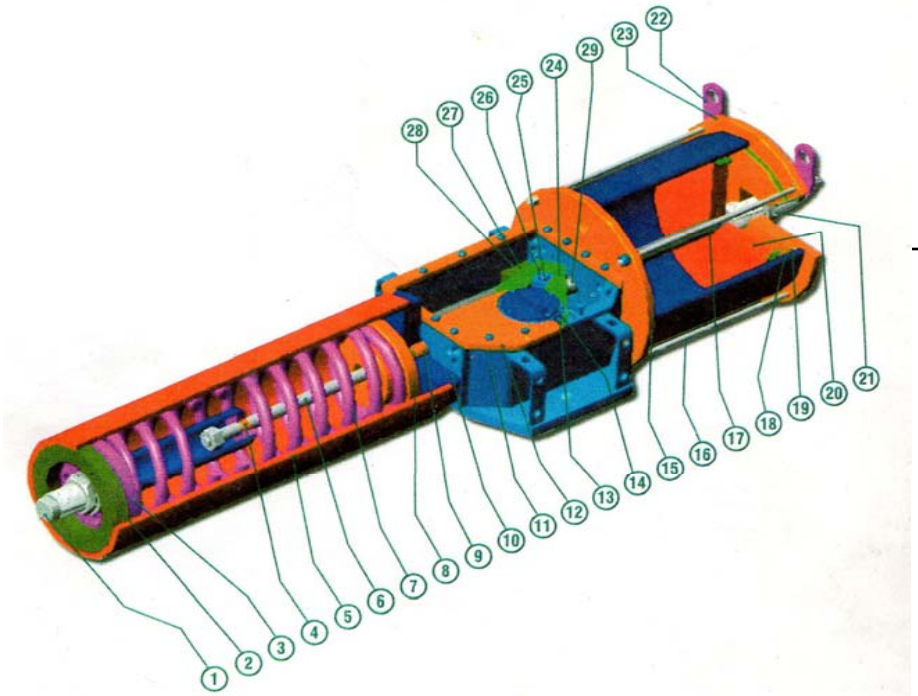
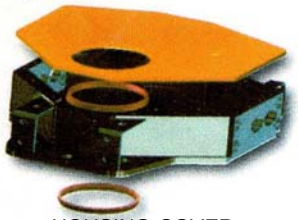
SPRING RETURN PNEUMATIC ACTUATOR

For 90º Operation for ON-OFF and Modulating duty Service

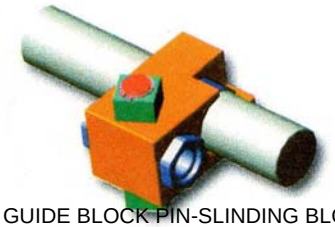




HOUSING-COVER

YOKE- BUSHINGS

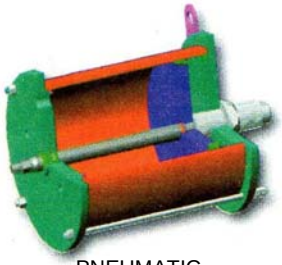
YOKE



GUIDE BLOCK PIN-SLINDING BLOCK

GUIDE BLOCK – GUIDE BLOCK BUSHING

GUIDE BAR



PNEUMATIC

CYLINDER ASSY

POS.	DESCRIPTION	MATERIAL
15	CYLINDER HEAD FLANGE Carbon Steel	ASTM A 283 GR D
14	POS. INDICATOR Carbon Steel	ASTM A 283 GR D
13	YOKE BUSHING Bronze	ASTM-B427 (AISI SAE 64)
12	COVER	Carbon Steel ASTM A283 GR.D + ASTM A537 C/1
11	HOUSING	Carbon Steel ASTM A283 GR.D + ASTM A537 C/1
10	CONTAINER FLANGE Carbon Steel	ASTM A 283 GR D
9	CONTAINER ROD BUSHING Carbon Steel	Steel + Bronze + Teflon
8	SPRING THRUST FLANGE Carbon Steel	ASTM A 283 GR D
7	SPRING Carbon Steel	AISI-SAE 9260
6	GUIDE ROD Carbon Steel	AISI-SAE 4340
5	SPRING CONTAINER Carbon Steel	ASTM-A106 GR.B
4	GUIDE ROD BUSHING	Steel + Bronze + Teflon
3	SPRING FLANGE Carbon Steel	ASTM A 283 GR D
2	SPRING NUT Carbon Steel	AISI-SAE 1040
1	TRAVEL STOP SREEN Carbon Steel	AISI-SAE 1040

