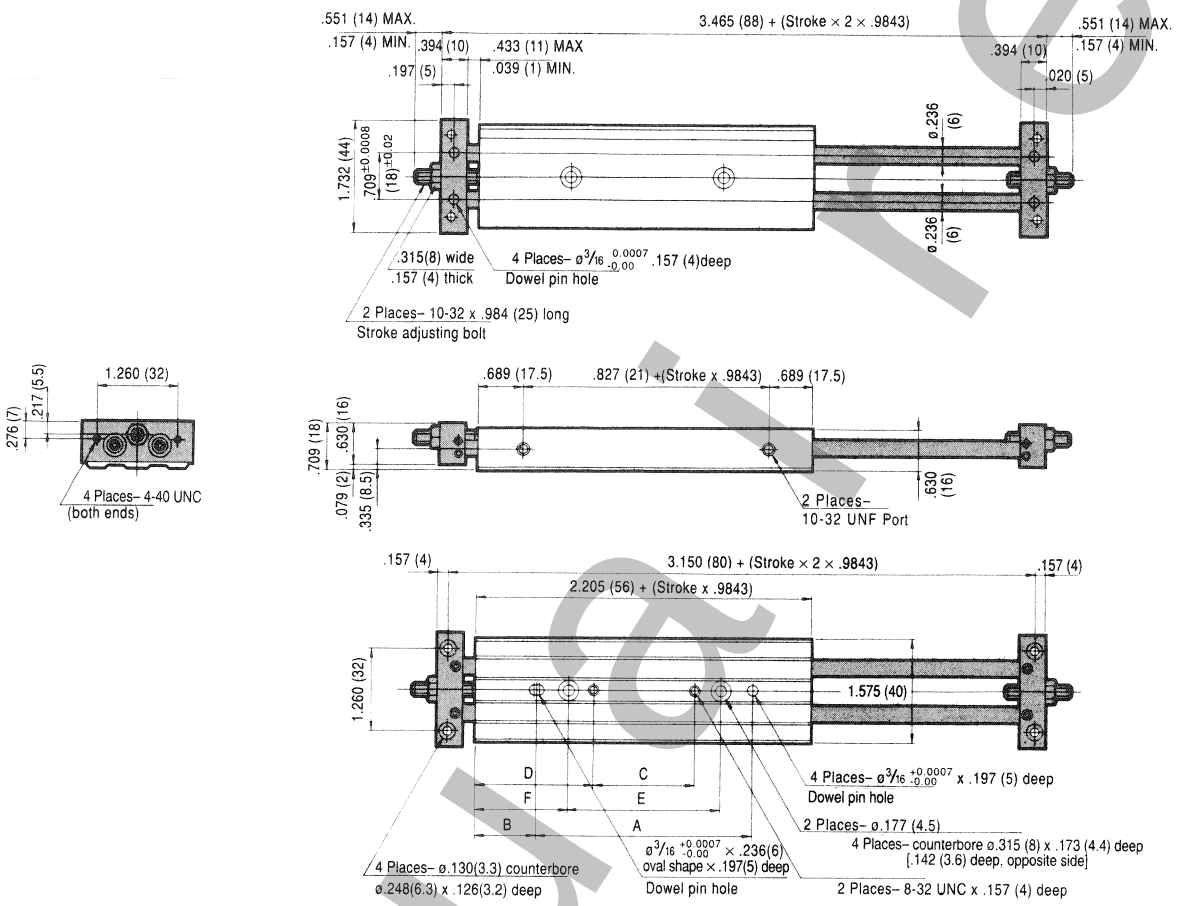
DIMENSION DIAGRAMS – FIXED TABLE TYPE (HSUTS) in. (mm)

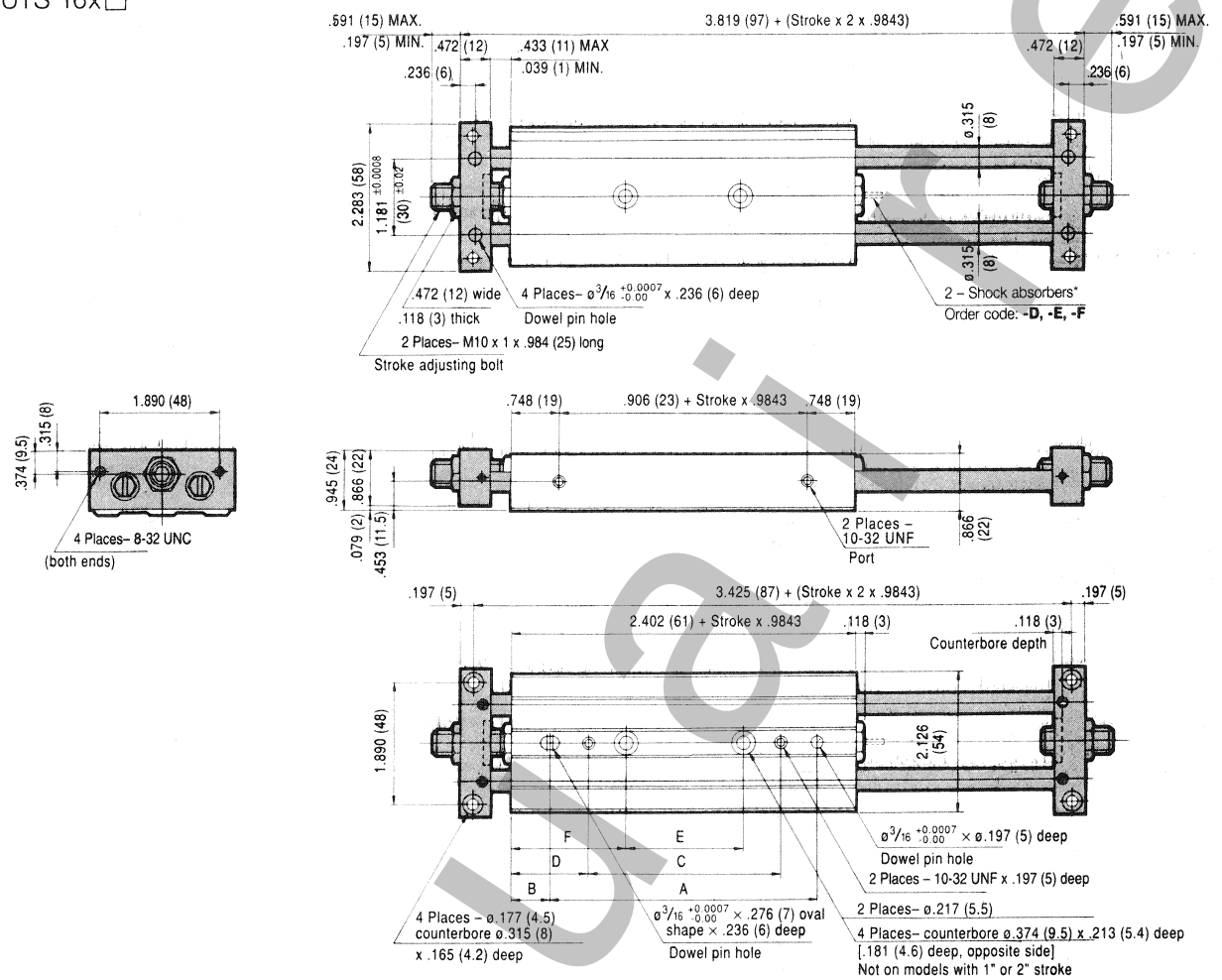


For mounting rail and sensor switch dimensions, see page 273.

Stroke	Bore											
	3/8 (10)						5/8 (16)					
	Code											
	A	B	C	D	E	F	A	B	C	D	E	F
1	2.559 (65)	0.315 (8)	0.591 (15)	1.299 (33)	1.378 (35)	0.906 (23)	2.165 (55)	0.610 (15.5)	0.984 (25)	1.201 (30.5)	–	–
2	3.346 (85)	0.413 (10.5)	1.575 (40)	1.299 (33)	2.362 (60)	0.906 (23)	3.150 (80)	0.610 (15.5)	1.969 (50)	1.201 (30.5)	–	–
3	3.346 (85)	0.906 (23)	1.575 (40)	1.791 (45.5)	2.362 (60)	1.398 (35.5)	4.134 (105)	0.610 (15.5)	2.953 (75)	1.201 (30.5)	1.772 (45)	1.791 (45.5)
4	3.346 (85)	1.398 (35.5)	1.575 (40)	2.283 (58)	2.362 (60)	1.890 (48)	5.118 (130)	0.610 (15.5)	3.937 (100)	1.201 (30.5)	2.756 (70)	1.791 (45.5)
5	–	–	–	–	–	–	5.906 (150)	0.709 (18)	4.724 (120)	1.299 (33)	3.543 (90)	1.890 (48)
6	–	–	–	–	–	–	5.906 (150)	1.201 (30.5)	4.724 (120)	1.791 (45.5)	3.543 (90)	2.382 (60.5)
7	–	–	–	–	–	–	5.906 (150)	1.693 (43)	4.724 (120)	2.283 (58)	3.543 (90)	2.874 (73)
8	–	–	–	–	–	–	5.906 (150)	2.185 (55.5)	4.724 (120)	2.776 (70.5)	3.543 (90)	3.366 (85.5)

Stroke	Bore					
	1 (25)					
	Code					
	A	B	C	D	E	F
1	2.559 (65)	0.571 (14.5)	0.984 (25)	1.358 (34.5)	–	–
2	3.543 (90)	0.571 (14.5)	1.969 (50)	1.358 (34.5)	–	–
3	4.528 (115)	0.571 (14.5)	2.953 (75)	1.358 (34.5)	1.772 (45)	1.949 (49.5)
4	5.512 (140)	0.571 (14.5)	3.937 (100)	1.358 (34.5)	2.756 (70)	1.949 (49.5)
5	5.512 (140)	1.063 (27)	3.937 (100)	1.850 (47)	3.740 (95)	1.949 (49.5)
6	5.512 (140)	1.555 (39.5)	3.937 (100)	2.343 (59.5)	3.937 (100)	2.343 (59.5)
7	5.512 (140)	2.047 (52)	3.937 (100)	2.835 (72)	3.937 (100)	2.835 (72)
8	5.512 (140)	2.539 (64.5)	3.937 (100)	3.327 (84.5)	3.937 (100)	3.327 (84.5)

HSUTS 16x□

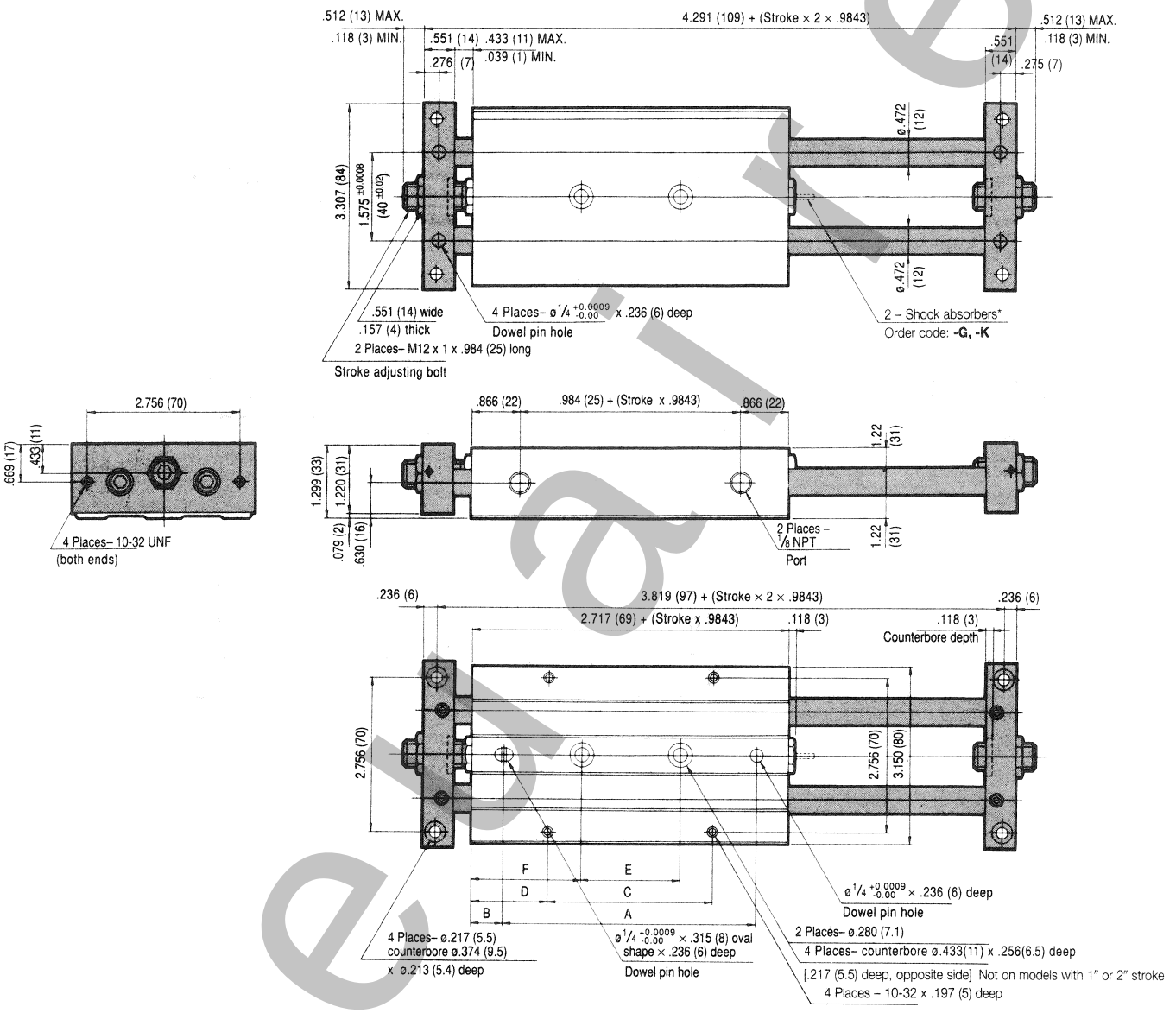


For mounting rail and sensor switch dimensions, see page 273.

