



Product Catalogue

AAA Supports Pvt. Ltd.



Supports Pvt. Ltd

Table of Contents

Introduction	1
Variable Spring Supports	3
Variable Spring Supports Selection table	6
Dimensional details for variable spring support	8
Constant Spring Supports	15
Load Travel Selection chart for Constant Support	19
Rigid Hanger & Rigid Struts	22
Hydraulic Snubbers	24
Pipe Clamp, Riser Clamp & Pipe Holding Components	35
Sliding Pipe Supports & Pipe Shoes	41
Pipe Connecting Elements	51
Erection & Maintenance Manual Variable Spring Supports	57
Erection & Maintenance Manual Constant Spring Supports	61
Enquiry Sheet	65

INTRODUCTION

AAA Supports Pvt. Ltd. is specialized in the Design, Engineering and Manufacturing of Pipe support Equipment and Spring Hangers. Our comprehensive service includes supply of standard and non-standard pipe support components for application in the Oil and gas, Chemical & Fertilizer Industry, Steel and Power Sector in a wide range of materials and surface finish which suits the customer's specific requirement.

PRODUCT RANGE

- VARIABLE SPRING HANGERS AND SUPPORTS
- CONSTANT SPRING HANGERS AND SUPPORTS
- RIGID STRUTS AND HANGERS
- PIPE CLAMPS, & PIPE HOLDING COMPONENTS
- ANCILLARY COMPONENTS
- PIPE SHOES
- SLIDING PLATES
- CRYOGENIC PIPE SUPPORTS

STANDARDS

AAA Supports Pvt. Ltd. strictly conforms to the requirements of the following international specifications. Design and dimensions are subjected to change due to continuous up gradation and improvement of our product.

- ASME B 31.1 (POWER PIPING)
- ASME B 31.3 (PETROLEUM REFINERY PIPING)
- BS 1726
- MSS SP-58 (PIPE HANGERS AND SUPPORTS- MATERIAL AND DESIGN)
- MSS SP-69 (PIPE HANGERS AND SUPPORTS- SELECTION AND APPLICATION)
- ASTM A 125
- BS 3974 PART-I, PART-II, PART-III

ORDERING INFORMATION

Please provide following details to select spring support system.

- Value of cold load or hot load (Kg or KN) in pipeline
- Travel or movement (mm) and its direction towards cold load position to hot load position
- Model or type of Hanger as shown 'A' to 'G' / 'AH' to 'FH' / 'AV' to "FV"
- Type and size of attachment (if required)
- Temperature of pipeline (if required)

QUALITY CONTROL/INSPECTION

All springs are tested as per BS- 1726 Part- I/ ASTM A125. Each and every spring support is subjected to rigorous internal inspection at our end and also offered to our client/ inspection agency for final test, acceptance and its validation as per approved Quality Assurance Plan and Drawing. All relevant test certificates are provided for client authentication.

PAINTING

- **Our Standard** : Two coats of Zinc Chromate Red/ Grey Oxide primer IS: 2074 and one coat of finish enamel paint to IS-5: 1973
- **On Request** : Spring to be PU/Neoprene rubber coating, casing and component to be hot dip galvanized to IS: 2629/A153/A123 except threaded portion. Threaded component shall be electro zinc coated to ASTM B633/B76, Epoxy Zinc phosphate primer & high build epoxy finish.

MARKING

Each and every Variable and Constant supports are fitted with a metallic load travel scale cum Name Plate on which all references are punched such as cold load, hot load, Travel, Support Tag No., Size etc. All items of ancillary equipment are clearly identified with Client's Tag No.

PACKING

Each and every spring support and its ancillary equipment are properly packed in Wooden Box/Crate. Packing list shall description of all items included in the Box.

GUARANTEE

Each spring support /hanger assembly is guaranteed for a period of 18 month from the date of supply or 12 months from the date of commissioning, whichever is earlier. We shall replace with free of charges if any material, which owing to defect in raw materials or workmanship, fails within guaranteed period.

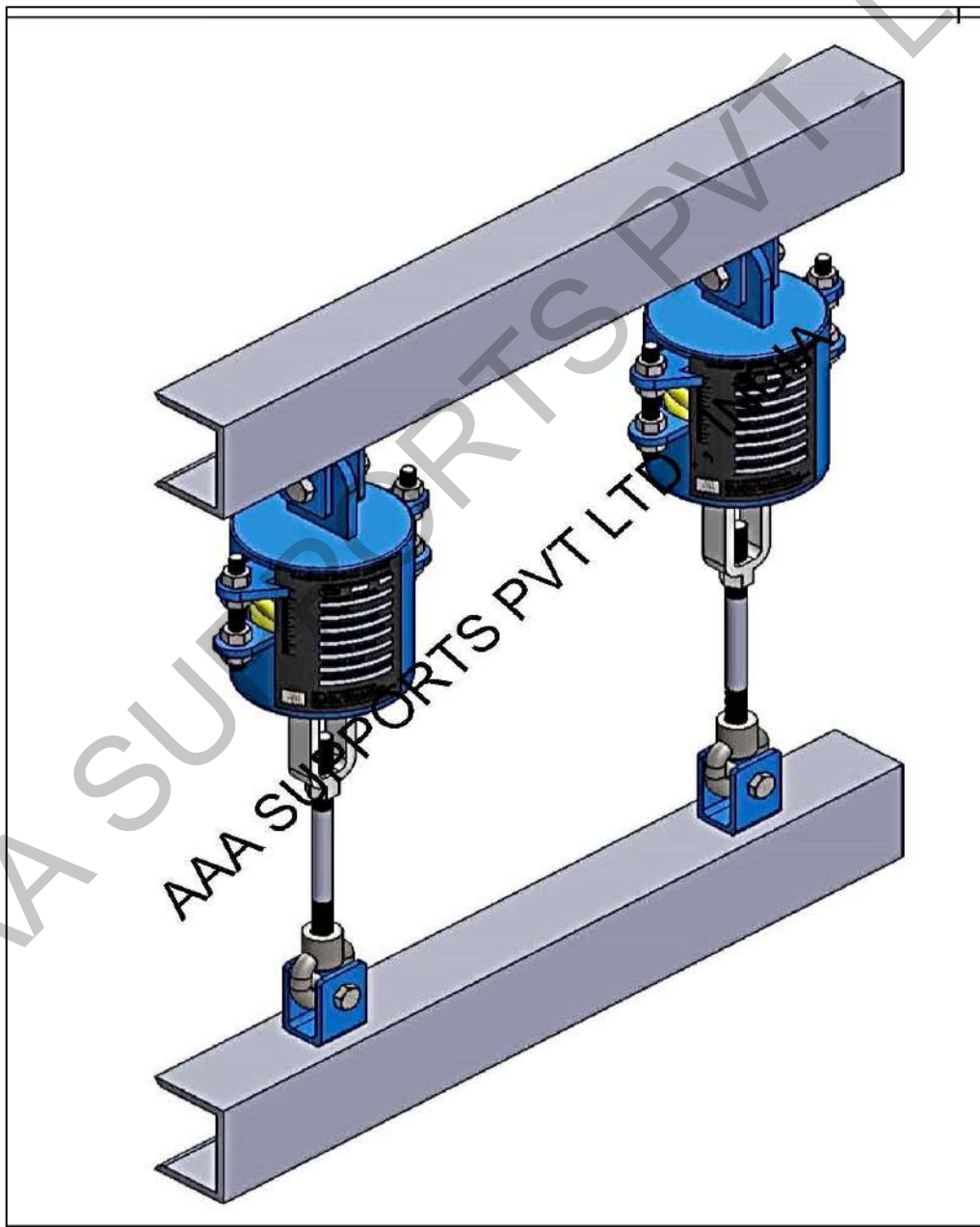
INSTALLATION INSTRUCTION

Fix the spring support in accordance with your pipeline drawing maintaining Tag No. (If required). Adjustment can be made by twisting Turnbuckle for hanging type or threaded load column pipe for bottom supported type, until it comes to the mark indicating the pre-setting cold load.

All variable and constant spring supports are locked in cold/pre-set load. Variable spring supports are locked by side studs & nuts from either side for constant spring supports by a pin, both of which are indicated by an arrow mark. After application of the hydrostatic load and before the pipe line comes into operation, pre-set locking arrangement are to be removed to take care of thermal movement & pipe load.

Height adjustment by twisting of turnbuckle or threaded load column pipe should not be made in loaded condition. Erection & pre-set removal instruction write up are pasted separately on variable and constant spring box.

VARIABLE SPRING HANGERS & SUPPORTS

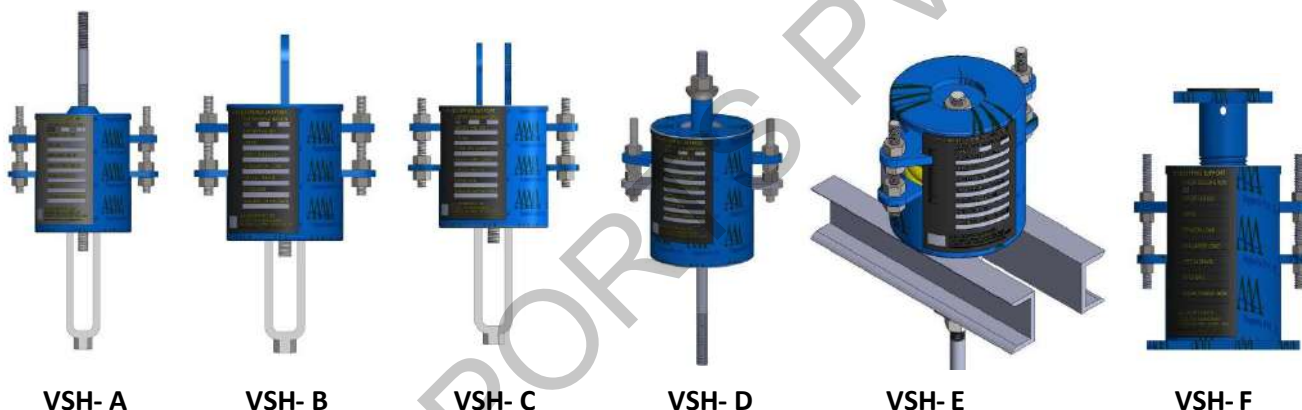


VARIABLE SPRING HANGERS AND SUPPORTS

Variable Spring Supports are used where pipeline are under high pressure, high temperature and results in vertical movement. To allow vertical movement, the entire loads are taken care of by Variable Spring Supports in both the hot and cold position. The Variable Spring Supports are utilized to protect valuable Instrument, pipeline a critical component. The design of the Variable Spring Supports is based on loads, movements and models to suit the required position on pipelines and also depending on the weather condition.

RANGE

We offer three series prefixed VS1, VS2 & VS3 twenty-five spring sizes allow a range of load 8.2 kgs to 27.43 tons. In all the series VS1, VS2 & VS3 provide travel 40mm, 80mm & 160mm respectively. It also takes 5 collinear displacements. We offer models such as A, B, C, D, E, F, G.



SPECIAL RANGE/ DESIGN

Apart from our standard design and product range, we undertake jobs specially designed by us to suit Client's requirement. We offer PU or neoprene rubber coating on spring and epoxy painting/galvanizing to avoid corrosion.

DESIGN PRINCIPLES

Supports components are arranged in a series of load groups, the load within each load group is in strict accordance with the permissible load of the connecting thread. All supports have a strictly symmetrical shape; have single upper and lower load connection resulting a moment free load connection to the structure. The actual travel position of the hangers/supports can be read directly from the travel scale in mm in accordance with the actual travel. All hangers/supports can be blocked in installation position within a close raster.



VSH- G

SUPPLY STANDARD

All hangers/supports have a rivet on name plate with travel scale displaying series, size, type, hot load, cold load, travel and client's tag no.

METHOD OF SELECTION (VARIABLE)

Hot/Operating load = 2000 Kg
Movement/Travel (Vertical) = 20 mm (UP)
Maximum Load Variation (V) = 25%

Using Selection Table

Enter table at 2000 Kg. located in size 15 column

$$\text{Check variability (V)} = \frac{\text{movement} * \text{spring rate} * 100}{\text{hot load}}$$

From VS2 series of size 15, Spring Rate =13.0 Kg/mm

$$\text{Variability} = \frac{20 * 13 * 100}{2000} = 13\% \text{ (acceptable)}$$

Support selection = VS2 TYPE 15

Cold pre-set load = (Hot load + movement* spring rate)
= 2000+(20*13) =2260 kg



VARIABLE SPRING HANGER- B TYPE



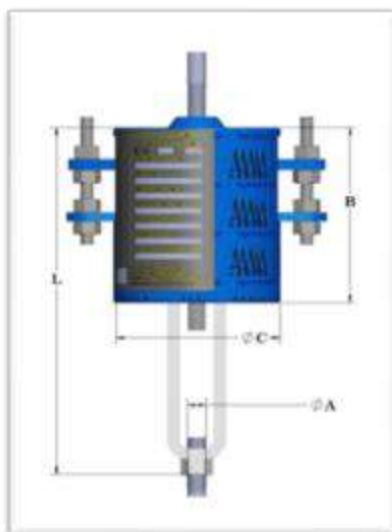
VARIABLE SPRING HANGER- F TYPE



VARIBALE SPRING SUPPORTS- BIG TON LOAD

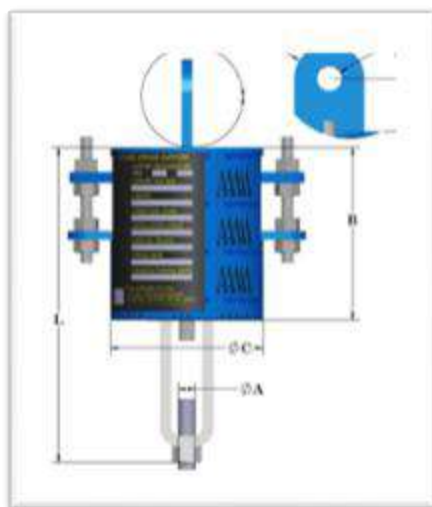
VARIABLE SPRING HANGERS & SUPPORTS SELECTION TABLE																														
SIZE					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
LOAD (kg)																														
TRAVEL					7	10	22	35	56.4	92	134	181	253	355	486	613	766	964	1116	1343	1588	2000	2781	3720	4674	6982	9775	11693	12911	
VS5	VS4	VS3	VS2	VS1	7.6	11	23.6	37.6	60.2	97	140	191	266	371	507	639	799	1006	1168	1409	1674	2116	2931	3920	4934	7322	10195	12233	13571	
0	0	0	0	0	8.2	12	25.2	40.2	64	102	147	200	278	387	528	665	832	1048	1220	1475	1760	2232	3081	4120	5194	7662	10615	12773	14231	
8	6	4	3	2	8.8	13	26.8	42.8	67.8	107	154	209	290	403	548	691	865	1090	1272	1541	1846	2348	3231	4320	5454	8002	11035	13313	14891	
16	12	8	6	4	9.4	14	28.4	45.4	71.6	112	161	218	303	419	569	717	898	1132	1324	1607	1932	2464	3381	4520	5714	8342	11455	13853	15551	
24	18	12	9	6	10	15	30	48	75.4	117	168	227	315	435	589	743	931	1174	1376	1673	2018	2580	3531	4720	5974	8682	11875	14393	16211	
32	24	16	12	8	10.6	16	31.6	50.6	79.2	122	174	237	328	451	610	769	964	1216	1428	1739	2104	2696	3681	4920	6234	9022	12295	14933	16871	
40	30	20	15	10	11.2	17	33.2	53.2	83	127	181	246	340	467	631	795	997	1258	1480	1805	2190	2812	3831	5120	6494	9362	12715	15473	17531	
48	36	24	18	12	11.8	18	34.8	55.8	86.8	132	188	255	352	483	651	821	1030	1300	1532	1871	2276	2928	3981	5320	6754	9702	13135	16013	18191	
56	42	28	21	14	12.4	19	36.4	58.4	90.6	137	195	264	365	499	672	847	1063	1342	1584	1937	2362	3044	4131	5520	7014	10042	13555	16553	18851	
64	48	32	24	16	13	20	38	61	94.4	142	201	273	377	515	692	873	1096	1384	1636	2003	2448	3160	4281	5720	7274	10382	13975	17093	19511	
72	54	36	27	18	13.6	21	39.6	63.6	98.2	147	208	283	390	531	713	899	1129	1426	1688	2069	2534	3276	4431	5920	7534	10722	14395	17633	20171	
80	60	40	30	20	14.2	22	41.2	66.2	102	152	215	292	402	547	734	925	1162	1468	1740	2135	2620	3392	4581	6120	7794	11062	14815	18173	20831	
88	66	44	33	22	14.8	23	42.8	68.8	105.8	157	222	301	414	563	754	951	1195	1510	1792	2201	2706	3508	4731	6320	8054	11402	15235	18713	21491	
96	72	48	36	24	15.4	24	44.4	71.4	109.6	162	229	310	427	579	775	977	1228	1552	1844	2267	2792	3624	4881	6520	8314	11742	15655	19253	22151	
104	78	52	39	26	16	25	46	74	113.4	167	235	319	439	595	795	1003	1261	1594	1896	2333	2878	3740	5031	6720	8574	12082	16075	19793	22811	
112	84	56	42	28	16.6	26	47.6	76.6	117.2	172	242	329	452	611	816	1029	1294	1636	1948	2399	2964	3856	5181	6920	8834	12422	16495	20333	23471	
120	90	60	45	30	17.2	27	49.2	79.2	121	177	249	338	464	627	837	1055	1327	1678	2000	2465	3050	3972	5331	7120	9094	12762	16915	20873	24131	
128	94	64	48	32	17.8	28	50.8	81.8	124.8	182	256	347	476	643	857	1081	1360	1720	2052	2531	3136	4088	5481	7320	9354	13102	17335	21413	24791	
136	102	68	51	34	18.4	29	52.4	84.4	128.6	187	263	356	489	659	878	1107	1393	1762	2104	2597	3222	4204	5631	7520	9614	13442	17755	21953	25451	
144	108	72	54	36	19	30	54	87	132.4	192	269	365	501	675	898	1133	1426	1804	2156	2663	3308	4320	5781	7720	9874	13782	18175	22493	26111	
152	114	76	57	38	19.6	31	55.6	89.6	136.4	197	276	375	514	691	919	1159	1459	1846	2208	2729	3394	4436	5931	7920	10134	14122	18595	23033	26771	
160	120	80	60	40	20.2	32	57.2	92.2	140	202	283	384	526	707	940	1185	1492	1888	2260	2795	3480	4552	6081	8120	10394	14462	19015	23573	27431	
0-160	0-120	0-80	0-60	0-40	20.8	33	58.8	94.8	143.6	207	290	393	538	723	960	1211	1525	1930	2312	2861	3566	4668	6231	8320	10654	14802	19435	24113	28091	
					21.4	34	60.4	97.4	147.6	212	297	402	551	739	981	1237	1558	1972	2364	2927	3652	4784	6381	8520	10914	15142	19855	24653	28751	
					22	35	62	100	151.4	217	303	411	563	755	1002	1263	1591	2014	2416	2993	3738	4900	6531	8720	11174	15482	20275	25193	29411	
SPRING RATE (kg/mm)	VS1	0.3	0.5	0.8	1.3	1.9	2.5	3.4	4.6	6.2	8	10.3	13	16.5	21	26	33	43	58	75	100	130	170	210	270	330				
	VS2	0.2	0.33	0.53	0.86	1.26	1.66	2.26	3.06	4.13	5.33	6.86	8.66	11	14	17.33	22	28.66	38.66	50	66.66	86.66	113.3	140	180	220				
	VS3	0.15	0.25	0.4	0.65	0.95	1.25	1.7	2.3	3.1	4	5.15	6.5	8.25	10.5	13	16.5	21.5	29	37.5	50	65	85	105	135	165				
	VS4	0.1	0.166	0.266	0.43	0.63	0.83	1.13	1.53	2.06	2.66	3.43	4.33	5.5	7	8.66	11	14.33	19.33	25	33.33	43.33	56.66	70	90	110				
	VS5	0.075	0.125	0.2	0.325	0.475	0.625	0.85	1.15	1.55	2	2.575	3.25	4.125	5.25	6.45	8.25	10.75	14.5	18.75	25	32.5	42.5	52.5	67.5	82.5				

