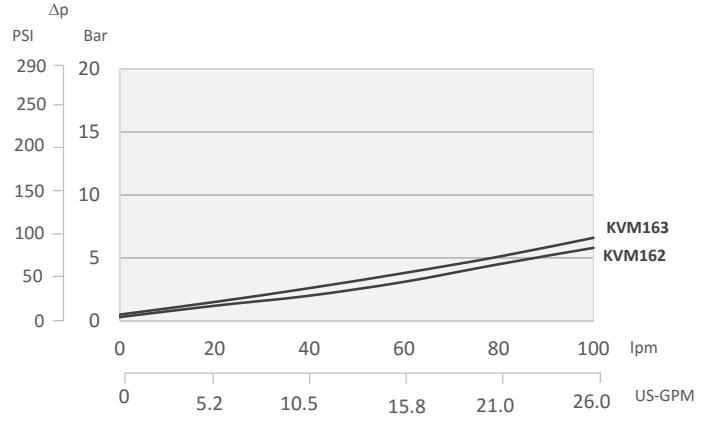
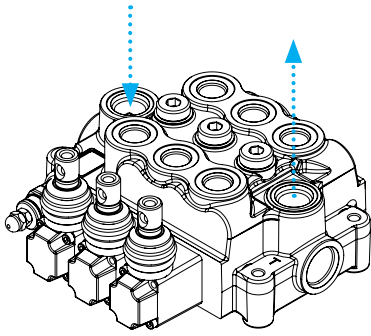
Given weights are for standard configurations.  
Ağırlıklar standart konfigürasyon için verilmiştir.

# Performance Data

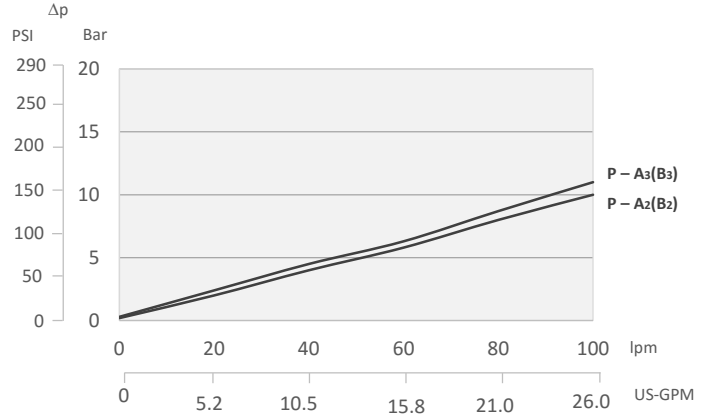
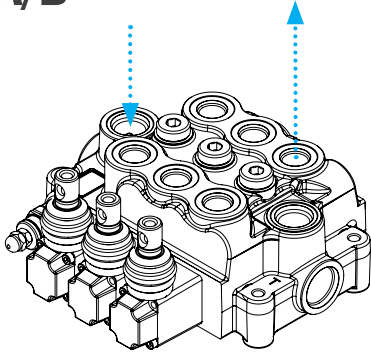
## Performans Eğrileri

### Pressure Drop Curves Basınç Kayıp Eğrileri

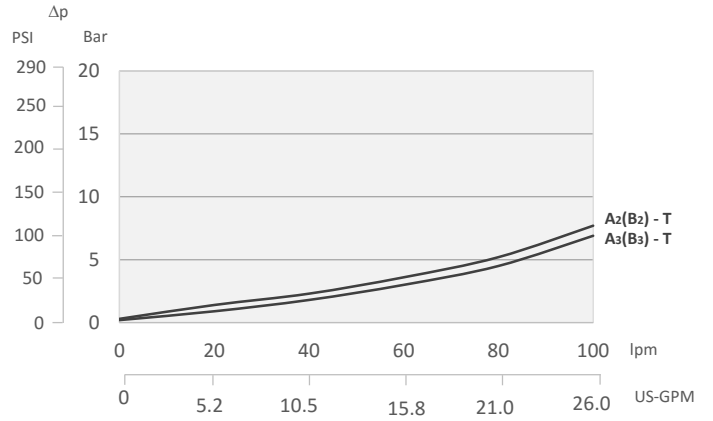
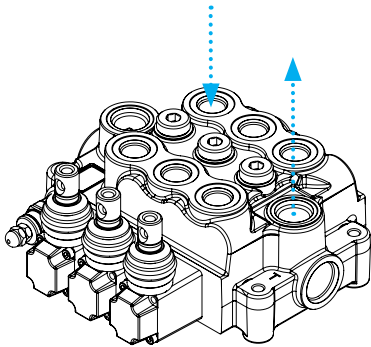
#### P - T



#### P - A/B



#### A/B - T



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

# Hydraulic Specifications

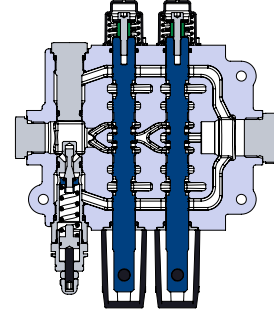
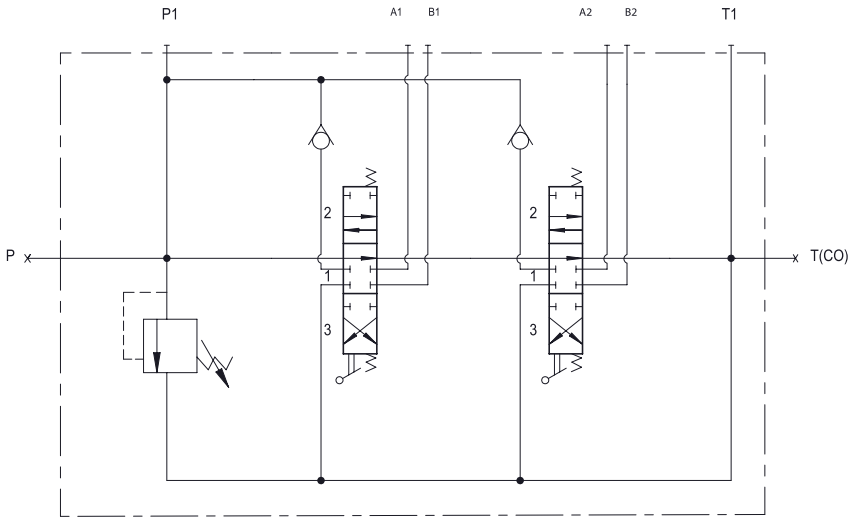
## Hidrolik Devre