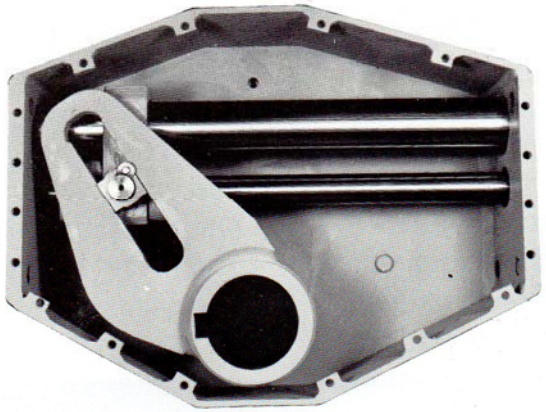
POS.	DESCRIPTION	MATERIAL
29	GUIDE BAR Alloy Steel Chrodmium Plated	AISI-SAE-9840
28	GUIDE BLOCK BUSHING	Steel + Bronze + Teflon
27	GUIDE BLOCK Carbon Steel	ASTM-A537 C/1
26	SLINDING BLOCK	ASTM-B427 (AISI SAE 64)
25	GUIDE BLOCK PIN	AISI-SAE 9840
24	YOKE	Carbon Steel API 5LX GRX52 + ASTM A537 C/1
23	END FLANGE Carbon Steel	ASTM A 283 GR D
22	EYEBOLT Carbon Steel	AISI-SAE 1040
21	TRAVEL STOP SREEN Carbon Steel	AISI-SAE 1040
20	PISTON Carbon Steel	ASTM A 283 GR D
19	PISTON ROAD SEAL RING	Nitrile Rubber
18	PISTON ROD BUSHING	Steel + Bronze + Teflon
17	PISTON ROD Alloy Steel Chrodmium Plated	AISI-SAE-9840
16	TIE ROD Alloy Steel Chrodmium Plated	AISI-SAE-9840

The AN-SE low pressure pneumatic Spring Return Actuator Series, was eingineered and is manufactured to provide Maximum Torque Output with supply pressure.

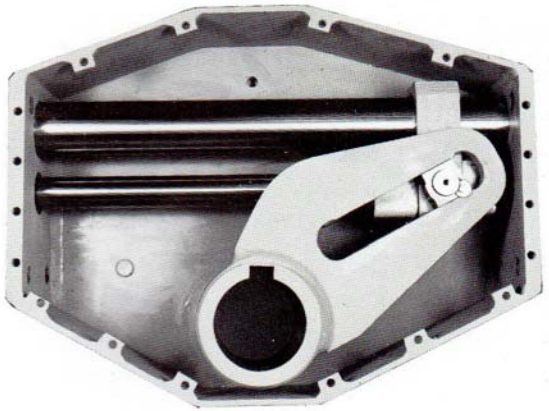
The AN-SE actuator is suitable for any quater turn application such as a Ball, Plug, Butterfly valves or Dampers in both ON-OFF and modulating heavy duty service.

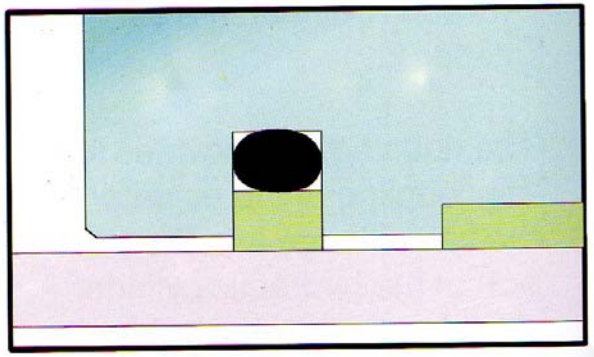
Canted Scotch Yoke Actuators are ideally suited to the larger valve sizes where high break away torques are requiered, or for valves with high working pressure.

