

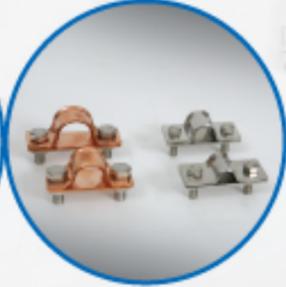
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**MR TECH**



### Greeting

**MR TECH co. is a company that produces GRE PIPE STRAPS used for LNG vessels and marine plants, Clamp, Sliding Pad, Gasket and variety of others. MR TECH co. promises to do it' s best to improve the quality of products and re- search to products develop continuously with oneness of all employees.**

**Thank you.**

### ABS Quality Evaluations Certificate Of Conformance

This is to certify that the Quality Management System of

**MR TECH CO.**

#87, Mokseonggong-ro, Gangseo-gu  
Busan  
Korea

has been assessed by ABS Quality Evaluations, Inc. and found to be in conformance with the requirements set forth by:  
ISO 9001:2008

The Quality Management System is applicable to:

MANUFACTURE OF CLAMPS AND SLIDING PADS

Certificate No: 47984  
Effective Date: 08 October 2012  
Expiration Date: 23 November 2015  
Revision Date: 08 October 2012

Alex Wassberg, President

Validity of this certificate is based on the periodic audits of the management system and is contingent upon prompt, written notification to ABS Quality Evaluations, Inc. of significant changes to the management system or company's financial status.

ABS Quality Evaluations, Inc. 14805 Sandhollow Drive, Houston, TX 77060, U.S.A.  
Validity of this certificate area is confined to the specific equipment, activities.

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### ■ STRAP FOR GRE PIPE

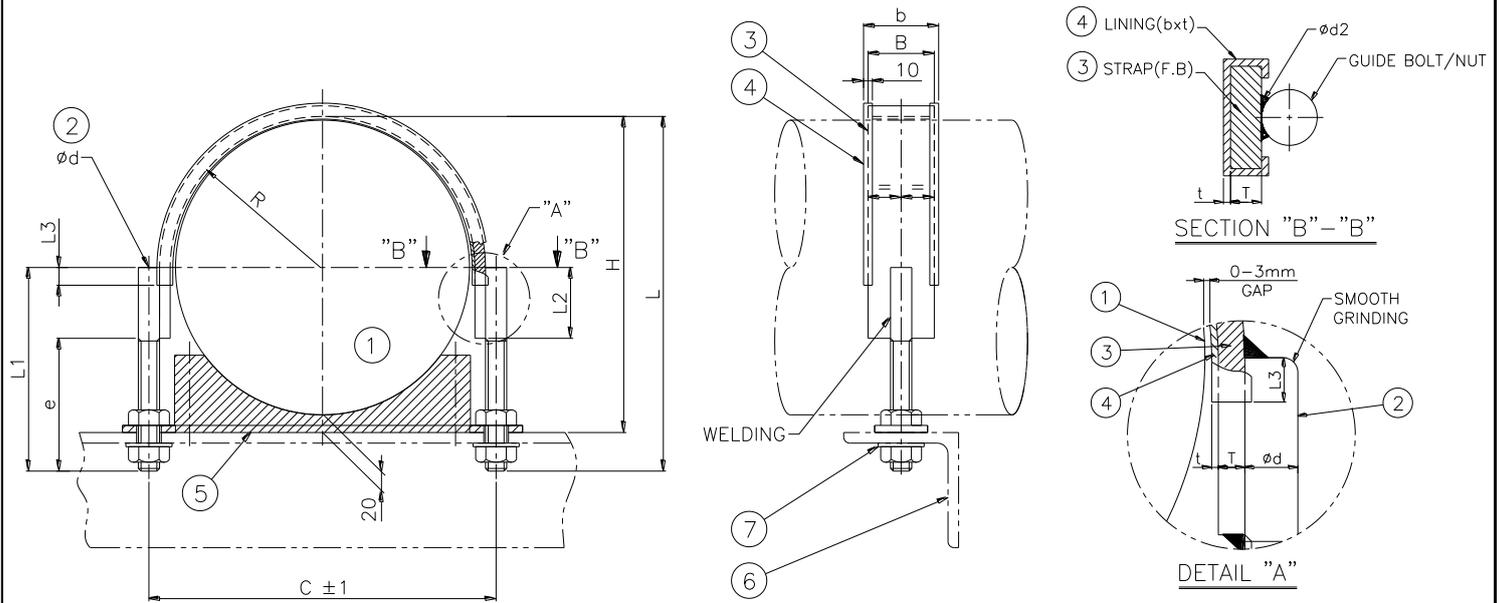
STRAP FOR GRE PIPE,DUPLEX PIPE	3
● SLIDING TYPE	
SLIDING PAD FOR GRE PIPE	4
● SLIDING TYPE	
STRAP FOR GRE PIPE	5
● FIXED TYPE	
SLIDING PAD FOR GRE PIPE	6
● FIXED TYPE	
STRAP FOR GRE PIPE	7
● ANCHOR TYPE	
STRAP FOR GRE PIPE	8
● S-TYPE	
STRAP FOR STAINLESS STEEL PIPE	9
COPPER & COPPER ALLOY BAND FOR PIPE	10
NON-FERROUS PIPE STRAP	11
THE OTHERS PRODUCT	12

### ■ PIPE CLAMP (PLASTIC PIPE CLAMP)

HEAVY TYPE	13
STANDARD TYPE	14
BOLTING TYPE	15
TWIN TYPE	16
MULTI LINE TYPE	17
● 2 LINE TYPE	
● 3 LINE TYPE	
● 4 LINE TYPE	
● 6 LINE TYPE	

STANDARD NAME	STRAP FOR GRP PIPE, DUPLEX PIPE (SLIDING TYPE)	M.R TECH MR-GRE-01
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SLIDING STRAP FOR G.R.P PIPE U-BOLT TYPE-A



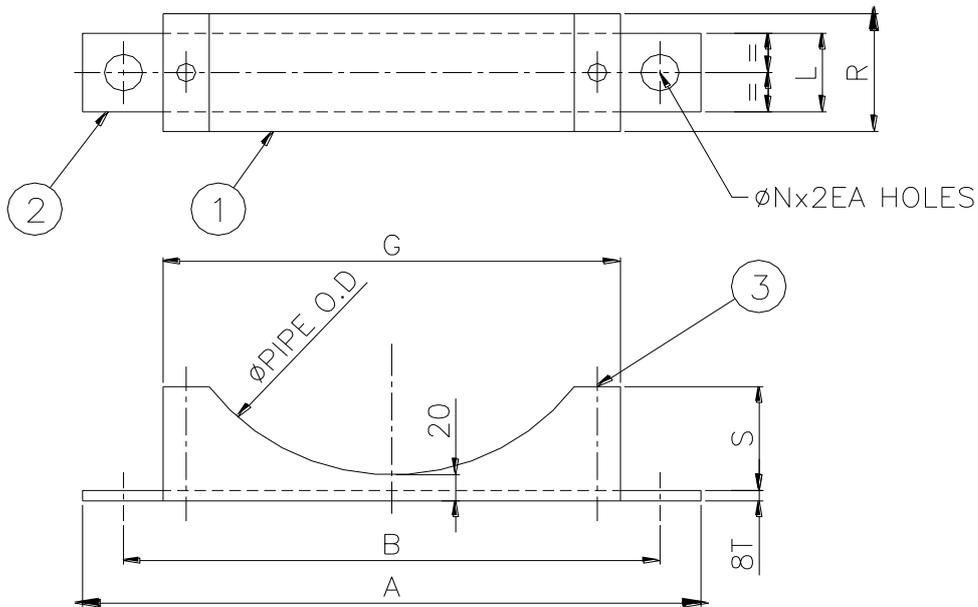
N.D	O.D	(H)	C	R	BXT	bXt	BOLT SIZE	L1	L2	L3	e	Ød	Ød1	(L)	ANGLE SIZE	WT (kg)
50 A	61.9	84.9	93.9	35.95	50 X 6	56 X 3	M 10	75	15	10	45	10	12	108.95	75 X 75 X 6 T	0.62
65 A							M 10									
80 A	90.5	113.5	115.5	50.25	50 X 6	56 X 3	M 12	90	20	10	50	12	14	138.25	75 X 75 X 6 T	0.89
100 A	115.9	138.9	153.9	62.95	65 X 6	71 X 3	M 16	110	30	20	60	16	18	170.95	75 X 75 X 6 T	1.32
125 A	142.6	165.6	180.6	76.30	65 X 6	71 X 3	M 16	120	50	20	70	16	18	194.30	100 X 100 X 6 T	1.54
150 A	169.8	192.2	210.2	91.10	65 X 6	71 X 3	M 16	135	50	20	73	16	18	226.60	100 X 100 X 6 T	1.68
200 A	222.3	246.4	272.4	117.20	75 X 9	85 X 5	M 20	170	50	20	80	20	24	285.70	130 X 130 X 10 T	3.62
250 A	279.0	303.4	329.4	145.70	75 X 9	85 X 5	M 20	200	80	20	80	20	24	344.20	130 X 130 X 10 T	4.50
300 A	332.8	357.0	393.0	172.50	75 X 12	85 X 5	M 24	230	80	20	88	24	28	401.00	130 X 130 X 12 T	6.90
350 A	358.0	382.1	418.1	185.05	75 X 12	85 X 5	M 24	243	100	20	88	24	28	425.00	130 X 130 X 12 T	7.50
400 A	408.9	432.9	468.9	210.45	75 X 12	85 X 5	M 24	270	100	20	88	24	28	478.95	130 X 130 X 12 T	8.31
450 A	459.3	483.5	525.5	235.75	100 X 12	110 X 5	M 30	303	100	20	97	30	35	536.00	130 X 130 X 12 T	12.87
500 A	510.2	534.6	576.6	261.30	100 X 12	110 X 5	M 30	325	100	20	97	30	35	585.00	130 X 130 X 12 T	13.96
550 A	561.1	585.5	631.5	286.75	100 X 12	110 X 5	M 30	353	100	20	97	30	35	637.00	130 X 130 X 12 T	16.69
600 A	611.9	636.3	688.3	312.15	100 X 12	110 X 5	M 30	387	100	20	125	36	42	697.00	130 X 130 X 12 T	23.09
650 A	687.1	711.5	763.5	349.75	120 X 14	130 X 5	M 36	423	100	20	125	36	42	770.00	130 X 130 X 12 T	25.35
700 A	739.9	764.1	816.1	376.05	120 X 14	130 X 5	M 36	450	100	20	125	36	42	824.00	130 X 130 X 12 T	26.77

