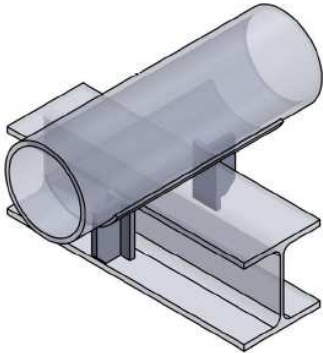
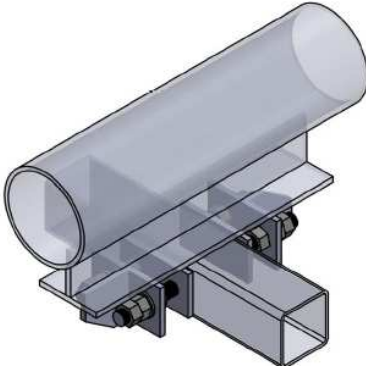
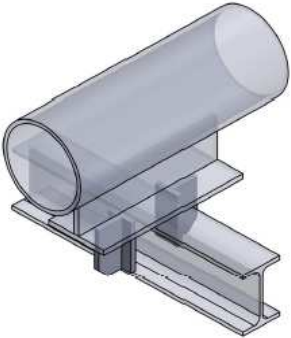
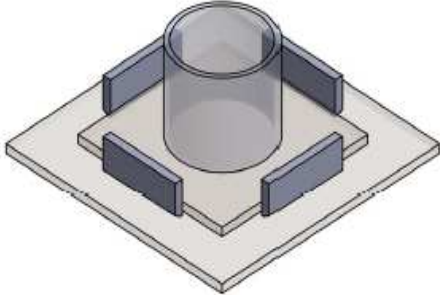
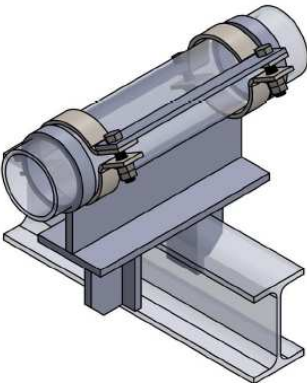
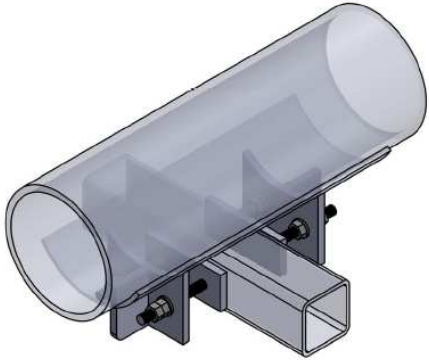
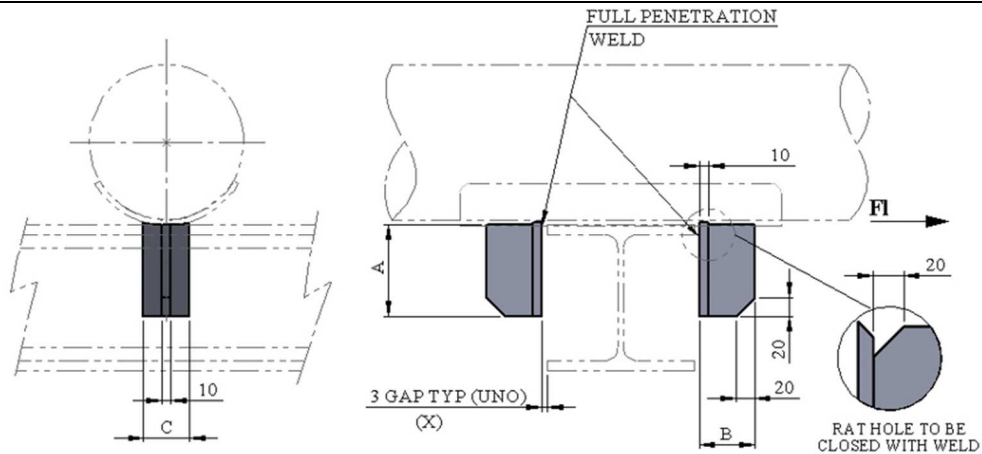


6. LINE STOPS		
<p>6.1</p>	<p><b>T-LS-001</b>  <b>LINE STOP FOR NON INSULATED LINES 50-1200mm / 2" – 48"</b></p> 	<p>6.4</p> <p><b>T-LS-004</b>  <b>ADJUSTABLE LINE STOP / LINE GUIDE</b></p> 
<p>6.2</p>	<p><b>T-LS-002</b>  <b>LINE STOPS FOR SHOES / TRUNNION 50- 1200mm / 2" – 48"</b></p> 	<p>6.5</p> <p><b>T-LS-005</b>  <b>STOP FOR POST BASE PLATE</b></p> 
<p>6.3</p>	<p><b>T-LS-003</b>  <b>LINE STOP FOR SHOE ON GRE / GRP- LINES 50- 1400mm / 2" – 56"</b></p> 	<p>6.6</p> <p><b>T-LS-006</b>  <b>ADJUSTABLE LINE STOP FOR NON INSULATED LINES 080 -750mm/3"-30"</b></p> 

