

Fig. 1306

Limit Stop

Fig. 1307: With Extension Piece

Size Range*: Rated loads from 650 (lbs) to 128,000 (lbs).

Service: Limit stops are passive restraints with preset gaps. The gaps are sized to permit free thermal movement but prevent excessive pipe stresses by limiting displacements due to seismic or other disturbing events.

How to size: Select size based on expected load. Stroke is determined by the required gap.

Features:

- Unrestricted thermal movement
- Simple installation
- Simplified inspection – visual
- ISO-9001 qualified
- Pin-to-pin: up to 120"

Materials: Smaller sizes (up to 10,000 lb. Load) are of stainless steel construction and utilize internal body threads for adjusting gaps. For larger sizes, carbon steel is used, and the gaps are adjusted with internal spacer washers. Hard chrome, as well as other platings and coating, are utilized to meet any environment.

Ordering:

Fig. 1306 specify: size, stroke, limit stop, compression setting and tension setting

Fig. 1307 specify: size, stroke, limit stop, W dimension, compression setting and tension setting.

***Note:** The use of this product must be in conjunction with the specialized Pipe Stress Program GapPipe®



Fig 1306, 1307: Loads (lbs) • Dimensions (in)					
Rated Load	Size	Stroke	Pin Dia	Pin to Pin (Fig. 1306)*	
				Min.	Max.
650	1	4	3/8	10 1/8	14 1/8
1,500	2	4	1/2	12 1/2	16 1/2
3,000	11	5	3/4	14 3/4	19 3/4
6,000	3	5		16 1/2	21 1/2
12,500	12	5	1	15 5/8	20 5/8
15,000	4	6		20 3/16	26 3/16
21,000	13	5	1 1/4	17 7/8	22 7/8
32,000	14	5	1 1/2	19 7/8	24 7/8
50,000	5	6		27	33
50,000	15	5	1 3/4	22 1/2	27 1/2
72,000	16	5	2	25 1/4	30 1/4
120,000	6	6	2 1/2	32 13/16	38 13/16
128,000	18	5		29 1/2	34 1/2

*Standard - other strokes available

Fig. 3306

Hydraulic Snubber

Fig. 3307: With Extension Piece

Size Range: Six standard sizes with load ratings from 350 to 50,000 pounds.

Finish: Basic unit is corrosion resistant salt bath nitrided. Attachments are painted with semi gloss primer, carbo zinc or other.

Service: For use on piping systems or equipment when unrestrained thermal movement must be allowed, but which must be restrained during impulsive or cyclic disturbance. The unit is not effective against low amplitude, high frequency movement. Use with standard settings to prevent destructive response to earthquakes, flow transients or wind load. Special settings are available to absorb the continuous thrust resulting from safety valve blow-off or pipe rupture.

Standard Settings: The standard settings are:
 Locking (activation) velocity 8 ± 2 in/min. Bleed rate (post activation) at normal rated load 4 ± 1 in/min. (Special settings are available). The valves are calibrated at the factory within the tolerances indicated at room temperature. Locking velocity and bleed rate will vary with temperature. Testing has indicated that there is little effect of these changes on dynamic operation.

Features:

- Temperature compensating valves minimize the effects of temperature on lockup and bleed
- Pressurized reservoirs
- Continuous operation at 150° F with brief transients to 350° F
- Factory calibrated valves
- Rapid, positive valve closure
- Special design minimizes the “lost motion“which results from the shifting and seating of piston seals
- Unlocked resisting force is less than 17 1/2 pounds for sizes 1/4 and 1/2 and less than 2% of rated load for larger sizes
- Stable non-flammable, long life hydraulic fluid
- Self-aligning bushings permit $\pm 5^\circ$ misalignment or angular motion. Bushings are coated with a dry lubricant.
- Choice of coating (paint, primer, carbo zinc, epoxy, plating or other) for attachments.