*NOTE: See Shock Absorbers page

DIMENSION DIAGRAMS – FIXED TABLE TYPE (HSUTS) in. (mm)

HSUTS 25x□



For mounting rail and sensor switch dimensions, see page 273.

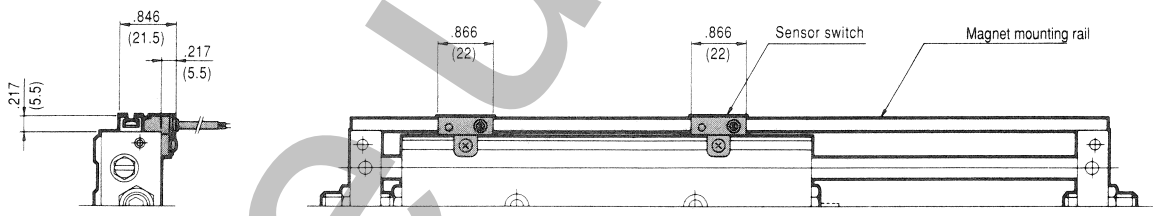
*NOTE: See Shock Absorbers page

Stroke	Bore											
	3/8 (10)						5/8 (16)					
	Code											
	A	B	C	D	E	F	A	B	C	D	E	F
1	2.559 (65)	0.315 (8)	0.591 (15)	1.299 (33)	1.378 (35)	0.906 (23)	2.165 (55)	0.610 (15.5)	0.984 (25)	1.201 (30.5)	–	–
2	3.346 (85)	0.413 (10.5)	1.575 (40)	1.299 (33)	2.362 (60)	0.906 (23)	3.150 (80)	0.610 (15.5)	1.969 (50)	1.201 (30.5)	–	–
3	3.346 (85)	0.906 (23)	1.575 (40)	1.791 (45.5)	2.362 (60)	1.398 (35.5)	4.134 (105)	0.610 (15.5)	2.953 (75)	1.201 (30.5)	1.772 (45)	1.791 (45.5)
4	3.346 (85)	1.398 (35.5)	1.575 (40)	2.283 (58)	2.362 (60)	1.890 (48)	5.118 (130)	0.610 (15.5)	3.937 (100)	1.201 (30.5)	2.756 (70)	1.791 (45.5)
5	–	–	–	–	–	–	5.906 (150)	0.709 (18)	4.724 (120)	1.299 (33)	3.543 (90)	1.890 (48)
6	–	–	–	–	–	–	5.906 (150)	1.201 (30.5)	4.724 (120)	1.791 (45.5)	3.543 (90)	2.382 (60.5)
7	–	–	–	–	–	–	5.906 (150)	1.693 (43)	4.724 (120)	2.283 (58)	3.543 (90)	2.874 (73)
8	–	–	–	–	–	–	5.906 (150)	2.185 (55.5)	4.724 (120)	2.776 (70.5)	3.543 (90)	3.366 (85.5)

Stroke	Bore					
	1 (25)					
	Code					
	A	B	C	D	E	F
1	2.559 (65)	0.571 (14.5)	0.984 (25)	1.358 (34.5)	–	–
2	3.543 (90)	0.571 (14.5)	1.969 (50)	1.358 (34.5)	–	–
3	4.528 (115)	0.571 (14.5)	2.953 (75)	1.358 (34.5)	1.772 (45)	1.949 (49.5)
4	5.512 (140)	0.571 (14.5)	3.937 (100)	1.358 (34.5)	2.756 (70)	1.949 (49.5)
5	5.512 (140)	1.063 (27)	3.937 (100)	1.850 (47)	3.740 (95)	1.949 (49.5)
6	5.512 (140)	1.555 (39.5)	3.937 (100)	2.343 (59.5)	3.937 (100)	2.343 (59.5)
7	5.512 (140)	2.047 (52)	3.937 (100)	2.835 (72)	3.937 (100)	2.835 (72)
8	5.512 (140)	2.539 (64.5)	3.937 (100)	3.327 (84.5)	3.937 (100)	3.327 (84.5)

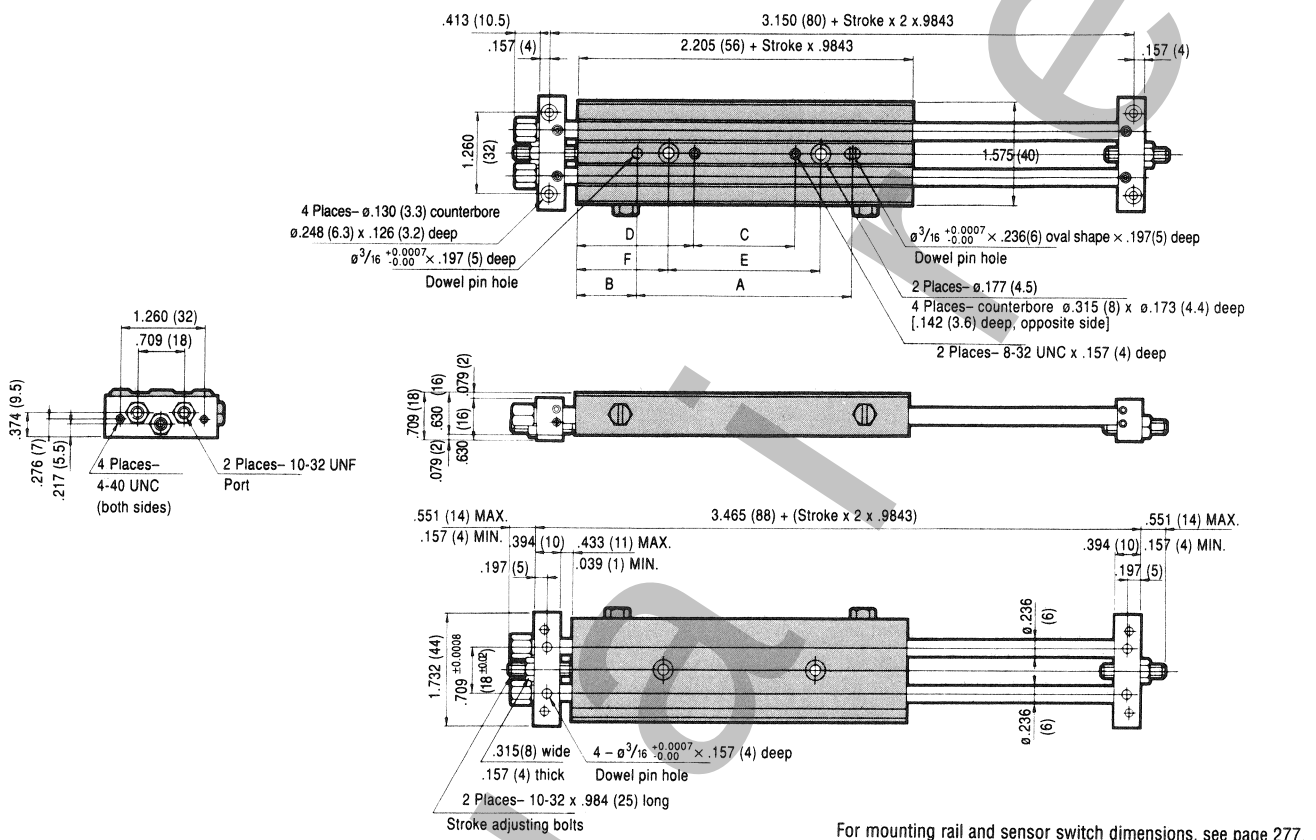
SENSOR SWITCH OPTION

CS9H□, CS3H□, CS4H□, CS5H□



DIMENSION DIAGRAMS – FIXED END PLATE TYPE (HSUPS) in. (mm)

HSUPS 10x□

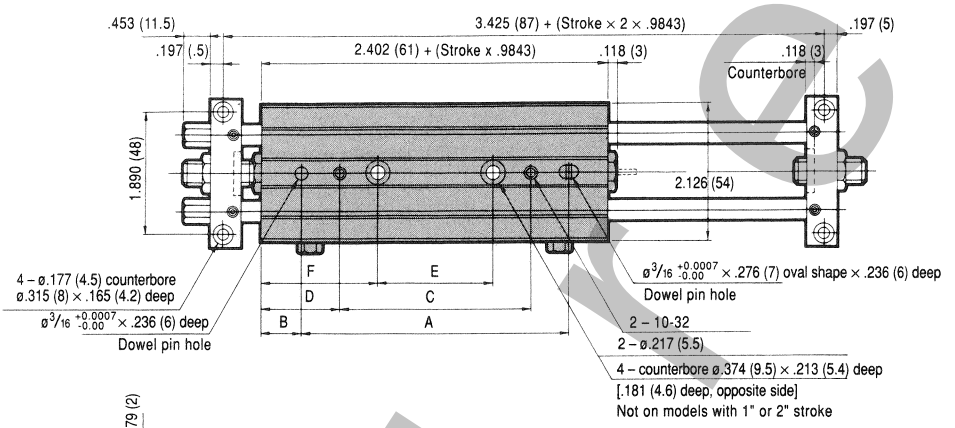


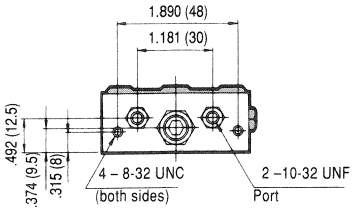
For mounting rail and sensor switch dimensions, see page 277.

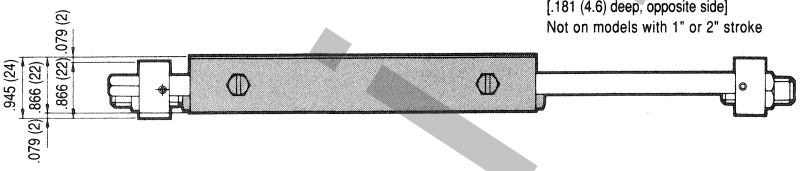
Stroke	Bore											
	3/8 (10)						5/8 (16)					
	Code											
	A	B	C	D	E	F	A	B	C	D	E	F
1	2.559 (65)	0.315 (8)	0.591 (15)	1.299 (33)	1.378 (35)	0.906 (23)	2.165 (55)	0.610 (15.5)	0.984 (25)	1.201 (30.5)	–	–
2	3.346 (85)	0.413 (10.5)	1.575 (40)	1.299 (33)	2.362 (60)	0.906 (23)	3.150 (80)	0.610 (15.5)	1.969 (50)	1.201 (30.5)	–	–
3	3.346 (85)	0.906 (23)	1.575 (40)	1.791 (45.5)	2.362 (60)	1.398 (35.5)	4.134 (105)	0.610 (15.5)	2.953 (75)	1.201 (30.5)	1.772 (45)	1.791 (45.5)
4	3.346 (85)	1.398 (35.5)	1.575 (40)	2.283 (58)	2.362 (60)	1.890 (48)	5.118 (130)	0.610 (15.5)	3.937 (100)	1.201 (30.5)	2.756 (70)	1.791 (45.5)
5	–	–	–	–	–	–	5.906 (150)	0.709 (18)	4.724 (120)	1.299 (33)	3.543 (90)	1.890 (48)
6	–	–	–	–	–	–	5.906 (150)	1.201 (30.5)	4.724 (120)	1.791 (45.5)	3.543 (90)	2.382 (60.5)
7	–	–	–	–	–	–	5.906 (150)	1.693 (43)	4.724 (120)	2.283 (58)	3.543 (90)	2.874 (73)
8	–	–	–	–	–	–	5.906 (150)	2.185 (55.5)	4.724 (120)	2.776 (70.5)	3.543 (90)	3.366 (85.5)

