



***LPD 100s***

***LINEAR  
PNEUMATIC  
DIAPHRAGM  
ACTUATORS***

## LPD 100s

### LINEAR PNEUMATIC DIAPHRAGM ACTUATORS

*The single spring linear pneumatic diaphragm actuators of the 100 series are designed to offer:*

#### **Rugged construction**

*The robust thick-walled carbon steel construction provides great stability, rigidity and protection from deformation*

#### **High reliability and easy maintenance**

*The “no-frills” design assures high reliability and easy maintenance interventions.*

#### **Single spring design**

*Single spring design is a must where precise control action is required. The single spring offer a more precise bench range and assures an absolute repeatability.*

#### **Standard or Low temperature service**

*The LPD 100s are available with suitable materials for both standard (-29°C / +80°C) and low temperature (-55°C/+60°C) service*



## **Key Features**

*The Diaphragm Actuators of the 100 series are designed to grant high reliability and easy maintenance.*

*Very often the multi-spring actuators are affected by non-uniform compression of all the springs. Therefore, the single spring design, that offer a more precise bench range and assures an absolute repeatability, is to be preferred when a precise control is needed.*

### **Diaphragm case**

*The diaphragm case is made with high quality, high strength formed steel.*

*The upper and lower covers compress the diaphragm edge in order to get an air proof sealing.*

### **Yoke**

*The yoke of the actuator is made of carbon steel plate (no cast iron) fabricated construction. Standard carbon steel or low temperature carbon steel are available.*

### **Spring**

*The high strength silicon-manganese steel spring is treated with phosphate or coated with “Japan Black” against corrosion. It has two flat parallel ends and it is top and bottom guided by two steel disks.*

### **Stem**

*Stem is made with by 13% Cr Stainless steel (AISI 410).*

*SS316 construction is available for low temperature application.*

*The stem is connected directly with the diaphragm plate.*

### **Adjusting screw**

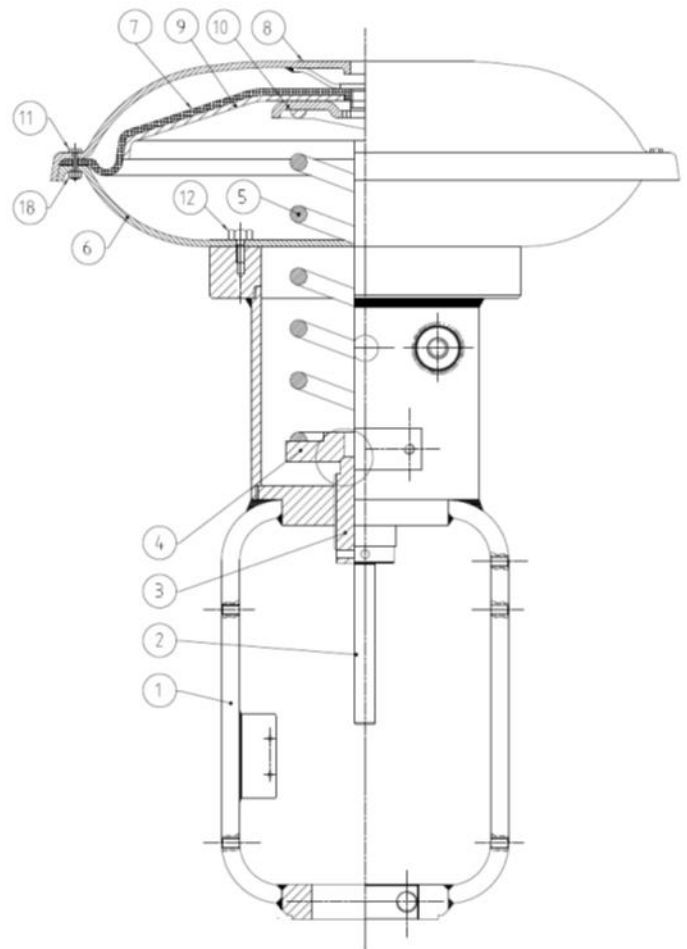
*The spring adjusting screw is made with hardened 42CrMo4 steel. It is screwed on the actuator yoke in the direct acting type and on the stem in the reverse type. Can be used to regulate the initial thrust of the spring.*