Applications:

- Direct replacement for Fig. 306/307 Pacific Scientific (PSA) mechanical snubbers: Exact load ratings, exact pin sizes, exact stroke lengths and exact pin-to-pin dimensions. The cross sectional dimensions of the Fig. 3306 are based on those of PSA to facilitate non-interference one-to-one replacement. Pins, clamps, pivot mounts, extension pieces, and rear brackets used with PSA snubbers are compatible with the Fig. 3306 and can be utilized.
- New installations: For new installations, the Fig. 3306 is available with a complete line of pipe clamps and rear brackets.



Fig. 3306



Fig. 3307 with Extension Piece

Loads (lbs)		
Size	Stroke (in)	Max Load *
1/4	4	350
1/2	2 1/2	650
1	4, 8	1,500
3	5, 10	6,000
10	6, 12	15,000
35	6	50,000

* Loads must not be applied outside a 10° included angle cone of action to the pipe clamp axis without special authorization.

Fig. 3306

Hydraulic Snubber

Fig. 3307: With Extension Piece

How to size:

- (1) **Size:** Use table on the previous page to select size large enough to restrain expected load.
- (2) **Stroke:** Define expected movement of the pivot joining the snubber with the equipment to be protected (cold to hot plus any abnormal movements). Determine maximum and minimum distances between this curve and the fixed pivot pin of the snubber. The minimum recommended stroke is 20% greater than the difference between these lengths. Make sure that all normal movement of equipment will be accommodated without the snubber entering the last 1/4" (preferably 1/2") of the stroke at either end.
Note: If erected position at the snubber's location on the equipment is outside of the range of normal cold-to-hot movement (e.g cold pull of pipe), the snubber should not be installed until after the equipment is in its cold position. This eliminates the need of providing for the extra travel in the snubber's stroke.
- (3) **Piston position:** To aid in measuring the piston position, we have shown a dimension, "Z". This dimension represents the distance between the cylinder head and the end of the rod when the rod is fully retracted. Whenever specifying the position at which the piston rod is to be set, the total dimension from the cylinder head to the end of the rod should be given. Thus, *piston setting = piston position + Z*.
- (4) **Assembly length:** Determine the installed "C" dimension by adding the installed piston position (not setting) to C minimum. Lay in takeout dimensions E and/or B, and find required pin-to-pin snubber length. If a pin-to-pin length adjustment is desired, use Fig. 3307. Calculate the required "W" dimension by subtracting (C installed + F) from the required pin-to-pin length. If this is less than W minimum, only a Fig. 3306 can be used, and one of the attachments will have to be moved or shimmed to suit. If a Fig. 3306 is to be used, make sure that the required pin-to-pin length is at least as great as (C installed + B). If neither a Fig. 3306 nor a Fig. 3307 can be accommodated, and the installation cannot be modified, consult your Anvil representative about designing a special or modified unit.
- (5) **Installed piston setting:** As indicated previously, the snubber should be installed at its cold piston position if possible. From the installed position, take extension (outward movement) of the piston rod as positive (+) and retraction as negative (-).
 Installed piston position =

$$\left(\frac{\text{Stroke} - (\text{Algebraic Sum of Movements})}{2} \right)$$

Ordering: Specify

- Fig. No.
- Size
- Stroke
- Load
- Cold and hot piston settings
- W dimension when specifying Fig. 3307
- Pipe clamp size when specifying option 3
- Attachment surface coating
- Option

Fig. 3306 & 3307 Options	
Option	Consists of...
0	Fig 3306: Basic unit (snubber) with pivot mount and one rear bracket.
	Fig. 3307: Basic unit with extension piece and one rear bracket.
1	Option 0 plus cylinder eye.
2	Option 0 plus cylinder eye and additional rear bracket.
3	Option 0 plus cylinder eye and pipe clamp.



Snubbers & Limit Stops

Fig. 3306

Hydraulic Shock and Sway Suppressor (cont.)

