



ZSI-Foster

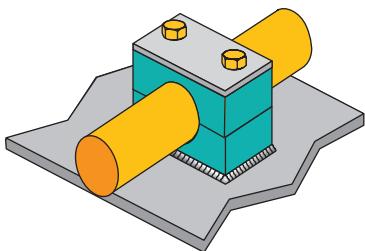


BETA

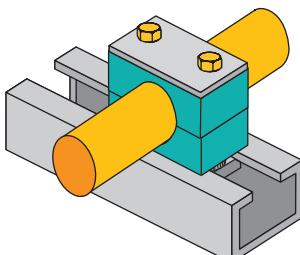
Hydraulic Clamps™



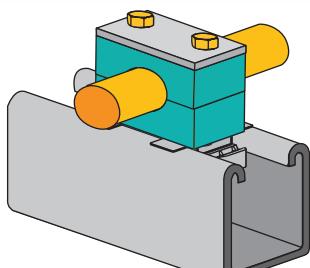
Installation Options For All Your Application Needs!



Weld Mounted



Din Rail Mounted



Z-Strut Channel Mounted



Beta Hydraulic Clamps™



Beta Clamps are ideal for clamping pipe, tube, hose, and electric cables. They are an economical and easy way of securing them in all types of terrestrial, marine, O.E.M. and Industrial applications. Thanks to the advanced features and the breadth and depth of our product offering, Beta Clamps are used in all areas of industrial, mobile and marine hydraulics, general industrial pipe construction, the field of press technology, instrumentation and control technology and many more.

- Beta Clamps offer shock-absorption, vibration dampening and noise reducing properties.
- Beta Clamps feature a practical and economical design which make for quick, easy pipe installation and layout.
- Using weldable plates, it's easy to anchor the clamps to machinery and steel work.
- Fast, safe, economic installation and service in piping system.
- Upper and lower clamp half are identical.
- Ribs in clamp bore are designed to absorb shock and vibration in the direction of the tube axis.
- Due to their design the clamps can be easily cleaned.

CLAMP BODY

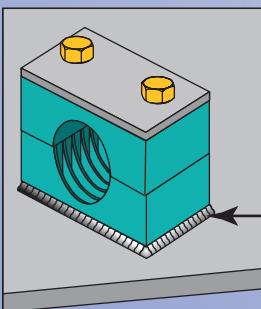
- Standard – Polypropylene (Green Color)
-22°F to 194°F (-30°C to +90°C)
- Aluminum is available for use in high heat applications

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
- Other metallic on request.

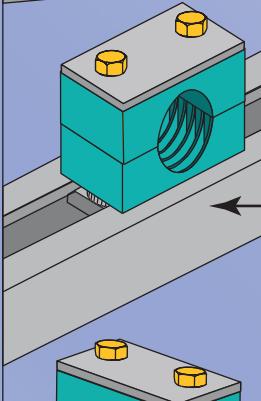
ZSi offers an installation option for all of your application needs.

COMMON WELDED METHOD



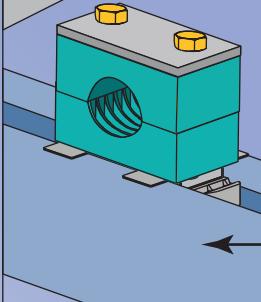
Install by welding the weld plate to existing steel

DIN RAIL MOUNTED



Attach to C-Rail using ZSI C-Rail Nuts

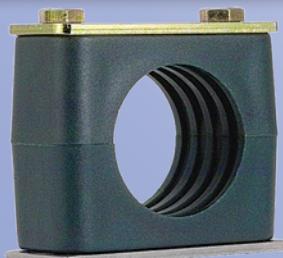
Z-STRUT MOUNTED



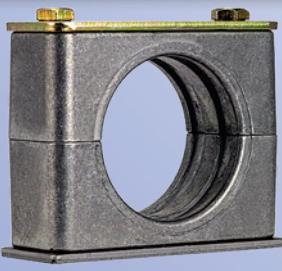
Attach to Z-Strut Channel using our exclusive Z-Strut Channel Adapter Nut