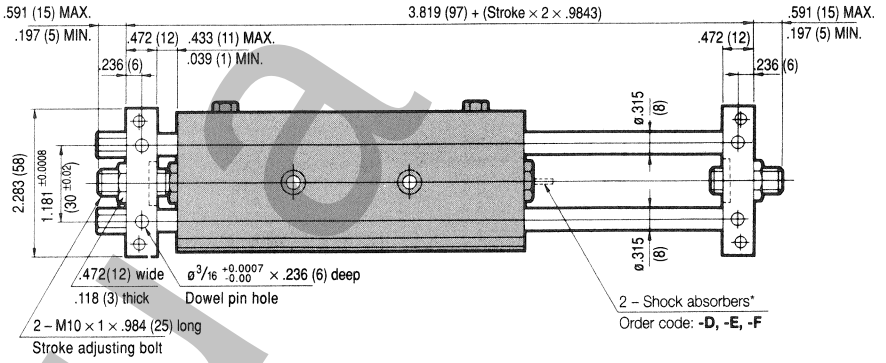
Stroke	Bore					
	1 (25)					
	Code					
	A	B	C	D	E	F
1	2.559 (65)	0.571 (14.5)	0.984 (25)	1.358 (34.5)	–	–
2	3.543 (90)	0.571 (14.5)	1.969 (50)	1.358 (34.5)	–	–
3	4.528 (115)	0.571 (14.5)	2.953 (75)	1.358 (34.5)	1.772 (45)	1.949 (49.5)
4	5.512 (140)	0.571 (14.5)	3.937 (100)	1.358 (34.5)	2.756 (70)	1.949 (49.5)
5	5.512 (140)	1.063 (27)	3.937 (100)	1.850 (47)	3.740 (95)	1.949 (49.5)
6	5.512 (140)	1.555 (39.5)	3.937 (100)	2.343 (59.5)	3.937 (100)	2.343 (59.5)
7	5.512 (140)	2.047 (52)	3.937 (100)	2.835 (72)	3.937 (100)	2.835 (72)
8	5.512 (140)	2.539 (64.5)	3.937 (100)	3.327 (84.5)	3.937 (100)	3.327 (84.5)

HSUPS 16x□







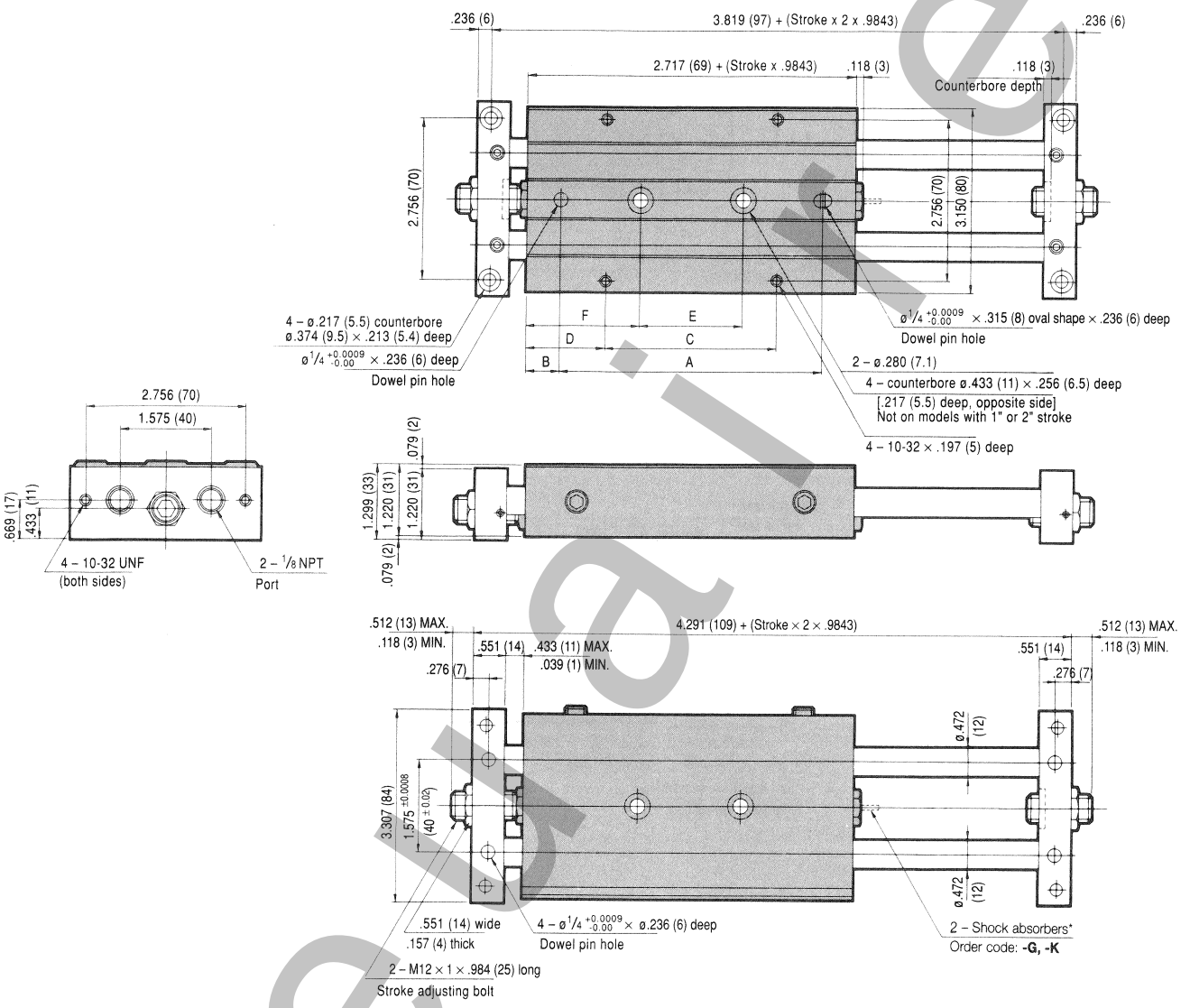


For mounting rail and sensor switch dimensions, see page 277.

*NOTE: See Shock Absorbers page

DIMENSION DIAGRAMS – FIXED END PLATE TYPE (HSUPS) in. (mm)

HSUPS 25x□



For mounting rail and sensor switch dimensions, see page 277.

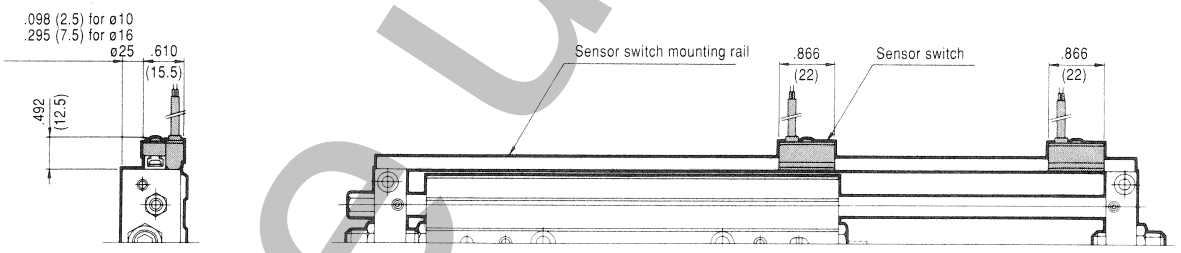
*NOTE: See Shock Absorbers page

Stroke	Bore											
	3/8 (10)						5/8 (16)					
	Code											
	A	B	C	D	E	F	A	B	C	D	E	F
1	2.559 (65)	0.315 (8)	0.591 (15)	1.299 (33)	1.378 (35)	0.906 (23)	2.165 (55)	0.610 (15.5)	0.984 (25)	1.201 (30.5)	–	–
2	3.346 (85)	0.413 (10.5)	1.575 (40)	1.299 (33)	2.362 (60)	0.906 (23)	3.150 (80)	0.610 (15.5)	1.969 (50)	1.201 (30.5)	–	–
3	3.346 (85)	0.906 (23)	1.575 (40)	1.791 (45.5)	2.362 (60)	1.398 (35.5)	4.134 (105)	0.610 (15.5)	2.953 (75)	1.201 (30.5)	1.772 (45)	1.791 (45.5)
4	3.346 (85)	1.398 (35.5)	1.575 (40)	2.283 (58)	2.362 (60)	1.890 (48)	5.118 (130)	0.610 (15.5)	3.937 (100)	1.201 (30.5)	2.756 (70)	1.791 (45.5)
5	–	–	–	–	–	–	5.906 (150)	0.709 (18)	4.724 (120)	1.299 (33)	3.543 (90)	1.890 (48)
6	–	–	–	–	–	–	5.906 (150)	1.201 (30.5)	4.724 (120)	1.791 (45.5)	3.543 (90)	2.382 (60.5)
7	–	–	–	–	–	–	5.906 (150)	1.693 (43)	4.724 (120)	2.283 (58)	3.543 (90)	2.874 (73)
8	–	–	–	–	–	–	5.906 (150)	2.185 (55.5)	4.724 (120)	2.776 (70.5)	3.543 (90)	3.366 (85.5)

Stroke	Bore					
	1 (25)					
	Code					
	A	B	C	D	E	F
1	2.559 (65)	0.571 (14.5)	0.984 (25)	1.358 (34.5)	–	–
2	3.543 (90)	0.571 (14.5)	1.969 (50)	1.358 (34.5)	–	–
3	4.528 (115)	0.571 (14.5)	2.953 (75)	1.358 (34.5)	1.772 (45)	1.949 (49.5)
4	5.512 (140)	0.571 (14.5)	3.937 (100)	1.358 (34.5)	2.756 (70)	1.949 (49.5)
5	5.512 (140)	1.063 (27)	3.937 (100)	1.850 (47)	3.740 (95)	1.949 (49.5)
6	5.512 (140)	1.555 (39.5)	3.937 (100)	2.343 (59.5)	3.937 (100)	2.343 (59.5)
7	5.512 (140)	2.047 (52)	3.937 (100)	2.835 (72)	3.937 (100)	2.835 (72)
8	5.512 (140)	2.539 (64.5)	3.937 (100)	3.327 (84.5)	3.937 (100)	3.327 (84.5)

