

KOSO

智能阀门定位器

*SMART VALVE POSITIONER*

*KGP5000 SERIES*



**KOSO**

# KOSO 控制阀及仪表系统

**KOSO** 作为自动调节阀（控制阀）的顶级制造商，因应时代需求，凭借高水平的独自技术和开发能力，拥有广泛的产品阵容。并且在 ISO9001 质量保证体系下生产出高质量和高可靠性的控制阀及仪表系统，适用于各种场合以及未来发展的需求。

本资料是 **KOSO** 调节阀用智能定位器的技术说明书，帮助您选择与 **KOSO** 调节阀或者其他厂家调节阀相配套的定位器。如果您对本说明书有任何疑问或需要更详细的资料，请与我们的营销人员联系。

## KOSO 's Control Valves and Instrumentation Systems

**KOSO**, the leading industrial control valve manufacturer with strong research and development capability of its own, has been meeting requirements of the time. Always making available a wide range of product lines, **KOSO** is committed to providing control valves, and the systems thereof, the highest quality and reliability, produced under its quality assurance system complying with ISO 9001 standard.

This is a technological catalog of **KOSO** smart positioners for control valves, intend to be of service as you select positioners to mount on **KOSO** or other manufacturers' control valves.

If you have questions on this technological catalog or require additional printed materials, please contact our sales representative nearest you.

### 安全使用注意

本产品是根据防爆型式认定以及品质管理体系制造的电气机械器具。为了保证安全使用，禁止用户自行进行零件的更换以及修理。

### Warning

This product is an electrical equipment manufactured under the Ex type approval and the Ex quality management system.

To ensure safe operation, any part of the product is not intended to be repaired and replaced by user.



KGP5000 Smart Valve Positioner

概要

KGP5000 系列定位器安装于气动执行机构，接收 DC4~20mA 的电流信号，使执行机构进行动作。同时，检测并反馈执行机构的动作变化量，根据反馈信息，定位到 DC4~20mA 电流信号对应的正确位置。本定位器适用于单动作和双动作的执行机构。

KGP5000 系列配置了 HART®协议，可以简便、准确、迅速地调整定位器的特性、零点、行程。另外，使用自我诊断功能，可实现设备管理的最优化。

The KGP5000 Series Positioner, which is to be mounted on a pneumatic actuator, makes the actuator work by getting DC 4~20 mA signals from a controller. And also, the function of detecting and returning the actuator displacement provides accurate positioning in response to DC 4~20 mA signals. The KGP5000 can be used with both single and double acting actuators.

The KGP5000 is designed to meet HART®. The KGP5000, therefore, can adjust easily and certainly response characteristic, zero and span of itself. And you can get optimal facility management using a self-diagnostic function.

标准规格 STANDARD SPECIFICATIONS

系列 Series	KGP5000		
输入信号 Input signal	4~20 mA DC -最小控制电流 -最小分程范围	4~20 mA DC - Minimum control current - Minimum split range	... 4.0mA ... 4.0mA
	HART通信 -最小通信电流	HART communication - Minimum current	... 3.8mA
	顺从电压 (阻抗)	Compliance voltage (Impedance)	... 13VDC @20mA ( 650Ω @20mA)
输出特性 Characteristic curve	线性 等百分比 快开 用户自定义 (19个点)	Linear Equal percent Quick opening Custom curve(19 points)	
开度发信输出 Position transmitter output	4~20mA DC		
	供给电压 最大电压 反接线保护	Supply voltage Maximum voltage Polarity protection	... 17~31VDC ... 40VDC ... -40VDC
	报警信号 (NAMUR043标准)	Alarm signal (according to NAMUR 043)	≤3.6mA(Lo) or ≥21mA(Hi)
	熔断方向 可通过软件设定为Hi或Lo *输入信号丢失时仅Lo侧	Burn-out direction Hi or Lo by S/W setting *Only Lo side at the lack of input signal	
对象执行机构 Available mounting	KOSO执行机构	KOSO actuators	... 5200LA,5300LA,6300LA,6300RC etc.
	其他的执行机构 直行程, 角行程, IEC60534-6, VDI/VDE3845 标准的执行机构	Other actuators Linear actuators, Rotary actuators and actuators manufactured in accordance with the standards IEC60534-6 and VDI/VDE3845.	
行程范围 Travel range	直行程 *除此以外的可特殊设计	Linear motion	... 12 ~ 100mm*
	角行程	Rotary motion	... 40 ~ 100°
动作 Action	单动作 / 双动作 单动作双动作兼用控制继电器 *控制继电器仅供正动作	Single acting / Double acting Pilot relay of both use for single and double acting * Pilot relay is direct action only.	