Canted Scotch – Yoke mechanism in OPEN position

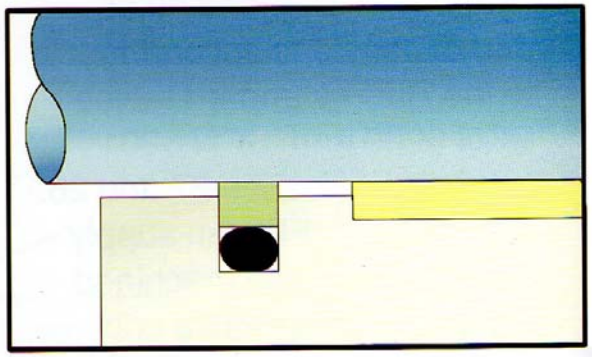


Canted Scotch – Yoke mechanism in CLOSED position





Piston seals



Piston rod seals

The yoke receives the thrust of the cylinder from the block pin by means of the bronze sliding blocks which move inside the slots of the yoke arms.

The block pin is mounted in the guide block where the threaded end of the cylinder piston rod is screwed.

The guide block slides along the guide bar by means of the bushing made of sintered bronze charged with teflon.
The bushing guarantees a very low friction coefficient.

The guide bar withstands the transversal forces originated by the angle between the surface of the slots and the perpendicular to the piston rod axis.
In this way the piston rod is not loaded by transversal forces, thus not wearing its guide bushing and its ring seals which are assembled in the head flange of the pneumatic cylinder.

The bronze material used in the sliding parts guarantees a high efficiency of the mechanism.

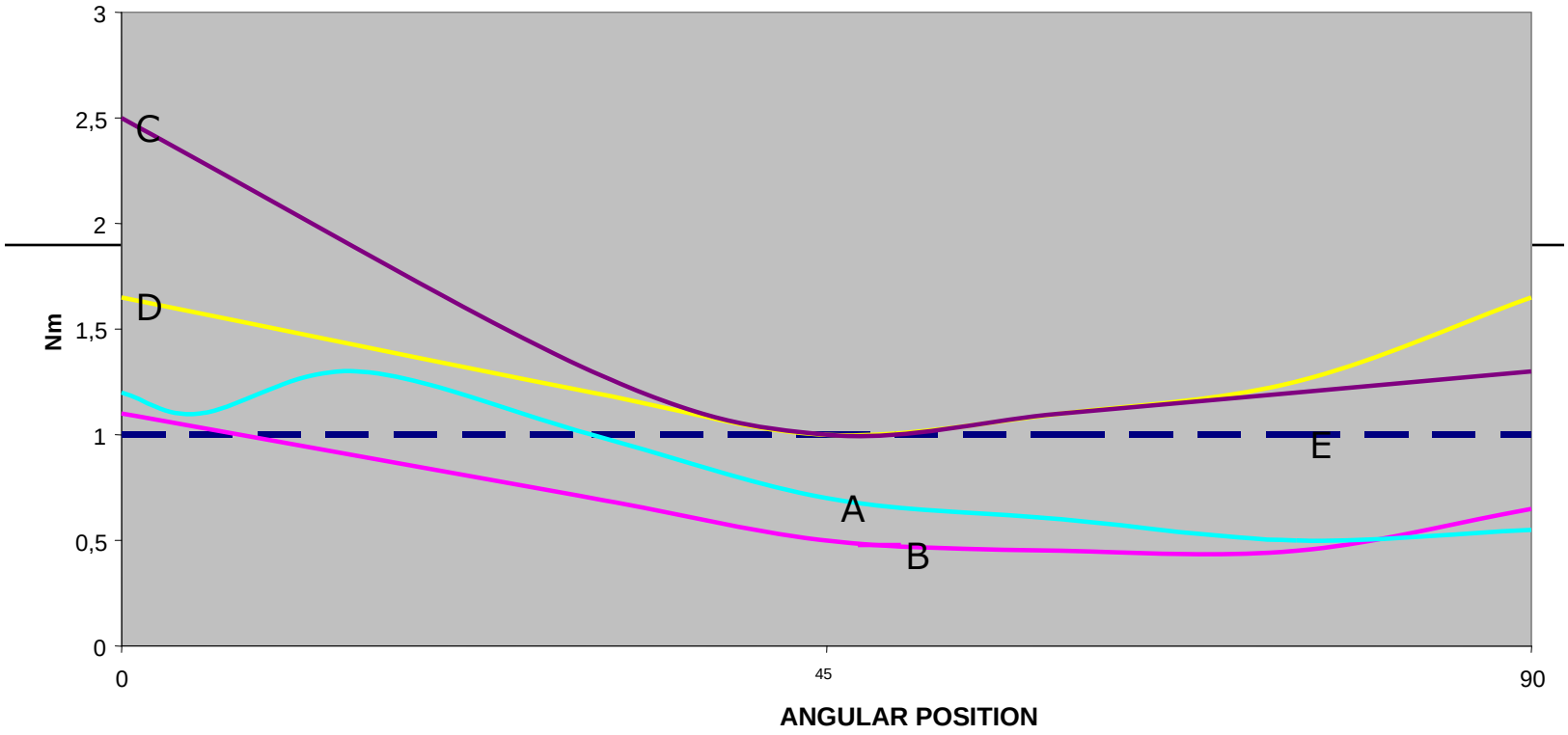
In case of an actuator with two cylinders, both mechanical stops are screwed into the end flanges of the cylinders.

