

Macalloy Tension Structures

Technical Data

TABLE 1					
Product Name	Material	Characteristic Yield Stress N/mm²	Ultimate Tensile Stress N/mm²	Min. Elongation %	Min. Charpy Impact J@-20°C
Macalloy 460	Carbon Steel	460	610	19	27
Macalloy S460	Stainless Steel	460	610	15	27
Macalloy 520	Carbon Steel	520	690	19	27
Macalloy S520 (M10-M76)	Stainless Steel	520	690	15	27
Macalloy S520 (M80 & Above)*	Stainless Steel	CONTACT MACALLOY FOR FURTHER DETAILS			
Macalloy 550	Carbon Steel	550	700	19	27
Macalloy S550 (M10-M76)	Stainless Steel	550	700	15	27
Macalloy S550 (M80 & Above)*	Stainless Steel	CONTACT MACALLOY FOR FURTHER DETAILS			
*PLEASE CONTACT MACALLOY FOR FURTHER DETAILS					

TABLE 2			
MAXIMUM LENGTH OF INDIVIDUAL BAR			
DIAMETER	STAINLESS STEEL	CARBON	GALVANISED
M10 – M12	6.0m	8.5m	6.0m
M16 – M30	6.0m	11.8m	11.8m
M36 – M100	6.0m	11.8m	11.8m
M105 – M120	CONTACT MACALLOY FOR DETAILS		

TABLE 3																					
TENDON CAPACITIES FOR CARBON AND STAINLESS 460																					
THREAD (CARBON & STAINLESS)	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	M80	M85	M90	M95	M100	M105	M110	M120
Nominal Bar Dia. (mm)	10	11	15	19	22	28	34	39	44	52	59	67	71	78	83	87	93	98	103	110	120
Design Resistance to EC3 NR,d (kN)	24	35	66	103	149	238	348	479	630	871	1149	1401	1677	1875	2138	2418	2714	3029	3360	3709	4459
Min. Yield Load (kN)	25	37	69	108	156	249	364	501	660	912	1204	1467	1756	1964	2239	2533	2843	3172	3520	3885	4671
Min. Break Load (kN)	33	48	91	143	207	330	483	665	875	1209	1596	1946	2329	2604	2969	3358	3769	4206	4667	5152	6194
Nominal Bar Weight (kg/m)	0.6	0.8	1.5	2.5	3.1	5.2	7.3	9.9	12.5	16.7	22.2	27.7	32.9	37.5	42.5	49.9	53.3	59.2	68.0	74.6	88.8

TABLE 4

TENDON CAPACITIES FOR CARBON AND *STAINLESS 520																					
THREAD (CARBON)	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	M80	M85	M90	M95	M100	M105	M110	M120
THREAD (STAINLESS)	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	*CONTACT MACALLOY FOR FURTHER DETAILS							
Nominal Bar Dia. (mm)	10	11	15	19	22	28	34	39	44	52	59	67	71	78	83	87	93	98	103	110	120
Design Resistance to EC3 NR,d (kN)	27	39	74	117	168	269	393	541	713	985	1300	1584	1897	2121	2418	2735	3070	3426	3801	4196	5044
Min. Yield Load (kN)	28	41	78	122	176	282	412	567	746	1031	1361	1659	1986	2220	2531	2863	3213	3586	3979	4392	5280
Min. Break Load (kN)	38	55	103	162	234	374	546	752	990	1368	1806	2201	2635	2946	3359	3799	4264	4758	5279	5828	7006
Nominal Bar Weight (kg/m)	0.6	0.8	1.5	2.5	3.1	5.2	7.3	9.9	12.5	16.7	22.2	27.7	32.9	37.5	42.5	49.9	53.3	59.2	68.0	74.6	88.8
*FOR STAINLESS 520 DIAMETERS M80 & ABOVE PLEASE CONTACT MACALLOY FOR FURTHER DETAILS																					