周围温度范围 Operating temperature range	防尘·防水（非防爆）型	Dust·water proof type	····· -40 ~ +80°C
	TIIS防爆型	TIIS explosion proof type	····· -20 ~ +60°C
	NEPSI防爆型	NEPSI explosion proof type	····· -40 ~ +70°C
	KOSHA防爆型	KOSHA explosion proof type	····· -20 ~ +60°C
	IECEX防爆型	IECEX explosion proof type	····· -40 ~ +70°C
	ATEX防爆型	ATEX explosion proof type	····· -40 ~ +70°C
	LCD显示	LCD	····· -20 ~ +70°C
周围湿度范围 Operating humidity range	5 ~ 95%RH（无结露）	(non-condensed)	
供给气压 Supply pressure	压力范围	Pressure range	···140~800kPa
	介质···空气	Medium···Air	
耗气量 Air consumption	单动作 ※ 输出气压恒定在50%时	Single acting type ※ at steady state of 50% output	··· 6Nℓ/min or less at 140kPa air supply ··· 9Nℓ/min or less at 300kPa air supply
	双动作 ※ 平衡气压恒定在供给压力的70%时	Double acting type ※ at balance pressure (70% of supply pressure)	··· 16Nℓ/min or less at 400kPa air supply ··· 20Nℓ/min or less at 550kPa air supply
最大空气处理容量 Maximum output capacity			··· 165Nℓ/min or more at 140kPa air supply ··· 290Nℓ/min or more at 300kPa air supply ··· 370Nℓ/min or more at 400kPa air supply ··· 500Nℓ/min or more at 550kPa air supply
结构 Enclosure	本体材质： -铝压铸合金 -丙烯烤漆	Housing materials: - Aluminum die-casting - Acrylic painting	
	橡胶材质 -仪表空气部位： 硅橡胶 -其他： NBR	Elastomer materials - For air passage: Silicone - Others: NBR	
	防护等级	Degree of Protection	··· IP66
	气源接口	Air connections	··· Rc1/4, 1/4NPT
	电气接口	Electric connections	··· G1/2, 1/2NPT, M20x1.5
	安装螺纹	Mounting threads	··· 4xM8, Φ50·4xM6
	重量 -无压力表块 -有压力表块	Weight - Without pressure gauge block - With pressure gauge block	··· 3.0kg ··· 3.3kg
性能 Performance	位置控制 -直线性 -滞后 -分辨率 -死区	Position control - Linearity - Hysteresis - Resolution - Dead band	··· ±1.2% F.S. ··· 0.7% F.S. ··· 0.1% or less ··· 0.1% or less
	位置发送 -直线性 -滞后	Position transmitter - Linearity - Hysteresis	··· ±1.0% F.S. ··· 0.5% F.S.
认证 Approvals	防尘·防水 -保护等级	Dust·water proof - Protection code·····IP66(No. AK 50363732 0001)	
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认 证 Approvals	防爆 - TIIS认证 - NEPSI认证 - KOSHA认证 - IECEx认证 - ATEX认证	Explosion proof - TIIS approval.....Ex d IIC T6 Gb (No. TC22443X) - NEPSI approval.....Ex d IIC T6 Gb (No. GYJ17.1027X) - KOSHA approval.....Ex d IIC T6 (No. 17-AV4BO-0350X) - IECEx approval.....Ex db IIC T6 Gb (No. IECEx DEK 17.0037X) - ATEX approval...II 2 G Ex db IIC T6 Gb (No. DEKRA 17ATEX0076 X)
	HART通信	HART communication.....HART7

形式以及代码号 TYPE AND CODE NO.