NO	DESCRIPTION	MATERIAL	Q'TY	REMARK	NOTE
1	PIPE	G.R.P	2	YARD SUPPLY	1.GRP PIPE OR SDSS PIPE OR CU-NI PPE. 2.③STRAP AND ④LINING TO BE BONDED. 3.WELDING PART SHALL SMOOTHLY GROU 4.PAINTING SPEC ,WILL BE INFORMED LAT 5.EXCLUDE PAD. * ( ) is Rference dimension
2	GUIDE BOLT & NUT	SS400(G)	—	GAL'V THICK ≥ 15µm MAKER SUPPL	
3	STRAP	SS401(G)	1	GAL'V THICK ≥ 16µm MAKER SUPPL	
4	LINING	NEOPRENE	1	MAKER SUPPLY	
5	SLIDING PAD	POLYETHYENE(20T)	1	MAKER SUPPLY	
6	SUPPORT	SS400	—	YARD SUPPLY	
7	SPRING WASHER	SWRH27,GAL'V	2	MAKER SUPPLY	

◆ IMAGE ◆



STANDARD NAME	SLIDING PAD FOR GRP PIPE (SLIDING TYPE)	M.R TECH MR-GRE-112
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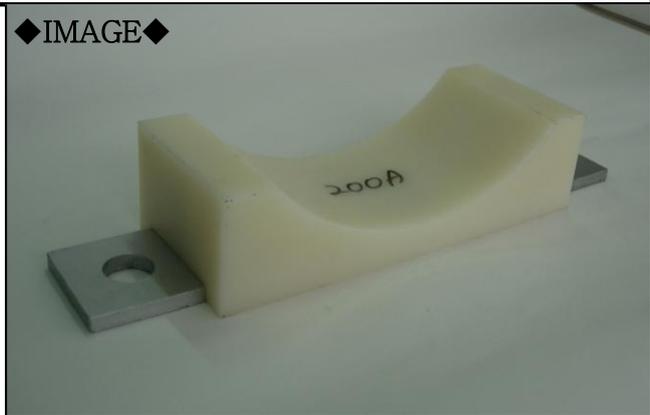
UNIT : mm

N.D	O.D	A	B	G	L	N	P	R	S	WT(kg)	Q'TY
50A	61.9	123.9	93.9	68.0	30	12	13.64	56	21.5	0.42	
65A											
80A	90.5	151.5	115.5	91.6	36	14	14.17	56	24.6	0.54	
100A	115.9	193.9	153.9	123.2	40	18	18.1	66	32.0	0.68	
125A	142.6	220.6	180.6	149.9	40	18	20.2	66	37.6	0.75	
150A	169.8	270.2	210.2	172.2	40	18	21.3	70	50.2	1.03	
200A	222.3	332.4	272.4	224.4	60	24	27.4	90	59.5	2.11	
250A	279.0	389.4	329.4	281.4	60	24	34.1	90	69.7	3.16	
300A	332.8	453.0	393.0	335.0	60	28	40.3	90	79.3	4.33	
350A	358.0	478.1	418.1	360.1	60	28	43.3	90	83.8	4.95	
400A	408.9	528.9	468.9	410.9	60	28	49.2	90	92.9	6.33	
450A	459.3	595.5	525.5	461.5	70	35	55.1	100	102.0	8.72	
500A	510.2	646.6	576.6	512.6	70	35	61.1	100	111.0	10.73	
550A	561.1	701.5	631.5	563.6	70	35	67.1	100	120.1	12.79	
600A	611.9	758.3	688.3	614.3	90	42	73.0	120	129.2	17.89	
650A	687.1	833.5	763.5	689.3	90	42	81.7	120	142.6	22.47	
700A	739.9	886.1	816.1	742.1	90	42	88.0	120	152.0	25.89	

NO.	DESCRIPTION	MATERIAL	Q'TY	REMARK
1	PAD	POLYETHYLENE	1	MAKER SUPPLY
2	STEEL PLATE	SS400, GAL'V	1	MAKER SUPPLY
3	HEX. SLOT BOLT	SS400(G)	2	MAKER SUPPLY

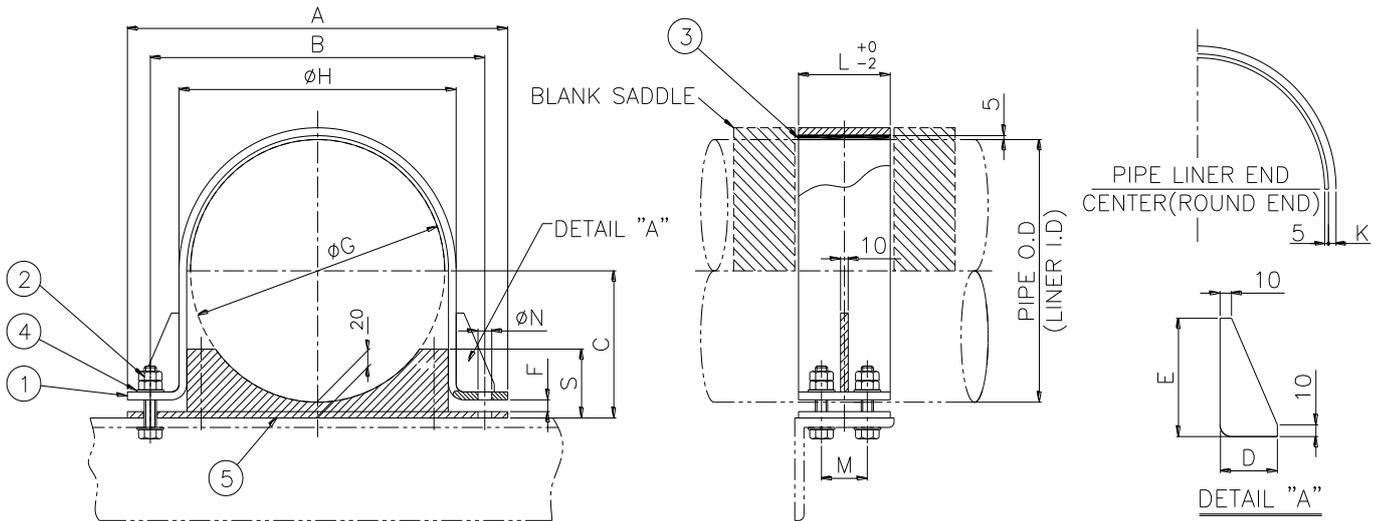
\* PAINT CODE :

◆ IMAGE ◆



STANDARD NAME	STRAP FOR GRP PIPE (FIXED TYPE)	M.R TECH
		MR-GRE-113

2. FIXED STRAP FOR G.R.E PIPE B-TYPE-A



\* STRAP TOLERANCE(I.D, O.D) : + 1%, - 0

\* "F" CAN BE CHANGED BY TOLERANCE OF GRP PIPE O.D AND BOLTING TORQUE FOR TIGHTNESS

\* EXCLUDE PAD

BALLAST SYSTEM

(based on atmospheric pressure)