Beta Hydraulic Clamps™



Steel w/ Polypropylene Cushion



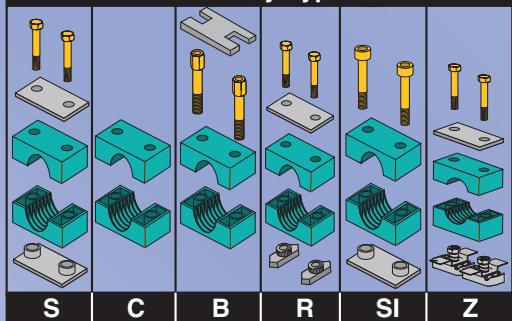
Steel w/ Aluminum Cushion

BETA STANDARD SERIES

- Cushions are Polypropylene (Green Color)
- Recommended for systems with less than 1500 PSI 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°.

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

Assembly Types

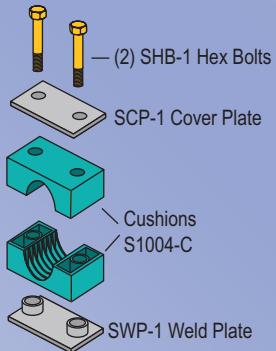


ORDERING EXAMPLE

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



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

* 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.
 NOTE: SM (metric) only available in Steel with Polypropylene (green) cushion.



Components	Cushion	Example
none	Steel	Polypropylene (green) S1004S
-AL	Steel	Aluminum S1004S-AL
-SS	Stainless Steel	Polypropylene (green) S1004S-SS

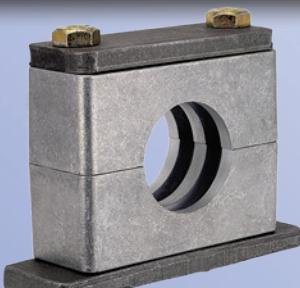
STANDARD SERIES COVER PLATE	STANDARD SERIES SAFETY PLATE	STANDARD SERIES WELD PLATE	HEX BOLT (Two required per assembly)	STACKING BOLTS (Two required per assembly)
	SCP1 Thru SCP7		SHB1 Thru SHB7	SB1 Thru SB6
STANDARD SERIES CAP SCREW (Two required per assembly)	C-RAIL NUT (Two required per assembly)	C-RAIL	STRUT NUT For Connection to Z-Strut	Z-STRUT CHANNEL
	SRN1-6			
SC-1 Thru SC-6		SCR1 SCR2	ZSA1-8 (Two required per assembly)	Z1625 Z8125 Z1000 Z875



Beta Hydraulic Clamps™



Steel w/Polypropylene Cushion

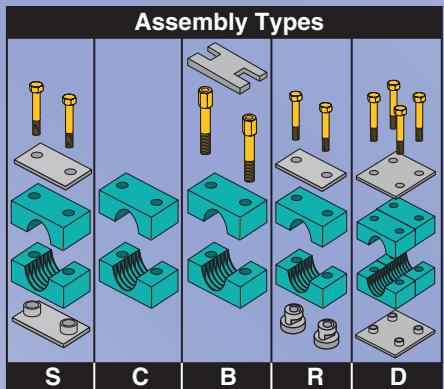


Steel w/Aluminum Cushion

BETA HEAVY SERIES

- Recommended 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
- Cushions are polypropylene (Green color) or Aluminum.
- Aluminum cushions and are used in higher heat applications up to 500°.

