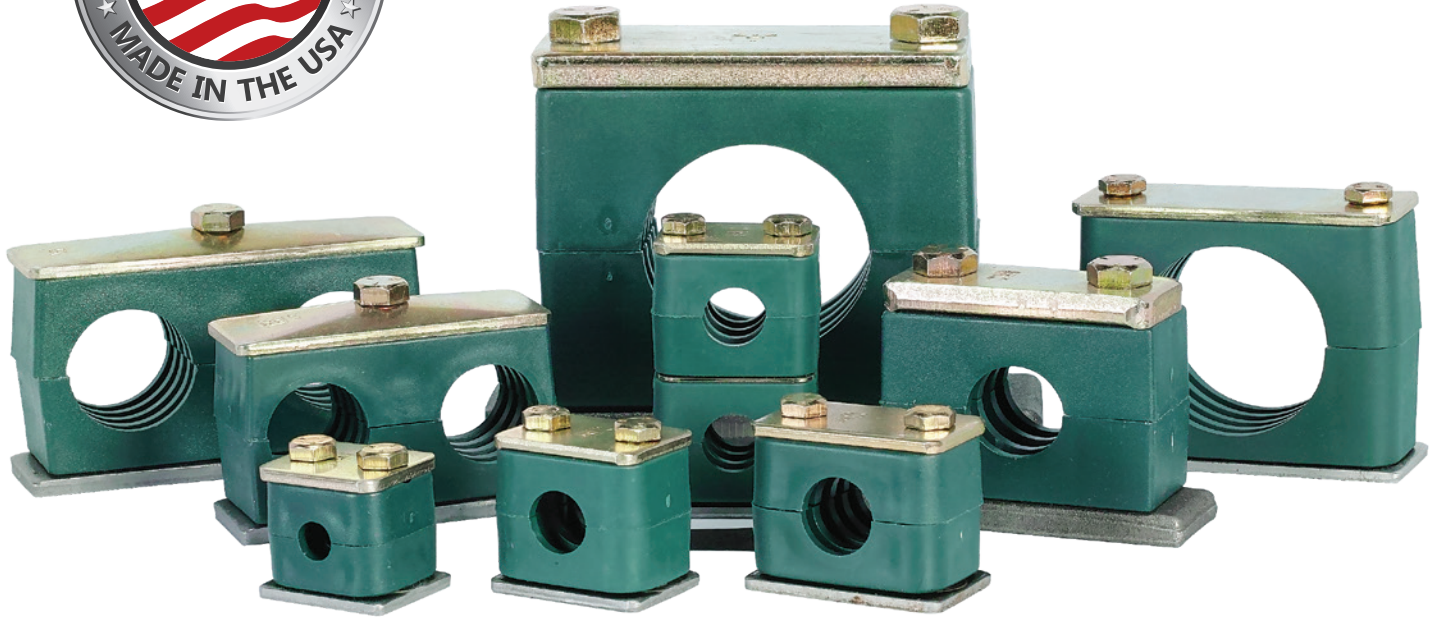




# BETA Hydraulic Clamps™

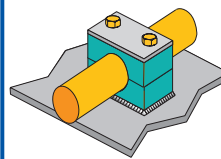


## Beta Cushions Now Made in the USA

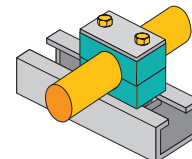


- Polypropylene Cushion and Steel Components
- Temperature range is -22°F to 194°F (-30°C to +90°C)
- Shock-Absorption, Vibration Dampening and Noise Reducing Properties
- Hydraulic Hoses, Pipes, Tubes and Electrical Cables

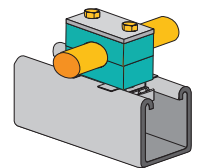
### *Installation Options For All Your Application Needs!*



**Weld Mounted**



**Rail Mounted**



**Channel Mounted**

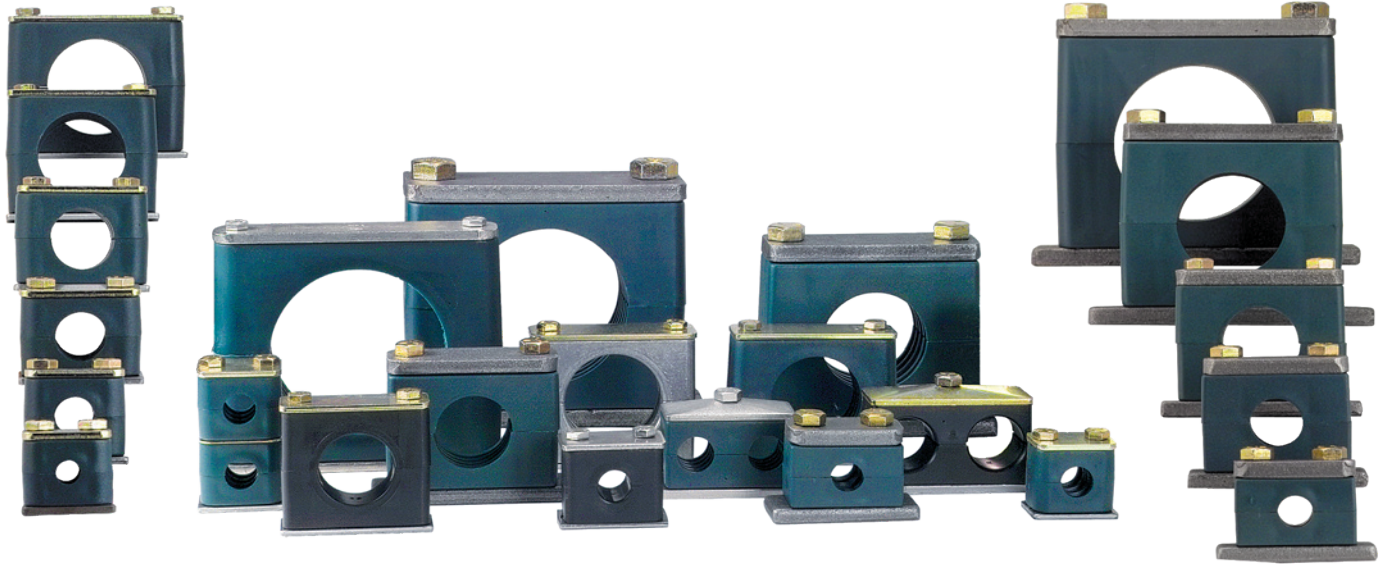
Call ZSi-Foster at (800) 323-7053 or order now at [ZSi-Foster.com](http://ZSi-Foster.com)

**ZSi-Foster**

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# Beta Clamps - Overview



**Beta Clamps** are an economical and easy way of securing pipe, tube, hose, and electrical cables. They are used in industrial, mobile and marine hydraulics, general industrial pipe construction, press technology, instrumentation and control technology, and many other applications.