*FOR STAINLESS 520 DIAMETERS M80 & ABOVE PLEASE CONTACT MACALLOY FOR FURTHER DETAILS

TABLE 5

TENDON CAPACITIES FOR CARBON AND *STAINLESS 550																					
THREAD (CARBON)	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	M80	M85	M90	M95	M100	M105	M110	M120
THREAD (STAINLESS)	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	*CONTACT MACALLOY FOR FURTHER DETAILS							
Nominal Bar Dia. (mm)	10	11	15	19	22	28	34	39	44	52	59	67	71	78	83	87	93	98	103	110	120
Design Resistance to EC3 NR,d (kN)	27	40	75	119	171	273	399	549	723	999	1319	1608	1924	2152	2453	2775	3114	3475	3856	4257	5117
Min. Yield Load (kN)	30	44	82	129	186	298	435	599	789	1090	1439	1754	2100	2348	2677	3028	3399	3792	4208	4645	5584
Min. Break Load (kN)	38	56	104	165	237	379	554	763	1004	1387	1832	2233	2673	2988	3407	3854	4325	4827	5356	5912	7107
Nominal Bar Weight (kg/m)	0.6	0.8	1.5	2.5	3.1	5.2	7.3	9.9	12.5	16.7	22.2	27.7	32.9	37.5	42.5	49.9	53.3	59.2	68.0	74.6	88.8
*FOR STAINLESS 550 DIAMETERS M80 & ABOVE PLEASE CONTACT MACALLOY FOR FURTHER DETAILS																					

*FOR STAINLESS 550 DIAMETERS M80 & ABOVE PLEASE CONTACT MACALLOY FOR FURTHER DETAILS

TABLE 6

Capacity and Lengths of Architectural and Standard Compression Struts														
System Ref.	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M76	M85	M90	M100
Maximum Compressive Capacity (kN)	14	28	45	69	122	190	274	370	530	729	1064	1395	1589	2031
Maximum Pin To Pin Length (mm)	2369	2663	2671	3105	3357	3367	4498	6397	7097	7420	8188	9323	10291	11679
Carbon CHS O.D. (mm)	33.7	42.4	48.3	60.3	76.1	88.9	114.3	139.7	168.3	193.7	219.1	244.5	273	323.9
Carbon CHS Wall Thickness (mm)	4	5	5	5	5	5	6.3	10	10	10	12.5	16	16	16
Stainless CHS O.D. (mm)	33.4	42.4	48.3	60.3	73.0	88.9	114.3	141.3	CONTACT TECHNICAL FOR DETAILS					
Stainless CHS Wall Thickness (mm)	4.5	5.0	5.0	5.0	5.2	5.5	6.0	9.5	CONTACT TECHNICAL FOR DETAILS					

CONNECTION DISC

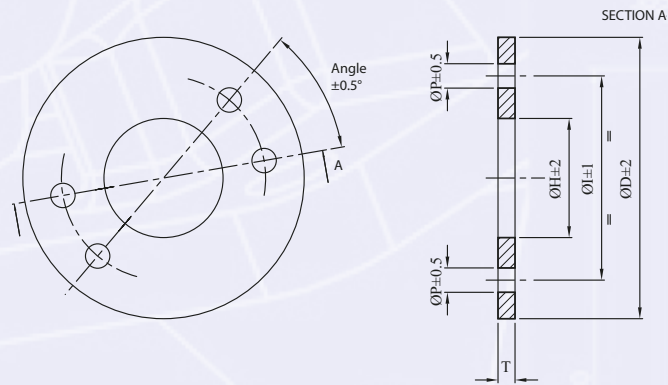


TABLE 7

	D/10	D/12	D/16	D/20	D/24	D/30	D/36	D/42	D/48	D/56	D/64	D/76
ØI	96	120	160	180	210	280	320	360	410	500	560	700
ØP	11.5	13	17	21.5	25.5	31.5	37.5	43.5	49.5	57.5	65.5	78.5
T	10	10	12	15	20	22	30	35	40	45	55	70
ØD	130	164	218	249	294	386	444	502	572	694	782	964
ØH	50	70	90	105	115	160	185	205	235	290	330	400

