



*energy ahead...*

# Susin i-tork

PNEUMATIC PISTON CYLINDER ACTUATOR

**PLD & PLS Series**



# INTRODUCTION

## PNEUMATIC PISTON CYLINDER ACTUATOR **PLD & PLS Series**

**SUSIN I-TORK** range PLDS series Piston Actuator designed for powerful, high performance application in ON/OFF or controlling for the Knife edge and Gate valve automation. The Cylinder Range is from 8 inches to 25 inches.

A Suitable solution for your Globe Control Valves because of its higher thrust capability, stiffness, precision movement and higher frequency response.

The Bore size starting from 200mm up to 630mm and the thrust force from 2500lbf up to 27000lbf in case of double acting at 60psi (4 bar). In the case of single acting it depends upon selection of spring.

Manual override by Hydraulic cylinder or Gear boxes in case of smaller sizes. The Pneumatic accessories such as Limit switch, Solenoid valve and Positioner can be provided.



# FEATURES

## General Features

- Operating Pressure of 150psi (10.3 Bar) permitting substantially higher thrust capabilities than Diaphragm actuators.
- Tighter valve Shutoff due to higher thrust & Offers ease of maintenance.
- Responds quickly to signal changes because of Double Acting configuration.
- NBR seals are standard, special seal available on request.
- Cylinder Materials are Cast Steel, if needed can be provided in SS and Aluminum.
- End cover material with Cast Iron and optionally provided carbon steel.
- Less weight, good corrosion resistant material construction.
- For Custom built thrust and stroke consult the factory .

## Design Features:

- A Guide rod for more than 250mm Bore size.
- Field reversible application is applicable from the range of 100mm Bore size.
- Above 200mm Bore size Quad Type 'O' ring.



- Cylinder inner surface – Honing and Hot chrome plated.
- Zinc rich epoxy coated piston/End flanges.
- Designed as Per ISO standard ISO3322, ISO4393 and ISO5597.
- Guide Bush is designed with Brass material.

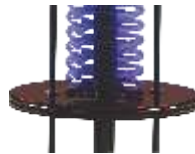


# CONSTRUCTION



## Guide Bush

PTFE Bush for the Piston which gives better Durability also has self lubricating characteristics for smooth operation at the low pressure aspects.



## Two Piston Guide Rod

To Prevent the Piston abrasion and increases the life of piston.

## Piston Seal Ring



Minimizing Piston wear for long life span.



## Spring

En47 offers excellent toughness, High tensile Strength, Vibration and shock resistance.

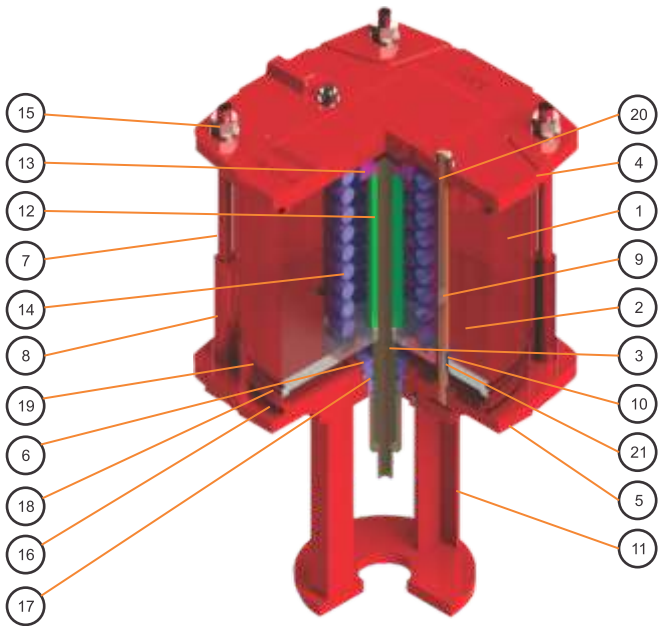


## Tie Bolt

Used in single acting cylinder to compress the spring. There is no need of any special Equipments to compress spring.

