



SAS
Latinoamérica

Catálogo | *catalogue*

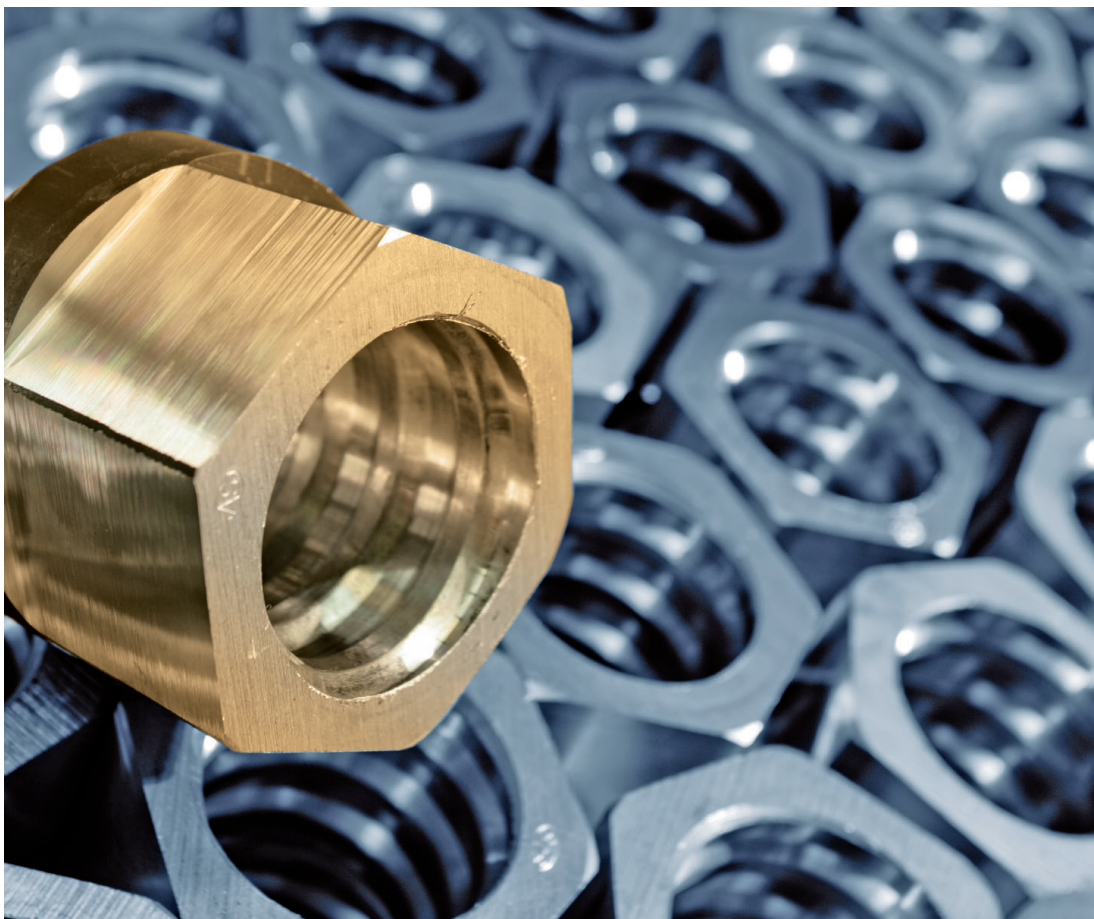
SAS 500 / 550 | SAS 550 / 620 | grado 75

SAS 555 / 700 | grado 80

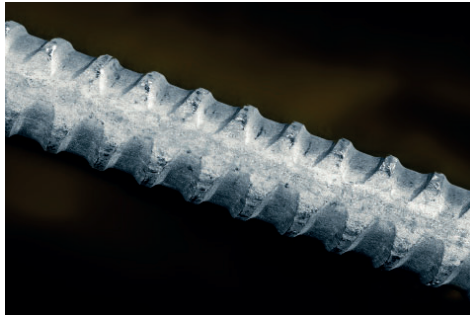
SAS 670 / 800 | grado 97

SAS 950 / 1050 | SAS 835 / 1035 | grado 150

SAS SYSTEMS



MAX AICHER



SAS barra roscada laminada en caliente - rosca a izquierdas | SAS thread bar hot rolled, ribbed - left hand thread

