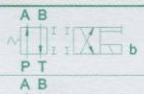
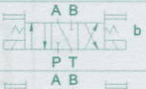
A

MODEL NO SPECIFICATIONS (DSG-01/03 Solenoid Operated Directional Valves)

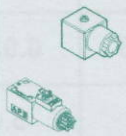
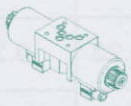
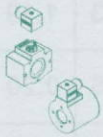
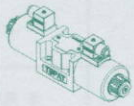
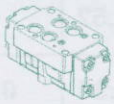
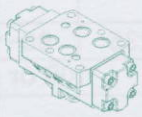
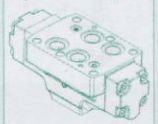
Spool Type & Graphic Symbols		Rated Flow Capacity -Maximum Flow Capacity											
SYMBOLS	MODEL NO	DSG (X) - 01 (1/8")						DSG - 03 (3/8")					
		AC		RAC		DC		AC		RAC		DC	
		A1	A2	R1	R2	D1	D2	A1	A2	R1	R2	D1	D2
	DSG-2B2-**												
	DSG-2B3-**												
	DSG-2B8-**												
	DSG-2D2-**												
	DSG-2D3-**												
	DSG-3C2-**												
	DSG-3C3-**	30~63 lpm (10.3~16.6USgpm)						70~120 lpm (18.5~31.7USgpm)					
	DSG-3C4-**												
	DSG-3C40-**												
	DSG-3C7-**												
	DSG-3C9-**												
	DSG-3C10-**												
	DSG-3C11-**												
	DSG-3C12-**												
	DSG-3C5-**	30~45 lpm (7.9~11.9USgpm)						70~100 lpm (18.5~26.4USgpm)					
	DSG-3C6-**												
	DSG-3C60-**												
Max. Operating Pressure (P.A.B) (bar)		315 (4500 PSI)											
Max. Operating Pressure 3C5/3C6 Types (bar)		250 (3600 PSI)											
Permissible Back Pressure (T) (bar)		160 (2300 PSI)											
Weight (Kgs)	Double Solenoid	1.9		2.0				4.0		4.8			
	Single Solenoid	1.5		1.6				3.3		3.8			
Switching Frequency (times/min)		280		120		280		240		120		240	
Hydraulic Fluids		Use Hydraulic Fluids Equivalent to ISO VG32 or VG46											
Operating Temperature Range Recommended (°C)		-15 ~ +70 (+5 ~ +160°F)											
Operating Viscosity (cSt)		15 ~ 400 (80 ~ 1800SSU)											
Filtration		25 Microns Absolute or Finer											

DSGX series mini. type solenoid valves.
Max. pressure (P.A.B) : 200bar (2900PSI)., 3C5/3C6 spool types : 160bar (2300PSI).
Permissible Back Pressure (T) : 100bar (1430PSI)
Weight : Double Solenoid : 1.6kgs.,Single Solenoid : 1.1kgs

A

■ Ordering Code

DSG	-	3C2	-	N	-	01	-	D2	-	30	-	RW	-	*P*D

Series No	Spool Type	Type of Ele. Conduit	Valve Size	Coil Voltage	Design No	Special Kits	Pilot and Drain
DSGX 	3C94(-01) 	N: DIN Type 	(DSG-) 01 (NFPA-D03) 	(N-01-) AC/DC 	30 DIN 912 bolts 	RW(RA/RB) Sroke Limiter 01/03  04/06	*P Pilot Plug (1/16,1/8,1/4) 
DSG(-N-01) 	3C60(-03) 	None:Box Type 	(DSG-) 03 (NFPA-D05) 	(N-03-) AC/DC 	3090 UNC bolts (North America) 	V: Viton Seal 	*D Drain Plug (1/16,1/8,1/4) 
DSG(-N-03) 	3C5(-04) 	Y:Lead-Wire 	(DSHG-) 04 (NFPA-D07) 	(01-) AC/DC 		Orifice Plug 0.8/0.1/1.2 mm 	
DSHG(-0*) 	3C3(-06) 		(DSHG-) 06 (NFPA-D08) 	(03-) AC/DC 	C: Check Valve P Port (5 bar)  Fig-1	C: Check Valve P Port (5 bar)  Fig-1	
DHG(-0*) 	3C60(-10) 		DSHG-10 (NFPA-D10) 	(Y-01/03-) DC 		RAC Type Shockless Rectifer built-in 	

COIL TYPE POWER SOURCE VOLTAGE

AC	A1: AC100V(50/60Hz) AC110V(60Hz)	DC	D1:DC12V D2:DC24V D3:DC36V
	A2: AC200V(50/60Hz) AC220V(60Hz)		D4:DC48V D5:DC60V D6:DC72V
	A3: AC110V(50Hz)		D14.5:DC14.5V D28:DC28V
	A4: AC220V(50Hz)	RECTIFIED	R1:RAC100 R2:RAC200
	A5: AC240V(50Hz)		R3:RAC110 R4:RAC220

For voltages other than specificed, consult HYKING for details.

VALVE SIZE
01-(1/8") 03-(3/8") 04-(1/2") 06-(3/4") 10-(1-1/4")

ELECTRICAL CONDUIT CONNECTION
N: DIN connector with light, DIN 43650.ISO6952.
Y: SWP connector.
None: Terminal box type with indicator lamp.

SPOOL TYPES

SERIES NUMBER
DSG: Solenoid operated directional valves, subplate mounting.
DSGX: Solenoid operated directional valves, mini type.
DSGH: Solenoid controlled pilot operated directional valves.
DHG: Hydraulic Operated Directional Valves.

PILOT/DRAIN CONNECTION (DSHG ONLY)
1P1D: Internal pilot,internal drain
1P2D: Internal pilot,external drain
2P1D: External pilot,internal drain
2P2D: External pilot,external drain

MODEL WITH SPECIAL KITS (OPTION - Omit If Not Required)

C:	Check Valve P Port (5 bar)	V:	Viton seals
S:	Shockless type	RB:	Stroke limiter "B" stroke
RA:	Stroke limiter "A" stroke	SK:	Surgeless (Surge Killer)
RW:	Stroke limiter "A+B" stroke	WP:	Water proof type.
PK:	Sparkless (Spark Killer) type.	VP:	Vibration proof type.

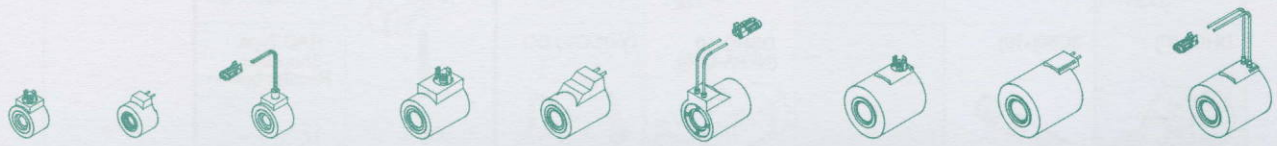
DESIGN NO
30: with DIN 912 bolts
3090: with UNC (North American) bolts

Design number is changed from 20 to 30 (2090 to 3090).
N (DIN Types), all parts are interchangeable with 20(2090)
Terminal box type equipped with new conduit box design, reference page 35 for details.