## **Direct Actuator**

*In a direct type actuator, the air pressure is supplied in the upper diaphragm case and forces the actuator stem downward. When the pressure is reduced, the opposing spring moves the actuator stem upward. In case of failure of air supply the pressure is no more active and the spring forces the stem to the extreme upward position.*

*In the push down to close valves this provide a fail open action.*

*in the push down to open valves this means a fail closed action.*

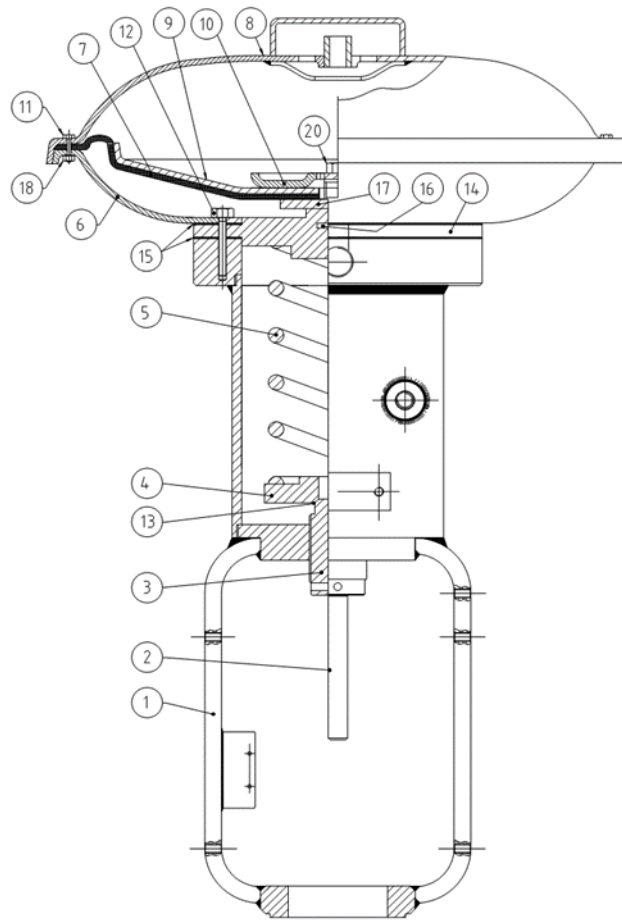


Item	Part name	Material -29°C / +80°C	Material -55°C / +60°C
1	YOKE	Fe 510 UNI7070	Fe 37D UNI7070
2	STEM	SS 410	SS 316
3	ADJUSTING SPRING	42CD4 UNI EN10083-3	42CD4 UNI EN10083-3
4	BOTTOM LOWER	Fe 510 UNI7070	Fe 37D UNI7070
5	SPRING	52SiCrNi5 UNI EN 10089-2006	52SiCrNi5 UNI EN 10089-2006
6	CASE LOWER	Fe 510 UNI7070	Fe 37D UNI7070
7	DIAPHRAGM	NEOPRENE + RAYON	SILICONE
8	CASE UPPER	Fe 510 UNI7070	Fe 37D UNI7070
9	DIAPHRAGM DISC	Fe 510 UNI7070	Fe 37D UNI7070
10	BOTTOM UPPER	Fe 510 UNI7070	Fe 37D UNI7070
11	SCREW	ASTM A193 B7	ss 316
12	SCREW	ASTM A193 B7	ss 316
18	NUT	ASTM A194 2H	ss 316

