

Macalloy 1030 Stainless and Carbon Post Tensioning Systems

Technical Data

TABLE 1

Grade	Nominal 0.1% Proof Stress	Nominal Ultimate Tensile Strength	Minimum Elongation	Approximate Modulus of Elasticity
	N/mm ²	N/mm ²	%	kN/mm ²
Macalloy 1030 25-40 (Carbon)	835	1030	6	170*
Macalloy 1030 50-75 (Carbon)	835	1030	6	205
Macalloy S1030 20-75 (Stainless)	835	1030	10	185

*Secant Modulus of Elasticity in range 5 – 70% UTS

TABLE 2

Nominal Diameter	Nominal Prestress at 70%	Nominal 0.1% Proof Load	Nominal Failing Load	Major Thread Diameter	Unthreaded Section Diameter	Cross Sectional Area	Mass
mm	kN	kN	kN	mm	mm	mm ²	Kg/m
20*	226	262	323	22	20.3	322	2.57
25	354	410	506	28.9	26	530	4.2
26.5 [†]	398	460	569	30.4	27.5	572	4.49
32	580	670	828	36.2	33.1	847	6.65
36	734	850	1049	40.2	37.1	1075	8.44
40	907	1050	1295	45.3	41.2	1320	10.36
50	1415	1639	2022	54.8	50.9	1963	15.66
62	2176	2521	3109	67.4	63.3	3117	24.47
75	3018	3495	4311	77.2	73.4	4185	32.86

*Available in Stainless only †Available in Carbon only

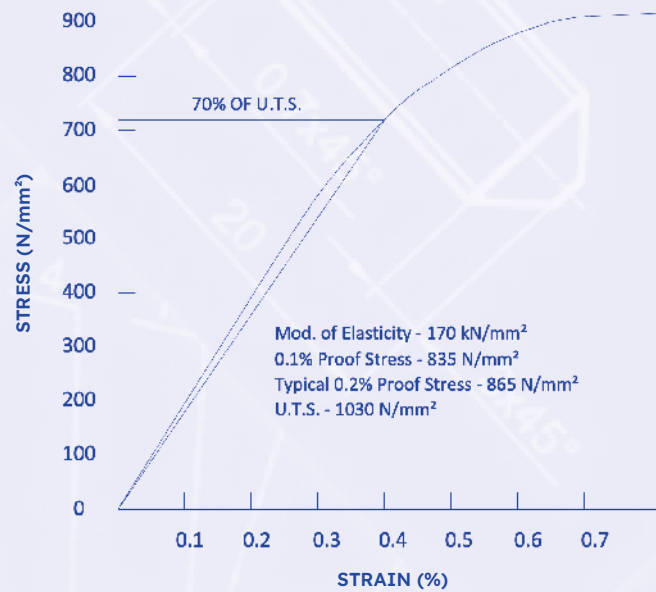


Figure 1: Typical Stress Strain Graph for Macalloy 1030 bar (25-40mm)

TABLE 3		
K Values for Macalloy Coarse Threads		
$\text{Torque (Nm)} = \frac{P \times D}{K}$ <p>Where</p> <p>P is desired axial load in kN</p> <p>D is the nominal bar diameter in mm</p> <p>K is a constant obtained by test measurements</p>	Bar Diameter	K
	mm	
	25	4.1
	26.5	4.3
	32	4.7
	36	4.9
	40	4.5
50	4.1	

TABLE 4												
		Physical Parameters										
		Item	Unit	Nominal Bar Diameter								
				20	25	26.5	32	36	40	50	62	75
Flat Nuts	Carbon	-	FN25	FN26.5	FN32	FN36	FN40	FN50	FN62	FN75		
	Stainless	FSSN20	FSSN25	-	FSSN32	FSSN36	FSSN40	FSSN50	-	FSSN75		
Carbon	Length	mm	-	34.5	38.5	43	48	53	73.5	95	100	
	Width Across Flats (DIA. For 62 & 75mm)	mm	-	46	50	56	62	72	90	123	135	
Stainless	Length	mm	25	32	-	40	47	50	70	-	100	
	Width Across Flats (DIA. For 50 & 75mm)	mm	41.3	47.3	-	56.4	60.3	63.5	101.6	-	135	

TABLE 4 (CONTINUED)

Flat Washers		Carbon	-	FSW25	FSW26.5	FSW32	FSW36	FSW40	FSW50	FSW62	FSW75
		Stainless	FSSW20	FSSW25	-	FSSW32	FSSW36	FSSW40	FSSW50	-	FSSW75
	Outside Diameter	mm	50	60	65	70	75	90	105	FLAT WASHER NOT REQUIRED	
	Thickness	mm	5	5	5	5	5	5	5		
Couplers		Carbon	-	FC25	FC26.5	FC32	FC36	FC40	FC50	FC62	FC75
		Stainless	FSSC20	FSSC25	-	FSSC32	FSSC36	FSSC40	FSSC50	-	FSSC75
	Outside Diameter	mm	35	42.5	42.5	50	57.5	62.5	76	95	110
	Length - Carbon	mm	-	85	90	115	130	140	170	210	230
	Length - Stainless	mm	65	80	-	95	105	120	160	-	210
End Plates		Carbon	-	FPP25	FPP26.5	FPP32	FPP36	FPP40	FPP50	FPP62	FPP75
		Stainless	FSSP20	FSSP25	-	FSSP32	FSSP36	FSSP40	FSSP50	-	FSSP75
	Length	mm	100	100	110	125	140	160	200	260	300
	Width	mm	100	100	110	125	140	160	200	260	300
	Thickness - standard	mm	25	40	40	50	50	60	60	70	75
	Hole Diameter	mm	24	34	36	41	45	51	61	72	82
	Thickness - threaded	mm	-	40	40	50	60	60	70	90	110
Ducts*	Recommended Duct ID	mm	30	38	40	48	54	60	75	93	109
Threads	Pitch	mm	2.5	6	6	6	6	8	8	8	8
Standard Thread Length (See Fig. 2)	Length										
	S1 Jacking End	mm	250	250	250	250	250	250	250	360	360
	S1 Dead End	mm	100	100	100	100	100	100	100	160	160
	Coupler	mm	40	45	50	60	65	75	90	110	150
	X1 (Min.)	mm	75	90	100	120	125	140	175	215	240
	X2 (Min.)	mm	42	49	53	57	62	71	91	110	116
	X3 (Min.)	mm	12	12	12	12	12	16	16	16	16