A

SOLENOID SPECIFICATIONS

AC/DC CURRENT		AC				DC			
						RECTIFIED INSIDE			
VOLTAGE (V)		AC110V		AC220V		R110V	R220V	DC12	DC24
FREQUENCY (Hz)		50	60	50	60	50/60	50/60		
DSGX (01) 1/8"	Starting current (A)	0.56	0.50	0.27	0.25	-	-	-	-
	Holding current (A)	0.12	0.12	0.56	0.52	0.068	0.038	0.44	0.22
	Holding electrical power (W)	-	-	-	-	5.0	5.0	5.0	5.0
DSG (01) 1/8"	Starting current (A)	2.38	2.33	1.19	1.17	-	-	-	-
	Holding current (A)	0.40	0.45	0.20	0.23	0.30	0.15	2.2	1.1
	Holding electrical power (W)	-	-	-	-	26	26	26	26
DSG (03) 3/8"	Starting current (A)	5.37	5.03	2.69	2.52	-	-	-	-
	Holding current (A)	0.70	0.75	0.30	0.35	0.48	0.24	3.16	1.57
	Holding electrical power (W)	-	-	-	-	38	38	38	38
Permissible voltage		95~120		200~235		95~120	200~235	11.0~13.2	22~26.4
Insulation resistance (M Ω)		100 or above (500V)							



VALVES RESPONSE CAPACITY

Unit : Times/Second

Model	Working Direction	Spring Centered Type (3C*)	No Spring Type (2D*)	Spring Offset Type (2B*)
DSGX-01 AC	Energization	0.01~0.02	0.01~0.02	0.01~0.02
	Spring back	0.015~0.05	----------	0.015~0.05
DSGX-01 DC/RAC	Energization	0.02~0.05	0.02~0.05	0.02~0.05
	Spring back	0.015~0.05	----------	0.015~0.05
DSG-01-AC	Energization	0.01~0.02	0.01~0.02	0.01~0.02
	Spring back	0.015~0.05	----------	0.015~0.05
DSG-01-DC/RAC	Energization	0.02~0.05	0.02~0.05	0.02~0.05
	Spring back	0.015~0.05	----------	0.015~0.05
DSG-03-AC	Energization	0.005~0.025	0.010~0.020	0.01~0.02
	Spring back	0.005~0.030	----------	0.010~0.030
DSG-03-DC/RAC	Energization	0.030~0.090	0.030~0.090	0.030~0.050
	Spring back	0.020~0.050	----------	0.020~0.040

1) Above response time test condition base on follow terms.
DSG-01 based on 140 bar (2000 psi) , 30 lpm (7.9 USgpm)
DSG-03 based on 140 bar (2000 psi) , 45 lpm (11.9 USgpm)
2) Changeover response time changes a little by the test condition (pressure,flow, viscosity.....etc.).

A

DESCRIPTIONS & INSTRUCTIONS

☐ HIGH FLOW

The high flow rate 63 *ℓ/min* (16.6 gpm) of the DSG-(N)-01 valves corresponds to conventional 03 valves.
DSG-(N)-03 is capable of controlling oil flow up to 120 *ℓ/min.* (31.7 gpm)
DSHG-(N)-04 are capable of controlling oil flow up to 300 *ℓ/min.* (79.3 gpm)
DSHG-(N)-06 are capable of controlling oil flow up to 500 *ℓ/min.* (132 gpm)
And DSHG-(N)-10 are capable of controlling oil flow up to 1000 *ℓ/min.* (291 gpm)
[Flow rate is a little different between different spool type.]

☐ HIGH PRESSURE

The DSG-(N)-01/03 solenoid valves, DSHG-(N)-04/06/10 Max operating pressure up to 315 bar(4500 PSI).

☐ LONG SERVICE LIFE

Durable Life: Durability to 50 million spool shifts.(Average)
Life Of Sealing : No oil leaks due to use of no-dynamic seals.

☐ POWERFUL QUIET WET ARMATURE SOLENOID.

Totally enclosed molded coil. Specially treated pressure resistant inner tube(SUS304). High grade steel cored(C2503) coil with wet solenoid. All moving parts are immersed in operating oil and muffled to provide low noise operation.

☐ NO OIL LEAKAGE

Special design of over-ride pins and seals prevent oil leakage.

☐ LOW PRESSURE DROP

See technical data of pressure drop for details. (P-25)

☐ HIGH BACKPRESSURE ALLOWED IN TANK (DRAIN) LINE.

The DSG-(N)-01/03 can be used with back pressure up to 160 bars(2300 PSI) on the tank port "T".
DSHG-(N)-04/06/10 permissible backpressure, internal drain 160 bars(2300 PSI),
and 210 bar (3000 PSI) for external drain type. Pipe the return back to tank below the oil level.

☐ INDICATOR LIGHTS (LEDS)

Solenoid indicator lights are standard, all DSG-01/03 (terminal box type), DSG-N-01/03 (DIN type) with all voltages, ensuring easy testing and maintenance at a glance.
DIN connector meet CE, IP 65, DIN 40050, ISO 6952 water proof standard.
(AC: Red led., DC: Yellow led. RAC: Green led.)

☐ COIL

Insulation high voltage test : 1500 V/min. (1800 V/sec.)
Double insulation wiring, hermetically sealed for moisture-resistance. Insulation class : H
Maximum allowable coil temperature: +150C (+300F)
Do not exceed permissible voltage range of the coil used.
Do not supply electric power to the AC solenoid unless the coil is mounted to the valve.
DIN type coil with 360 possible orientation.
No-spring type (DSHG-2N*-04/06/10) one of the coil should be energized continuously to avoid malfunction.
On double solenoid valves, do not energize both at the same time as it will result in coils burning out.

☐ HI-TENSILE CAST IRON (FC 30)

Bodies are of high tensile cast iron with large shell cored passages. Spool bores are precision honed with accurately machined land locations.

☐ SPOOLS

Spools are hardened alloy steel(SCM21), precision ground and incorporate balancing grooves. All spools are interchangeable with valve body simplifying maintenance. Many options in spool type selection.

☐ 3 STANDARD ELECTRICAL CONNECTIONS TYPE, VARIOUS COIL VOLTAGES.

There are 3 types (DIN, Terminal Box, SWP) for standard electrical connection and variety of AC,DC & RAC coil voltages. Coil voltages. AC:AC100V/AC110V/AC200V/AC220V/AC240V (50/60HZ) DC:DC12/24/36/48
RAC:RAC100V/AC110V/AC200V/AC220V/AC240V

☐ HYDRAULIC SHOCKLESS TYPE (S)- LOW NOISE TYPE

The DC/RAC type solenoid valves with a cushion device, results in a smooth com- mutation from a position to another position (smooth start and stop performance). This will greatly reduce the noise which comes from changing over and vibrating pipes. The optional stroke limiter (RW/RA/RB) can be 1/4.,1/3.,1/2 micro adjustments search for the best soft smooth cushion. When the stroke limiter is screwed in, the main spool stroke becomes shorter and flow rate becomes lower.The max adjustment range details as follow.

DSGX-(N)-01-DC/RAC: max. 1.4 mm
DSG-(N)-01-DC/RAC: max. 1.4 mm
DSG-(N)-03-DC/RAC: max. 2.2 mm
DSHG-(N)-04-AC/DC/RAC: max. 7 mm
DSHG-(N)-06-AC/DC/RAC: max. 12 mm

☐ SPECIAL TYPE, (VOLTAGES) ARE AVAILABLE.

(A) Shockless + shifting time adjustable. (B) Stroke limiter adjustable.(RA/RB/RW types)
(C) Lead wire type (SWP connector terminals) for marine, mobile parts.
(D) Explosion proof (flame proof) type. (E) Surgeless (Surge Killer) type.
(F) Sparkless (Spark Killer) type. (G) Water proof type. (H) Vibration proof type.
(I) AC24., DC 14.50., DC28., DC36., DC 48., DC110 ..... (J) Viton seals were available.
Consult local agent for details.

☐ ASSEMBLY INSTALLATION

The no-spring valves (DSHG-2N-04/06/10 TYPE) shall mounted with longitudinal axis horizontal as they work under impulse. Spring centered (3C*) ,spring offset (2B*) and detented (2D*) valves have no orientation limitation. The DSG-(N)-01/03 & DSHG-(N)-04/06/10 mounting surface dimensions conform to ISO 4401, Hydraulic fluid power-Four-port directional control valves-Mounting surface. The installation surface should be finer than 6.3 S.

☐ SUBPLATE & MANIFOLDS

Comprehensive range of sub-plates, multi-station manifolds and stackable modules.

☐ MOUNTING BOLTS + ACCESSORIES.

Hexagonal socket head cap screw (Metric or American fixing bolts), and DIN connector + led as standard with no extra cost.