VARIABLE SPRING HANGERS & SUPPORTS SELECTION TABLE																													
SIZE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25			
LOAD IN NEWTONS																													
TRAVEL		69	98	216	343	526	902	1313	1774	2479	3479	4763	6007	7507	9447	10937	13161	15562	19600	27254	36456	45805	68424	95795	114591	126528			
VS5	VS4	VS3	VS2	VS1	75	108	231	369	590	951	1372	1872	2607	3636	4969	6262	7830	9859	11446	13808	16405	20737	28724	38416	48353	71756	99911	119883	132996
0	0	0	0	0	80	118	247	394	627	1000	1441	1960	2724	3793	5174	6517	8154	10270	11956	14455	17248	21874	30194	40376	50901	75088	104027	125175	139464
8	6	4	3	2	86	127	263	419	664	1049	1509	2048	2842	3949	5370	6772	8477	10682	12466	15102	18091	23010	31664	42336	53449	78420	108143	130467	145932
16	12	8	6	4	92	137	278	445	702	1098	1578	2136	2969	4106	5576	7027	8800	11094	12975	15749	18934	24147	33134	44296	55997	81752	112259	135759	152400
24	18	12	9	6	98	147	294	470	739	1147	1646	2225	3087	4263	5772	7281	9124	11505	13485	16395	19776	25284	34604	46256	58545	85084	116375	141051	158868
32	24	16	12	8	104	157	310	496	776	1196	1705	2323	3214	4420	5978	7536	9447	11917	13994	17042	20619	26421	36074	48216	61093	88416	120491	146343	165336
40	30	20	15	10	110	167	325	521	813	1245	1774	2411	3332	4577	6184	7791	9771	12328	14504	17689	21462	27558	37544	50176	63641	91748	124607	151635	171804
48	36	24	18	12	116	176	341	547	851	1294	1842	2499	3450	4733	6380	8045	10094	12740	15014	18336	22305	28694	39014	52136	66189	95080	128723	156927	178272
56	42	28	21	14	122	186	357	571	888	1343	1911	2587	3577	4890	6586	8301	10417	13152	15523	18983	23148	29831	40484	54096	68737	98412	132839	162219	184740
64	48	32	24	16	127	196	372	598	925	1392	1970	2675	3695	5047	6782	8555	10741	13563	16033	19629	23990	30968	41954	56056	71285	101744	136955	167511	191208
72	54	36	27	18	133	206	388	623	962	1441	2038	2773	3822	5204	6987	8810	11064	13975	16542	20276	24833	32105	43424	58016	73833	105076	141071	172803	19768
80	60	40	30	20	139	216	404	649	1000	1490	2107	2862	3940	5361	7193	9065	11388	14386	17052	20923	25676	33242	44894	59976	76381	108408	145187	178095	204144
88	66	44	33	22	145	225	419	674	1037	1539	2176	2950	4057	5517	7389	9320	11711	14798	17562	21570	26519	34378	46364	61936	78929	111740	149303	183387	210612
96	72	48	36	24	151	235	435	700	1074	1588	2244	3038	4185	5674	7595	9575	12034	15210	18071	22217	27362	35515	47834	63896	81477	115072	153419	188679	217080
104	78	52	39	26	157	245	451	725	1111	1637	2303	3126	4302	5831	7791	9829	12358	15621	18581	22863	28204	36652	49304	65856	84025	118404	157535	193971	223548
112	84	56	42	28	163	255	467	751	1149	1686	2372	3224	4430	5988	7997	10084	12681	16033	19090	23510	29047	37789	50774	67816	86573	121736	161651	199263	230016
120	90	60	45	30	169	265	482	776	1186	1735	2440	3312	4547	6145	8203	10339	13005	16444	19600	24157	29890	38926	52244	69776	89121	125068	165767	204555	236484
128	96	64	48	32	174	274	498	802	1223	1784	2509	3401	4665	6301	8399	10594	13328	16856	20110	24804	30733	40062	53714	71736	91669	128400	169883	209847	242952
136	102	68	51	34	180	284	514	827	1260	1833	2577	3489	4792	6458	8604	10849	13651	17268	20619	25451	31576	41199	55184	73696	94217	131732	173999	215139	249420
144	108	72	54	36	186	294	529	853	1298	1882	2636	3577	4910	6615	8800	11103	13975	17679	21128	26097	32418	42336	56654	75656	96765	135064	178115	220431	255888
152	114	76	57	38	192	304	545	878	1337	1931	2705	3675	5037	6772	9006	11358	14298	18091	21638	26744	33261	43473	58124	77616	99313	138396	182231	225723	262356
160	120	80	60	40	198	314	561	904	1372	1980	2773	3763	5155	6929	9212	11613	14622	18502	22148	27391	34104	44610	59594	79576	101861	141728	186347	231015	268824
0-160	0-120	0-80	0-60	0-40	204	323	576	929	1470	2029	2842	3851	5272	7085	9408	11868	14945	18914	22658	28038	34947	45746	61064	81536	104409	145060	190463	236307	275292
					210	333	592	955	1447	2078	2911	3940	5400	7242	9614	12123	15268	19326	23167	28685	35790	46883	62534	83496	106957	148392	194579	241599	281760
					216	343	608	980	1484	2127	2969	4028	5517	7399	9820	12377	15592	19737	23677	29331	36632	48020	64004	85456	109505	151724	198695	246891	288228
SPRING RATE N/mm	VS1	2.9	4.9	7.8	12.7	18.6	24.5	33.3	45.1	61	78	101	127	162	206	255	323	421	568	735	980	1274	1666	2058	2646	324			
	VS2	2.0	3.2	5.2	8.4	12.4	16.3	22.2	30.0	41	52	67	85	108	137	170	216	281	379	491	654	850	1112	1373	1766	2158			
	VS3	1.5	2.5	3.9	6.4	9.3	12.3	16.7	22.5	30	39	50	64	81	103	127	162	211	284	368	490	637	833	1029	1323	1617			
	VS4	1.0	1.6	2.6	4.2	6.2	8.1	11.1	15.0	20	26	34	42	54	69	85	108	141	190	245	327	425	556	687	883	1079			
	VS5	0.7	1.2	2.0	3.2	4.7	6.1	8.3	11.3	15	20	25	32	40	51	63	81	105	142	184	245	319	417	515	662	809			



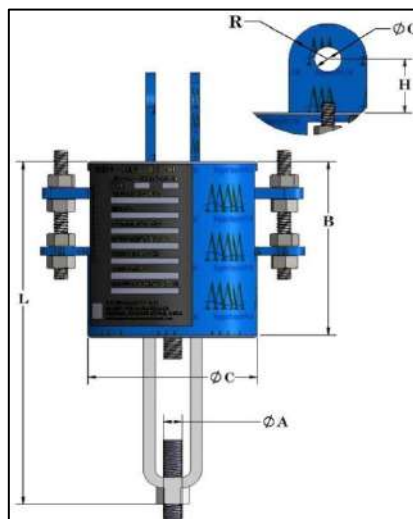
DIMENSION DETAILS: VSH TYPE "A"

SIZE	AØ	B					ØC	L				
		VS1	VS2	VS3	VS4	VS5		VS1	VS2	VS3	VS4	VS5
1	M10	95	129	161	277	298	89	195	229	261	377	398
2	M10	99	133	167	276	300	114	199	233	267	376	400
3	M10	108	145	183	312	331	114	208	245	283	412	431
4	M10	108	144	180	311	323	140	208	244	280	411	423
5	M10	127	170	214	367	399	140	227	270	314	467	499
6	M10	137	185	234	408	439	140	237	285	334	508	539
7	M12	147	197	246	430	465	140	247	297	346	530	565
8	M12	159	212	266	457	498	140	259	312	366	557	598
9	M16	177	238	298	510	565	165	282	343	403	615	670
10	M16	185	248	312	537	591	165	290	353	417	642	696
11	M20	193	258	324	559	613	165	298	363	429	664	718
12	M20	182	243	304	534	577	194	292	353	414	644	687
13	M24	211	279	346	592	654	194	321	389	456	702	764
14	M24	250	338	421	709	810	194	363	451	534	822	923
15	M30	238	319	397	665	756	194	351	432	510	778	869
16	M30	248	332	412	685	783	194	361	445	525	798	896
17	M30	263	354	440	725	842	194	388	479	565	850	967
18	M36	277	364	459	730	848	219	402	489	584	855	973
19	M42	328	441	549	891	1137	219	453	566	674	1016	1262
20	M48	347	458	567	911	1070	244	477	588	697	1041	1200
21	M56	362	473	582	931	1091	273	497	608	717	1066	1226
22	M64	428	569	702	1127	1343	273	573	714	847	1272	1488
23	M64	454	597	730	1178	1386	324	604	747	880	1328	1536
24	M72	492	651	796	1279	1527	324	642	801	946	1429	1677
25	M72	521	690	830	1330	1605	324	671	840	980	1480	1755



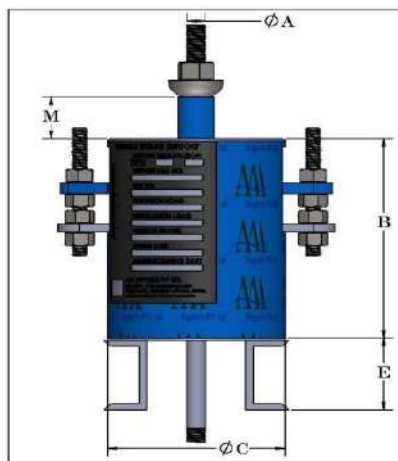
DIMENSION DETAILS: VSH TYPE "B"

SIZE	A	B					ØC	H	ØO	R	T	L				
		VS1	VS2	VS3	VS4	VS5						VS1	VS2	VS3	VS4	VS5
1	M10	95	129	161	277	298	89	45	18	33	6	195	229	261	377	398
2	M10	99	133	167	276	300	114	45	18	33	6	199	233	267	376	400
3	M10	108	145	183	312	331	114	45	18	33	6	208	245	283	412	431
4	M10	108	144	180	311	323	140	45	18	33	8	208	244	280	411	423
5	M10	127	170	214	367	399	140	45	18	33	8	227	270	314	467	499
6	M10	137	185	234	408	439	140	50	23	33	8	237	285	334	508	539
7	M12	147	197	246	430	465	140	50	23	33	8	247	297	346	530	565
8	M12	159	212	266	457	498	140	50	23	33	10	259	312	366	557	598
9	M16	177	238	298	510	565	165	50	27	37	10	277	338	398	610	665
10	M16	185	248	312	537	591	165	50	27	37	10	285	348	412	637	691
11	M20	193	258	324	559	613	165	50	27	37	12	293	358	424	659	713
12	M20	182	243	304	534	577	194	60	27	37	12	282	343	404	634	677
13	M24	211	279	346	592	654	194	60	27	37	12	311	379	446	692	754
14	M24	250	338	421	709	810	194	60	30	40	12	350	438	521	809	910
15	M30	238	319	397	665	756	194	60	30	40	12	338	419	497	765	856
16	M30	248	332	412	685	783	194	70	33	45	16	348	432	512	785	883
17	M30	263	354	440	725	842	194	70	33	45	16	363	454	540	825	942
18	M36	277	364	459	730	848	219	80	39	50	20	377	464	559	830	948
19	M42	328	441	549	891	1137	219	85	45	55	20	428	541	649	991	1237
20	M48	347	458	567	911	1070	244	90	51	63	25	447	558	667	1011	1170
21	M56	362	473	582	931	1091	273	100	60	75	25	462	573	682	1031	1191
22	M64	428	569	702	1127	1343	273	120	68	85	25	528	669	802	1227	1443
23	M64	454	597	730	1178	1386	324	120	68	85	25	554	697	830	1278	1486
24	M72	492	651	796	1279	1527	324	130	76	95	30	592	751	896	1379	1627
25	M72	521	690	830	1330	1605	324	130	76	95	30	621	790	930	1430	1705



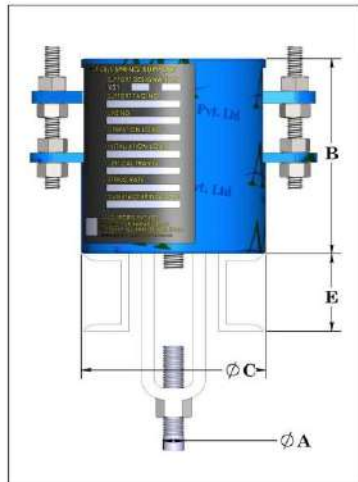
DIMENSION DETAILS: VSH TYPE "C"

SIZE	A	B					ØC	H	ØO	R	S	L				
		VS1	VS2	VS3	VS4	VS5						VS1	VS2	VS3	VS4	VS5
1	M10	95	129	161	277	298	89	45	18	33	20	195	229	261	377	398
2	M10	99	133	167	276	300	114	45	18	33	25	199	233	267	376	400
3	M10	108	145	183	312	331	114	45	18	33	25	208	245	283	412	431
4	M10	108	144	180	311	323	140	45	18	33	25	208	244	280	411	423
5	M10	127	170	214	367	399	140	45	18	33	25	227	270	314	467	499
6	M10	137	185	234	408	439	140	50	23	33	30	237	285	334	508	539
7	M12	147	197	246	430	465	140	50	23	33	30	247	297	346	530	565
8	M12	159	212	266	457	498	140	50	23	33	30	259	312	366	557	598
9	M16	177	238	298	510	565	168	50	27	37	35	277	338	398	610	665
10	M16	185	248	312	537	591	168	50	27	37	35	285	348	412	637	691
11	M20	193	258	324	559	613	168	50	27	37	35	293	358	424	659	713
12	M20	182	243	304	534	577	194	60	27	37	40	282	343	404	634	677
13	M24	211	279	346	592	654	194	60	27	37	40	311	379	446	692	754
14	M24	250	338	421	709	810	194	60	30	40	45	350	438	521	809	910
15	M30	238	319	397	665	756	194	60	30	40	45	338	419	497	765	856
16	M30	248	332	412	685	783	194	70	33	45	45	348	432	512	785	883
17	M30	263	354	440	725	842	194	70	33	45	45	363	454	540	825	942
18	M36	277	364	459	730	848	219	80	39	50	50	377	464	559	830	948
19	M42	328	441	549	891	1137	219	85	45	55	60	428	541	649	991	1237
20	M48	347	458	567	911	1070	244	90	51	63	70	447	558	667	1011	1170
21	M56	362	473	582	931	1091	273	100	60	75	75	462	573	682	1031	1191
22	M64	428	569	702	1127	1343	273	120	68	85	80	528	669	802	1227	1443
23	M64	454	597	730	1178	1386	324	120	68	85	80	554	697	830	1278	1486
24	M72	492	651	796	1279	1527	324	130	76	95	90	592	751	896	1379	1627
25	M72	521	690	830	1330	1605	324	130	76	95	90	621	790	930	1430	1705



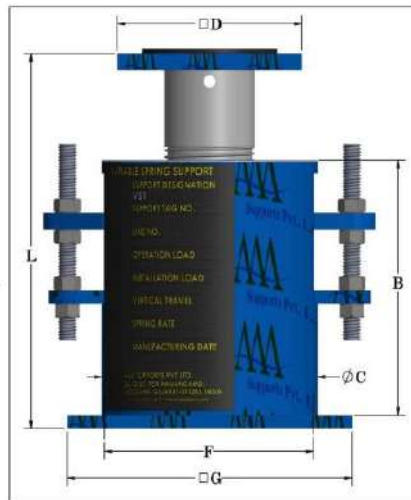
DIMENSION DETAILS: VSH TYPE "D"

SIZE	A	B					ØC	M					E
		VS1	VS2	VS3	VS4	VS5		VS1	VS2	VS3	VS4	VS5	
1	M10	95	129	161	277	298	89	40	50	60	70	80	150
2	M10	99	133	167	276	300	114	40	50	60	70	80	150
3	M10	108	145	183	312	331	114	40	50	60	70	80	150
4	M10	108	144	180	311	323	140	40	50	60	70	80	150
5	M10	127	170	214	367	399	140	40	50	60	70	80	150
6	M10	137	185	234	408	439	140	40	50	60	70	80	150
7	M12	147	197	246	430	465	140	40	50	60	70	80	150
8	M12	159	212	266	457	498	140	40	50	60	70	80	150
9	M16	177	238	298	510	565	168	50	60	70	80	90	150
10	M16	185	248	312	537	591	168	50	60	70	80	90	150
11	M20	193	258	324	559	613	168	50	60	70	80	90	150
12	M20	182	243	304	534	577	194	50	60	70	80	90	150
13	M24	211	279	346	592	654	194	50	60	70	80	90	150
14	M24	250	338	421	709	810	194	50	60	70	80	90	150
15	M30	238	319	397	665	756	194	50	60	70	80	90	150
16	M30	248	332	412	685	783	194	50	60	70	80	90	200
17	M30	263	354	440	725	842	194	50	60	70	80	90	200
18	M36	277	364	459	730	848	219	60	70	80	90	100	200
19	M42	328	441	549	891	1137	219	60	70	80	90	100	200
20	M48	347	458	567	911	1070	244	60	70	80	90	100	200
21	M56	362	473	582	931	1091	273	60	70	80	90	100	200
22	M64	428	569	702	1127	1343	273	60	70	80	90	100	200
23	M64	454	597	730	1178	1386	324	60	70	80	90	100	200
24	M72	492	651	796	1279	1527	324	60	70	80	90	100	200
25	M72	521	690	830	1330	1605	324	60	70	80	90	100	200



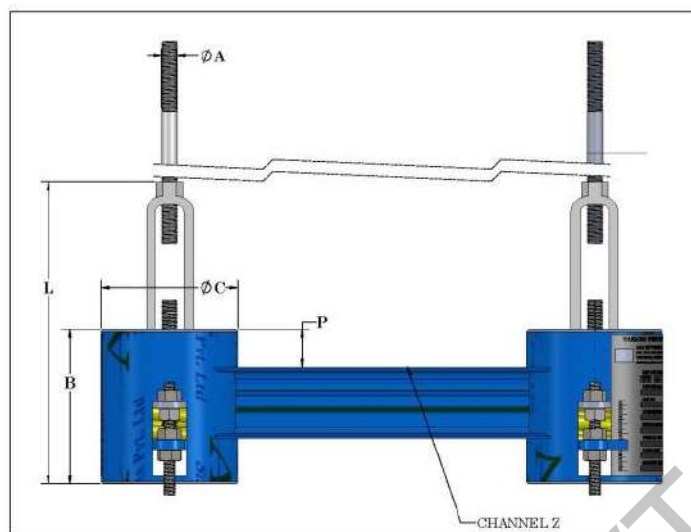
DIMENSION DETAILS: VSH TYPE "E"

SIZE	A	B					ØC	E
		VS1	VS2	VS3	VS4	VS5		
1	M10	95	129	161	277	298	89	150
2	M10	99	133	167	276	300	114	150
3	M10	108	145	183	312	331	114	150
4	M10	108	144	180	311	323	140	150
5	M10	127	170	214	367	399	140	150
6	M10	137	185	234	408	439	140	150
7	M12	147	197	246	430	465	140	150
8	M12	159	212	266	457	498	140	150
9	M16	177	238	298	510	565	168	150
10	M16	185	248	312	537	591	168	150
11	M20	193	258	324	559	613	168	150
12	M20	182	243	304	534	577	194	150
13	M24	211	279	346	592	654	194	150
14	M24	250	338	421	709	810	194	150
15	M30	238	319	397	665	756	194	150
16	M30	248	332	412	685	783	194	200
17	M30	263	354	440	725	842	194	200
18	M36	277	364	459	730	848	219	200
19	M42	328	441	549	891	1137	219	200
20	M48	347	458	567	911	1070	244	200
21	M56	362	473	582	931	1091	273	200
22	M64	428	569	702	1127	1343	273	200
23	M64	454	597	730	1178	1386	324	200
24	M72	492	651	796	1279	1527	324	200
25	M72	521	690	830	1330	1605	324	200



DIMENSION DETAILS: VSH TYPE "F"

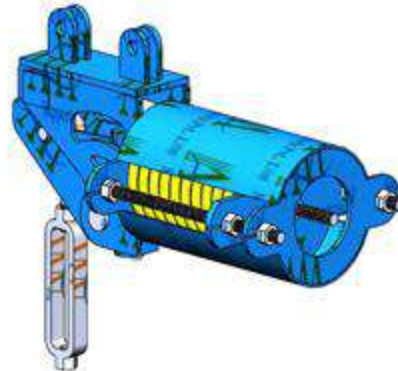
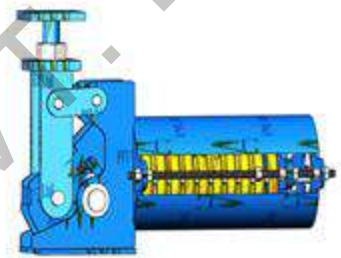
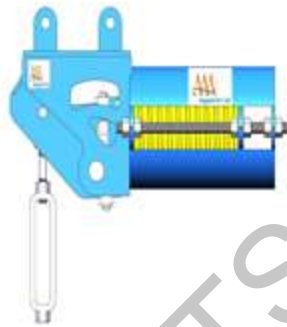
SIZE	B					ϕC	D^2	F^2	G^2	L					T1	T2
	VS1	VS2	VS3	VS4	VS5					VS1	VS2	VS3	VS4	VS5		
1	95	129	161	277	298	89	125	140	100	170	224	276	427	478	8	6
2	99	133	167	276	300	114	125	160	120	174	228	282	426	480	8	6
3	108	145	183	312	331	114	125	160	120	183	240	298	462	511	8	6
4	108	144	180	311	323	140	125	190	140	183	239	295	461	503	8	6
5	127	170	214	367	399	140	125	190	140	202	265	329	517	579	8	6
6	137	185	234	408	439	140	140	190	140	217	285	354	563	624	8	6
7	147	197	246	430	465	140	140	190	140	227	297	366	585	650	8	6
8	159	212	266	457	498	140	140	190	140	239	312	386	612	683	10	8
9	177	238	298	510	565	165	140	210	160	257	343	423	670	755	10	8
10	185	248	312	537	591	165	140	210	160	270	353	437	697	786	10	8
11	193	258	324	559	613	165	140	210	160	278	363	449	719	808	10	8
12	182	243	304	534	577	194	150	255	190	267	348	429	694	772	10	8
13	211	279	346	592	654	194	150	255	190	296	384	471	752	849	10	8
14	250	338	421	709	810	194	150	255	190	340	448	551	874	1010	12	10
15	238	319	397	665	756	194	160	255	190	328	429	527	830	956	12	10
16	248	332	412	685	783	194	160	255	190	338	442	542	850	983	12	10
17	263	354	440	725	842	194	160	255	190	353	464	570	890	1042	12	10
18	277	364	459	730	848	219	160	280	210	372	479	594	900	1053	12	10
19	328	441	549	891	1137	219	180	280	210	423	556	684	1061	1342	16	12
20	347	458	567	911	1070	244	180	300	230	442	573	702	1081	1275	16	12
21	362	473	582	931	1091	273	180	340	260	462	593	717	1101	1296	16	12
22	428	569	702	1127	1343	273	200	340	260	528	689	842	1302	1548	16	12
23	454	597	730	1178	1386	324	200	390	300	559	772	875	1358	1596	20	16
24	492	651	796	1279	1527	324	200	390	300	597	776	941	1459	1737	20	16
25	521	690	830	1330	1605	324	200	390	300	626	815	975	1510	1815	20	20



DIMENSION DETAILS: VSH TYPE "G"