CONTACT MACALLOY FOR DETAILS FOR ADDITIONAL SIZES

CROSS COUPLER

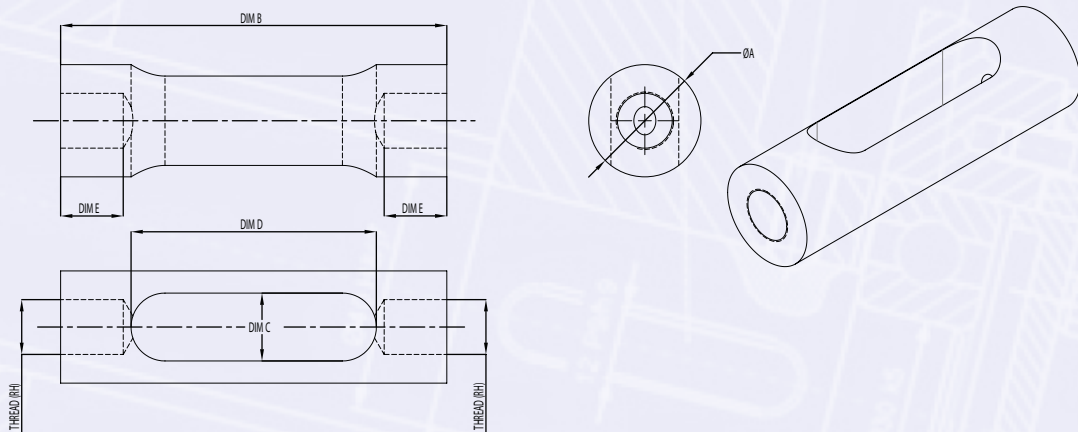


TABLE 8

THREAD	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	M80	M85	M90	M95	M100	M105	M110	M120
ØA (mm)	19	25	29	35	43	52	62	72	82	96	110	120	134	140	148	158	165	172	184	190	208
B (mm)	73	82	105	128	148	183	217	249	283	328	376	408	462	481	509	556	561	582	620	645	704
C (mm)	12	14	18	22	26	32	38	44	50	58	66	72	78	82	87	92	97	102	107	112	122
D (mm)	47	52	67	82	94	117	139	159	181	210	242	262	300	315	323	346	365	376	404	419	458
E (mm)	10	12	16	20	24	30	36	42	48	56	64	70	76	80	85	90	95	100	105	110	120

TURNBUCKLE

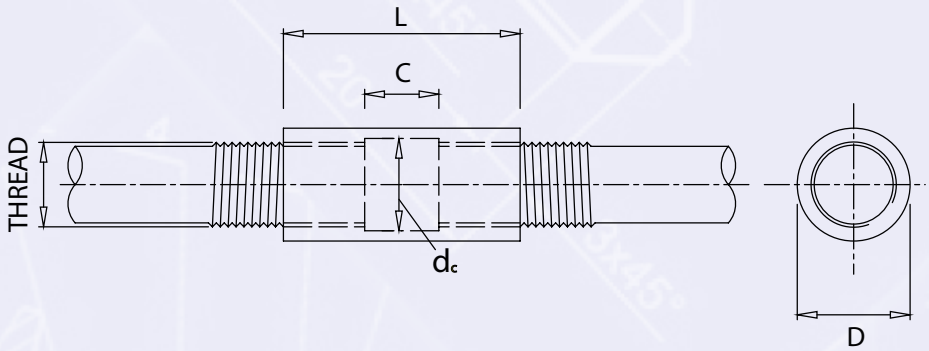
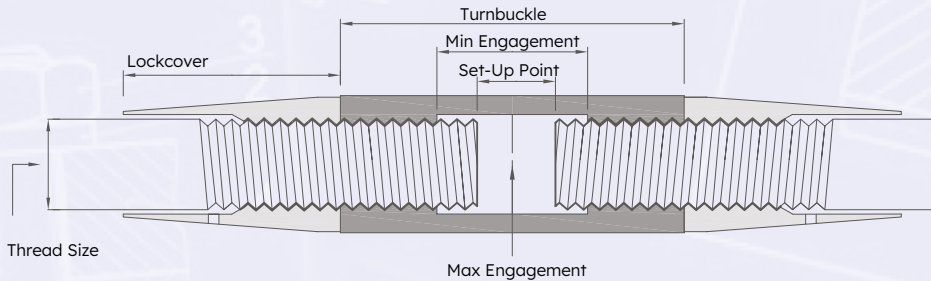


TABLE 9																					
THREAD	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	M80	M85	M90	M95	M100	M105	M110	M120
d_c (mm)	12	14	18	22	26	32	38	44	50	58	66	72	78	82	87	92	97	102	107	112	122
C (mm)	50	50	50	50	50	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
D (mm)	17	19	25	29	35	43	52	60	68	80	91	100	108	114	121	129	136	143	148	157	172
L (mm)	74	78	86	90	98	160	172	184	196	212	228	240	252	260	270	280	290	300	310	320	340
*Custom turnbuckles offering extra adjustment are available upon request																					

TURNBUCKLE ADJUSTMENT AND SET UP POINTS

Turnbuckle Adjustment – M10 to M24: +/- 25mm.
 Turnbuckle Adjustment – M30 to M120: +/- 50mm.
 Set-Up Point – M10 to M24: 1 x thread diameter +12.5mm in each end of the turnbuckle.
 Set-Up Point – M30 to M120: 1 x thread diameter + 25mm in each end of the turnbuckle.