N.D	O.D	A	B	C	D	E	F	GΦ	HΦ	S	K	L	M	NΦ	ANGLE SIZE	BOLT/NUT	WT(kg)
50A	61.9	187.0	137.0	50.95	45	30	10	71.9	83.9		6	100	50	14	50 x 50 x 6T	M12 x 65	1.83
65A																	
80A	90.5	225.5	175.5	65.25	45	35	10	100.5	112.5		6	100	50	14	75 x 75 x 6T	M12 x 65	1.91
100A	115.9	249.9	199.9	77.95	45	45	10	125.9	143.9		9	100	50	14	75 x 75 x 6T	M12 x 65	2.44
125A	142.6	271.6	221.6	91.3	45	45	10	152.6	170.6		9	100	50	14	75 x 75 x 6T	M12 x 65	3.61
150A	169.8	333.2	273.2	104.4	50	50	15	179.8	197.8		9	100	50	14	75 x 75 x 6T	M12 x 70	4.17
200A	222.3	385.4	325.4	131.15	50	50	15	232.3	250.3		9	100	50	14	100 x 100 x 10T	M12 x 70	5.00
250A	279.0	414.4	354.4	159.5	50	80	15	289.0	307.0		9	100	50	14	100 x 100 x 10T	M12 x 70	5.69
300A	332.8	498.0	438.0	186.4	50	100	15	342.8	362.8		10	120	64	18	130 x 130 x 12T	M16 x 80	8.67
350A	358.0	523.1	463.1	199.0	50	100	15	368.0	388.0		10	120	64	18	130 x 130 x 12T	M16 x 80	9.14
400A	408.9	577.9	517.9	224.45	50	100	15	418.9	442.9		12	120	64	18	130 x 130 x 12T	M16 x 85	10.10
450A	459.3	628.5	568.5	249.65	50	100	20	469.3	493.3		12	120	64	18	130 x 130 x 12T	M16 x 90	11.05
500A	510.2	679.6	619.6	275.1	50	100	20	520.2	544.2		12	140	80	18	130 x 130 x 12T	M16 x 90	15.66
550A	561.1	730.5	670.5	300.55	50	150	20	571.1	595.1		12	140	80	18	130 x 130 x 12T	M16 x 90	16.94
600A	611.9	785.3	725.3	325.95	50	150	20	621.9	649.9		14	140	80	18	130 x 130 x 12T	M16 x 90	18.22
650A	687.1	822.5	762.5	363.55	50	150	20	697.1	725.1		14	140	80	18	130 x 130 x 12T	M16 x 90	19.68
700A	739.9	913.1	853.1	389.95	50	150	20	749.9	777.9		14	140	80	18	130 x 130 x 12T	M16 x 90	21.43

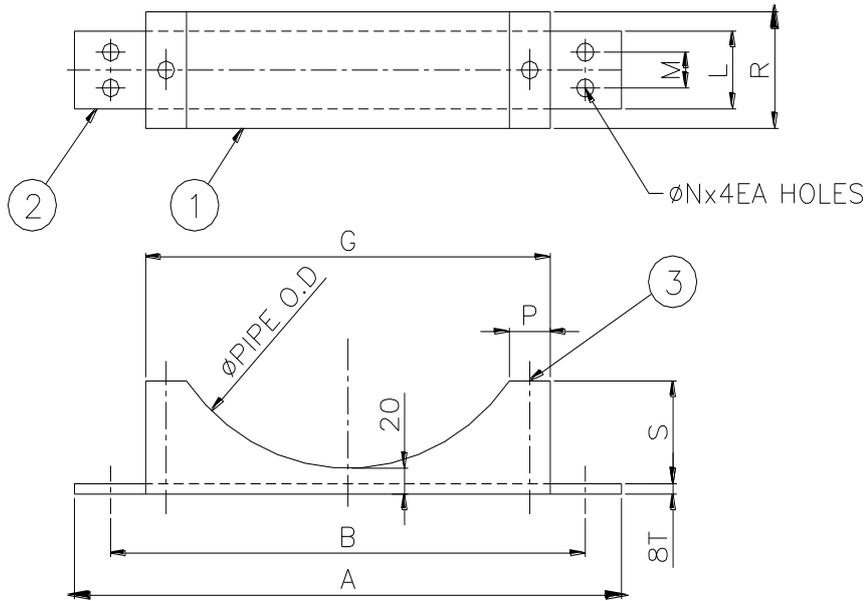
NO.	DESCRIPTION	MATERIAL	QTY	REMARK	NOTE
1	STRAP	SS400	1	PAINING	1. LINER OF NEOPRENE SHALL BE KEPT THE SHAPE BY MOULDING.
2	HEX BOLT + NUTS	SS400(G)	4#8		2. ALLOWANCE : (+0mm) - (-2mm), SPECIALLY DIMENSION 'L'.
3	LINER	NEOPRENE	1		3. STRAP AND LINER TO BE BONDED.
4	SPRING WASHER	SMR#27(G)	4		4. WELDING PART SHALL BE SMOOTHLY GRINDED.
5	SLIDING PAD	POLYETHYLENE(20T)	1		

NO.	DESCRIPTION	MATERIAL	QTY	REMARK	NOTE
1	STRAP	SS400	1	PAINING	1. LINER OF NEOPRENE SHALL BE KEPT THE SHAPE BY MOULDING.
2	HEX BOLT + NUTS	SS400(G)	4#8		2. ALLOWANCE : (+0mm) - (-2mm), SPECIALLY DIMENSION 'L'.
3	LINER	NEOPRENE	1		3. STRAP AND LINER TO BE BONDED.
4	SPRING WASHER	SMR#27(G)	4		4. WELDING PART SHALL BE SMOOTHLY GRINDED.



STANDARD NAME	<b>SLIDING PAD FOR GRP PIPE (FOR FIXED TYPE)</b>	M.R TECH  MR-GRE-114
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UNIT : mm

N.D	O.D	A	B	G	L	M	ΦN	P	R	S	WT(kg)	Q'TY
50A	61.0	187.0	137.0	71.9	100	50	12	13.64	130	21.5	1.25	
65A												
80A	90.5	225.5	175.5	100.5	100	50	12	18.9	130	24.6	1.55	
100A	115.9	249.9	199.9	125.9	100	50	12	19.15	130	32.0	1.81	
125A	142.6	271.6	221.6	152.6	100	50	12	21.75	130	37.6	2.00	
150A	169.8	332.2	273.2	179.2	100	50	14	24.8	130	50.2	2.45	
200A	222.3	385.4	325.4	231.4	100	50	14	30.9	130	59.5	3.59	
250A	279.0	414.4	354.4	288.4	100	50	14	37.6	130	69.7	5.04	
300A	332.8	498.0	438.0	342.0	120	64	18	43.8	150	79.3	7.93	
350A	358.0	523.1	463.1	367.1	120	64	18	46.8	150	83.8	8.97	
400A	408.9	577.9	517.9	417.9	120	64	18	52.7	150	92.9	11.31	
450A	459.3	628.5	568.5	468.5	120	64	18	58.6	150	102.0	13.90	
500A	510.2	679.6	619.6	519.6	140	80	18	64.6	170	111.0	21.34	
550A	561.1	730.5	670.5	570.5	140	80	18	70.6	170	120.1	25.36	
600A	611.9	785.3	725.3	621.3	140	80	18	76.5	170	129.2	29.75	
650A	687.1	822.5	762.5	696.5	140	80	18	85.3	170	142.6	36.70	
700A	739.9	913.1	853.1	749.1	140	80	18	91.5	170	152.0	42.33	

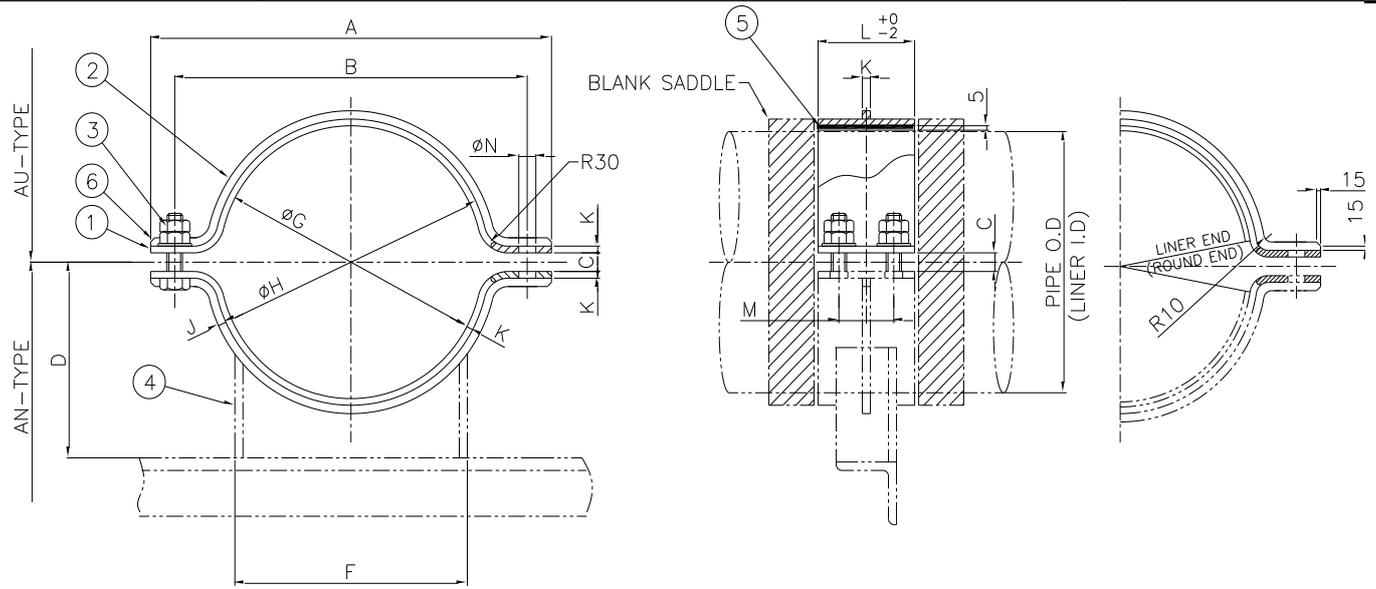
NO.	DESCRIPTION	MATERIAL	Q'TY	REMARK
1	PAD	POLYETHYLENE	1	MAKER SUPPLY
2	STEEL PLATE	SS400 GAL'V & PAINT	1	MAKER SUPPLY
3	HEX. SLOT BOLT	SS400(G)	2	MAKER SUPPLY

**NOTE**

\*PAINT CODE :



STANDARD NAME	STRAP FOR GRP PIPE (ANCHOR TYPE)	M.R TECH
		MR-GRE-115



1) APPLICATION: ANCHOR SUPPORTS ON ELBOWS & T-PIECE

2) STRAP TOLERANCE(I.D, O.D) : +1%, -0

3) "C" CAN BE CHANGED "B" TOLERANCE OF GRP PIPE O.D AND BOLTING TORQUE FOR TIGHTNESS.