*Note duct sizes do not accommodate couplers

Figure 2: End thread dimensions

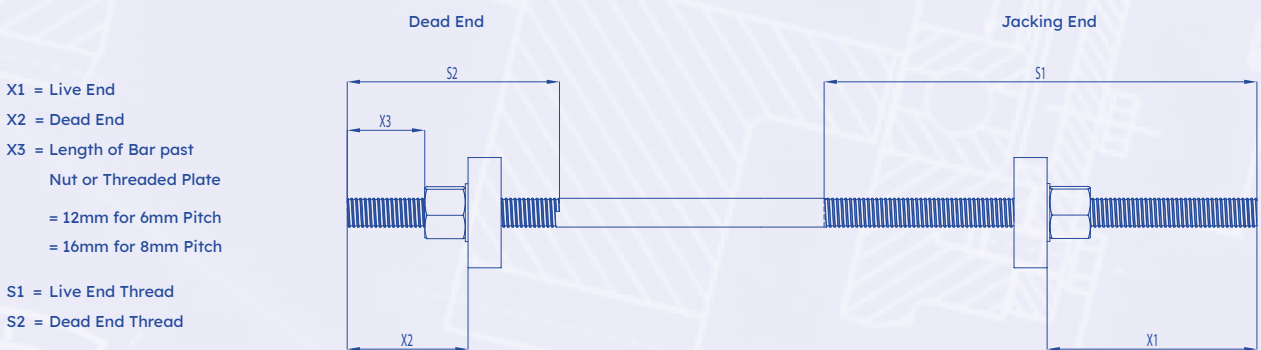
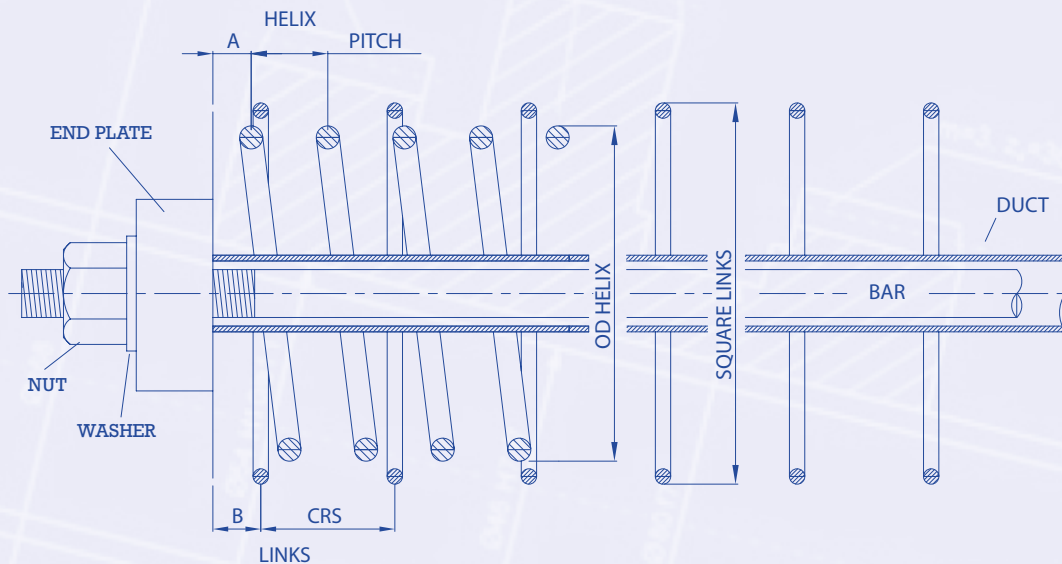


TABLE 5

REINFORCEMENT DETAILS

Bar Dia.	HELIX					LINKS					Recommended Duct I.D
	Bar	A	Pitch (mm)	OD	Turns (mm)	Bar	B	CRS (mm)	SQU	Number	
25	12	20	40	175	4	8	25	70	199	6	38
26.5	12	20	40	180	4	8	25	70	205	6	40
32	12	20	40	190	5	8	30	70	216	7	48
36	12	20	40	210	6	8	30	70	235	7	54
40	12	20	40	240	7	10	35	75	265	8	60
50	12	20	40	300	8	12	40	80	330	9	75
62	12	30	50	400	8	16	50	80	490	10	93
75	12	30	50	450	8	16	50	100	490	10	109

Figure 3: Typical end block reinforcement



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