### Parallel Circuit Paralel Devre

Standard configuration; Parallel circuit with upper inlet and outlet.  
Standart konfigürasyon; Paralel devre, P1 ve T1 açık, P ve T(CO) kör şeklindedir.

Code / Kod

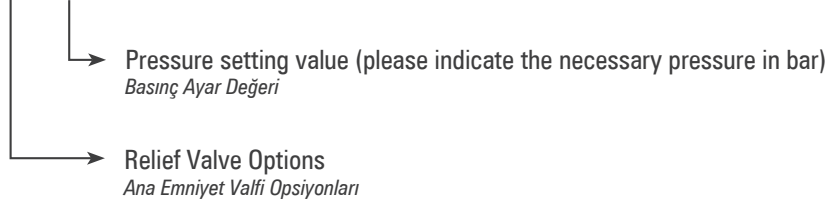
NO  
CODE



# Inlet Option

## Basınç (P) Hattı Opsiyonları

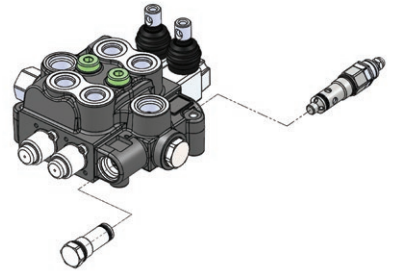
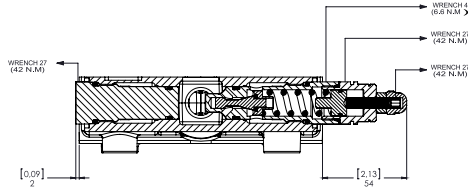
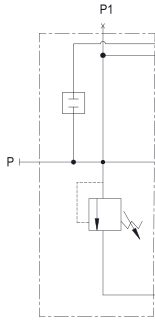
KVM162C - **R(180)** / SC4 ST11 K3 / SC1 ST1 K1 / H



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

Code / Kod

R

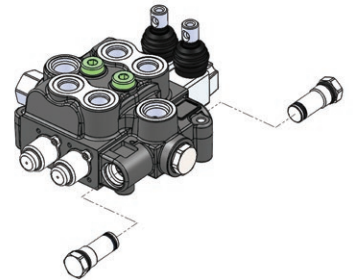
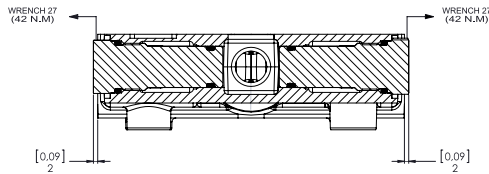
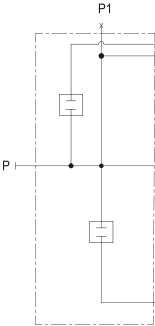


Please indicate the necessary pressure setting value. MRV is preset to 180 Bar at 15 lpm unless otherwise specified.  
*Lütfen ayarlanmasını istediğiniz basınç değerini bildiriniz. Ürünler standart olarak 15 lt/dk'da 180 Bara ayarlanır.*

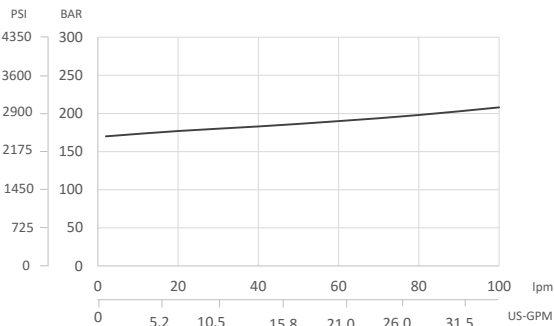
### Main Relief Valve Blanking Plug *Emniyet Valfsiz*

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

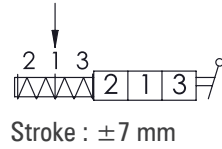
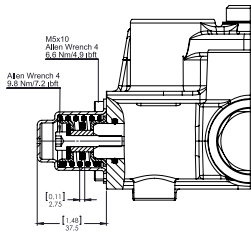
KVM162C - R(180) / **SC4** ST11 K3 / SC1 ST1 K1 / H

↳ Spool Positioners  
Sürgü Kontrolleri

### Spool Positioners with Spring Return *Yay Dönüslü Sürgü Kontrolleri*

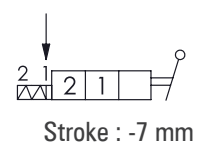
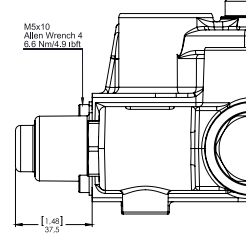
## SC1

3 Positions Spring Return  
3 Pozisyon Yaylı



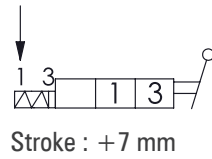
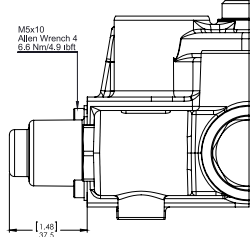
## SC5