SAS 500 / 550 Ø 12 - 50 mm + 75 mm | grade 75

SAS 555 / 700 Ø 57,5 mm + 63,5 mm | grade 80

Ø _{NENI} / Ø _{NOM} [mm]	12	14	16	20	25	28	32	36	40	43	50	57,5	63,5	75
max d _A [mm]	14	16	19	23	29	32	36	41	45	48	56	63	70	82
c [mm]	7	7,5	8	10	12,5	14	16	18	20	21,5	26	20	21	24
f _{yk} (f _{0,2k}) / f _{tk} / A _{gt} ¹	500 N/mm ² / 550 N/mm ² / ≥ 6%											555 N/mm ² 700 N/mm ² ≥ 5%	500 N/mm ² 550 N/mm ² ≥ 5%	
F _{yk} [F _{0,2k}] [kN]	57	77	100	160	245	310	405	510	630	726	980	1441	1760	2209
F _{tk} [kN]	62	85	110	175	270	340	440	560	690	799	1080	1818	2215	2430
A [mm ²]	113	154	201	314	491	616	804	1020	1260	1452	1960	2597	3167	4418
G [kg/m]	0,89	1,21	1,58	2,47	3,85	4,83	6,31	7,99	9,87	11,40	15,40	20,38	24,86	34,68

SAS 550 / 620 Ø 12 - 50 mm | grade 75

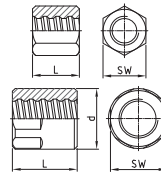
Ø _{NENI} / Ø _{NOM} [mm]	12	14	16	20	25	26	28	30	32	36	40	43	50
max d _A [mm]	14	16	19	23	29	30	32	34	36	41	45	48	56
c [mm]	7	7,5	8	10	12,5	13	14	15	16	18	20	21,5	26
f _{yk} (f _{0,2k}) / A _{gt} ¹	550 N/mm ² / 620 N/mm ² ≥ 6%												
F _{yk} [F _{0,2k}] [kN]	62	85	110	175	270	290	340	390	440	560	690	799	1080
F _{tk} = 1,08 x F _{yk} [kN]	67	92	119	189	292	313	367	421	475	605	745	862	1166
A [mm ²]	113	154	201	314	491	531	616	707	804	1020	1260	1452	1960
G [kg/m]	0,89	1,21	1,58	2,47	3,85	4,17	4,83	5,55	6,31	7,99	9,87	11,40	15,40

¹ Deformación total porcentual para carga máxima | Percentage total elongation at maximum force

Los pesos reales pueden variar dentro de las tolerancias de fabricación. | Weight specifications of bar and accessories are average values. The actual values may deviate due to fabrication tolerances.

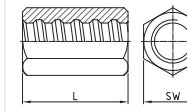
SAS SYSTEMS

tuerca hexagonal anchor nut



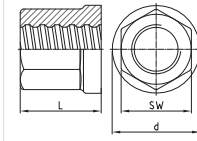
Ø [mm] SW x L x d [mm] [kg]

tuerca hexagonal larga anchor nut long



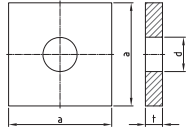
SW x L [mm] [kg]

tuerca hexagonal apoyo circular anchor nut with flange



SW x L x d [mm] [kg]

placa de anclaje lisa anchor plate flat

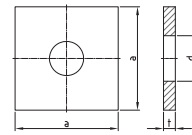


a x t x d [mm] [kg]