\* 해당 치수는 PROJECT, MAKER 도면에 따라 재 검토 요망.

### BALLAST SYSTEM

(based on atmospheric pressure)

UNIT : mm

N.D	O.D	A	B	C	D	F	φG	φH	J	K	L	M	φN	LEG SIZE	BOLT/NUT	WT(kg)	
																UPPER	UNDER
50A	61.9	187.0	137.0	20	110	70	73.9	85.9	15	6	100	58	14	50 x 6T	M12 x 60	2.16	2.2
65A																	
80A	90.5	225.5	175.5	20	120	100	102.5	114.5	20	6	100	58	14	75 x 6T	M12 x 60	2.63	2.69
100A	115.9	249.9	199.9	20	130	120	127.9	139.9	25	6	100	58	14	75 x 6T	M12 x 60	2.75	3.81
125A	142.6	271.6	221.6	20	150	150	139.9	160.6	25	6	100	58	14	100 x 10T	M12 x 65	3.90	4.03
150A	169.8	337.2	277.4	20	180	170	181.2	201.2	25	10	140	64	18	100 x 10T	M16 x 75	5.38	6.48
200A	222.3	389.4	329.4	20	200	200	233.4	253.4	30	10	140	64	18	100 x 10T	M16 x 75	6.27	8.09
250A	279.0	446.9	386.9	20	230	250	290.9	310.9	30	10	140	64	18	100 x 10T	M16 x 75	7.13	8.98
300A	332.8	500.2	440.2	20	250	300	344.2	364.2	30	10	140	64	18	100 x 10T	M16 x 75	7.90	9.07
350A	358.0	525.6	465.6	20	280	360	369.6	389.6	30	10	140	64	18	100 x 10T	M16 x 75	8.28	11.07
400A	408.9	580.7	520.7	20	320	420	420.7	444.7	35	12	160	80	18	100 x 12T	M16 x 80	12.06	15.56
450A	459.3	631.3	571.3	20	350	450	471.3	495.3	35	12	160	80	18	100 x 12T	M16 x 80	13.07	16.55
500A	510.2	682.6	622.6	20	370	500	522.6	546.6	35	12	200	100	22	130 x 12T	M20 x 85	12.10	21.51
550A	561.1	733.5	673.5	20	400	550	573.5	597.5	35	12	200	100	22	130 x 12T	M20 x 85	17.12	23.02
600A	611.9	784.8	724.8	20	430	600	624.8	648.8	40	12	220	110	22	130 x 16T	M20 x 85	18.54	24.91
650A	687.1	864.0	804.0	20	470	680	700.0	728.0	40	14	220	110	26	130 x 16T	M24 x 95	20.15	28.20
700A	739.9	917.1	857.1	20	500	720	753.1	781.1	40	14	220	110	26	130 x 16T	M24 x 95	21.28	30.47

NO.	DESCRIPTION	MATERIAL	Q'TY	REMARK
1	STRAP	SS400	2	HOT DIP GAL'V
2	BRACKET	SS400	2	HOT DIP GAL'V
3	HEX, BOLT/NUT	SS400(G)	4+8	GAL'V THICK ≥ 15μm MAKER SUPPLY
4	LEG	SS400	2	HOT DIP GAL'V
5	LINER	NEOPRENE	2	MAKER SUPPLY
6	SPRING WASHER	SWRH27(G)	4	MAKER SUPPLY

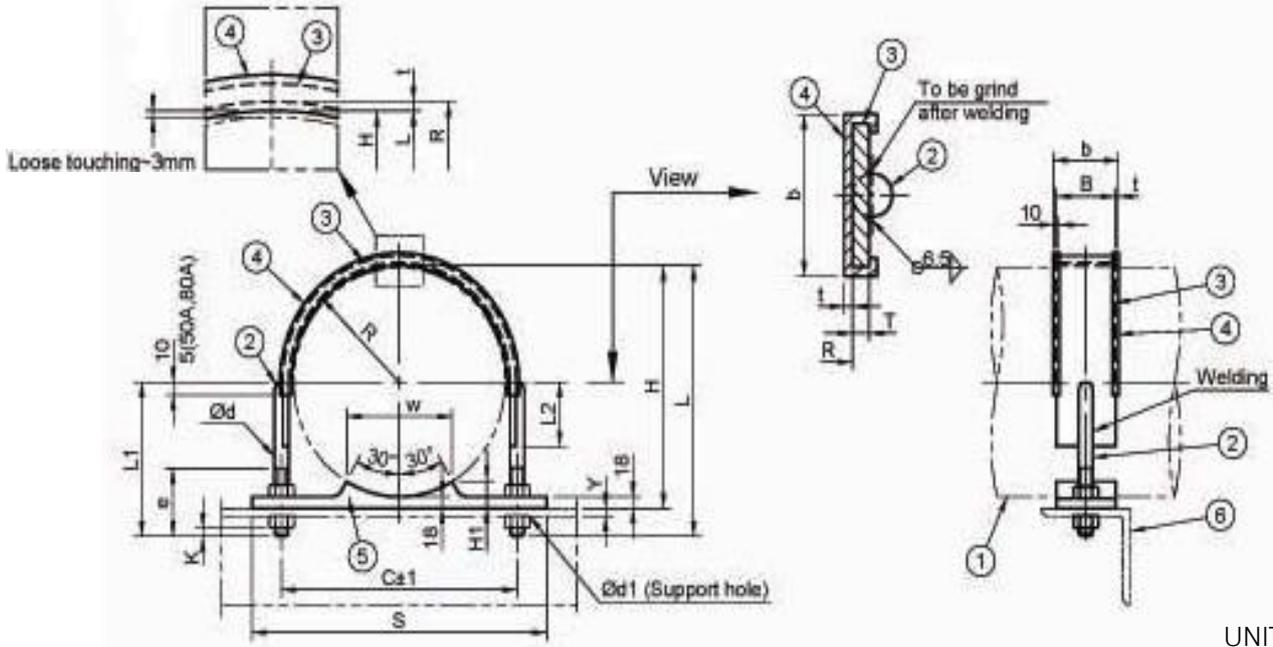
#### NOTE

- LINER OF NEOPRENE SHALL BE KEPT THE SHAPE BY MOULDING.
- ALLOWANCE : (+10mm)~(-2mm), SPECIALLY DIMENSION 'L'
- STRAP AND LINER TO BE BONDED
- WELDING PART SHALL SMOOTHLY GROUNDED

#### ◆ IMAGE ◆



STANDARD NAME	<b>STRAP FOR GRP PIPE</b> (HOT DIP GALVANNIZED)	M.R TECH MR-GRE-118
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UNIT:mm