基本型号

Base model

K G P 5

① ② ③ - ④ ⑤ ⑥ ⑦ - ⑧

①	构造	Proof type	Standard connections of housing (selectable options)					②	③	-	④	⑤	⑥	⑦	-	⑧
	防尘·防水(非防爆)	- Dust·water proof	Electric: G1/2 (1/2NPT, M20) Air: Rc1/4 (1/4NPT)	0												
	TIIS耐压	- Flameproof	Electric: G1/2 Air: Rc1/4 *1, *2, *3	1												
	NEPSI耐压	- Flameproof	Electric: 1/2NPT Air: 1/4NPT *2	2												
	KOSHA耐压	- Flameproof	Electric: 1/2NPT Air: 1/4NPT *2	3												
	IECEX耐压	- Flameproof	Electric 1/2NPT (M20) Air 1/4NPT	4												
	ATEX耐压	- Flameproof	Electric: 1/2NPT (M20) Air: 1/4NPT	5												
	TR-CU 020 (EMC)	- Dust·water proof	Electric: 1/2NPT (M20) Air: 1/4NPT	F												
②	反馈杆	Feedback linkage type		③	④	⑤	⑥	⑦	⑧							
	直行程用标准型	Linear motion standard type (~50mm stroke)		0												
	直行程用长行程型	Linear motion· long stroke type (Option)		1												
	角行程用	Rotary motion type		2												
	角行程用·轴直连	Rotary motion· VDI / VDE3845 type		3												
③	通信方式	Communication type		④	⑤	⑥	⑦	⑧								
	4~20mA 带HART阀位反馈	4~20mA HART with Position feedback		3												
④	执行机构型式	Actuator type		⑤	⑥	⑦	⑧									
	单动作执行机构	Single acting actuator		S												
	双动作执行机构	Double acting actuator		D												
⑤	压力表模块	Pressure gauge block		⑥	⑦	⑧										
	无	Without gauge block		0												
	有	With gauge block		5												
⑥	压力表单位	Pressure gauge range		⑦	⑧											
	200kPa	0.2MPa	30psi / 2bar	200kPa / 2kgf/cm <sup>2</sup>	2bar / 0.2MPa	2										
	400kPa	0.4MPa	60psi / 4bar	400kPa / 4kgf/cm <sup>2</sup>	4bar / 0.4MPa	4										
	1000kPa	1.0MPa	150psi / 10bar	1000kPa / 10kgf/cm <sup>2</sup>	10bar / 1.0MPa	10										
⑦	压力表单位	Pressure gauge unit		⑧												
		kPa		K												
		MPa		M												
		psi & bar <Dual-scale>		P												
		kPa & kgf/cm <sup>2</sup> <Dual-scale>		G												
		bar & MPa <Dual-scale>		B												
⑧	可选项	Option		⑨												
	无可选项	No option		0												
	直行程用长行程型	Feedback linkage type:		~100mm stroke	1											
		Linear motion· long stroke type		~150mm stroke	2											
				~200mm stroke	3											
				~250mm stroke	4											
	本体接口	Connections of housing		Electric: 1/2NPT, Air: 1/4NPT *1: TIIS不能选择。Not Selectable for TIIS	N											
				Electric: M20x1.5, Air: 1/4NPT *2: TIIS, NEPSI, KOSHA不能选择。Not Selectable for TIIS, NEPSI and KOSHA	M											
	重防腐涂层	Heavy duty coating			L											

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TIIS用追加电缆等级	Additional cable gland for TIIS <i>*3: 配线时使用两个引线口时。When two entries are used for wiring</i>	W
带合格证明书和检验证书	Certificate of conformance & Inspection certificate	C
特殊	Special	X

## 特 长

- 阀门控制稳定且响应灵敏  
使用先进的 PID 控制算法，阀门控制稳定可靠且响应快速。
- 可进行故障诊断・预防性保养  
搭载压力传感器，通过充分的自我诊断功能，实现对运行数据的监视・储存，保障使用现场操作安全、可靠，以及设备管理效率化、最优化。
- 可进行效率化的设定・维护  
采用大型 LCD 人机交互界面，充分考虑作业人员操作性的单元布局，使定位器的设定和维护操作变得简单、可靠。
- 广泛用于各类执行机构  
丰富的 PID 参数设定、可选择的单动/双动控制继电器，以及多种的反馈方式能够覆盖从小型到大型，直行程或角行程，单动作或双动作的各类执行机构
- 标准配置 HART®通信协议  
标准配置应用于流程工业的仪器仪表广泛采用的 HART®通信协议。