TURNBUCKLE WITH FIN PLATE

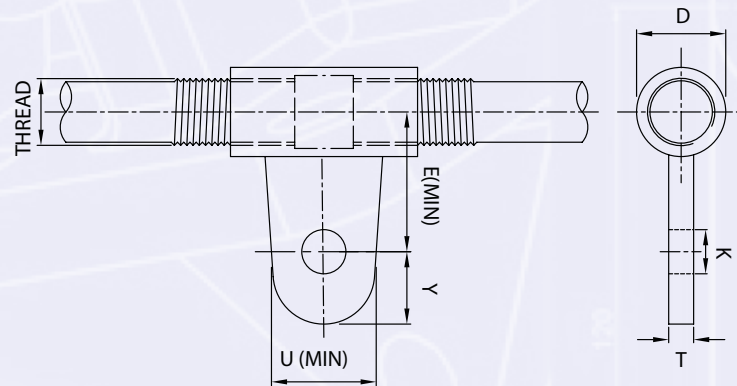


TABLE 10

THREAD	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	M80	M85	M90	M95	M100
Y (mm)	19	22	30	37	43	56	64	74	84	101	112	120	132	148	160	166	181	196
U (mm)	28	34	48	60	68	90	103	118	135	163	180	192	211	237	259	266	291	317
E (mm)	31	35	46	55	64	81	93	107	121	144	161	173	189	208	224	234	252	271
D (mm)	17	19	25	29	35	43	52	60	68	80	91	100	108	114	121	129	136	143
K (mm)	11.5	13	17	21.4	25.5	31.5	37.5	43.5	49.5	57.5	65.5	72.5	78.5	85.5	91.5	96.5	104.5	111.5
T (mm)	10	10	12	15	20	22	30	35	40	45	55	70	70	70	70	80	85	85

COUPLER

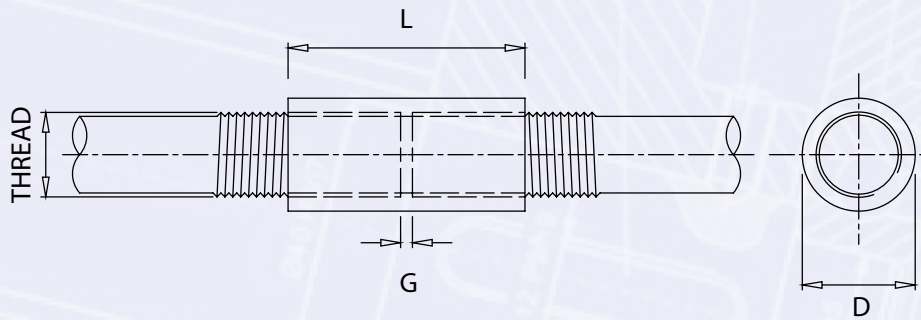


TABLE 11

THREAD	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	M80	M85	M90	M95	M100	M105	M110	M120
D (mm)	17	19	25	29	35	43	52	60	68	80	91	100	108	114	121	129	136	143	148	157	172
G (mm)	$1 \leq G \leq 5$																				
L (mm)	25	29	37	45	53	65	77	89	101	117	133	145	157	165	175	185	195	205	215	225	245

FORK

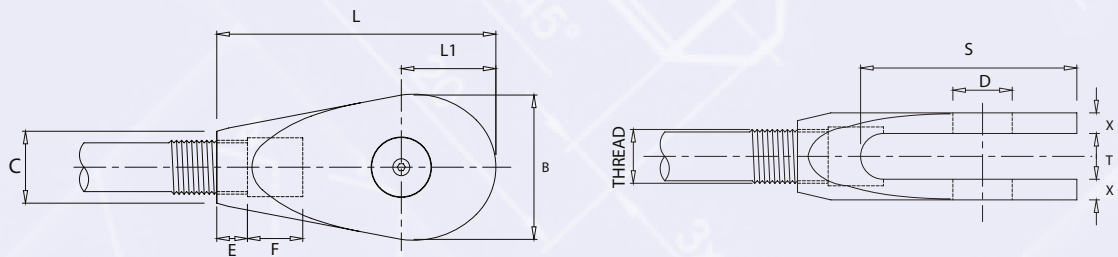
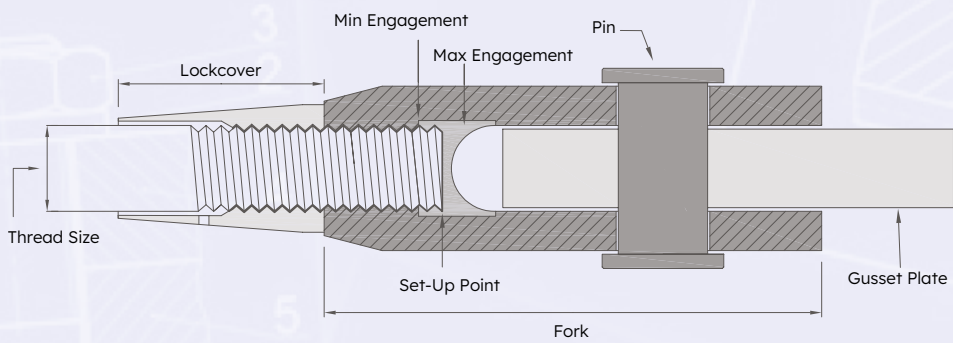