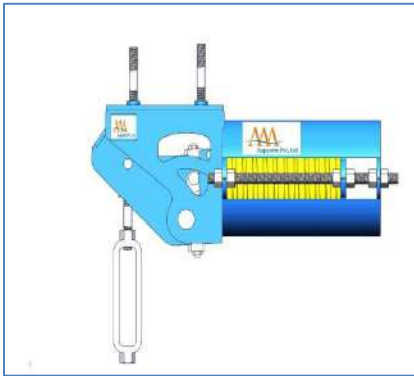
SIZE	A	B					ØC	L					Z	R CRS
		VS1	VS2	VS3	VS4	VS5		VS1	VS2	VS3	VS4	VS5		
1	M10	95	129	161	277	298	89	195	229	261	377	398	75	300
2	M10	99	133	167	276	300	114	199	233	267	376	400	75	300
3	M10	108	145	183	312	331	114	208	245	283	412	431	75	300
4	M10	108	144	180	311	323	140	208	244	280	411	423	75	350
5	M10	127	170	214	367	399	140	227	270	314	467	499	75	350
6	M10	137	185	234	408	439	140	237	285	334	508	539	75	350
7	M12	147	197	246	430	465	140	247	297	346	530	565	75	350
8	M12	159	212	266	457	498	140	259	312	366	557	598	75	350
9	M16	177	238	298	510	565	168	282	343	403	615	670	75	450
10	M16	185	248	312	537	591	168	290	353	417	642	696	75	450
11	M20	193	258	324	559	613	168	298	363	429	664	718	75	450
12	M20	182	243	304	534	577	194	292	353	414	644	687	75	500
13	M24	211	279	346	592	654	194	321	389	456	702	764	100	500
14	M24	250	338	421	709	810	194	363	451	534	822	923	100	500
15	M30	238	319	397	665	756	194	351	432	510	778	869	100	500
16	M30	248	332	412	685	783	194	361	445	525	798	896	100	500
17	M30	263	354	440	725	842	194	388	479	565	850	967	125	500
18	M36	277	364	459	730	848	219	402	489	584	855	973	125	550
19	M42	328	441	549	891	1137	219	453	566	674	1016	1262	125	550
20	M48	347	458	567	911	1070	244	477	588	697	1041	1200	150	600
21	M56	362	473	582	931	1091	273	497	608	717	1066	1226	150	650
22	M64	428	569	702	1127	1343	273	573	714	847	1272	1488	175	650
23	M64	454	597	730	1178	1386	324	604	747	880	1328	1536	175	700
24	M72	492	651	796	1279	1527	324	642	801	946	1429	1677	200	700
25	M72	521	690	830	1330	1605	324	671	840	980	1480	1755	200	700

CONSTANT SPRING HANGERS & SUPPORTS

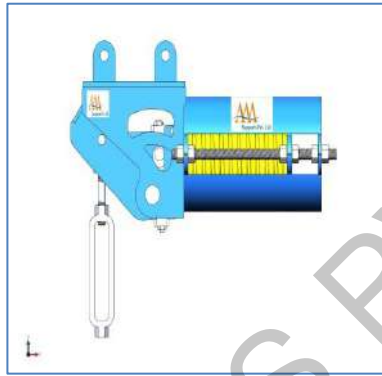


CONSTANT SPRING HANGERS & SUPPORTS

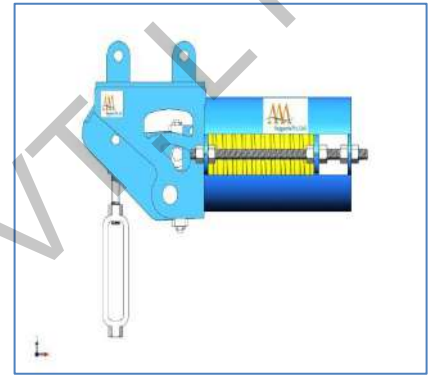
Constant spring support is specially used to accommodate constant effort load, excessive movement of the pipeline due to high temperature and pressure of thermal movement. Constant load takes place through its range by a perfect counter balance crank lever where load and spring movements through the pivot ensure the minimum kinetic variation.



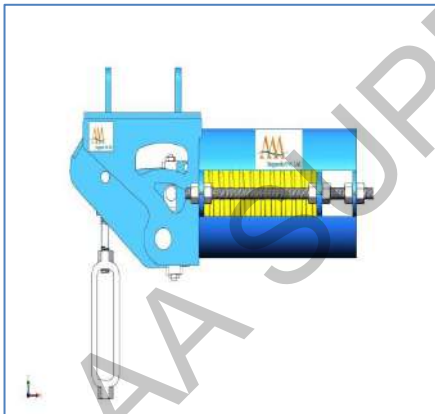
CSH- TYPE A



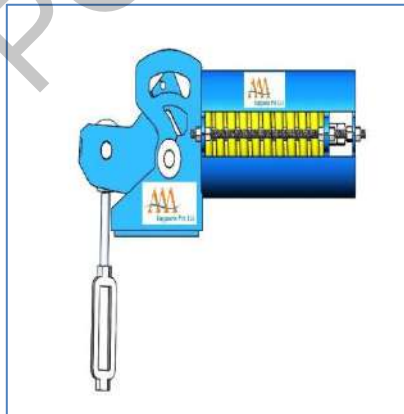
CSH- TYPE B



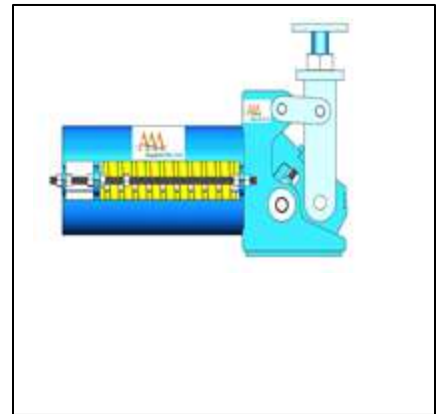
CSH- TYPE C



CSH- TYPE D



CSH- TYPE E



CSH- TYPE F

RANGE

We offer travel range from 40mm to 420 mm with the load range of 16kg to 22756 kg.

SPECIAL RANGE/DESIGN

Apart from our specified standard design and range of product, we undertake jobs specially designed by us to fulfill client's requirement i.e. constant spring support can supply more load/travel than that provided in our standard selection table. Special type of fixing arrangement can be designed apart from our standard.

LOAD ADJUSTMENT

The load adjuster allows for an increase or decrease of load carrying capacity of $\pm 10\%$ of the mean load. Rotating the load adjuster nut in the appropriate direction will increase or decrease the load accordingly.

PRE-SETTING

Each and every Constant spring support is pre-set prior to dispatch. The Stopper Nut must be removed before the entire system comes into operation and following the erection instruction.

INDICATOR & REFERENCE MARK

Each Constant spring support is provided with a travel indicator, which indicates the position of movement of the pipeline. I.e. low, medium and high. An elaborate introductory plate is also provided on the surface of the support, which indicates client reference mark/tag no., operating load, total travel, our reference etc.

ACCEPTANCE LIMIT

Percentage deviation, $V = \frac{L_{max} - L_{min}}{L_{max} + L_{min}} * 100 \leq 6\%$

Where, L Max=Maximum load recorded (Kg.) and L Min=Minimum load recorded (Kg.)

METHOD OF SELECTION

Hot/operating load = 1250Kg.

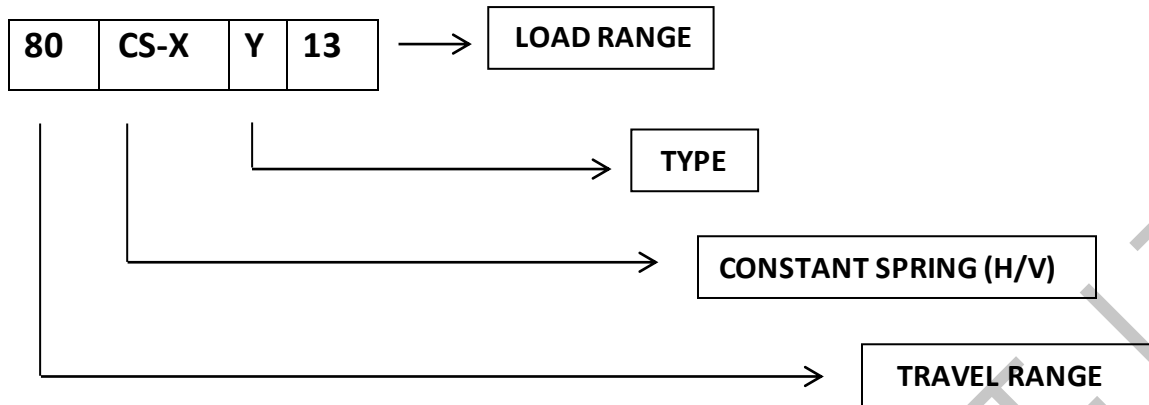
Actual Vertical Travel/Movement = 58mmUP

Using Selection Table

Total Travel/Movement = Actual Movement + 25mm

= 58+25 = 83mm ~ 80 mm

Enter table at travel range 80 mm and load range 1250kg. It located in Size 13.
Selection/Support Designation = 80 CSX-X-13



NOTES:

AAA SUPPORT

LOAD - TRAVEL SELECTION CHART FOR CONSTANT SUPPORTS

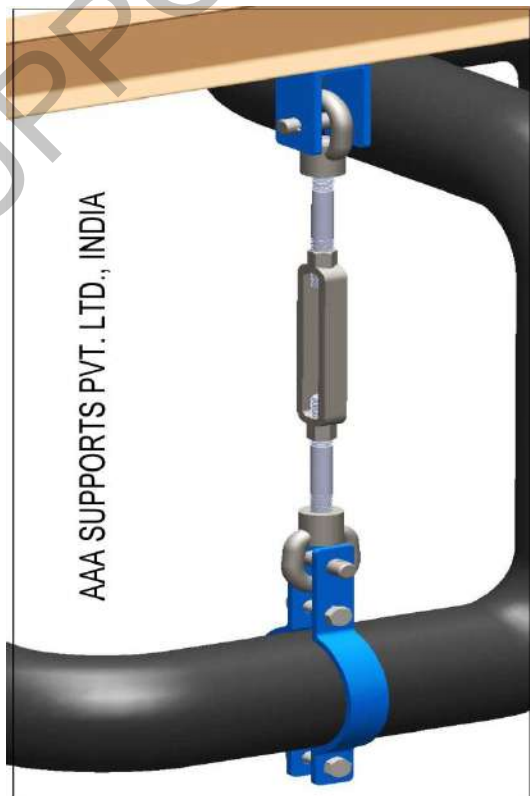
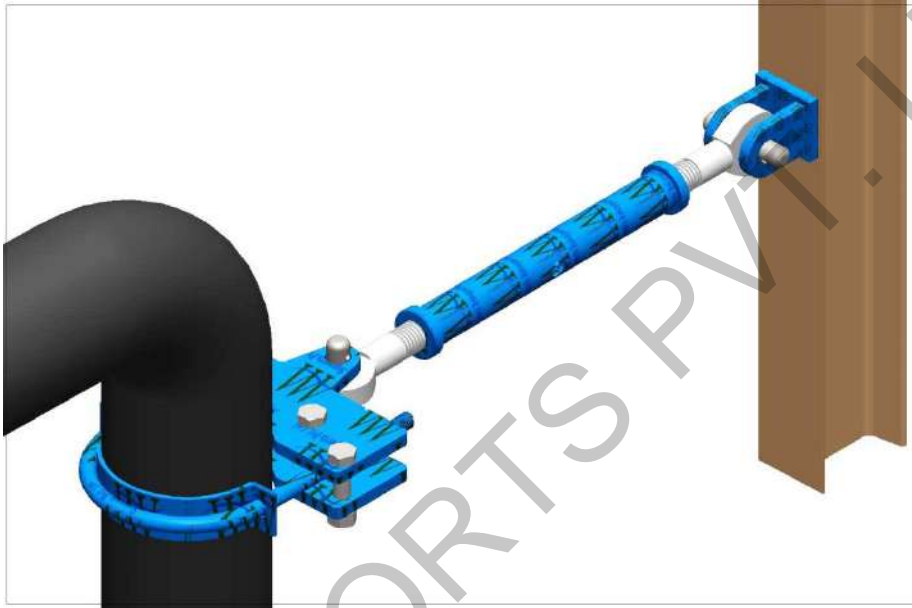
TRAVEL		→																				↓	
SIZE		40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230		
1		16	13	10	8																		
2		24	19	15	12																		
3		36	29	22	18	14	11																
4		54	43	33	27	21	17																
5		81	65	50	40	32	26	21	17	14													
6		121	98	75	60	49	40	32	26	21													
7		182	148	113	91	74	60	48	39	32	26	21	17										
8		273	222	170	136	111	90	73	59	48	39	31	25										
9		410	333	256	205	166	135	109	89	72	58	47	38										
10		615	499	384	307	249	203	164	134	108	88	71	58	47	38	31	25						
11		922	749	576	461	374	304	247	201	163	132	107	87	71	57	46	38						
12				864	691	562	456	371	301	245	199	161	131	106	86	70	57						
13				1297	1037	843	685	556	452	367	298	242	197	160	130	105	85	69	56	46	37		
14				1946	1556	1265	1027	835	678	551	447	363	295	240	195	158	128	104	85	69	56		
15				2919	2335	1897	1541	1252	1017	826	671	545	443	360	292	237	193	157	127	103	84		
16				4378	3503	2846	2312	1879	1526	1240	1007	818	665	540	439	356	289	235	191	155	126		
17					5254	4269	3468	2818	2290	1860	1511	1228	998	810	658	535	434	353	287	233	189		
18						6404	5209	4217	3435	2790	2267	1842	1497.02	1216	988	802	652	530	430	349	284		
19							7805	6341	5152	4186	3401	2763	2245	1824	1482	1204	978	795	646	524	426		
20							11707	9512	7728	6279	5102	4145	3368	2736	2223	1806	1467	1192	969	787	639		
21								14268.7	11593	9419	7653	6218	5052	4105	3335	2709	2201	1789	1453	1181	949		
22								21403.1	17390	14129	11480	9327	7578	6157	5003	4065	3302	2683	2180	1771	1439		
23										21194	17220	13991.4	11368	9236	7504	6097	4954	4025	3270	2657	2159		
24											20987.1	17052		13854	11257	9146	7431	6038	4905	3986	3238		
25														20782	16885.5	13719	11147	9056	7358	5979	4857		
26																20597	16720	13585	11038	8968	7286		
27																		20378	16557	13452	10930		
																					16395		

LOAD - TRAVEL SELECTION CHART FOR CONSTANT SUPPORTS

TRAVEL	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420
SIZE	↓	↓	↓	↓	L	O	A	D	i	n	k	g	↓	↓	↓	↓	↓	↓	↓

12	30																		
13	45																		
14	63	55	46	36															
15	102	83	67	55															
16	154	125	101	82															
17	231	187	152	123	100	81	66	54	43										
18	346	281	228	185	151	122	99	81	55										
19	519	422	343	278	226	184	149	121	98										
20	779	633	514	418	339	276	224	182	148	120	97	79	64	52					
21	1169	950	772	627	509	414	336	273	222	180	146	119	96	78					
22	1754	1425	1158	940	764	621	504	410	333	270	219	178	145	117					
23	2631	2138	1737	1411	1146	931	757	615	499	406	329	268	217	176	143	115	94	77	62
24	3947	3207	2605	2117	1720	1397	1135	922	749	609	494	402	326	265	215	175	142	115	93
25	5920	4810	3908	3175	2580	2096	1703	1383	1124	913	742	603	490	398	323	262	213	173	140
26	8880	7215	5862	4763	3870	3144	2555	2075	1686	1370	1113	904	735	597	485	394	320	260	211
27	13321	10823	8794	7145	5805	4717	3832	3113	2530	2055	1670	1357	1102	895	727	591	480	380	317
28	19982	16235	13191	10718	8708	7075	5748	4670	3795	3083	2505	2035	1653	1343	1091	887	720	585	475
29			19787	16077	13062	10613	8623	7006	5692	4626	3758	3053	2480	2015	1637	1330	1081	878	713
30					19593	15919	12935	10509	8539	6939	5637	4580	3721	3023	2456	1996	1621	1317	1020
31							19402.4	15764	12808	10407	8455	6870	5582	4535	3685	2994	2432	1976	1605
32									19213	15610	12683	10305.4	8373	6808	5517	4491	3649	2964	2408
33											19025.3	15458.1	12559	10204	8291	6736	5473	4447	3613
34													18839	15307.1	12437	10105	8210	6670	5420
35														22960	18655	15157	12315	10006	8130
36																22736	18473	15009	12195

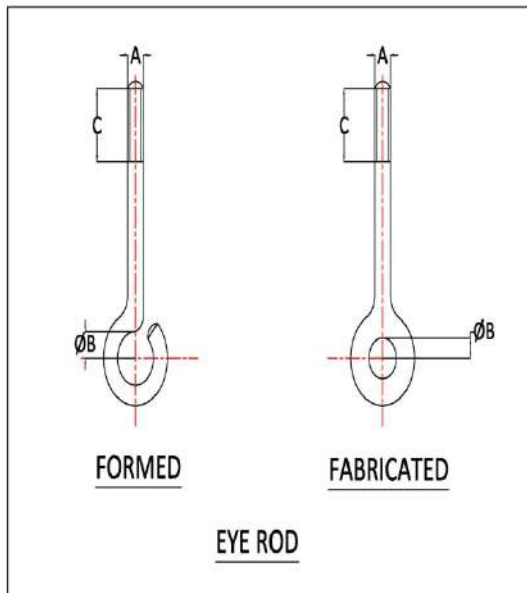
RIGID HANGERS AND RIGID STRUTS



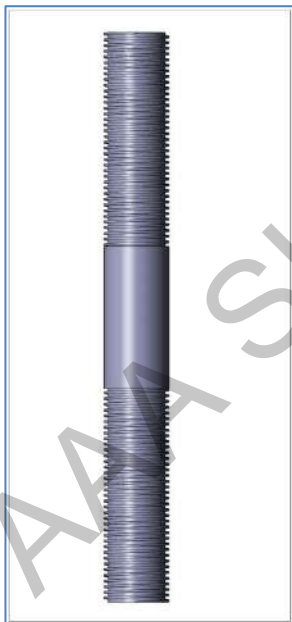
AAA SUPPORTS PVT. LTD., INDIA

RIGID HANGER

Rigid hanger supports are used to support pipe lines which are not subjected to any vertical movement (but may be subjected to Axial or lateral movement). Typically a rigid hanger will consist of a Tie rod assembly with or without a pipe clamp.



EYE ROD/ HANGER ROD					
SIZE	ØA	ØB	C	SAFE LOAD (kg)	TYPE
M12	M12	20	200	600	FORMED TYPE
M16	M16	24	200	1050	
M20	M20	28	250	1750	
M24	M24	30	250	2500	
M27	M27	32	250	3300	
M30	M30	36	250	4500	
M36	M36	42	300	5600	
M42	M42	48	300	7500	FABRICATED TYPE
M48	M48	55	350	9700	
M56	M56	62	350	13500	
M64	M64	70	350	18000	
M72	M72	78	400	23000	
ALL DIMENSION ARE IN mm.					



THREADED HANGER
ROD



FORMED EYE
ROD



FABRICATED EYE
ROD

RIGID STRUT ASSEMBLY

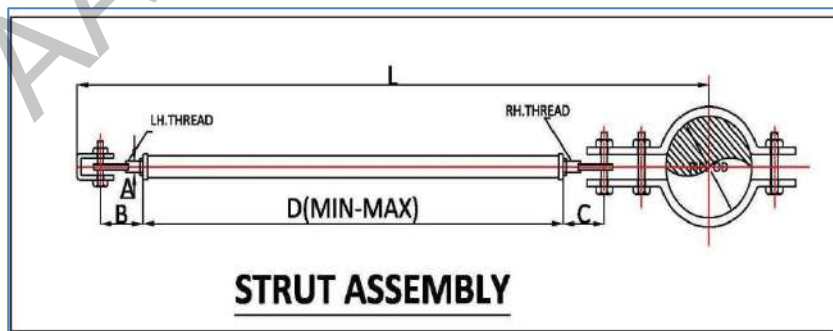
A Rigid Strut is a dynamic component designed to resist longitudinal compression and tensile forces. Struts provide outwards-facing support in their lengthwise direction, which can be used to keep two other components separate, while connected at same time.

Some of the following features are here:

1. 5° Co-Linear movement permissible
2. Adjustment up-to $\pm 75\text{mm}$ available.
3. Standard Design Load up-to 20000 kg
4. Apart from standard, special design to meet client's requirement.



RIGID STRUT ASSEMBLY					
SIZE	A	B	C	D Min.-Max.	MAX LOAD (kg.)
RS-1	M20	150	150	200-1500	300
RS-2	M24	150	1150	200-2500	1000
RS-3	M30	175	175	200-2750	2000
RS-4	M30	175	175	275-2750	3500
RS-5	M36	200	200	300-2750	5000
RS-6	M42	225	225	325-2750	7000
RS-7	M45	225	225	350-2750	10000
RS-8	M48	250	250	350-2500	13000
RS-9	M56	275	275	350-2500	16000
RS-10	M64	300	300	350-2500	20000
ALL DIMENSION ARE IN mm.					



HYDRAULIC SNUBBER



Introduction

Snubber is one kind of damping devices, by special inner valve, to control hydraulic cylinder piston movement, to decrease the response of pipeline and equipment affected by the periodic load and shock load.

Its performance can be summed up in "combination of hard & soft".

When the pipeline is in the normal working state, the snubbers enable the slow movements due to the thermal dilatation in both directions and oppose only the low resistance to such movements, this reflects its "soft".



When the pipeline is in the special conditions (such as the earthquake, water hammer, steam-hammer, safety valve exhaust steam, pipe breaking, etc.), the pipe movement speed leads to dynamic forces that are harmful to the pipeline, the snubbers are immediately locked at the desired speed and support the dynamic force by transferring it to the fixed structure, to reduce the impact of the pipeline response amplitude. This reflects its "hard".

The SNU series hydraulic snubbers are developed, and their performances have reached the state of art of similar products in the world. The products are widely used in nuclear power, thermal power, petrochemical, steel, Fertilizers, wind power, solar energy etc. also they are exported to worldwide regions. After recent year of development, our company has become the major, specialized, large scale-snubber producer in India and the leading snubber supplier.

The application of hydraulic snubber

Snubbers are widely used to resist vibration of pipeline, and major equipment •in domestic nuclear power, thermal power, petrochemical, military, steel, wind power, solar energy industry, etc. Snubbers can effectively protect the pipeline and equipment from the damage by the shock load.