Fig. 3307: With Extension Piece

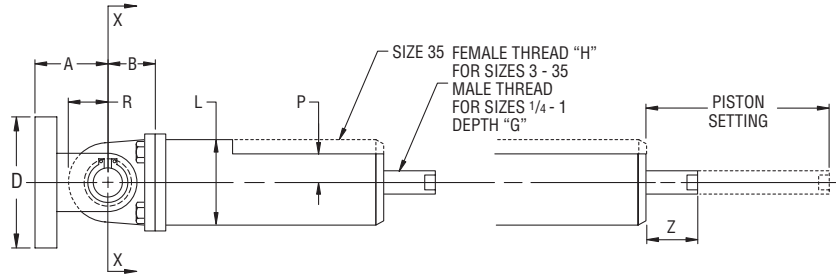


FIG. 3306 (OPTION 0)

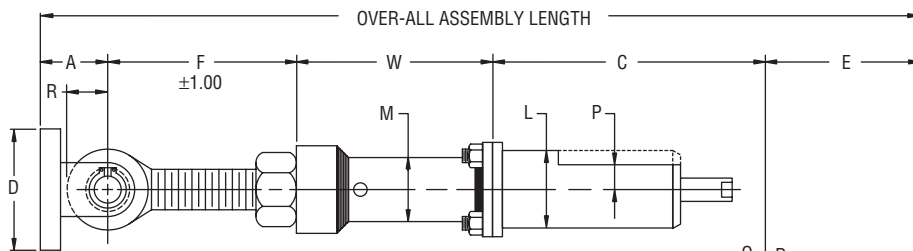
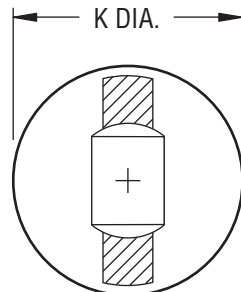
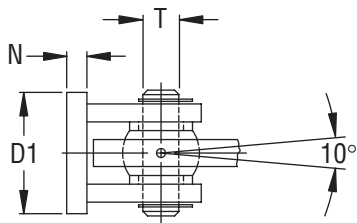


FIG. 3307 (OPTION 0)



BOLT PLATE (SIZES 1/4 - 10)
SECTION X-X

NOTE: CYLINDER EYE MAY BE ROTATED TO ANY POSITION

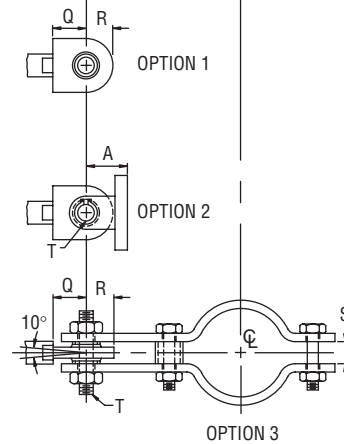


Fig. 3306

Hydraulic Snubber (cont.)

Fig. 3307: With Extension Piece

Fig 3306, 3307 Dimensions (in)

Snubber Size	Stroke	A	B	C *			D	D1	F	G	H	K Dia	L Dia	M Dia	N	P	Q Ref	R Max	S	T Dia	W		Max Pin to Pin	Z
				Min	Mid	Max															Min	Max		
1/4	4.00	1.00	1.19	9.0	11.00	13.0	2.00	1.25	2.94	0.38	3/8-16	2.25	2.25	1.31	0.25	0.62	1.19	0.63	0.63	0.374	8.25	45.56	61.50	0.19
1/2	2.50			7.5	8.75	10.0														0.372	8.25	48.56		
1	4.00	1.62	1.56	11.0	13.00	15.0	4.00	1.75	3.00	0.38	3/8-16	3.25	2.38	1.31	0.38	0.69	2.00	1.00	1.00	0.499	8.81	43.50	61.50	0.19
	8.00			15.5	19.50	23.5														0.497	N/A	N/A		
3	5.00	2.12	2.62	14.0	16.50	19.0	5.00	3.62	4.50	0.72	5/8-18	4.62	4.62	2.38	0.50	1.44	2.12	1.38	1.38	0.749	9.31	37.50	61.50	1.25
	10.00			20.0	25.00	30.0														0.747	N/A	N/A		
10	6.00	3.00	4.06	16.1	19.10	22.1	7.00	4.00	5.12	1.00	1-14	5.75	5.75	2.88	1.00	1.62	2.00	1.62	1.38	0.999	10.18	44.50	72.75	2.10
	12.00			23.1	29.10	35.1														0.997	N/A	N/A		
35	6.00	4.62	3.00	24.0	27.00	30.0	9.75	6.50	7.75	1.88	1 7/8-12	-	6.00	4.50	1.25	-	3.00	2.79	2.00	1.499 1.497	10.00	79.75	117.50	1.48