	T 2002 - Ø		T 2024 - Ø		T 2163 - Ø		T 2139 - Ø **	
12	22 x 25	0,10	22 x 35	0,08	-	-	50 x 8 x 16	0,14
14	27 x 35	0,12	27 x 45	0,16	-	-	50 x 8 x 18	0,14
16	32 x 40	0,20	32 x 50	0,25	-	-	50 x 8 x 20	0,15
20	36 x 45	0,27	32 x 65	0,25	-	-	70 x 12 x 25	0,42
25	41 x 50	0,34	41 x 75	0,52	-	-	90 x 15 x 30	0,87
26	46 x 50	0,45	41 x 80	0,56	-	-	100 x 15 x 33	1,08
28	46 x 55	0,48	41 x 85	0,48	-	-	100 x 15 x 33	1,08
30	50 x 60	0,65	46 x 90	0,77	-	-	120 x 20 x 36	2,10
32	55 x 60	0,78	50 x 90	0,90	-	-	120 x 20 x 40	2,06
36	60 x 65	1,00	55 x 95	1,17	-	-	150 x 30 x 44	4,94
40	65 x 70	1,19	60 x 100	1,30	65 x 70 x 85	1,20	150 x 30 x 47	4,89
43	70 x 75	1,51	-	-	70 x 80 x 90	1,81	160 x 40 x 50	7,42
50	79 x 90	2,17	79 x 120	3,00	80 x 85 x 100	2,35	190 x 45 x 58	11,82
57,5	90 x 110 x 102	4,13	-	-	90 x 100 x 110	3,50	220 x 50 x 67	17,61
63,5	100 x 115 x 108	4,72	-	-	100 x 115 x 125	4,90	245 x 50 x 70	22,05
75	100 x 100 x 108	2,99	-	-	100 x 120 x 115	4,15	275 x 65 x 88	35,48

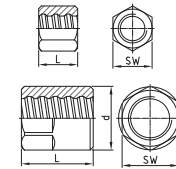
SAS SYSTEMS

placa de anclaje lisa pequeña anchor plate flat small



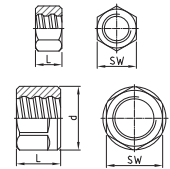
Ø [mm] a x t x d [mm] [kg]

contratuerca larga lock nut long



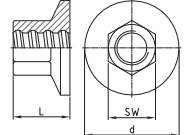
SW x L x d [mm] [kg]

contratuerca corta lock nut short



SW x L x d [mm] [kg]

pieza de anclaje anchor piece



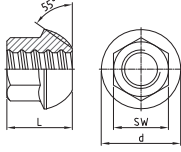
SW x L x d [mm] [kg]

	T 2008 - Ø **		T 2003 - Ø		T 2040 - Ø		T 2073 - Ø	
12	40 x 6 x 16	0,06	19 x 20	0,04	19 x 13	0,03	-	-
14	-	-	27 x 25	0,09	27 x 15	0,06	-	-
16	50 x 8 x 20	0,10	32 x 30	0,15	32 x 20	0,10	30 x 33 x 50	0,25
20	60 x 10 x 25	0,16	32 x 40	0,16	32 x 20	0,09	36 x 40 x 70	0,43
25	70 x 12 x 30	0,40	41 x 40	0,25	41 x 20	0,14	41 x 45 x 70	0,50
26	-	-	41 x 45	0,35	41 x 25	0,20	41 x 50 x 90	0,70
28	85 x 14 x 33	0,70	41 x 45	0,26	41 x 25	0,15	46 x 50 x 90	0,77
30	-	-	50 x 50	0,55	50 x 30	0,35	50 x 55 x 95	1,00
32	100 x 15 x 38	1,00	50 x 50	0,47	50 x 30	0,30	50 x 60 x 100	1,40
36	-	-	55 x 55	0,85	55 x 30	0,40	60 x 65 x 110	1,64
40	120 x 17 x 47	1,69	60 x 65	0,85	60 x 35	0,45	65 x 70 x 120	2,10
43	-	-	70 x 65	1,31	70 x 40	0,80	70 x 80 x 130	2,43
50	150 x 20 x 58	3,12	79 x 80	2,10	79 x 50	1,30	80 x 85 x 150	3,88
57,5	-	-	90 x 80 x 102	2,87	90 x 60 x 102	2,08	90 x 100 x 175	6,09
63,5	-	-	90 x 115 x 102	3,74	90 x 75 x 102	2,28	100 x 115 x 190	7,38
75	-	-	100 x 80 x 108	2,37	100 x 80 x 108	2,37	-	-