- Shock absorption, vibration dampening, and noise reducing properties
- Securely and easily anchor clamps to machinery and steel work with weldable plates.
- Easily cleaned
- Ribs in clamp bore absorb shock and vibration in direction of tube axis.
- Upper and lower clamp halves are identical.
- Available in complete units and individual components.

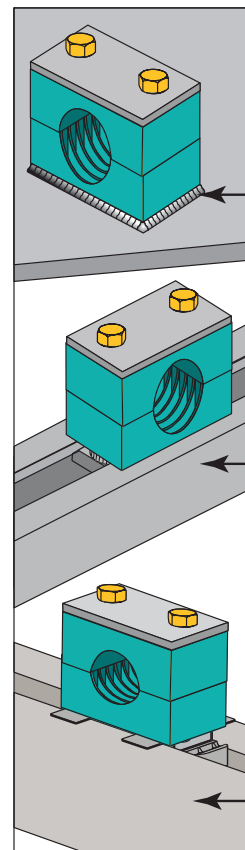
## CLAMP BODY

- Standard – Polypropylene (Green Color)  
-22°F to 194°F ( -30°C to +90°C)
- Aluminum is available for use in high heat applications

## CLAMP COMPONENTS – The other metallic components of the clamps are manufactured in:

- Lower and upper plates: steel, stainless steel type 304
- Screw bolts: steel, S40C, stainless steel type 304
- Please call 1.800.323.7053 for information on other metals.

## Installation Options



### Common Welded Method

Install by welding the weld plate to existing steel

### Din Rail Mounted

Attach to C-Rail using ZSI C-Rail Nuts

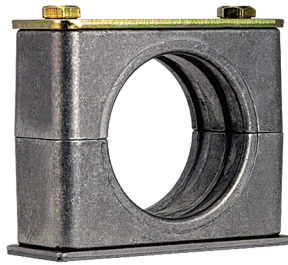
### Strut Mounted

Attach to Wesanco Channel using our exclusive Channel Adapter Nut

# Beta Clamps - Standard



Polypropylene Cushion

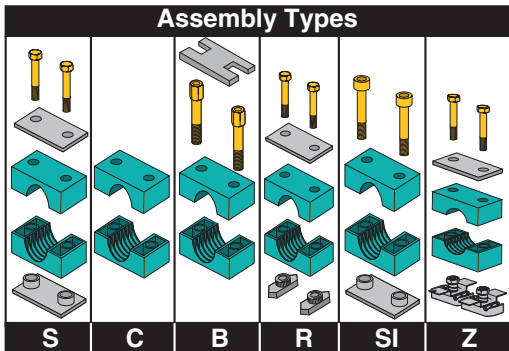


Aluminum Cushion

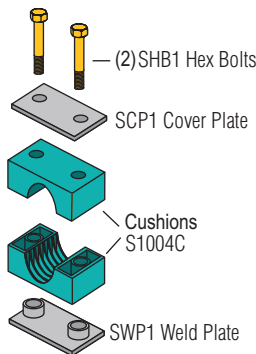
## BETA STANDARD SERIES

- Standard Cushions are Polypropylene (Green Color), Polypropylene (Black), Polyamide (PA), and Aluminum (AL), cushions available in most sizes. Contact factory for additional information.
- Recommended for systems with less than 1,500 psi (103 bar) without dynamic loads.
- Use for standard hydraulics, general pipe construction, electrical cables, and general duty piping applications subject to moderate levels of shock and vibration.
- Aluminum cushions and are used in higher heat applications up to 500°F (260°C).

**INSTALLATION** - Refer to pages 9 – 11 for complete installation guide.



ORDERING EXAMPLE		
S1004-S		
ASSEMBLY INCLUDES		
Quantity	Part No.	Description
1 Each	SWP1	Weld Plate
1 Each	SCP1	Cover Plate
2 Each	SHB1	Hex Bolts
1 set	S1004C	Cushions



True/Actual Outside Diameter (O.D.) is shown in parenthesis.

Group	Part No. *	Tube Size	Pipe Size	Metric Size (Tube)	Bolt
S1	S1004	1/4" (0.250)	-	-	1/4"-20 x 1 1/4"
	S1006	3/8" (0.375)	-	-	
	SM1006	-	-	6mm (0.236)	
	S1007	-	1/8" (0.405)	10mm	
	SM1008	-	-	8mm (0.315)	
	SM1012	-	-	12mm (0.472)	
S2	S2008	1/2" (0.500)	-	-	1/4"-20 x 1 3/8"
	S2009	-	1/4" (0.540)	-	
	S2010	5/8" (0.625)	-	16mm	
	S2011	-	3/8" (0.675)	-	
	SM2014	-	-	14mm (0.551)	
	SM2015	-	-	15mm (0.591)	
	SM2018	-	-	18mm (0.709)	
S3	S3012	3/4" (0.750)	-	19mm	1/4"-20 x 1 1/2"
	S3014	-	1/2" (0.840)	-	
	S3015	7/8" (0.875)	-	22mm	
	S3016	1" (1.000)	-	-	
	SM3020	-	-	20mm (0.787)	
	SM3025	-	-	25mm (0.984)	
S4	S4017	-	3/4" (1.050)	-	1/4"-20 x 1 3/4"
	S4018	1 1/8" (1.125)	-	-	
	SM4030	-	-	30mm	
S5	S5020	1 1/4" (1.250)	-	-	1/4"-20 x 2 1/2"
	S5021	-	1" (1.315)	-	
	S5024	1 1/2" (1.500)	-	38mm	
	S5027	-	1 1/4" (1.660)	42mm	
S6	SM5035	-	-	35mm (1.380)	1/4"-20 x 2 3/4"
	S6028	1 3/4" (1.750)	-	-	
	S6030	-	1 1/2" (1.900)	-	
S7	S6032	2" (2.000)	-	-	1/4"-20 x 4"
	S7038	-	2" (2.375)	-	
	S7036	2 1/4" (2.250)	-	-	
	S7040	2 1/2" (2.500)	-	-	
	S7044	2 3/4" (2.750)	-	70mm	
S7048	3" (3.000)	-	-	-	

↓  
**SUFFIX**

\* For additional sizes contact factory.  
Note: Add assembly type to part number.  
Example: **S1004S-SS** provides the complete assembly as shown with stainless steel components.