* Adapters are available to match existing pin-to-pins.

Fig 3306, 3307 Dimensions (in)

*Pipe Size	E-Take Out					Clamp Stock Size				
	Snubber Size					Snubber Size				
	1/4 & 1/2	1	3	10	35	1/4 & 1/2	1	3	10	35
3/4	2 7/16	-	-	-	-	3/16 x 1	-	-	-	-
1	2 9/16	-	-	-	-	3/16 x 1	-	-	-	-
1 1/4	2 1 1/16	-	-	-	-	3/16 x 1	-	-	-	-
1 1/2	4 1/8	-	-	-	-	1/4 x 1 1/4	-	-	-	-
2	5 1/8	-	-	-	-	1/4 x 1 1/4	-	-	-	-
2 1/2	5 3/8	7	7	7	-	1/4 x 1 1/4	3/8 x 1 3/4	1/2 x 2 1/2	5/8 x 2 1/2	-
3	5 1 5/16	7	7	8 1/8	-	1/4 x 1 1/4	3/8 x 1 3/4	1/2 x 2 1/2	5/8 x 2 1/2	-
3 1/2	6 3/16	7	7	8 1/8	-	1/4 x 1 1/4	3/8 x 1 3/4	1/2 x 2 1/2	5/8 x 2 1/2	-
4	6 1/2	7 1/4	7 1/4	8 3/8	-	5/16 x 2	1/2 x 1 1/2	5/8 x 2 1/2	5/8 x 2 1/2	-
5	7 3/4	7 3/4	7 3/4	9 1/8	-	5/16 x 2	1/2 x 1 1/2	5/8 x 2 1/2	3/4 x 3	-
6	8 3/8	8 3/8	8 3/8	10	-	5/16 x 2	1/2 x 2	5/8 x 3	3/4 x 4	-
8	9 3/8	9 3/8	9 3/8	11 1/4	12 5/8	5/16 x 2	1/2 x 2 1/2	3/4 x 3	3/4 x 5	1 x 7
10	10 1/2	10 1/2	10 1/2	12 3/4	14 1/4	5/16 x 2	5/8 x 2 1/2	3/4 x 4	3/4 x 6	1 1/4 x 6
12	-	11 7/8	11 7/8	13 7/8	15 3/8	-	5/8 x 2 1/2	3/4 x 5	1 x 5	1 1/4 x 6
14	-	12 5/8	12 5/8	14 1/2	16	-	5/8 x 2 1/2	3/4 x 5	1 x 5	1 1/4 x 7
16	-	13 5/8	13 5/8	15 1/4	17 1/8	-	5/8 x 3	3/4 x 5	1 x 5	1 1/4 x 8
18	-	14 5/8	14 5/8	16 3/8	18 1/4	-	3/4 x 3	3/4 x 5	1 x 6	1 1/4 x 9
20	-	15 3/4	15 3/4	17 3/4	19 1/4	-	3/4 x 3	3/4 x 5	1 x 7	1 1/2 x 8
24	-	18 1/8	18 1/8	19 7/8	21 3/4	-	3/4 x 4	3/4 x 5	1 x 7	1 1/2 x 9
30	-	21 1/4	21 1/4	23	25	-	3/4 x 4	3/4 x 6	1 x 7	1 1/2 x 10
36	-	24	24	26 1/2	28 1/8	-	3/4 x 5	3/4 x 7	1 x 7	1 1/2 x 10

* Intermediate sizes between 20 and 36 are available and will have the take out and stock of the next larger size.