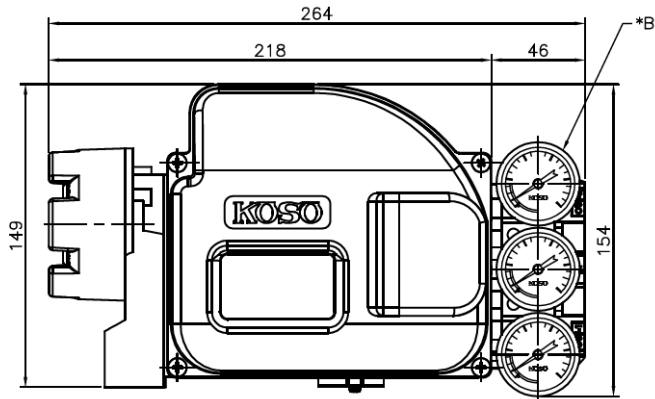
## FEATURES

- STABLE VALVE CONTROL THROUGH STABILITY IN CONTROL WITH FAST RESPONSE  
By using advanced PID control algorithm, a stable control and fast response is achieved.
- INTERNAL PRESSURE SENSORS FOR FAILURE DIAGNOSIS AND PREDICTIVE MAINTENANCE  
The self-diagnostic function monitoring and storing the operation state data by using pressure sensors contributes to safe & stable plant operation and suitable & efficient facility management.
- USER INTERFACE PROVIDING THE EFFICIENCY OF THE SETUP AND MAINTENANCE WORK  
The setup and maintenance work can be performed easily and certainly by local user interface using large-sized LCD and by the layout which can help unit operations.
- OPERATE WITH VARIOUS TYPES OF ACTUATORS  
Suitable PID parameter settings, selectable pilot relay and various types of feedback lever enable operating with small and large, linear motion and rotary motion , single acting and double acting actuators.
- STANDARD BUILT-IN HART® COMMUNICATION PROTOCOL  
The communication system is designed to conform to the HART protocol standard which is widely used in process industry.

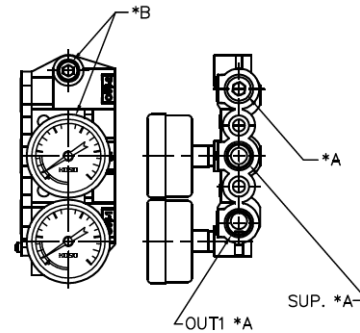
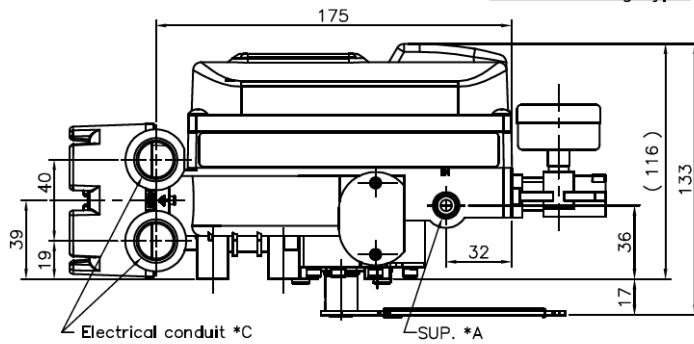
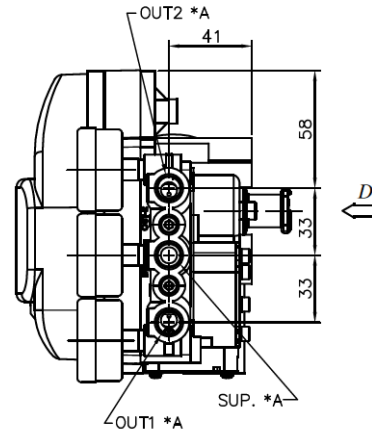
# SMART POSITIONER

Linear motion standard type

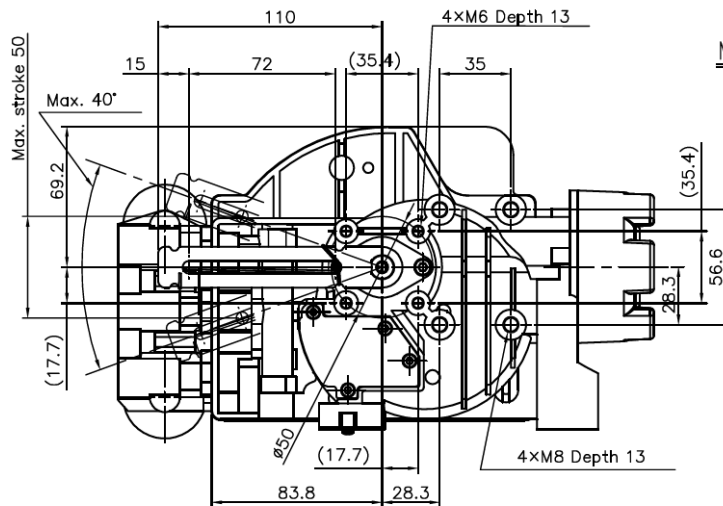
UNIT : mm



Double acting type



Single acting type



D VIEW

MODEL KGP 5 □ 0 □ - □ □ □ - □  
 \*1 \*2 \*3 \*4 \*5 \*6 \*7 \*8

*1	PROOF TYPE
*2	FEEDBACK TYPE
*3	COMMUNICATION TYPE
*4	ACTUATOR TYPE
*5	PRESSURE GAUGE TYPE
*6	PRESSURE GAUGE RANGE
*7	PRESSURE GAUGE UNIT
*8	OPTION

- \*A AIR CONNECTIONS
- \*B PRESSURE GAUGE & PLUG CONNECTIONS
- \*C ELECTRIC CONNECTIONS

APPROX. WEIGHT : 3.0kg  
 ( WITHOUT \*5 )

NOTE:

DRAWING No.