	Components	Cushion	Example
none	Steel	Polypropylene (green)	<b>S1004S</b>
-AL	Steel	Aluminum	<b>S1004S-AL</b>
-SS	Stainless Steel	Polypropylene (green)	<b>S1004S-SS</b>

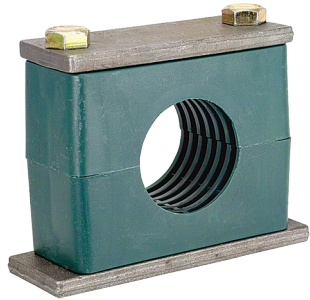
STANDARD SERIES COVER PLATE		STANDARD SERIES SAFETY PLATE		STANDARD SERIES WELD PLATE		HEX BOLT (Two required per assembly)		STACKING BOLTS (Two required per assembly)	
	SCP1 Thru SCP7		SP1 Thru SP6		SWP1 Thru SWP7		SHB1 Thru SHB7		SB1 Thru SB6
STANDARD SERIES CAP SCREW (Two required per assembly)		C-RAIL NUT (Two required per assembly)		C-RAIL		STRUT NUT For Connection to Channel		WESANCO CHANNEL	
	SC-1 Thru SC-6		SRN1-6		SCR1 SCR2		ZSA1-8 (Two required per assembly)		W200 W210 W400 W500





# Beta Clamps - Heavy

Metric Sizes Now Available!



Polypropylene Cushion

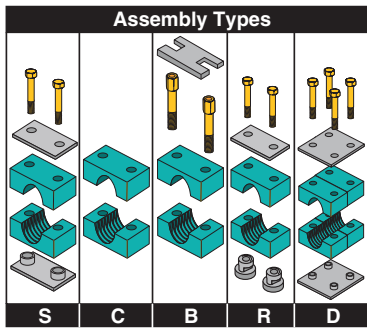


Aluminum Cushion

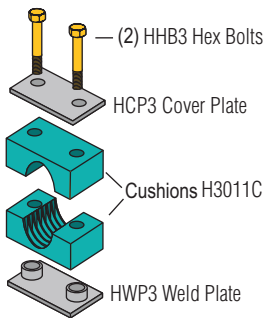
## BETA HEAVY SERIES

- Recommended systems with greater than 1,500 psi (103 bar) operating pressure, operations with pressure surges, and applications with wide temperature fluctuations.
- Absorbs high levels of shock, noise, and vibration
- Standard Cushions are Polypropylene (Green color), Polypropylene (Black), Polyamide (PA), and Aluminum (AL), cushions available in most sizes. Contact factory for additional information.
- Aluminum cushions and are used in higher heat applications up to 500°F (260°C).

**INSTALLATION** - Refer to pages 9 – 11 for complete installation guide.



ORDERING EXAMPLE		
H3004S		
ASSEMBLY INCLUDES		
Quantity	Part No.	Description
1 Each	HWP3	Weld Plate
1 Each	HCP3	Cover Plate
2 Each	HHB3	Hex Bolts
1 set	H3004C	Cushions



True/Actual Outside Diameter (O.D.) is shown in parenthesis.

Group	Part No.	Tube Size	Pipe Size	Metric Size (Tube)	Hex Bolt
H3	H3004	1/4" (0.250)	-	-	3/8"-16 x 1-3/4"
	H3006	3/8" (0.375)	-	-	
	H3007	-	1/8" (0.405)	10mm	
	H3008	1/2" (0.500)	-	-	
	H3009	-	1/4" (0.540)	-	
	H3010	5/8" (0.625)	-	16mm	
	H3011	-	3/8" (0.675)	-	
	HM3008	-	-	8mm (0.315)	
	HM3012	-	-	12mm (0.472)	
	HM3018	-	-	18mm (0.709)	
H4	H4012	3/4" (0.750)	-	19mm	3/8"-16 x 2-1/4"
	H4014	-	1/2" (0.840)	-	
	H4015	7/8" (0.875)	-	22mm	
	H4016	1" (1.000)	-	-	
	H4017	-	3/4" (1.050)	-	
	HM4020	-	-	20mm (0.787)	
	HM4030	-	-	30mm (1.180)	
H5	H5020	1 1/4" (1.250)	-	32mm	3/8"-16 x 2-3/4"
	H5021	-	1" (1.315)	-	
	H5024	1 1/2" (1.500)	-	38mm	
	H5027	-	1 1/4" (1.660)	42mm	
	HM5035	-	-	35mm (1.380)	
H6	H6028	1 3/4" (1.750)	-	-	1/2"-13 x 4"
	H6030	-	1 1/2" (1.900)	-	
	H6032	2" (2.000)	-	-	
	H6034	2 1/4" (2.250)	-	-	
	H6038	2 3/8" (2.375)	2" (2.375)	-	
	H6040	2 1/2" (2.500)	-	-	
H7	H7044	2 3/4" (2.750)	-	70mm	5/8"-11 x 5-1/4"
	H7046	-	2 1/2" (2.870)	-	
	H7050	3" (3.000)	-	-	
	H7056	-	3" (3.500)	-	
H8	H8072	-	4" (4.500)	-	M20 x 190mm
H9	H9089	-	5" (5.563)	-	M24 x 220mm
	H9106	-	6" (6.625)	-	
H10	H10137	-	8" (8.625)	-	M30 x 300mm
H11	H11170	-	10" (10.750)	-	M30 x 450mm

Note: Add assembly type to part number. \*

**Example: H3004S-SS** provides the complete assembly as shown with stainless steel hardware components.

Note: HM (Heavy Metric) only available with Carbon Steel hardware and Polypropylene (green) cushion.

SUFFIX	Components	Cushion	Example (complete assembly):
NONE	Steel	Polypropylene (green)	H3004S
-AL	Steel	Aluminum	H3004S-AL
-SS	Stainless Steel	Polypropylene (green)	H3004S-SS

HEAVY SERIES COVER PLATE		HEAVY SERIES SAFETY PLATE		HEAVY SERIES WELD PLATE		HEAVY SERIES HEX BOLT (Two required per single assembly)		HEAVY SERIES STACKING BOLTS (Two required per single assembly)	
	HCP3 Thru HCP9		HSP3 Thru HSP9		HWP3 Thru HWP9		HHB3 Thru HHB9		HSB3 Thru HSB9
C-RAIL NUT (Two required per single assembly)		C-RAIL		HEAVY SERIES DOUBLE WELD PLATE		HEAVY SERIES DOUBLE COVER PLATE			
	HRN3-5 HRN6		HCR1 HCR2		HDP3 Thru HDP7		DCP3 Thru DCP7		

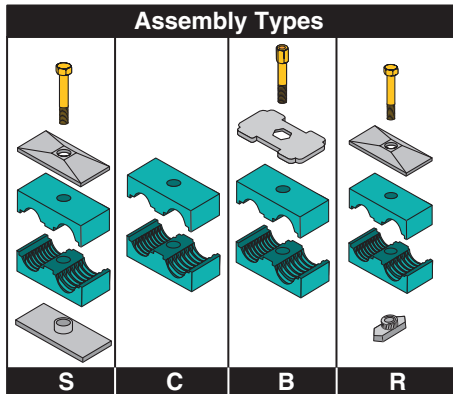
# Beta Clamps - Twin



## BETA CLAMPS TWIN SERIES

- Ideal for general-duty applications subject to moderate levels of shock and vibration.
- Recommended for systems with less than 1,500 psi (103 bar) without dynamic loads.
- Standard cushions in this series are Polypropylene (Green Color). Polypropylene (Black), and Polyamide (PA) are available upon request. Call factory for additional sizes and cushion material inquiries.