2 Positions Spring Return  
2 Pozisyon Yaylı



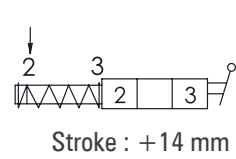
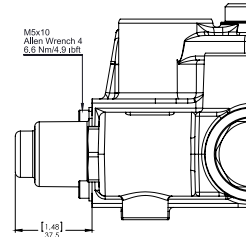
## SC6

2 Positions Spring Return  
2 Pozisyon Yaylı



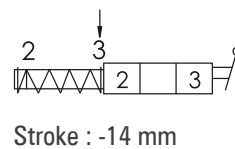
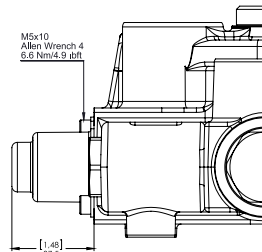
## SC11

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

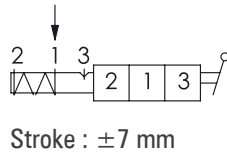
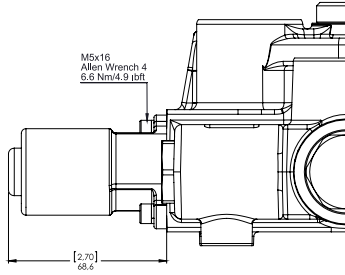




## Spool Positioners with Detent *Detantlı Sürgü Kontrolleri*

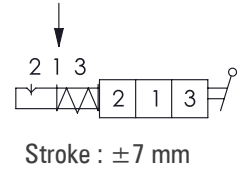
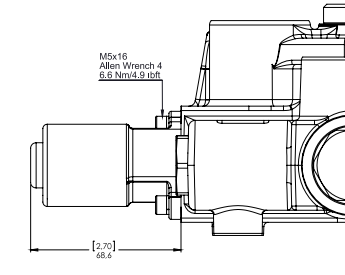
### SC2 3 Position Spring Return, Detent in Pos. 3

3 Pozisyon Yaylı, 3.Pozisyon Detantlı



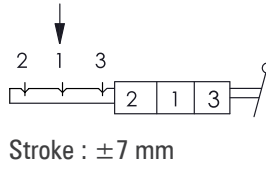
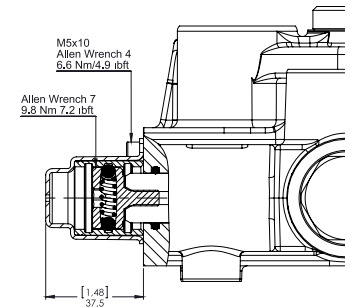
### SC3 3 Position Spring Return, Detent in Pos. 2

3 Pozisyon Yaylı, 3.Pozisyon Detantlı



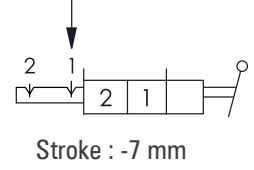
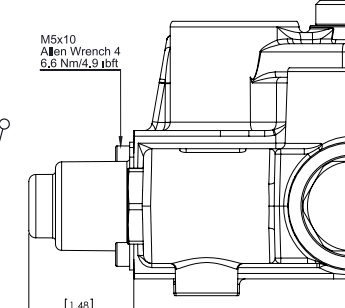
### SC4 3 Position Detent in All Positions

3 Pozisyon Detantlı



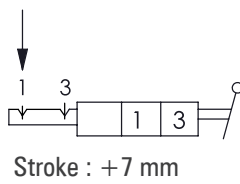
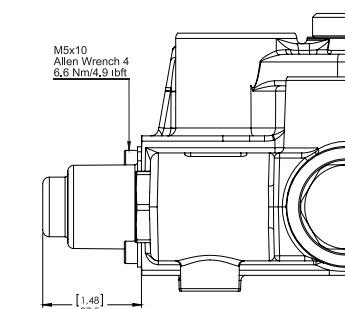
### SC7 2 Position Detent

2 Pozisyon Detantlı



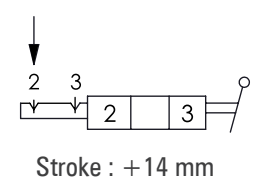
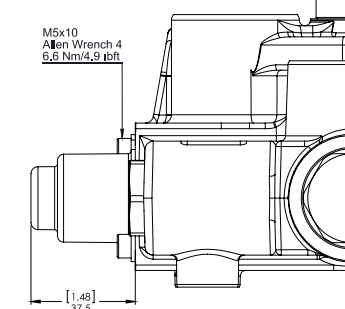
### SC8 2 Position Detent

2 Pozisyon Detantlı



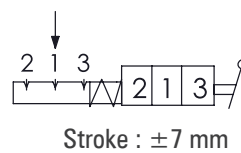
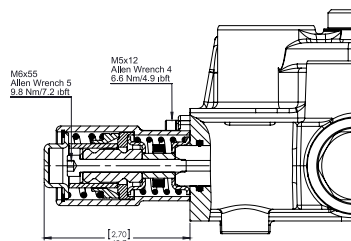
### SC13 2 Position Detent