E-KGP5000-0

REV.

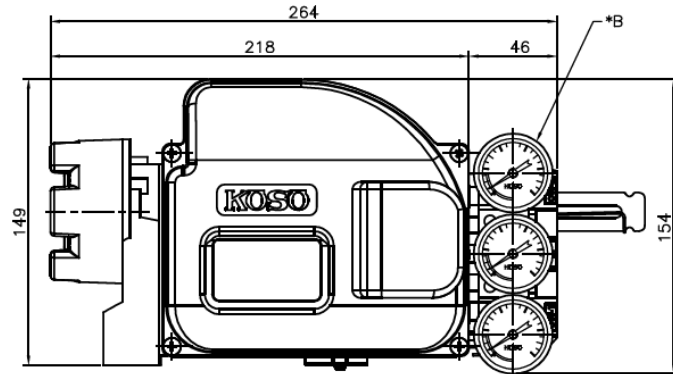
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**KOSO**

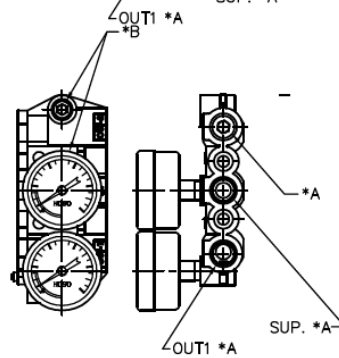
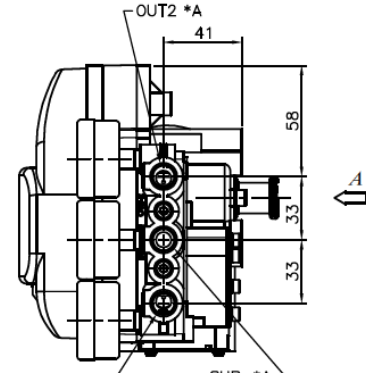
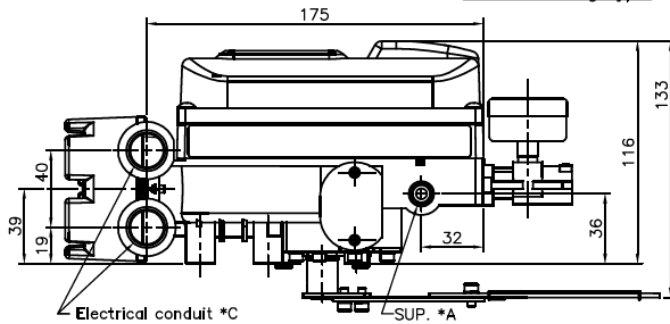
# SMART POSITIONER