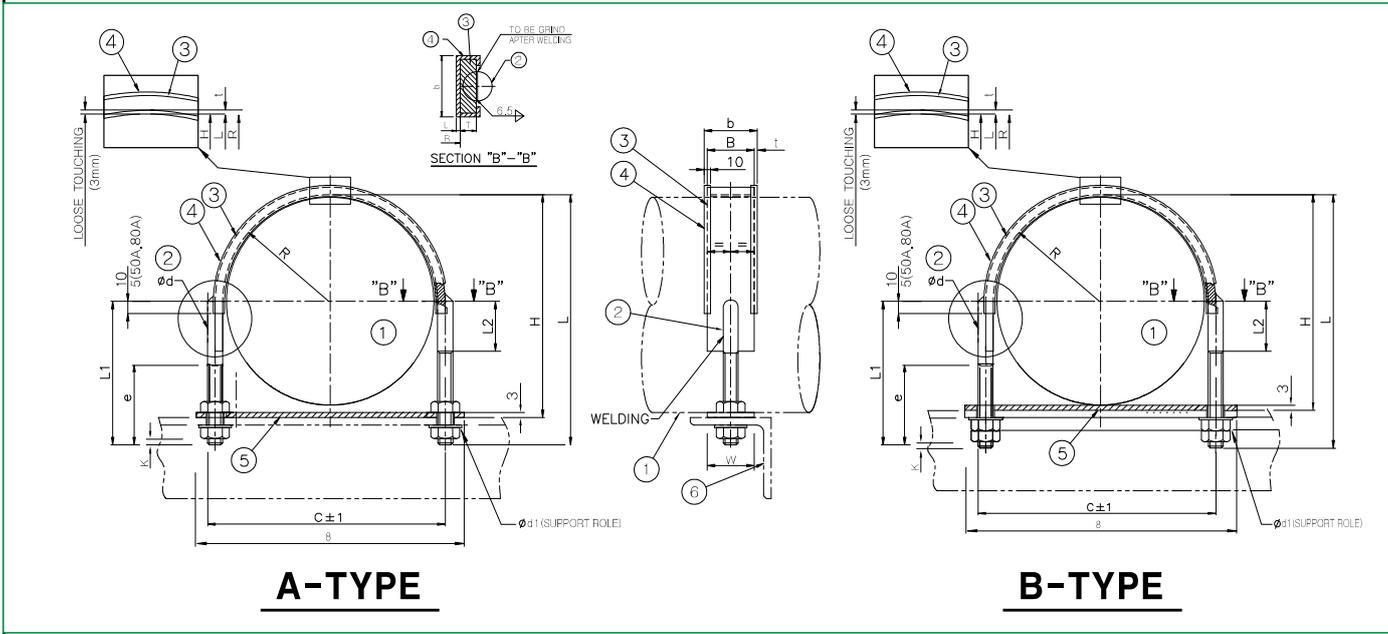
N.D	O.D	H	C	R	BXT	bXt	BOLT SIZE	L1	L2	e	d	d1	L	K	Y	W	H1	S	WT (kg)
40 A	53.2	74.2	75.0	31.00	50 X 5	56 X 3	M 10 X 60	10	50	10	12	96	3.0	12	23	20	125	0.23	
50 A	61.5	82.5	84.0	37.00	50 X 5	56 X 3	M 10 X 75	10	55	10	12	106	3.0	12	31	22	135	0.25	
80 A	90.2	111.2	114.0	51.00	50 X 5	56 X 3	M 12 X 90	20	60	12	15	137	3.5	12	45	24	165	0.31	
100 A	115.6	136.6	146.0	65.00	60 X 10	66 X 3	M 16 X 105	25	70	16	20	166	4.0	12	58	26	205	0.45	
125 A	142.3	163.4	172.0	78.00	60 X 10	66 X 3	M 16 X 120	40	70	16	20	192	4.0	12	71	28	240	0.94	
150 A	169.2	190.2	198.0	91.00	60 X 10	66 X 3	M 16 X 135	40	70	16	20	220	4.0	12	85	29	255	1.14	
200 A	221.4	242.4	254.0	117.00	60 X 10	66 X 3	M 20 X 165	50	80	20	24	276	5.0	12	111	33	320	1.34	
250 A	278.4	299.4	312.0	146.00	60 X 10	66 X 3	M 20 X 195	80	85	20	24	334	6.0	12	140	37	385	2.26	
300 A	332.0	353.0	368.0	172.00	60 X 10	70 X 3	M 24 X 225	80	85	24	28	390	6.0	12	166	40	445	3.47	
350 A	357.1	378.1	398.0	187.00	80 X 10	90 X 5	M 24 X 235	100	105	24	28	415	6.0	12	179	42	470	5.42	
400 A	407.9	428.9	454.0	212.00	90 X 12	100 X 5	M 30 X 265	100	110	30	35	472	7.0	12	204	45	545	5.97	
450 A	458.5	479.5	506.0	238.00	90 X 12	100 X 5	M 30 X 290	110	115	30	35	523	7.0	12	229	49	595	7.62	
500 A	509.6	530.6	556.0	263.00	100 X 12	110 X 5	M 30 X 320	110	130	30	35	575	8.0	12	255	52	650	9.09	
550 A	560.5	581.5	608.0	289.00	100 X 12	110 X 5	M 30 X 345	110	130	30	35	626	8.0	12	280	56	700	11.70	
600 A	611.3	632.3	664.0	314.00	100 X 12	110 X 5	M 36 X 375	110	130	36	42	681	8.0	12	306	59	760	13.10	
650 A	686.5	707.5	740.0	352.00	110 X 14	120 X 5	M 36 X 410	110	130	36	42	757	8.0	12	343	64	850	16.90	
700 A	739.1	760.1	792.0	378.00	110 X 14	120 X 5	M 36 X 440	120	135	36	42	809	8.0	12	370	68	885	18.40	

NO	DESCRIPTION	MATERIAL	Q'TY	REMARK	NOTE
1	PIPE	G.R.P	2	YARD SUPPLY	1.GRP PIPE OR SDSS PIPE OR
2	GUIDE BOLT & NUT	SS400(G)	-	GAL'V THICK ≥ 15 <sub>µm</sub> MAKER SUPPLY	2.③STRAP AND ④LINING TO B
3	STRAP	SS401(G)	1	GAL'V THICK ≥ 16 <sub>µm</sub> MAKER SUPPLY	3.WELDING PART SHALL SMOO
4	LINING	NEOPRENE	1	MAKER SUPPLY	
5	SLIDING PAD	POLYETHYENE(20T)	1	MAKER SUPPLY	
6	SUPPORT	SS400	-	YARD SUPPLY	

NO	DESCRIPTION	MATERIAL	Q'TY	REMARK	NOTE
1	PIPE	G.R.P	2	YARD SUPPLY	1.GRP PIPE OR SDSS PIPE OR CU-NI PPE.
2	GUIDE BOLT & NUT	SS400(G)	-	GAL'V THICK ≥ 15 <sub>µm</sub> MAKER SUPPLY	2.③STRAP AND ④LINING TO BE BONDED.
3	STRAP	SS401(G)	1	GAL'V THICK ≥ 16 <sub>µm</sub> MAKER SUPPLY	3.WELDING PART SHALL SMOOTHLY GROUND.
4	LINING	NEOPRENE	1	MAKER SUPPLY	
5	SLIDING PAD	POLYETHYENE(20T)	1	MAKER SUPPLY	



STANDARD NAME	PIPE STRAP FOR STAINLESS STEEL PIPE	M.R TECH MR-STN-116
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UNIT : mm

N.D	O.D	H	C	R	B X T	b X t	BOLT SIZE	L2	e	Ød	Ød1	L	K	S	W	ANGLE	WT(kg)
							L1										
15	1/2	21.7	27.7	42	16	50 X 3	56 X 3	M 10 X 30	4	26	10	12	46	3	84	50	50 X 40 X 5 T
20	3/4	27.2	33.2	46	18	50 X 3	56 X 3	M 10 X 34	5	29	10	12	52	3	88	50	50 X 40 X 5 T
25	1	34.0	40.0	54	22	50 X 3	56 X 3	M 10 X 36	5	30	10	12	58	3	96	50	50 X 40 X 5 T
32	1 1/4	42.7	48.7	62	26	50 X 3	56 X 3	M 10 X 41	7	32	10	12	67	3	104	50	50 X 40 X 5 T
40	1 1/2	48.6	54.6	68	29	50 X 3	56 X 3	M 10 X 44	10	33	10	12	73	3	110	50	50 X 40 X 5 T
50	2	60.5	66.5	80	35	50 X 3	56 X 3	M 10 X 50	10	36	10	12	85	3	122	50	50 X 40 X 5 T
65	2 1/2	76.3	82.3	96	43	50 X 3	56 X 3	M 10 X 60	15	36	10	12	103	3	138	50	50 X 50 X 6 T
80	3	89.1	95.1	110	49	50 X 3	56 X 3	M 12 X 68	20	40	12	15	117	3	155	50	50 X 50 X 6 T
100	4	114.3	120.3	140	62	60 X 3	66 X 3	M 16 X 84	25	50	16	19	146	4	189	60	65 X 65 X 6 T
125	5	139.8	145.8	166	75	60 X 3	66 X 3	M 16 X 96	35	55	16	19	171	4	215	60	65 X 65 X 6 T
150	6	165.2	171.2	190	87	60 X 3	66 X 3	M 16 X ##	40	60	16	19	197	4	239	60	65 X 65 X 6 T
200	8	216.3	222.3	246	113	60 X 3	66 X 3	M 20 X ##	50	65	20	24	255	5	300	60	75 X 75 X 9 T
250	10	267.4	273.4	298	139	60 X 3	66 X 3	M 20 X ##	60	70	20	24	306	5	352	60	75 X 75 X 9 T

NO	DESCRIPTION	MATERIAL	Q'TY	REMARK
1	PIPE	SUS 316		YARD SUPPLY
2	GUIDE BOLT&NUT	SUS 316		
3	STRAP	SUS 316		
4	LINING	NEOPRENE		SHORE HARDNESS 70±5
5	SLIDING PAD	SUS 316(3T)		MAKER SUPPLY
6	SUPPORT	SS400		YARD SUPPLY



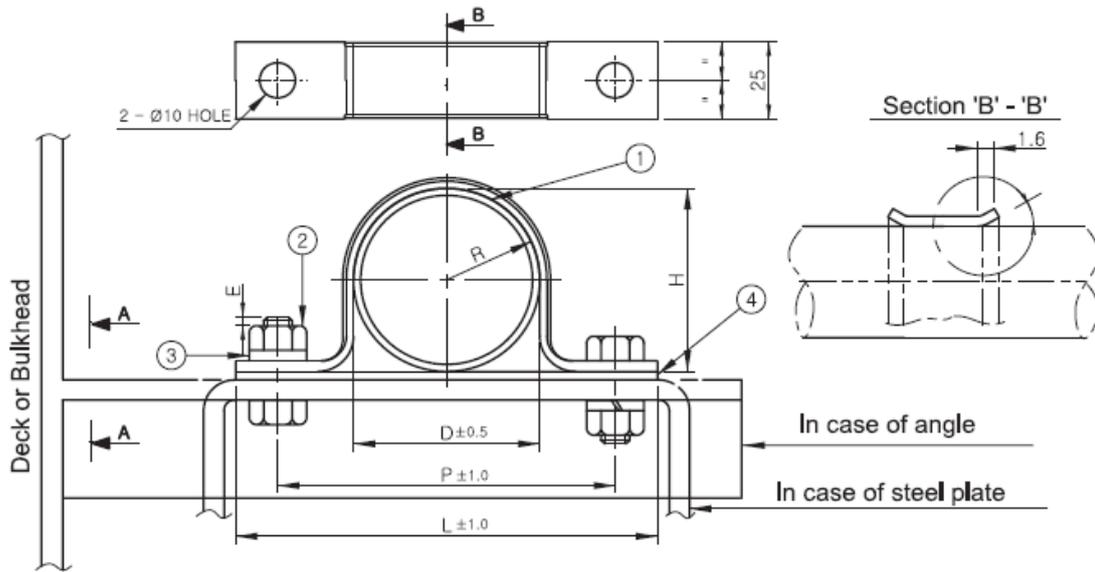
NOTE

- ③STRAP AND ④LINING TO BE BONDED.
- WELDING PART SHALL BE DONE SMOOTHLY GROUND.
- DUPLEX SUS PIPE & TITANIUM PIPE 적용  
(\* O.D의 차이만큼 치수변경됨)