**INSTALLATION** - Refer to pages 9 – 11 for complete installation guide.

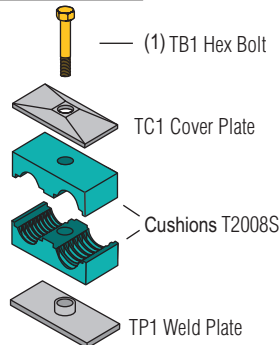


True/Actual Outside Diameter (O.D.) is shown in parenthesis.

Group	Steel Part No.	Tube Size	Pipe Size	Metric Size (Tube)	Hex Bolt
T1	T1004	1/4" (0.250)	-	-	1/4"-20 x 1 3/8"
	T1006	3/8" (0.375)	-	-	
	T1007	-	1/8" (0.405)	10mm	
T2	T2008	1/2" (0.500)	-	-	5/16"-18 x 1 3/8"
	T2009	-	1/4" (0.540)	-	
	T2010	5/8" (0.625)	-	16mm	
	T2011	-	3/8" (0.675)	-	
T3	T3012	3/4" (0.750)	-	-	5/16"-18 x 1 3/4"
	T3014	-	1/2" (0.840)	-	
	T3015	7/8" (0.875)	-	-	
T4	T4017	-	3/4" (1.050)	-	5/16"-18 x 2"
	T4018	1 1/8" (1.125)	-	-	
	T5020	1 1/4" (1.250)	-	-	
T5	T5021	-	1" (1.315)	-	5/16"-18 x 2 3/8"
	T5024	1 1/2" (1.500)	-	-	
	T5027	-	1 1/4" (1.660)	-	

\*For additional sizes and stainless steel contact factory.  
 Note: Add Assembly type to Part No.-  
 Example: **T2008S** provides the complete assembly as shown

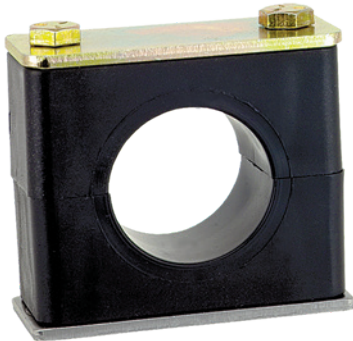
ORDERING EXAMPLE		
T2008S		
ASSEMBLY INCLUDES		
Quantity	Part No.	Description
1 Each	TP1	Weld Plate
1 Each	TC1	Cover Plate
1 Each	TB1	Hex Bolts
1 set	T2008S	Cushions



TWIN SERIES COVER PLATE		TWIN SERIES SAFETY PLATE		TWIN SERIES WELD PLATE		TWIN STACKING BOLTS	
	TC1 Thru TC5		TSP1 Thru TSP5		TP1 Thru TP5		TSB1 Thru TSB5
TWIN HEX BOLT		C-RAIL NUT		C-RAIL			
	TB1 Thru TB5		SRN1-6 TRN2-5		SCR1 SCR2		

# Beta Clamps - Smoothie

## BETA SMOOTHIE STANDARD SERIES



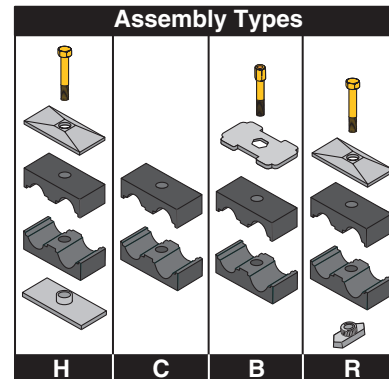
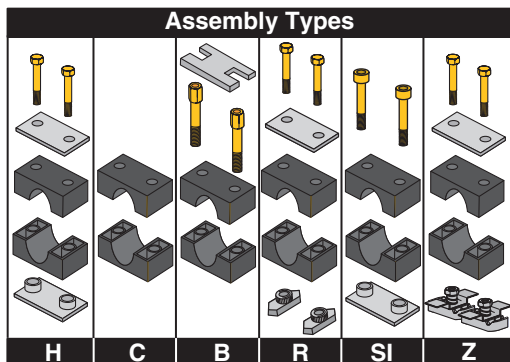
## BETA SMOOTHIE TWIN SERIES



**Beta Smoothies** are ideal for general-duty applications where there is a need to reduce wear on hose connection caused by vibration and surge.

- Chamfered and smooth core protects hose cover and extends the life of the hose
- Uses Standard Beta hardware
- Reduces wear on hose connection caused by vibration and surge

**INSTALLATION** - Refer to pages 9 – 11 for complete installation guide.



Group	Part No.	SAE 100R1 Hose Size	Bolt
S2	S2004H	1/4"	1/4 – 20 x 1 3/8
	S2006H	3/8"	
S3	S3008H	1/2"	1/4 – 20 x 1 1/2
	S3010H	5/8"	
S4	S4012H	3/4"	1/4 – 20 x 1 3/4
S5	S5016H	1"	1/4 – 20 x 2 1/2

\*For additional sizes and stainless steel contact factory.  
 Note: Add Assembly type to Part No.- **Example: S2004H** provides the complete assembly as shown

Group	Part No.	SAE 100R1 Hose Size	Bolt
T2	T2004H	1/4"	5/16 – 18 x 1 3/8
	T2006H	3/8"	
T3	T3008H	1/2"	5/16 – 18 x 1 3/4
T4	T4010H	5/8"	5/16 – 18 x 2
	T4012H	3/4"	
T5	T5016H	1"	5/16 – 18 x 2 3/8

\*For additional sizes and stainless steel contact factory.  
 Note: Add Assembly type to Part No.- **Example: T2004H** provides the complete assembly as shown

# Beta Clamps - Rubber Insert

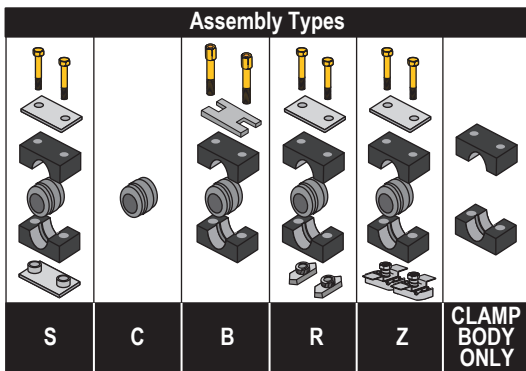


## BETA STANDARD RUBBER INSERT SERIES



- One cushion block provides flexible size range of cushioning.
- Smooth bore core can be used on hose, or for vibration reduction
- Broad range of metric sizes.
- Maintains center line when used in groups.