Linear motion - long stroke type

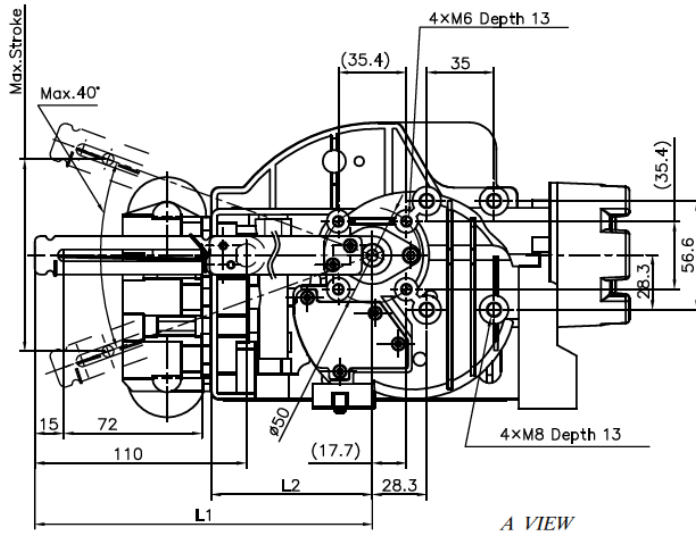
UNIT : mm



Double acting type



Single acting type



MODEL KGP 5 □ 1 □ □ □ □ □ □ □  
 \*1 \*2 \*3 \*4 \*5 \*6 \*7 \*8

*1	PROOF TYPE															
*2	FEEDBACK TYPE															
	<table border="1"> <thead> <tr> <th>L1</th> <th>L2</th> <th>STROKE</th> </tr> </thead> <tbody> <tr> <td>176</td> <td>83.8</td> <td>~100mm</td> </tr> <tr> <td>251</td> <td>155.8</td> <td>~150mm</td> </tr> <tr> <td>321</td> <td>228.8</td> <td>~200mm</td> </tr> <tr> <td>396</td> <td>303.8</td> <td>~250mm</td> </tr> </tbody> </table>	L1	L2	STROKE	176	83.8	~100mm	251	155.8	~150mm	321	228.8	~200mm	396	303.8	~250mm
L1	L2	STROKE														
176	83.8	~100mm														
251	155.8	~150mm														
321	228.8	~200mm														
396	303.8	~250mm														
*3	COMMUNICATION TYPE															
*4	ACTUATOR TYPE															
*5	PRESSURE GAUGE TYPE															
*6	PRESSURE GAUGE RANGE															
*7	PRESSURE GAUGE UNIT															
*8	OPTION															

- \*A AIR CONNECTIONS
- \*B PRESSURE GAUGE & PLUG CONNECTIONS
- \*C ELECTRIC CONNECTIONS

APPROX. WEIGHT : 3.0kg  
 (WITHOUT \*5.)

NOTE :

DRAWING No.

E-KGP5000-1

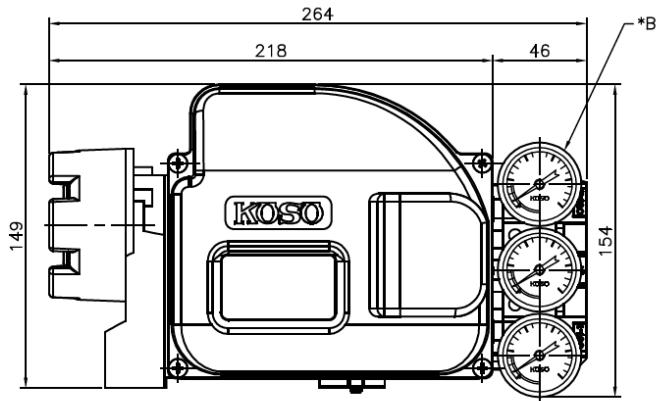
REV.

A

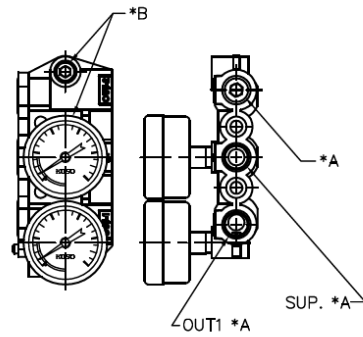
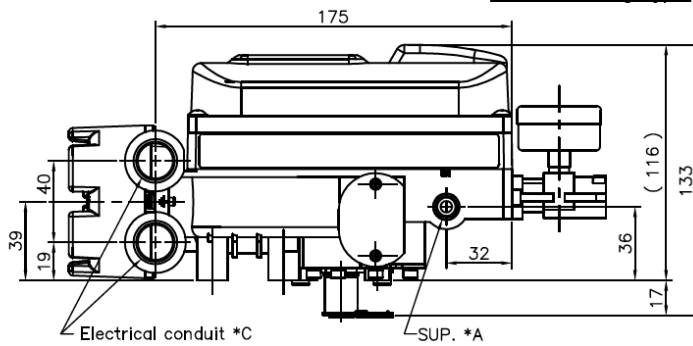
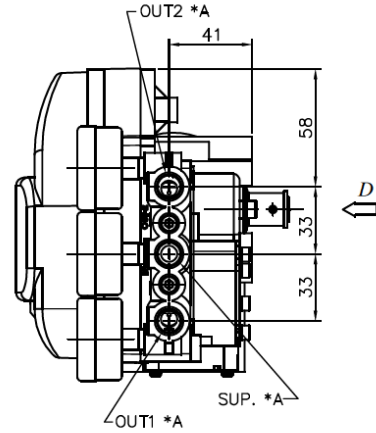
**KOSO**