The piston rod slides inside the bore of the head flange guided by the bushing .
This guide bushing has surface contact with the piston rod in bronze charged with teflon and guarantees a very low coefficient of friction.
The piston slides inside the cylinder tube and is guided by a teflon ring which guarantees a high efficiency.

The piston and piston rod seals are made by teflon rings precharged by an o-ring made of the most suitable compound for the most severe working conditions.

Shows the diagrams as a function of the angular position of the typical required torque of a ball valve both in opening and in closing, and the output torque of a canted scotch yoke mechanism.

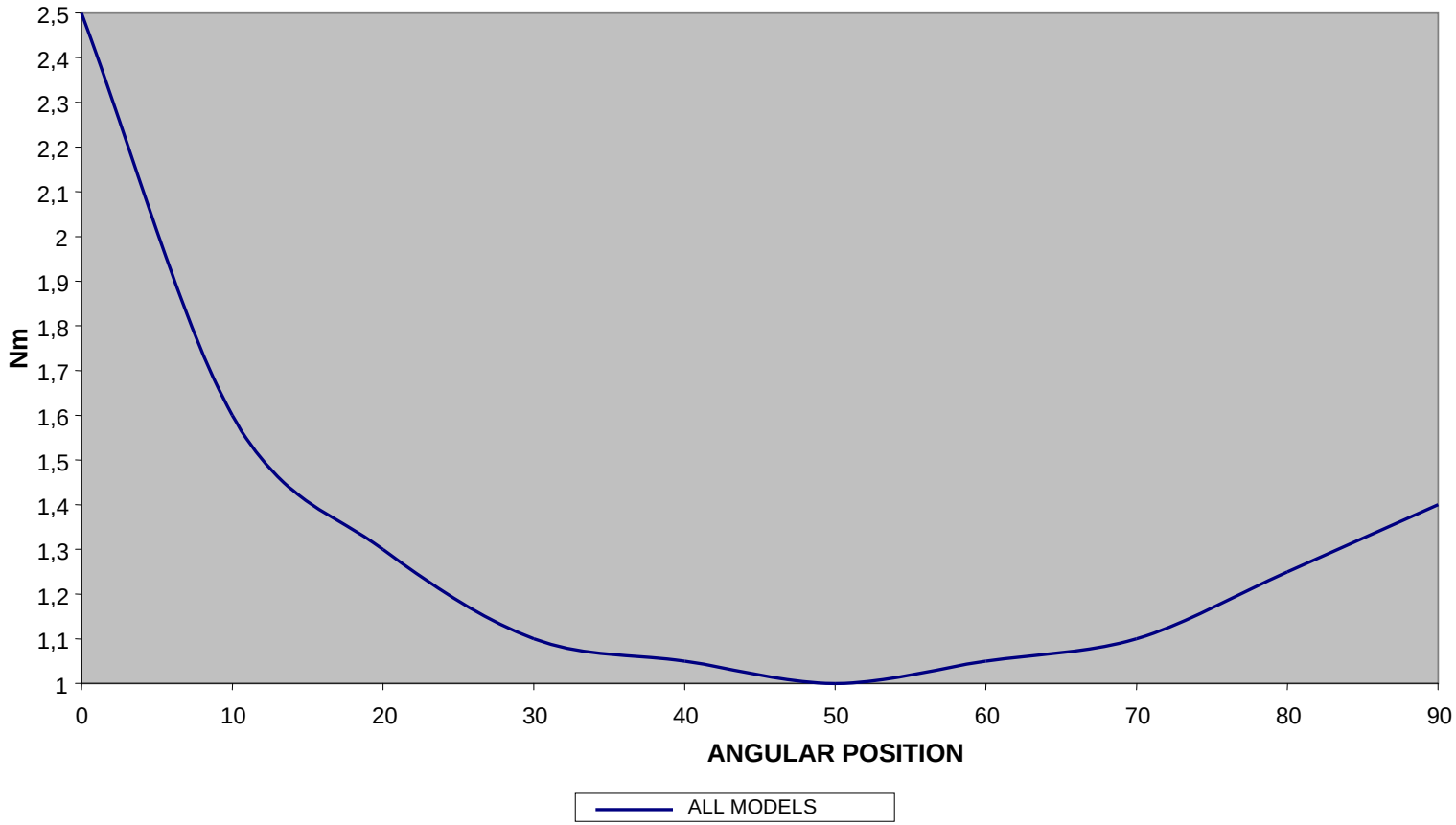
TAB. 1 TORQUE ACTUATORS



E) OUTPUT TORQUE OF CONSTANT TORQUE ACTUATOR
D) ACTUAL ACTUATOR OUTPUT TORQUE (SYMETRIC DESIGN)