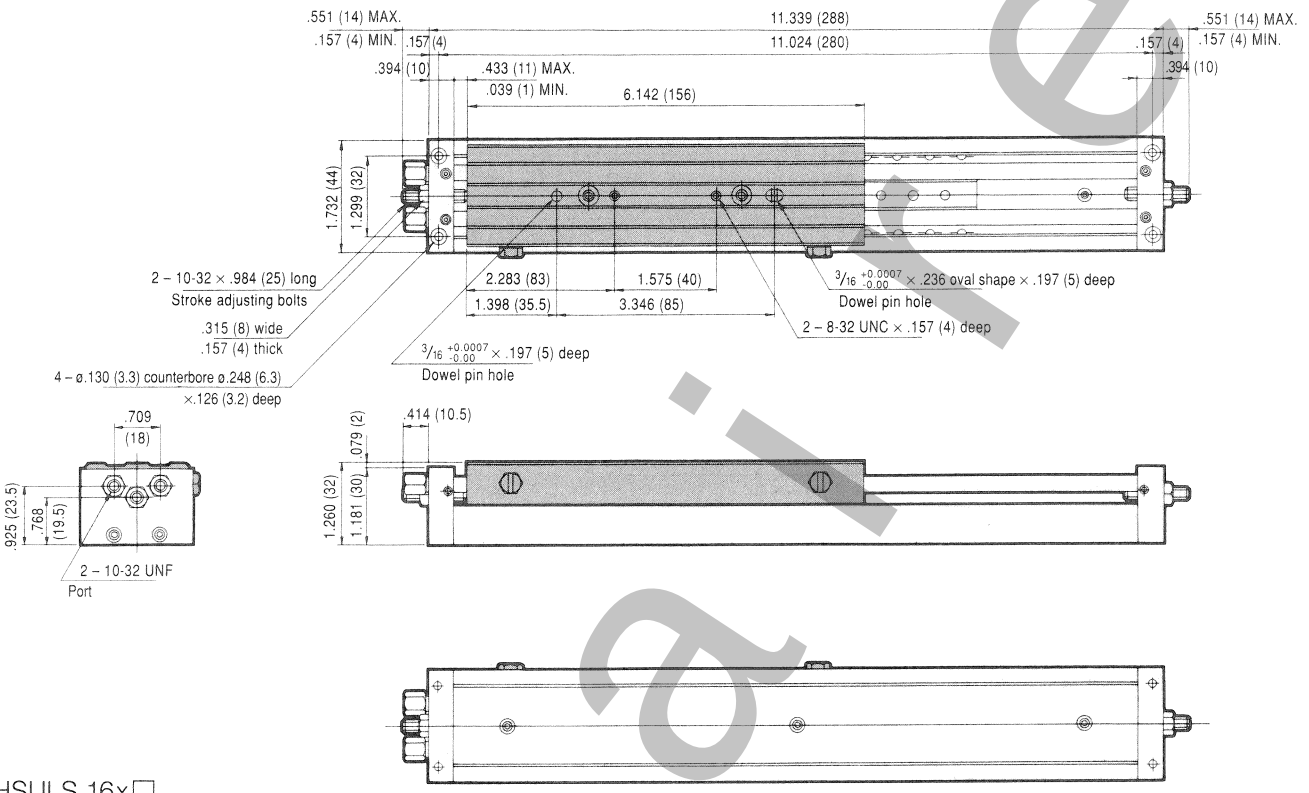
SENSOR SWITCH OPTION

CS9H□, CS3H□, CS4H□, CS5H□

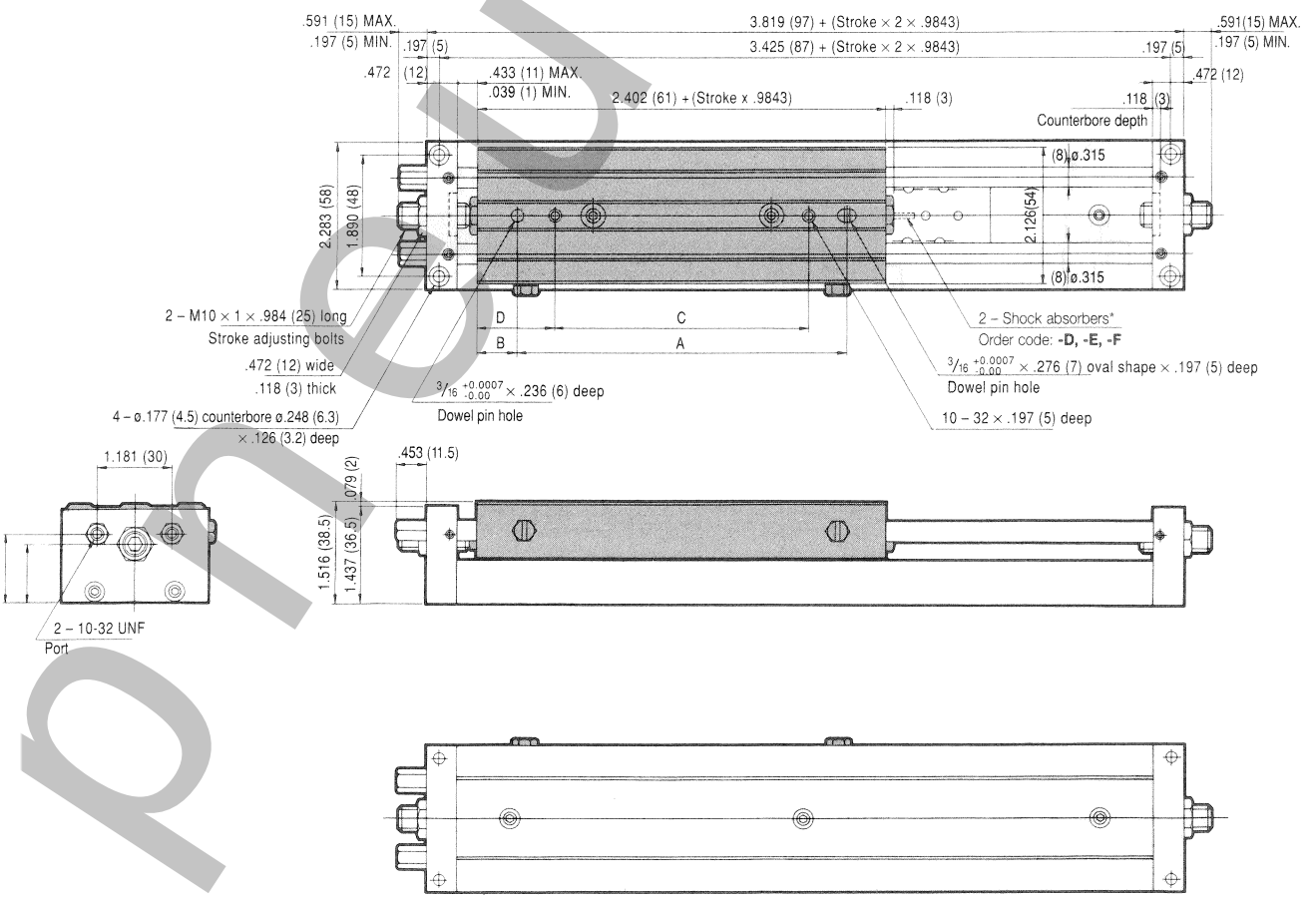


DIMENSION DIAGRAMS – FIXED RAIL-ON PLATE TYPE (HSULS) in. (mm)

HSULS 10x4



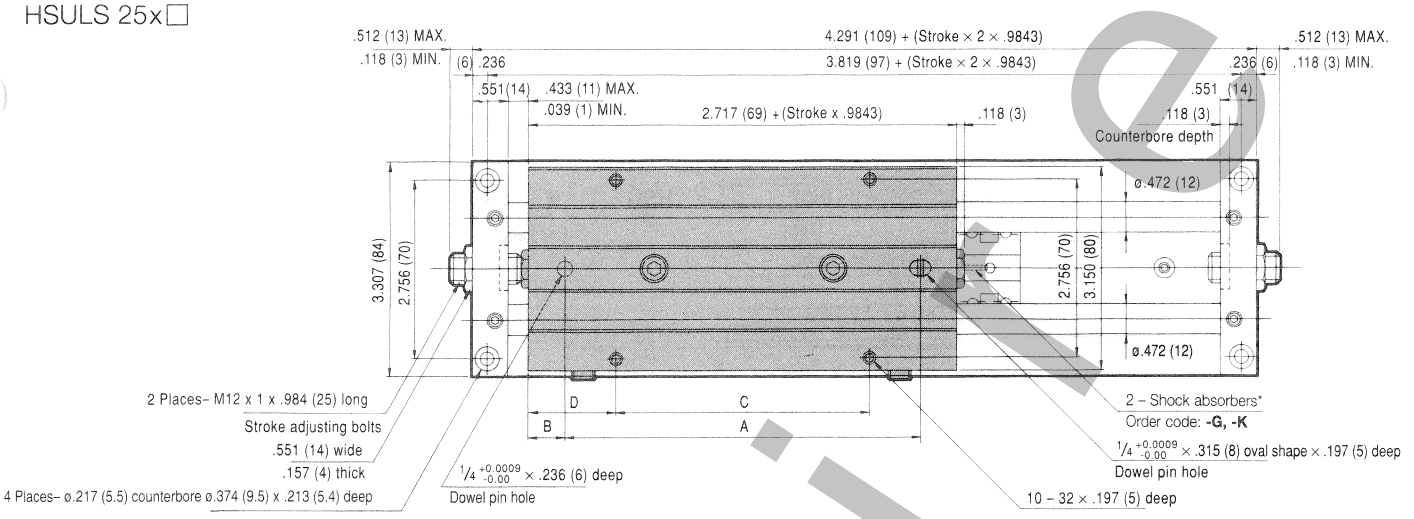
HSULS 16x□

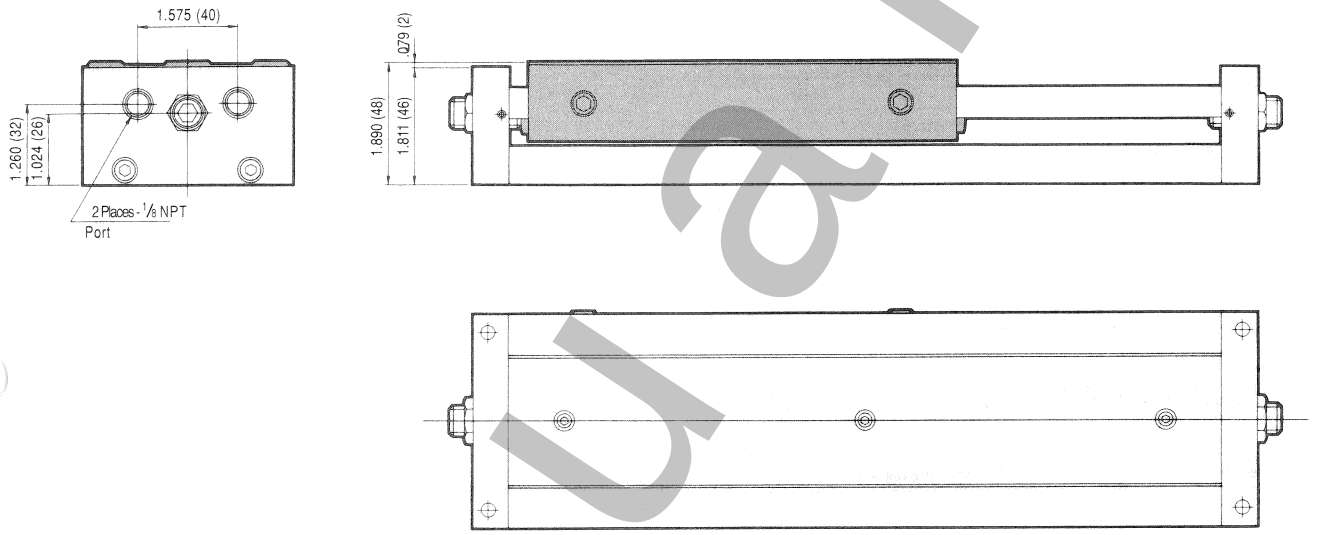


*NOTE: See Shock Absorbers page

DIMENSION DIAGRAMS – FIXED RAIL-ON PLATE TYPE (HSULS) in. (mm)

HSULS 25x□



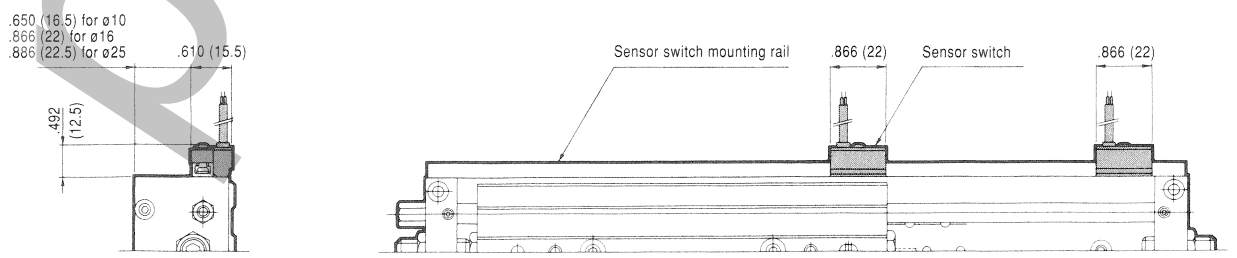


Stroke	Bore							
	5/8 (16)				1 (25)			
	Code							
	A	B	C	D	A	B	C	D
4	5.118 (130)	0.610 (15.5)	3.937 (100)	1.201 (30.5)	5.512 (140)	0.571 (14.5)	3.937 (100)	1.358 (34.5)
5	5.906 (150)	0.709 (18)	4.724 (120)	1.299 (33)	5.512 (140)	1.063 (27)	3.937 (100)	1.850 (47)
6	5.906 (150)	1.201 (30.5)	4.724 (120)	1.791 (45.5)	5.512 (140)	1.555 (39.5)	3.937 (100)	2.343 (59.5)
7	5.906 (150)	1.693 (43)	4.724 (120)	2.283 (58)	5.512 (140)	2.047 (52)	3.937 (100)	2.835 (72)
8	5.906 (150)	2.185 (55.5)	4.724 (120)	2.776 (70.5)	5.512 (140)	2.539 (64.5)	3.937 (100)	3.327 (84.5)

*NOTE: See Shock Absorbers page

SENSOR SWITCH OPTION

CS9H□, CS3H□, CS4H□, CS5H□



SLIDE UNITS

WITH END KEEP MECHANISM

SPECIFICATIONS

Item		Cylinder bore size – in. (mm)	
		5/8 (16)	1 (25)
Operation		Double acting, Double piston	
Media		Air	
Mounting type		Fixed table, fixed end plate, and rail-on plate types	
Pressure range psig (kgf/cm²)	Fixed table type Fixed end plate type	20 ~ 125 (1.5 ~ 9)	20 ~ 125 (1.5 ~ 9)
	Fixed rail-on plate type		
Temperature – °F (°C)		32 ~ 140 (0 ~ 60)	
Speed range in./sec. (mm/s)	Standard	2 ~ 8 (50 ~ 200)	
	w/shock absorber	2 ~ 16 (50 ~ 400)	
Cushion		Shock absorber (optional)	
Lubrication		Not required	
Non-rotating accuracy		±0.05°	±0.02°
Stroke adjusting range – in. (mm)		± 0.197 (± 5)	
Maximum loads lb./in. (kgf)	Fixed table type	3.3 (1.5)	5.5 (2.5)
	Fixed end plate type	6.6 (3)	11.0 (5)
	Fixed rail-on plate type	2 2 (10)	
Port size		10-32	1/8" NPT

NOTE: Figures indicate entire load balanced on both plates (at maximum stroke). When putting load on only one side, load should not exceed the allowed weight.

BORE SIZES AND STROKES in. (mm)

Bore size	Standard strokes – in.
5/8 (16)	1, 2, 3, 4, 5, 6, 7, 8
1 (25)	1, 2, 3, 4, 5, 6, 7, 8

NOTE: Model HSULKS: All bore sizes, minimum stroke is 4".