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

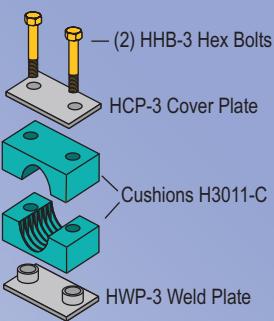


ORDERING EXAMPLE

H3004S

ASSEMBLY INCLUDES

Quantity	Part No.	Description
1 Each	HWP3	Weld Plate
1 Each	HCP3	Cover Plate
2 Each	HHB3	Hex Bolts
1 set	H3011C	Cushions



Group	Part No.	Tube Size	Pipe Size	Wt/100	Hex Bolt
H3	H3004	1/4" (0.250)	–	65	3/8"-16 x 1-3/4"
	H3006	3/8" (0.375)	–	65	
	H3007	–	1/8" (0.405)	65	
	H3008	1/2" (0.500)	–	65	
	H3009	–	1/4" (0.540)	65	
	H3010	5/8" (0.625)	–	65	
	H3011	–	3/8" (0.675)	65	
H4	H4012	3/4" (0.750)	–	83	3/8"-16 x 2-1/4"
	H4014	–	1/2" (0.840)	82	
	H4015	7/8" (0.875)	–	83	
	H4016	1" (1.000)	–	83	
	H4017	–	3/4" (1.050)	83	
H5	H5020	11/4" (1.250)	–	104	3/8"-16 x 2-3/4"
	H5021	–	1" (1.315)	104	
	H5024	11/2" (1.500)	–	103	
	H5027	–	11/4" (1.660)	103	
H6	H6028	13/4" (1.750)	–	266	1/2"-13 x 4"
	H6030	–	1 1/2" (1.900)	276	
	H6032	2" (2.000)	–	267	
	H6034	2 1/4" (2.250)	–	266	
	H6038	2 3/8" (2.375)	2" (2.375)	267	
H7	H6040	2 1/2" (2.500)	–	264	5/8"-11 x 5-1/4"
	H7044	2 3/4" (2.750)	–	510	
	H7046	–	2 1/2" (2.870)	525	
	H7050	3" (3.000)	–	506	
	H7056	–	3" (3.500)	495	
H8	H7057	3 1/2" (3.500)	–	510	5/8"-11 x 7-1/2"
	H8072	–	4" (4.500)	1,350	
	H9089	–	5" (5.563)	1,970	
H9	H9106	–	6" (6.625)	1,970	7/8"-9 x 8-1/4"
	H10137	–	8" (8.625)	4,700	
H10	H11170	–	10" (10.750)	11,500	M30 x 300mm
	–	–	–	–	
<p>*For additional sizes contact factory. Note: Add assembly type to part number. Example: H3004S-SS provides the complete assembly as shown with stainless steel components.</p>					
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)
C-RAIL NUT (Two required per single assembly)	C-RAIL	HEAVY SERIES DOUBLE WELD PLATE	HEAVY SERIES DOUBLE COVER PLATE	



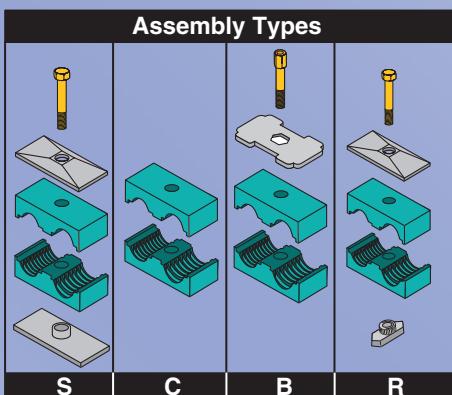
Beta Hydraulic Clamps™



BETA CLAMPS TWIN SERIES are ideal for general-duty applications subject to moderate levels of shock and vibration. Cushions in this series are Polypropylene (Green Color).