The Snubbers therefore prevent the damage due to:

A. Inside of the pipe system

- Water hammer, steam hammer
- Safety valve exhaust steam
- Shutdown the main throttle valve quickly
- Boiler explosion
- Pipe breaking etc.

B. External of the system

- The earthquake
- Wind load

Hydraulic snubber can protect the following equipment:

- Piping system
- Main pump
- The important valves
- The important pressure vessel
- Steam generators
- The main load-bearing beam, etc.

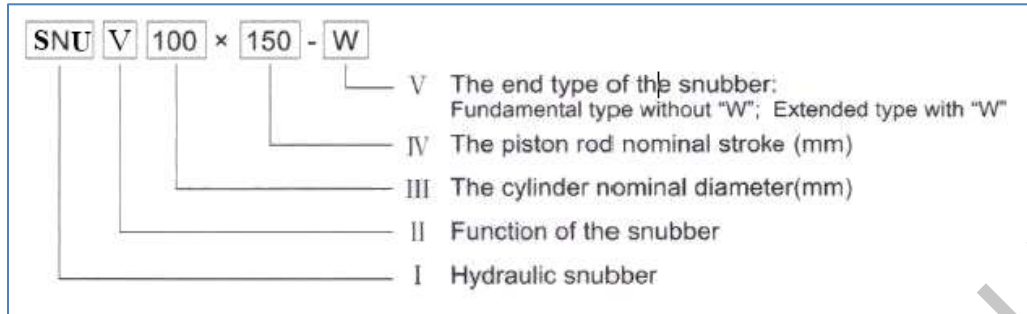
The characteristics of the snubber:

1. The clear displacement indication;
2. The simple shape, symmetric structure, compact, easy to install in the limited space;
3. The low friction, generally less than 1% ~ 2% of the rated load.
4. Damping force is large, dynamic response time is short;
5. Both ends of snubber are installed knuckle bearings, to be allowed $\pm 6^\circ$ angle of oscillation during the operation;
6. Special damping valve, and high reliability;

Silicon-oil are used as mediums, and it is stable and fire-resisting; Special rubber sealing is used, and the good tolerance in all kind of conditions

Description method of Type:

1. Constituent part of the marks:



2. The contents of each part mark:

No.	Name	Marking	Definition
I	Type	SNU	Hydraulic Snubber
II	Function	V	Vibration resistance
		T	Relief Valve Reaction forces of exhaust steam resistance
III	Cylinder Specifications	100	Nominal Cylinder diameter
IV	Stroke	150	Piston rod nominal stroke
V	End Type	Without 'W'	Fundamental type snubber without extension rod
		With 'W'	Extended type snubber with extension rod

As an example – SNUV100x150-W

A snubber whose function is vibration absorption, with nominal cylinder diameter is 100mm, piston rod nominal stroke is 150mm and the end type of the snubber is with 'W'

Type	Bore Size (mm)	Normal Load (kN)	Stroke (mm)	Pin Size (mm)	Lockup Velocity (mm/min)	Bleed Rate (mm/min)	Drag Force (kN)
SNU	25	5	100	10	120 – 360	Type V: 12 – 120	≤0.02Fn
	32	10	100/200	12			
	40	16	150	15			
	63	48	300	25			
	80	80	150 300 500	35		Type T: 0	≤0.015Fn
	100	120		40			
	125	200		50			
	160	320		60			
	200	500		80			
	250	1000		110			
							≤0.01Fn

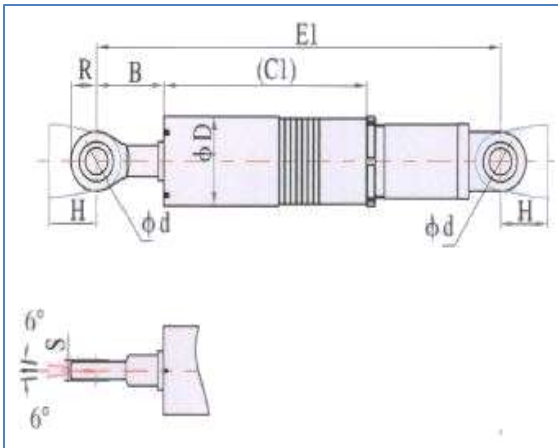
Technical Parameters:

CYLINDER	Rated Load (kN)	Stroke (mm)	H	B	S	R	C (Median Value)	Ød	ØD	ØD1	E1 (Median Value)	W (Median Value)	E2	F	Weight* (kg)
C32	10	100	35	45	10.5	16	250	12	78	30	340	1500	1865	70	4.5
C32	10	200	35	45	10.5	16	400	12	78	30	490	1500	2015	70	6
C40	16	150	40	61	12.5	20	350	15	95	38	472	2050	2556	95	8.88
C40	16	300	40	61	12.5	20	575	15	95	38	697	2050	2781	95	12.5
C63	48	150	55	94	20.5	32	390	25	138	63.5	578	2240	2839	115	22.9
C63	48	300	55	94	20.5	32	615	25	138	63.5	8803	2240	3065	115	30.3
C63	48	400	55	94	20.5	32	765	25	138	63.5	953	2240	3214	115	35.6
C80	80	150	70	125	25.5	41	415	35	160	76	665	2315	3000	145	36.4
C80	80	300	70	125	25.5	41	640	35	160	76	890	2315	3225	145	46.7
C80	80	400	70	125	25.5	41	790	35	160	76	1040	2315	3375	145	53.5
C100	120	150	80	142	28.5	46	435	40	180	89	719	2660	3402	165	54.2
C100	120	300	80	142	28.5	46	660	40	180	89	944	2660	3627	165	67.3
C100	120	400	80	142	28.5	46	810	40	180	89	1094	2660	3777	165	75.6
C125	200	150	100	160	36	62.5	465	50	205	108	785	3045	3870	200	85.8
C125	200	300	100	160	36	62.5	690	50	205	108	1010	3045	4095	200	102
C125	200	400	100	160	36	62.5	840	50	205	108	1160	3045	4245	200	114
C160	320	150	125	175	45	75	505	60	260	140	855	3925	4835	230	148
C160	320	300	125	175	45	75	730	60	260	140	1080	3925	5060	230	171
C160	320	400	125	175	45	75	880	60	260	140	1230	3925	5210	230	188
C200	500	150	145	230	56	97.5	545	80	345	152	1005	3935	4985	275	247
C200	500	300	145	230	56	97.5	770	80	345	152	1230	3935	5210	275	280
C200	500	400	145	230	56	97.5	920	80	345	152	1380	3935	5360	275	303

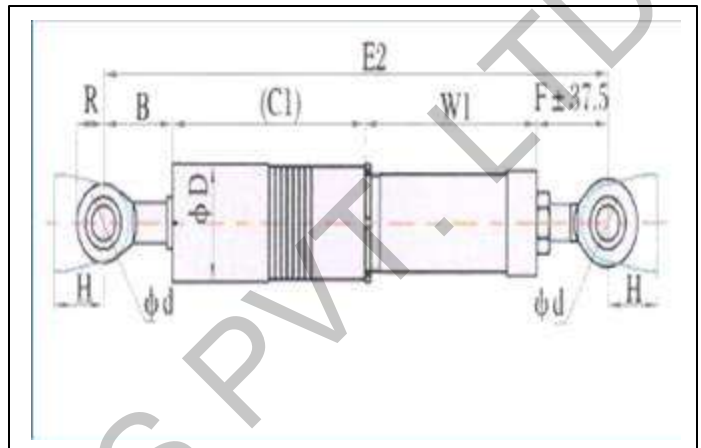
The installation Size

Size B: If the installation space is larger, please choose the below products. (SNU-Series 2)

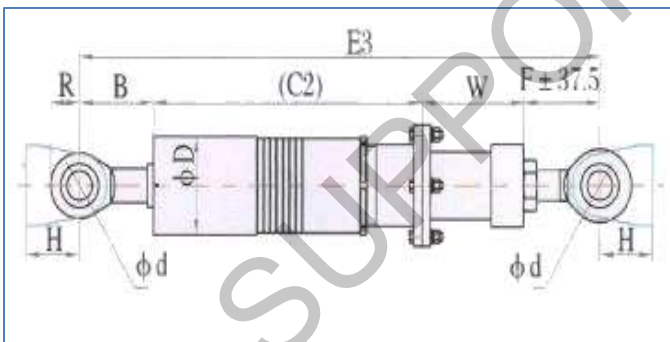
The drawing without extension rod:



The drawing with extension rod (without flange):



The drawing with extension rod (with flange):

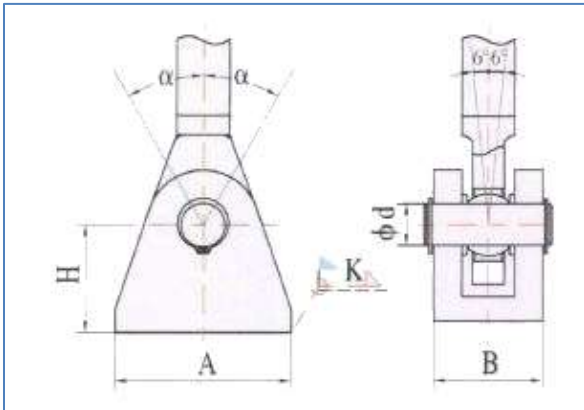


NOTES

Technical Parameters:

CYLINDER	Rated Load (kN)	Stroke (mm)	H	B	S	R	Ød	ØD	C1 (Median Value)	C2 (Median Value)	W (Median Value)	W1 (Median Value)	F	E1 (Median Value)	E2 (Median Value)	E3 (Median Value)	Weight* (kg)
C63	48	150	55	94	20.5	32	25	91	396	537	2240	1500	115	695	2105	2899	21.4
C63	48	300	55	94	20.5	32	25	91	621	9912	2240	1500	115	1070	2330	3199	29.6
C80	80	150	70	125	25.5	41	35	110	425	569	2315	1400	140	770	2090	3064	35.3
C80	80	300	70	125	25.5	41	35	110	650	944	2315	1400	140	1145	2315	3364	46.1
C80	80	400	70	125	25.5	41	35	110	800	1194	2315	1400	140	1395	2465	3564	53.4
C100	120	150	80	142	28.5	46	40	135	426	574	2660	1300	145	820	2013	3436	51.6
C100	120	300	80	142	28.5	46	40	135	651	949	2660	1300	145	1195	2238	3736	66.5
C100	120	400	80	142	28.5	46	40	135	801	1199	2660	1300	145	1445	2388	3936	77.1
C125	200	150	100	160	36	62.5	50	160	456	1601	3045	1000	160	925	1776	3879	84.7
C125	200	300	100	160	36	62.5	50	160	681	976	3045	1000	160	1300	2001	4179	105.2
C125	200	400	100	160	36	62.5	50	160	831	1226	3045	1000	160	1550	2151	4379	117.4
C160	320	150	125	175	45	75	60	202	488	635	3925	800	180	1010	1643	4826	140.2
C160	320	300	125	175	45	75	60	202	713	1010	3925	800	180	1385	1865	5126	171.9
C160	320	400	125	175	45	75	60	202	863	1260	3925	800	180	1635	2018	5326	191.6
C200	500	150	145	230	56	90	80	253	548	695	3935	700	225	1175	1703	4988	250.3
C200	500	300	145	230	56	90	80	253	773	1070	3935	700	225	1550	1928	5288	299.5
C200	500	400	145	230	56	90	80	253	923	1320	3935	700	225	1800	2078	5488	325.2

Welding Clevis



Type	Rated Load (kN)	d	H	A	B	K			Weight (kg)
						$0^\circ \leq \alpha \leq 15^\circ$	$15^\circ \leq \alpha \leq 30^\circ$	$30^\circ \leq \alpha \leq 90^\circ$	
XZ-12	10	12	30	40	35	3	3	4	0.35
XZ-15	16	15	40	55	42	4	4	5	0.65
XZ-25	48	25	55	80	61	7	8	9	1.77
XZ-35	80	35	70	110	77	9	10	11	4.89
XZ-40	120	40	80	125	93	10	12	14	6.22
XZ-50	200	50	100	145	114	14	16	18	11.45
XZ-60	320	60	125	165	144	16	19	22	20.56
XZ-80	500	80	145	215	174	21	25	28	38.5

Instruction

Installation Instruction:

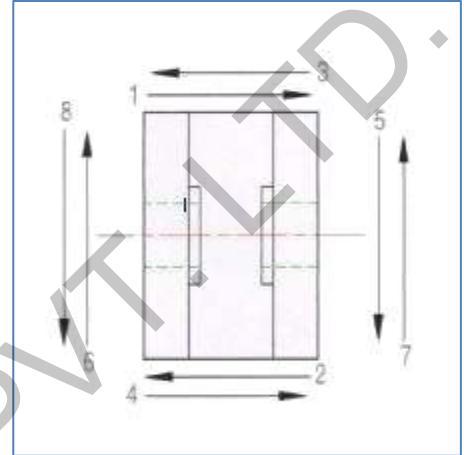
1. To avoid accidentally bruised by adjacent equipment, structures or welding splash, the installation time of the Snubber should be chosen after its adjacent equipment, structures finish the installation.
2. Snubber/Supports shall be installed when the pipeline is in cold operating load condition.

Installation steps:

Before installation, first, should check the lifting point location, the size of the installation, snubber type, etc. whether meet to the requirements of design drawings and documents.

A. The installation of the welding clevis component

- 1) According to the requirements of the installation drawing (or lifting point), the component of welding clevis is welded on the specified beam. The height "K" of the weld should be in accordance with the provisions of Table 4 (recommended value).
- 2) To avoid the distortion of the welding clevis, choose the welding sequence of the welding seam as shown in the figure on the right.

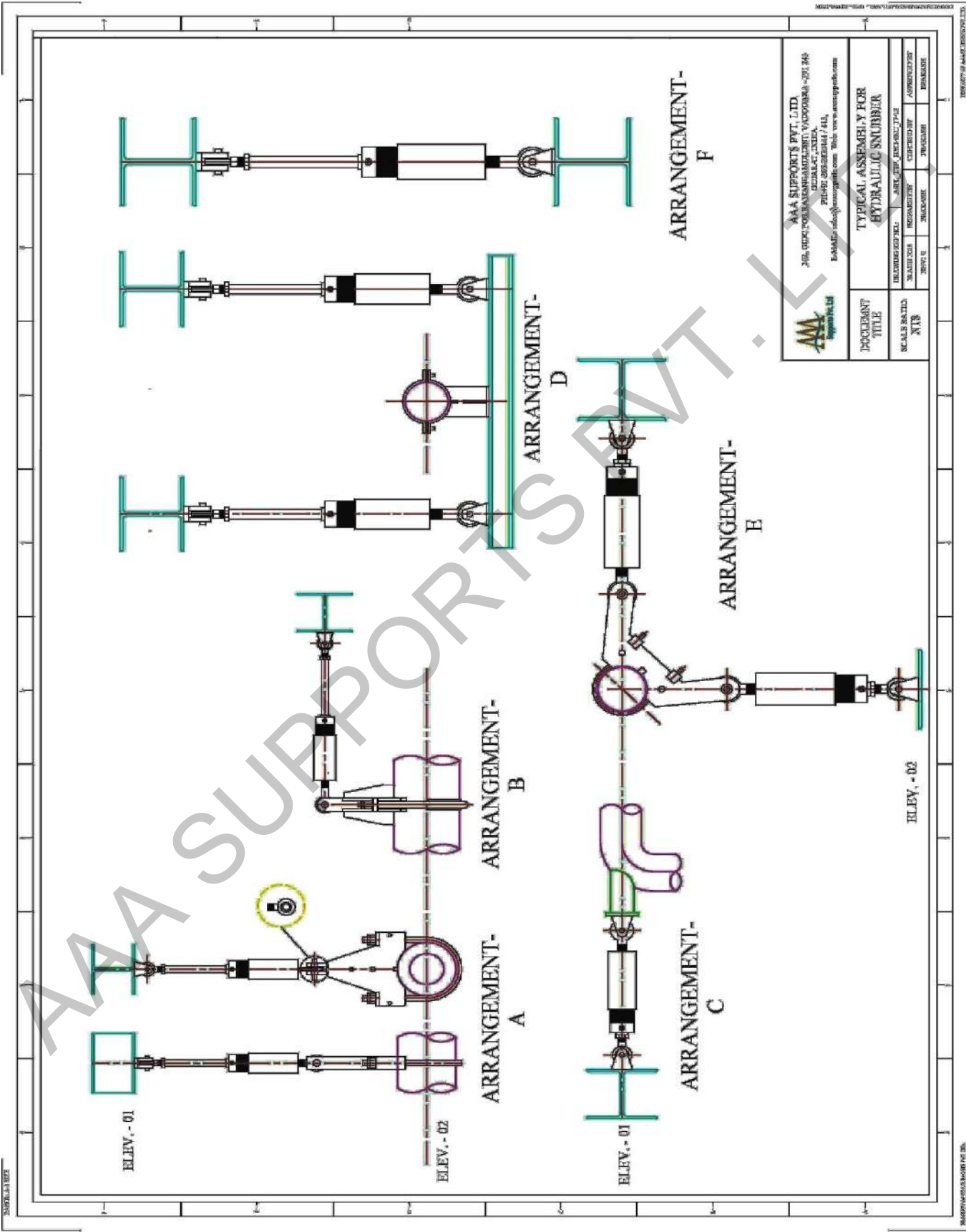


B. The installation of clamp

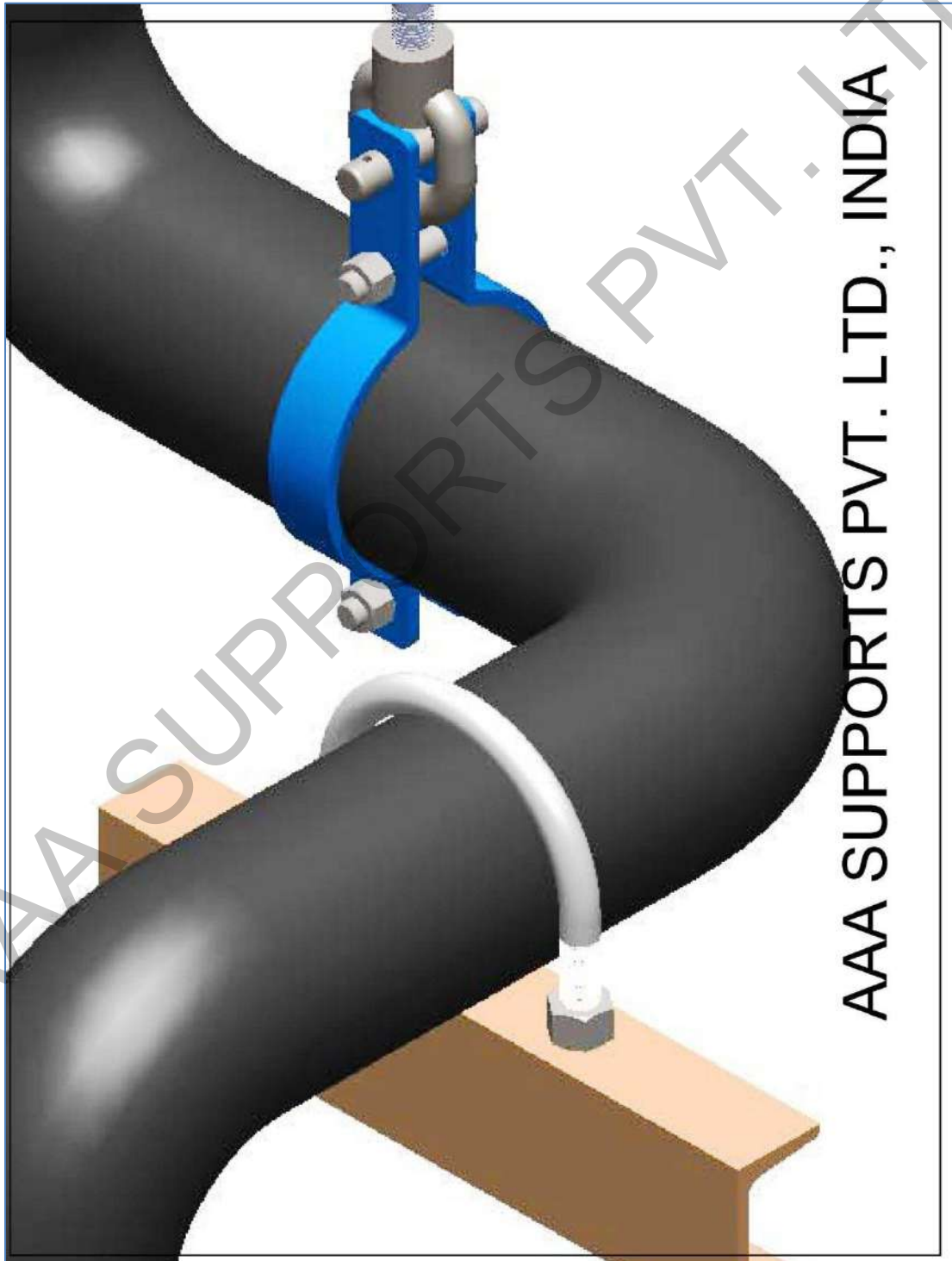
C. The installation of the Snubber:

1. To ensure that the hydraulic snubber can work normally, when the Pipeline line reaches the maximum thermal displacement snubber axis and pin seat assembly between the axes of the largest angle 13 should be not more than 6 degrees. The α can be adjusted according to the actual installation direction (horizontal, vertical or inclined), and its range: $0 \sim 90^\circ$.
2. On-site installation:
If the actual pin - pin size of E between the welding clevis and clamp is not equal to the pin – pin size of E1 or E2 by snubber lifting point design, we can adjust in moderation according to the following method:
 - a. For the snubber without extension rod, we can adjust the E1 by adjusting the length of piston rod out in moderation, to meet E size. After adjusting, the snubber still should be allowed at least 10 mm of travel allowance when the snubber piston should be in the cold and hot state.
 - b. For the snubber with extension rod, we can adjust the E1 by adjusting F size, to meet E size.