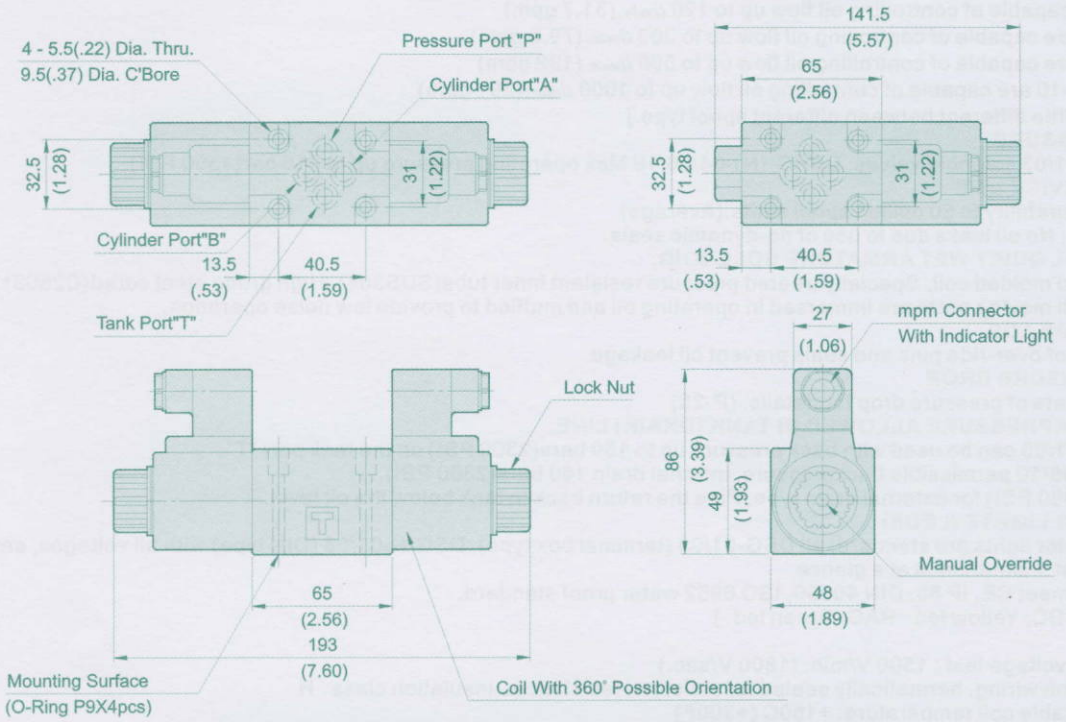
DIMENSIONS

MILLIMETERS(INCHES)

A

DSG-N-01-AC

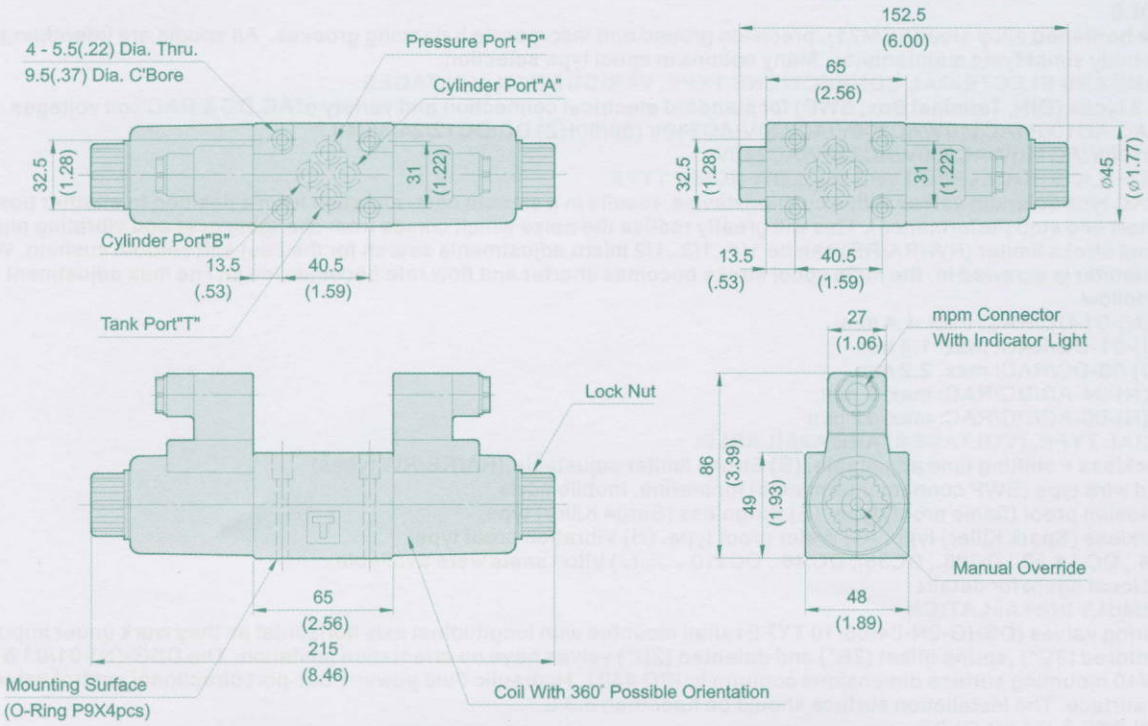
MOUNTING SURFACE:DSG-01-CETOP3
ISO 03-NFPAD03



Attachment Name	Description	Tightening Torque	Code
Soc. Hd. Cap Screw	M5 X45LgX4pcs	5-7 Nm	30
Soc. Hd. Cap Screw	10-24UNCX1-3/4"LgX4pcs	43-60 in.lbs	3090

DSG-N-01-DC/RAC

MOUNTING SURFACE:DSG-01-CETOP3
ISO 03-NFPAD03



Attachment Name	Description	Tightening Torque	Code
Soc. Hd. Cap Screw	M5 X45LgX4pcs	5-7 Nm	30
Soc. Hd. Cap Screw	10-24UNCX1-3/4"LgX4pcs	43-60 in.lbs	3090

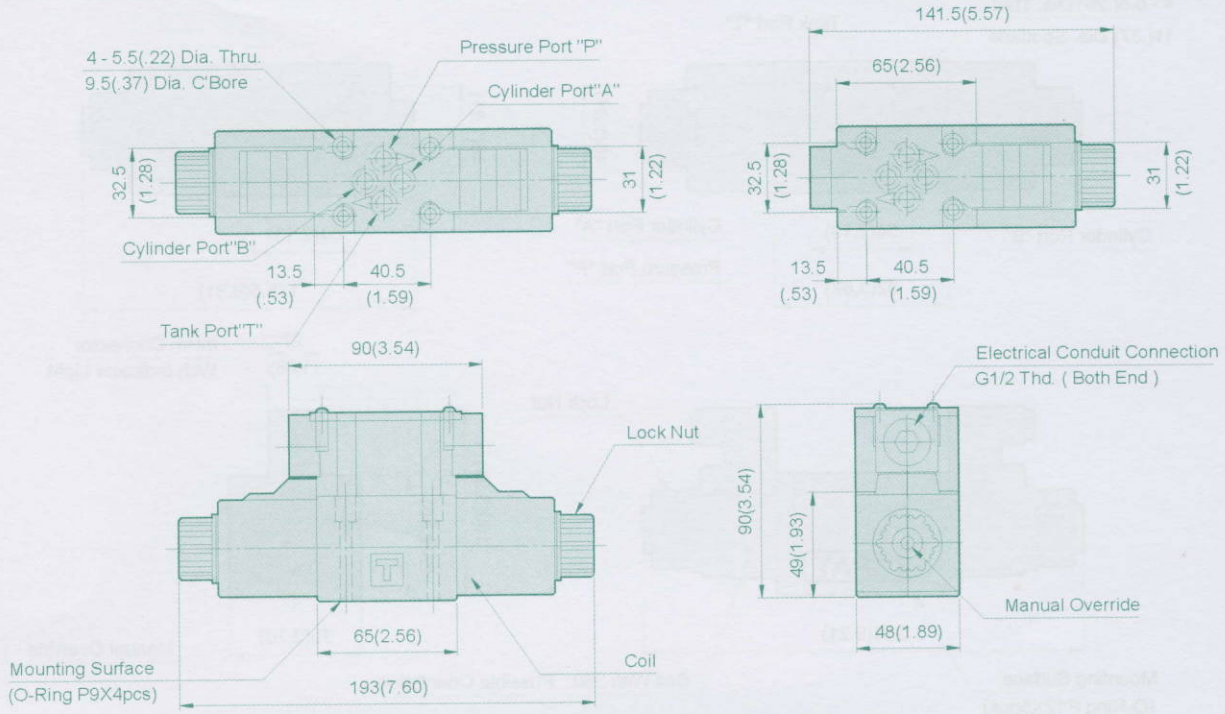
DIMENSIONS

MILLIMETERS(INCHES)