Snubbers & Limit Stops

Fig. 200, Fig. C-200

Hydraulic Snubber

Fig. 201, Fig. C-201: With Extension Piece

Size Range: Seven standard sizes with cylinder bores of 1½" to 8" and with normal load ratings from 3,000 pounds to 128,000 pounds. All are available with 5", 10", 15", or 20" strokes except the 1½" size which is offered with 5" and 10" strokes only. Snubbers are available with integral or remote reservoirs.

Finish: Fig. 200/201 painted with semi gloss primer.
Fig. C-200/C-201 corrosion resistant; painted with carbo zinc.

Service: For use on piping systems or equipment when unrestrained thermal movement must be allowed, but which must be restrained during impulsive or cyclic disturbance. The unit is not effective against low amplitude, high frequency movement. Use with standard settings to prevent destructive response to earthquakes, flow transients or wind load. Special settings are available to absorb the continuous thrust resulting from safety valve blow-off or pipe rupture.

Standard settings: The standard settings are: Locking (activation) velocity 8 ± 2 in/min.

Bleed rate (post activation) at normal rated load 4 ± 1 in/min. (Special settings are available).

The valves are calibrated at the factory within the tolerances indicated at room temperature. Locking velocity and bleed rate will vary with temperature. Testing has indicated that there is little effect of these changes on dynamic operation.

Features:

- Choice of valve type
 - Adjustable – permits field adjustments
 - Temperature compensating – minimizes the effects of temperature on lockup and bleed
- Choice of reservoir type
 - Transparent – continuous operation at 200° F with brief transients to 250° F
 - Metal or pressurized metal – allows brief transients to 340° F
 - Pressurized – eliminates the concern of reservoir orientation relative to valve and cylinder – minimizes internal contamination
 - Remote
- Factory calibrated valves
- Rapid, positive valve closure
- Special design minimizes the “lost motion” which results from the shifting and seating of piston seals
- Unlocked resisting force is less than 1% of rated load
- Stable, non-flammable, long life hydraulic fluid made highly visible for ease of inspection
- Self-aligning bushings permit ± 5° misalignment or angular motion. Bushings are coated with a dry lubricant.
- Choice of coating (paint, primer, carbo zinc, epoxy, plating or other)



Loads (lbs)	
Cylinder Size (in)	Max Load *
1½ (5" stroke)	3,000
1½ (10" stroke)	1,250
2½ (5", 10", 15" stroke)	12,500
2½ (20" stroke)	10,500
3¼	21,000
4	32,000
5	50,000
6	72,000
8	128,000

* Loads must not be applied outside a 10° included angle cone of action to the pipe clamp axis without special authorization.

Fig. 200, Fig. 201

Hydraulic Snubber (cont.)

Upgrade Kits: Kits are available to upgrade existing snubbers with temperature compensating valves and/or pressurized reservoir.

How to size:

- (1) Cylinder size: Use table on page PH-191 to select cylinder bore size large enough to restrain expected load.
- (2) Stroke: Define expected movement of the pivot joining the suppressor with the equipment to be protected (cold to hot plus any abnormal movements). Determine maximum and minimum distances between this curve and the fixed pivot pin of the snubber. The minimum recommended stroke is 20% greater than the difference between these lengths.
Note: If erected position at the snubber's location on the equipment is outside of the range of normal cold-to-hot movement (e.g. cold pull of pipe), the snubber should not be installed until after the equipment is in its cold position. This eliminates the need of providing for the extra travel in the snubber's stroke. For 2½" through 8" snubbers, standard strokes are 5", 10", 15", and 20". For the 1½" snubber, 5" and 10" are the only standard strokes.
- (3) Installed piston setting: As indicated previously, the snubber should be installed at its cold piston position if possible. From the installed position, take extension (outward movement) of the piston rod as positive (+) and retraction as negative (-).
- (4) Installed piston position =

$$\left(\frac{\text{Stroke} - (\text{Algebraic Sum of Movements})}{2} \right)$$

To aid in measuring the piston position, we have shown a dimension, "Z". This dimension represents the distance between the cylinder head and the end of the rod when the rod is fully retracted. Whenever specifying the position at which the piston rod is to be set, the total dimension from the cylinder head to the end of the rod should be given. Thus, Piston Setting = Piston Position + Z.