ORDERING INFORMATION

HSU | T | K | S | 16 x 4 | CS3H | A | HSUTS

- HSU — Slide Units
- T — Slide unit type: **T** — Fixed table; **P** — Fixed end plate; **L** — Fixed rail-on plate
- K — End keep
- S — S -Sensor type Note 1
- 16 x 4 — BORE x STROKE
- CS3H — Sensor switch model:
  - **CS9H** — Hall effect (solid state) type with LED — 4 ~ 28 VDC
  - **CS3H** — Reed switch with LED — 10 ~ 30 VDC, 85 ~ 115 VAC
  - **CS4H** — Reed switch with LED — 10 ~ 30 VDC, 85 ~ 115 VAC
  - **CS5H** — Reed switch — 3 ~ 30 VDC, 85 ~ 115 VAC
- A — Lead wire length:
  - **A** — 39 In. (nom.) 1000mm (actual)
  - **B** — 108 In. (nom.) 3000mm (actual)
  - **C** — 196 In. (nom.) 5000mm (actual)
- HSUTS — Mounting bracket for Slide Unit sensor switches:
  - **HSUTS** — Fixed table
  - **HSUPS** — Fixed end plate
  - **HSULS** — Fixed rail-on plate

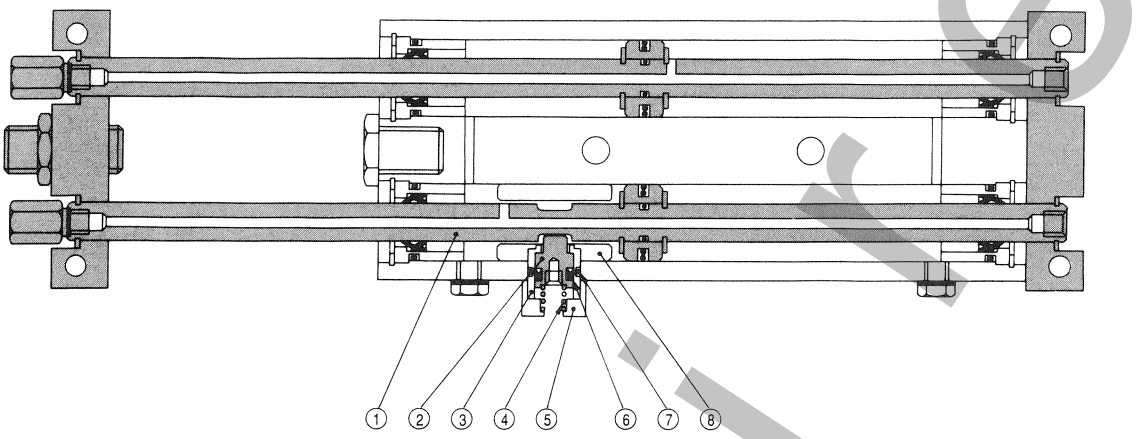
NOTE 1: Magnet and mounting rail included for sensor switch operation.
See Sensor Section for How To Order Sensor Switches.
For mounting rail and sensor switch dimensions, see Page 283 (T), 285 (P) and 287 (L).

THRUST FORCE lbs. (kgf)

Bore in. nominal (mm) actual	Piston rod dia. inch (mm)	Pressure area in.² (cm²)	Air pressure – psig (kgf/cm²)							
			28 (2)	43 (3)	57 (4)	71 (5)	85 (6)	100 (7)	114 (8)	128 (9)
5/8 (16)	0.315 (8)	0.47 (3.02)	13.30 (6.03)	19.93 (9.04)	26.59 (12.06)	33.23 (15.07)	39.89 (18.09)	46.55 (21.11)	53.18 (24.12)	59.84 (27.14)
1 (25)	0.472 (12)	1.17 (7.56)	33.30 (15.1)	49.83 (22.6)	66.59 (30.2)	83.13 (37.7)	99.89 (45.3)	116.42 (52.8)	133.18 (60.4)	149.94 (68.0)

INNER CONSTRUCTION AND MAJOR PARTS

HSUPKS 16x□



NAMES AND MATERIALS OF MAJOR PARTS

No.	Item	Materials
1	Piston rod	Hard steel (hard chrome plated)
2	Lock piston	Hard steel (hard chrome plated)
3	Sleeves	Aluminum
4	Spring	Stainless steel
5	Lock cover	Aluminum
6	Lock piston seal	Buna N
7	Lock cover o-ring	Buna N
8	Lock piston collar	Aluminum

NOTE: Please refer to standard type Slide Units for other materials.

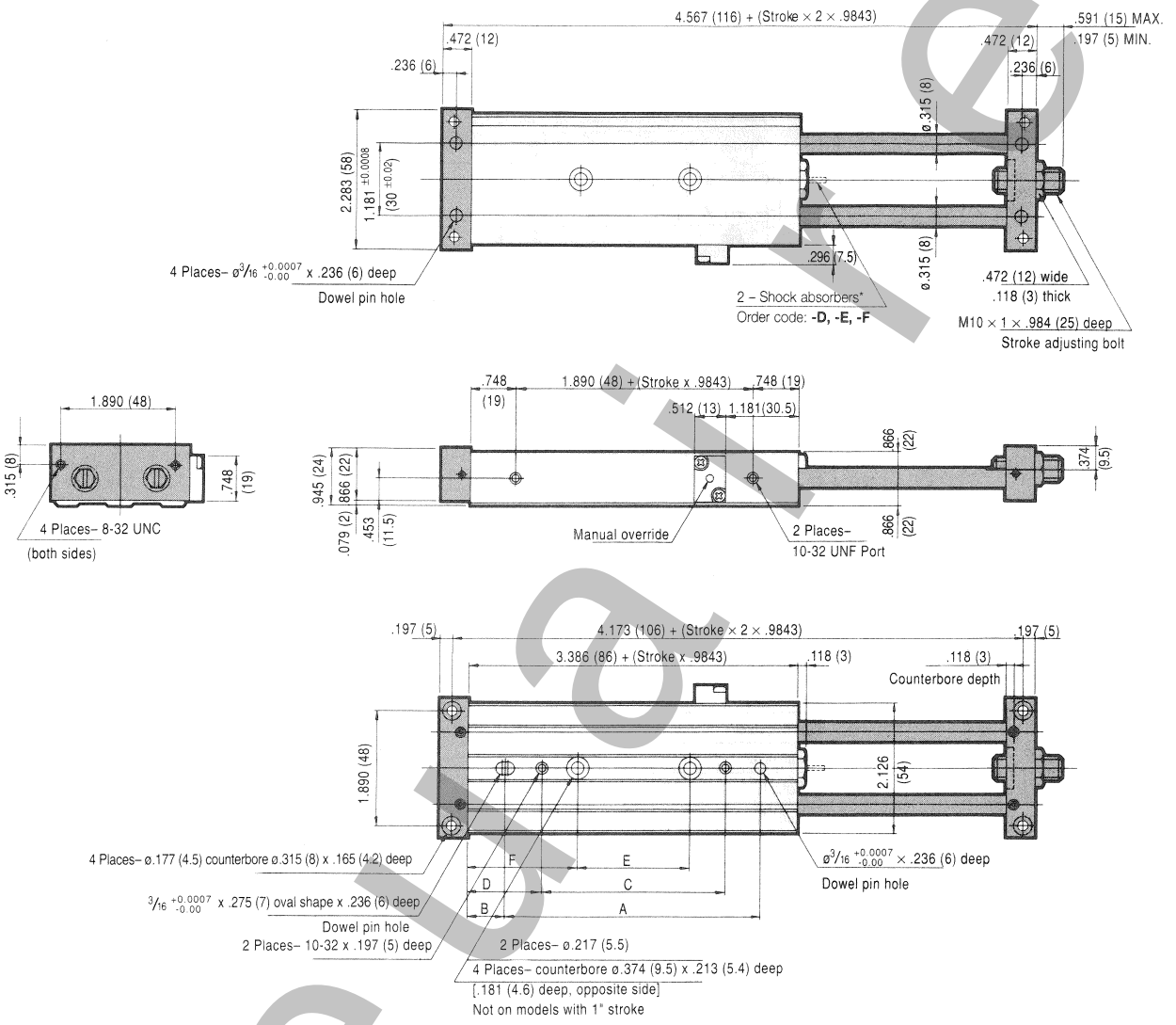
WEIGHT

oz. (kgf)

Model	Body weight								Added weight		
	Stroke – in.								Shock absorber	Weight of one sensor switch	
	1	2	3	4	5	6	7	8	2 pcs.	CS9H□	CS3H□ CS4H□ CS5H□
HSUTK 16x□ HSUPK 16x□	21.5 (0.61)	24.7 (0.70)	27.5 (0.78)	30.7 (0.87)	33.5 (0.95)	36.7 (1.04)	39.9 (1.13)	42.7 (1.21)	0.7 (0.02)	1.4 (0.04)	1.1 (0.03)
HSULK 16x□	–	–	–	60.7 (1.72)	68.1 (1.93)	75.5 (2.14)	82.5 (2.34)	89.9 (2.55)			
HSUTK 25x□ HSUPK 25x□	48.3 (1.37)	54.7 (1.55)	61.0 (1.73)	67.4 (1.91)	73.7 (2.09)	80.1 (2.27)	86.1 (2.44)	92.4 (2.62)	1.1 (0.03)	1.4 (0.04)	1.1 (0.03)
HSULK 25x□	–	–	–	115.0 (3.26)	127.3 (3.61)	140.0 (3.97)	152.4 (4.32)	165.1 (4.68)			

DIMENSION DIAGRAMS – FIXED TABLE TYPE WITH END KEEP (HSUTKS) in. (mm)

HSUTKS 16x□

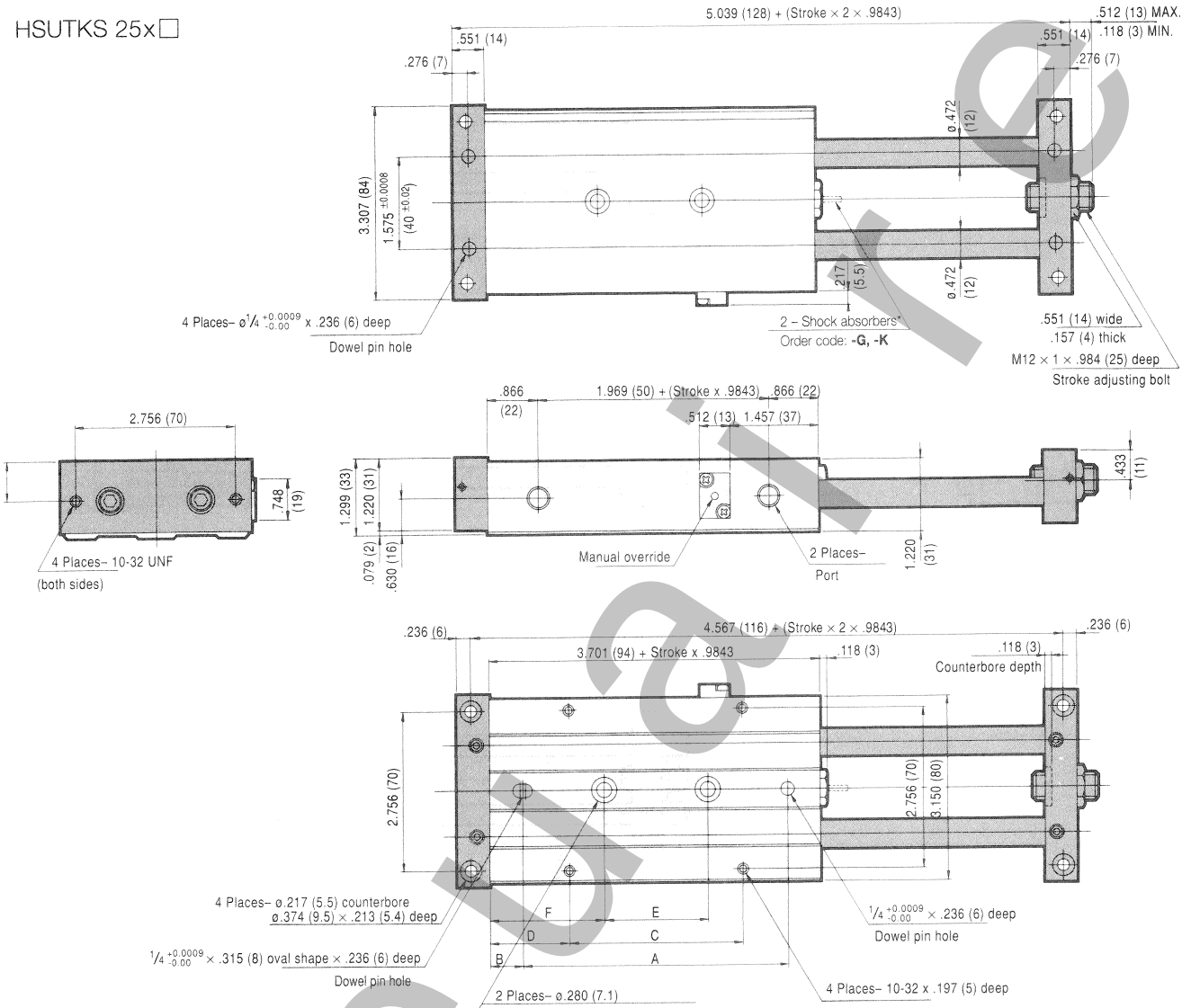


Stroke	Code					
	A	B	C	D	E	F
1	3.150 (80)	0.610 (15.5)	1.969 (50)	1.201 (30.5)	–	–
2	4.134 (105)	0.610 (15.5)	2.953 (75)	1.201 (30.5)	1.772 (45)	1.791 (45.5)
3	5.118 (130)	0.610 (15.5)	3.937 (100)	1.201 (30.5)	2.756 (70)	1.791 (45.5)
4	5.906 (150)	0.709 (18)	4.724 (120)	1.299 (33)	3.543 (90)	1.890 (48)
5	5.906 (150)	1.201 (30.5)	4.724 (120)	1.791 (45.5)	3.543 (90)	2.382 (60.5)
6	5.906 (150)	1.693 (43)	4.724 (120)	2.283 (58)	3.543 (90)	2.874 (73)
7	5.906 (150)	2.185 (55.5)	4.724 (120)	2.776 (70.5)	3.543 (90)	3.366 (85.5)
8	6.693 (170)	2.283 (58)	5.512 (140)	2.874 (73)	4.331 (110)	3.465 (88)