# COPPER & COPPER ALLOY BAND FOR PIPE

## 1. Scope

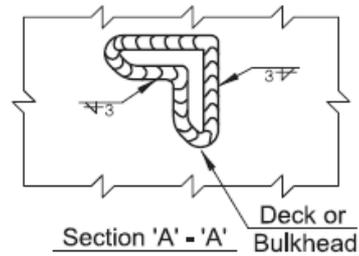
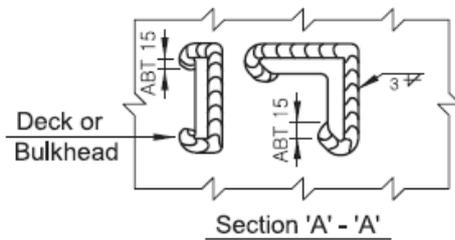
This standard stipulates pipe support for copper pipe and copper alloy pipe(except Cu-Ni pipe) in tank, engine room and accommodation area, except refrigerant line.



## 2. Welding method

Case 1 : Behind of lining and ceiling in accommodation area, Tank and engine room area except wet space

Case 2 : Wet space where have not lining and ceiling



## 3. Material List

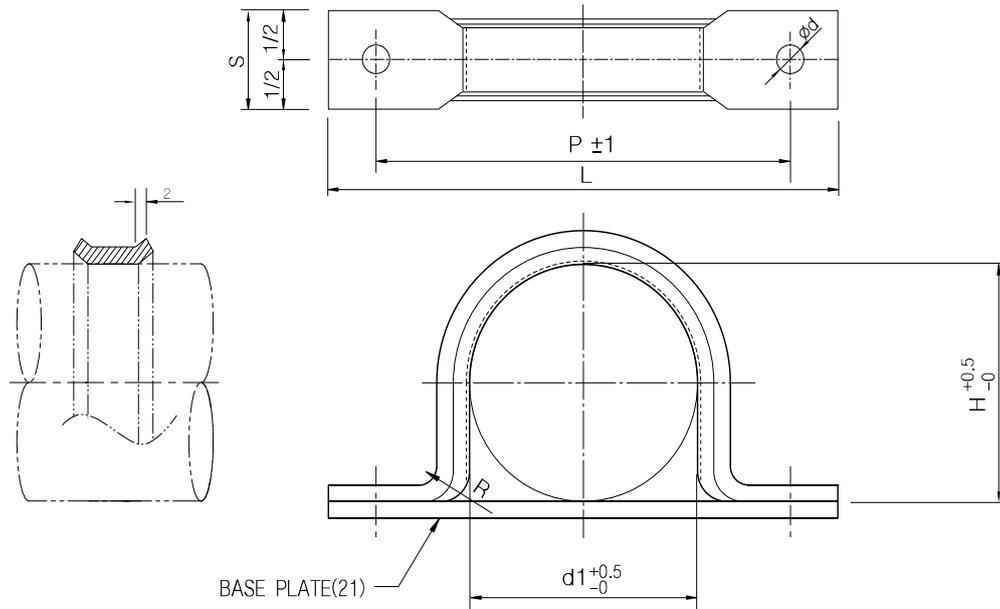
No.	Designation	Material
1	Clip	Brass : 1.6t
2	Hex. Bolt / Nut	JIS G3101 SS400 Galvanized
3	Spring washer	BSBM2
4	Base Plate	Brass : 1.0t

No.	Pipe O.D	Size					Hex. Bolt /Nut		Weight(Kg)
		H	P	R	D	L	Size X Length	E	
1	15.0	16	42	8	16	54	M8 X 20L	3.9	0.135
2	20.0	21.6	45	10.5	21	68	M8 X 20L	3.9	0.139
3	25.0	27	53	13	26	76	M8 X 20L	3.9	0.144
4	30.0	32	65	15.5	31	88	M8 X 20L	3.9	0.149
5	35.0	37	75	18	36	98	M8 X 20L	3.9	0.16
6	40.0	42	80	20.5	41	102	M8 X 20L	3.9	0.194
7	45.0	47	90	23	46	114	M8 X 20L	3.9	0.194
8	55.0	57	100	28	56	123	M10X20L	1.9	0.25

STANDARD  
NAME

NON-FERROUS PIPE STRAP

M.R TECH  
MR-NF-117

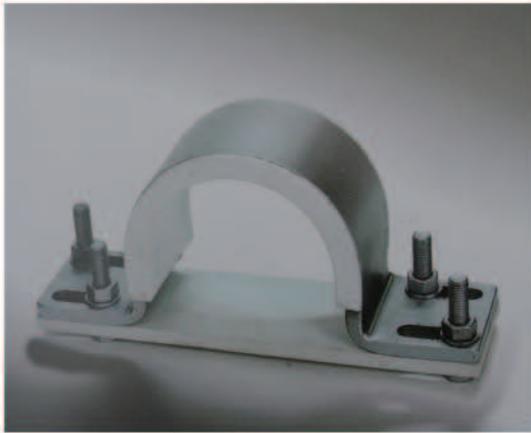


UNIT : mm

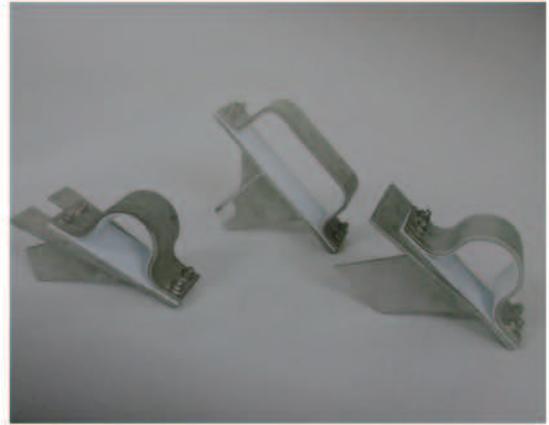
PIPE		STRAP							BOLT		BOLT HOLE	Weight (kg)
N.D	O.D	L	P	H	d1	S	d	R	SIZE	L		
6A	8	57	40	7	9	25	7	2	M6	20	8	0.05
8A	10			9	14							
	12			11	16							
10A	15	14	19									
	18	17	22									
15A	20	68	48	19	23		10	2	M8	10	0.06	
	22			21	25							
20A	25	85	60	24	29	12	3	M10	25	12	0.07	
25A	30	95	70	29	34							
32A	35	105	80	34	38							
40A	45	116	90	44	48	32	3	M10	25	12	0.18	
50A	55	140	110	54	55							
	57			57	57							
	60.3			60	60.3							

◆IMAGE◆

# THE OTHER PRODUCTS



U-STRAP



SPRAY SUPPORT



PIPE SUPPORTS FOR  
NON-INSULATED LINES



U-BOLT



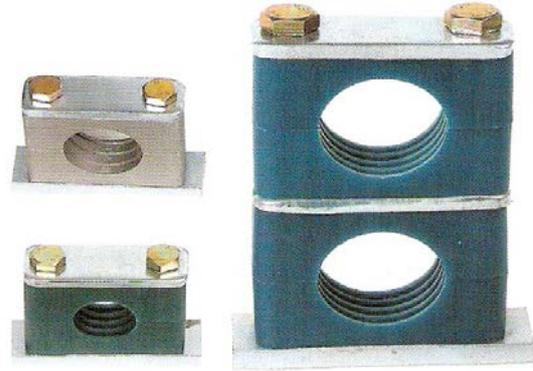
C.T.S SUPPORT

# HEAVY TYPE

## 헤비타입 파이프 클램프

### ◆ 디자인

- 레일타입은 모든시리즈(H-30.40.50.60)에 사용 할 수 있다.
- 한 쌍의 클램프를 결합하는 금속타입은 모든 시리즈에 사용 할 수 있다.
- 결합해서 조이는 두 금속타입은 모든 시리즈에 사용 할 수 있다.

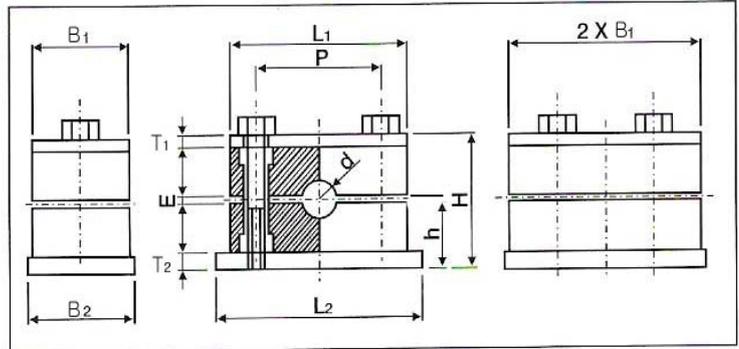


### ◆ 클램프 재료

- 폴리프로필렌 PP
- 폴리아미드 PA
- 알루미늄 AL

### ◆ 부속품 재료

- 모든 부분의 금속은 스테인레스를 사용할수 있다(레일너트 제외).