## Reverse Actuator

*In a reverse type actuator, the air pressure is supplied in the lower diaphragm case and it forces the actuator stem upward. When the pressure is reduced, the opposing spring moves the actuator stem downward. In case of failure of air supply the pressure is no more active and the spring forces the stem to the extreme downward position.*

*In the push down to close valves this provide a fail closed action.  
in the push down to open valves this means a fail open action.*



Item	Part name	Material -29°C / +80°C	Material -55°C / +60°C
1	YOKE	Fe 510 UNI7070	Fe 37D UNI7070
2	STEM	ASTM A182 F316	ASTM A182 F316
3	ADJUSTING SPRING	42CD4 UNI EN10083-3	42CD4 UNI EN10083-3
4	BOTTOM LOWER	Fe 510 UNI7070	Fe 37D UNI7070
5	SPRING	52SiCrNi5 UNI EN 10089-2006	52SiCrNi5 UNI EN 10089-2006
6	CASE LOWER	Fe 510 UNI7070	Fe 37D UNI7070
7	DIAPHRAGM	NEOPRENE + RAYON	SILICONE
8	CASE UPPER	Fe 510 UNI7070	Fe 37D UNI7070
9	DIAPHRAGM DISC	Fe 510 UNI7070	Fe 37D UNI7070
10	BOTTOM UPPER	Fe 510 UNI7070	Fe 37D UNI7070
11	SCREW	ASTM A193 B7	SS 316
12	SCREW	ASTM A193 B7	SS 316
14	FLANGE ACTUATOR REVERSE	Fe 510 UNI7070	Fe 37D UNI7070
15	GASKET	PF64	PF64
16	O-RING	VITON	VITON
17	PLATE	Fe 510 UNI7070	Fe 37D UNI7070
18	NUT	ASTM A194 2H	SS 316
19	ELASTIC NUT	ASTM A194 2H	SS 316

## **Handwheels**

Usually the handwheels provide a ready possibility to position the control valve during an emergency.

KG Equipments can deliver handwheels which can be operated either from top or from side.

To allow the automatic operation of the control valve the handwheel has to be in disengaged position.

### **Top driven handwheel**

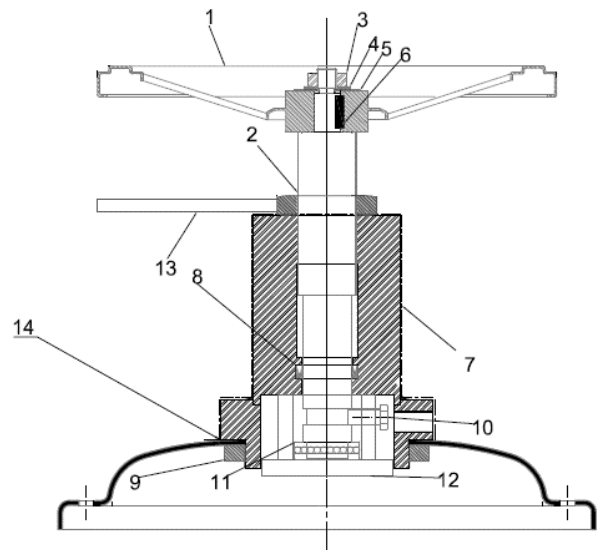
The top driven handwheel is a very compact and therefore economic construction.

Two different constructions are available for direct or reverse actuator.

It can act as a stop device limiting valve stem travel only in the spring load direction.

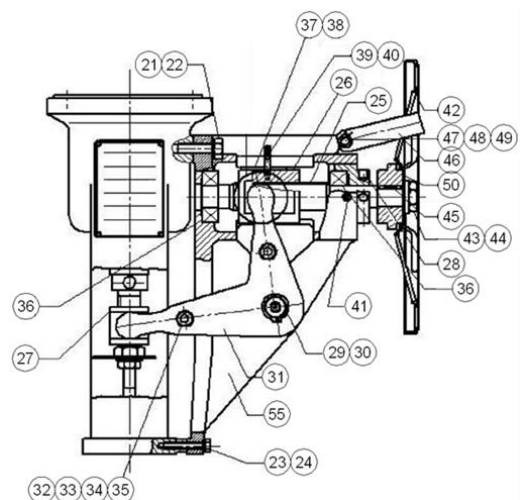
The top driven handwheel on direct acting actuators need to be taken at the maximum upward position to be fully disengaged.