# SMART POSITIONER

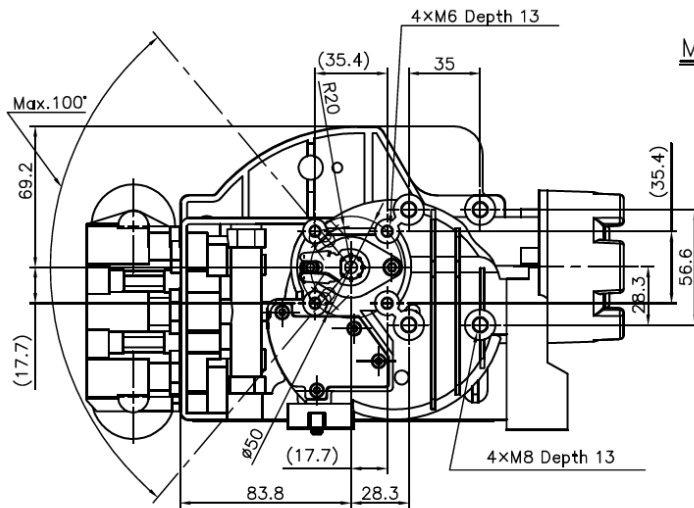
Rotary motion type  
UNIT : mm



Double acting type



Single acting type



D VIEW

MODEL KGP 5 □ 2 □ - □ □ □ - □  
\*1 \*2 \*3 \*4 \*5 \*6 \*7 \*8

*1	PROOF TYPE
*2	FEEDBACK TYPE
*3	COMMUNICATION TYPE
*4	ACTUATOR TYPE
*5	PRESSURE GAUGE TYPE
*6	PRESSURE GAUGE RANGE
*7	PRESSURE GAUGE UNIT
*8	OPTION

- \*A AIR CONNECTIONS
- \*B PRESSURE GAUGE & PLUG CONNECTIONS
- \*C ELECTRIC CONNECTIONS

APPROX. WEIGHT : 3.0kg  
( WITHOUT \*5 )

NOTE:

DRAWING No.

E-KGP5000-2

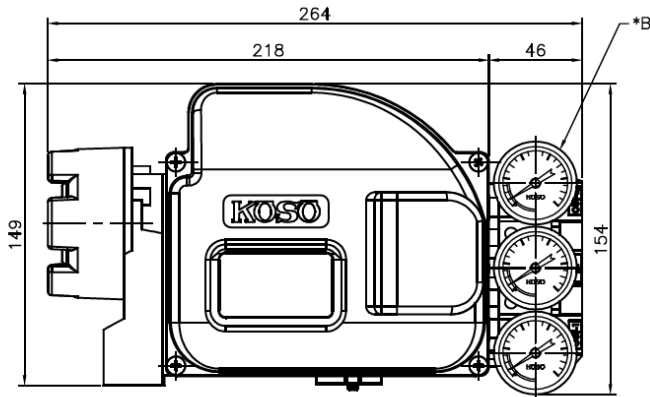
REV.

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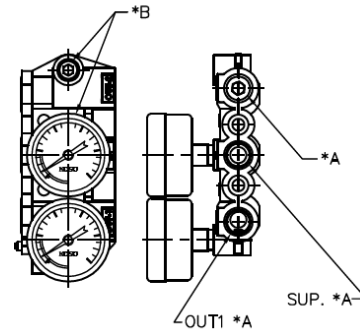
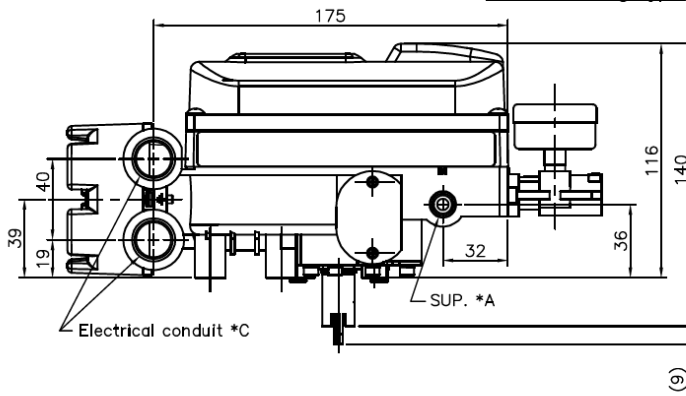
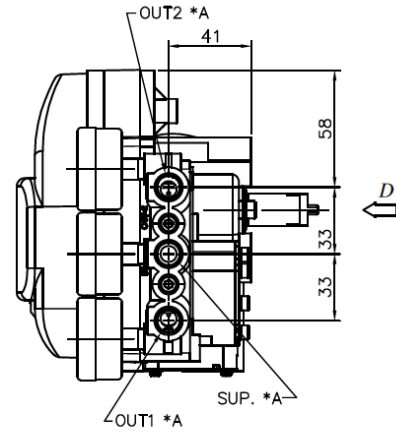
**KOSO**