### ◆ Specifications

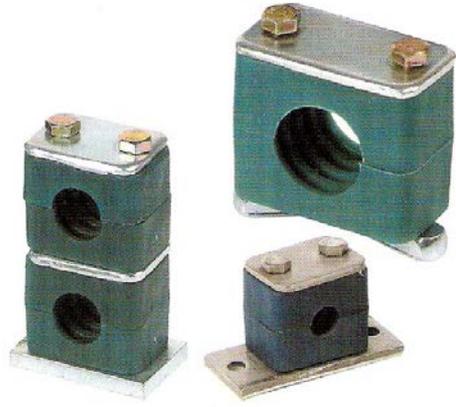
Series	Tubings			Dimensions(mm)										Bolt
	A	IN	DØ	L1	B1	T1	L2	B2	T2	E	h	H	P	
H-30			6	55	30	6	73	32	9	2	25	52	33	M10 X 45
			8											
	6	1/8	10.5											
			12											
	8	1/4	13.8											
H-40			15	70	30	6	85	32	9	2	33	68	45	M10 X 60
			20											
	15	1/2	21.7											
			25											
	20	3/4	27.2											
H-50			25	85	30	6	100	32	9	2	38	78	60	M10 X 70
			30											
			32											
			34											
			35											
H-60			38	115	45	8	150	50	9	3	58	119	90	M12 X 110
			40											
			45											
	32	1 1/4	42.7											
			50											
H-70			55	150	60	10	200	65	9	3	72	147	122	M16 x 140
			60.5											
			65											
			70											
			73											
H-80			76.3	205	80	16	270	90	16	3	101	205	168	M20 X 190
			80											
	65	2 1/2	76.3											
H-90			89.1	250	90	16	310	100	16	4	115	234	205	M24 X 230
			101.6											
			114.3											
H-100			139.8	320	122	25	380	130	25	4	160	324	265	M30 X 310
			165.2											
			216.4											
H-110			267.4	466	160	30	520	170	30	10	235	480	395	M33 X 460
			318.5											
			355.6											
H-120			406.4	630	180	36	680	190	36	30	301	632	535	M36 X 580
			400											

# STANDARD TYPE

## 스탠다드 타입 파이프클램프

### ◆ 디자인

- 레일타입은 모든시리즈 사용 할 수 있다.
- 한 쌍의 클램프를 결합하는 금속타입은 모든 시리즈에 사용 할 수 있다.
- 결합해서 조이는 두 금속타입은 모든 시리즈에 사용 할 수 있다.

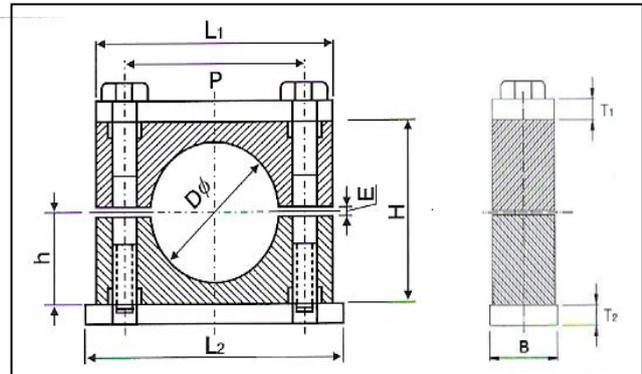


### ◆ 클램프 재료

- 폴리프로필렌 PP
- 폴리아미드 PA

### ◆ 부속품 재료

- 모든 부분의 금속은 스테인레스를 사용할수 있다(레일너트 제외).

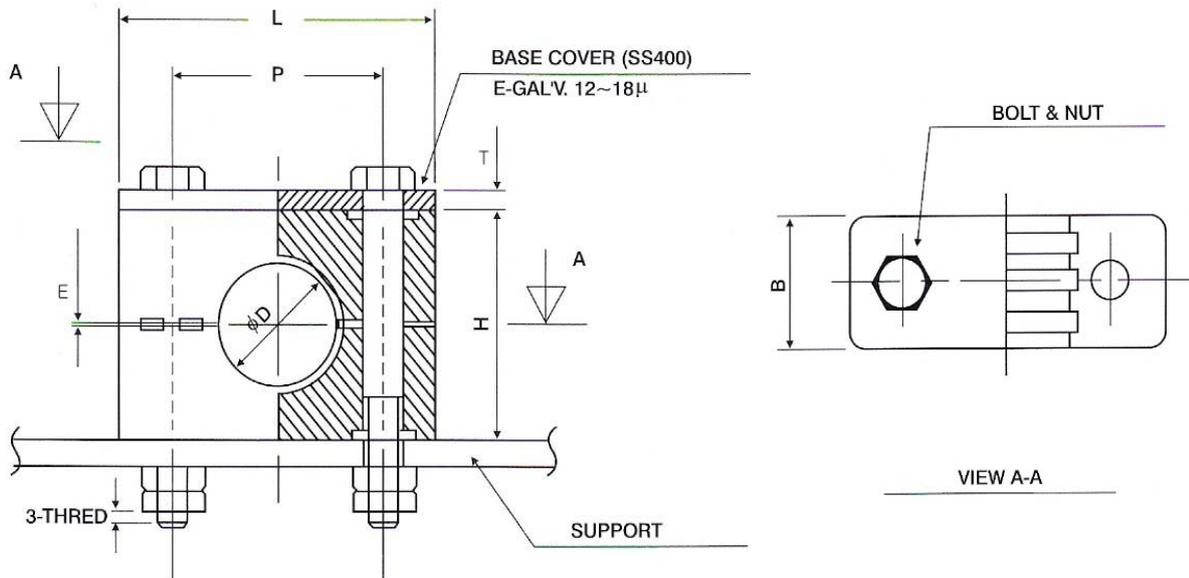


### ◆ Specifications

Series	DØ			Dimensions(mm)									Bolt
	A	IN	DØ	L1	L2	B	T1	T2	E	h	H	P	
S-1		1/4	6.35	28	38	32	3	6	0.4	13	27		M6 X 30
		5/16	8										
		3/8	9.5										
	6		10										
S-2			12	37	47	32	3	6	0.5	13	27	20	M6 X 30
		1/4	6.35										
		5/16	8										
		3/8	9.5										
	6		10										
S-3		1/2	12.7	43	53	32	3	6	0.6	16	33	26	M6 X 35
			13.5										
	8		14										
		5/8	16										
	10		17.2										
S-4		3/4	19	50	60	32	3	6	0.8	17	35	33	M6 X 40
			20										
	15		21.3										
		7/8	22										
S-5		1	25	57	67	32	3	6	0.8	21	44	40	M6 X 45
			27.3										
	20		28										
			30										
S-6		1 1/4	32	69	79	32	3	6	0.8	28	56	52	M6 X 60
			32										
	25		34										
			35										
S-7		1 1/2	38	86	96	32	3	6	1.0	32	66	66	M6 X 70
			42										
	32		44.5										
			48.3										
	1 3/4	50.8											
	2	54											

# BOLTING TYPE

## 볼팅 타입 파이프클램프



### ◆ Specifications

Series	DØ		Dimensions(mm)						Bolt	
	A	IN	DØ	L	B	T	E	H		P
B-1			6	40	30	4.5	1	34	23	M8 X 65
		1/4	6.35							
		5/16	8							
		3/8	9.5							
B-2	6		10.5	43	30	4.5	1	36	26	M8 X 65
		1/2	12							
	8		13.8							
B-3			15	48	30	4.5	1	39	30	M8 X 70
		5/8	16							
			17.3							
B-4		3/4	20	52	30	4.5	2	40	33	M8 X 70
	15		21.7							
		7/8	22							
		1	25							
B-5	20		27.3	58	30	6	2	43	40	M8 X 75
			28							
			30							
B-6	25		34	75	30	6	2	46	51	M10 X 80
			35							
B-7	32		42.7	83	30	6	2	60	58	M10 X 95
B-8	40		48.6	92	30	6	3	74	67	M10 X 110
B-9	50		60.5	103	45	6	3	84	79	M12 X 125
B-10	65		76.3	130	45	8	3	112	100	M16 X 165
B-11	80		89.1	143	50	8	3	125	113	M16 X 175

# TWIN TYPE

## 트윈 타입 파이프클램프

### ◆ 디자인

- 레일타입은 모든시리즈 사용 할 수 있다.
- 한 쌍의 클램프를 결합하는 금속타입은 모든 시리즈에 사용 할 수 있다.
- 결합해서 조이는 두 금속타입은 모든 시리즈에 사용 할 수 있다.