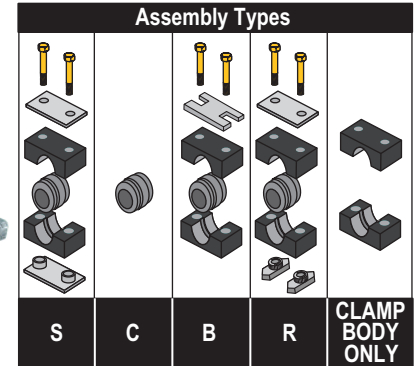
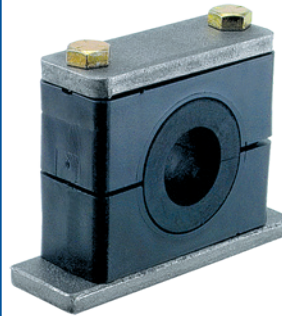
**INSTALLATION** - Refer to pages 9 – 11 for complete installation guide.



Group	Part No.	EE-Rubber Insert Bore Size Ø D		Tube O.D.	Pipe	Recommended Nominal Size Hose O.D. Min - Max	Bolt Size
		in	mm				
S4	SM4006RI	0.24	6	-	-	0.22 - 0.24	1/4-20 x 1 3/4
	SM4008RI	0.32	8	1/16"	-	0.30 - 0.32	
	S4007RI	0.39	10	-	1/8"	0.37 - 0.39	
	SM4012RI	0.47	12	-	-	0.45 - 0.47	
	S4008RI	0.50	12.7	1/2"	-	0.48 - 0.50	
	SM4014RI	0.55	14	-	-	0.53 - 0.55	
	SM4015RI	0.59	15	-	-	0.57 - 0.59	
	S4010RI	0.63	16	5/8"	-	0.61 - 0.63	
	S4011RI	0.68	17.2	-	3/8"	0.66 - 0.68	
	S4012RI	0.75	19	3/4"	-	0.73 - 0.75	
S4C	Clamp Body Only (Group S4)						
S6	S6014RI	0.79	20	-	1/2"	0.77 - 0.79	1/4-20 x 2 3/4
	S6015RI	0.87	22	7/8"	-	0.85 - 0.87	
	S6016RI	0.98	25	1"	-	0.96 - 0.98	
	S6017RI	1.06	26.9	-	3/4"	1.04 - 1.06	
	SM6028RI	1.10	28	-	-	1.08 - 1.10	
	SM6030RI	1.18	30	-	-	1.16 - 1.18	
	S6020RI	1.26	32	1 1/4"	-	1.24 - 1.26	
S6C	Clamp Body Only (Group S5)						

\*For additional sizes and stainless steel contact factory.  
Note: Add Assembly type to Part No. - Example: **SM4006RI** provides the complete assembly as shown

## BETA HEAVY RUBBER INSERT SERIES



- Used for high pressure hydraulics and heavy duty operations.
- Used for intermittent load and high oil speeds.
- Increase size range over standard series.

**INSTALLATION** - Refer to pages 9 – 11 for complete installation guide.

Group	Part No.	Bore Ø D in. (mm)	Tube O.D.	Pipe Size	Nom. Size Hose O.D	Bolt Size
H4	HM4006RI	0.24 (6)	-	-	0.22 - 0.24	3/8-16x 2 1/4"
	HM4008RI	0.32 (8)	1/16"	-	0.30 - 0.32	
	H4007RI	0.39 (10)	-	1/8"	0.37 - 0.39	
	HM4012RI	0.47 (12)	-	-	0.45 - 0.47	
	H4008RI	0.50 (12.7)	1/2"	-	0.48 - 0.50	
	HM4014RI	0.55 (14)	-	-	0.53 - 0.55	
	HM4015RI	0.59 (15)	-	-	0.57 - 0.59	
	H4010RI	0.63 (16)	5/8"	-	0.61 - 0.63	
	H4011RI	0.68 (17.2)	-	3/8"	0.66 - 0.68	
	H4012RI	0.75 (19)	3/4"	-	0.73 - 0.75	
H4C	Clamp Body Only (Group H4)					
H5	H5014RI	0.79 (20)	-	1/2"	0.77 - 0.79	3/8-16x 2 3/4"
	H5015RI	0.87 (22)	7/8"	-	0.85 - 0.87	
	H5016RI	0.98 (25)	1"	-	0.96 - 0.98	
	H5017RI	1.06 (26.9)	-	3/4"	1.04 - 1.06	
	HM5028RI	1.10 (28)	-	-	1.08 - 1.10	
	HM5030RI	1.18 (30)	-	-	1.16 - 1.18	
H5020RI	1.26 (32)	1 1/4"	-	1.24 - 1.26		
H5C	Clamp Body Only (Group H5)					
H6	H6021RI	1.33 (33.7)	-	1"	1.31 - 1.33	1/2-13x 4"
	HM6035RI	1.38 (35)	-	-	1.36 - 1.38	
	H6024RI	1.50 (38)	1 1/2"	-	1.48 - 1.50	
	HM6040RI	1.58 (40)	-	-	1.56 - 1.58	
	H6027RI	1.65 (42)	-	1 1/4"	1.63 - 1.65	
	HM6045RI	1.79 (45.5)	-	-	1.77 - 1.79	
	H6030RI	1.89 (48)	-	1 1/2"	1.87 - 1.89	
	H6032RI	2.01 (51)	2"	-	1.99 - 2.01	
	H6034RI	2.10 (53.4)	2 1/8"	-	2.08 - 2.10	
	HM6056RI	2.22 (56.4)	-	-	2.2 - 2.22	
H6C	Clamp Body Only (Group H6)					
H7	H7038RI	2.36 (60)	-	2"	2.34 - 2.36	5/8-11x 5 1/4"
	HM7065RI	2.56 (65)	-	-	2.54 - 2.56	
	HM7070RI	2.76 (70)	-	-	2.74 - 2.76	
	H7046RI	2.87 (73)	-	2 1/2"	2.85 - 2.87	
	H7050RI	2.99 (76)	3"	-	2.97 - 2.99	
	H7C	Clamp Body Only (Group H7)				
H8	HM8036RI	3.27 (83)	-	-	3.19 - 3.27	3/4-10x 7 1/2"
	H8056RI	3.50 (89)	3 1/2"	3"	3.43 - 3.50	
	H8C	Clamp Body Only (Group H8)				

\*For additional sizes and stainless steel contact factory.

# Beta Adapter





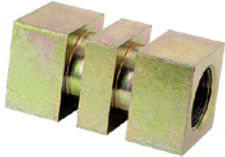


The **BETA ADAPTER** allows a clamping junction to be inserted into virtually any hydraulic line. The exclusive square bodied junction adapter design can be used with metallic tubing or hydraulic hose ends. It provides a point of union for hydraulic runs which transition from one form of conveyance to another (i.e. hose to tubing). Once inserted into the customized Beta Adapter clamp body, the junction point is securely clamped fighting the effects of vibration, insuring a leak-free system.

- Beta Adapter cushions can also be used with rubber inserts.
- Z-Clamp split bushings from Group 1 can be utilized with the basic Beta Adapter Group 4 cushion.
- Z-Clamp bushings from Group 2 coincide with Group 5 Beta Adapter assemblies.
- The split bushings provide extra vibration absorption for delicate clamping surfaces.