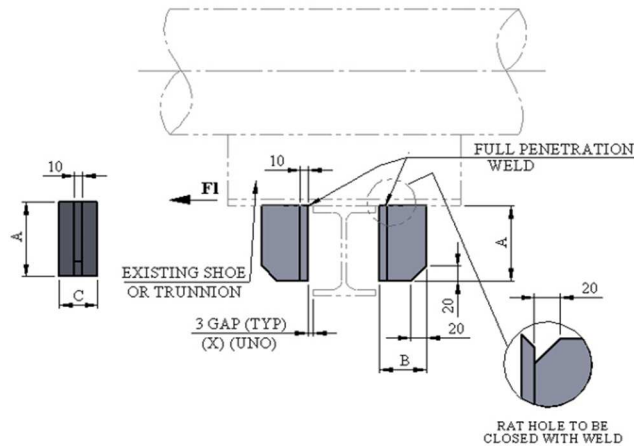
6.	<b>LINE STOPS</b>		
6.7	<b>T-LS-008</b> <b>BOLTED LINE STOP FOR SHOES</b> <b>WITH DOUBLE NUT (NO LIFT-OFF)</b>		
6.8	<b>T-LS-010</b> <b>BOLTED LINE STOP WITH BRACE</b> <b>FOR SHOES</b>		

**6.1 LINE STOP FOR INSULATED LINES 50-1200mm / 2"- 48"**
**LS-001**


TYPICAL PART NUMBER	AVAILABLE MATERIAL SHORT CODE	STD DETAIL TEMPERATURE LIMITATION	
		MAX. DESIGN TEMP.	MIN. DESIGN TEMP.
T-LS-001-(DN)-SS	SS	350 °C	-196°c (-105°c) ( Refer Note)
T-LS-001-(DN)-CS	CS	350 °C	(-) 20 °C
T-LS-001-(DN)-DU	Du	100°c (Operating)	(-) 46 °C
T-LS-001-(DN)- 6Mo	6Mo	120°c (Operating)	-196°c (-105°c) (Refer Note)
T-LS-001-(DN)-Ti	Ti	350 °C	(-) 196 °C

TYPE	LINE SIZE		A	B	C	Qty.	MAXIMUM LOADS FI (kN) (See note)					WEIGHTS (in kg) CS
	DN (mm)	NPS in (inch)					Carbon Steel.	Stainless Steel	Duplex.	6Mo.	Titanium	
T-LS-001-0050	DN 50	2"	100	60	50	2	80	47	80	67.6	61.6	1.5
T-LS-001-0080	DN 80	3"	100	60	50	2	80	47	80	67.6	61.6	1.5
T-LS-001-0100	DN 100	4"	100	60	50	2	80	47	80	67.6	61.6	1.5
T-LS-001-0125	DN 125	5"	100	60	50	2	80	47	80	67.6	61.6	1.5
T-LS-001-0150	DN 150	6"	100	60	50	2	80	47	80	67.6	61.6	1.5
T-LS-001-0200	DN 200	8"	100	60	50	2	80	47	80	67.6	61.6	1.5
T-LS-001-0250	DN 250	10"	100	90	80	2	120	70.8	120	101.4	92.4	2.5
T-LS-001-0300	DN 300	12"	100	90	80	2	120	70.8	120	101.4	92.4	2.5
T-LS-001-0350	DN 350	14"	150	110	150	2	150	88.5	150	216	115.5	5.9
T-LS-001-0400	DN 400	16"	150	110	150	2	150	88.5	150	228	115.5	5.9
T-LS-001-0450	DN 450	18"	150	110	150	2	150	88.5	150	235	115.5	5.9
T-LS-001-0500	DN 500	20"	150	110	150	2	150	88.5	150	237	115.5	5.9
T-LS-001-0550	DN 550	22"	150	110	150	2	150	88.5	150	252	115.5	5.9
T-LS-001-0600	DN 600	24"	150	110	150	2	150	88.5	150	254	115.5	5.9
T-LS-001-0650	DN 650	26"	150	110	150	2	150	88.5	150	256	115.5	5.9
T-LS-001-0700	DN 700	28"	150	110	150	2	150	88.5	150	264	115.5	5.9
T-LS-001-0750	DN 750	30"	150	110	150	2	150	88.5	150	271	115.5	5.9
T-LS-001-0800	DN 800	32"	150	110	150	2	150	88.5	150	271	115.5	5.9
T-LS-001-0850	DN 850	34"	150	110	150	2	150	88.5	150	276	115.5	5.9
T-LS-001-0900	DN 900	36"	150	110	150	2	150	88.5	150	282	115.5	5.9
T-LS-001-0950	DN 950	38"	150	110	150	2	150	88.5	150	283	115.5	5.9
T-LS-001-1000	DN 1000	40"	150	110	150	2	150	88.5	150	288	115.5	5.9
T-LS-001-1050	DN 1050	42"	150	110	150	2	150	88.5	150	288	115.5	5.9
T-LS-001-1100	DN 1100	44"	150	110	150	2	150	88.5	150	288	115.5	5.9
T-LS-001-1150	DN 1150	46"	150	110	150	2	150	88.5	150	288	115.5	5.9
T-LS-001-1200	DN 1200	48"	150	110	150	2	150	88.5	150	288	115.5	5.9