** La formación de óxido no se puede descartar debido al almacenamiento y a las condiciones de transporte | Rust formation cannot be ruled out due to storage and transport conditions

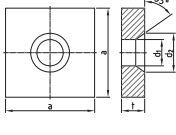
SAS SYSTEMS

tuera asiento esférico 55°
domed nut 55°



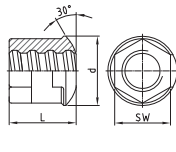
Ø [mm] SW x L x d [mm] [kg]

placa de anclaje asiento esférico 55°
anchor plate cone 55°



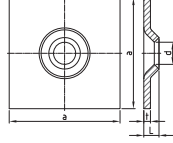
a x t x d₁ x d₂ [mm] [kg]

tuera asiento esférico 30°
dome nut 30°



SW x L x d [mm] [kg]

placa de anclaje abombada 30°/55°
domed washer 30°/55°

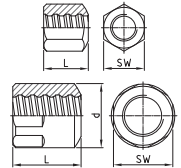


a x L x t x d [mm] [kg]

	T 2044 - Ø		T 2011 - Ø **		T 2944 - Ø		T 2132 - Ø **	
12	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-
16	27 x 33 x 35	0,11	60 x 10 x 25 x 33	0,24	-	-	150 x 25 x 10 x 22	1,77
20	36 x 42 x 49	0,30	70 x 12 x 30 x 44	0,37	36 x 40 x 51	0,30	150 x 25 x 10 x 26	1,76
25	41 x 45 x 55	0,35	90 x 15 x 35 x 49	0,81	41 x 45 x 54	0,32	150 x 25 x 10 x 34	1,74
26	-	-	-	-	-	-	-	-
28	41 x 54 x 62	0,45	100 x 15 x 40 x 54	0,99	41 x 50 x 58	0,38	200 x 25 x 10 x 34	3,11
30	-	-	-	-	-	-	-	-
32	46 x 57 x 70	0,60	120 x 20 x 52 x 60	1,91	50 x 60 x 62	0,70	200 x 27 x 12 x 40	3,70
36	-	-	-	-	-	-	-	-
40	60 x 70 x 88	1,50	150 x 30 x 65 x 76	4,48	65 x 70 x 85	1,79	200 x 42 x 20 x 53	5,90
43	70 x 80 x 100	2,12	160 x 40 x 75 x 93	6,54	-	-	-	-
50	80 x 85 x 107	2,57	190 x 45 x 83 x 96	10,78	80 x 85 x 100	2,96	-	-
57,5	90 x 100 x 120	3,79	220 x 50 x 92 x 110	16,25	-	-	-	-
63,5	100 x 115 x 144	5,51	245 x 50 x 104 x 121	20,09	-	-	-	-
75	100 x 120 x 160	6,62	275 x 65 x 118 x 145	32,60	-	-	-	-

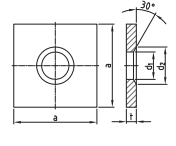
SAS SYSTEMS

tuera hexagonal asiento esférico 30°
bull nose nut 30°



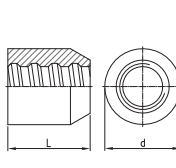
Ø [mm] SW x L x d [mm] [kg]

placa de anclaje asiento esférico 30°
anchor plate cone 30°



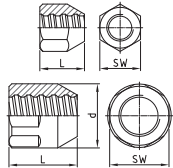
a x t x d₁ x d₂ [mm] [kg]

perno de soldadura
welding bolt



d x L [mm] [kg]

perno de soldadura hexagonal
welding bolt hexagonal



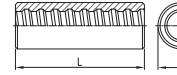
SW x L x d [mm] [kg]