**INSTALLATION** - Refer to pages 9 – 11 for complete installation guide.



## BETA ADAPTER – OPTIONAL ADAPTERS (FOR USE WITH BETA ADAPTERS & Z-CLAMPS)

		Tube Size	Group 1 (H4) Part No.	Group 2 (H5) Part No.
	37° JIC	1/4"	H4MJA1-4-S	H5MJA2-4-S
		3/8"	H4MJA1-6-S	H5MJA2-6-S
		1/2"	H4MJA1-8-S	H5MJA2-8-S
		5/8"	H4MJA1-10-S	H5MJA2-10-S
		3/4"	-	H5MJA2-12-S
		5/8"	-	H5MJA2-14-S
	O-Ring Face Seal	3/8"	H4MJO1-6-S	H5MJO2-6-S
		1/2"	H4MJO1-8-S	H5MJO2-8-S
		5/8"	H4MJO1-10-S	H5MJO2-10-S
		3/4"	-	H5MJO2-12-S
		1"	-	H5MJO2-16-S
	Female Junction	1/2"	H4FJA1-8-S	-
	Female Pipe	3/4"	-	H5FJA2-12-S
		3/8" NPT	H4FJA1-6P-S	H5FJA2-12P-S
	Beta Cushions Only (Set of Two)	-	H4JCN-C	H5JCN-C
	Z-Clamp Split Bushing	-	HAC-1 (1-1/2" SERIES) CAN BE USED	HAC-2 (2" SERIES) CAN BE USED



# Beta Clamp Technical Data



## BETA CLAMPS TORQUE AND MATERIAL PROPERTIES

TIGHTENING TORQUE								
Clamp	Group	Bolt Size	Aluminum Cushion		Polypropylene Cushion		Polyamide Cushion	
			Lbf	Nm	Lbf	Nm	Lbf	Nm
BETA STANDARD	S1 - S7	1/4"-20	7	10	6	8	6	8
BETA HEAVY	H3, H4	3/8"-16	22	30	9	12	15	20
	H5	3/8"-16	26	35	11	15	18	25
	H6	1/2"-13	41	55	29	30	30	40
	H7	5/8"-11	89	120	33	45	41	55
BETA TWIN	T1	1/4"-20	-	-	4	6	4	6
	T2 - T5	5/16"-18	-	-	9	12	9	12

The outlined particulars are approximate values and are only valid as references, which are not binding, also with regard to possible protection of third parties, and they do not exempt you from your own examination of suitability of the products delivered by us. Therefore, these values can only be used in a limited sense for construction purposes. The application of the products is carried out outside our control possibilities and, therefore, is exclusively subject to your own area of responsibility. If, however, liability should be possible, it would be limited for all damages to the value of the goods supplied by us and in use by you. It goes without saying, that we guarantee the perfect quality of our products according to our general sales and delivery conditions.

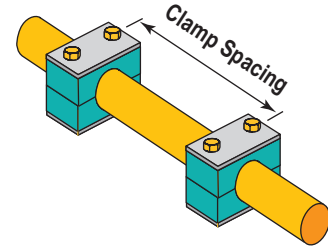
BETA CLAMP MATERIAL PROPERTIES		
Material Properties		Polypropylene (PP)
Density	-	0.906 g/cm3
Tensile strength	DIN 53454	25-35 N/mm2
Flexure stress limit	DIN 53452	36N N/mm2
Compressive strength	DIN 53454	90 N/mm2
Impact strength	DIN 53453	No break
Thermo Properties		Polypropylene (PP)
Max. temp. resistance		-30 to 90°C
Thermal conductivity		15 x 10 <sup>-5</sup> /°C
Linear expansion coeff.		0.22 W/[mk]
Electrical Properties		Polypropylene (PP)
Specific volume	DIN 53482	1016 ohm x cm
Chemical Properties		Polypropylene (PP)
Consistent for weak acids, solvents, mineral oils and seawater.		

DRILL SIZES FOR NPT PIPE TAPS		
Tap Size (In.)	Threads/In.	Drill Dia. (In.)
1/8	27	R
1/4	18	7/16
3/8	18	37/64
1/2	14	23/32
3/4	14	59/64
1	11 1/2	1 5/32
1 1/4	11 1/2	1 1/2
1 1/2	11 1/2	1 47/64
2	11 1/2	2 7/32
2 1/2	8	2 3/8
3	8	3 1/4
3 1/2	8	3 3/4
4	8	4 1/4

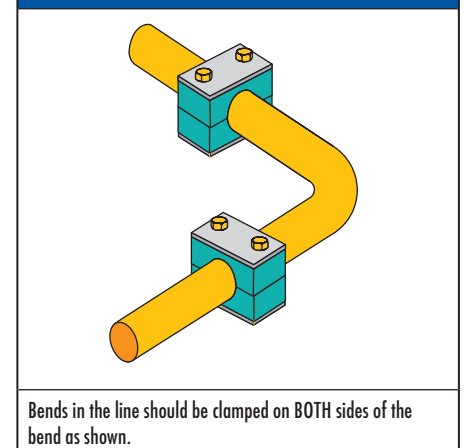
TAP & DRILL SIZES (Unified National Coarse)		
Tap Size (In.)	Threads/In.	Drill Size (In.)
1/4	20	7
5/16	18	F
3/8	16	5/16
7/16	14	U
1/2	13	27/64
9/16	12	37/64
5/8	11	17/32
3/4	10	21/32
7/8	9	49/64
1	8	7/8
1 1/8	7	63/64
1 1/4	7	1 1/64
1 3/8	6	1 7/32
1 1/2	6	1 11/32
1 3/4	5	1 9/16
2	4 1/2	1 25/32

## RECOMMENDED PIPE CLAMP SPACING

RECOMMENDED PIPE CLAMP SPACING			
Pipe O.D.		Spacing	
in	mm	ft - in.	m
0.24" - 0.5"	6 - 12.7	3' - 3"	1.0
0.5" - 0.87"	12.7 - 22	3' - 11"	1.2
0.87" - 1.26"	22 - 32	4' - 11"	1.5
1.26" - 1.5"	32 - 38	6' - 7"	2.0
1.5" - 2.24"	38 - 57	8' - 10"	2.7
2.24" - 2.95"	57 - 75	9' - 10"	3.0
2.95" - 3"	75 - 76.1	11' - 6"	3.5
3" - 3.5"	76.1 - 88.9	12' - 2"	3.7
3.5" - 4"	88.9 - 102	13' - 1"	4.0
4" - 4.5"	102 - 114	14' - 9"	4.5
4.5" - 6.6"	114 - 168	16' - 5"	5.0
6.6" - 8.6"	168 - 219	19' - 8"	6.0
8.6" - 12.8"	219 - 324	21' - 12"	6.7
12.8" - 14"	324 - 356	22' - 12"	7.0
14" - 16"	356 - 406	24' - 7"	7.5
16" - 16.5"	406 - 419	26' - 11"	8.2
16.5" - 20"	419 - 508	27' - 11"	8.5
20" - 20.5"	508 - 521	29' - 6"	9.0
20.5" - 22"	521 - 558	32' - 10"	10.0
22" - 31.5"	558 - 800	41' - 0"	12.5