*NOTE: See Shock Absorbers page

DIMENSION DIAGRAMS – FIXED TABLE TYPE WITH END KEEP in. (mm)

HSUTKS 25x□

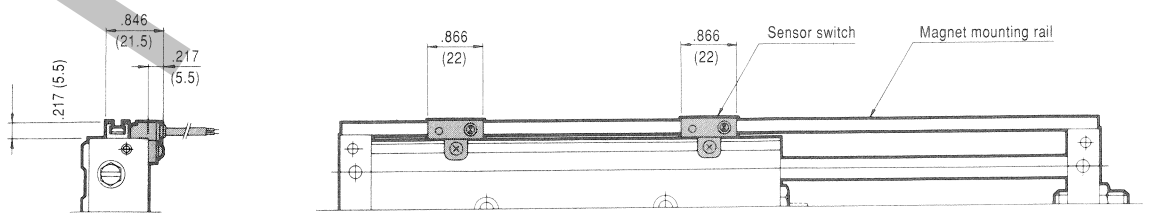


Stroke	Code					
	A	B	C	D	E	F
1	3.543 (90)	0.571 (14.5)	1.969 (50)	1.358 (34.5)	–	–
2	4.528 (115)	0.571 (14.5)	2.953 (75)	1.358 (34.5)	1.772 (45)	1.949 (49.5)
3	5.512 (140)	0.571 (14.5)	3.937 (100)	1.358 (34.5)	2.756 (70)	1.949 (49.5)
4	5.512 (140)	1.063 (27)	3.937 (100)	1.850 (47)	3.740 (95)	1.949 (49.5)
5	5.512 (140)	1.555 (39.5)	3.937 (100)	2.343 (59.5)	3.937 (100)	2.343 (59.5)
6	5.512 (140)	2.047 (52)	3.937 (100)	2.835 (72)	3.937 (100)	2.835 (72)
7	5.512 (140)	2.539 (64.5)	3.937 (100)	3.327 (84.5)	3.937 (100)	3.327 (84.5)
8	6.299 (160)	2.638 (67)	4.724 (120)	3.425 (87)	4.724 (120)	3.425 (87)

*NOTE: See Shock Absorbers page

SENSOR SWITCH OPTION

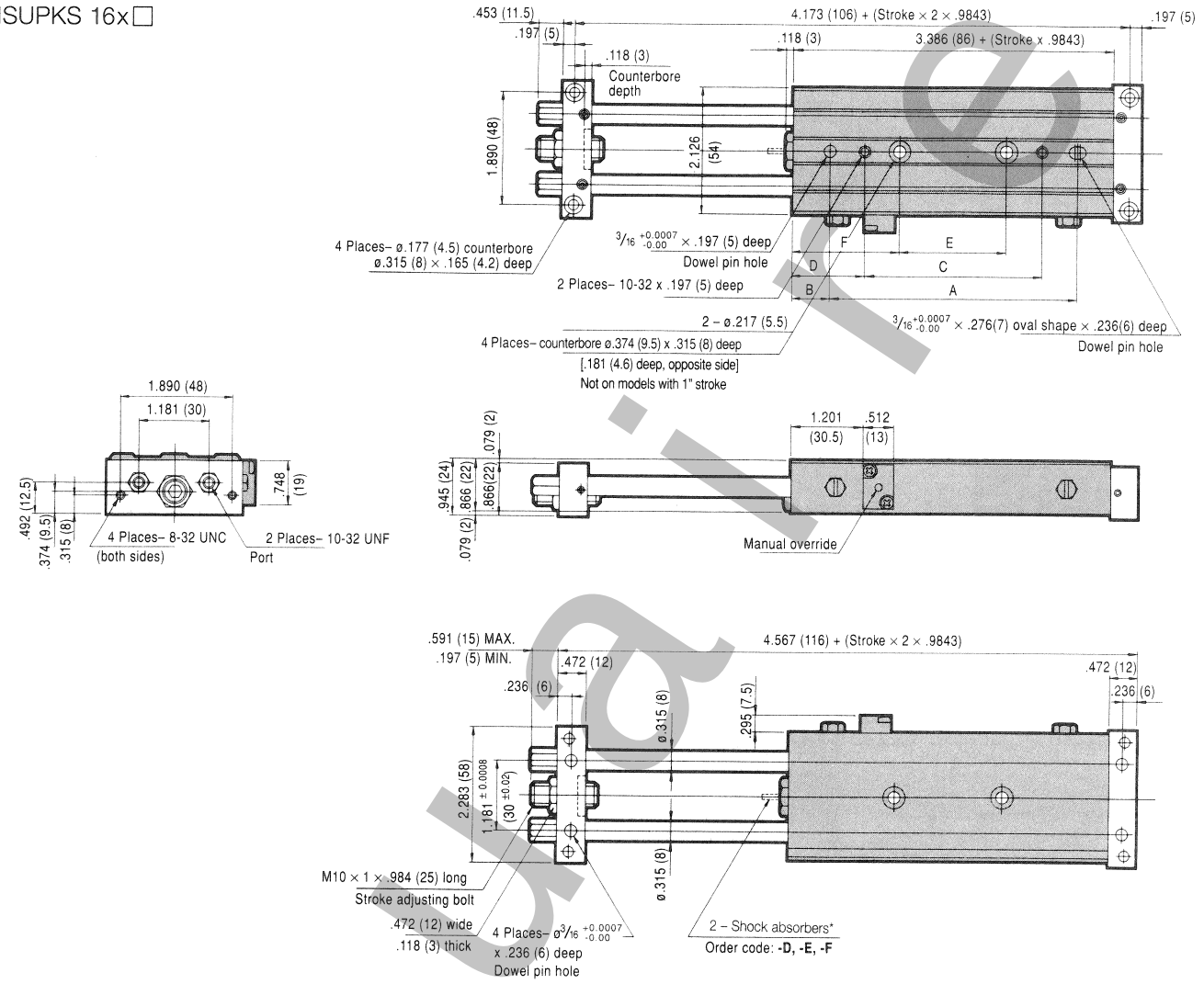
CS9H□, CS3H□, CS4H□, CS5H□



DIMENSION DIAGRAMS – FIXED END PLATE TYPE WITH END KEEP

in. (mm)

HSUPKS 16x□



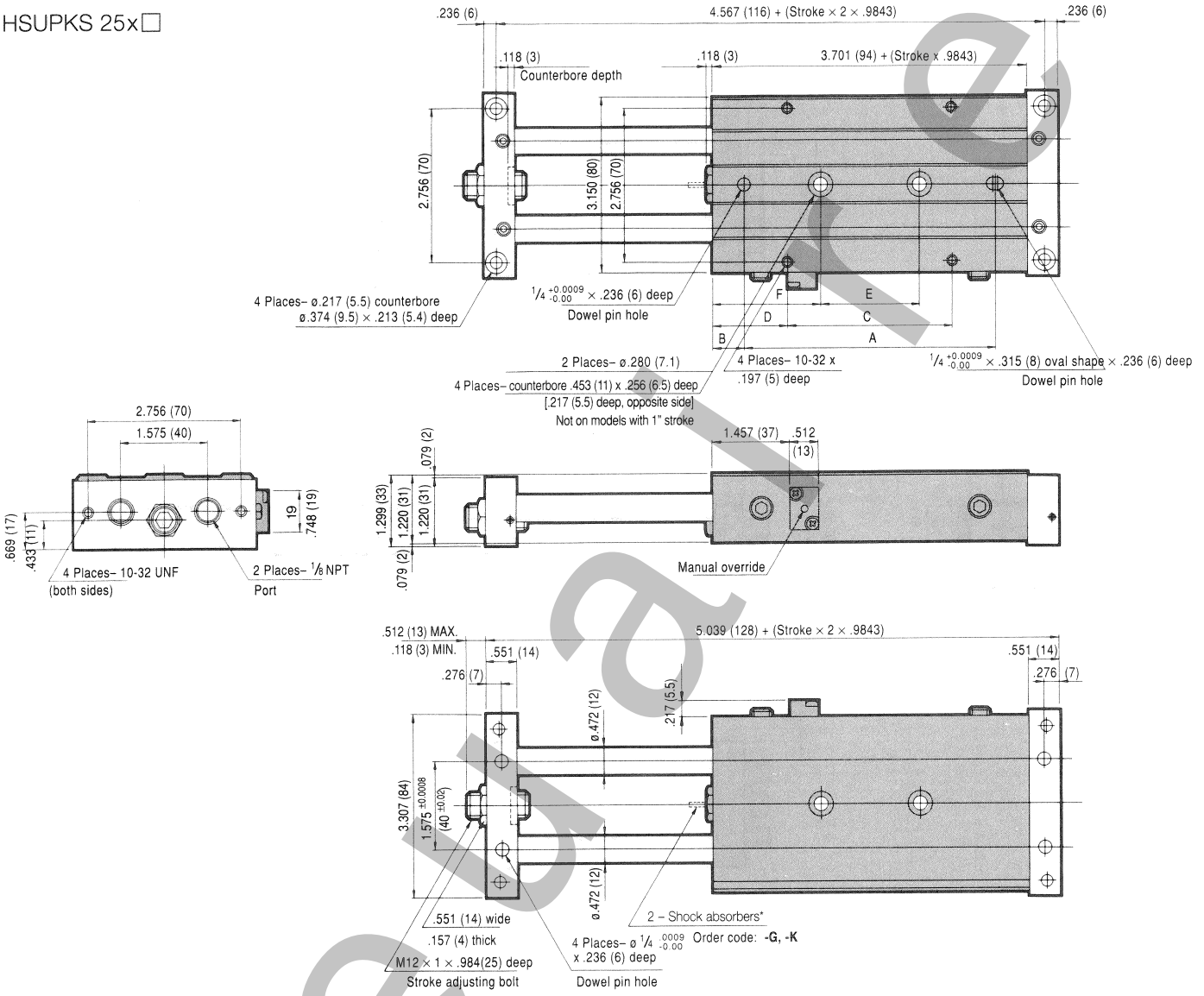
Stroke	Code					
	A	B	C	D	E	F
1	3.150 (80)	0.610 (15.5)	1.969 (50)	1.201 (30.5)	–	–
2	4.134 (105)	0.610 (15.5)	2.953 (75)	1.201 (30.5)	1.772 (45)	1.791 (45.5)
3	5.118 (130)	0.610 (15.5)	3.937 (100)	1.201 (30.5)	2.756 (70)	1.791 (45.5)
4	5.906 (150)	0.709 (18)	4.724 (120)	1.299 (33)	3.543 (90)	1.890 (48)
5	5.906 (150)	1.201 (30.5)	4.724 (120)	1.791 (45.5)	3.543 (90)	2.382 (60.5)
6	5.906 (150)	1.693 (43)	4.724 (120)	2.283 (58)	3.543 (90)	2.874 (73)
7	5.906 (150)	2.185 (55.5)	4.724 (120)	2.776 (70.5)	3.543 (90)	3.366 (85.5)
8	6.693 (170)	2.283 (58)	5.512 (140)	2.874 (73)	4.331 (110)	3.465 (88)

This dimension drawing shows Slide Unit in locked End Keep condition.