	T 2963 - Ø		T 1928 - Ø **		T 3022 - Ø		T 3026 - Ø	
12	22 x 25	0,05	50 x 8 x 16 x 26	0,14	30 x 30	0,12	32 x 40	0,21
14	27 x 35	0,12	50 x 8 x 18 x 28	0,14	36 x 40	0,24	36 x 50	0,34
16	32 x 40	0,18	60 x 8 x 20 x 30	0,20	40 x 45	0,33	41 x 55	0,48
20	36 x 45	0,25	70 x 12 x 25 x 35	0,41	45 x 50	0,44	46 x 65	0,70
25	41 x 50	0,33	90 x 15 x 30 x 40	0,87	50 x 55	0,55	50 x 75	0,89
26	46 x 50	0,42	100 x 15 x 33 x 45	1,07	50 x 55	0,53	50 x 75	0,89
28	46 x 55	0,47	100 x 15 x 33 x 45	1,07	55 x 60	0,73	55 x 85	1,21
30	50 x 60	0,61	120 x 20 x 36 x 46	2,09	60 x 65	1,02	60 x 90	1,20
32	55 x 60	0,75	120 x 20 x 40 x 50	2,06	60 x 65	0,91	60 x 90	1,20
36	60 x 65	0,94	150 x 30 x 44 x 59	4,92	70 x 70	1,45	70 x 95	1,20
40	65 x 70	1,15	150 x 30 x 47 x 60	4,88	80 x 80	2,11	79 x 100	2,66
43	70 x 75	1,47	160 x 40 x 58 x 78	7,16	90 x 90	3,07	80 x 100 x 90	3,11
50	79 x 90	2,15	190 x 45 x 58 x 75	11,79	90 x 90	2,77	90 x 120 x 100	4,51
57,5	90 x 110 x 102	3,92	220 x 50 x 67 x 87	17,56	110 x 110	5,29	100 x 120 x 110	5,44
63,5	100 x 115 x 108	4,65	245 x 50 x 70 x 100	21,92	114 x 120	5,88	100 x 120 x 114	5,25
75	100 x 100 x 108	2,90	275 x 65 x 88 x 110	35,40	-	-	-	-

** La formación de óxido no se puede descartar debido al almacenamiento y a las condiciones de transporte | Rust formation cannot be ruled out due to storage and transport conditions

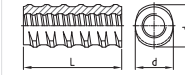
SAS SYSTEMS

manguito estándar
coupler standard



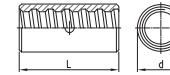
Ø [mm] d x L [mm] [kg]

manguito de barra roscada
thread coupler



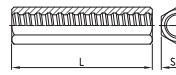
d x d₁ x L [mm] [kg]

manguito de contacto
contact coupler



d x L [mm] [kg]

manguito hexagonal largo
hexagonal coupler long

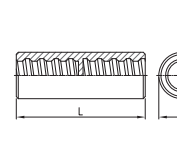


SW x L [mm] [kg]

	T 3003 - Ø			T 3087 - Ø			T 3006 - Ø		T 3010 - Ø	
12	22 x 60	0,11	-	-	-	-	-	-	22 x 80	0,20
14	27 x 75	0,22	-	-	-	-	-	-	27 x 100	0,34
16	32 x 90	0,37	26,5 x 31 x 90	0,27	27 x 65	0,17	32 x 120	0,60		
20	36 x 105	0,52	32 x 37 x 105	0,40	32 x 70	0,25	32 x 140	0,55		
25	40 x 115	0,62	40 x 46 x 115	0,68	36 x 80	0,30	41 x 160	1,10		
26	45 x 120	0,80	47 x 53 x 120	1,13	36 x 80	0,30	41 x 170	1,10		
28	45 x 125	0,85	47 x 53 x 125	1,09	40 x 85	0,40	41 x 180	1,05		
30	50 x 135	1,37	47 x 53 x 135	1,10	45 x 90	0,60	50 x 180	1,75		
32	52 x 140	1,32	57 x 64 x 140	1,93	45 x 90	0,50	50 x 180	1,76		
36	60 x 150	2,10	57 x 64 x 150	1,78	50 x 120	1,25	60 x 190	2,75		
40	65 x 160	2,34	65 x 72 x 160	2,52	54 x 120	0,82	65 x 210	3,67		
43	80 x 170	4,49	75 x 82 x 170	3,79	60 x 130	1,19	70 x 220	4,46		
50	80 x 200	4,49	-	-	63 x 160	1,09	79 x 240	5,97		
57,5	102 x 230	9,54	-	-	83 x 170	3,36	-	-		
63,5	102 x 260	9,45	-	-	90 x 200	4,28	-	-		
75	108 x 240	8,01	-	-	102 x 210	5,33	-	-		