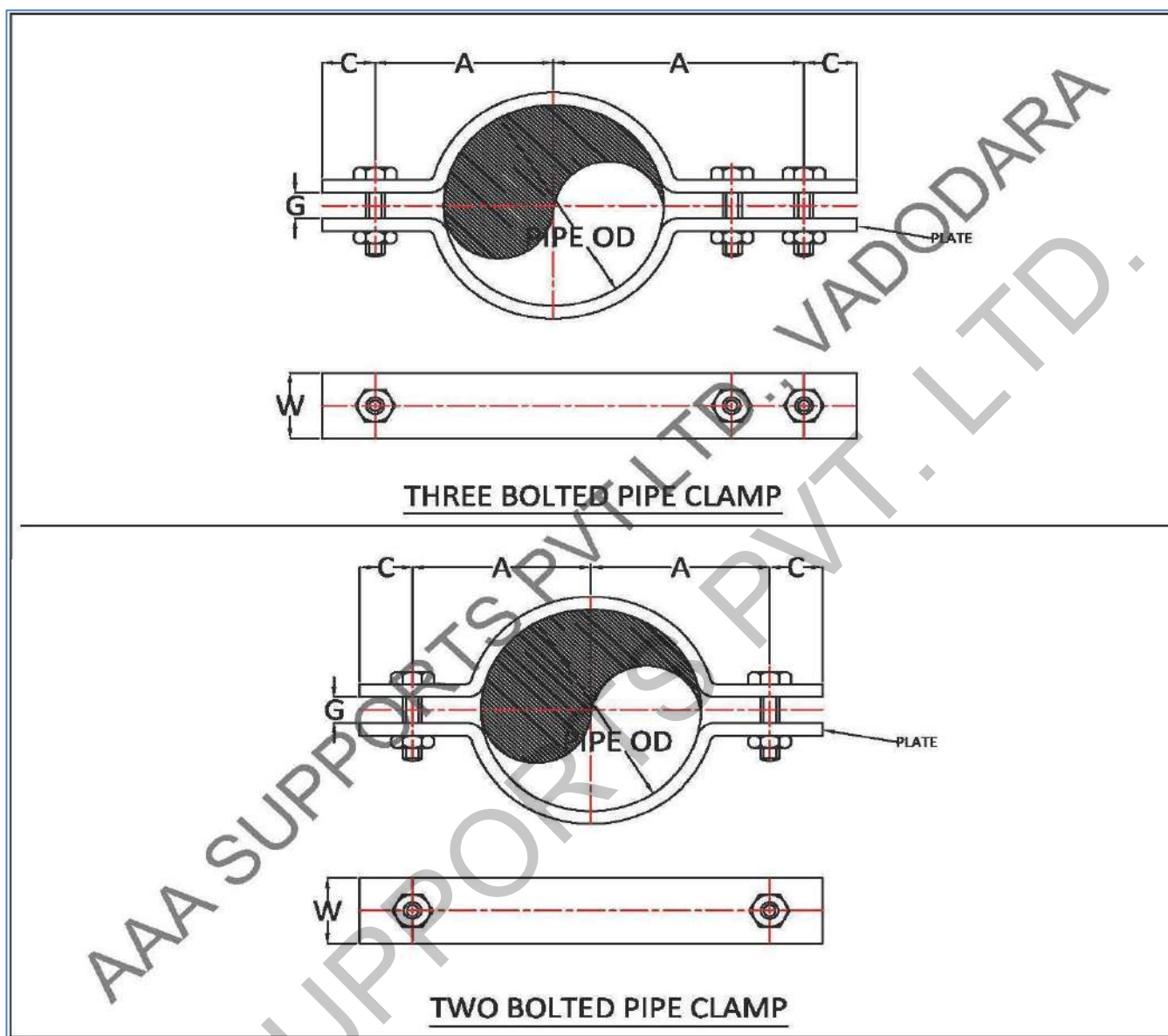
TYPICAL ARRANGEMENT OF HYDRAULIC SNUBBER ASSEMBLY



PIPE CLAMPS, RISER CLAMPS & PIPE HOLDING COMPONENTS



PIPE CLAMPS



Pipe Clamps, generally Three bolts and Two bolts pipe clamps are used to hold the horizontal hanging pipes, while the light duty or heavy duty Riser clamps are used to hold the vertical pipes.

We, AAA Supports Pvt Ltd. offer a wide range from ½" pipe size to 42" size pipe clamps, from -150°C operating temperature to 550°C operating temperature range from our standard design.

Apart from our standards, we also offer custom design for our client up to size 2400 NB. We offer different pipe sizes clamps with different material grade as per client's requirement.

Temperature Range

Upto 350°C
from 351°C - 470°C
from 471°C - 550°C
from 551°C & Above

Material Standards

IS 2062 or ASTM A36 or Equivalent
ASTM SA387 P11 or Equivalent
ASTM SA387 P22 or Equivalent
ASTM A240 SS304/316 or Equivalent



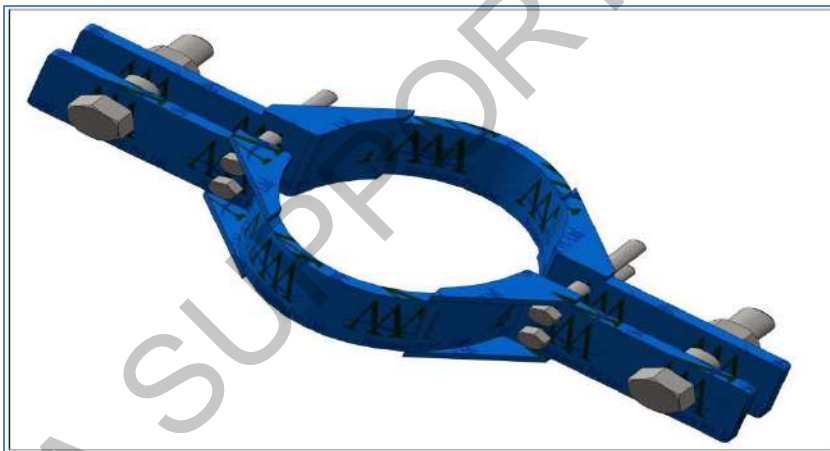
TWO BOLT PIPE CLAMP



THREE BOLT PIPE CLAMP



**RISER CLAMP
(FOR LIGHT LOAD)**

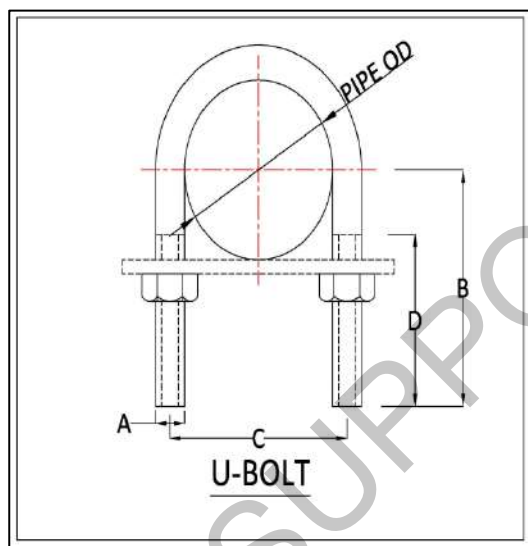
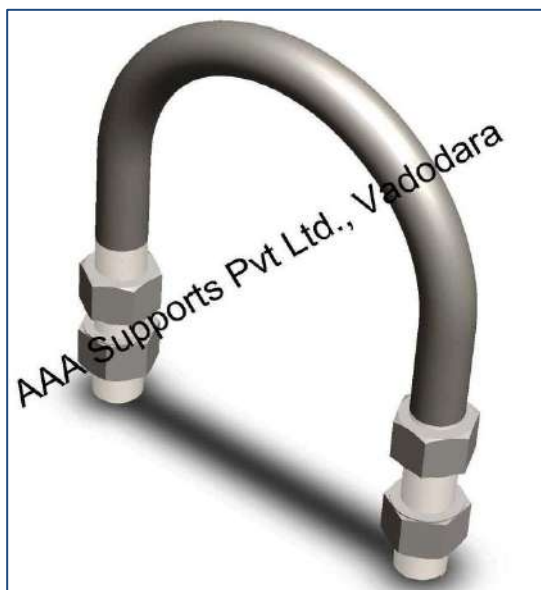


**RISER CLAMP
(FOR HEAVY LOAD)**



**RISER CLAMP
(FOR HEAVY LOAD)**

U-BOLTS



U-BOLT						
PIPE NB	PIPE OD	A	B	C	D	SAFE LOAD (Kg)
1/2"	21	M8	60	30	50	350
3/4"	27	M8	60	35	50	350
1"	34	M8	60	41	50	350
1.1/4"	42	M10	60	52	50	550
1.1/2"	48	M10	65	60	50	550
2"	60	M10	70	71	50	550
2.1/2"	76	M12	80	87	60	1000
3"	89	M12	90	103	60	1000
3.1/2"	102	M12	100	116	70	1000
4"	114	M12	110	128	70	1000
5"	140	M12	130	156	70	1000
6"	168	M16	140	187	80	1600
8"	219	M16	180	238	80	1600
9"	244	M16	200	262	90	1600
10"	273	M16	220	293	90	1600
12"	324	M20	250	349	100	3350
14"	356	M20	265	381	100	3350
16"	406	M20	290	432	100	3350
18"	457	M24	310	486	110	4500
20"	508	M24	340	537	110	4500
22"	559	M24	370	583	120	4500
24"	610	M24	405	638	120	4500
ALL DIMENSION ARE IN mm.						

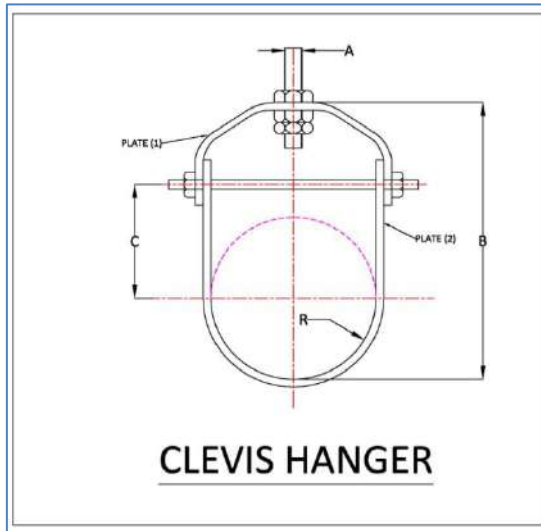
Material Selection: Carbon Steel or IS 2062, or Equivalent

Alloy Steel or ASTM A182 F11/ A182 F22 or Equivalent

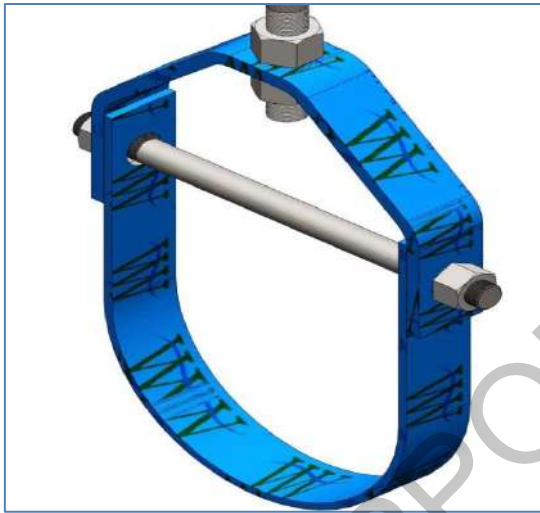
Stainless Steel or ASTM A240 SS 304/316/321 or Equivalent

Apart from standards, we offer by special design to meet required load and dimensions.

CLEVIS HANGER



CLEVIS HANGER



CLEVIS HANGER				
PIPE SIZE (INCH)	A	B	C	SAFE LOAD (kg)
1/2"	M8	70	25	270
3/4"	M8	76	30	270
1"	M8	82	30	270
1 1/4"	M10	92	31	300
1 1/2"	M10	103	34	300
2"	M10	110	40	400
2 1/2"	M12	140	49	500
3"	M12	153	56	500
4"	M16	195	81	500
5"	M16	227	92	650
6"	M20	320	86	750
8"	M24	383	128	900
10"	M24	448	158	1300
12"	M24	490	180	1600
14"	M27	525	192	1800
16"	M27	575	215	1950
18"	M30	640	246	2000
20"	M30	685	272	2500
22"	M30	742	287	2500
24"	M30	800	322	2500

Material Selection: Carbon Steel or IS 2062, or Equivalent

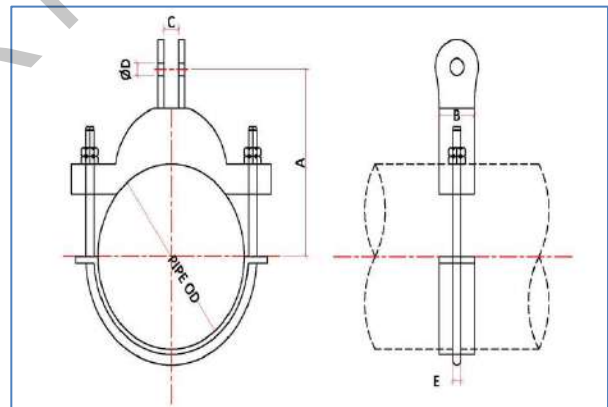
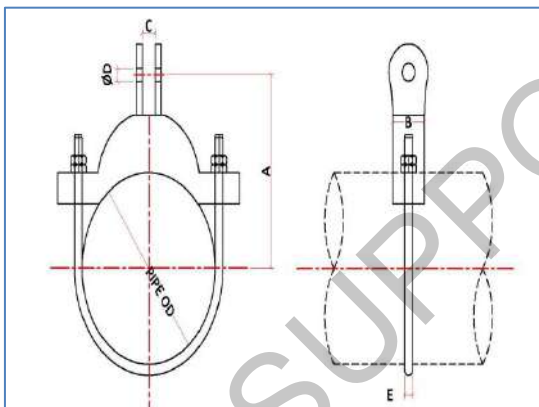
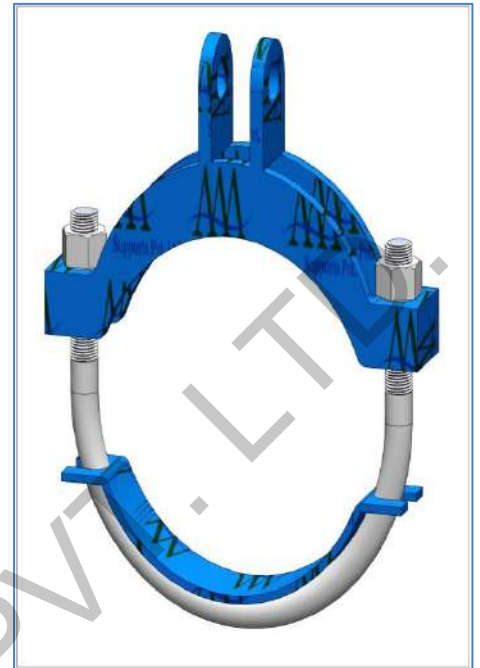
Alloy Steel or ASTM SA387 P11/ SA387 P22 or Equivalent

Stainless Steel or ASTM A240 SS 304/316/321 or Equivalent

Apart from standards, we offer by special design to meet required load and dimensions.

YOKE CLAMP

YOKE CLAMP							
PIPE SIZE (INCH)	PIPE OD	A	B	C	ØD	F	SAFE LOAD (kg)
4"	114	180	60	30	22	190	1600
6"	168	220	70	35	26	270	2800
8"	219	250	85	40	30	320	3500
10"	273	300	85	40	33	390	4500
12"	324	330	100	45	39	440	5850
14"	356	360	100	45	39	475	5850
16"	406	405	110	50	45	530	7500
18"	457	460	110	55	52	600	8750
20"	508	505	120	55	52	650	9500
24"	610	575	130	60	56	800	12100
ALL DIMENSION IN mm.							



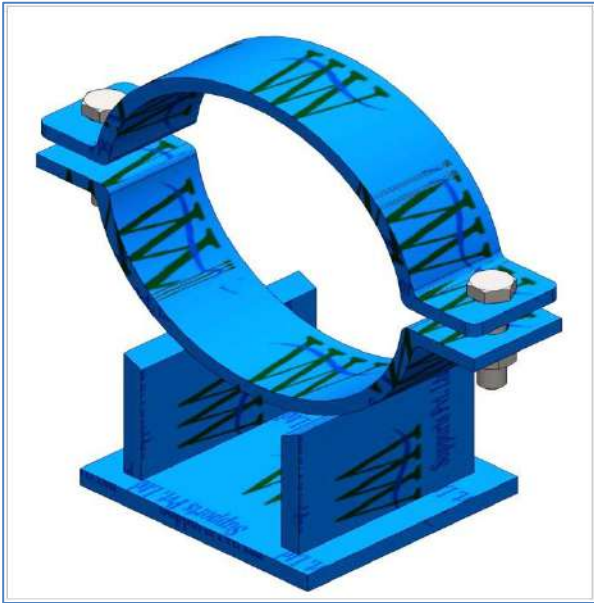
Material Selection: Carbon Steel or IS 2062, or Equivalent
Alloy Steel or ASTM SA387 P11/ SA387 P22 or Equivalent
Stainless Steel or ASTM A240 SS 304/316/321 or Equivalent

Apart from standards, we offer by special design to meet required load and dimensions.

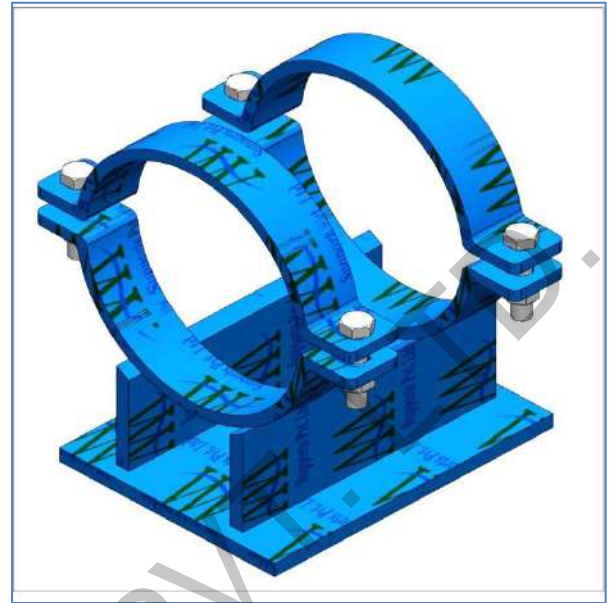
SLIDING PIPE SUPPORTS AND PIPE SHOES



PIPE CLAMP SHOE



PIPE CLAMP SHOE (FOR LIGHT LOAD)

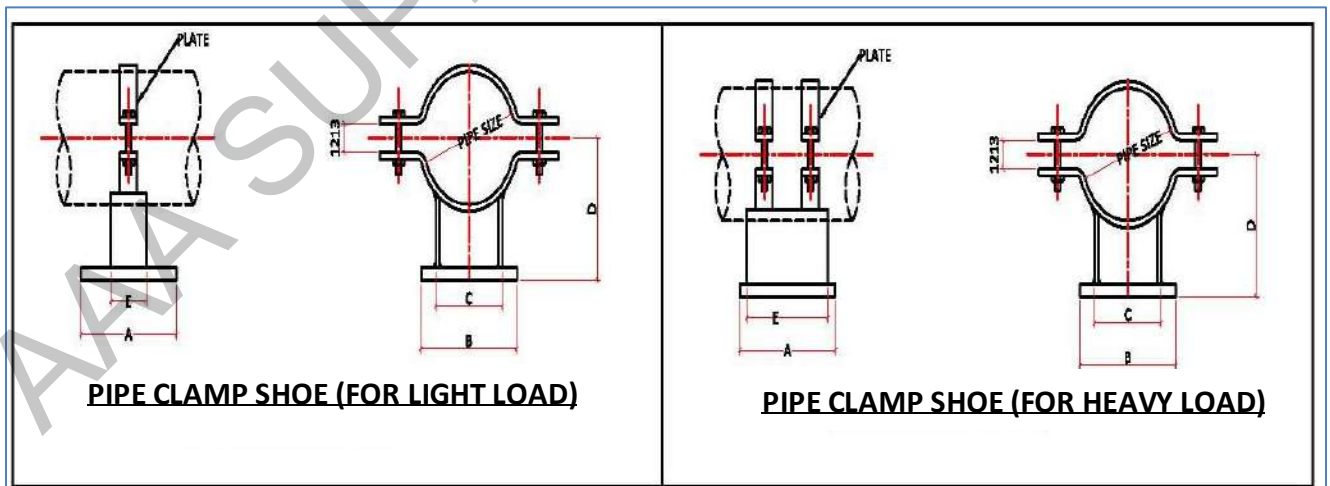


PIPE CLAMP SHOE (FOR HEAVY LOAD)

PIPE CLAMP SHOE

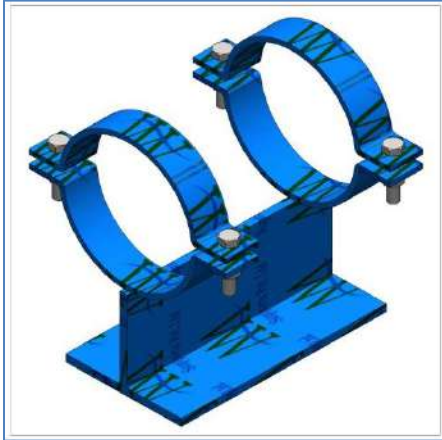
PIPE SIZE (INCH)	PIPE OD	A	B	C	D	E	BOLT/ STUD	SAFE WORKING LOAD (kg)		
								UP TO 350°C	351°C- 470°C	471°C- 550°C
1"	34	100	100	40	80	60	M12	675	506	430
2"	60	125	125	50	100	75	M12	752	564	480
3"	89	125	125	60	110	75	M12	850	637	540
4"	114	150	150	75	120	75	M12	1050	790	670
		150	150	75	130	100	M16	2195	1650	1402
6"	168	200	200	90	160	100	M16	1565	1170	1001
		200	200	90	170	100	M20	3400	2550	2160
8"	219	200	200	110	190	125	M16	1675	1260	1080
		200	200	110	200	125	M16	3500	2650	2230
		200	200	110	200	125	M20	5500	4125	3506
10"	273	250	250	140	220	150	M16	3500	2625	2230
		250	250	140	220	150	M20	6300	4725	4016
		250	250	140	220	150	M20	7500	5625	4780
12"	324	250	250	150	250	200	M16	4100	3075	2600
		250	250	150	250	200	M20	6800	5100	4335
		250	250	150	250	200	M20	8520	6390	6326
14"	356	300	300	170	270	250	M20	4500	3375	2870
		300	300	170	270	250	M20	6700	5025	4270
		300	300	170	270	250	M24	8450	6337	5380
16"	406	300	300	190	290	250	M20	4500	3375	2860
		300	300	190	290	250	M20	6700	5025	4270
		300	300	190	290	250	M24	8450	6337	5386
18"	457	350	350	200	320	250	M20	4450	3337	2825

		350	350	200	320	250	M20	6650	4980	4230
		350	350	200	320	250	M24	8400	6300	5355
20"	508	350	350	220	340	250	M20	4400	3300	2805
		350	350	220	340	250	M20	6600	4950	4207
		350	350	220	340	250	M24	8400	6225	5290
22"	550	350	350	240	360	250	M20	4300	3225	2740
		350	350	240	360	250	M20	6500	4875	4140
		350	350	240	360	250	M24	8200	6150	5227
24"	610	350	350	260	400	300	M20	5000	3750	3180
		350	350	260	400	300	M24	7500	5625	4780
		350	350	260	400	300	M30	11000	8250	7050
26"	660	400	400	280	420	300	M20	4850	3630	3090
		400	400	280	420	300	M24	7350	5510	4685
		400	400	280	420	300	M30	10800	8100	6885
30"	762	400	400	320	470	300	M20	4700	3525	3000
		400	400	320	470	300	M24	7200	5400	4590
		400	400	320	470	300	M30	10500	7875	6680
36"	914	500	500	380	550	400	M20	4500	3375	2868
		500	500	380	550	400	M24	7000	5250	4460
		500	500	380	550	400	M30	10000	7500	6375
40"	1016	500	500	420	600	400	M20	4250	3190	2700
		500	500	420	600	400	M24	6500	4875	4140
		500	500	420	600	400	M30	9500	7125	6050
42"	1066	500	500	440	640	400	M20	4000	3000	2550
		500	500	440	640	400	M24	6300	4725	4010
		500	500	440	640	400	M30	9300	6975	5925
ALL DIMENSION IN mm.										