*NOTE: See Shock Absorbers page

DIMENSION DIAGRAMS – FIXED END PLATE TYPE WITH END KEEP in. (mm)

HSUPKS 25x□

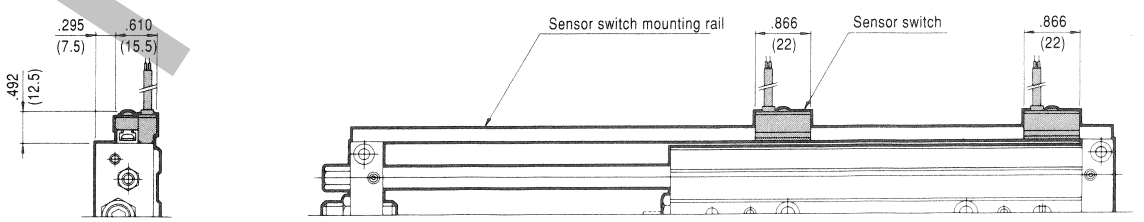


Stroke	Code					
	A	B	C	D	E	F
1	3.543 (90)	0.571 (14.5)	1.969 (50)	1.358 (34.5)	–	–
2	4.528 (115)	0.571 (14.5)	2.953 (75)	1.358 (34.5)	1.772 (45)	1.949 (49.5)
3	5.512 (140)	0.571 (14.5)	3.937 (100)	1.358 (34.5)	2.756 (70)	1.949 (49.5)
4	5.512 (140)	1.063 (27)	3.937 (100)	1.850 (47)	3.740 (95)	1.949 (49.5)
5	5.512 (140)	1.555 (39.5)	3.937 (100)	2.343 (59.5)	3.937 (100)	2.343 (59.5)
6	5.512 (140)	2.047 (52)	3.937 (100)	2.835 (72)	3.937 (100)	2.835 (72)
7	5.512 (140)	2.539 (64.5)	3.937 (100)	3.327 (84.5)	3.937 (100)	3.327 (84.5)
8	6.299 (160)	2.638 (67)	4.724 (120)	3.425 (87)	4.724 (120)	3.425 (87)

*NOTE: See Shock Absorbers page

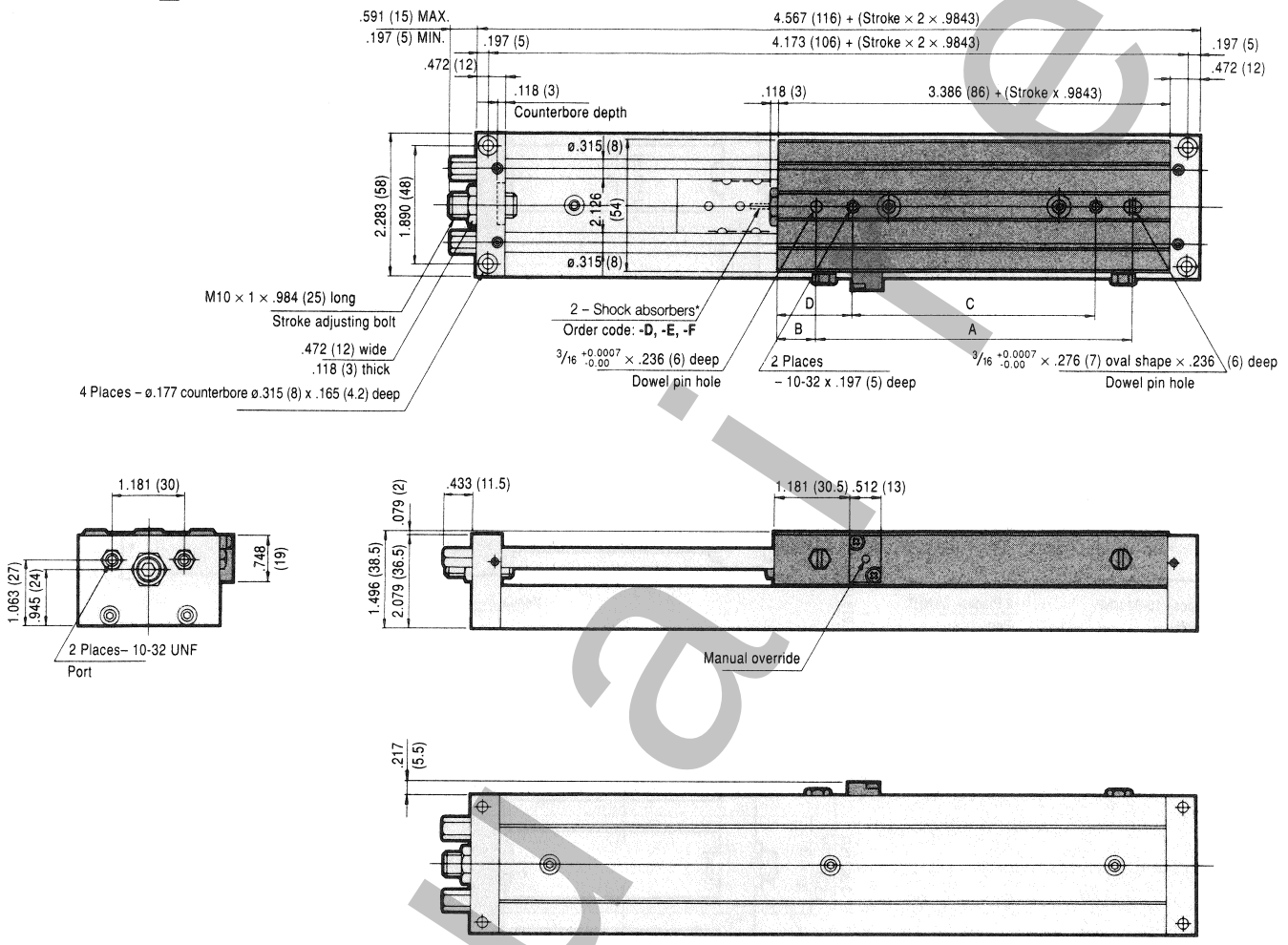
SENSOR SWITCH OPTION

CS9H□, CS3H□, CS4H□, CS5H□



DIMENSION DIAGRAMS – FIXED RAIL-ON PLATE TYPE WITH END KEEP in. (mm)

HSULKS 16x□



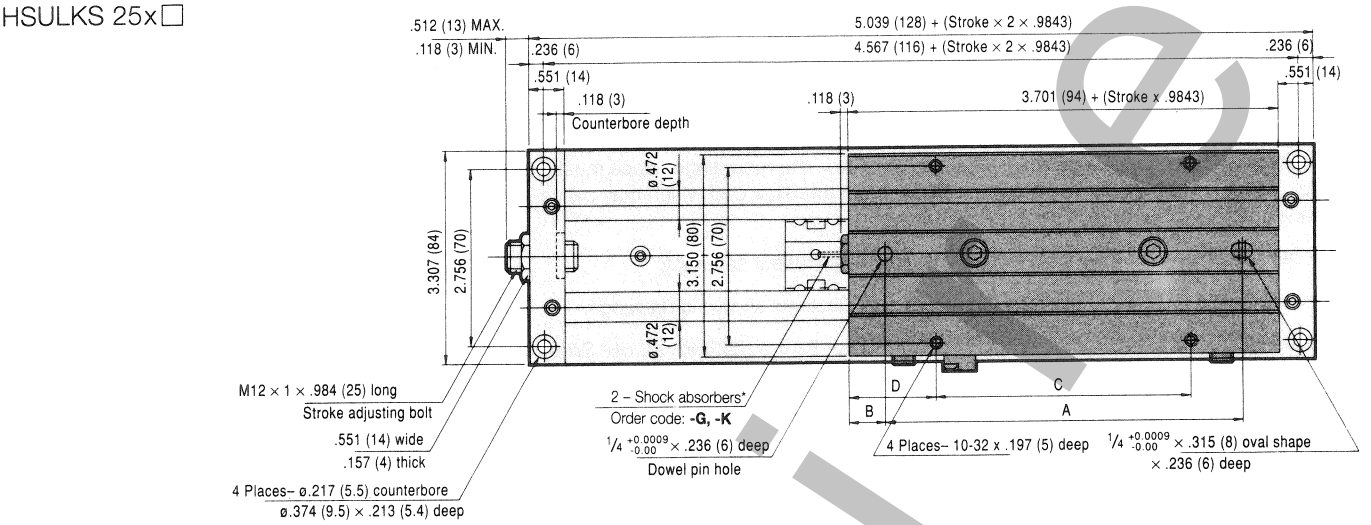
Stroke	Code			
	A	B	C	D
4	5.906 (150)	0.709 (18)	4.724 (120)	1.299 (33)
5	5.906 (150)	1.201 (30.5)	4.724 (120)	1.791 (45.5)
6	5.906 (150)	1.693 (43)	4.724 (120)	2.283 (58)
7	5.906 (150)	2.185 (55.5)	4.724 (120)	2.776 (70.5)
8	6.693 (170)	2.283 (58)	5.512 (140)	2.874 (73)

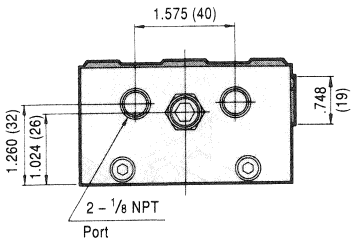
This dimension drawing shows Slide Unit in locked End Keep condition.

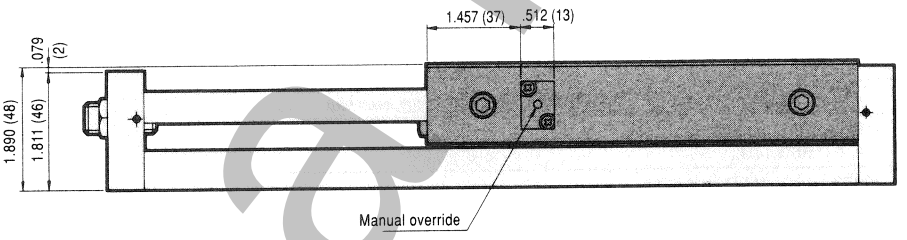
*NOTE: See Shock Absorbers page

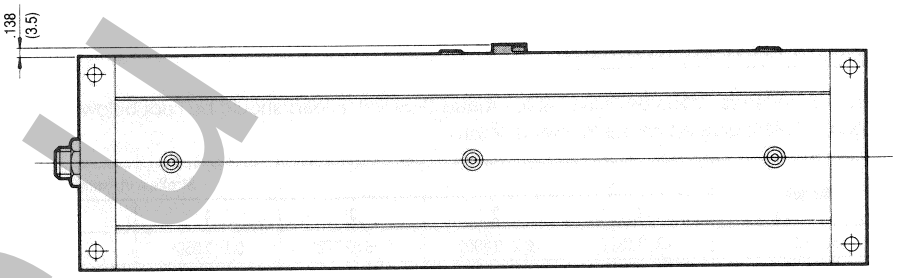
DIMENSION DIAGRAMS – FIXED RAIL-ON PLATE TYPE WITH END KEEP in. (mm)

HSULKS 25x□







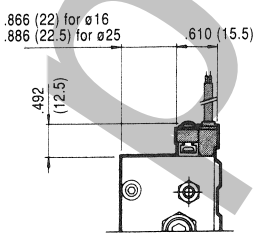


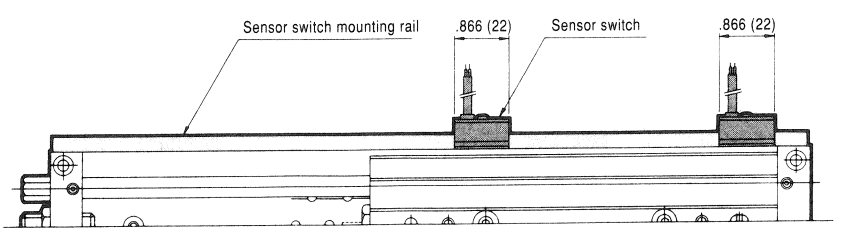
Stroke	Code			
	A	B	C	D
4	5.512 (140)	1.063 (27)	3.937 (100)	1.850 (47)
5	5.512 (140)	1.555 (39.5)	3.937 (100)	2.343 (59.5)
6	5.512 (140)	2.047 (52)	3.937 (100)	2.835 (72)
7	5.512 (140)	2.539 (64.5)	3.937 (100)	3.327 (84.5)
8	6.299 (160)	2.638 (67)	4.724 (120)	3.425 (87)

*NOTE: See Shock Absorbers page

SENSOR SWITCH OPTION

CS9H□, CS3H□, CS4H□, CS5H□





HANDLING TIPS AND POINTS TO BE CONSIDERED

MOUNTING BODY

MOUNTING

1. Slide Units may be mounted in any direction, however, the mounting surface must be flat. When mounting, take care not to twist or bend the Slide Unit which may cause leakage, loss of accuracy, and improper operation.

2. Scratches or dents on the table or plate may adversely affect accuracy.

3. To locate table and plate, use dowel pins per specifications shown in drawings.

4. When using a heavy load or operating at speeds over 8 in./s (200mm/s), use Slide Units equipped with either internally or externally mounted shock absorbers.

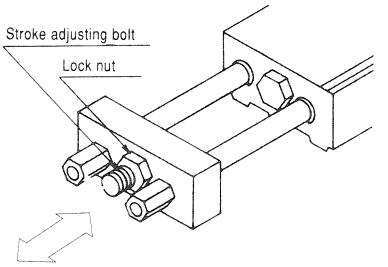
STROKE ADJUSTMENT

To shorten stroke, loosen the lock nuts and turn stroke adjusting bolts clockwise. To lengthen stroke, turn adjusting bolts counter-clockwise. Tighten lock nuts after adjustment.

in. (mm)

Model	Stroke adjustment range, each end
HSUT10x□, HSUP10x□, HSUL10x□	1–5" ±0.315 6–8" ±0.276
HSUT(K)16x□, HSUT(K)25x□ HSUP(K)16x□, HSUP(K)25x□ HSUL(K)16x□, HSUL(K)25x□	1–5" ±0.315* 6–8" ±0.276*

*End Keep models have stroke adjustment of ±0.197 (5 mm) on End Keep side of Slide Unit.



MAXIMUM LATERAL LOADS

When placing lateral loads on Fixed Table models (HSUT/K), load should be kept below the load values indicated on the following chart.

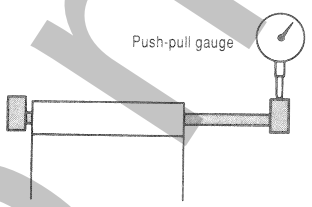
lb.(kgf)

Model	Stroke – in. (mm)							
	1	2	3	4	5	6	7	8
HSUT10x□	0.3 (0.137)	0.2 (0.095)	0.16 (0.072)	0.1 (0.059)	–	–	–	–
HSUT(K)16x□	0.7 (0.312)	0.5 (0.216)	0.4 (0.165)	0.3 (0.134)	0.25 (0.113)	0.2 (0.097)	0.2 (0.085)	0.2 (0.076)
HSUT(K)25x□	1.9 (0.857)	1.3 (0.604)	1.0 (0.466)	0.8 (0.379)	0.7 (0.320)	0.6 (0.276)	0.5 (0.243)	0.5 (0.217)

PISTON ROD DEFLECTION

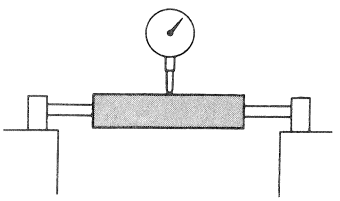
Piston rod deflection will occur when excessive loads are placed on Fixed Table (HSUT/K) and Fixed End Plate models (HSUP/K). Use the following chart for approximate rod deflection factors.