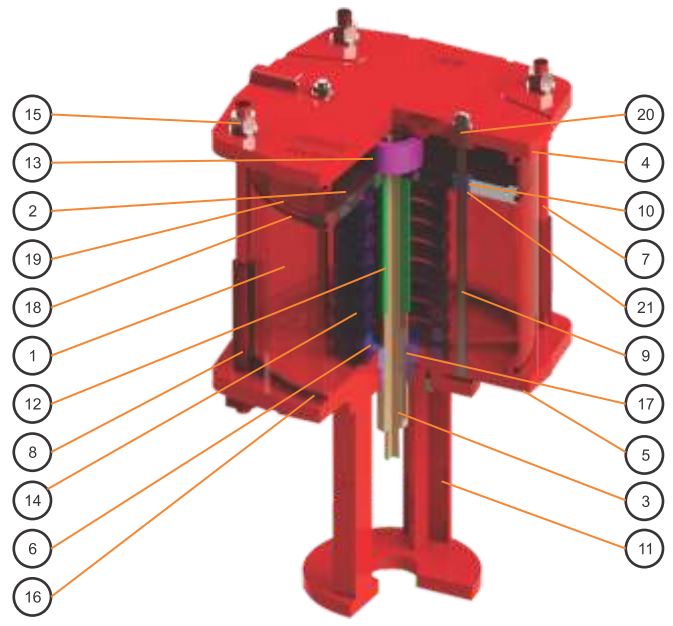
# MATERIALS

## Spring Return Linear Piston Actuator (Fail close)



ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	CYLINDER	A106-A53 (HOT CHROMIUM PLATED)	1
2	PISTON	ALUMINUM (LM 25)	1
3	PISTON ROD	A276 (TYPE 304)	1
4	TOP END COVER	DUCTILE IRON	1
5	BOTTOM END COVER	DUCTILE IRON	1
6	BOTTOM BUSH	PTFE	1
7	TIE ROD	AISI 1040 (EN8)	4
8	TIE BOLT	AISI 1040 (EN8)	2
9	PISTON GUIDE ROD	SS304	2
10	PISTON GUIDE ROD BUSH	PTFE	2
11	YOKE	CS	1
12	SPACER	A36	1
13	STOPPER WASHER	A36	1
14	SPRING	EN47	1
15	FASTENERS	HIGH TENSILE 8.8 GRADE	-
16	FLANGE O RING	NBR	2
17	BOTTOM BUSH O RING	NBR	4
18	PISTON RING	NBR	1
19	SEAL RING	CFT	1
20	GUIDE BAR O RING	NBR	6
21	GUIDE BUSH O RING	NBR	8

## Spring Return Linear Piston Actuator (Fail Open)



SL. NO.	PART NUMBER	MATERIAL	QTY
1	CYLINDER	A106-A53 (HOT CHROMIUM PLATED)	1
2	PISTON	ALUMINUM (LM 25)	1
3	PISTON ROD	A276 (TYPE 304)	1
4	TOP END COVER	DUCTILE IRON	1
5	BOTTOM END COVER	DUCTILE IRON	1
6	BOTTOM BUSH	PTFE	1
7	TIE ROD	AISI 1040 (EN8)	4
8	TIE BOLT	AISI 1040 (EN8)	2
9	PISTON GUIDE ROD	SS304	2
10	PISTON GUIDE ROD BUSH	PTFE	2
11	YOKE	CS	1
12	SPACER	A36	1
13	STOPPER WASHER	A36	1
14	SPRING	EN47	1
15	FASTENERS	HIGH TENSILE 8.8 GRADE	-
16	FLANGE O RING	NBR	2
17	BOTTOM BUSH O RING	NBR	4
18	PISTON RING	NBR	1
19	SEAL RING	CFT	1
20	GUIDE BAR O RING	NBR	6
21	GUIDE BUSH O RING	NBR	8

# TECHNICAL DATA

## Single Acting PLS Series

The below spring return piston actuator, spring thrust values are only for reference, the cylinders can be built according to the application requirements.

Cylinder Bore Dia/Model Number	Piston Rod Dia	Spring FORCE		Air FORCE AT 50 PSI IN lbf		Air 60 PSI force lbf		Air 80 PSI force lbf	
		START	END	AIR START	AIR END	AIR START	AIR END	AIR START	AIR END
300/PLS - 300	32	2700	1500	3,645.10	2,445.10	4,674.20	3,474.20	6,732.20	5,532.20
		6480	3500					4,732.20	1,752.20
350/PLS - 350	40	2700	1500	4,564.30	3,364.30	5,777.10	4,577.10	8,202.80	7,002.80
		6480	3500			3,777.10	797.1	6,202.80	3,222.80
380/PLS - 380	45	6480	3500	4,847.40	1,867.40	6,516.80	3,536.80	9,855.80	6,875.80
		10500	5700					7,655.80	2,855.80
430/PLS - 430	50	6480	3500	6,941.80	3,961.80	9,030.20	6,050.20	13,206.90	10,226.90
		10500	5700			6,830.20	2,030.20	11,006.90	6,206.90
480/PLS - 480	55	6480	3500	9,443.30	6,463.30	12,031.90	9,051.90	17,209.30	14,229.30
		10500	5700	7,243.30	2,443.30	9,831.90	5,031.90	15,009.30	10,209.30
		17000	9000					11,709.30	3,709.30
530/PLS - 530	60	10500	5700	10,391.40	5,591.40	13,609.70	8,809.70	20,046.30	15,246.30
		17000	9000			10,309.70	2,309.70	16,746.30	8,746.30
580/PLS - 580	65	10500	5700	13,365.50	8,565.50	17,178.60	12,378.60	24,804.80	20,004.80
		9000	9000	10,065.50	10,065.50	13,878.60	13,878.60	21,504.80	21,504.80
		14500	14500	4,565.50	4,565.50	8,378.60	8,378.60	16,004.80	16,004.80
630/PLS - 630	70	10500	5700	17,034.50	12,234.50	21,581.40	16,781.40	30,675.20	25,875.20
		9000	9000	13,734.50	13,734.50	18,281.40	18,281.40	27,375.20	27,375.20
		14500	14500	8,234.50	8,234.50	12,781.40	12,781.40	21,875.20	21,875.20
		36000	20000					16,375.20	375.2