2 Pozisyon Detantlı



### SC28 3 Position Spring Centered with Detent

3 Pozisyon Yaylı ve Detantlı

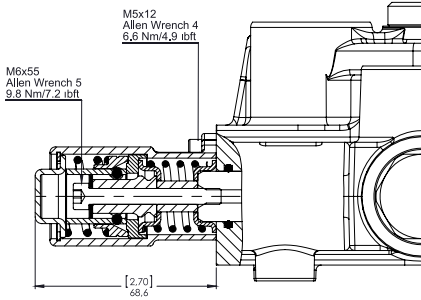


## 4 Position a Side Spool Positioners 4 Pozisyon A Tarafı Sürgü Kontrolleri

# SC9

4 Position Spring Return, Detent in 4th Pos.

4 Pozisyon Yaylı, 4.Pozisyon Detantlı

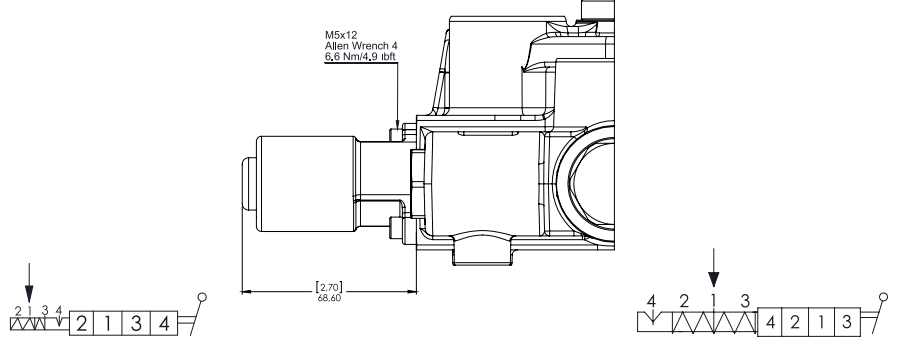


Used with Spool ST9B  
ST9B Sürgü ile kullanılır

# SC23

4 Position Spring Return, Detent in 4th Pos.

4 Pozisyon Yaylı, 4.Pozisyon Detantlı

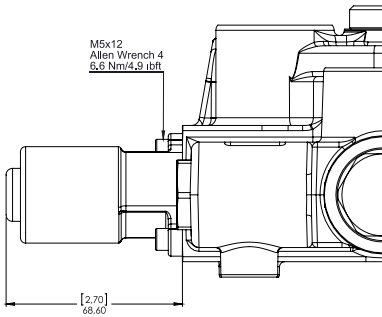


Used with Spool ST9A  
ST9A Sürgü ile kullanılır

# SC21

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

4 Pozisyon Yaylı, 4.Pozisyon Hissetmeli Detantlı

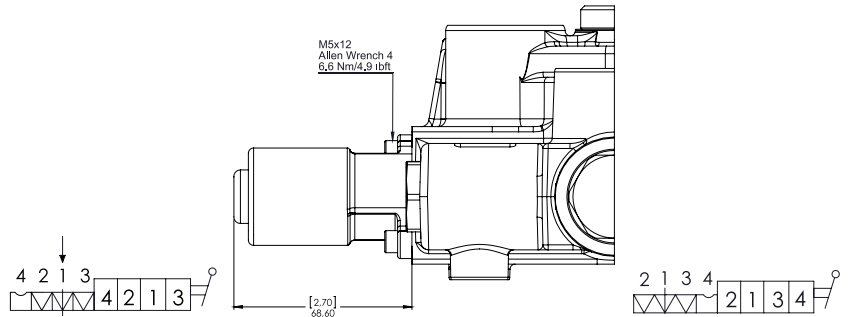


Used with Spool ST10A  
ST10A Sürgü ile kullanılır

# 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

# SC17

On-Off Electro-Hydraulic Control

On-Off Electro-Hydraulic Control

## Operation Characteristics

Pilot Pressure  
*Pilot Basıncı* Min. 10 Bar / 145 PSI  
Max. 25 Bar / 360 PSI

Back Pressure  
*Tank Basıncı* Max. 3 Bar

## Coil Characteristics

Coil Connection Type  
*Bobin Bağlantı Tipi* DIN 43650

Supply Voltage  
*Voltaaj* 12VDC, 24VDC

Protection Type  
*Koruma* IP65

Nominal Voltage Tolerance  
*Nominal Voltaaj Toleransı*  $\pm 10\%$

Duty cycle  
*Görev Çevrimi* 100%

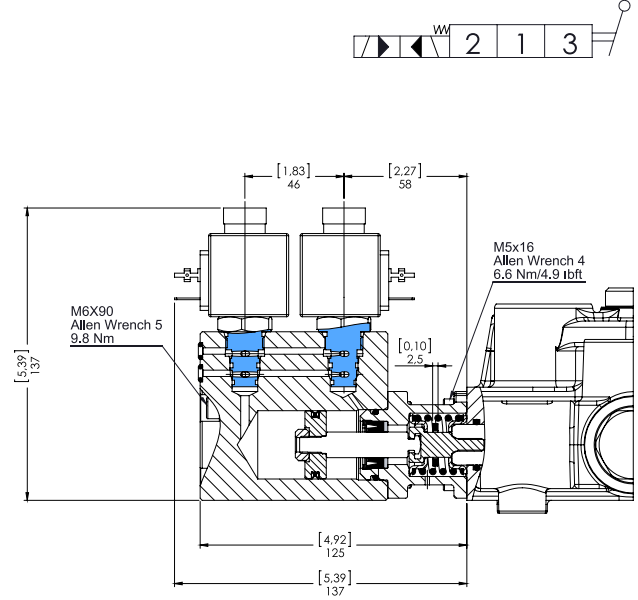
Absorbed Power  
*Güç* 18W

Coil Insulation Class  
*Yalıtım Sınıfı* Class "F" 155°C

Maximum Temperatures  
*Maksimum Çalışma Sıcaklığı* 100°C

Stroke (mm)  
*Strok (mm)*  $\pm 7$  mm

Supply Voltage	Order Code
12VDC	SC172
24VDC	SC174



# SC15

On-Off Pneumatic Control

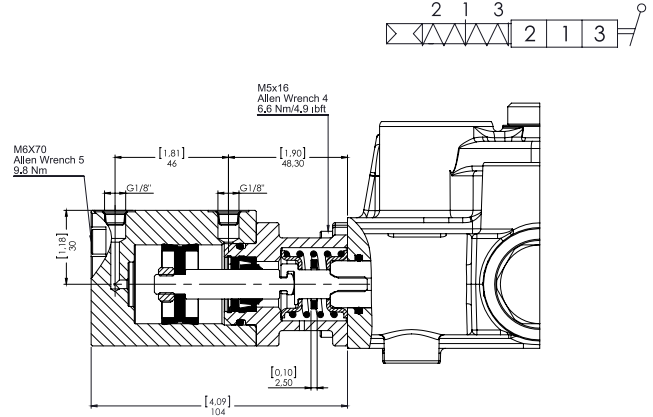
On-Off Pnömatik Kontrol

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

Pilot Pressure  
Pilot Basıncı

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

## Coil Characteristics

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