Fixed Table Type (HSUT/K)



Model	Load lb. (kgf)	Stroke – in. (mm)	
		4	8
HSUT10x□	0.4 (0.2)	0.004 (0.11)	–
	0.7 (0.3)	0.006 (0.16)	–
	1.1 (0.5)	0.011 (0.27)	–
HSUT(K)16x□	1.1 (0.5)	0.003 (0.07)	0.017 (0.44)
	2.2 (1.0)	0.006 (0.15)	0.035 (0.88)
	3.3 (1.5)	0.009 (0.22)	0.052 (1.32)
HSUT(K)25x□	2.2 (1.0)	0.001 (0.03)	0.007 (0.18)
	3.3 (1.5)	0.002 (0.05)	0.011 (0.27)
	5.5 (2.5)	0.003 (0.08)	0.018 (0.45)

Fixed End Plate Type (HSUP/K)

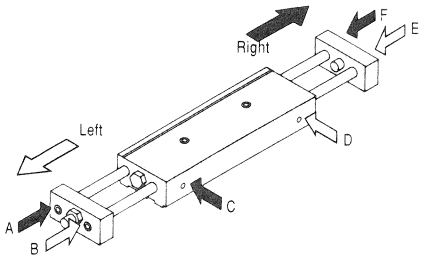


Model	Load lb. (kgf)	Stroke – in. (mm)	
		4	8
HSUP10x□	0.4 (0.2)	0.001 (0.02)	–
	1.1 (0.5)	0.002 (0.04)	–
	2.2 (1.0)	0.003 (0.07)	–
HSUP(K)16x□	2.2 (1.0)	0.001 (0.02)	0.005 (0.12)
	4.4 (2.0)	0.002 (0.05)	0.010 (0.25)
	6.6 (3.0)	0.003 (0.07)	0.015 (0.37)
HSUP(K)25x□	4.4 (2.0)	0.0004 (0.01)	0.002 (0.05)
	6.6 (3.0)	0.0004 (0.01)	0.003 (0.08)
	10.10 (5.0)	0.001 (0.02)	0.005 (0.13)

PLUMBING

PLUMBING LOCATION AND OPERATING DIRECTION

Fixed Table Type (HSUT, HSUTK):



Piston rod and end plate move to the right when air is supplied to C-port, and move to the left when supplied to D-port. Plug C- and D-ports to plumb A-, B-, E-, F-ports. Special adaptors and plugs are needed.

Piston rod and plate move to the right when air is supplied to A-, F-ports and move to the left when supplied to B-, E-ports.

Fixed End Plate Type (HSUP, HSUPK)
Fixed Rail-on Plate Type (HSUL, HSULK)

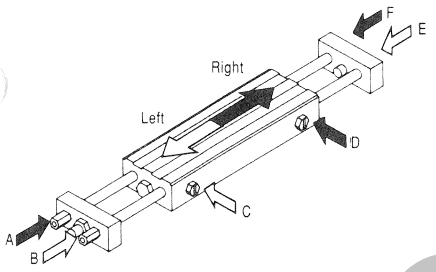


Table moves to the right when air is supplied to A-port and moves left when supplied to B-port. Plug A- and B-ports to plumb C-, D-, E-, F-ports. Special plug required.

Table moves to the right when air is supplied to C-, E-ports and moves to the left when D-, F-ports.

Before connecting fittings and tubing, blow all foreign material from these components. If using a sealant, take extra care that sealant does not enter Slide Unit causing malfunction and/or leaks.

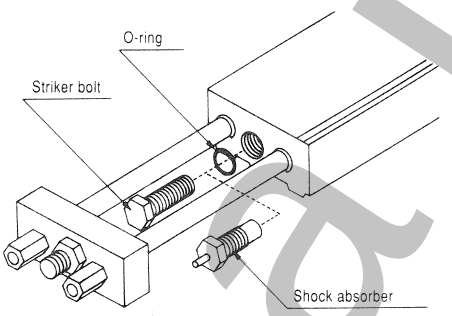
SHOCK ABSORBER

SELECTION

Use only fixed-type (not adjustable) shock absorbers with Slide Units. Use the chart on the following page for shock absorber selection.

SHOCK ABSORBER EXCHANGES

When loads and operating speeds change, be sure to change shock absorber to ensure proper shock absorption.



1. Take care not to scratch piston rod when adding or removing shock absorber or striker bolt.

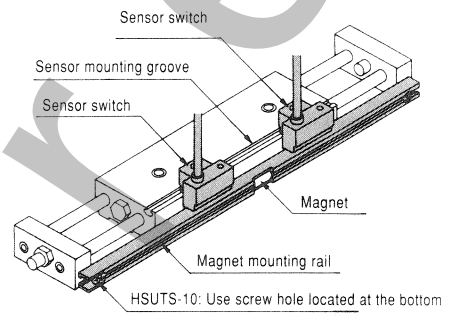
2. When mounting shock absorber or striker bolt, be sure to insert o-ring first.

3. This product cannot be operated without shock absorber or striker bolt.

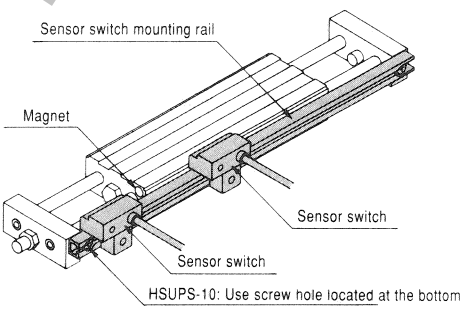
4. Do not loosen or remove screw located at the end of the shock absorber. Oil inside will leak causing shock absorber failure.

SENSOR SWITCH

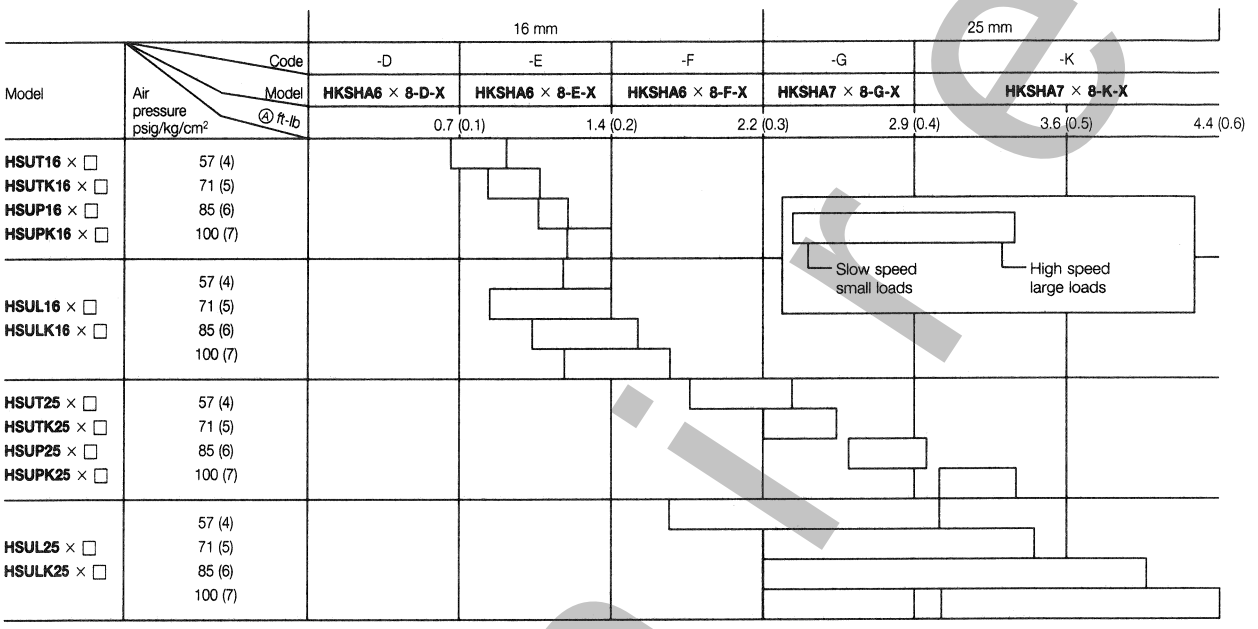
Fixed Table Type (HSUTS, HSUTKS):



Fixed Plate Type (HSUPS, HSUPKS)
Fixed Rail-on Plate Type (HSULKS, HSULKS):



SHOCK ABSORBER SELECTION GUIDE



Ⓐ Shock absorbing capacity ft-lb (kgf-m)

Humphrey Slide Units are designed so that one shock absorber can be installed in each end of the unit.

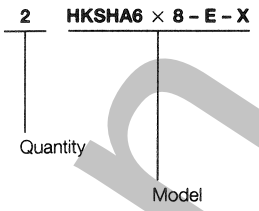
Shock absorbers are available for Slide Units of 5/8″ (16mm) and 1″ (25mm) bore. They are not available for Slide Units of 3/8″ (10mm) bore.

Code -D, -E, and -F shock absorbers (see chart above fit) 5/8″ (16mm) bore Slide Units only. Code -G and -K shock absorbers fit 1″ (25mm) bore Slide Units only.

Shock absorbers are supplied loose and are ordered separately, i.e., not as part of the Slide Unit model number.

To order, state shock absorber model number and the quantity you need. In applications requiring shock absorbers, generally two are used (one on each end of the Slide Unit).

ORDERING INFORMATION



CONTROLS FOR SLIDE UNITS WITH END-KEEP

1. Use 2-position, 4- or 5-port valves. Do not use 3-position valves in which the center position has delivery ports open to exhaust.

2. Use meter-out flow controls. Meter-in flow controls may prevent End Keep from releasing.

3. Use air supply pressure of at least 30 psig (2 kgf/cm^2).

4. Connect *valve's* normally closed port to the Slide Unit port opposite of the one nearest the End Keep.

CAUTION

1. Do not admit compressed air to the supply port adjacent to the End Keep if the opposite supply port has been previously exhausted. This may cause unintended actuation; the piston rods may suddenly extend or retract. This could lead to personal injury and/or damage to the Slide Unit or adjacent equipment.

2. When commencing operation of the Slide Unit after it has been completely exhausted (such as prior to start up, or after an emergency stop), first pressurize the supply port opposite the one nearest the End Keep.

3. Do not use an external stop to limit the stroke of the End Keep side of the Slide Unit. Doing so may render the End Keep inoperable.

ADJUSTING SLIDE UNIT STROKE

The stroke of Humphrey Slide Units can be adjusted within a range of –0.197 to 0 inches (–5 to 0 mm) on the side opposite the End Keep.

MANUAL OPERATION OF END KEEP

For manual operation of End Keep, insert a 4-40 threaded screw into the lock piston opening in the End Keep mechanism. Thread the screw into the lock piston about three turns. Pull on the screw to disengage the lock piston. To maintain the manual override, shoulder a 4-40 locknut against the Slide Unit. This maintains release of the lock piston, and frees-up hands.

CAUTION

1. Do not release End Keep when a load is present on the Slide Unit. This may cause unintended operation which could result in injury to personnel, or damage to equipment. When releasing the End Keep, be sure that air pressure is supplied to the port opposite the port adjacent to the End Keep, then release the End Keep.

2. If difficulty is experienced in manual release of the End Keep, the cause may be interference between the lock piston and the piston rods. In this case, supply air to the port opposite the one located adjacent to the End Keep. Then release the End Keep as described above.

3. If contaminants (water, oil, dirt or other debris) enter the manual override opening, the locking mechanism may not pull out sufficiently to disengage the piston rods. Provide adequate protection to avoid this condition.

GENERAL INFORMATION

ATMOSPHERE

Protect Slide Units when used in contaminated conditions such as excessive dust or where exposed to water or oil particles. Penetration of these substances may adversely affect operation.

When media or atmosphere contain the following substances, Slide Units should not be used: organic solvents, phosphoric acid, ester-type machine oil, sulfurous acid, gas, chlorine gas, or acids.

LUBRICATION

No lubrication is required when compressed air is dry and free of water and oil. If lubricating oil is used, it must be chemically compatible with Buna N elastomers and of sufficient viscosity to assure adequate lubrication. Thin or low viscosity oils (spindle oil, machine oil, etc.) do not provide a good residual film of lubrication.

MEDIA/FILTRATION

Slide Units are designed for use with compressed air or inert gases. Consult factory if using any other media. Compressed air should be clean and uncontaminated. When in doubt, install an air filter with filtering capacity of 40 microns. Periodically remove and clean or replace filter element.

CAUTION

Compressed air is powerful and may be dangerous. Before attempting to remove a component from an air line or system, *always* disconnect the supply air and thoroughly exhaust the line or system. *Never* attempt to construct, operate, or service anything using compressed air unless you have been properly trained to do so. Failure to heed this warning could result in SERIOUS, EVEN FATAL, PERSONAL INJURY.