The top driven handwheel on reverse acting actuators need to be taken at the maximum downward position to be fully disengaged.



### **Side mounted handwheel**

All side-mounted handwheels can be used to stroke the valve in either direction and at any point in the actuator stem travel. It can be used also as a stop travel in either direction but not both at the same time. The handwheel is de-clutchable, so in the neutral position automatic operation is possible throughout full valve travel. In any other position valve travel will be limited by the handwheel position.



## **Performance table**

*KG Equipments LPD actuators can fit all the globe control valves GL2 GL3, AG, TG1 and TG2 series up to DN 16”.*

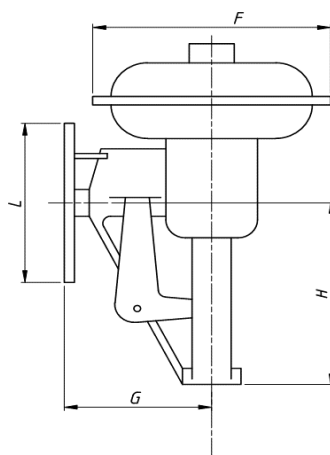
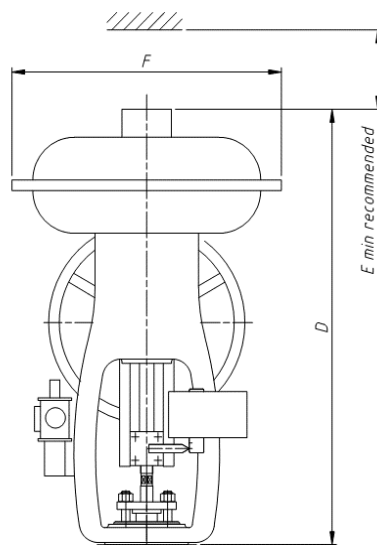
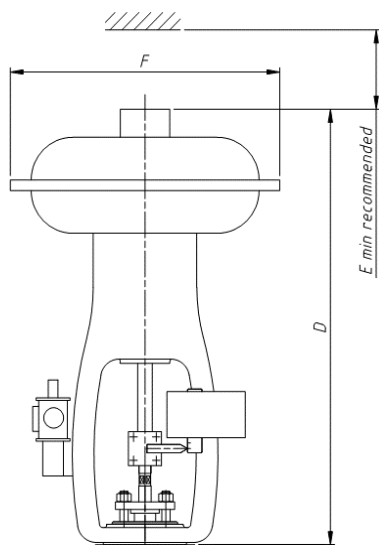
*Each actuator size can be equipped with 4 different spring range set on different valve strokes. Totally we can choose among 88 different possible combinations of size / stroke and spring range*

<b>ACTUATOR MODEL</b>	<b>TRAVEL</b>	<b>SPRING RANGE</b>	<b>EFFECTIVE AREA</b>	<b>THRUST [N/psi]</b>
<b>LPD 111</b>	13 20 25	3 – 15 6 – 30 15 – 30 20 - 44	<b>470 cm2</b>	<b>330</b>
<b>LPD 113</b>	20 25 40	3 – 15 6 – 30 15 – 30 20 - 44	<b>677 cm2</b>	<b>476</b>
<b>LPD 115</b>	25 40 50 60	3 – 15 6 – 30 15 – 30 20 - 44	<b>997 cm2</b>	<b>700</b>
<b>LPD 118</b>	25 40 50 60 80 (no HW)	3 – 15 6 – 30 15 – 30 20 - 44	<b>1295 cm2</b>	<b>906</b>
<b>LPD 118L</b>	80	3 – 15 6 – 30 15 – 30 20 - 44	<b>1295 cm2</b>	<b>906</b>
<b>LPD 124</b>	40 50 60 80 100	3 – 15 6 – 30 15 – 30 20 - 44	<b>1885 cm2</b>	<b>1320</b>
<b>LPD 124L</b>	150	3 – 15 6 – 30 15 – 30 20 - 44	<b>1885 cm2</b>	<b>1320</b>