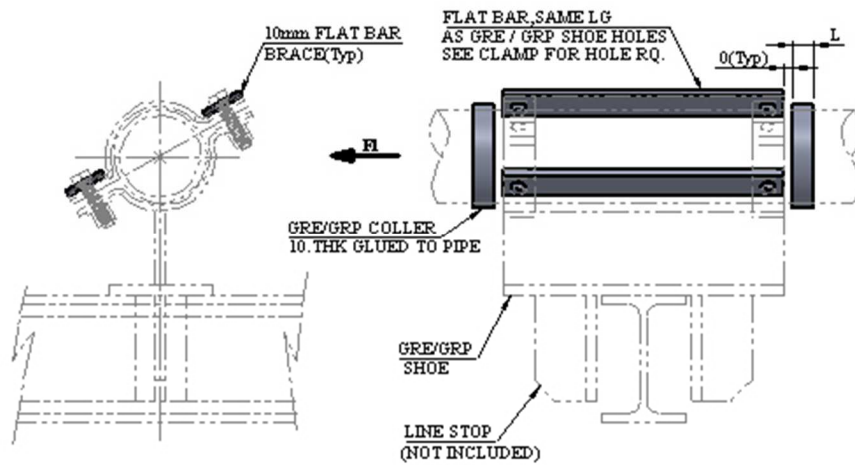
All Welds to be a = 0.7 x WT, but max 4 mm CFW.  
 Line Stop to be site located and welded.  
 Reduce maximum loads by 40% for Line Stop without Rest function.  
 Impact Test Req'd. for the below min design temperature  
 for Matl. Code SS (-)196° c, for Matl. Code DU (-)46°c.

**6.2 LINE STOPS FOR SHOES / TRUNNION 50- 1200mm / 2"- 48"**
**LS-002**


TYPICAL PART NUMBER	AVAILABLE MATERIAL SHORT CODE	STD. DETAIL TEMPERATURE LIMITATION	
		MAX. DESIGN TEMP.	MIN. DESIGN TEMP.
T-LS-002-000A-SS	SS	350 °C	-196°c (-105°c) (Refer Note)
T-LS-002-000A-CS	CS	350 °C	(-) 20 °C
T-LS-002-000A-DU	DU	100°c (Operating)	(-) 46 °C
T-LS-002-000A-6Mo	6Mo	120°c (Operating)	-196°c (-105°c) (Refer Note)
T-LS-002-000A-Ti	Ti	350 °C	(-) 196 °C

TYPE	LINE SIZE		A	B	C	Qty.	MAXIMUM LOADS F1 (kN) (See note)				WEIGHTS (in kg) CS
	DN (mm)	NPS in (inch)					CS	LD	SS	Ti	
T-LS-002-000A	DN 50	2"	100	60	50	2	80	100	47	63	1.54
	DN 80	3"	100	60	50	2	80	100	47	63	1.54
	DN 100	4"	100	60	50	2	80	100	47	63	1.54
	DN 125	5"	100	60	50	2	80	100	47	63	1.54
	DN 150	6"	100	60	50	2	80	100	47	63	1.54
T-LS-002-000B	DN 200	8"	100	60	50	2	80	100	47	63	1.54
	DN 250	10"	100	90	80	2	120	150	70.8	95	2.48
T-LS-002-000C	DN 300	12"	100	90	80	2	120	150	70.8	95	2.48
	DN 350	14"	150	110	150	2	150	190	88.5	116	5.86
	DN 400	16"	150	110	150	2	150	190	88.5	116	5.86
	DN 450	18"	150	110	150	2	150	190	88.5	116	5.86
	DN 500	20"	150	110	150	2	150	190	88.5	116	5.86
	DN 550	22"	150	110	150	2	150	190	88.5	116	5.86
	DN 600	24"	150	110	150	2	150	190	88.5	116	5.86
	DN 650	26"	150	110	150	2	150	190	88.5	116	5.86
	DN 700	28"	150	110	150	2	150	190	88.5	116	5.86
	DN 750	30"	150	110	150	2	150	190	88.5	116	5.86
	DN 800	32"	150	110	150	2	150	190	88.5	116	5.86
	DN 850	34"	150	110	150	2	150	190	88.5	116	5.86
	DN 900	36"	150	110	150	2	150	190	88.5	116	5.86
	DN 950	38"	150	110	150	2	150	190	88.5	116	5.86
	DN 1000	40"	150	110	150	2	150	190	88.5	116	5.86
	DN 1050	42"	150	110	150	2	150	190	88.5	116	5.86
	DN 1100	44"	150	110	150	2	150	190	88.5	116	5.86
	DN 1150	46"	150	110	150	2	150	190	88.5	116	5.86
DN 1200	48"	150	110	150	2	150	190	88.5	116	5.86	