Call factory for additional sizes and cushion material

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

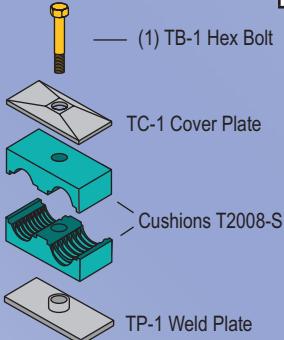


Group	Steel Part No.	Stainless Steel Part No.	Tube Size	Pipe Size	WT/100	Hex Bolt
T1	T1004	T1004-SS	1/4		21	1/4"-20 x 1 3/8"
	T1006	T1006-SS	3/8"		21	
	T1007	T1007-SS		1/8"	21	
T2	T2008	T2008-SS	1/2"		31	5/16"-18 x 1 3/8"
	T2009	T2009-SS		1/4"	31	
	T2010	T2010-SS	5/8"		31	
T3	T2011	T2011-SS		3/8"	31	5/16"-18 x 1 3/4"
	T3012	T3012-SS	3/4"		40	
	T3014	T3014-SS		1/2"	39	
T4	T3015	T3015-SS	7/8"		39	5/16"-18 x 2"
	T3016	T3016-SS	1"		38	
	T4017	T4017-SS		3/4"	49	
T5	T4018	T4018-SS	1 1/8"		49	5/16"-18 x 2 3/8"
	T5020	T5020-SS	1 1/4"		65	
	T5021	T5021-SS		1	65	
	T5024	T5024-SS	1 1/2		64	
	T5027	T5027-SS		1 1/4	62	

*For additional sizes and stainless steel contact factory.

Note: Add Assembly type to Part No. **Example: T1004S** 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		TSPI Thru TSP5
TWIN HEX BOLT	C-RAIL NUT	C-RAIL	
	TB1 Thru TB5		TSB1 Thru TSB5
		SRN1-6 TRN2-5	
		SCR1 SCR2	



Beta Hydraulic Clamps™

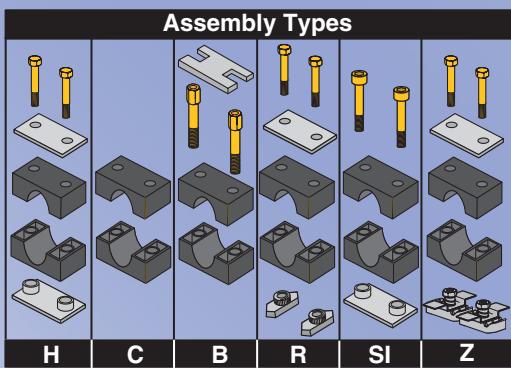
BETA "SMOOTHIE" STANDARD SERIES



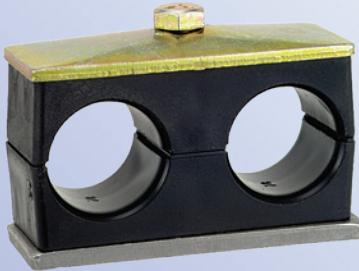
Beta "Smoothie" is ideal for general-duty applications where there is a need to reduce wear on hose connection caused by vibration and surge.

- 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.



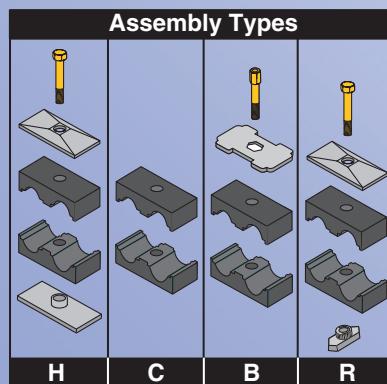
BETA "SMOOTHIE" TWIN SERIES



Beta "Smoothie" is 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 Twin 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	WT/100	Bolt
S2	S2004H	1/4"	20	1/4 – 20 x 1 ³ / ₈
	S2006H	3/8"	20	
S3	S3008H	1/2"	25	1/4 – 20 x 1 ¹ / ₂
	S3010H	5/8"	25	
S4	S4012H	3/4"	29	1/4 – 20 x 1 ³ / ₄
S5	S5016H	1"	39	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	WT/100	Bolt
T2	T2004H	1/4"	31	5/16 – 18 x 1 ³ / ₈
	T2006H	3/8"	31	
T3	T3008H	1/2"	39	5/16 – 18 x 1 ³ / ₄
T4	T4010H	5/8"	49	5/16 – 18 x 2
	T4012H	3/4"	49	
T5	T5016H	1"	65	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 Hydraulic Clamps™

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.