A

DSG-01-AC

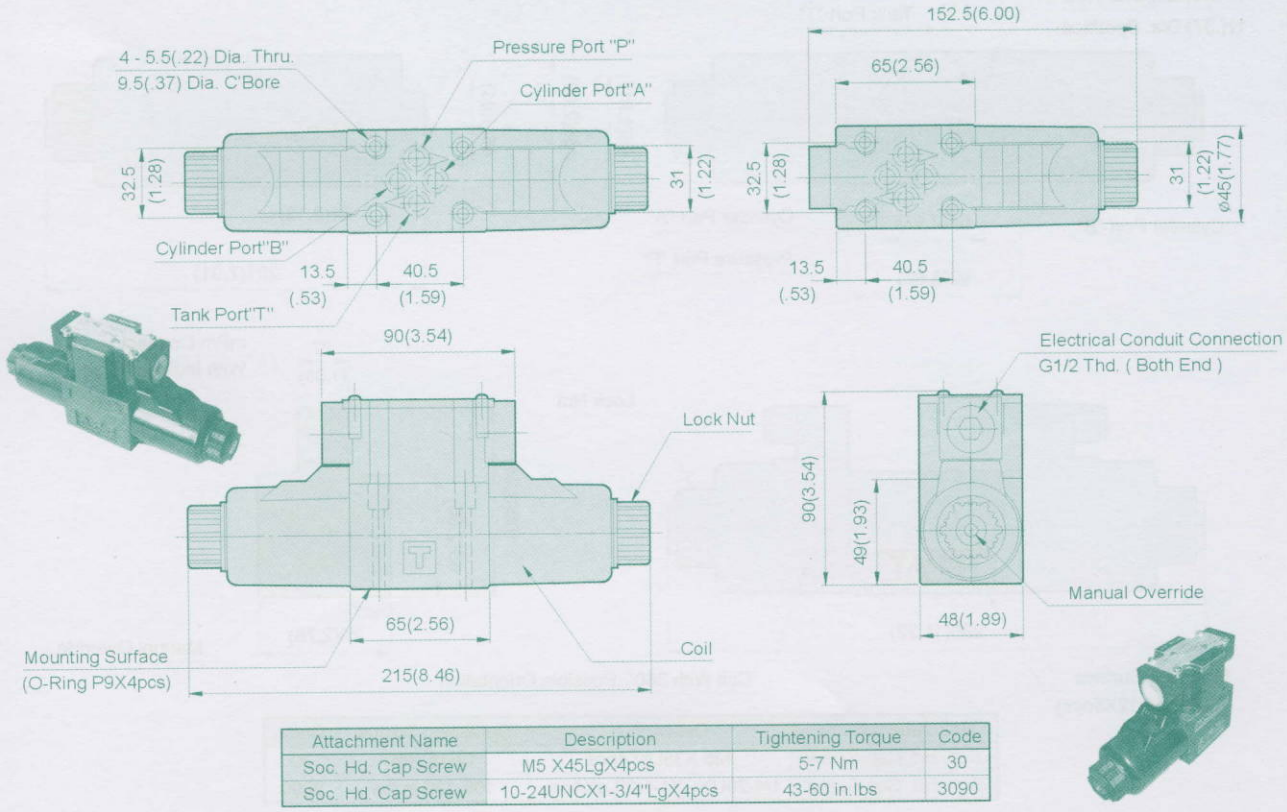
MOUNTING SURFACE:DSG-01-CETOP3
ISO 03-NFPAD03



Attachment Name	Description	Tightening Torque	Code
Soc. Hd. Cap Screw	M5 X45LgX4pcs	5-7 Nm	30
Soc. Hd. Cap Screw	10-24UNCX1-3/4"LgX4pcs	43-60 in.lbs	3090

DSG-01-DC/RAC

MOUNTING SURFACE:DSG-01-CETOP3
ISO 03-NFPAD03



Attachment Name	Description	Tightening Torque	Code
Soc. Hd. Cap Screw	M5 X45LgX4pcs	5-7 Nm	30
Soc. Hd. Cap Screw	10-24UNCX1-3/4"LgX4pcs	43-60 in.lbs	3090

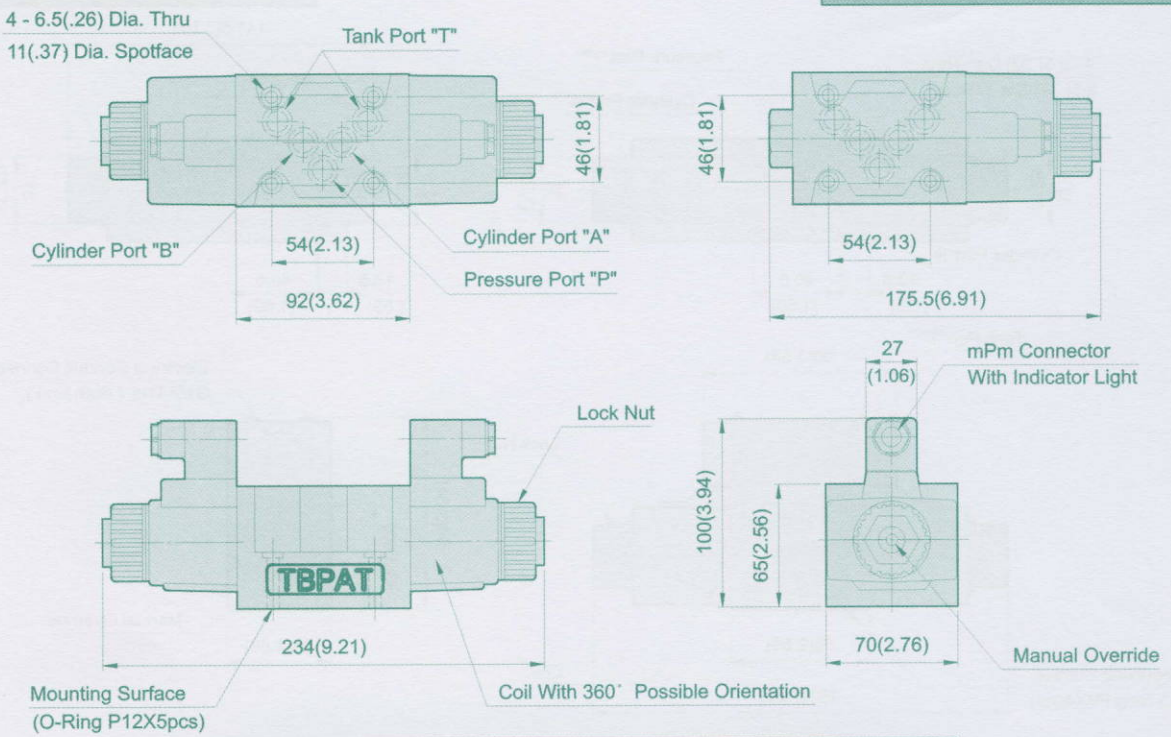
DIMENSIONS

MILLIMETERS(INCHES)