C) ACTUAL ACTUATOR OUTPUT TORQUE (CANTED DESIGN)
B) CLOSING TORQUE OF VALVE"
A) OPENING TORQUE OF VALVE"

The torque curve developed by this type of actuator is the most suitable one to operate quater turn valves particulary the ball valves.

TAB. 2 TORQUE ACTUATORS



FEATURES

•Totally enclosed weatherproof housing IP.66 for water ingress protection fabricated carbon steel for maximum strength.

•Hard chromium plated and polished Guide Bar and Piston Rod por corrosion resistance and minimal friction.

•Bushings made of Bronze or sintered bronze to provide minimal fiction and extended service life.

•Electroless nickel plated (ENP) and Polished Cylinder for corrosion resistance and minimal frction.

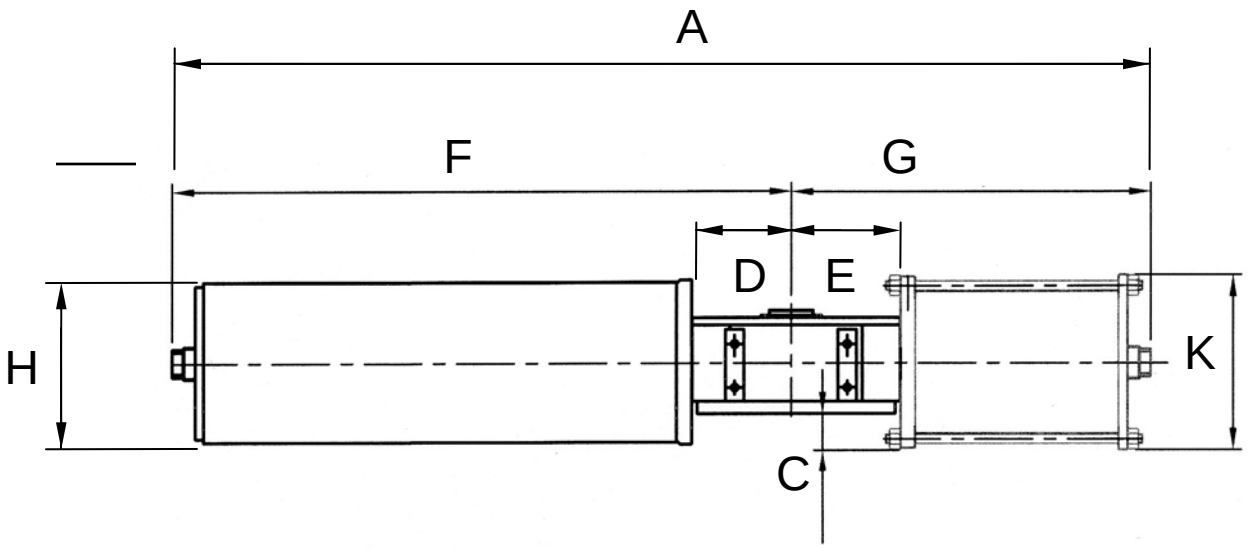
•Floating type Piston Rod and Piston Seals provide low hysteresis and high sensivity preventing sticking problems.