TABLE 12

THREAD	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	M80	M85	M90	M95	M100	M105	M110	M120
L (mm)	63	75	99	122	148	178	204	232	266	314	348	386	410	432	459	489	512	555	600	600	661
B (mm)	30	34	45	53	64	81	93	109	123	147	169	181	201	212	236	248	262	289	294	296	350
C (mm)	17	19	25	29	35	44	52	60	69	80	91	100	108	114	121	129	136	143	148	159	176
E (mm)	12	14	18	24	27	32	38	44	50	58	66	72	78	82	87	92	97	102	107	112	122
F (mm)	8	10	14	16	22	28	34	41	46	55	49	49	49	49	49	49	49	49	49	49	49
T (mm)	11	12	15	19	24	26	34	39	44	49	59	75	76	78	78	86	91	91	96	106	125
D (mm)	11.5	13	17	21.5	25.5	31.5	37.5	43.5	49.5	57.5	65.5	72.5	78.5	85.5	91.5	96.5	104.5	111.5	115.5	118	122
S (mm)	46	54	70	85	104	127	148	167	191	227	259	276	309	325	349	374	396	430	430	455	516
X (mm)	4	4.5	6	8.5	9.5	11.5	14.5	17.5	21	23.5	27.5	31	34.5	36	37	41	41	41	55	50	55
L1 (mm)	18	22	29	34	42	53	61	70	81	97	111	114	132	134	153	162	165	188	190	190	211

FORK ADJUSTMENT AND SET UP POINTS

- Fork Adjustment – M10 to M56: +/- ½ thread diameter in each fork end.
- Fork Adjustment – M64 to M120: +/- 25 mm in each fork end.
- Set-Up Point – M10 to M56: 1 ½ x thread diameter in each fork end.
- Set-Up Point – M64 to M120: 1 x thread diameter plus 25mm in each fork end.



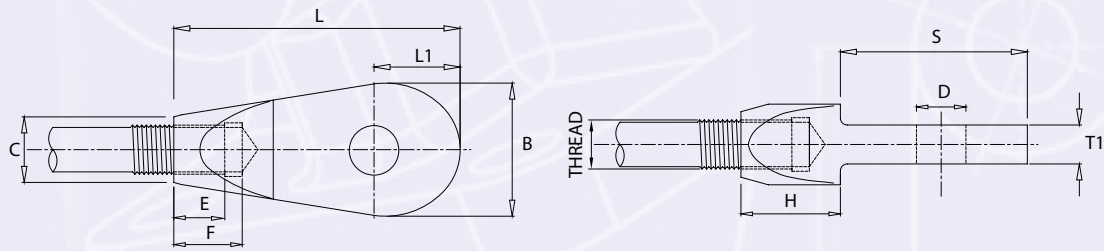
SPADE

TABLE 13

THREAD	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	M80	M85	M90	M95	M100	M105	M110	M120
L (mm)	78	92	118	147	174	213	249	289	321	365	408	CONTACT MACALLOY FOR DETAILS	476	CONTACT MACALLOY FOR DETAILS	524	555	CONTACT MACALLOY FOR DETAILS	625	CONTACT MACALLOY FOR DETAILS	CONTACT MACALLOY FOR DETAILS	CONTACT MACALLOY FOR DETAILS
B (mm)	28	32	44	51	62	80	94	107	122	147	169		202		236	249		287			
C (mm)	17	19	25	29	35	43	52	60	68	80	89		108		121	129		143			
E (mm)	20	24	32	22	26	34	38	44	50	58	66		78		87	92		102			
F (mm)	26	30	40	40	48	62	72	84	96	112	119		126		135	140		150			
H (mm)	32	38	48	60	70	85	100	115	127	150	168		181		194	202		217			
D (mm)	11.5	13	17.5	21.5	25.5	31.5	37.5	43.5	49.5	57.5	65.5		78.5		91.5	96.5		111.5			
S (mm)	46	54	70	87	104	128	149	169	194	215	245		290		330	353		408			
T1 (mm)	8	9	12	15	20	22	30	35	40	45	55		70		72	80		85			
L1 (mm)	17.5	21.5	29	33	41	52	61	69	80	96	110		132		152	161		188			