A

DSG-N-03-AC

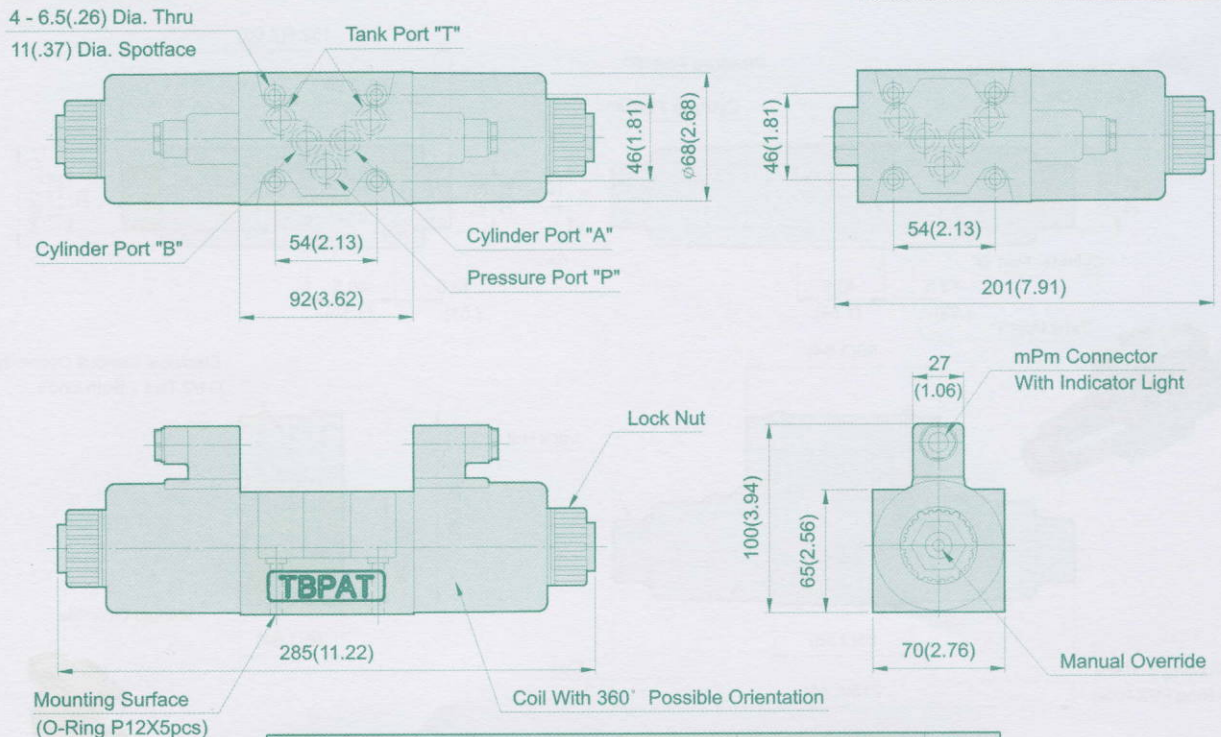
MOUNTING SURFACE:DSG-03-CETOP5
ISO 05-NFPAD05



Attachment Name	Description	Tightening Torque	Code
Soc. Hd. Cap Screw	M6 X35LgX4pcs	12-15 Nm	30
Soc. Hd. Cap Screw	1/4-20UNCX1-1/2"LgX4pcs	105-130 in.lbs	3090

DSG-N-03-DC/RAC

MOUNTING SURFACE:DSG-03-CETOP5
ISO 05-NFPAD05



Attachment Name	Description	Tightening Torque	Code
Soc. Hd. Cap Screw	M6 X35LgX4pcs	12-15 Nm	30
Soc. Hd. Cap Screw	1/4-20UNCX1-1/2"LgX4pcs	105-130 in.lbs	3090

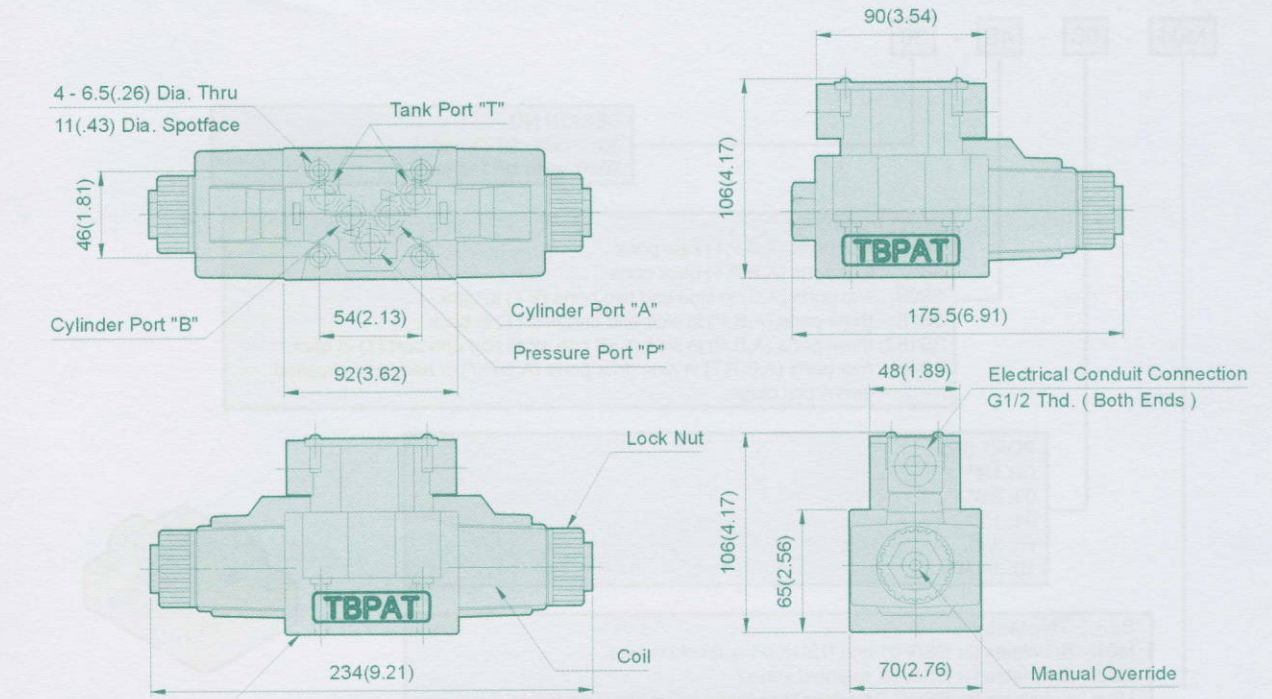
DIMENSIONS

MILLIMETERS(INCHES)

A

DSG-03-AC

MOUNTING SURFACE:DSG-03-CETOP5
ISO 05-NFPAD05



Attachment Name	Description	Tightening Torque	Code
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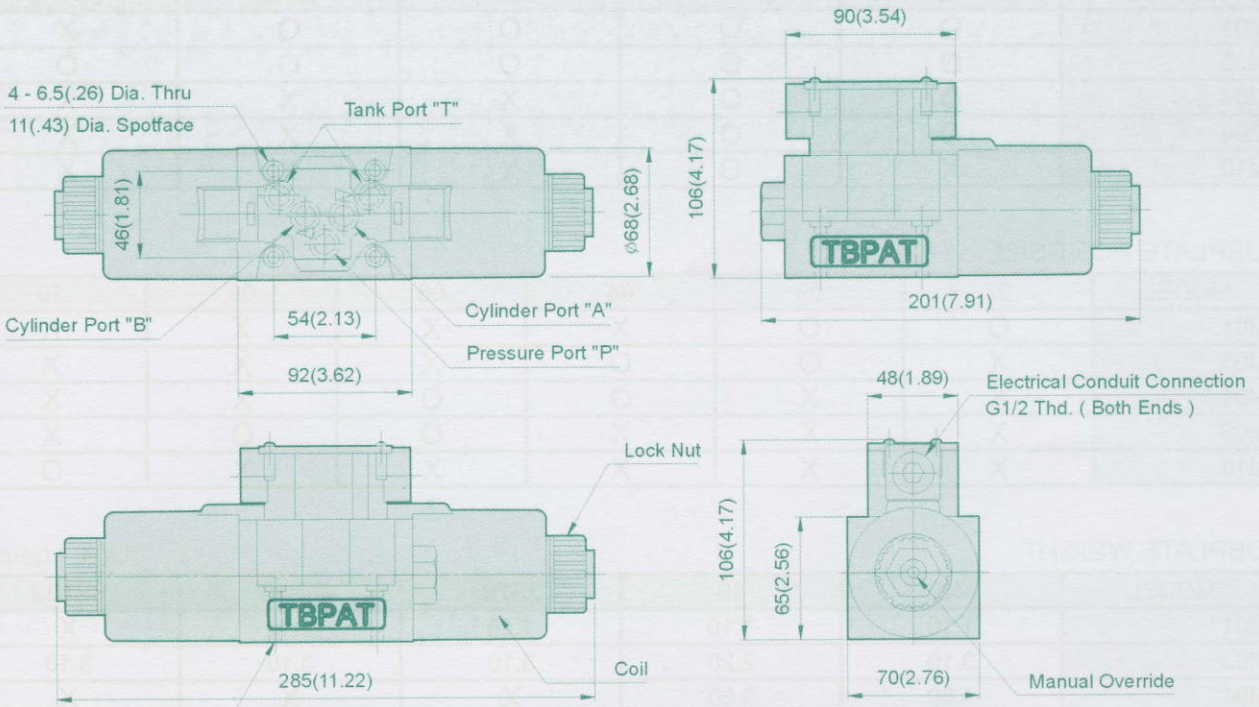
DSG-03-DC/RAC

MOUNTING SURFACE:DSG-03-CETOP5
ISO 05-NFPAD05



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Soc. Hd. Cap Screw	1/4-20UNCX1-1/2"LgX4pcs	105-130 in.lbs	3090

A

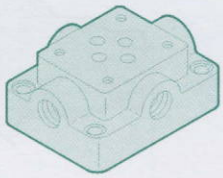
ORDERING CODE

M01 - 03 - 4B - 30

DESIGN NO
30: with PT thread
3090: with NPT thread

PORT POSITION
4S: four ports (A,B,P,T) side ports
4B: four ports (A,B,P,T) back ports
2S2B: two ports (A,B) in side and two ports (P,T) in back
3S1B: three ports (A,B,P) in side and one port (T) in back
3S1B2: three ports (A,B,P) in side (A+B one side) and one port (T) in back
4S4B: four ports (A,B,P,T) in side ,four ports (A,B,P,T) in back and supplied with 4 pcs plugs.