Supply Voltage

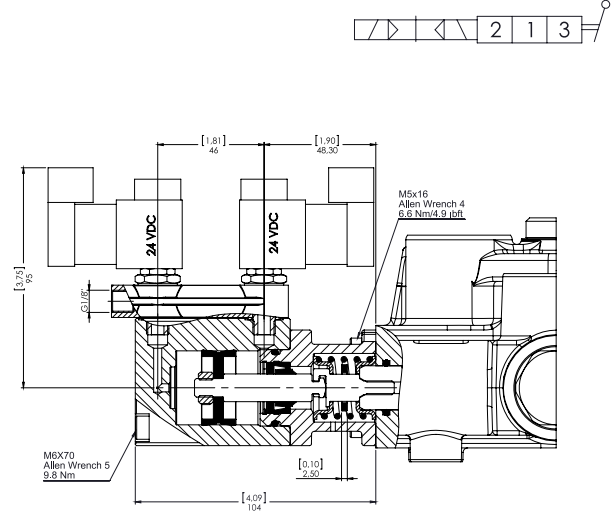
Order Code

12VDC

SC302

24VDC

SC304



# Spool Options

## Sürgü Tipleri

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

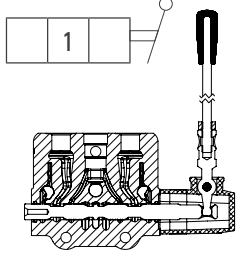
Spool Options  
Sürgü Tipleri

### Spool Positions Sürgü Pozisyonları

1st Position

1. Pozisyon

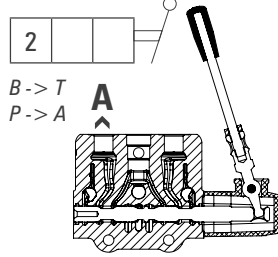
Spool Neutral Position  
Nötr



2nd Position

2. Pozisyon

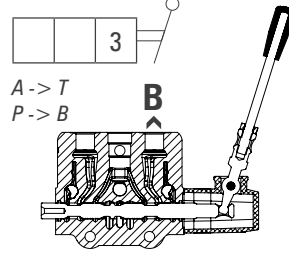
Spool In Position  
Mil İçerde



3rd Position

3. Pozisyon

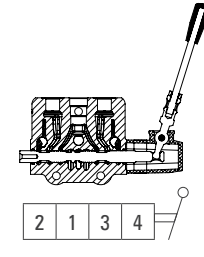
Spool Out Position  
Mil Dışarda



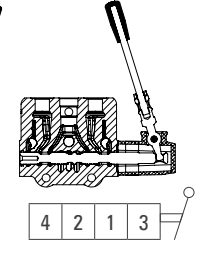
4th Position

4. Pozisyon

4th Pos. Spool Out  
4. Pozisyon Mil Dışarda



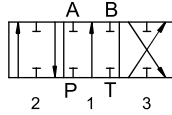
4th Pos. Spool In  
4. Pozisyon Mil İçerde



## ST1

3 Position, Double Acting

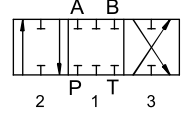
3 Pozisyon, Çift Etkili



## ST4

3 Position, Closed Center

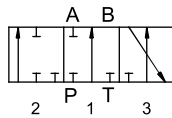
3 Pozisyon, Kapalı Merkez



## ST2

3 Position, A Port Single Acting

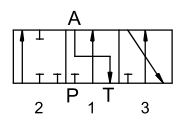
3 Pozisyon, A Port Tek Etkili



## ST5

3 Position, A Port Single Acting and to Tank

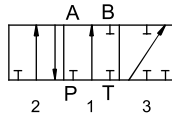
3 Pozisyon, A Port Tek Etkili ve Tanka Açık



## ST3

3 Position, B Port Single Acting

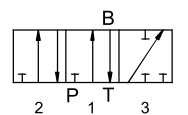
3 Pozisyon, B Port Tek Etkili



## ST6

3 Position, B Port Single Acting and to Tank

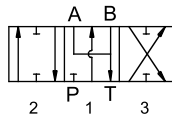
3 Pozisyon, B Port Tek Etkili ve Tanka Açık



## ST11

3 Position, Double Acting, A/B to Tank

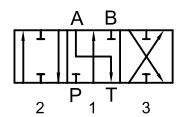
3 Pozisyon, Çift Etkili A ve B Tanka Açık



## ST7

3 Position, Double Acting A to Tank

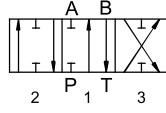
3 Pozisyon, Çift Etkili ve A Tanka Açık



# ST8

3 Position,  
Double Acting B to Tank

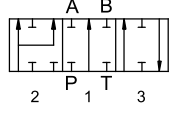
3 Pozisyon,  
Çift Etkili ve B Tanka Açık