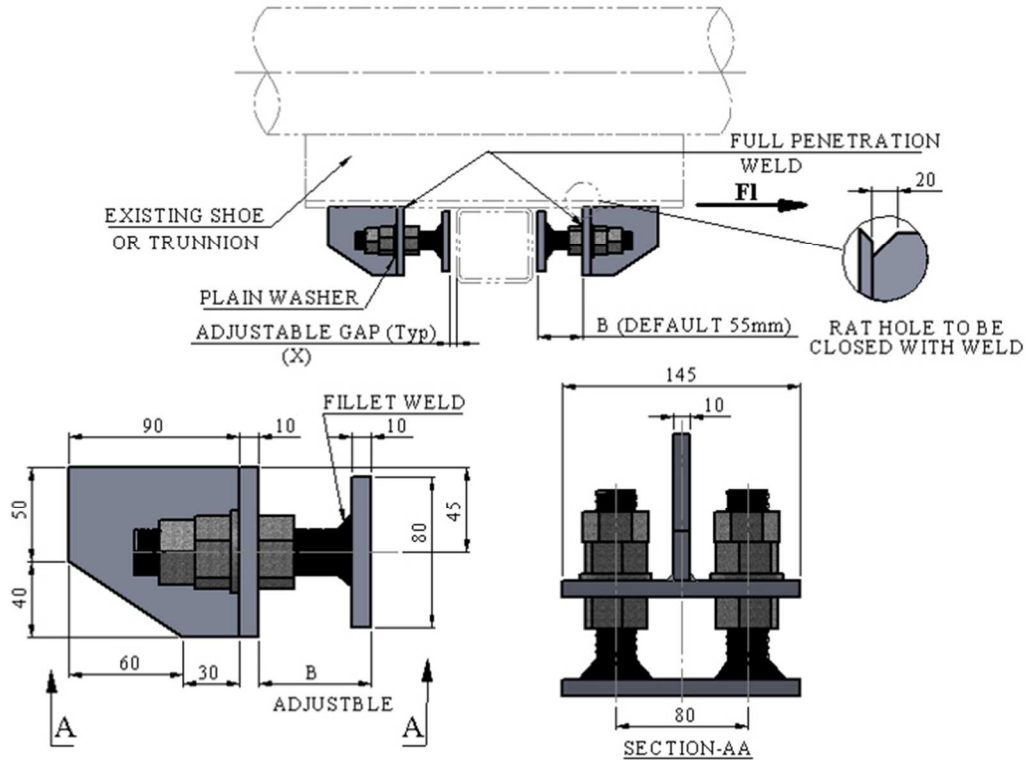
All Welds to be a = 0.7 x WT, but max 4 mm CFW.  
 Line Stop to be site located and welded.  
 Reduce maximum loads by 40% For Line Stop without Rest function.  
 For ALS ( Blast) with Lean Duplex (LD) material a maximum load factor of 1.35 can be used.  
 Impact Test Req'd. for the below min design temperature  
 for Matl. Code SS (-)196° c, for Matl. Code DU (-)46°c.

**6.3 LINE STOP FOR SHOE ON GRE / GRP-LINES 50- 1400mm / 2” – 56”**
**LS-003**


TYPICAL PART NUMBER	AVAILABLE MATERIAL SHORT CODE	STD. DETAIL TEMPERATURE LIMITATION	
		MAX. DESIGN TEMP.	MIN. DESIGN TEMP.
T-LS-003-(DN)-CS	CS	150°C	(-) 20 °C
T-LS-003-(DN)-SS	SS	150°C	(-) 46 °C

TYPE	LINE SIZE		L	MAXIMUM LOADS Fl (kN)
	DN (mm)	NPS in (inch)		
T-LS-003-0050	DN 50	2"	50	14
T-LS-003-0080	DN 80	3"	50	21
T-LS-003-0100	DN 100	4"	50	27
T-LS-003-0150	DN 150	6"	100	36
T-LS-003-0200	DN 200	8"	100	36
T-LS-003-0250	DN 250	10"	100	60
T-LS-003-0300	DN 300	12"	100	60
T-LS-003-0350	DN 350	14"	100	75
T-LS-003-0400	DN 400	16"	100	75
T-LS-003-0450	DN 450	18"	100	75
T-LS-003-0500	DN 500	20"	100	75
T-LS-003-0600	DN 600	24"	100	75
T-LS-003-0700	DN 700	28"	150	75
T-LS-003-0750	DN 750	30"	150	75
T-LS-003-0800	DN 800	32"	150	75
T-LS-003-0900	DN 900	36"	150	75
T-LS-003-1000	DN 1000	40"	150	75
T-LS-003-1050	DN 1050	42"	150	75
T-LS-003-1100	DN 1100	44"	150	75
T-LS-003-1150	DN 1150	46"	150	75
T-LS-003-1200	DN 1200	48"	150	75
T-LS-003-1400	DN 1400	56"	150	75