PORT SIZE
02: 1/4"
03: 3/8"
04: 1/2"
06: 3/4"
10: 1-1/4"



SERIES NUMBER
M01: Subplates for DSG-01 and DSGX-01 solenoid valves
M03: Subplates for DSG-03 solenoid valves
M04: Subplates for DSHG-04 solenoid controlled pilot operated valves
M06: Subplates for DSHG-06 solenoid controlled pilot operated valves
M10: Subplates for DSHG-06 solenoid controlled pilot operated valves

The installation surfacs should be finer than 6.3S

SUBPLATE PORT POSITION

MODEL	4S	4B	2S2B	3S1B	3S1B2
M01	O	O	O	O	X
M03	O	O	O	O	O
M04	O	O	X	X	X
M06	O	O	X	X	X
M10	X	O	X	X	X

SUBPLATE PORT SIZE

MODEL	02	03	04	06	08	10
M01	O	O	X	X	X	X
M03	X	O	O	X	X	X
M04	X	X	O	O	X	X
M06	X	X	X	O	O	X
M10	X	X	X	X	X	O

SUBPLATE WEIGHT

Unit: kgs/pc

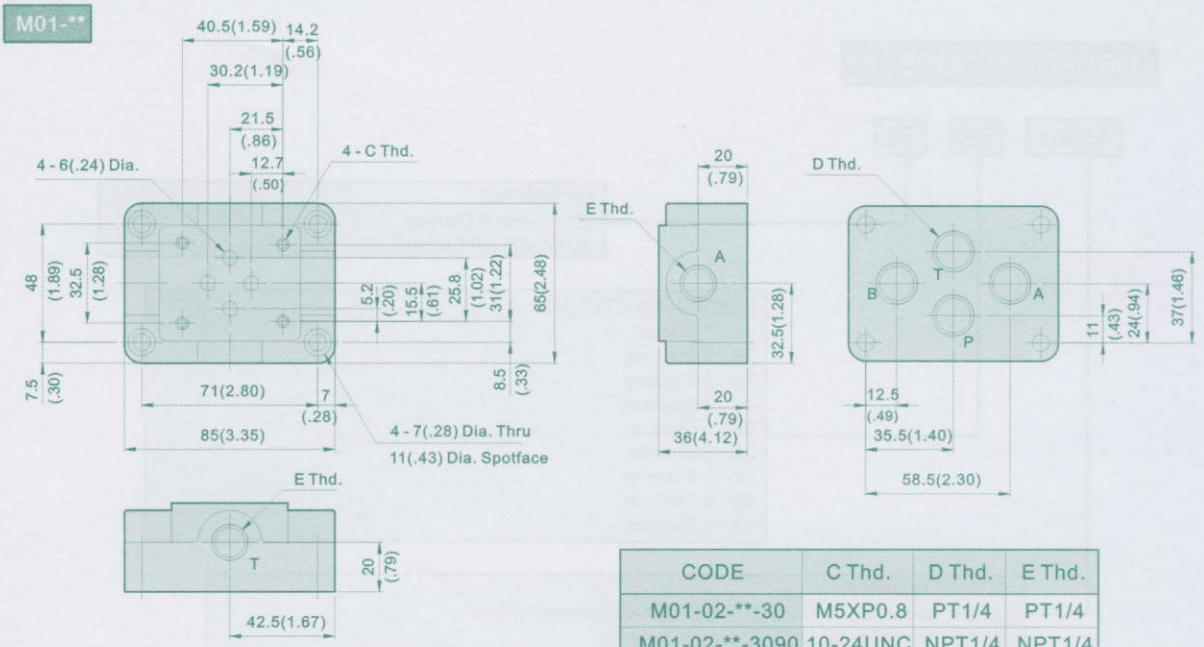
MODEL	4S	4B	2S2B	3S1B	3S1B2
M01	1.10	1.10	1.10	1.10	X
M03	3.10	2.20	3.10	3.10	3.10
M04	4.80	3.00	X	X	X
M06	9.50	4.60	X	X	X
M10	X	17.00	X	X	X

SUBPLATE

DIMENSIONS:MILLIMETERS(INCHES)

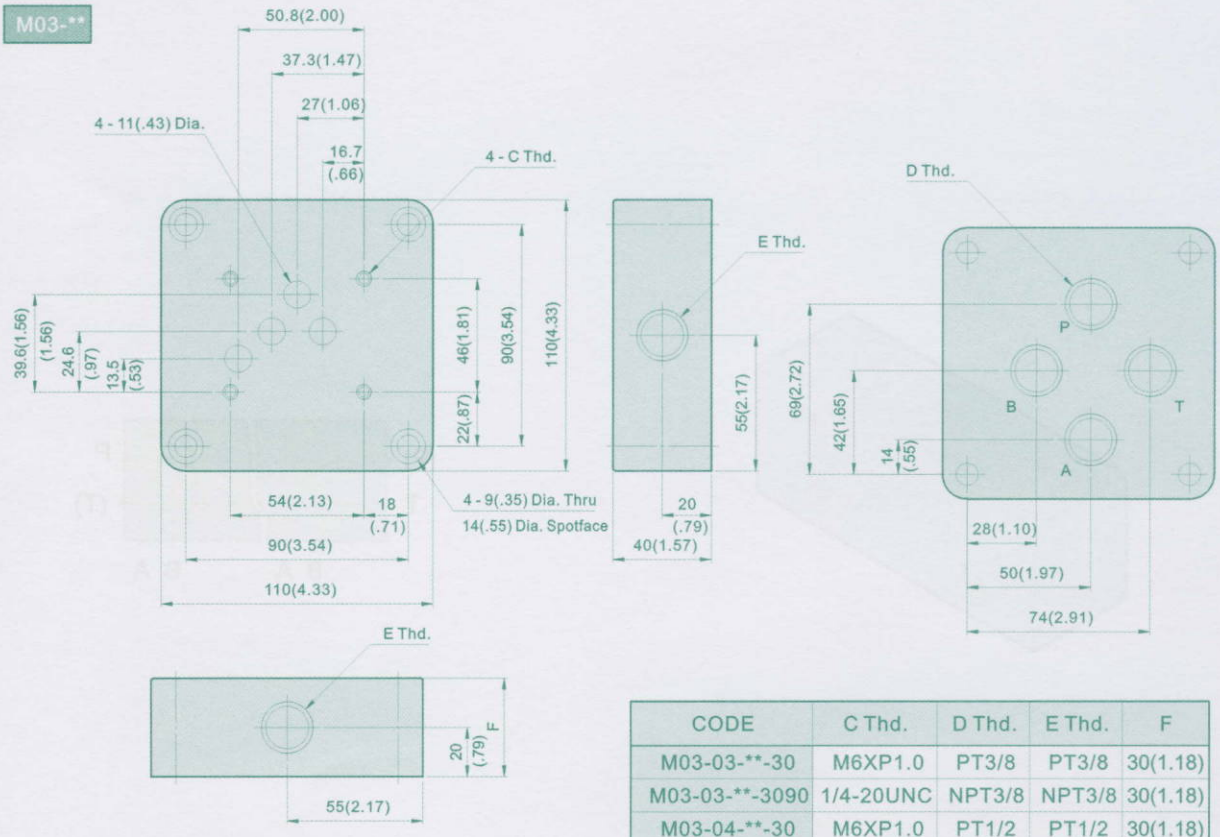
A

M01-**



CODE	C Thd.	D Thd.	E Thd.
M01-02-**-30	M5XP0.8	PT1/4	PT1/4
M01-02-**-3090	10-24UNC	NPT1/4	NPT1/4
M01-03-**-30	M5XP0.8	PT3/8	PT3/8
M01-03-**-3090	10-24UNC	NPT3/8	NPT3/8

M03-**



CODE	C Thd.	D Thd.	E Thd.	F
M03-03-**-30	M6XP1.0	PT3/8	PT3/8	30(1.18)
M03-03-**-3090	1/4-20UNC	NPT3/8	NPT3/8	30(1.18)
M03-04-**-30	M6XP1.0	PT1/2	PT1/2	30(1.18)
M03-04-**-3090	1/4-20UNC	NPT1/2	NPT1/2	30(1.18)

" F " is for port position " 4B " type only.