Assembly Types					
S	C	B	R	Z	CLAMP BODY ONLY

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	
S6	S4C	Clamp Body Only (Group S4)					1/4-20 x 2 ³ / ₄
	S6014RI	0.79	20	-	1/2"	0.77 - 0.79	
	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: SM4006RIS provides the complete assembly as shown

BETA HEAVY RUBBER INSERT SERIES



Assembly Types					
S	C	B	R	CLAMP BODY ONLY	

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

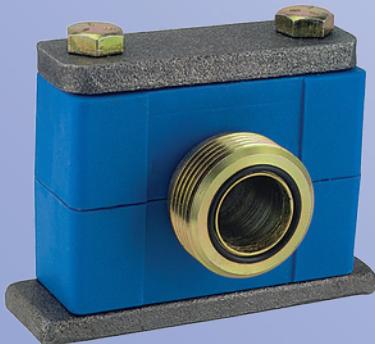
INSTALLATION - Refer to pages 9 – 11 for complete installation guide.

Group	Part No.	Bore Ø D in. (mm)	Tube O.D.	Pipe	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		
H5	Clamp Body Only (Group H4)						
	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		
	Clamp Body Only (Group H5)						
	H6021RI	1.33 (33.7)	-	1"	1.31 - 1.33		
H6	HM6035RI	1.38 (35)	-	-	1.36 - 1.38	1/2-13x 4	
	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		
	Clamp Body Only (Group H6)						
H7	H7038RI	2.36 (60)	-	2"	2.34 - 2.36	5/8-11x 5 ¹ / ₂	
	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		
	Clamp Body Only (Group H7)						
	H8036RI	3.27 (83)	-	-	3.19 - 3.27		
H8	H8056RI	3.50 (89)	3 ¹ / ₂ "	3"	3.43 - 3.50	3/4-10x 7 ¹ / ₂	
	Clamp Body Only (Group H8)						

*For additional sizes and stainless steel contact factory.



Beta Hydraulic Clamps™



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
		1"	–	H5MJA2-16-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	–
		3/4"	–	H5FJA2-12-S
	Female Pipe	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



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BETA CLAMPS TORQUE AND MATERIAL PROPERTIES

Clamp	Group	Bolt Size	TIGHTENING TORQUE					
			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 h	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 10-5 /°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
5/8	14	59/64
1	11 1/2	15/32
1 1/4	11 1/2	1 1/2
1 1/2	11 1/2	147/64
2	11 1/2	27/32
2 1/2	8	25/8
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	31/64
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	17/64
1 3/8	6	17/32
1 1/2	6	111/32
1 3/4	5	19/16
2	4 1/2	125/32

RECOMMENDED PIPE CLAMP SPACING

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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

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Bends in the line should be clamped on BOTH sides of the bend as shown.



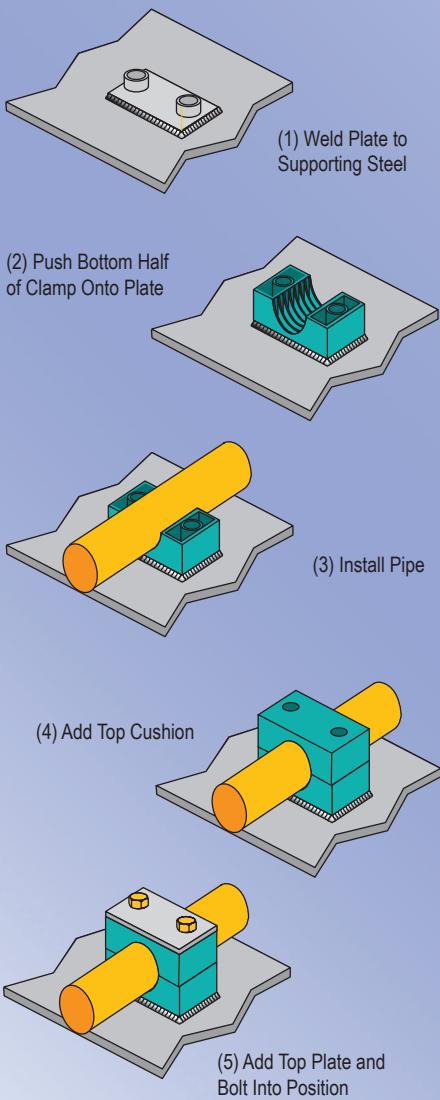
Beta Hydraulic Clamps™

INSTALLATION ON WELD PLATES

ZSI weld plates are available for the following Series:

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

For best alignment of ZSI 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.

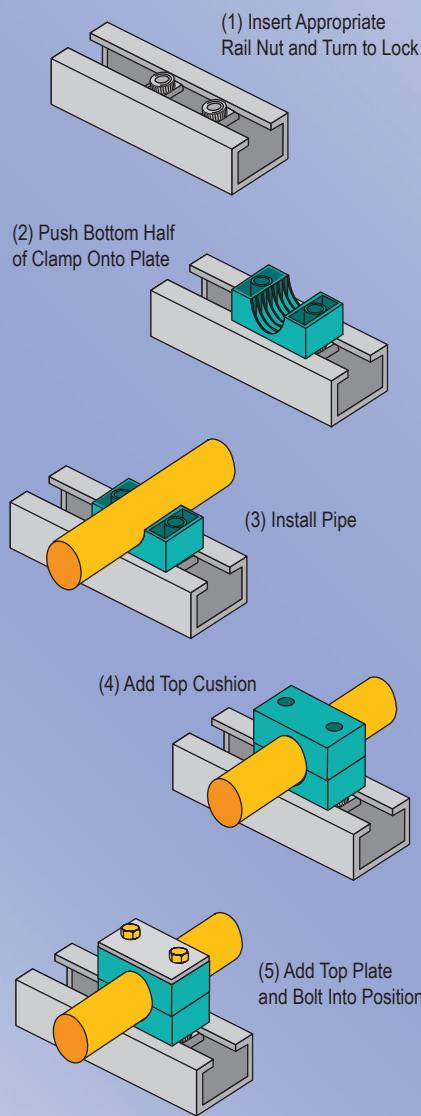
INSTALLATION ON MOUNTING RAILS

ZSI mounting rails can be used with the following Series:

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

ZSI 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.

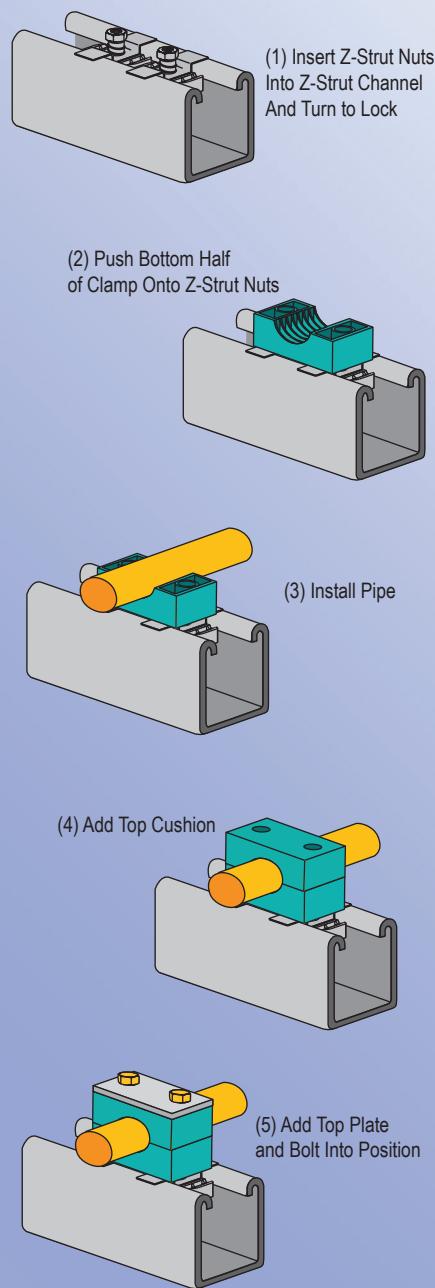


NOTE: The rail nut will slide within the rail so clamp units can be adjusted before being firmly bolted.