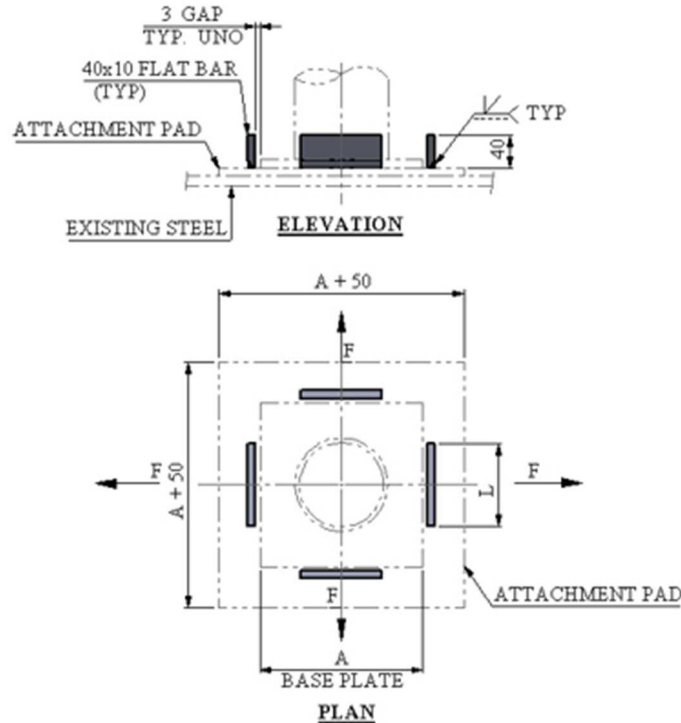
Allowable shear stress of adhesive on GRE / GRP Stop = 1.5 N/mm<sup>2</sup>.  
 GRE collar Pl. shall be made from purpose built pipe to fit pipe diameter.  
 Flat bar brace, same width as pipe clamp.  
 Dim L is linked to the maximum loads given. GRE/GRP Pipe vendor to confirm / approve final design.

**6.4 ADJUSTABLE LINE STOP / LINE GUIDE**
**LS-004**


TYPICAL PART NUMBER	AVAILABLE MATERIAL SHORT CODE	STD DETAIL TEMPERATURE LIMITATION	
		MAX. DESIGN TEMP	MIN. DESIGN TEMP.
T-LS-004-000A-SS	SS	350°C	-196°C (-105°C) (Refer Note)
T-LS-004-000A-CS	CS	350°C	(-) 20 °C
T-LS-004-000A-LD	LD	350°C	(-) 46 °C

TYPE	BOLTING INFORMATION	QTY	MAX. LOADS FI (kN)			WEIGHTS (in kg) CS
			LD	CS	SS	
T-LS-004-000A	2 OFF M24 STUDBOLTS x 115 LONG WITH TRIPPLE NUTS	2	34	27	16	7.92

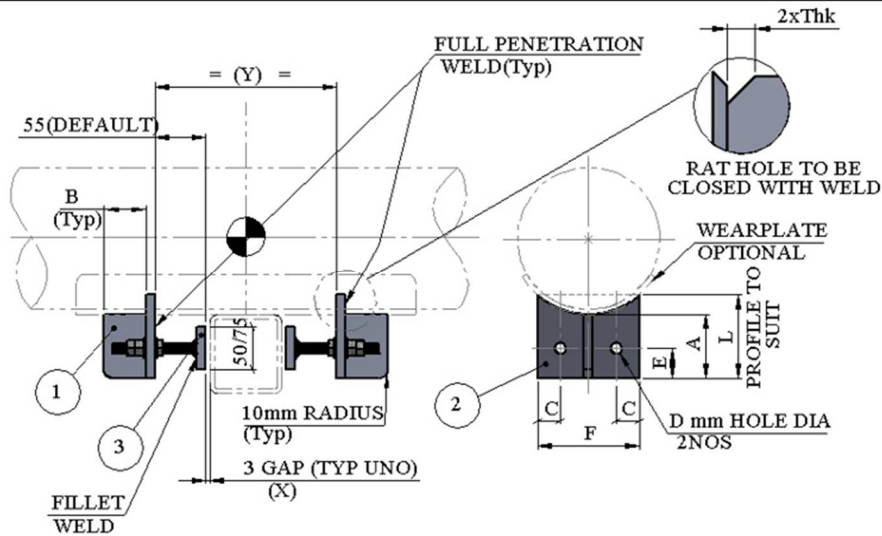
All Welds to be  $a = 0.7 \times WT$ , but max 4 mm CFW.  
 Line Stop / Line Guide to be site located and welded.  
 Standard type includes all bolts, plain washers and tripple nuts. Bolts to have a minimum overlength of 3 threads.  
 Bolt Quality to be ANSI A4-80SS (SS & LD Detail) and ASTM A193 Grade B7 (CS Detail).  
 For Material LD (Lean Duplex) maximum Blast (ALS) load FI (kN) the value increased by factor 1,35 can be used.  
 Impact Test Reqd. for the below min design temperature  
 for Matl. Code SS (-)196° c.