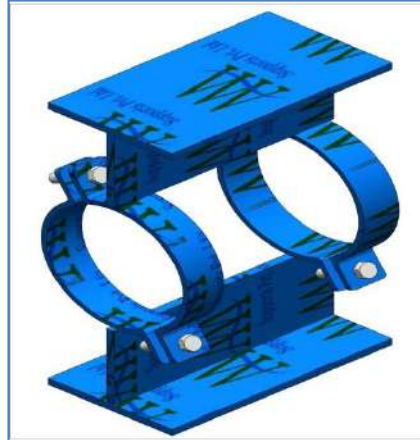


SLIDING PIPE SHOE

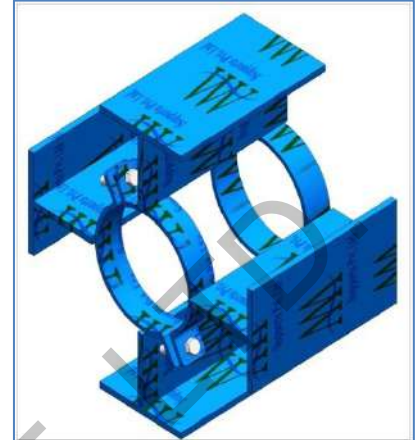
Type I to III: Light Load requirement & Type IV to VI: Heavy load requirement



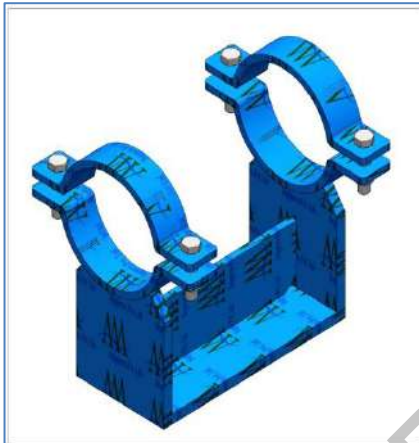
Type I



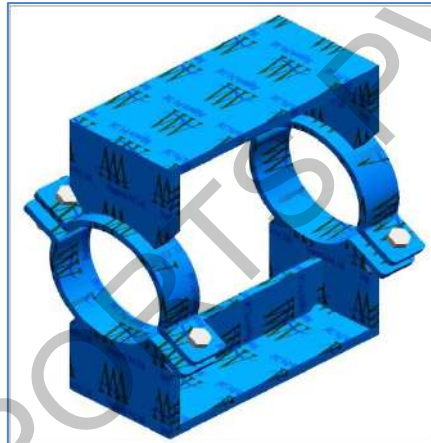
Type II



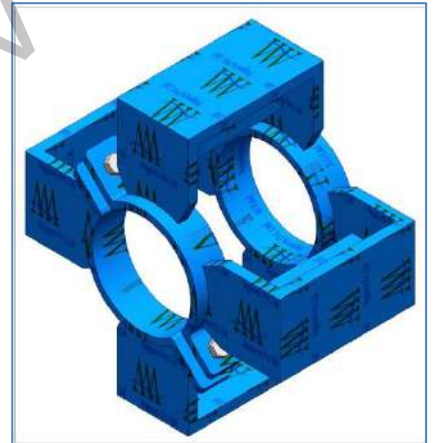
Type III



Type IV



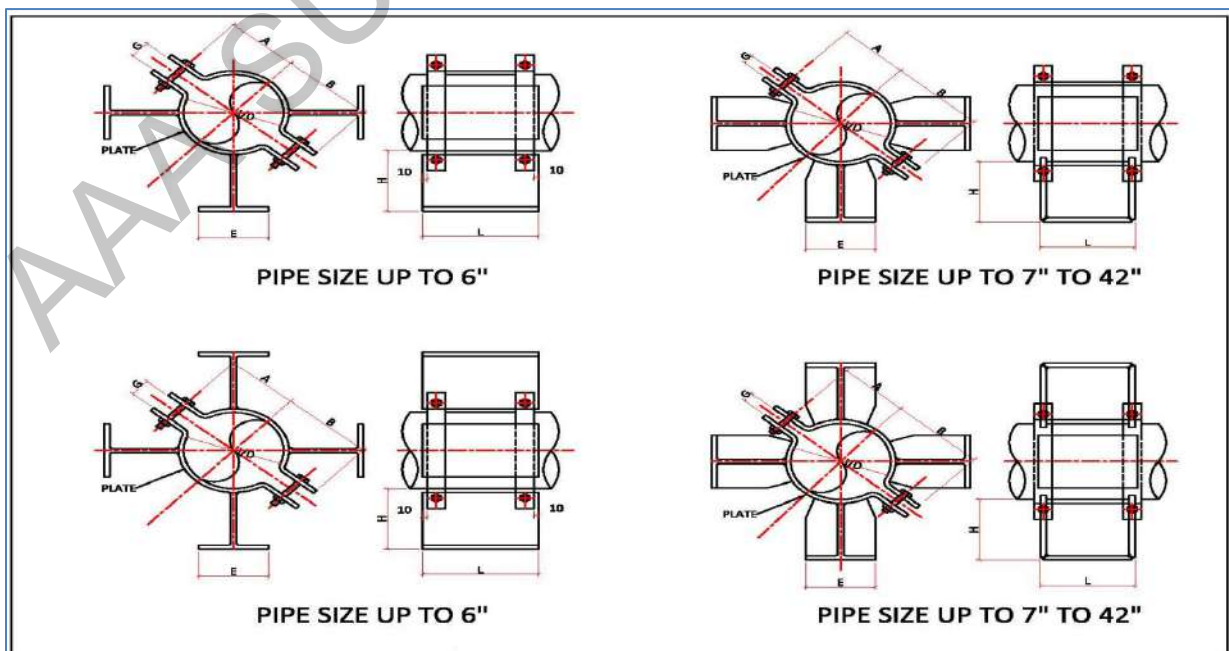
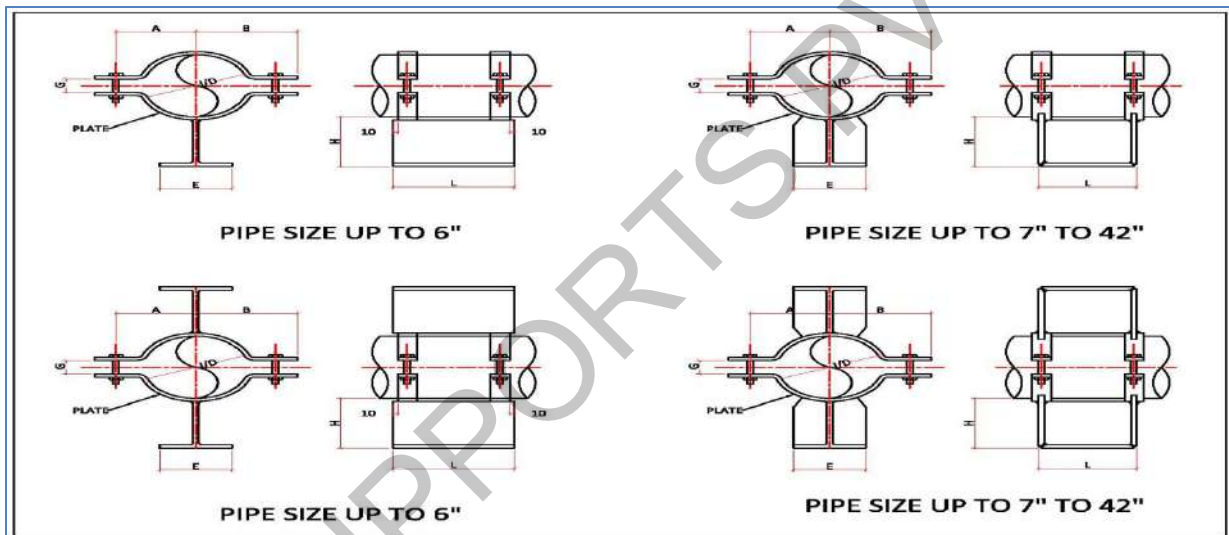
Type V



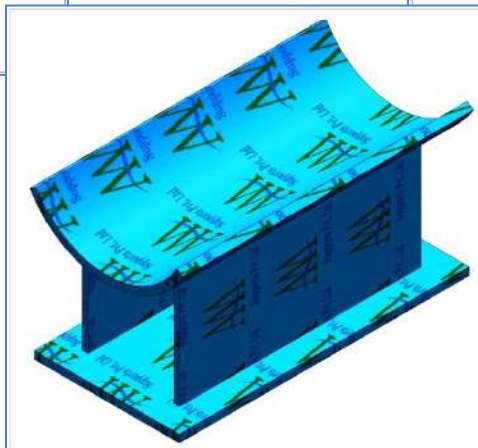
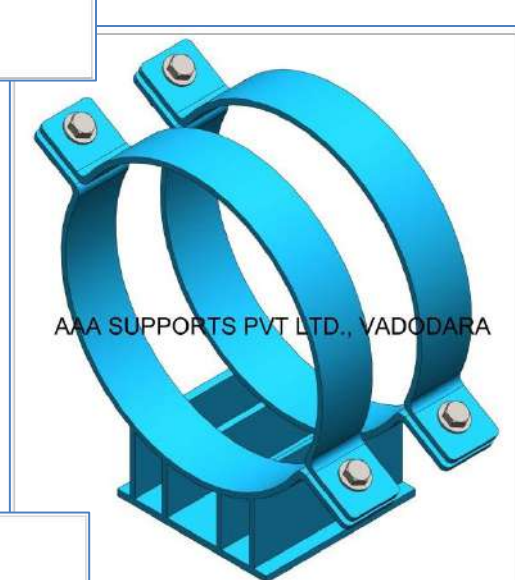
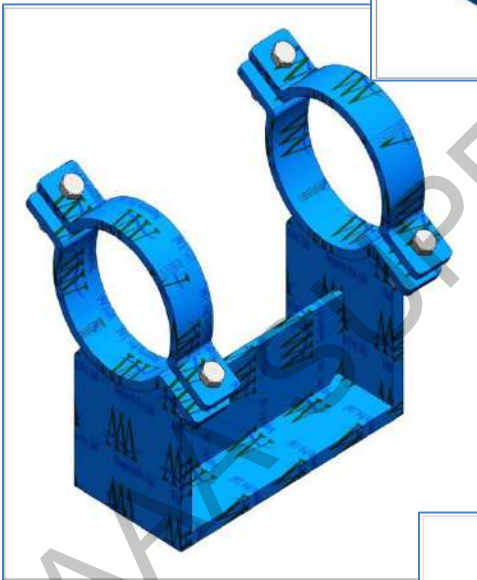
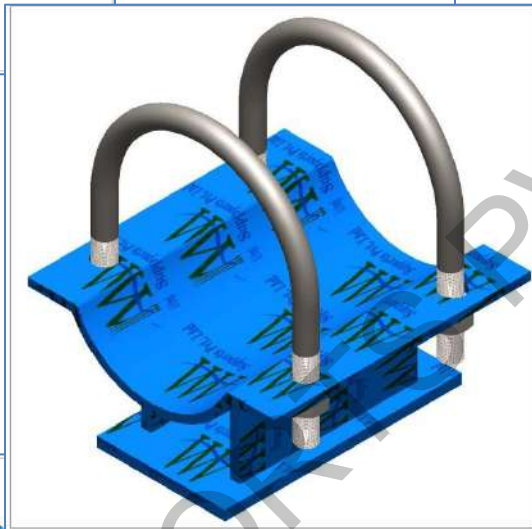
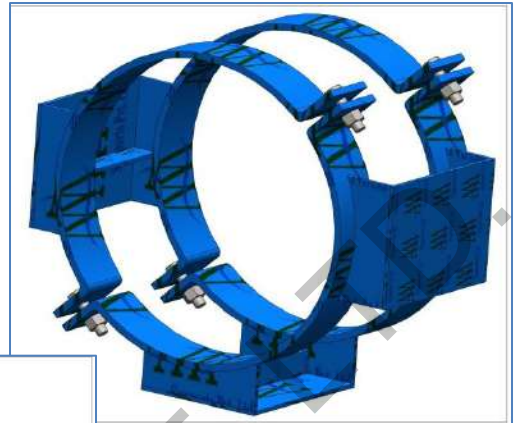
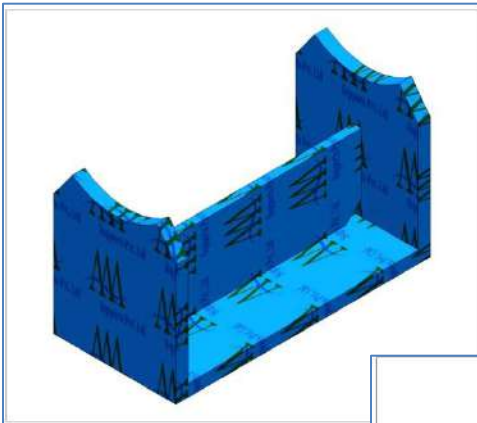
Type VI

SLIDING PIPE SHOE								
PIPE SIZE (INCH)	I/D	A	B	E	G	L	W	SAFE LOAD (kg)
1"	34	50	75	50	15	150	35	350
1.1/2"	48	55	80	50	15	150	35	350
2"	60	60	85	60	20	150	35	350
2.1/2"	76	70	95	60	20	200	35	650
3"	89	80	110	60	20	200	40	700
4"	114	90	120	75	25	200	40	650
5"	140	110	140	75	25	200	40	875
6"	168	125	155	75	25	200	40	1450
8"	219	155	195	100	25	200	40	1900
10"	273	190	230	100	30	200	40	1875

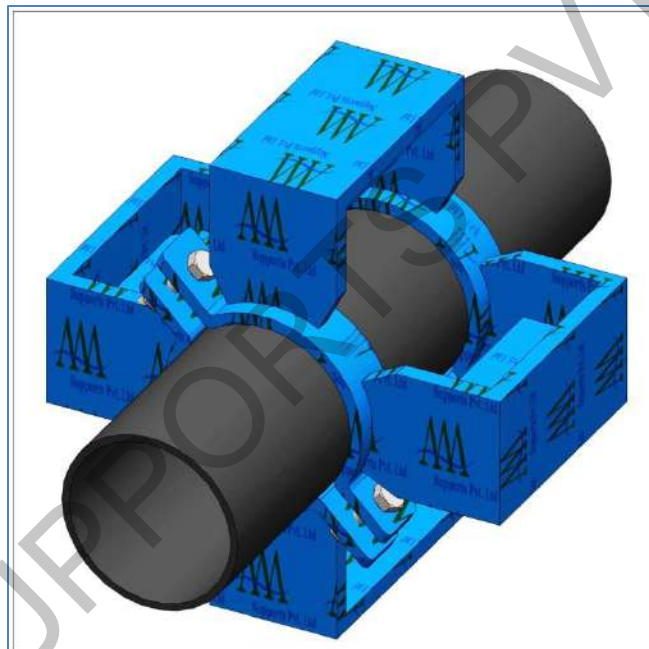
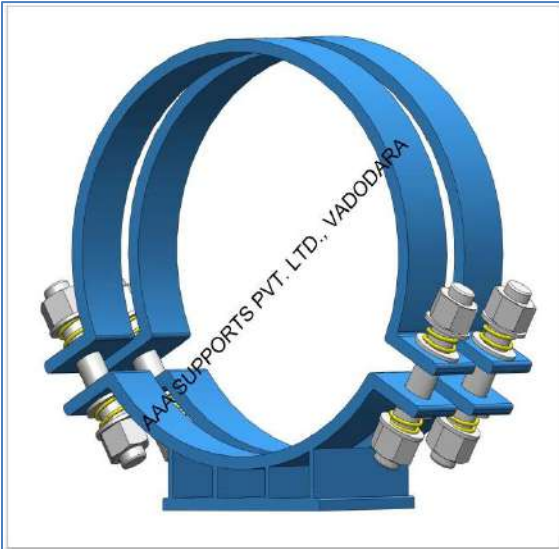
12"	324	210	255	100	30	250	50	3275
14"	356	235	280	150	30	250	50	3325
16"	406	260	305	150	30	250	65	6650
18"	457	280	330	200	30	250	65	11375
20"	508	315	365	200	30	300	65	11900
22"	559	335	385	200	30	300	65	11100
24"	610	365	415	250	30	300	75	12675
26"	660	415	465	250	30	300	75	12100
30"	762	460	510	250	30	300	75	11750
Dimension 'H' = To suit 50 mm/ 100 mm. max. Insulation thickness.								
ALL DIMENSION ARE IN mm.								



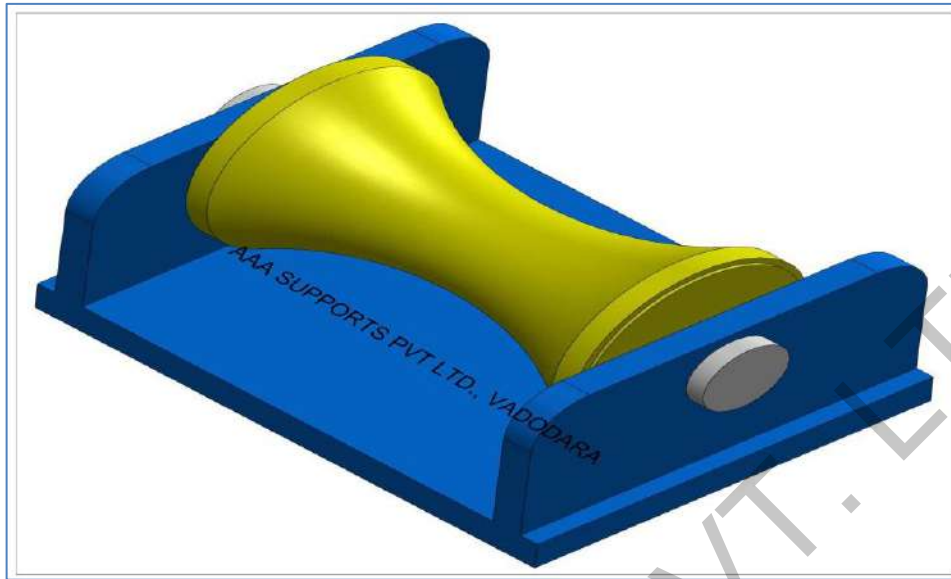
DIFFERENT TYPE OF PIPE SHOE ASSEMBLY



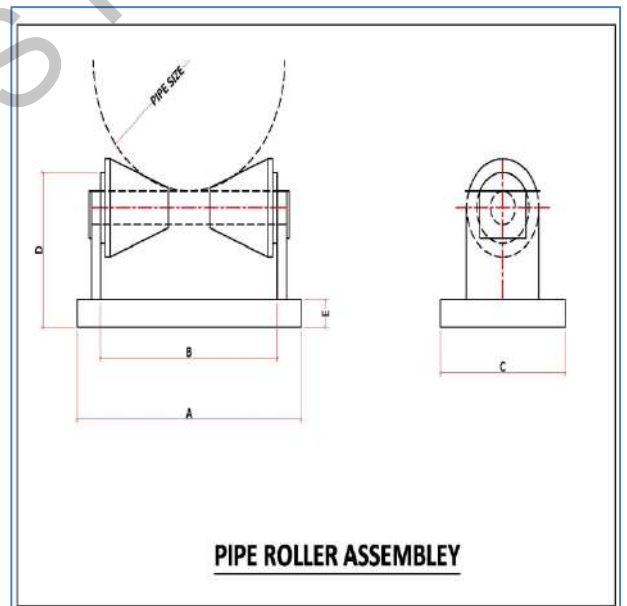
AAA SUPPORTS PVT LTD., VADODARA



PIPE ROLLER ASSEMBLY



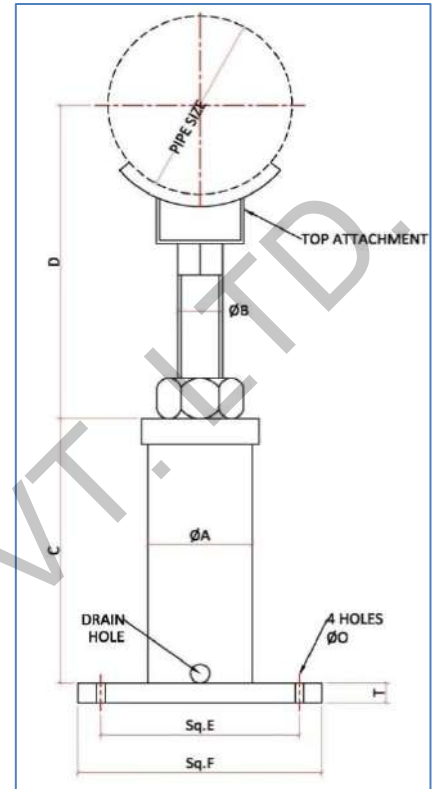
PIPE ROLLER ASSEMBLY					
PIPE SIZE (INCH)	A	B	C	D	SAFE LOAD (kg)
2"	125	80	125	70	500
3"	125	80	125	80	600
4"	150	100	125	90	850
5"	150	100	125	100	1250
6"	150	100	125	110	1600
8"	175	120	150	110	1800
10"	175	120	150	120	2350
12"	200	140	150	120	2850
14"	225	150	175	130	3500
16"	250	170	175	130	4500
18"	250	180	175	140	5700
20"	275	200	175	150	6500
24"	320	240	200	160	7300
30"	380	300	200	170	8500
ALL DIMENSION IN mm.					