- (5) Assembly length: Determine the installed "C" dimension by adding the installed piston position (not setting) to C minimum. Lay in take out dimensions E and/or B, and find required pin-to-pin snubber length. If a pin-to-pin length adjustment is desired, use Fig. 201. Calculate the required "W" dimension by subtracting (C installed + F) from the required pin-to-pin length. If this is less than W minimum, only a Fig. 200 can be used, and one of the attachments will have to be moved or shimmed to suit. If a Fig. 200 is to be used, make sure that the required pin-to-pin length is at least as great as (C installed + B). If neither a Fig. 200 nor a Fig. 201 can be accommodated, and the installation cannot be modified, consult your Anvil representative about designing a special or modified unit.

Ordering:

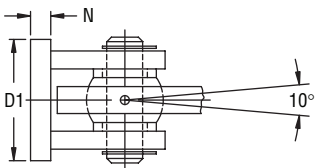
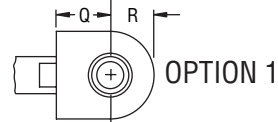
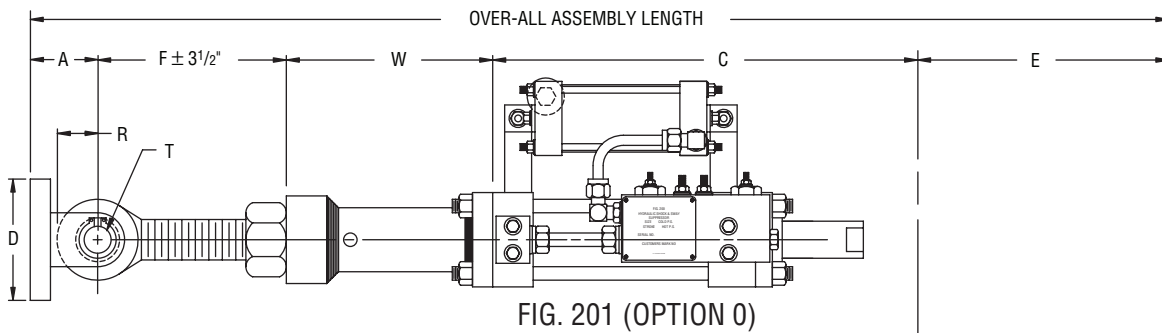
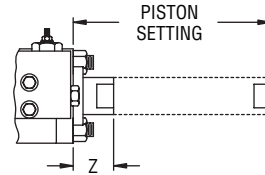
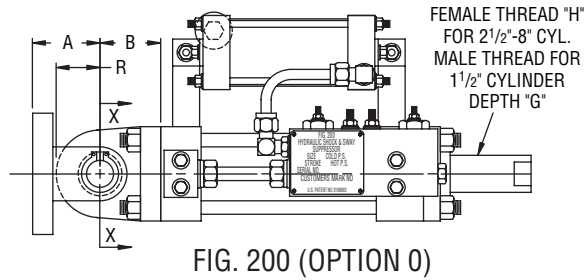
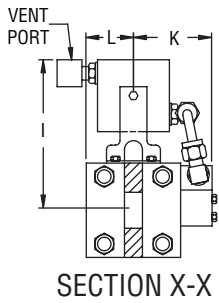
Ordering: Specify part number as follows:						
XXX	X	XX	X	X	X	X
Reservoir Orientation O=Does not apply for pressurized or remote U=Rod up D=Rod down or horizontal						
Reservoir Type L=Transparent (Polycarbonate) M=Metal (limited applications) P=Pressurized R=Remote						
Valve Type A=Adjustable T=Temperature Compensating						
Option (0,1,2, or 3), See Option Table Below						
Stroke (5, 10, 15, 20)						
Cylinder Size: 1 (1½ Cyl.) 2 (2½ Cyl.) 3 (3¼ Cyl.) 4 (4Cyl.) 5 (5Cyl.) 6 (6Cyl.) 8 (8 Cyl.)						
Figure No. (200 or 201), Also Specify: W Dimension when Specifying Fig 201 Pipe Clamp Size when Specifying Option 3 Surface Coating Cold and Hot Piston Settings.						