**6.5 STOP FOR POST BASE PLATE**
**LS-005**


TYPICAL PART NUMBER	AVAILABLE MATERIAL SHORT CODE	STD DETAIL TEMPERATURE LIMITATION	
		MAX. DESIGN TEMP.	MIN. DESIGN TEMP.
T-LS-005-000A-CS	CS	350°c	(-) 20°c
T-LS-005-000A-SS	SS	350°c	-196°c (-105°c) ( Refer Note)
T-LS-005-000A-AL	AL	N/A	N/A
T-LS-005-000A-Ti	Ti	350 °C	(-) 196 °C

TYPE	L	MAXIMUM LOAD F (kN)				SUPPORT FUNCTION	WEIGHTS (in kg) CS
		CS	SS	Al	Ti		
T-LS-005-000A	50	45	26.5	12.6	34.7	RS, LG, LS (See Note)	0.63
T-LS-005-000B	100	90	53	25	69.3	RS, LG, LS (See Note)	1.25
T-LS-005-000C	150	135	79.6	37.8	104	RS, LG, LS (See Note)	1.84

For material specification, See pipe support work Instruction.  
 Detail only to be used on Rest , Guide and Stop combination. Lift off not allowed.  
 Impact Test Reqrd. for the below min design temperature  
 for Matl. Code SS (-)196° c.

**6.6 ADJUSTABLE LINE STOP FOR NON INSULATED LINES 080 -750mm/3"-30"**
**LS-006**


TYPICAL PART NUMBER	AVAILABLE MATERIAL SHORT CODE	STD DETAIL TEMPERATURE LIMITATION	
		MAX. DESIGN TEMP.	MIN. DESIGN TEMP.
T-LS-006-(DN)-SS	SS	350°C	-196°C (-105°C) (Refer Note)
T-LS-006-(DN)-CS	CS	350°C	(-) 20°C
T-LS-006-(DN)-DU	Du	100°C (Operating)	(-) 46 °C
T-LS-006-(DN)-LD	LD	350°C	(-) 46 °C
T-LS-006-(DN)-6Mo	6Mo	120°C (Operating)	-196°C (-105°C) ( Refer Note)

TYPE	LINE SIZE		PLATE A x B x THK ①	CUT FROM PLATE F x L x THK ②	C	D	E	PLATE ③	STUD BOLTS c/w WASHERS & NUTS	MAXIMUM LOADS (kN) F	WEIGHTS (in kg) CS
	DN (mm)	NPS in (inch)									
T-LS-006-0080	DN 80	3"	60 x 50 x 10	90 x 75 x 10	20	13	25	90 x 50 x 10	4 - M12 x 100 LG.	43	2.56
T-LS-006-0100	DN 100	4"	60 x 50 x 10	90 x 75 x 10	20	13	25	90 x 50 x 10	4 - M12 x 100 LG.		2.56
T-LS-006-0125	DN 125	5"	60 x 50 x 10	90 x 75 x 10	20	13	25	90 x 50 x 10	4 - M12 x 100 LG.		2.56
T-LS-006-0150	DN 150	6"	75 x 50 x 10	120 x 100 x 10	27	13	40	120 x 50 x 10	4 - M12 x 100 LG.		3.94
T-LS-006-0200	DN 200	8"	75 x 75 x 10	120 x 100 x 10	27	18	40	120 x 50 x 10	4 - M16 x 120 LG.		4.84
T-LS-006-0250	DN 250	10"	85 x 85 x 15	150 x 110 x 15	35	22	40	150 x 75 x 15	4 - M20 x 100 LG.	100	9.86
T-LS-006-0300	DN 300	12"	85 x 85 x 15	150 x 110 x 15	35	22	40	150 x 75 x 15	4 - M20 x 100 LG.		9.86
T-LS-006-0350	DN 350	14"	85 x 85 x 15	150 x 110 x 15	35	22	40	150 x 75 x 15	4 - M20 x 100 LG.		9.86
T-LS-006-0400	DN 400	16"	85 x 85 x 15	150 x 110 x 15	35	22	40	150 x 75 x 15	4 - M20 x 100 LG.		9.86
T-LS-006-0450	DN 450	18"	85 x 85 x 15	150 x 110 x 15	35	22	40	150 x 75 x 15	4 - M20 x 100 LG.		9.86
T-LS-006-0500	DN 500	20"	85 x 85 x 15	150 x 110 x 15	35	22	40	150 x 75 x 15	4 - M20 x 100 LG.		9.86
T-LS-006-0550	DN 550	22"	85 x 85 x 15	150 x 110 x 15	35	22	40	150 x 75 x 15	4 - M20 x 100 LG.		9.86
T-LS-006-0600	DN 600	24"	85 x 85 x 15	150 x 110 x 15	35	22	40	150 x 75 x 15	4 - M20 x 100 LG.		9.86
T-LS-006-0650	DN 650	26"	85 x 85 x 15	150 x 110 x 15	35	22	40	150 x 75 x 15	4 - M20 x 100 LG.		9.86
T-LS-006-0700	DN 700	28"	85 x 85 x 15	150 x 110 x 15	35	22	40	150 x 75 x 15	4 - M20 x 100 LG.		9.86
T-LS-006-0750	DN 750	30"	85 x 85 x 15	150 x 110 x 15	35	22	40	150 x 75 x 15	4 - M20 x 100 LG.	9.86	