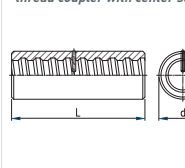
SAS SYSTEMS

manguito estándar con tope central
coupler standard with center stop



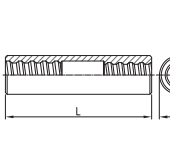
Ø [mm] d x L [mm] [kg]

manguito de barra roscada con tope central
thread coupler with center stop



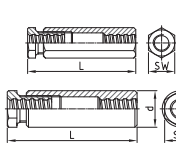
d x L [mm] [kg]

manguito reductor
reducing coupler



Ø x d x L [mm] [kg]

tensor
turnbuckle

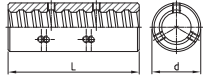


SW x L x d [mm] [kg]

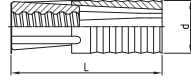
	T 3002 - Ø			T 3043 - Ø			T 3102 - Ø		T 3105 - Ø	
12	22 x 60	0,12	-	-	-	-	-	-	32 x 126	0,65
14	27 x 75	0,23	-	-	-	-	-	-	32 x 138	0,66
16	32 x 90	0,38	32 x 90	0,40	16/14 x 32 x 120	0,55	36 x 150	0,92		
20	36 x 105	0,54	36 x 105	0,53	20/16 x 36 x 130	0,65	41 x 175	1,28		
25	40 x 115	0,65	40 x 115	0,62	25/20 x 40 x 150	0,84	46 x 190	1,64		
26	45 x 120	0,83	45 x 120	0,91	26/20 x 40 x 155	0,88	50 x 205	2,17		
28	45 x 125	0,89	45 x 125	0,86	28/26 x 45 x 170	1,20	50 x 205	2,04		
30	50 x 135	1,41	50 x 135	1,21	30/28 x 50 x 180	1,62	60 x 225	3,58		
32	52 x 140	1,37	52 x 140	1,32	32/30 x 52 x 185	1,72	60 x 225	3,41		
36	-	-	60 x 150	1,96	36/32 x 60 x 205	2,61	70 x 250	5,39		
40	-	-	65 x 160	2,38	40/36 x 65 x 215	3,26	79 x 270	7,31		
43	-	-	80 x 170	4,49	43/40 x 80 x 225	5,93	90 x 290 x 105	13,46		
50	-	-	80 x 200	4,55	50/40 x 80 x 240	6,00	100 x 310 x 115	16,89		
57,5	-	-	102 x 230	9,54	57,5/50 x 90 x 280	7,99	100 x 340 x 125	20,37		
63,5	-	-	102 x 260	9,45	63,5/57,5 x 102 x 310	11,56	100 x 395 x 130	24,11		
75	-	-	108 x 240	8,08	75/63,5 x 110 x 290	11,63	110 x 370 x 130	19,67		

SAS SYSTEMS

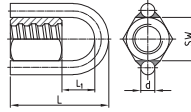
manguito con tornillos de apriete
coupler with set screws



perno expansivo
expansion shell



tuerca hexagonal con argolla
ring nut

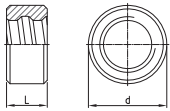


Ø [mm] d x L [mm] [kg] d x L [mm] [kg] SW x L x L, x d [mm] [kg]