# S12A

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

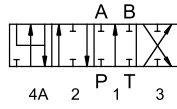
3 Pozisyon, Çift Etkili  
3. Pozisyonda Rejeneratif  
(Mil İçerde 2. Pozisyon)



# ST9A

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

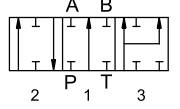
4 Pozisyon, 4. Pozisyonda Float  
(Mil İçerde 4. Pozisyon)



# ST12B

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

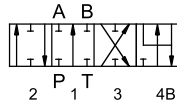
3 Pozisyon, Çift Etkili  
2. Pozisyonda Rejeneratif  
(Mil Dışarda 3. Pozisyon)



# ST9B

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

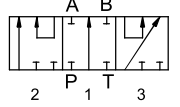
4 Pozisyon, 4. Pozisyonda Float  
(Mil Dışarda 4. Pozisyon)



# ST19

3 Position, Series Spool

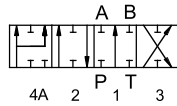
3 Pozisyon, Seri Sürgü



# ST10A

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

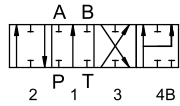
4 Pozisyon,  
4. Pozisyonda Rejeneratif  
(Mil İçerde 4. Pozisyon)



# 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

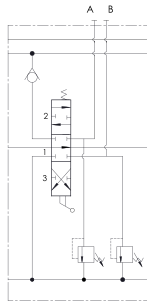
## Yardımcı Valfler

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

Auxiliary Valves  
Yardımcı Valfler

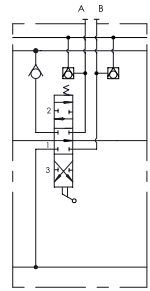
**V1**

Antishock valves on A & B ports  
A & B portlarında antişok valfi



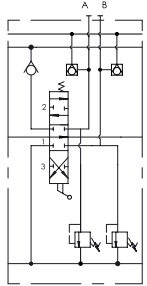
**V4**

Anticavitation valves on A & B ports  
A & B portlarında antikavitasyon valfi



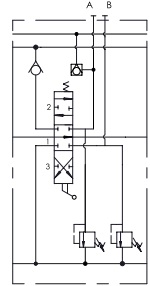
**V7**

Antishock & anticavitation valves  
on A & B ports  
A & B portlarında  
antişok & antikavitasyon valfi



**V8**

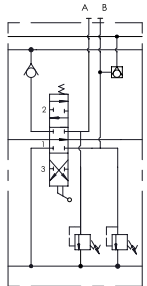
Antishock & anticavitation valve  
on port A & antishock valve on port B  
A portunda antişok & antikavitasyon  
valfi & B portunda antişok valfi



**V9**

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

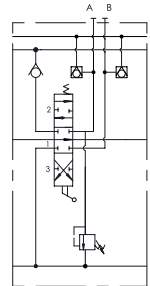
A portunda antişok valfi  
& B portunda antişok  
& antikavitasyon valfi



**V12**

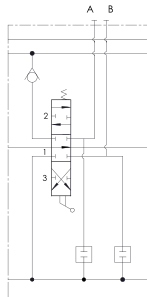
Antishock & anticavitation valve  
on port A & anticavitation valve  
on port B

A portunda antişok  
& antikavitasyon valfi  
& B portunda antikavitasyon valfi



**V13**

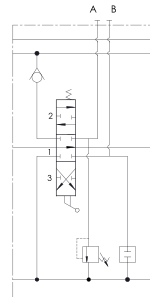
Port relief cavity plug on A & B ports  
A & B portlarında kör tapa



**V17**

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

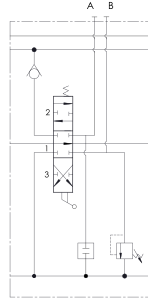
A portunda antişok  
& B portunda kör tapa



# V18

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

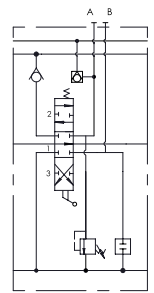
A portunda kör tapa  
& B portunda antişok valfi



# V19

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

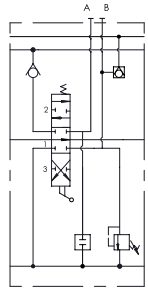
A portunda antişok  
& antikavitasyon valfi  
& B portunda kör tapa



# V20

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

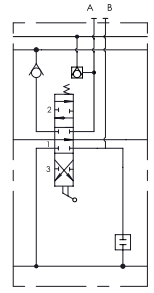
A portunda kör tapa  
& B portunda antişok  
& antikavitasyon valfi



# V21

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

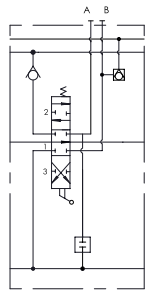
A portunda antikavitasyon valfi  
& B portunda kör tapa



# V22

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

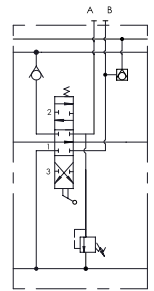
A portunda kör tapa  
& B portunda antikavitasyon valfi



# V27

Antishock valve on port A  
& anticavitation valve on port B

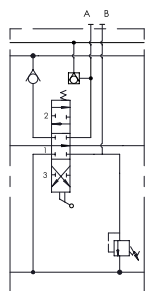
A portunda antişok  
& B portunda antikavitasyon valfi