Notes:

ADJUSTABLE PIPE SHOE

ADJUSTABLE PIPE SHOE							
PIPE SIZE (INCH)	ØA	C	D	SQ. E	SQ. F	ØO	SAFE LOAD (kg)
2"	60	200	125	100	140	15	700
3"	60	200	150	100	140	15	700
4"	89	200	165	100	140	15	2800
5"	89	200	175	100	140	15	2800
6"	114	250	200	140	190	19	4900
7"	114	250	225	140	190	19	4900
8"	114	250	250	140	190	19	4900
10"	140	300	300	160	210	23	6850
12"	140	300	350	160	210	23	6850
14"	140	300	375	160	210	23	8100
16"	140	300	400	160	210	23	8100
18"	165	400	450	190	255	23	9500
20"	165	400	500	190	255	23	9500
22"	165	400	525	190	255	27	9500
24"	219	400	550	190	255	27	10750
26"	219	400	575	190	255	27	10750
30"	273	500	625	260	340	30	13500
36"	273	500	700	260	340	30	13500
40"	273	500	750	260	340	30	13500
42"	273	500	775	260	340	30	13500
ALL DIMENSION IN mm.							



LOW FRICTION SLIDING SUPPORT

Low-Friction Slide Supports are used for very cost effective way to provide the movement of mechanical systems.

*It is used for variety of applications including pipe supports, heavy equipment such as pressure vessels and structural steel members.

*Combination of PTFE pad and Polished Stainless Steel have very low friction coefficient than other solid material. It allows the object to move freely.

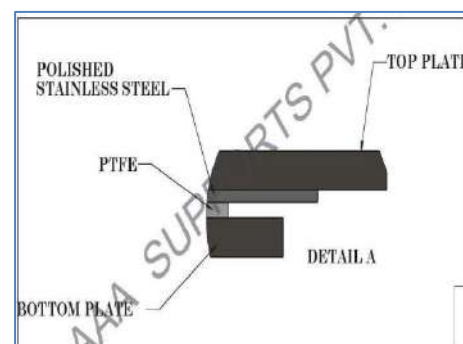
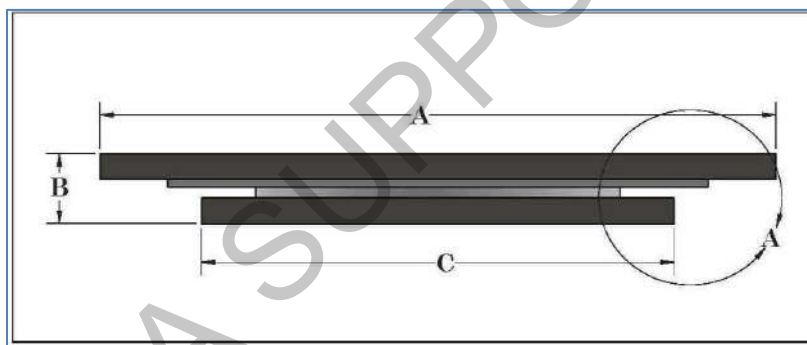
* It is capable of operating dry, i.e. no requirement for lubrication. The operating temperature for PTFE sliding support is -200 to + 200°C.

* No lubricant is required for operation.

*Sliding arrangement may be designed to suite client's requirement apart from our standard travel range & dimensions.

*Dimension "B" may be change to suite load/ travel

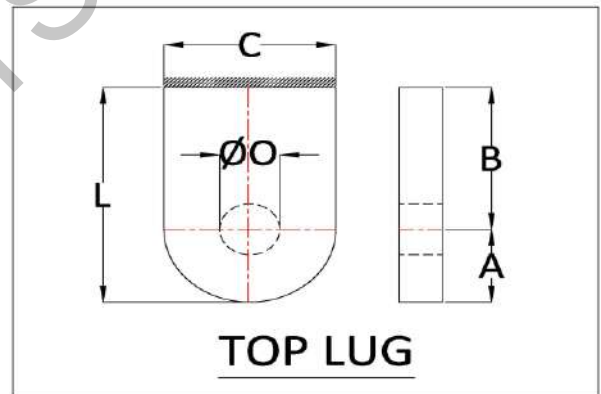
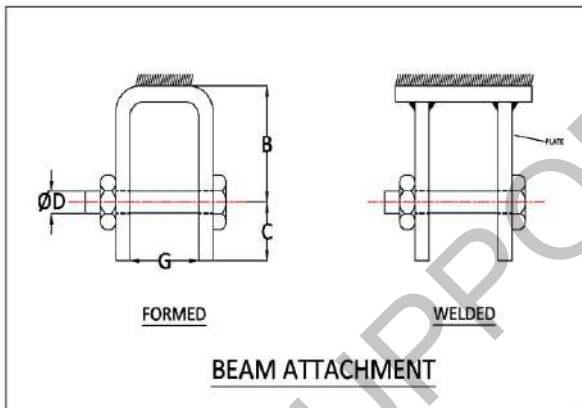
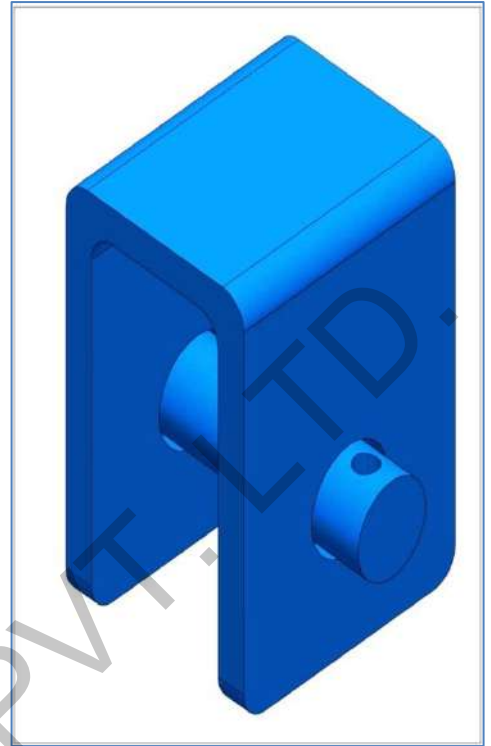
LOW FRICTION SLIDING SUPPORTS					
SAFE LOAD (Kg)	SIZE A FOR TRAVEL			SIZE B (mm)	SIZE C (mm)
	15 mm	30mm	50mm		
UP TO 500	100	120	140	22	77
500-1500	125	145	165	30	100
1500-4000	150	175	200	38	125
4000-7000	175	200	225	45	150
7000-15000	225	250	275	55	200
15000-30000	275	300	325	58	250
30000-50000	325	350	375	62	300
ALL DIMENSION IN mm.					



PIPE CONNECTING ELEMENTS

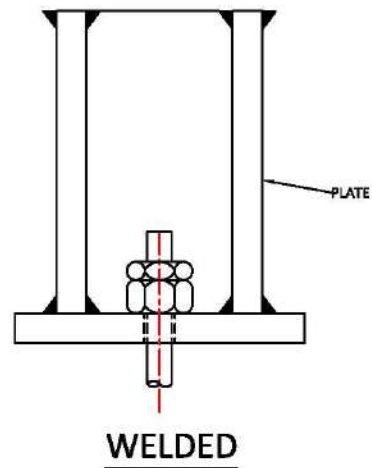
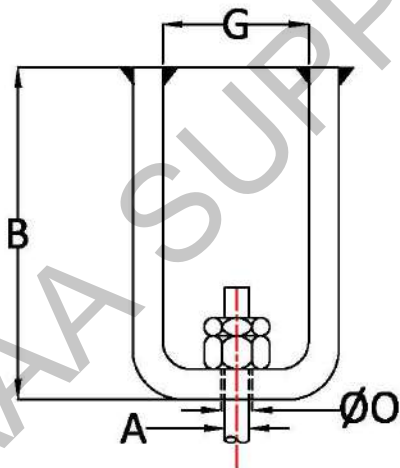
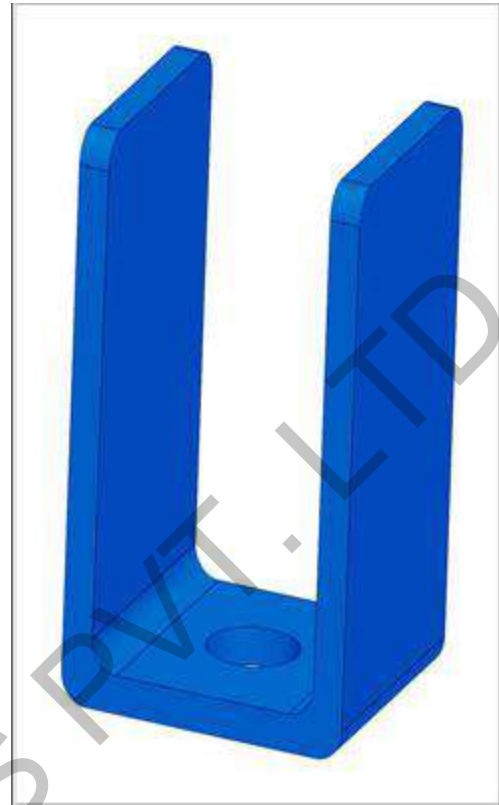


BEAM BRACKET WITH PIN							
SIZE	A	B	G	ØO	BOLT/ PIN	SAFE LOAD (Kg)	TYPE
M12	25	45	30	18	M16	920	FORMED TYPE
M16	35	50	30	23	M20	1510	
M20	35	50	35	27	M24	1750	
M24	40	60	40	27	M24	2500	
M30	50	80	45	33	M30	4500	
M36	50	85	55	39	M36	6000	
M42	55	95	65	45	M42	7500	
M48	63	110	70	51	M48	9700	WELDED TYPE
M56	75	125	75	60	M56	13500	
M64	85	135	80	65	M64	18000	
M72	95	150	90	76	M72	23000	
ALL DIMENSION ARE IN mm.							



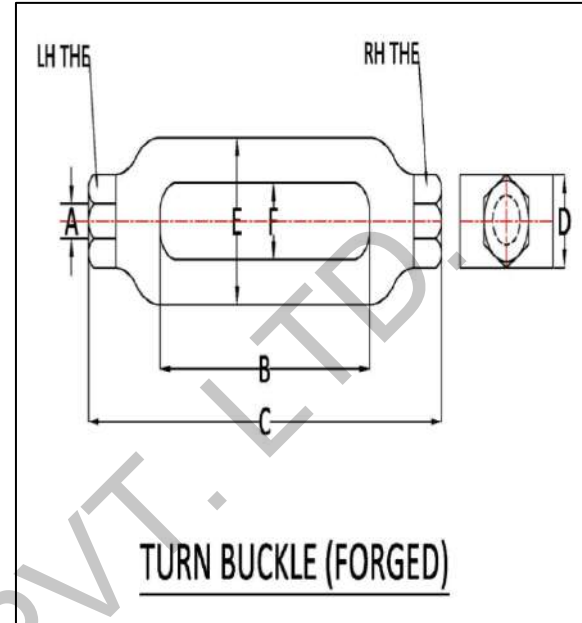
LUG						
SIZE	A	B	C	ØO	L	SAFE LOAD (Kg)
M12	33	45	65	18	78	920
M16	33	50	65	23	83	1510
M20	37	50	75	27	87	1750
M24	37	60	75	27	97	2500
M27	40	60	80	30	100	3300
M30	45	70	90	33	115	4500
M36	50	80	100	39	130	6000
M42	55	85	110	45	140	7500
M48	63	90	125	51	153	9700
M56	75	100	150	60	176	13500
M64	85	120	170	68	205	18000
M72	95	130	190	76	225	23000
ALL DIMENSION ARE IN mm.						

BEAM ATTACHMENT						
SIZE	A	B	G	ØO	SAFE LOAD (Kg)	TYPE
M12	12	75	40	18	920	FORMED TYPE
M16	16	85	45	23	1510	
M20	20	85	45	27	1750	
M24	24	100	50	27	2500	
M27	27	110	55	30	3300	
M30	30	120	61	33	4500	
M36	36	135	72	39	6000	
M42	42	155	85	45	7500	
M48	48	170	100	51	9700	WELDED TYPE
M56	56	190	110	60	13500	
M64	64	210	125	68	18000	
M72	72	230	135	76	23000	
ALL DIMENSION ARE IN mm.						

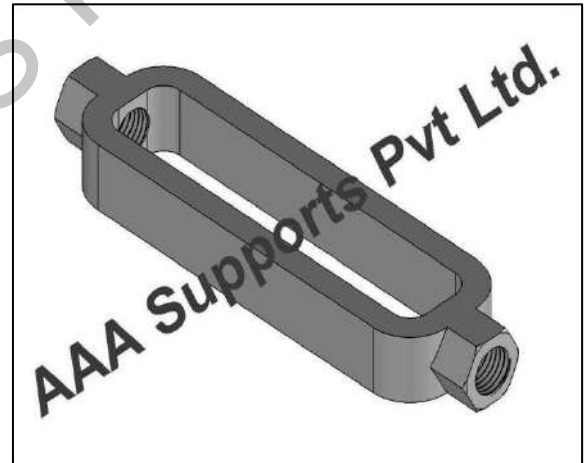


BEAM ATTACHMENT

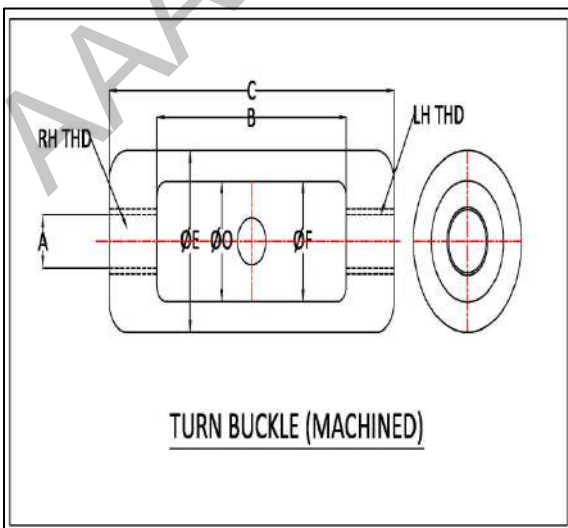
TURN BUCKLE									
SIZE	A	B	C	D	E	F	SAFE LOAD (Kg)	PROOF LOAD (kg)	TYPE
M12	M12	150	200	19	35	20	600	900	FORGED TYPE
M16	M16	150	200	24	50	30	1050	1575	
M20	M20	150	210	30	56	30	1750	2625	
M24	M24	150	220	36	67	35	2500	3750	
M27	M27	155	225	40	75	40	3300	4950	
M30	M30	155	225	45	82	42	4500	5750	
ALL DIMENSION ARE IN mm.									



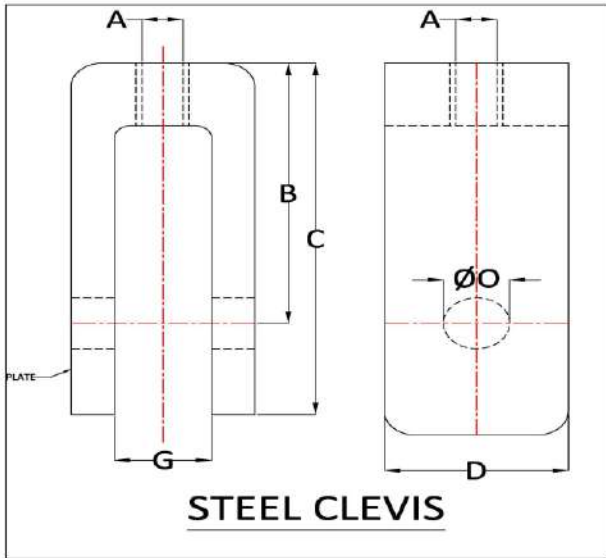
TURNBUCKLE - MACHINED



TURNBUCKLE- FORGED



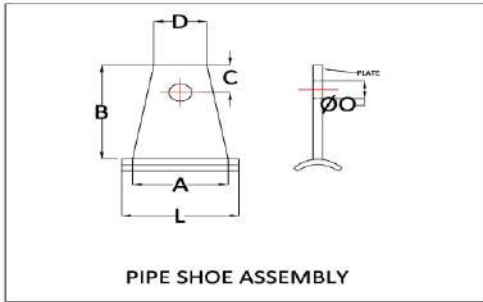
TURN BUCKLE (MACHINED)								
SIZE	A	B	C	ØF	ØO	SAFE LOAD (Kg)	PROOF LOAD (kg)	TYPE
M36	M36	160	250	40	22	5600	8400	MACHINED
M42	M42	160	250	48	22	7500	11250	
M48	M48	160	260	54	22	9700	14550	
M56	M56	160	270	62	28	13500	20250	
M64	M64	170	290	70	28	18000	27000	
M72	M72	170	300	78	28	23000	34500	
ALL DIMENSION ARE IN mm.								



STEEL CLEVIS						
SIZE	A	B	C	G	ØO	SAFE LOAD (Kg)
M12	M12	130	100	25	18	600
M16	M16	130	100	25	23	1050
M20	M20	140	105	30	23	1750
M24	M24	150	110	34	27	2500
M27	M27	160	115	36	30	3300
M30	M30	165	120	40	33	4500
M36	M36	180	125	46	39	5600
M42	M42	200	135	52	45	7500
M48	M48	215	145	58	51	9700
M56	M56	225	145	68	60	13500
M64	M64	245	155	75	68	18000
M72	M72	270	170	82	76	23000
ALL DIMENSION ARE IN mm.						

Note:

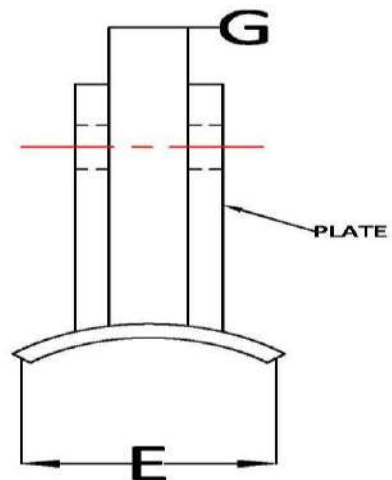
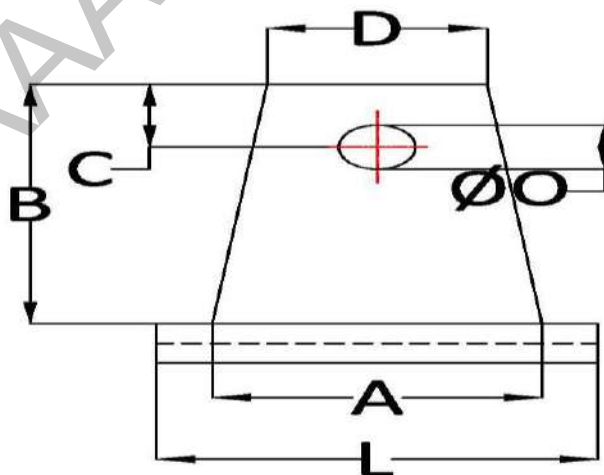
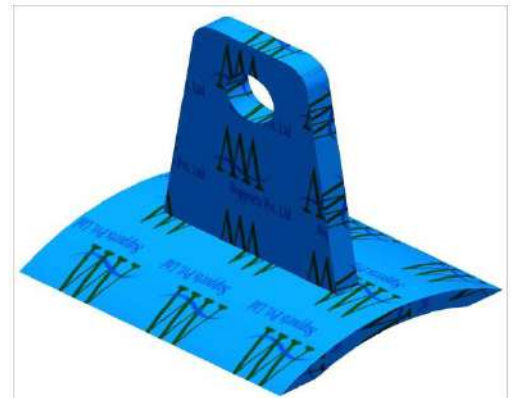
1. Material: Carbon steel
2. Apart from the standard table we undertake job by special design to meet required load and dimension



Note:

1. Material used Carbon steel/Alloy Steel/Stainless steel.
2. Apart from the standard, we may undertake the job by special design to meet required load and dimensions.

PIPE SHOE ASSEMBLY										
SIZE	A	B	C	D	E	F	G	L	ØO	SAFE LOAD (kg)
M12	80	80	25	50	50	55	16	100	18	920
M16	80	100	30	50	50	70	20	100	22	1510
M20	100	100	30	60	75	70	25	120	22	1750
M24	120	110	35	70	90	75	30	140	26	2500
M27	120	120	40	75	100	80	32	140	30	3300
M30	130	120	45	80	120	75	35	150	33	4500
M36	130	130	50	95	120	75	42	150	39	6000
M42	150	140	60	110	120	67	48	170	45	7500
M48	160	150	65	125	130	68	55	180	52	9700
M56	180	170	75	150	130	65	63	200	60	13500
M64	200	190	85	170	140	65	65	220	68	18000
M72	220	210	95	190	140	65	65	240	76	23000
ALL DIMENSION IN mm.										