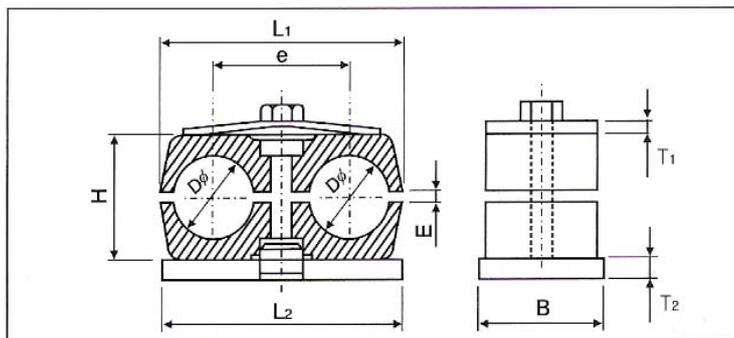


### ◆ 클램프 재료

- 폴리프로필렌 PP
- 폴리아미드 PA

### ◆ 부속품 재료

- 모든 부분의 금속은 스테인레스를 사용할수 있다(레일너트 제외).

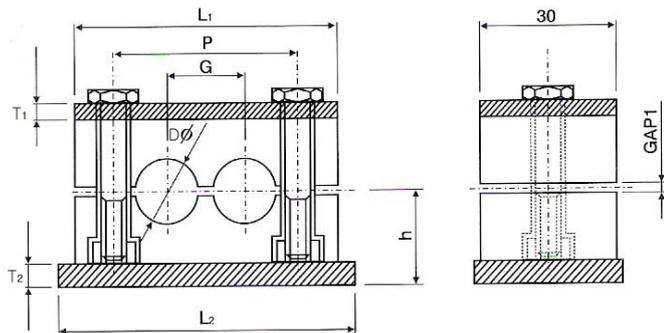
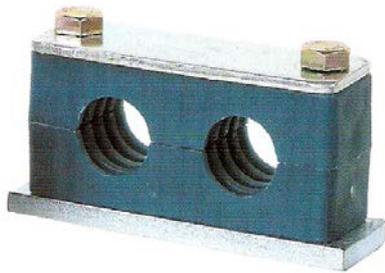


### ◆ Specifications

Series	DØ			Dimensions(mm)								Bolt
	A	IN	DØ	L1	L2	B	T1	T2	E	P	e	
ST-1			6	36	37	32	3	4.5	0.6	27	20	M6 x 35
		1/4	6.4									
			8									
		3/8	9.5									
	6		10									
ST-2			12	54	55	32	3	4.5	0.8	27	29	M8 x 35
		1/2	12.7									
			13.5									
			14									
		5/8	15									
ST-3			16	67	70	32	3	4.5	1.0	37	36	M8 x 45
		3/4	19									
			20									
	15		21.3									
		7/8	22									
ST-4			25	80	85	32	3	4.5	1.0	45	45	M8 x 50
			27.3									
			28									
			30									
ST-5			32	106	110	32	3	4.5	1.0	54	56	M8 x 65
		1 1/4	34									
	25		35									
		1 1/2	38									

# MULTI LINE TYPE

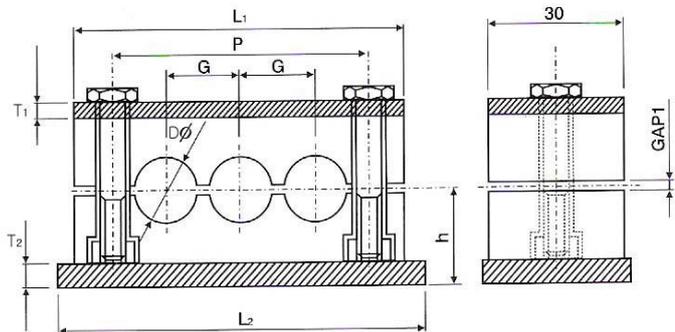
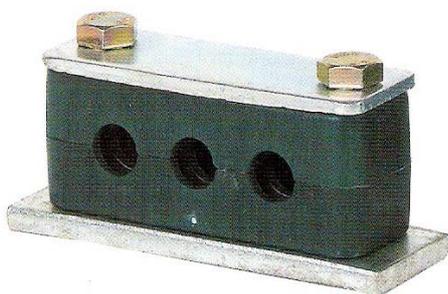
## 2 LINE TYPE



### ◆ Specifications

DØ			Dimensions(mm)							Bolt
A	IN	DØ	L <sub>1</sub>	L <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	G	h	P	
	1/4	Ø6 X 2	62	76	3	6	18.5	20	42	M8 X 38
	5/16	Ø8 X 2	62	76	3	6	20	20	42	M8 X 38
6	3/8	Ø10 X 2	62	76	3	6	20	20	42	M8 X 38
	1/2	Ø12 X 2	62	76	3	6	20	20	42	M8 X 38
8		Ø15 X 2	76	89	3	6	29	22	58	M8 X 43
		Ø16 X 2	76	89	3	6	29	22	58	M8 X 43
10	5/8	Ø17.3 X 2	76	89	3	6	29	22	58	M8 X 43
15		Ø21.7 X 2	101	115	3	6	35	29	80	M8 X 55
20	7/8	Ø25 X 2	101	115	3	6	35	29	80	M8 X 55
		Ø34 X 2	151	166	3	9	54	34	126	M8 X 75
32		Ø42 X 2	151	166	3	9	54	34	126	M8 X 75

## 3 LINE TYPE

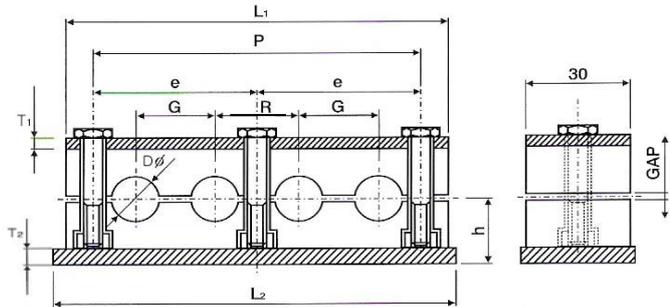


### ◆ Specifications

DØ			Dimensions(mm)							Bolt
A	IN	DØ	L <sub>1</sub>	L <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	G	h	P	
	1/4	Ø6 X 3	85	100	3	6	21	22	65	M8 X 38
	5/16	Ø8 X 3	85	100	3	6	21	22	65	M8 X 38
6	3/8	Ø10 X 3	85	100	3	6	21	22	65	M8 X 38
	1/2	Ø12 X 3	85	100	3	6	21	22	65	M8 X 38
8		Ø15 X 3	108	123	3	6	27	22	88	M8 X 38
		Ø16 X 3	108	123	3	6	27	22	88	M8 X 38
10	5/8	Ø17.3 X 3	108	123	3	6	27	22	88	M8 X 38
15		Ø21.7 X 3	130	145	3	6	27	27	110	M8 X 55
20	7/8	Ø25 X 3	130	145	3	6	27	27	110	M8 X 55

# MULTI LINE TYPE

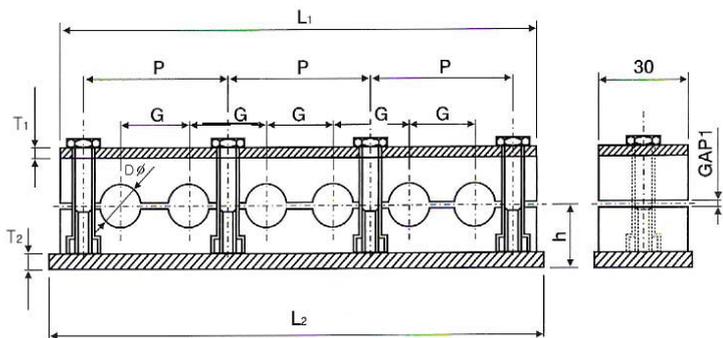
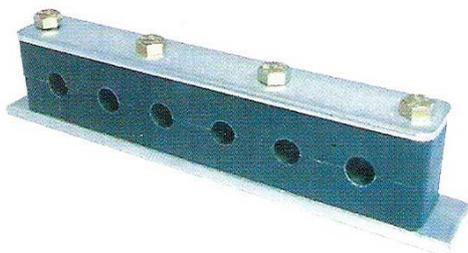
## 4 LINE TYPE



### ◆ Specifications

DØ			Dimensions(mm)									Bolt
A	IN	DØ	L1	L2	T1	T2	G	R	h	P	e	
	1/4	Ø6 X4	107	123	3	6	18.5	18.5	21	87		M8 X 38
	5/16	Ø8 X4	107	123	3	6	18.5	18.5	21	87		M8 X 38
6	3/8	Ø10 X4	107	123	3	6	18.5	18.5	21	87		M8 X 38
	1/2	Ø12 X4	107	123	3	6	18.5	18.5	21	87		M8 X 38
8		Ø15 X4	143	157	3	6	27	35	21	123	61.5	M8 X 43
10	5/8	Ø17.3 X4	143	157	3	6	27	35	21	123	61.5	M8 X 43
15		Ø20 X4	143	157	3	6	27	35	21	123	61.5	M8 X 43

## 6 LINE TYPE



### ◆ Specifications

DØ			Dimensions(mm)							Bolt
A	IN	DØ	L1	L2	T1	T2	G	h	P	
	1/4	Ø6 X6	200	220	3	6	21	22	65	M8 X 43
	5/16	Ø8 X6	200	220	3	6	21	22	65	M8 X 43
6	3/8	Ø10 X6	200	220	3	6	21	22	65	M8 X 43
	1/2	Ø12 X6	200	220	3	6	21	22	65	M8 X 43
8		Ø12.7 X6	200	220	3	6	27	22	88	M8 X 43
		Ø13 X6	200	220	3	6	27	22	88	M8 X 43
		Ø15 X6	200	220	3	6	27	22	88	M8 X 43