Fig. 200 & Fig. 201 Options

Option	Consists of...
0	Fig 200: Basic unit (snubber) with pivot mount and one rear bracket. Fig. 201: Basic unit with extension piece and one rear bracket.
1	Option 0 plus cylinder eye.
2	Option 0 plus cylinder eye and additional rear bracket.
3	Option 0 plus cylinder eye and pipe clamp.

Fig. 200, Fig. 201

Hydraulic Snubber (cont.)



NOTE:
CYLINDER EYE
MAY BE ROTATED
TO ANY POSITION

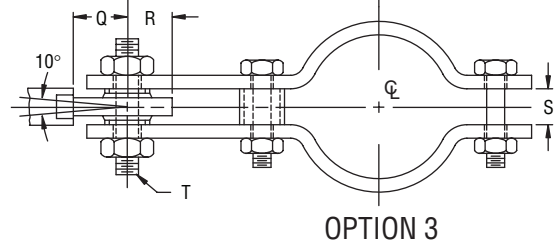
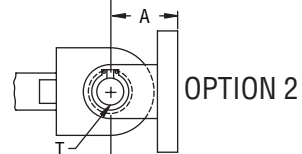


Fig. 200, Fig. 201

Hydraulic Snubber (cont.)

Fig 200, 201: Weight (lbs) • Dimensions (in)																									
Cylinder		Fig. 200 Wgt.	A	B	C			D	D ₁	F	G	H	I			K	L	N	Q	R	S	T	W		Z
Bore	Stroke				Min	Mid	Max						Metal Res.	Trans. Res.	Press Res.								Min	Max	
1½	5	45	2½	15/8	13⅞	15⅝	18⅞	2	2⅝	6	¾	5/8-18	59/16	41⅜	4¾	2¾	2¼	5/8	2⅞	1⅞	1	¾	9½	75⅝	5/8
	10	49			18⅞	23⅞	28⅞																	65⅝	
2½	5	75	2½	2¼	13⅞	15⅝	18⅞	2	2⅞	7⅞	7/8	7/8-14	6¼	5⅞	5¾	3¼	1¾	¾	2	1⅝	1⅞	1	10⅝	94⅞	1
	10	81			18⅞	23⅞	28⅞																	84⅞	
	15	87			23⅞	30⅞	38⅞																	74⅞	
	20	93			28⅞	38⅞	48⅞																	64⅞	
3¼	5	121	3	3	14⅞	17⅞	19⅞	3	3⅞	7⅞	1⅞	1⅞-12	6⅞	5¾	6¾	3¾	2¼	¾	2½	2⅞	1⅞	1¼	10½	92	1⅞
	10	132			19⅞	24⅞	29⅞																	82	
	15	146			24⅞	32⅞	39⅞																	72	
	20	156			29⅞	39⅞	49⅞																	62	
4	5	177	4	3¾	16⅞	18⅝	21⅞	6⅞	4¼	9⅞	1½	1½-12	7⅞	6	7⅞	4	2½	1¼	3⅞	2½	2	1½	11½	89⅞	1⅞
	10	189			21⅞	26⅞	31⅞																	79⅞	
	15	206			26⅞	33⅞	41⅞																	69⅞	
	20	223			31⅞	41⅞	51⅞																	59⅞	
5	5	235	5	4½	18	20½	23	7⅞	5⅝	10⅞	1⅞	1⅞-12	8½	7	9⅞	4¾	3¼	1¾	4	3⅞	2⅝	1¾	12	86⅞	1⅞
	10	256			23	28	33																	76⅞	
	15	277			28	35½	43																	66⅞	
	20	298			33	43	53																	56⅞	
6	5	292	5¾	5½	19¾	22¼	24¾	9⅞	6¼	11⅞	2¼	2¼-12	9⅞	7⅝	10⅞	5¼	3⅞	2	4⅝	3½	2¾	2	13⅝	83⅞	1¾
	10	320			24¾	29¾	34¾																	73⅞	
	15	348			29¾	37¼	44¾																	63⅞	
	20	375			34¾	44¾	54¾																	53⅞	
8	5	515	7¼	6	23½	26	28½	14	8¾	14½	4	3-12	12½	not available	4⅞	4⅞	2¼	6¾	4¾	-	2½	14½	75½	2¼	
	10	575			28½	33½	38½																65½		
	15	640			33½	41	48½																55½		
	20	705			38½	48½	58½																45½		