# V28

Anticavitation valve on port A  
& antishock valve on port B

A portunda antikavitasyon valfi  
& B portunda antişok valfi





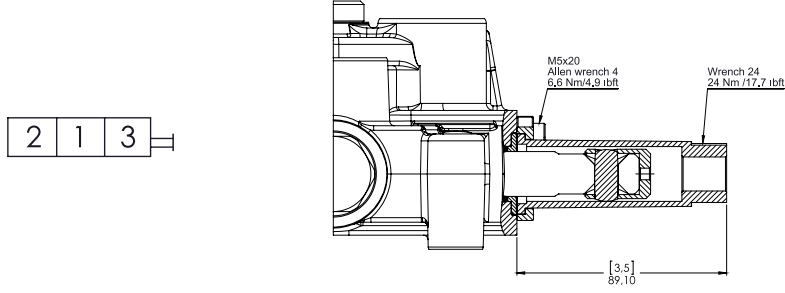


Order Code

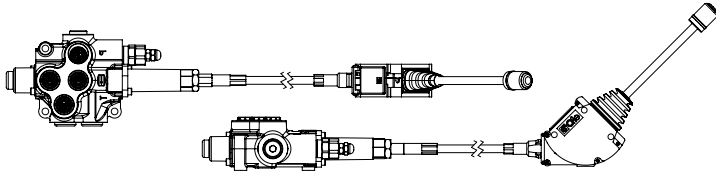
**KT**

Cable Connection Kit

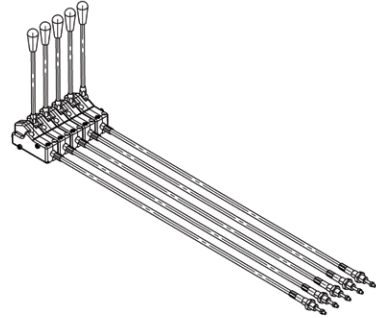
Kablo Bağlantı Kiti



### Lever Cable Remote Control *Halat Kontrol*



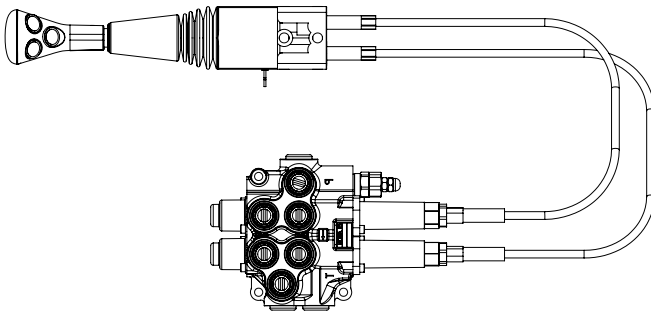
### Cable remote control for Group of Levers *Halat Kontrol Grubu*



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 cables 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.*

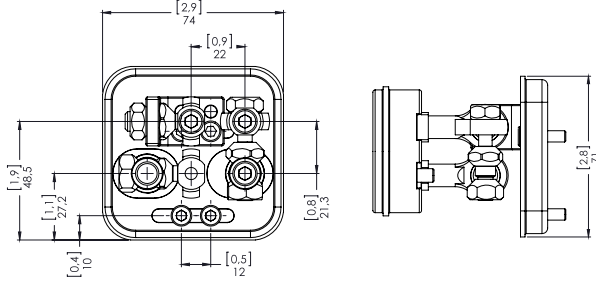
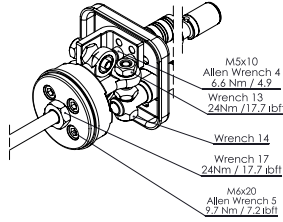
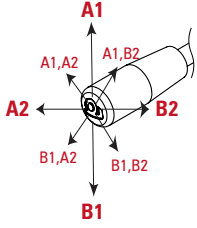
# Joystick Control

## Joystik Kontrol

### K7

Manual Joystick with pivot on top left

Manuel Joystick Kontrol (Pivot Sol Üst)

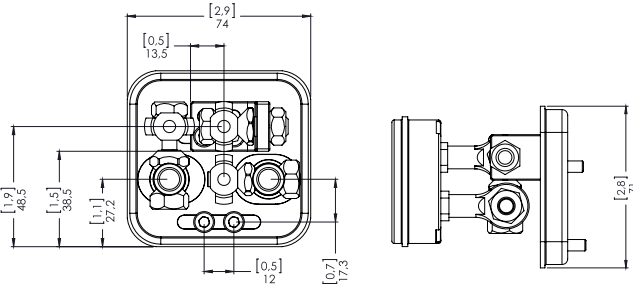
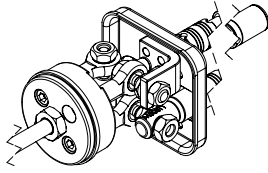
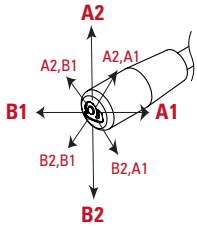


K7 is standard configuration unless otherwise specified.  
Aksi belirtilmedikçe K7 standart konfigürasyondur.