All Welds to be a = 0.7 x WT, but max 4 mm CFW.

After pipe installation , Line Stop to be adjusted to the required gap dimension and All nuts locked.

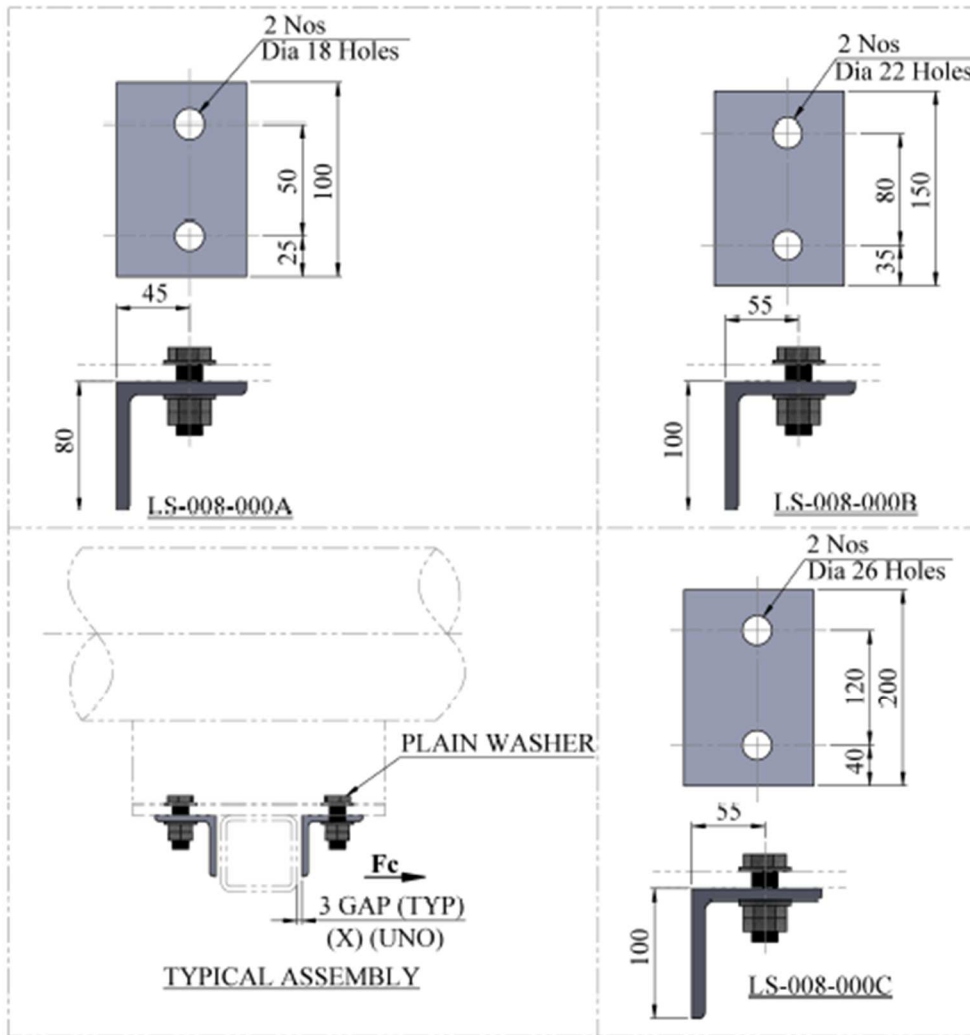
Standard type includes all bolts , plain washers and tripple nuts. Bolts to have a minimum overlengh of 3 threads.

The washer type to be used shall be approved by the project client , See Also the pipe support work instruction.

Impact Test Reqd. for the below min design temperature

for Matl. Code SS (-)196° c, for Matl. Code LTCS, LD & DU (-)46°c.