Snubbers & Limit Stops

Fig 200, 201: Dimensions (in)													
Pipe Size	E-Take Out						Clamp Stock Size						
	Cylinder Bore						Cylinder Bore						
	1½	2½	3¼	4	5	6	1½	2½	3¼	4	5	6	
2	6	6⅝	-	-	-	-	⅜ x 1¾	½ x 2½	-	-	-	-	
2½	7	7	-	-	-	-	⅜ x 1¾	½ x 2½	-	-	-	-	
3	7	7	-	-	-	-	⅜ x 1¾	½ x 2½	-	-	-	-	
3½	7	7	-	-	-	-	⅜ x 1¾	½ x 2½	-	-	-	-	
4	7¼	7¼	-	-	-	-	½ x 1½	⅝ x 2½	-	-	-	-	
5	7¾	7¾	9⅞	10	-	-	½ x 1½	⅝ x 2½	¾ x 3	¾ x 5	-	-	
6	8⅝	8⅝	10	10	11⅞	-	½ x 2	⅝ x 3	¾ x 4	¾ x 5	1 x 5	-	
8	9⅝	9⅝	11¼	11¼	12⅝	-	½ x 2½	¾ x 3	¾ x 5	1 x 5	1 x 6	-	
10	10½	10½	12¾	12¾	14¼	-	⅝ x 2½	¾ x 4	¾ x 6	1 x 5	1 x 7	-	
12	11⅞	11⅞	13⅞	13⅞	15⅝	-	⅝ x 2½	¾ x 5	1 x 5	1 x 6	1 x 7	-	
14	12⅝	12⅝	14½	14½	16	-	⅝ x 2½	¾ x 5	1 x 5	1 x 7	1¼ x 6	-	
16	13⅝	13⅝	15¼	15¼	17⅞	-	⅝ x 3	¾ x 6	1 x 5	1 x 7	1¼ x 6	-	
18	14⅝	14⅝	16⅝	16⅝	18¼	-	¾ x 3	1 x 5	1 x 6	1 x 7	1¼ x 7	-	
20	15¾	15¾	17¾	17¾	19¼	19¼	¾ x 3	1 x 5	1 x 7	1¼ x 6	1¼ x 8	1½ x 8	
24	18⅞	18⅞	19⅞	19⅞	21¾	21¾	¾ x 4	1 x 5	1 x 7	1¼ x 6	1¼ x 9	1½ x 9	
30	21¼	21¼	23	23	25	25	¾ x 4	1 x 6	1¼ x 6	1¼ x 8	1½ x 8	1¾ x 10	
36	24	24	26½	26½	28⅞	28⅞	¾ x 5	1 x 7	1¼ x 6	1¼ x 9	1½ x 10	1¾ x 10	