## Double Acting PLD Series

MODEL	Cylinder Bore Dia	Air 50 PSI force lbf		Air 60 PSI force lbf		Air 80 PSI force lbf	
	mm	Ext	Ret	Ext	Ret	Ext	Ret
PLD-200	200	2312	2227	2774	2733	3699	3644
PLD-250	250	3612	3578	4335	4293	5780	5724
PLD-300	300	5202	5145	6243	6174	8324	8232
PLD-350	350	6153	6064	7384	7277	9846	9703
PLD-380	380	8461	8347	10153	10017	13537	13355
PLD-430	430	10582	10441	12698	12530	16931	16707
PLD-480	480	13113	12943	15735	15532	20980	20709
PLD-530	530	16293	16091	19552	19310	26069	25746
PLD-580	580	19302	19065	23163	22878	30883	30504
PLD-630	630	23009	22734	27610	27281	36814	36375

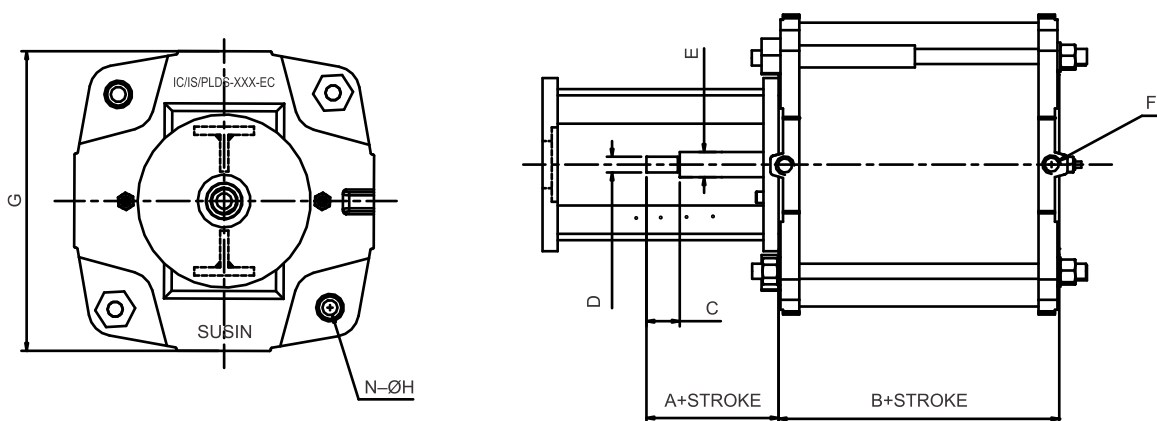
Be sure of adding safety factor

Given values after friction losses

## DIMENSIONS GENERAL DIMENSIONS

PLD-DOUBLE ACTING DIMENSION DETAILS								
CYLINDER BORE DIA	A+S	B	C	D	øE	F (NPT PORT SIZE IN INCH)	G	N-øH
ø200	230+S	150+S	50	M27	32	1/2"	226 SQ	4-14
ø250	260+S	150+S	50	M27	32	1/2"	280 SQ	4-16
ø300	270+S	150+S	50	M27	32	1/2"	335 SQ	4-18
ø350	280+S	175+S	50	M30	40	1/2"	367 SQ	4-20
ø380	300+S	175+S	50	M36	45	3/4"	425 SQ	4-22
ø430	310+S	175+S	50	M42	50	3/4"	476 SQ	4-24
ø480	320+S	200+S	50	M42	55	3/4"	600 RND	8-18
ø530	340+S	200+S	50	M46	60	3/4"	650 RND	8-20
ø580	350+S	200+S	50	M46	65	3/4"	710 RND	12-20

NOTE: 'S' DENOTES STROKE FOR EACH MODEL, 'N' DENOTES NO OF TIE RODS  
END COVER ON BORE ø200 TO ø430 PLDS, MODELS ARE IN SQUARE, ALL DIMENSIONS ARE IN MM



# ACCESSORIES

## Positioner:

Reliable performance and outstanding durability under harsh working environments through robust valve control devices.