## RECOMMENDED CLAMPING FOR BENDS

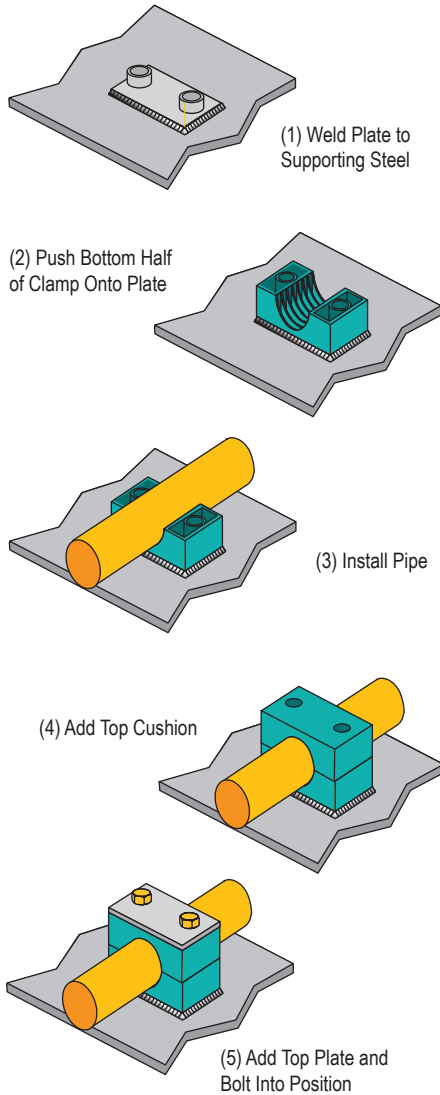


## INSTALLATION ON WELD PLATES

ZSi-Foster weld plates are available for the following Series:

- Standard Series
- Heavy Series
- Twin Series
- Beta Adapters

For best alignment of ZSi-Foster clamps we recommend that you mark their location before welding.



### Installation On Weld Plates

- Weld metal welding plates to a weight adjusted base.
- Clip lower half of clamp on to welding plate and insert tube; then add second clamp-half, cover plate, and tighten with screws provided.
- DO NOT weld with plastic clamp in position.
- After assembly the two clamp halves MUST NOT come into contact with each other.

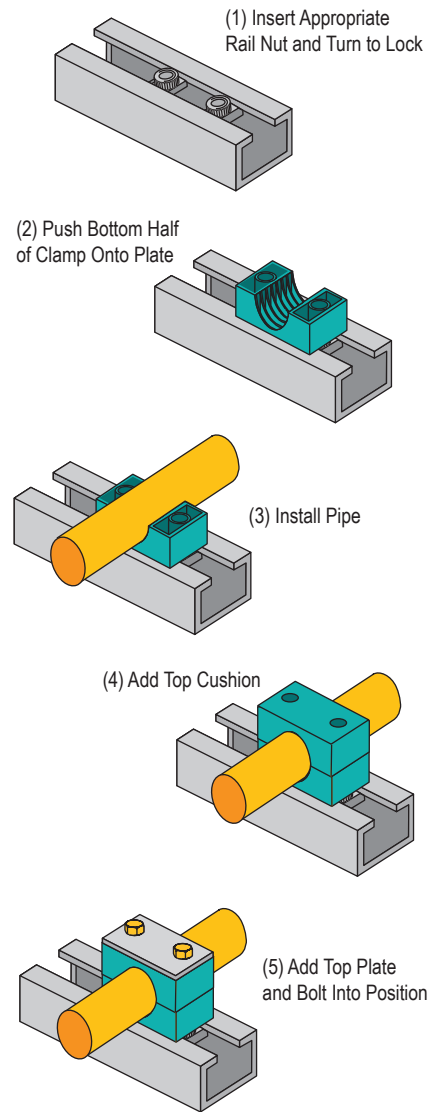
## INSTALLATION ON MOUNTING RAILS

ZSi-Foster mounting rails can be used with the following Series:

- Standard Series
- Heavy Series (Group H3 to H6)
- Twin Series
- Beta Adapters

ZSi-Foster mounting rails are available in two different height sizes and are either welded or bolted to the supporting construction.

For Standard Series and Twin Series insert hexagon rail nut and turn to lock. For Heavy Series slide in rail nut.

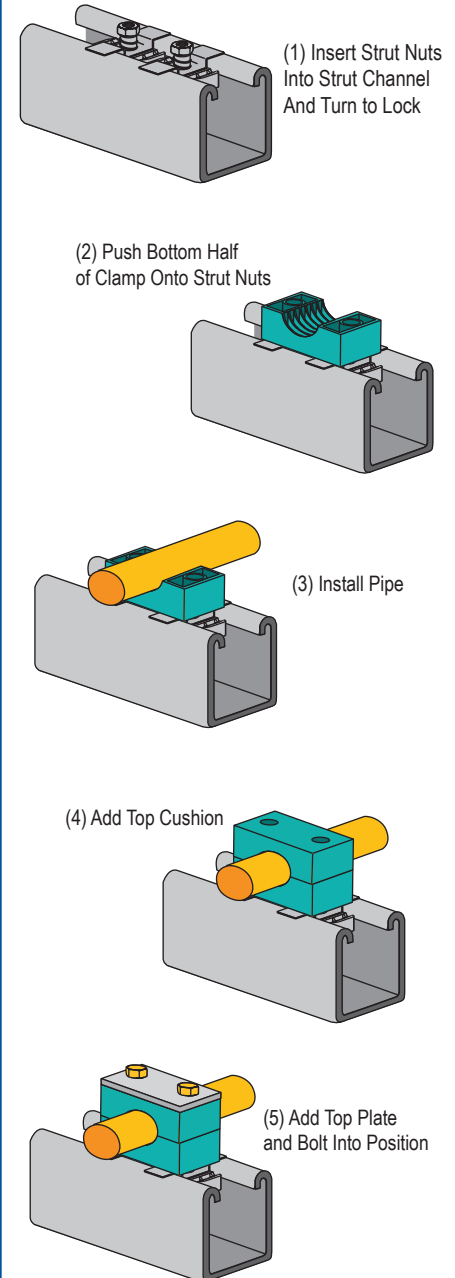


**NOTE:** The rail nut will slide within the rail so clamp units can be adjusted before being firmly bolted.

## INSTALLATION ON CHANNEL

The ZSA Nuts can be used with any clamp using a 1/4-20 mounting bolt. This includes:

- Standard Series
- Twin Series (T1 Only)
- Beta Rubber Inserts



**NOTE:** The ZSA Nut will slide within the Channel so clamp units can be adjusted before being firmly bolted.

# Beta Clamp Installation



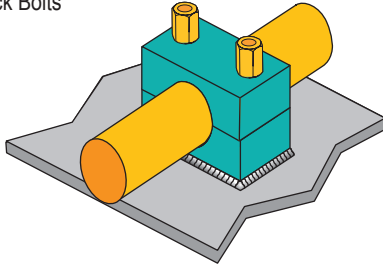
## MULTI-LEVEL ASSEMBLY

ZSi-Foster multi-level pipe clamps permit easy stacking of several tubes or pipes of the same group. The clamps are connected by stacking bolts.