### K7B

Manual Joystick with pivot on top right

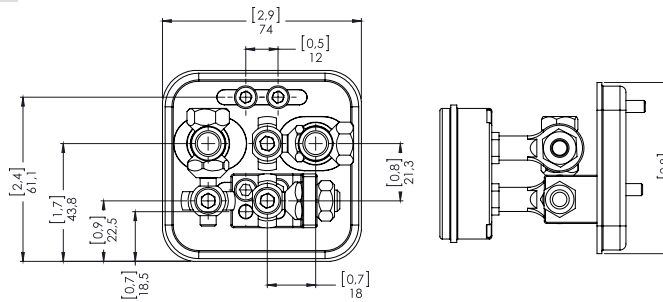
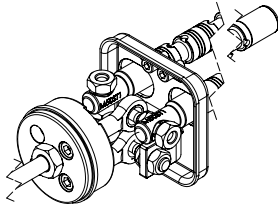
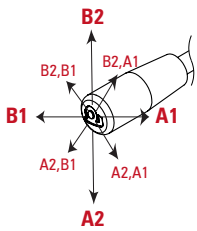
Manuel Joystick Kontrol (Pivot Sağ Üst)



### K7C

Manual Joystick with pivot on bottom right

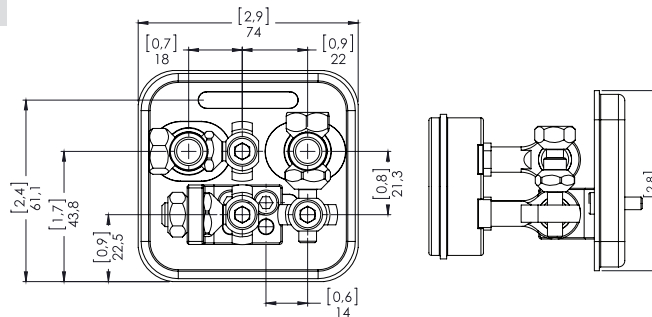
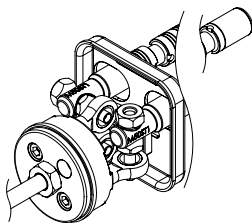
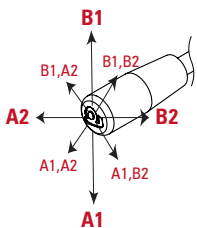
Manuel Joystick Kontrol (Pivot Sağ Alt)



### K7D

Manual Joystick with pivot on bottom left

Manuel Joystick Kontrol (Pivot Sol Alt)



# Outlet Options

## Tank (T) Hattı Opsiyonları

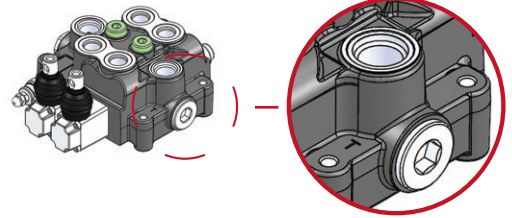
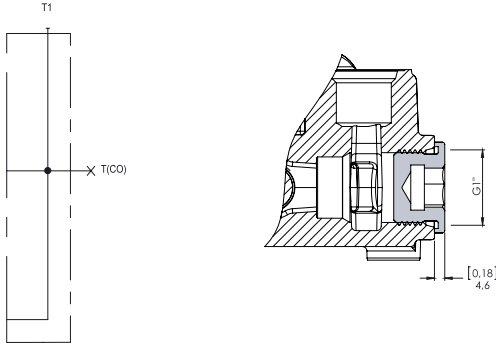
KVM162C - R(180) / SC4 ST11 K3 / SC1 ST1 K1 / **H**

Outlet Options  
Tank (T) Hattı Opsiyonları

### Standard Open Center Upper Outlet (T1 open, T2 plugged) Standart Açık Merkez (T1 açık, T2 kör)

Code / Kod

**NO  
CODE**



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

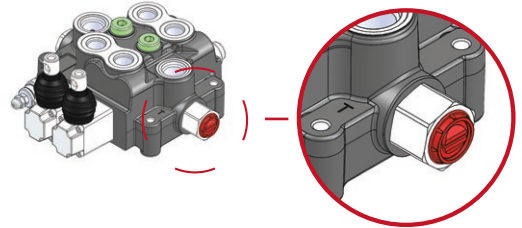
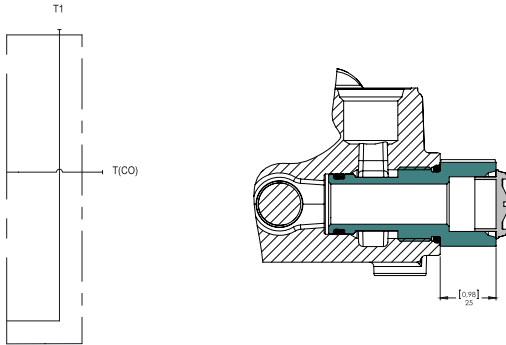
### Outlet with Carry-Over Carry-Over

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

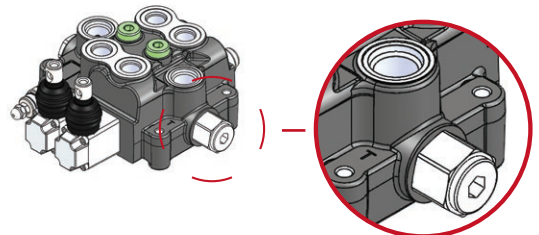
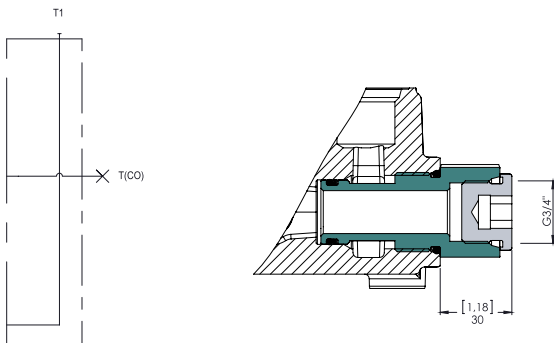
**H**



### Outlet with Closed Center Plug Kapalı Merkez

Code / Kod

**K**





[www.akon.com.tr](http://www.akon.com.tr)

[export@akon.com.tr](mailto:export@akon.com.tr)  
[sales@akon.com.tr](mailto:sales@akon.com.tr)