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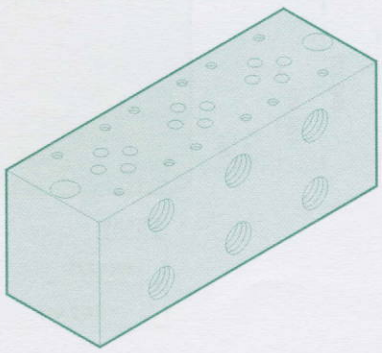
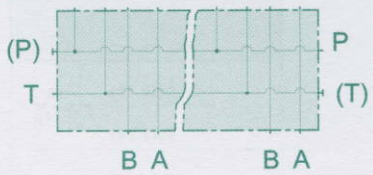
ORDERING CODE

MM01 - 5S - 30

- 30 — DESIGN NO
  - 30: with PT thread
  - 3090: with NPT thread
- 5S — NUMBER OF STATIONS
  - 1S : 1 Station
  - 2S : 2 Stations
  - 3S : 3 Stations
  - 4S : 4 Stations
  - 5S : 5 Stations
  - 6S : 6 Stations
  - 7S : 7 Stations
  - 8S : 8 Stations
  - 9S : 9 Stations
- MM01 — SERIES NUMBER
  - MM01: Manifolds for DSG-01 and DSGX-01 solenoid valves
  - MM03: Manifolds for DSG-03 solenoid valves

1. The installation surface should be finer than $\frac{6.3S}{\sim\sim\sim}$
2. Material:Casting iron FC 30 (or steel or aluminium)
3. Max Working Pressure: 315 bar



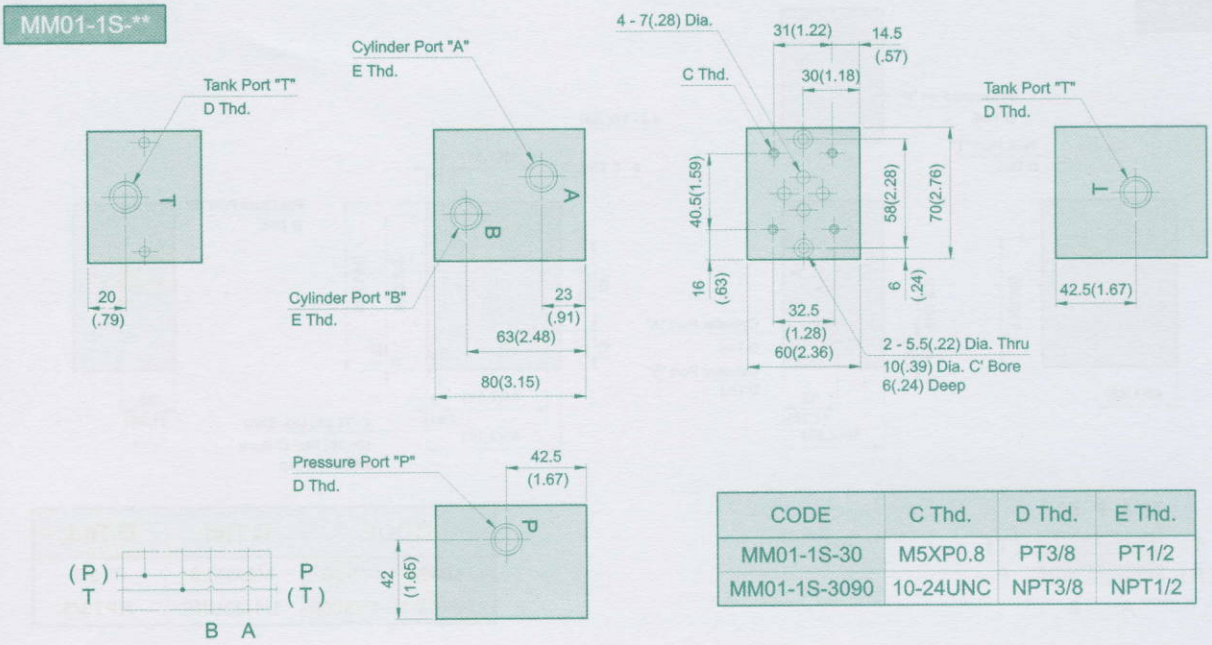


MANIFOLDS

DIMENSIONS:MILLIMETERS(INCHES)