## Weight and Dimensions

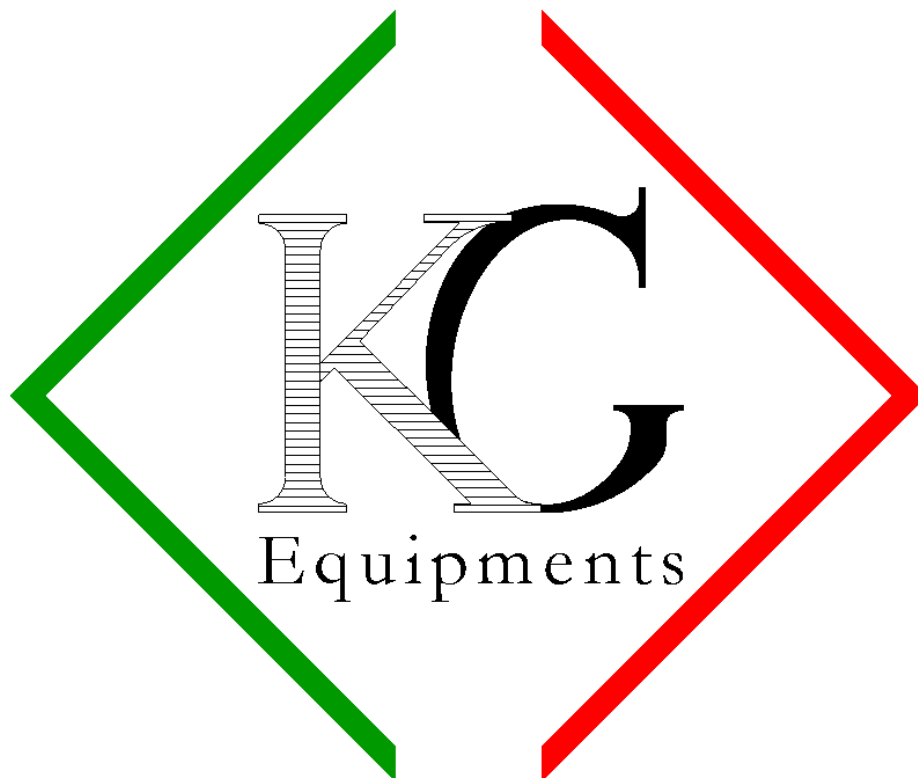
TYPE	D [mm]		E [mm]	F [mm]	G [mm]	H [mm]		L [mm]	ACTUATOR WEIGHT [kg]		HANDWHEEL WEIGHT [kg]
	Dir	Rev				Dir	Rev		Dir	Rev	
LPD 111	470	505	150	330	287	240	260	250	20	28	11
LPD 113	600	665	200	385	370	268	292	400	35	45	24
LPD 115	720	780	250	495	400	390	390	500	60	68	30
LPD 118	755	880	250	585	413	400	440	572	75	83	34
LPD 118L	1050	1175	300	585	723	530	505	910	100	110	112
LPD 124	1090	1290	350	1090	723	530	560	910	160	180	112
LPD 124L	1450	1650	400	1090	750	600	600	910	210	240	80





**Notes:**

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***KG EQUIPMENTS***

***Via Leonino da Zara, 36  
35020 ALBIGNASEGO (PD)***

***Tel +39 049 5207427***

***[www.kgequipments.com](http://www.kgequipments.com)***