PIN SET

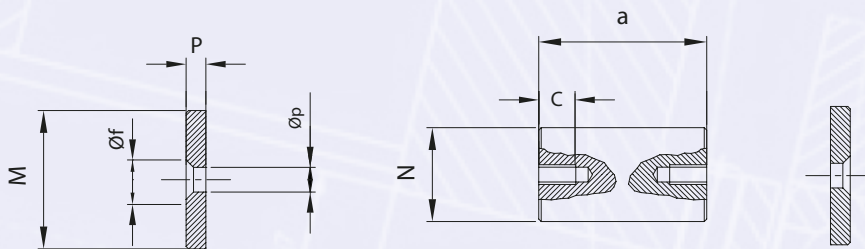


TABLE 14

[illegible]

GUSSET PLATE

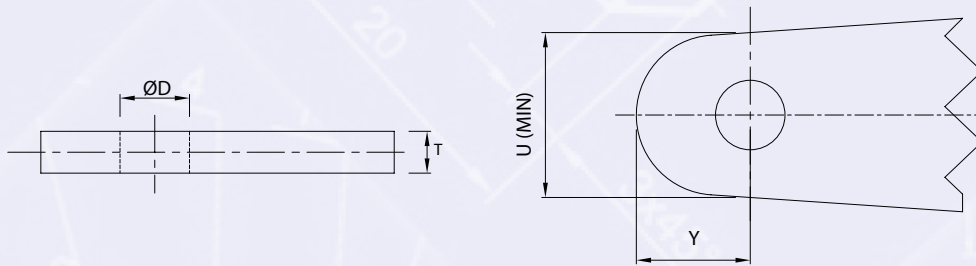


TABLE 15

THREAD	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	M80	M85	M90	M95	M100	M105	M110	M120
T (mm)	10	10	12	15	20	22	30	35	40	45	55	70	70	70	70	80	85	85	90	100	120
D (mm)	11.5	13	17	21.4	25.5	31.5	37.5	43.5	49.5	57.5	65.5	72.5	78.5	85.5	91.5	96.5	104.5	111.5	115.5	118	122
U (mm)	28	34	48	60	68	90	103	118	135	163	180	192	211	237	259	266	291	317	326	332	348
Y (mm)	19	22	30	37	43	56	64	74	84	101	112	120	132	148	160	166	181	196	202	206	215

If connecting to a stainless connection plate where no isolation is required, please use the above table.

GUSSET PLATE WHEN USED WITH ISOLATION

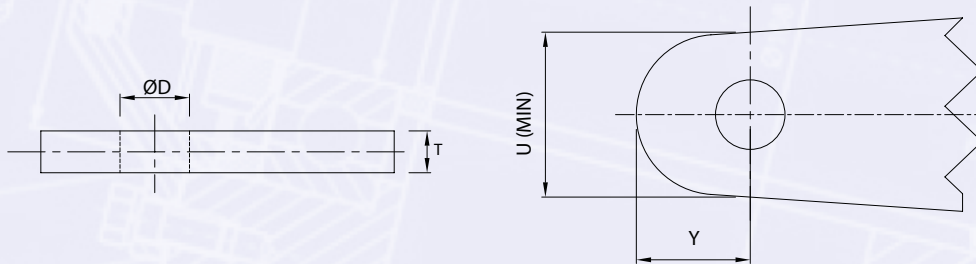


TABLE 16

THREAD	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	M80	M85	M90	M95	M100	M105	M110	M120
T (mm)	10	10	12	15	20	22	30	35	40	45	55	70	70	70	70	80	85	85	90	100	120
ØD (mm)	15.5	17	21	25.5	30	36	42	48	55.5	63.5	72.5	79.5	85.5	93	99	104	112	119	123	126	130
U (mm)	34	40	53	65	75	96	109	126	145	173	193	204	228	250	273	281	300	329	342	346	362
Y (mm)	20	23	31	38	44	57	65	76	86	103	114	122	134	150	163	169	184	199	205	209	218

The above dimensions should be used when connecting stainless forks to a carbon steel connection plate. This then allows space for isolation sleeves and washers.