Erection & Maintenance Manual

Variable Spring Support & Hangers

AAA SUPPORTS PVT. LTD.

Variable Hangers & Supports

1. INTRODUCTION

This manual covers the procedure for the erection, commissioning and maintenance of Variable Spring Hangers & Supports.

Variable spring Hanger & supports are used where the load varies directly with the change in travel or vice-versa due to high temperature and pressure of thermal movement. The vertical expansion of the piping causes a corresponding extension or compression of the spring and cause in the actual supporting effect of the hanger. The variation in supporting force is equal to the product of the amount of the vertical expansion and the spring scale of the hanger.

Variable spring hangers are recommended for general use on non-critical piping systems and where vertical movement is of small magnitude on critical systems. As per, MSS-SP-58 the load variation of Variable Spring Hanger and Supports is allowed up-to $\pm 25\%$ for critical system applications on piping.

$$\text{VARIABILITY FACTOR (\%)} = \frac{\text{MOVEMENT} * \text{SPRING RATE} * 100}{\text{HOT LOAD}}$$

AAA Supports Pvt Ltd., Variable Spring Hanger and Supports are designed to load range up-to 25,000 kg/ 250,000 N and travel range of 0-160 mm.

AAA Support's design team is also having experience of design the custom support Higher load range and Higher travel range as per project requirement.

2. STORAGE

- Supports should be handled with care and stores in dry and dust free environment.
- Spring Hanger & supports are already locked at factory pre-set/ cold position in dispatch condition.
- Do not change the load settings without consulting the engineer responsible for the system.
- Kindly ensure that Pins/Bolt nuts in Structural and Pipe attachments are dismantled only during installation at site in order to avoid loss of such small parts.
- Packaging should be reinstated after any Goods Inward Inspection at site until they are required for use.
- Do not paint Name/Scale plates.
- Refer to Support GA Drawings for the arrangement details.
- Do not cut, drill or modify the support components without consulting the piping engineer responsible for the system and AAA Supports Pvt. Ltd.

3. ERECTION

1. Variable Spring Hanger and Support design is based directly load applied on the load, and compression/ deflection of spring. Due to improper handling or storage and improper erection affect the efficiency and mechanism of movement of the Variable Spring Hanger & Support.
2. Spring units should be lifted carefully from the lifting points.
3. Variable Spring Hanger & Supports are supplied in pre-set or factory load setting through arrangement of side stud locking system.
4. Side stud Locking arrangement should not be lose/ release till the final erection/ installation and thermal insulation of the pipe has been done only after the installation of the Spring Hangers & Supports.
5. Standard Variable Spring Hanger & Supports and ancillaries are designed to sustain Hydrostatic Test (generally 2 times max. load on the supports).
6. To check the Constant Spring Hanger & Support is in balance position, the lock-nut should be move (of both sides) from the piston plate/ spring load plate.
7. If there is lot of effort or force is required to unlock/ loose the lock nut (either upper side of spring load plate or the lower side of spring load plate), Variable Spring hanger and Support is not in balance position and adjustment is require to balance the Spring Hanger and Support.
8. For balancing the spring hanger and supports, it is necessary to increase or decrease the height of pipe/ equipment to release the dead weight of the equipment/ pipe on spring units by rotating the turnbuckle or rod hanger (clockwise or anticlockwise up-to ± 75 mm).
9. For base mounting spring supports, Load Column threaded pipe is used to adjustment of assembly height (± 25 mm) and can also be used at the time of balancing of pipe or equipment.
10. All locking nuts should be loose till the Limit Stop marked position to operate/movement of the spring support accordingly.
11. After the installation and Hydro test and before operating, the supports should be checked properly as follows:
 - a. The lock nuts are loose up to **Red marked** position
 - b. There is no any fastener/ foreign material or parts into the support.
 - c. All the attachments are properly placed.
 - d. Any temporary supports/ attachment should be removed before the operation.
 - e. All the fixing bolts/ pins should be properly tightens/ place.
 - f. There should be space availability to allow the rotation of the angular lever during the operational movement of the piping and equipment.

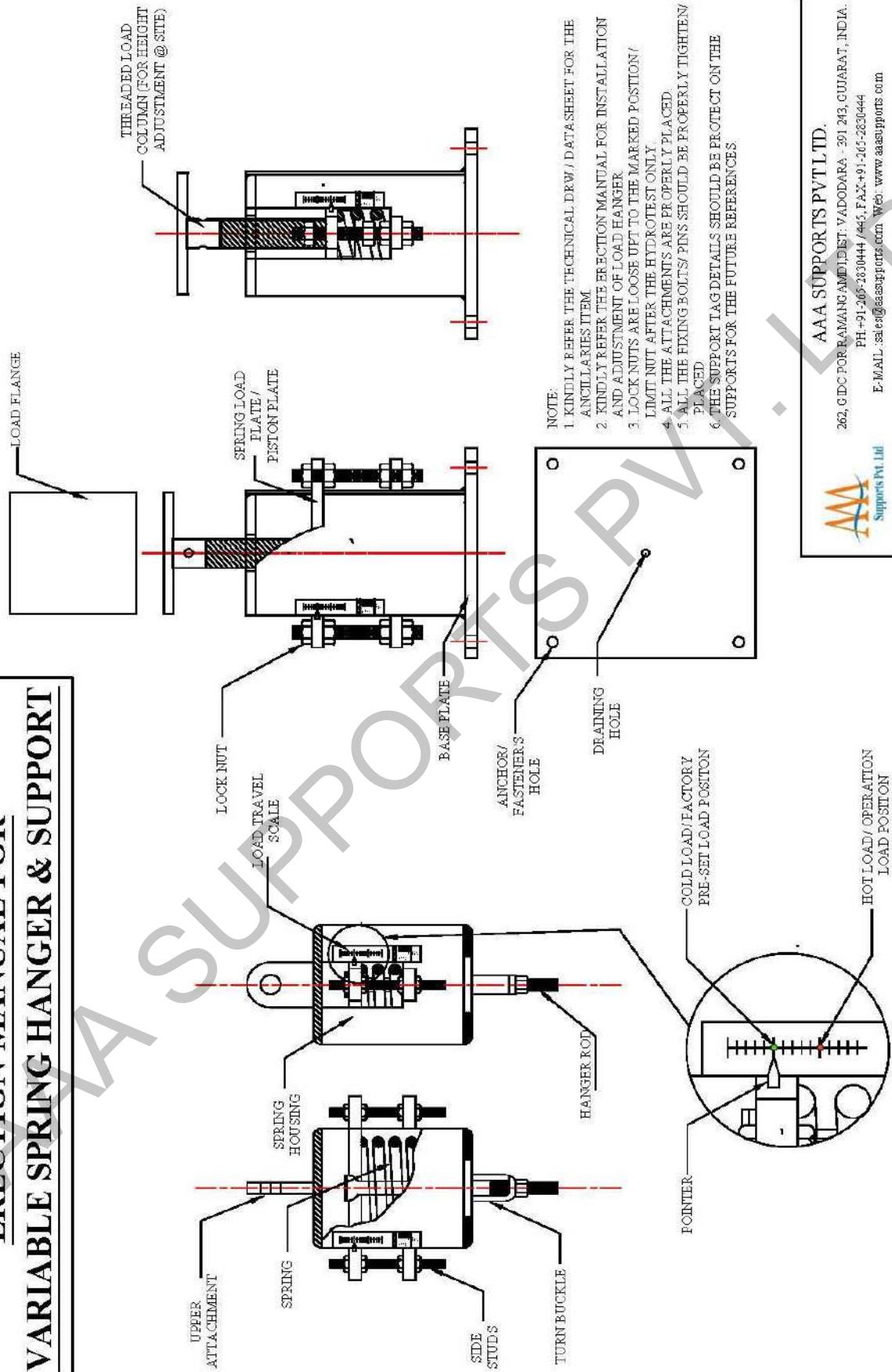
4. MAINTENANCE

Designing of the Spring Hangers and supports are to be maintenance free and long term operational services. Meanwhile some of the items like the threaded parts/ pivot pins require the rust prevention greasing/ oil from time to time.

We, AAA Supports Pvt. Ltd. also recommend to the user/ contractor to inspect the spring supports. on intervals to observe any cracks/ damages/ malfunctions/ corrosion/ foreign materials in spring supports or the attachments. For the long time uses protective coating should be inspected time-to-time and repaired if necessary. Kindly insure the Support Tag details should be properly visible and readable.

We, AAA Supports Pvt. Ltd. strongly recommend the user/ contractor to **lock the spring units at its initial position/ cold position/ factory pre-set position during the shutdown/ maintenance and unlock the before the Operation (Hot Condition of pipe) .**

ERECTION MANUAL FOR VARIABLE SPRING HANGER & SUPPORT



- NOTE:**
1. KINDLY REFER THE TECHNICAL DRAW / DATASHEET FOR THE ANCILLARY ITEM
 2. KINDLY REFER THE ERECTION MANUAL FOR INSTALLATION AND ADJUSTMENT OF LOAD HANGER
 3. LOCK NUTS ARE LOOSE UP TO THE MARKED POSITION / LIMIT NUT AFTER THE HYDROTEST ONLY
 4. ALL THE ATTACHMENTS ARE PROPERLY PLACED
 5. ALL THE FIXING BOLTS/ PINS SHOULD BE PROPERLY TIGHTENED
 6. THE SUPPORT TAG DETAILS SHOULD BE PROTECT ON THE SUPPORTS FOR THE FUTURE REFERENCES

AAA SUPPORTS PVT.LTD.
262, G.D.C. FOR RAMANG AMDI DIST: VADODARA - 391 243, GUJARAT, INDIA.
PH +91 265 2830444 / 445, FAX +91 265 2830444
E-MAIL: sales@aaasupports.com Web: www.aaasupports.com

TITLE		ERECTION MANUAL FOR	
QTY: -		VARIABLE SPRING HANGER AND SUPPORTS	
REF. SHEET	AAA DWG NO.	DESIGNED BY	APPROVED BY
SCALE: 1:1	DATE: 11.08.2017	REV. NO.	DATE: 11.08.2017
REV. NO.	DATE: 11.08.2017	REV. NO.	DATE: 11.08.2017

Erection & Maintenance Manual

Constant Spring Supports & Hangers

AAA SUPPORTS PVT. LTD.

ERECTION AND MAINTENANCE MANUAL

CONSTANT SPRING HANGER & SUPPORTS

1. INTRODUCTION

This manual covers the procedure for the erection, commissioning and maintenance of Constant Spring Hangers & Supports.

Constant Spring Supports are used to accommodate constant effort load, excessive movement of the pipe line due to high temperature and pressure of thermal movement. Constant load takes place through its range by a perfect counter balance crank lever where load and spring movements through the pivot ensure the minimum kinetic variation.

As per, MSS-SP-58 the load variation of the Constant Spring Hanger and Supports) is allowed only $\pm 6\%$ from the set load/ required load.

The supports should be erect in at correct node/ position, otherwise the load distribution of the pipework/ equipment will be unequal and support will not work effectively.

2. STORAGE

- Supports should be handled with care and stores in dry and dust free environment.
- Spring Hanger & supports are already locked at factory pre-set/ cold position in dispatch condition.
- Do not change the load settings without consulting the engineer responsible for the system.
- Kindly ensure that Pins/Bolt nuts in Structural and Pipe attachments are dismantled only during installation at site in order to avoid loss of such small parts.
- Packaging should be reinstated after any Goods Inward Inspection at site until they are required for use.
- Do not paint Name/Scale plates.
- Refer to Support GA Drawings for the arrangement details.
- Do not cut, drill or modify the support components without consulting the piping engineer responsible for the system and AAA Supports Pvt. Ltd.

3. ERECTION

1. Constant spring hanger and supports are designed on the ball crank mechanism and are perfectly balanced between and the load on the pipe/ equipment and spring force. Due to improper handling or storage and improper erection affect the efficiency and mechanism of movement of the Constant Spring Hanger & Support.
2. Spring units should be lifted carefully from the lifting points.
3. Constant Spring Hanger & Supports are supplied in pre-set or factory load setting through arrangement of side stud locking system

4. In case of Hanger arrangement, the assembly length between Pipe & Spring unit can be correct/ adjust through turnbuckle or hanger rod (± 75 mm only).
5. In case of Base mounted supports, the length adjustment (± 25 mm only) can be done by rotating the load flange of the Base Mounted Support (Screw Mechanism).
6. Side stud Locking arrangement should not be lose/ release till the final erection/ installation and thermal insulation of the pipe has been done only after the installation of the Spring Hangers & Supports.
7. Standard Constant Spring Hanger & Supports and ancillaries are designed to sustain Hydrostatic Test (generally 2 times max. load on the supports).
8. To check the Constant Spring Hanger & Support is in balance position, the lock-nut should be move (of both sides) from the piston plate/ spring load plate.
9. If there is lot of effort or force is required to unlock/ loose the lock nut, support in not in balance position and adjustment is require to balance the constant spring support by rotating (clockwise or anticlockwise) the Load Adjustment Nut(increasing/ decreasing the distance between the distance between the pivot pin and the pin.
10. All locking nuts should be loose till the Limit Stop marked position to operate/movement of the spring support accordingly.
11. After the installation and Hydro test and before operating, the supports should be checked properly as follows:
 - i. The lock nuts are loose up to **Red marked** position.
 - ii. There is no any fastener/ foreign material or parts into the support.
 - iii. All the attachments are properly placed.
 - iv. Any temporary supports/ attachment should be removed before the operation.
 - v. All the fixing bolts/ pins should be properly tightens/ place.
 - vi. There should be space availability to allow the rotation of the angular lever during the operational movement of the piping and equipment.

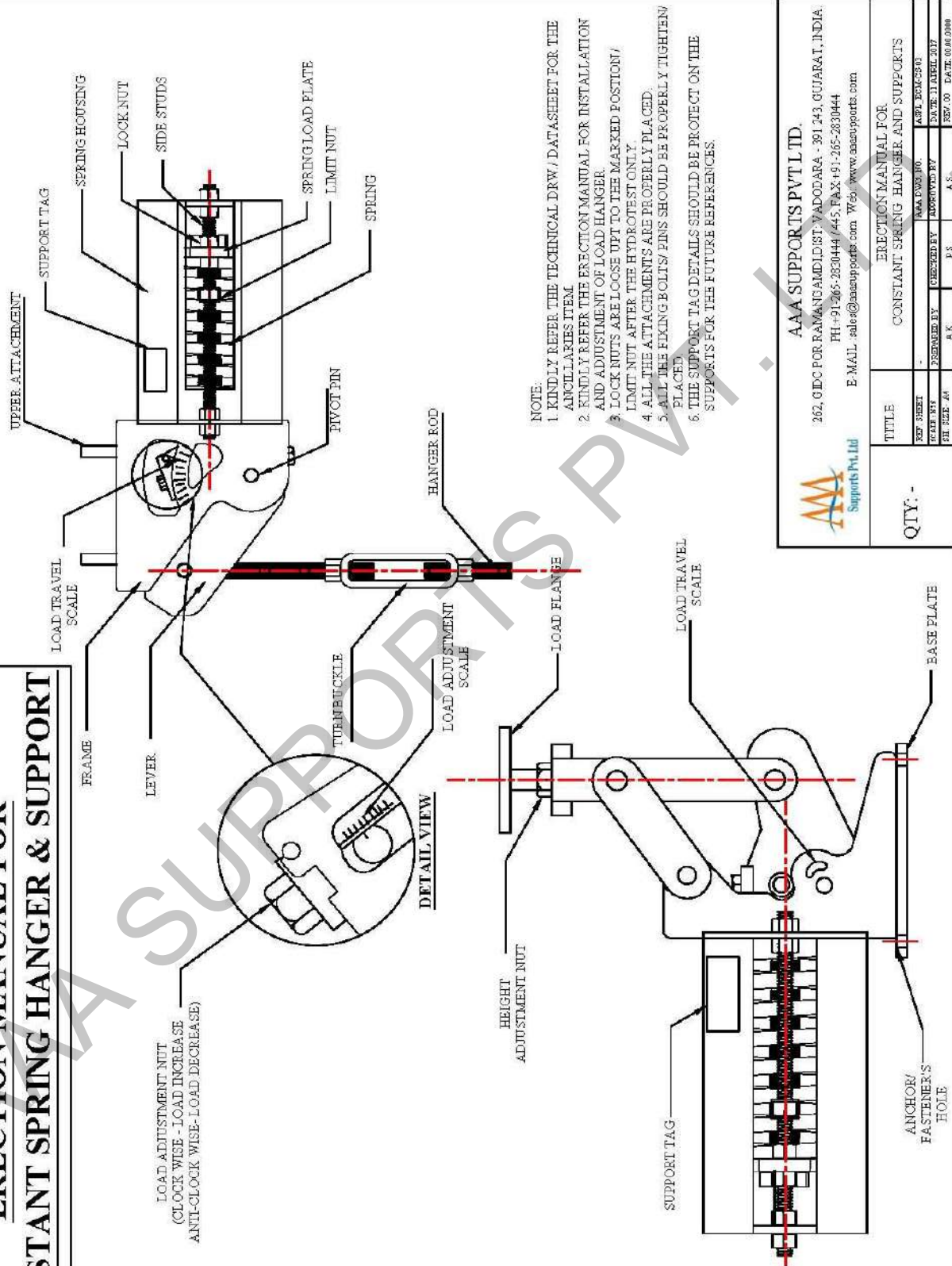
4. MAINTENANCE:

Designing of the Spring Hangers and supports are to be maintenance free and long term operational services. Meanwhile some of the items like the threaded parts/ pivot pins require the rust prevention greasing/ oil from time to time.

We, AAA Supports Pvt Ltd. also recommend to the user/ contractor to inspect the spring supports on intervals to observe any cracks/ damages/ malfunctions/ corrosion/ foreign materials in spring supports or the attachments. For the long time uses protective coating should be inspected time-to-time and repaired if necessary. Kindly insure the Support Tag details should be properly visible and readable.

We, AAA Supports Pvt Ltd. strongly recommend the user/ contractor to **lock the spring units at its initial position/ cold position/ factory pre-set position during the shutdown/ maintenance and unlock the before the Operation (Hot Condition of pipe) .**

ERECTION MANUAL FOR CONSTANT SPRING HANGER & SUPPORT



- NOTE:
1. KINDLY REFER THE TECHNICAL DRW / DATASHEET FOR THE ACCESSORIES ITEM
 2. KINDLY REFER THE ERECTION MANUAL FOR INSTALLATION AND ADJUSTMENT OF LOAD HANGER
 3. LOCK NUTS ARE LOOSE UP TO THE MARKED POSITION / LIMIT NUT AFTER THE HYDROTEST ONLY
 4. ALL THE ATTACHMENTS ARE PROPERLY PLACED
 5. ALL THE FIXING BOLTS / PINS SHOULD BE PROPERLY TIGHTENED
 6. THE SUPPORT TAG DETAILS SHOULD BE PROTECT ON THE SUPPORTS FOR THE FUTURE REFERENCES.



AAA SUPPORTS PVT. LTD.

262, QIDC POR RAMANDI, DIST. VADODARA - 391 243, GUJARAT, INDIA.
PH: +91-265-283044 / 445, FAX: +91-265-283044

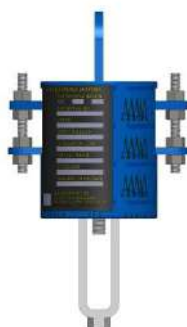
E-MAIL: sales@aaasupports.com Web: www.aaasupports.com

TITLE		ERECTION MANUAL FOR CONSTANT SPRING HANGER AND SUPPORTS	
REF. SHEET	-	AAA DVS. NO.	ASP. EDCG50
DATE: 11.04.2017	PREPARED BY	CHECKED BY	DATE: 11.04.2017
PH. SIZE: A4	A.S.	P.S.	REV. 00 DATE: 01.06.2006

PROPERTY OF AAA SUPPORTS
PVT. LTD. VADODARA

AAA SUPPORTS PVT. LTD. ENQUIRY SHEET

Name of the Company *				
Contact Person Name *				
Contact No *				
Project Details (if any) *				
Ref Doc./Dwg. No.(if any)*				
Enquiry Details				
Sr. No.	Item Description	UOM	Please Insert Data Here	
1	Line No.(If any)			
2	Node No.(If any)			
3	Support Tag No.(If any)			
	No. of Supports req.			
1)	Hot Load/Operating Load *	Kg or N		
2)	Cold Load/Installation Load *	Kg or N		
3)	Movement/Travel direction :-		Up= + ve	Down= - ve
	Vertical (Y Direction) *	mm		
	Horizontal (X Direction)	mm		
	Lateral (Z Direction)	mm		
4)	Spring Rate (If any):-	Kg/mm or N/mm		
5)	Variability Factor (for variable only)	%		
6)	Hydro Test Load (If any)	Kg or N		
7)	Design Load (If any)	Kg or N		
8)	Type of Supports *			
	Hanging Type	Yes/No		
	Cane/Bottom Type	Yes/No		
9)	Total Assembly Length (If any):-	mm		
10)	Operating Temp. *	°C		
11)	Pipe Size *	mm or NB		
12)	Pipe Material:-			
13)	Ancillaries Items(if any):-			
	Pipe Clamps	Yes/No		
	Pipe Shoe	Yes/No		
	Beam Attachments	Yes/No		
	Pipe Roller Shoe	Yes/No		
	Riser Clamps	Yes/No		
	Graphite Pad or PTFE Pad	Yes/No		
	Other ancillaries items (if any please mention)			
14)	Surface Painting Specification (If any):-			


VSH- A

VSH- B

VSH- C

VSH- D

VSH- E

VSH- F



Support Systems
you can trust

189, G.I.D.C ESTATE, POR-RAMANGAMDI, VADODARA-391 243, GUJARAT, INDIA. PH: +91 265 2830444/45

Email: sales@aaasupports.com web: www.aaasupports.com