**6.7 BOLTED LINE STOP FOR SHOES WITH DOUBLE NUT (NO LIFT-OFF)**
**LS-008**


TYPICAL PART NUMBER	AVAILABLE MATERIAL SHORT CODE	STD. DETAIL TEMPERATURE LIMITATION	
		MAX. DESIGN TEMP.	MIN. DESIGN TEMP.
T-LS-008--000A-CS	CS	150°c	(-) 20°c
T-LS-008--000A-SS	SS	150°c	(-) 46 °C
T-LS-008--000A-LD	LD	150°c	(-) 46 °C

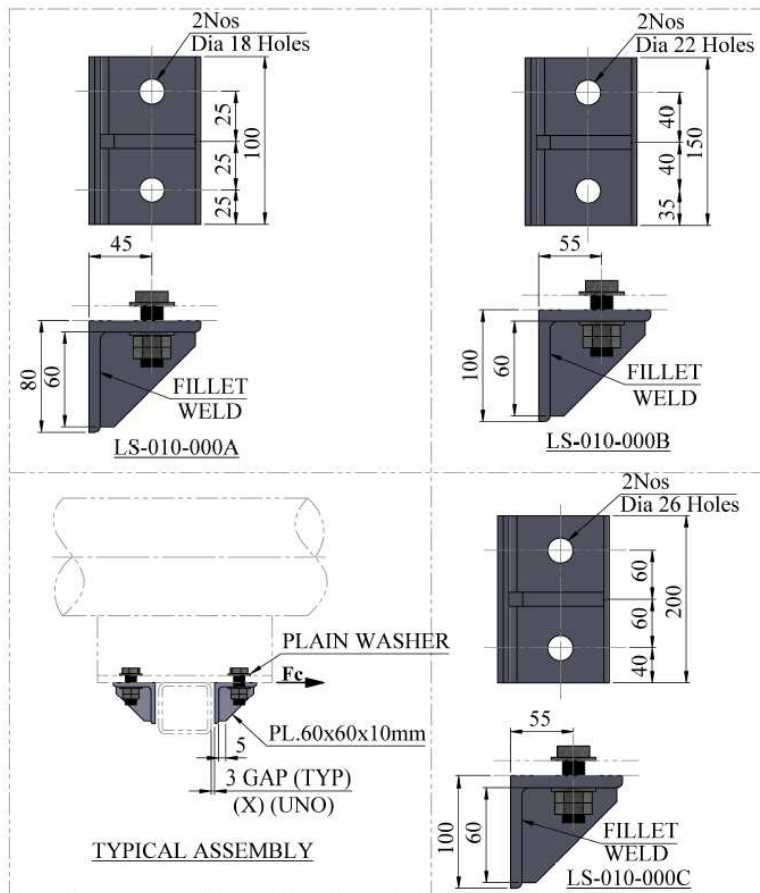
TYPE	B SECTION	LINE SIZE	BOLTING	MAX. LOADS Fc (kN)	WEIGHTS (in kg) CS
T-LS-008--000A	L80 x 80 x 8	2" TO 8"	M16 x 70	36	2.2
T-LS-008--000B	L100 x L100 x 10	10" TO 48"	M20 x 80	56	4.9
T-LS-008--000C	L100 x L100 x 10	12" TO 48"	M24 x 90	80	6.9

Allowable loads are based on shear force in bolt. Does not allow Lift off with Stop forces.

Line Stops to be site located and drilled.

Standard Type includes all bolts (Fully Threaded with a min. overlength of 3 Threads.), plain washers and double nuts.

The washer type to be used shall be approved by the project client , See also the pipe support work instruction.

**6.8 BOLTED LINE STOP WITH BRACE FOR SHOES**
**LS-010**


TYPICAL PART NUMBER	AVAILABLE MATERIAL SHORT CODE	STD. DETAIL TEMPERATURE LIMITATION	
		MAX. DESIGN TEMP.	MIN. DESIGN TEMP.
T-LS-010-000A-CS	CS	150°C	(-) 20°C
T-LS-010-000A-SS	SS	150°C	(-) 46 °C
T-LS-010-000A-LD	LD	150°C	(-) 46 °C

TYPE	B SECTION	LINE SIZE	BOLTING	MAX. LOADS Fc (kN)	WEIGHTS (in kg) CS
T-LS-010-000A	L80 x 80 x 8	2" TO 8"	M16 x 70	36	2.4
T-LS-010-000B	L100 x L100 x 10	10" TO 48"	M20 x 80	56	5.2
T-LS-010-000C	L100 x L100 x 10	12" TO 48"	M24 x 90	80	7.2

Allowable loads are based on shear force in bolt.  
 Line Stops to be site located and drilled.  
 Standard type includes all bolts (Fully Threaded with a min. overlength of 3 Threads.), plain washers and double nuts.  
 The washer type to be used shall be approved by the project client, See also the pipe support work instruction.