METRIC ISOLATION SLEEVE DIMENSIONS

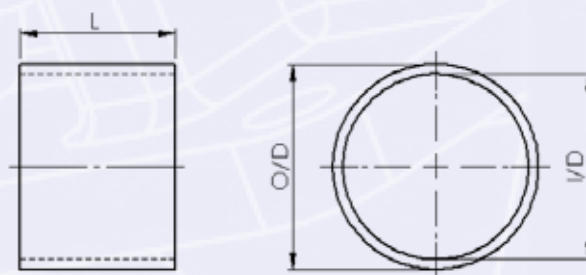


TABLE 17

THREAD		M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	M80	M85	M90	M95	M100	M105	M110	M120
SLEEVE REF.	Unit	IS10	IS12	IS16	IS20	IS24	IS30	IS36	IS42	IS48	IS56	IS64	IS70	IS76	IS80	IS85	IS90	IS95	IS100	IS105	IS110	IS120
L	mm	9	10	13	16	21	23	31	36	41	46	55	71	71	71	71	82	86	88	92	101	121
O/D	mm	14.5	16	20	24.5	29	35	41	47	54	62	71	78	84	91	97	102	110	117	121	124	128
I/D	mm	11.5	13	17	21	25	31	37	43	49	57	64.5	71.5	77.5	84.5	90.5	95.5	103.5	110.5	114.5	117	121

METRIC ISOLATION WASHER DIMENSIONS

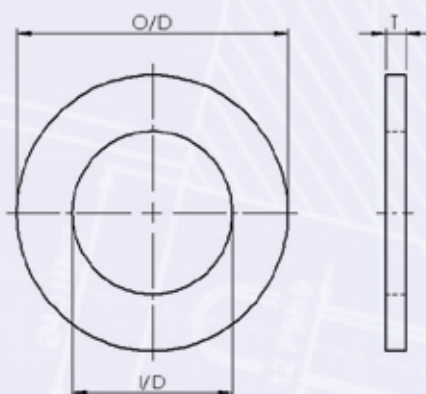
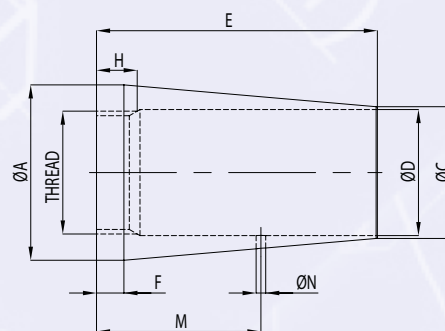


TABLE 18

[illegible]

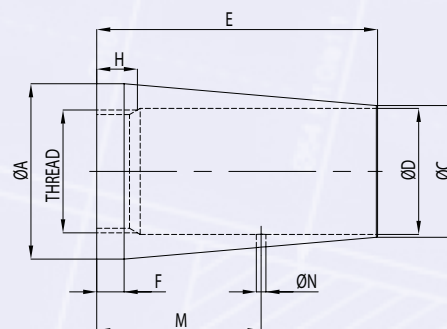
UNIVERSAL LOCK COVERS

REF	THREAD	ØA	ØC	ØD	E	F	H	M	ØN
LCU10	M10 x 1.5	16.5	16	13.5	44	12	8	18	5
LCU12	M12 x 1.75	18.5	16	13.5	44	12	8	18	5
LCU16	M16 x 2	24	21	18	46	12	10	26	5
LCU20	M20 x 2.5	28	25	22	48	12	12	30	6
LCU24	M24 x 3	34	30	26	92	12	15	35	6
LCU30	M30 x 3.5	42	36	32	126	15	18	45	6
LCU36	M36 x 4	51	42	38	134	15	20	51	6
LCU42	M42 x 4.5	59	48	44	145	15	23	57	6
LCU48	M48 x 5	67	54	50	153	15	25	63	7
LCU56	M56 x 5.5	79	62	58	169	15	28	71	7
LCU64	M64 x 6	90	70	66	179	15	30	84	7
LCU70	M70 x 6	99	76	72	185	20	30	90	7
LCU76	M76 x 6	107	82	78	191	20	30	96	7
LCU80	M80 x 6	113	86	82	195	20	30	100	7
LCU85	M85 x 6	120	91	87	200	20	30	105	7
LCU90	M90 x 6	128	96	92	205	20	30	110	7
LCU95	M95 x 6	135	101	97	210	20	30	115	7
LCU100	M100 x 6	142	106	102	215	20	30	120	7
LCU105	M105 x 6	147	111	107	220	20	30	120	7
LCU110	M110 x 6	158	116	112	225	20	30	120	7
LCU120	M120 x 6	175	126	122	235	20	30	120	7