# SMART POSITIONER

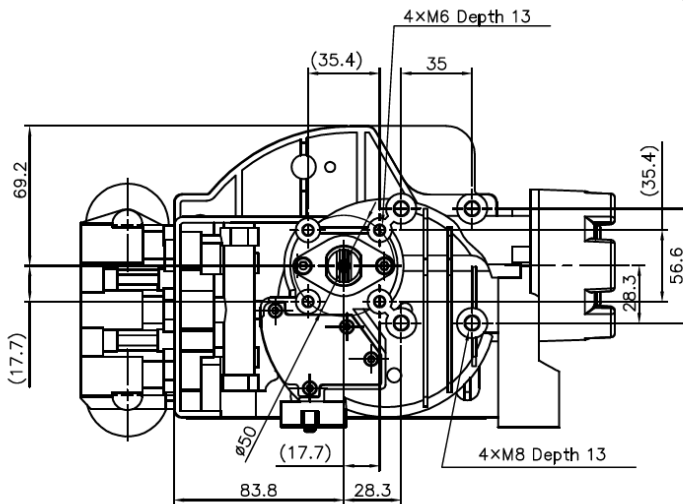
VDI / VDE3845 type  
UNIT : mm



Double acting type



Single acting type



D VIEW

MODEL KGP 5 □ 3 □ - □ □ □ - □  
\*1 \*2 \*3 \*4 \*5 \*6 \*7 \*8

*1	PROOF TYPE
*2	FEEDBACK TYPE
*3	COMMUNICATION TYPE
*4	ACTUATOR TYPE
*5	PRESSURE GAUGE TYPE
*6	PRESSURE GAUGE RANGE
*7	PRESSURE GAUGE UNIT
*8	OPTION

- \*A AIR CONNECTIONS
- \*B PRESSURE GAUGE & PLUG CONNECTIONS
- \*C ELECTRIC CONNECTIONS

APPROX. WEIGHT : 3.0kg  
( WITHOUT \*5 )

NOTE:

DRAWING No.

E-KGP5000-3

REV.

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**KOSO**

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## ■ WORLD-WIDE NETWORK (Sales, Manufacturing, Services)

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Nihon Koso Co., Ltd., Tokyo, Japan	TEL. (81) 3-5202-4300	FAX. (81) 3-5202-4301
Paris Office	TEL. (33) 1-73-75-23-1	FAX. (33) 1-73-75-23-1
Moscow Office	TEL. (7) 495-775-8531	FAX. (7) 495-787-2758
Abu Dhabi Branch	TEL. (971) 2-639-06-55	FAX. (971) 2-639-08-89
Koso M-Mac International Inc., CA, U.S.A.	TEL. (1) 661-942-4499	FAX. (1) 661-942-0999
Koso America Inc. Boston, U.S.A	TEL. (1) 774-517-5300	FAX. (1) 774-517-5230
Rexa Inc. Boston, U.S.A	TEL. (1) 508-584-1199	FAX. (1) 508-584-2525
Pacific Seismic Products.Inc., CA, U.S.A.	TEL. (1) 661-942-4499	FAX (1) 661-942-0999
Koso Kent Introl. Ltd., U.K.	TEL. (44) 0-1484-710311	FAX. (44) 0-1484-407407
Koso Control Engineering (Wuxi) Co., Ltd., China	TEL. (86) 510-85101567	FAX. (86) 510-85122498
Wuxi Koso Fluid Control Co., Ltd., China	TEL. (86) 510-85585118	FAX. (86) 510-85585119
Wuxi Koso Valve Casting Co., Ltd., China	TEL. (86) 510-85581109	FAX. (86) 510-85123093
Hangzhou Hangyang KOSO P & V Co., Ltd.	TEL. (86) 571-85869508	FAX. (86) 571-85343203
Koso-AACI (Anshan) Co., Ltd., China	TEL. (86) 412-8812686	FAX. (86) 412-8814582
Koso Control Instrument (Anshan) Co., Ltd., China	TEL. (86) 412-8829518	FAX. (86) 412-8968860
Korea Koso Co., Ltd., Seoul, Korea	TEL. (82) 2-539-9011	FAX. (82) 2-566-5119
Korea Koso Engineering Co., Ltd., Seoul, Korea	TEL. (82) 2-539-9018	FAX. (82) 2-566-5119
Koso Controls Asia Pte Ltd., Singapore	TEL. (65) 67472722	FAX. (65) 67467677
Koso India Private Limited	TEL. (91) 253-2383111	FAX. (91) 253-2384413
Koso Control Europe s.r.o. Czech	TEL. (420) 513-035-180	FAX. (420) 545-422-529
Koso Italy	TEL. (39) 02-93162165	FAX. (39) 02-9306847
Koso Gulf	TEL. (968) 2443-7695	

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