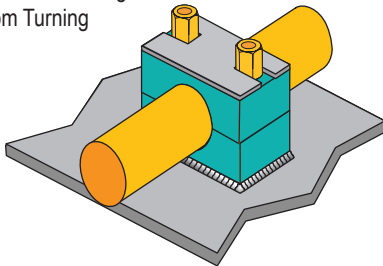
Safety plates are inserted between the clamps to prevent the stacking bolts from turning.

The example below shows a stacking clamp added to a welded clamp, however, ZSi-Foster stacking assemblies can be fitted to weld plates, rails, or strut in the same manner.

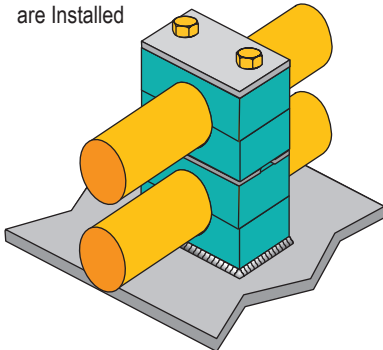
(1) After the Top Cushion is Added, Secure it with the Stack Bolts



(2) Add Safety Plate to Prevent Stacking Bolts from Turning



(3) Assemble Another Clamp Onto the Stacking Bolt in Same Manner as Single Clamps are Installed



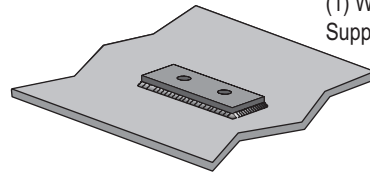
## Stacking Assembly

- Weld on welding plate with a fixing bracket.
- Wedge on lower clamp-half, insert tube, add upper clamp-half and tighten with fixing screws.
- Apply a locking plate to upper half of the clamp to prevent fixing screw from twisting.
- Mount the second tube clamp in exactly the same way.

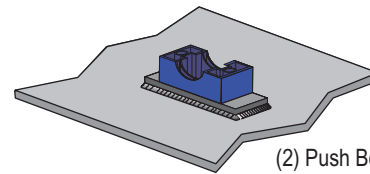
## INSTALLATION OF BETA ADAPTER

Beta Adapters are installed in much the same manner as Beta Clamps. The weld plate is welded onto existing structure and the Beta cushion and adapter is assembled onto it.

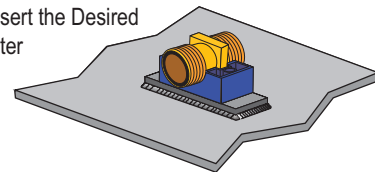
(1) Weld Plate to Supporting Steel



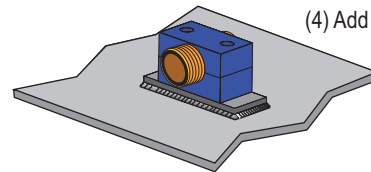
(2) Push Bottom Half of Clamp Onto Plate



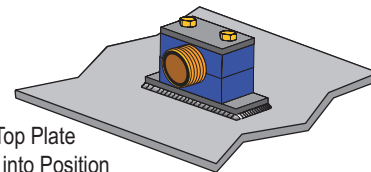
(3) Insert the Desired Adapter



(4) Add Top Cushion

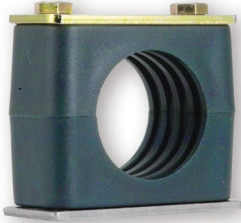


(5) Add Top Plate and Bolt into Position



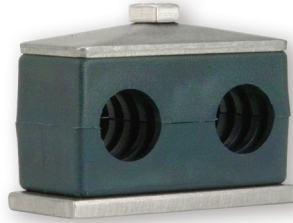


# BETA Hydraulic Clamps™



## Beta Standard Series

- For standard hydraulics and systems with less than 1500 PSI without dynamic loads
- Polypropylene cushion and steel components



## Beta Twin Series

- For standard hydraulics, general pipe construction and electrical cables
- Polypropylene cushion and steel components

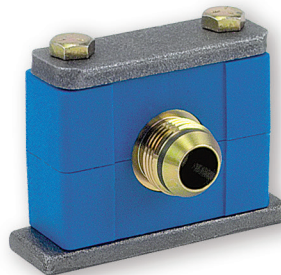


## Beta Cushions Now Made in the USA



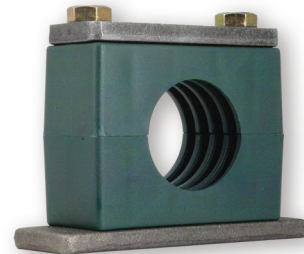
## Beta Twin Smoothie Series

- Reduces wear on hose connection caused by vibration and surge.
- Chamfered and smooth core protects hose cover and extends hose life.
- Uses Beta Twin hardware
- Polypropylene cushion and steel components



## Beta Adapter Series

- Allows a clamping junction to be inserted into hydraulic lines
- The adapter body is offered in two sizes for use with the Z-Clamp adapter inserts



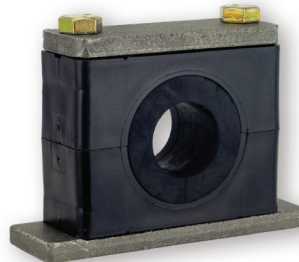
## Beta Heavy Series

- For systems with greater than 1500 PSI operating pressure, operations with pressure surges, and applications with wide temperature fluctuations.
- Absorbs high levels of shock, noise, and vibration
- Polypropylene cushion & steel components



## Beta Special Metals Series

- Aluminum cushions with steel components are used in high heat applications up to 500°F
- Stainless steel clamp hardware with polypropylene cushion are used in applications where external corrosion is a concern.



## Beta Rubber Inserts Series

- Available in standard and heavy
- One cushion block provides flexible size range of cushioning.
- Smooth bore core can be used on hose, or for vibration reduction



## Beta Standard Smoothie Series

- Reduces wear on hose connection caused by vibration and surge.
- Chamfered and smooth core protects hose cover and extends hose life.
- Uses Beta Standard hardware
- Polypropylene cushion & steel components

Call ZSi-Foster at (866) 918-3003 or order now at [zsi-foster.com](http://zsi-foster.com)