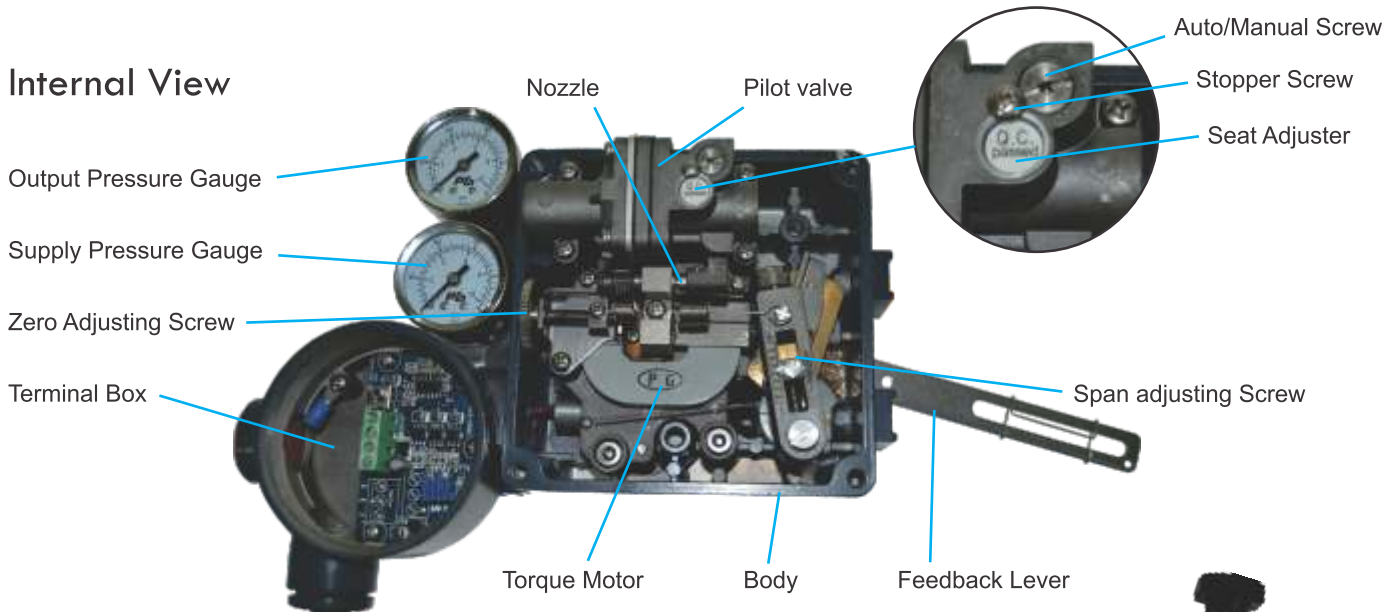
Various types of Positioner are:

**Electro Pneumatic Positioner (Linear/Rotary)**

**Pneumatic - Pneumatic Positioner (Linear/Rotary)**

**Smart Positioner**

## Internal View



## Features:

- Precise calibration with simple SPAN and ZERO adjustments
- ½ split range available
- Vibration resistant design & Stainless steel gauges standard
- Restricted pilot valve orifice kit for small actuators included
- Certified for ATEX Eex md B T5 (05 ATEX 1076X) by NEMKO in conformance with EN 50014:1997, EN 50018:2000 & EN 50028:1987
- Certified for EMC (K1046 / E04) in conformance with EN 61000-6-2:2001 and EN 61000-6-4:2001 by RWTUV
- EN 61000-6-2:2001 & EN 61000-6-4:2001 by RWTUV
- Certified for Ex md B T6 (99-1075-Q1), Ex md C T6
- (2000-1057-Q1), and Ex ia B T6 (2000-1056-Q1) by KOSHA

## Construction

Temperature Range: -40 deg C to 60 deg C

Pressure: 1.5 to 10 Bar

Response: 30ms (on) 40 ms(off)

## Other Accessories:

### Filter Regulator

Gauge Port Size ¼" ½" NPT  
Air media  
Filtration 5 micron  
Gauge Port Size Rc 1/8  
Housing material: Aluminum  
Pressure Gauge will be in SS



### Solenoid Valve

Our Next generation solenoid valves specifically engineered to pilot Pneumatic Process valve actuators, with improved design and added valuable features.

Non NAMUR Standard mounting  
Weather Proof IP65  
CE Certified  
ATEX Ex Series  
Intrinsically safe series



### Electrical

Voltage ((+/-10%): 12 VDC & 24 V DC, 24VAC, 120V AC & 240VAC, 50/60 Hz (Other Voltages on request)



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