INSTALLATION ON Z-STRUT CHANNEL

The Z-Strut 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 Z-Strut Nut will slide within the Z-Strut Channel so clamp units can be adjusted before being firmly bolted.



Beta Hydraulic Clamps™

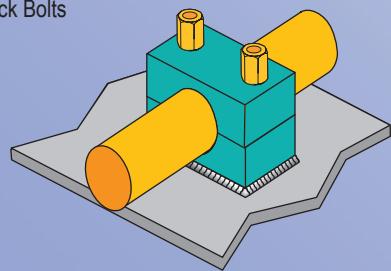
MULTI-LEVEL ASSEMBLY

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

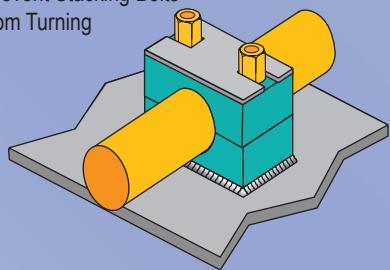
Safety plates are inserted between the clamps to prevent the stacking bolts from turning.

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

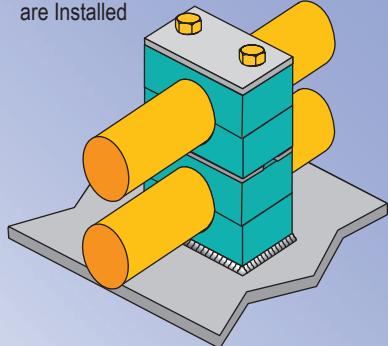
(1) After the Top Cushion is Added, Secure it with the Stack Bolts



(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



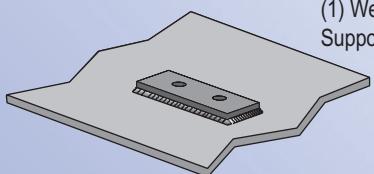
Stacking Assembly

- 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.

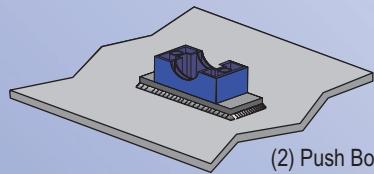
INSTALLATION OF BETA ADAPTER

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

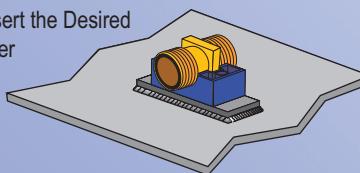
(1) Weld Plate to Supporting Steel



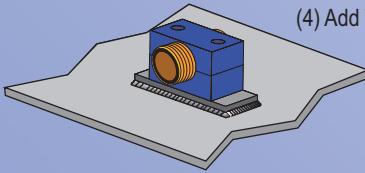
(2) Push Bottom Half of Clamp Onto Plate



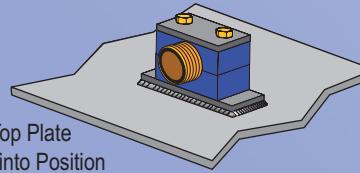
(3) Insert the Desired Adapter



(4) Add Top Cushion

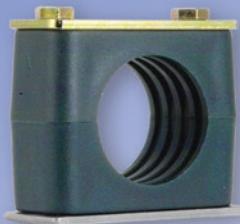


(5) Add Top Plate and Bolt into Position





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 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 Special Metals Series

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



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 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 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

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



DISTRIBUTED BY:

ZSI, INC.

45065 Michigan Ave.
Canton, MI 48188
Tel: (734) 844-0055
Tel: (800) 323-7053
Fax: (734) 844-0066

www.zsi-foster.com