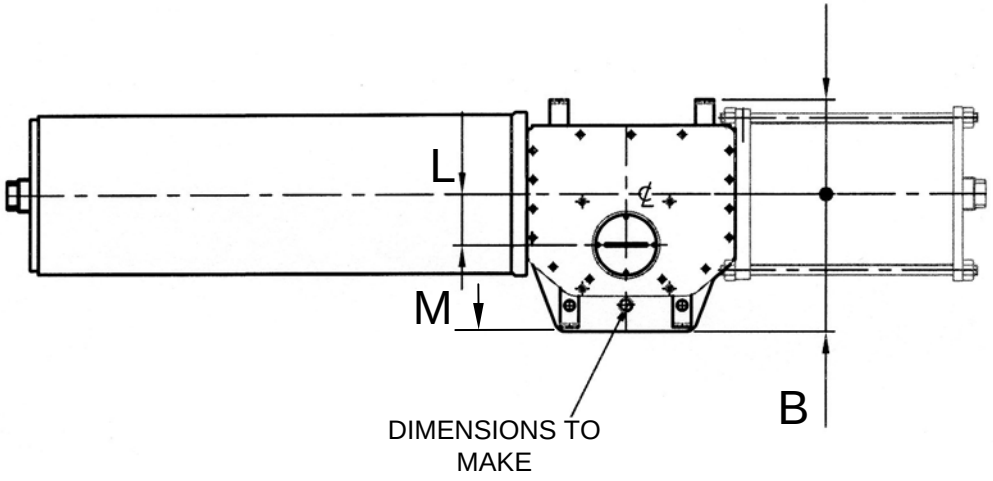
•The Spring Return Pack incorporates up to the springs fully encapsulated.

•Angular stroke adjustment between 82º and 98º.

•Limit switch boxes- explosionproof, limit switches can be provided in different types according to the customer requierements.