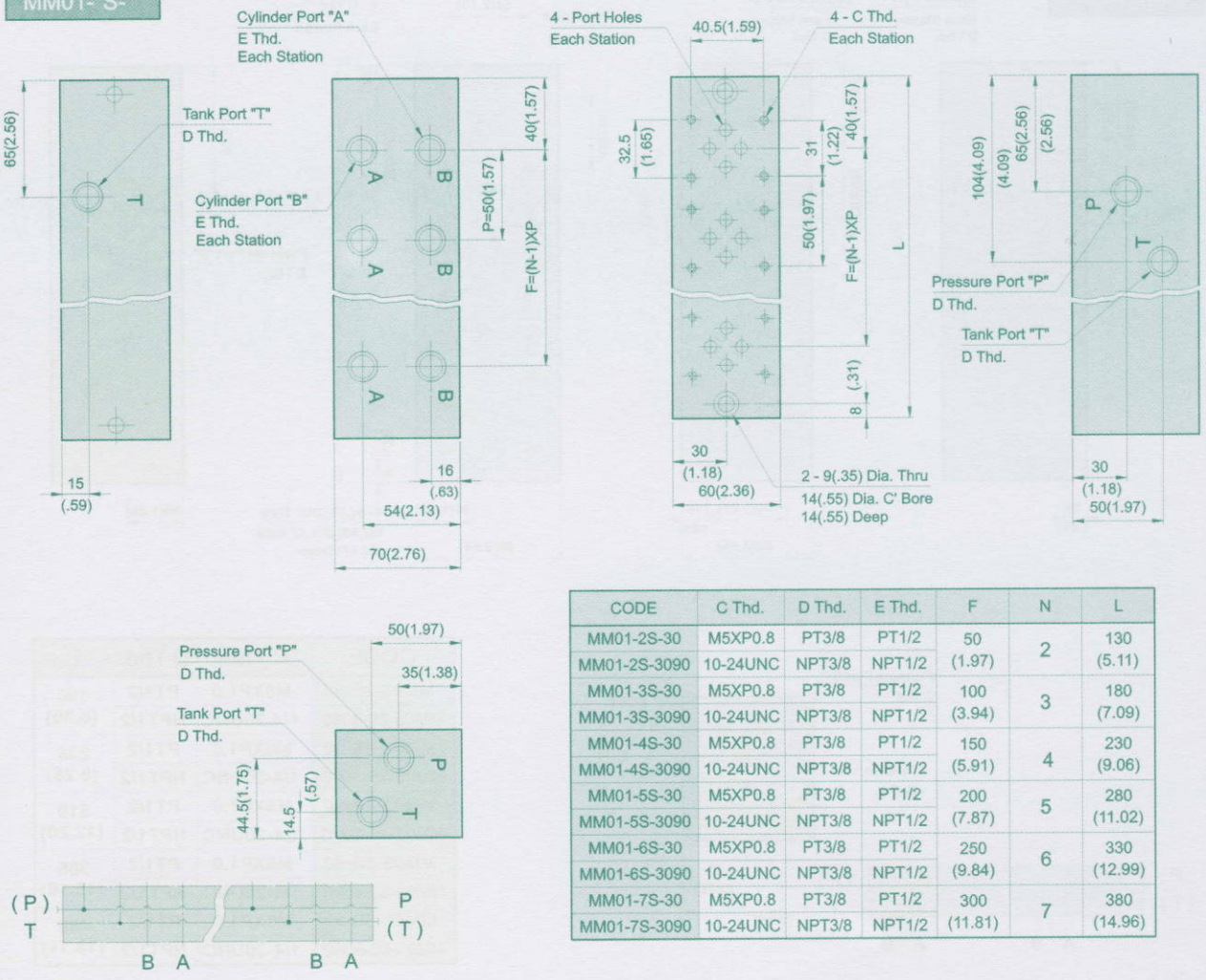
A

MM01-1S-**



CODE	C Thd.	D Thd.	E Thd.
MM01-1S-30	M5XP0.8	PT3/8	PT1/2
MM01-1S-3090	10-24UNC	NPT3/8	NPT1/2

MM01-*S-**



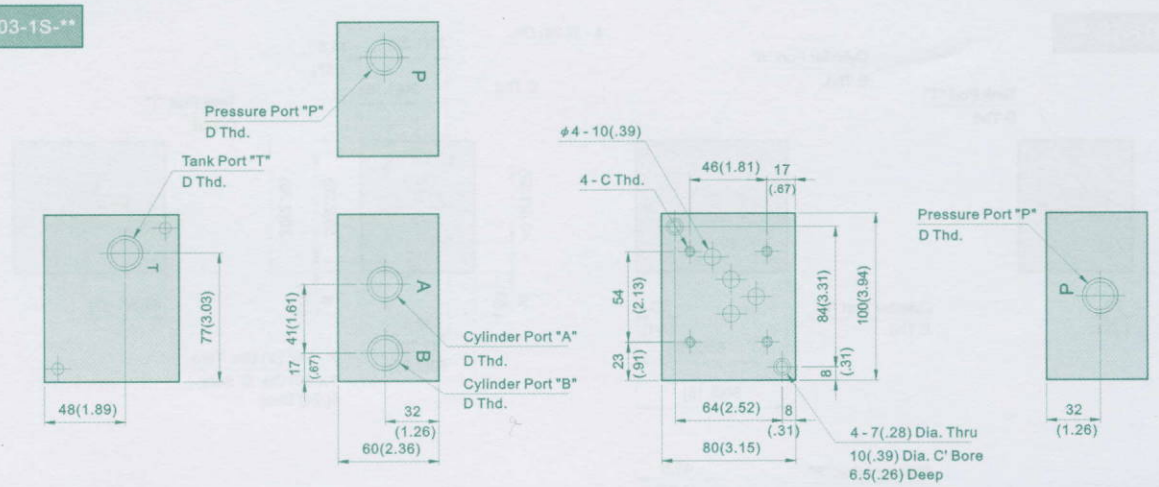
CODE	C Thd.	D Thd.	E Thd.	F	N	L
MM01-2S-30	M5XP0.8	PT3/8	PT1/2	50 (1.97)	2	130 (5.11)
MM01-2S-3090	10-24UNC	NPT3/8	NPT1/2			
MM01-3S-30	M5XP0.8	PT3/8	PT1/2	100 (3.94)	3	180 (7.09)
MM01-3S-3090	10-24UNC	NPT3/8	NPT1/2			
MM01-4S-30	M5XP0.8	PT3/8	PT1/2	150 (5.91)	4	230 (9.06)
MM01-4S-3090	10-24UNC	NPT3/8	NPT1/2			
MM01-5S-30	M5XP0.8	PT3/8	PT1/2	200 (7.87)	5	280 (11.02)
MM01-5S-3090	10-24UNC	NPT3/8	NPT1/2			
MM01-6S-30	M5XP0.8	PT3/8	PT1/2	250 (9.84)	6	330 (12.99)
MM01-6S-3090	10-24UNC	NPT3/8	NPT1/2			
MM01-7S-30	M5XP0.8	PT3/8	PT1/2	300 (11.81)	7	380 (14.96)
MM01-7S-3090	10-24UNC	NPT3/8	NPT1/2			

MANIFOLDS

DIMENSIONS: MILLIMETERS(INCHES)

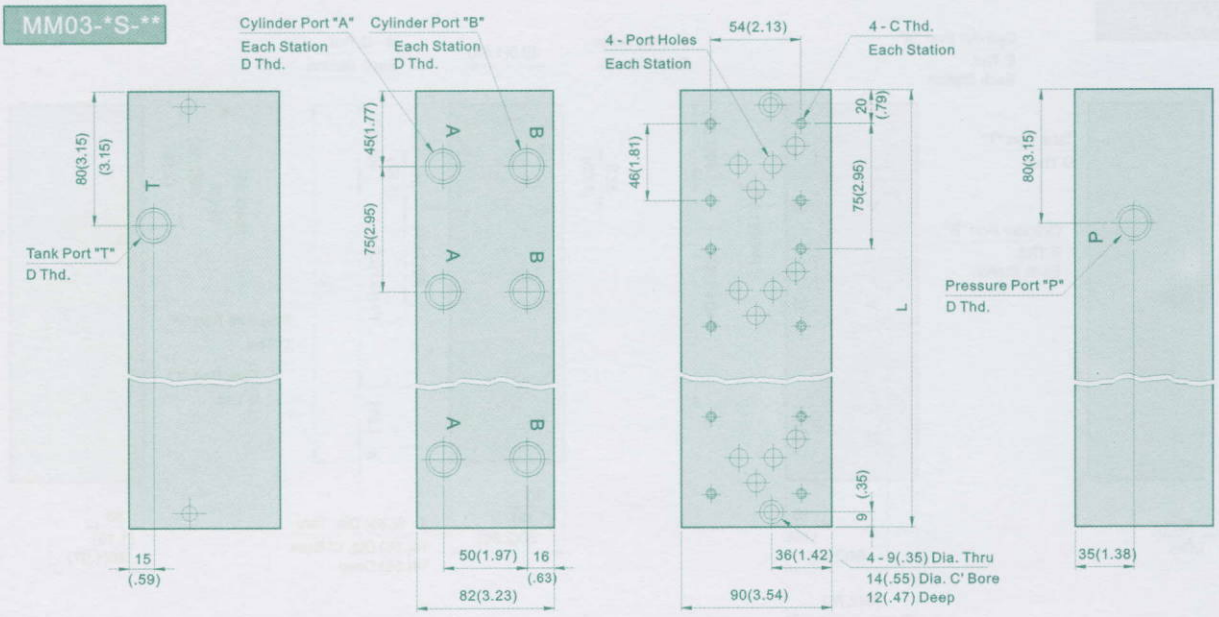
A

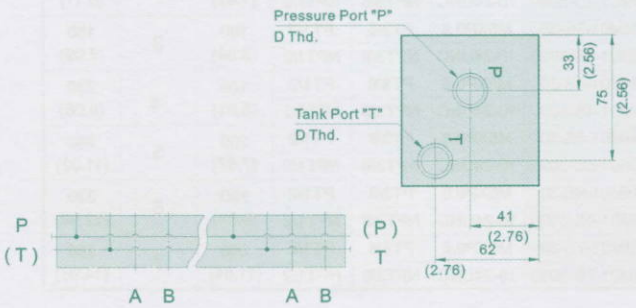
MM03-1S-**



CODE	C Thd.	D Thd.
MM03-1S-**-30	M6XP0.8	PT3/8
MM03-1S-**-3090	1/4-20UNC	NPT3/8

MM03-*S-**





CODE	C Thd.	D Thd.	L
MM03-2S-30	M6XP1.0	PT1/2	160 (6.30)
MM03-2S-3090	1/4-20UNC	NPT1/2	
MM03-3S-30	M6XP1.0	PT1/2	235 (9.25)
MM03-3S-3090	1/4-20UNC	NPT1/2	
MM03-4S-30	M6XP1.0	PT1/2	310 (12.20)
MM03-4S-3090	1/4-20UNC	NPT1/2	
MM03-5S-30	M6XP1.0	PT1/2	385 (15.16)
MM03-5S-3090	1/4-20UNC	NPT1/2	
MM03-6S-30	M6XP1.0	PT1/2	460 (18.11)
MM03-6S-3090	1/4-20UNC	NPT1/2	