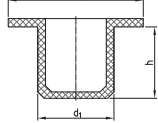
	T 3020 - Ø		T 2136 - Ø *		T 2927 - Ø *	
12	-	-	-	-	-	-
14	-	-	-	-	32 x 110 x 54 x 16	0,58
16	-	-	32 x 92	0,22	32 x 110 x 54 x 16	0,57
20	-	-	39 x 109	0,44	36 x 120 x 59 x 16	0,67
25	-	-	49 x 121	0,60	41 x 135 x 69 x 16	0,78
26	-	-	-	-	-	-
28	45 x 125	0,82	49 x 121	0,60	46 x 145 x 74 x 16	0,97
30	-	-	-	-	-	-
32	52 x 140	1,35	59 x 149	1,00	55 x 165 x 89 x 16	1,34
36	60 x 150	1,94	-	-	-	-
40	65 x 160	2,35	-	-	65 x 193 x 103 x 20	2,10
43	80 x 170	4,41	-	-	70 x 200 x 105 x 20	2,56
50	80 x 200	4,50	-	-	79 x 220 x 110 x 20	3,33
57,5	102 x 230	9,45	-	-	90 x 270 x 140 x 20	5,57
63,5	102 x 260	9,41	-	-	100 x 279 x 144 x 20	6,07
75	108 x 240	8,02	-	-	100 x 279 x 159 x 20	4,43

SAS SYSTEMS

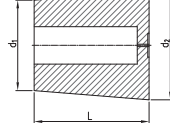
tuerca de fijación
fix ring



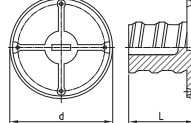
tapón interior
inner cap



cono hueco
recess cone



tape con tornillos
nail plate

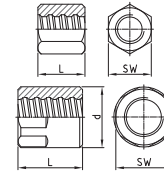


Ø [mm] d x L [mm] [kg] d1 x d2 x h [mm] [kg] d1 x d2 x L [mm] [kg] d x L [mm] [kg]

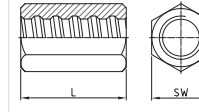
	T 5003 - Ø		T 5025 - Ø		T 5050 - Ø		T 5979 - Ø	
12	-	-	12 x 19 x 7	0,01	36 x 42 x 40	0,02	36 x 20	0,01
14	-	-	14 x 19 x 7	0,01	41 x 49 x 49	0,03	42 x 20	0,01
16	-	-	16 x 25 x 9	0,01	48 x 58 x 64	0,05	48 x 25	0,01
20	-	-	20 x 25 x 9	0,01	50 x 62 x 74	0,07	48 x 30	0,01
25	-	-	25 x 30 x 9	0,01	63 x 76 x 78	0,10	58 x 35	0,02
26	-	-	26 x 31 x 9	0,01	-	-	58 x 35	0,02
28	-	-	28 x 35 x 9	0,01	74 x 89 x 89	0,14	58 x 40	0,02
30	-	-	30 x 35 x 9	0,01	-	-	68 x 45	0,03
32	-	-	32 x 37 x 9	0,01	77 x 93 x 98	0,14	68 x 45	0,03
36	50 x 25	0,15	36 x 42 x 9	0,01	-	-	-	-
40	55 x 25	0,18	40 x 48 x 10	0,01	-	-	-	-
43	65 x 25	0,33	-	-	-	-	-	-
50	65 x 30	0,25	50 x 58 x 10	0,01	-	-	-	-
57,5	81 x 35	0,60	-	-	-	-	-	-
63,5	89 x 40	0,85	64 x 74 x 10	0,01	-	-	-	-
75	102 x 40	1,01	-	-	-	-	-	-

SAS SYSTEMS

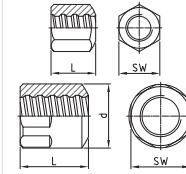
tuerca hexagonal EP
anchor nut EP flat



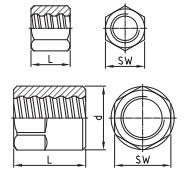
tuerca hexagonal larga EP
anchor nut EP long



tuerca hexagonal
asiento esférico 30° EP
bull nose nut EP 30°



contratuercas larga EP
lock nut EP long

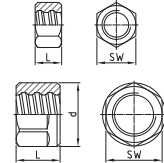


Ø [mm] SW x L x d [mm] [kg] SW x L [mm] [kg] SW x L x d [mm] [kg] SW x L x d [mm] [kg]