DIMENSIONS AN-SE SERIES

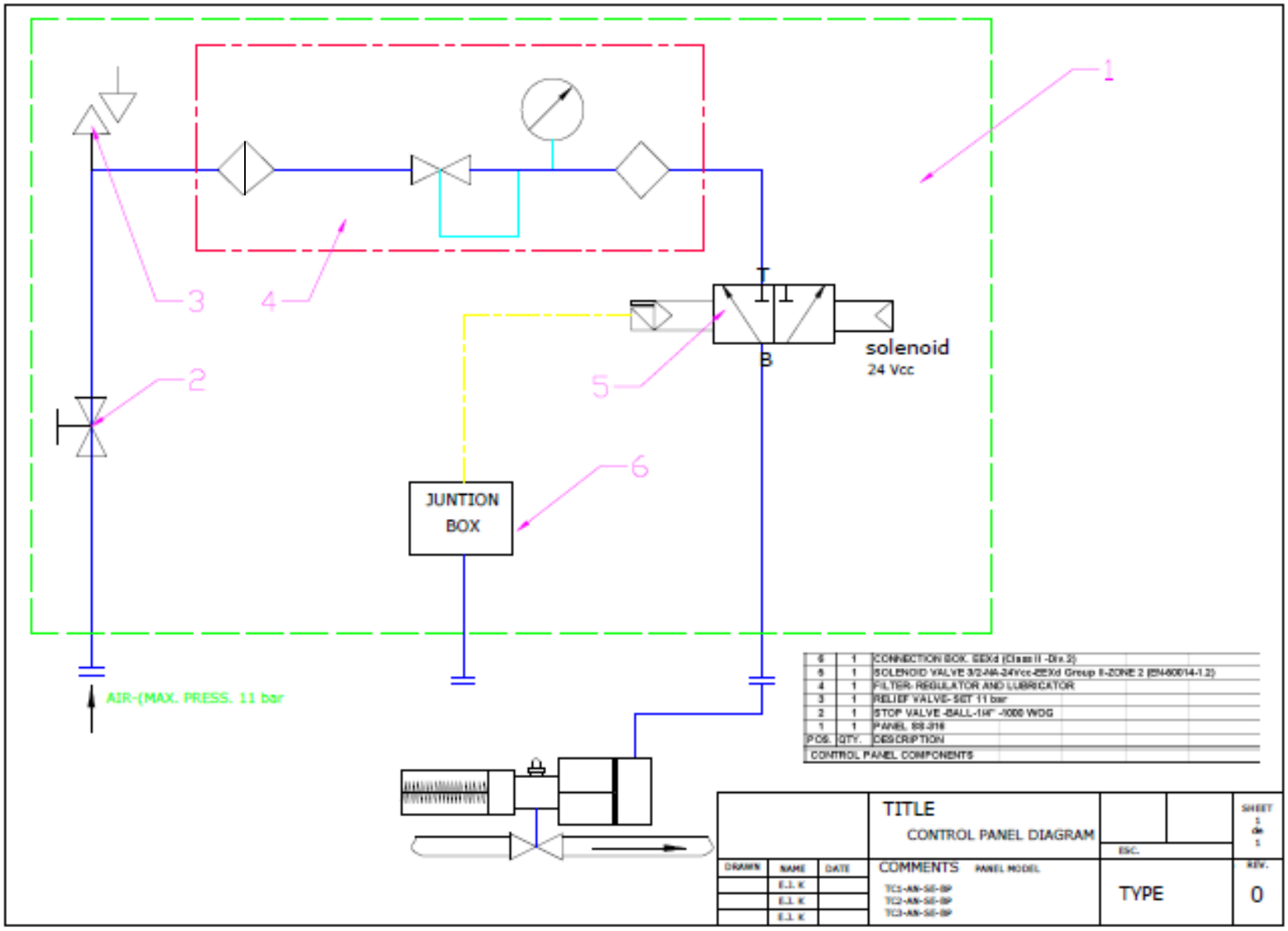




ACTUATOR MODEL	A	B	C	D	E	F	G	H	K	L	M	WEIGHT (KG)
AN-4C-SE-235-52-CL	1430	360	40	155	185	860	570	220	260	90	150	185
AN-4C-SE-385-150-CL	1460	360	135	155	185	880	580	220	450	90	150	310
AN-4C-SE-485-260-CL	1490	360	153	155	185	910	600	220	560	90	150	408

TORQUES (Nm) AT MINIMUM PRESSURE (4.5 bar)

MODEL	AST (0º)	ART (45º)	AET (90º)	SST (90º)	SRT (45º)	SET (0º)	MAX. OPERATING PRESSURE (bar)
AN-4C-SE-235-52-CL	2485	743	851	1672	717	1133	7.5
AN-4C-SE-385-150-CL	6430	1886	2090	4670	2030	3706	6
AN-4C-SE-485-260-CL	8470	3141	4161	6574	3073	5698	5



POS.	QTY.	DESCRIPTION
CONTROL PANEL COMPONENTS		
6	1	CONNECTION BOX. EEXd (Class II -Div.2)
5	1	SOLENOID VALVE 3/2-NA-24Vcc-EEXd Group II-ZONE 2 (EN-60014-1.2)
4	1	FILTER-REGULATOR AND LUBRICATOR
3	1	RELIEF VALVE- SET 11 bar
2	1	STOP VALVE -BALL-1/4" -1000 WOG
1	1	PANEL 800-316

DRAWN	NAME	DATE
	E.I. K	
	E.I. K	
	E.I. K	

TITLE
CONTROL PANEL DIAGRAM

COMMENTS PANEL MODEL
TC1-AN-SE-BP
TC2-AN-SE-BP
TC3-AN-SE-BP

ESC.

TYPE

SHEET 1 de 1

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