CROSS COUPLER LOCK COVERS

REF	THREAD	ØA	ØC	ØD	E	F	H	M	ØN
CCLC10	M10 x 1.5	18.5	16	13.5	29	12	8	16	5
CCLC12	M12 x 1.75	24	16	13.5	31	12	8	18	5
CCLC16	M16 x 2	28	21	18	37	12	10	26	6
CCLC20	M20 x 2.5	34	25	22	43	12	12	30	6
CCLC24	M24 x 3	42	30	26	74	12	15	35	6
CCLC30	M30 x 3.5	51	36	32	105	15	18	45	6
CCLC36	M36 x 4	61	42	38	111	15	20	51	6
CCLC42	M42 x 4.5	71	48	44	117	15	23	57	6
CCLC48	M48 x 5	81	54	50	123	15	25	63	7
CCLC56	M56 x 5.5	95	62	58	136	15	28	71	7
CCLC64	M64 x 6	109	70	66	144	15	30	84	7
CCLC70	M70 x 6	119	76	72	150	20	30	90	7
CCLC76	M76 x 6	133	82	78	156	20	30	96	7
CCLC80	M80 x 6	139	86	82	160	20	30	100	7
CCLC85	M85 x 6	147	91	87	165	20	30	105	7
CCLC90	M90 x 6	157	96	92	170	20	30	110	7
CCLC95	M95 x 6	164	101	97	175	20	30	115	7
CCLC100	M100 x 6	171	106	102	180	20	30	120	7
CCLC105	M105 x 6	183	111	107	185	20	30	120	7
CCLC110	M110 x 6	189	116	112	190	20	30	120	7
CCLC120	M120 x 6	207	126	122	195	20	30	130	7



METRIC NUT DIMENSIONS

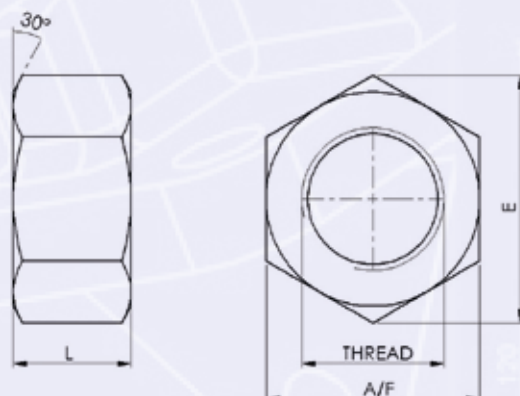


TABLE 21

THREAD		M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	M80	M85	M90	M95	M100	M105	M110	M120
REF	Unit	NM10	NM12	NM16	NM20	NM24	NM30	NM36	NM42	NM48	NM56	NM64	NM70	NM76	NM80	NM85	NM90	NM95	NM100	NM105	NM110	NM120
A/F	mm	17	19	24	30	36	46	55	65	75	85	95	105	110	115	120	130	135	145	150	155	170
L	mm	8	10	13	16	19	24	29	34	38	45	51	58	61	64	68	72	76	80	84	88	96
E	mm	18.9	21.1	26.8	33	39.6	50.9	60.8	71.3	82.6	95.1	106.4	117.7	123.3	129	133.1	145.8	151.4	162.7	168.4	174	191

METRIC WASHER DIMENSIONS

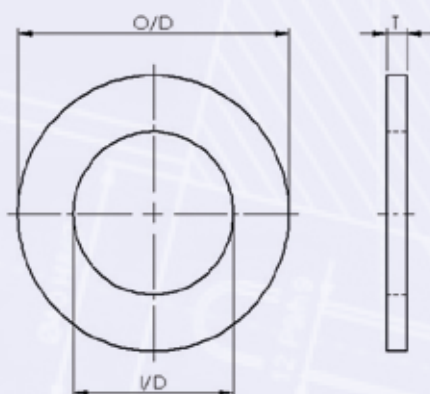


TABLE 22

THREAD		M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M70	M76	M80	M85	M90	M95	M100	M105	M110	M120
REF	Unit	WM10	WM12	WM16	WM20	WM24	WM30	WM36	WM42	WM48	WM56	WM64	WM70	WM76	WM80	WM85	WM90	WM95	WM100	WM105	WM110	WM120
O/D	mm	21	24	30	37	44	56	66	78	92	105	115	125	135	140	145	160	165	175	180	185	210
I/D	mm	11	14	18	22	26	33	39	45	52	62	70	76	82	86	91	96	101	107	112	117	127
T	mm	2	2.5	3	3	4	4	5	7	8	9	9	10	10	12	12	12	12	14	14	14	16



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