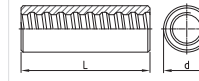
	T 2002 - Ø EP		T 2024 - Ø EP		T 2963 - Ø EP		T 2003 - Ø EP	
12	22 x 30	0,06	22 x 35	0,08	22 x 30	0,06	19 x 25	0,05
14	27 x 40	0,14	27 x 45	0,16	27 x 40	0,14	27 x 30	0,12
16	32 x 50	0,25	32 x 50	0,25	32 x 50	0,24	32 x 35	0,18
20	36 x 55	0,31	32 x 65	0,26	36 x 55	0,31	32 x 45	0,19
25	41 x 60	0,40	41 x 75	0,51	41 x 60	0,40	41 x 50	0,35
26	46 x 60	0,57	41 x 80	0,52	-	-	41 x 55	0,36
28	46 x 65	0,55	41 x 85	0,49	46 x 65	0,55	41 x 55	0,31
30	50 x 75	0,79	46 x 90	0,71	-	-	50 x 60	0,63
32	55 x 75	0,97	50 x 90	0,87	55 x 75	0,96	50 x 60	0,57
36	60 x 80	1,22	55 x 95	1,08	60 x 80	1,18	55 x 65	1,01
40	65 x 85	1,43	60 x 100	1,31	65 x 85	1,43	60 x 75	1,00
43	70 x 90	1,81	-	-	70 x 90	1,77	70 x 75	1,51
50	79 x 105	2,71	79 x 120	2,97	79 x 105	2,62	79 x 95	2,50
57,5	90 x 125 x 102	4,72	-	-	90 x 125 x 102	4,53	90 x 100 x 102	3,68
63,5	100 x 130 x 108	5,53	-	-	100 x 130 x 108	5,30	90 x 130 x 102	4,26
75	100 x 115 x 108	3,48	-	-	100 x 115 x 108	3,38	100 x 100 x 108	2,97

SAS SYSTEMS

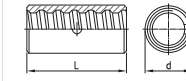
contratuercas corta EP
lock nut EP short



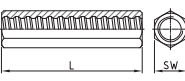
manguito EP estándar
coupler EP standard



manguito de contacto EP
contact coupler EP



manguito hexagonal largo EP
hexagonal coupler EP long



Ø [mm] SW x L x d [mm] [kg] d x L [mm] [kg] d x L [mm] [kg] SW x L [mm] [kg]

	T 2040 - Ø EP		T 3003 - Ø EP		T 3006 - Ø EP		T 3010 - Ø EP	
12	19 x 20	0,03	22 x 75	0,15	-	-	22 x 80	0,17
14	27 x 25	0,09	27 x 90	0,32	-	-	27 x 100	0,34
16	32 x 30	0,15	32 x 105	0,46	-	-	32 x 120	0,60
20	32 x 40	0,17	36 x 120	0,59	32 x 70	0,25	32 x 140	0,56
25	41 x 40	0,28	40 x 135	0,71	36 x 80	0,30	41 x 160	1,10
26	41 x 45	0,29	45 x 140	1,06	36 x 80	0,24	41 x 170	1,11
28	41 x 45	0,41	45 x 145	0,97	40 x 85	0,40	41 x 200	1,22
30	50 x 50	0,52	50 x 155	1,38	45 x 90	0,53	50 x 180	1,89
32	50 x 50	0,50	52 x 160	1,49	45 x 90	0,50	50 x 180	1,75
36	55 x 55	0,73	60 x 170	2,30	50 x 120	0,74	60 x 190	2,90
40	60 x 65	0,85	65 x 190	3,07	54 x 120	0,90	65 x 210	3,66
43	70 x 65	1,30	80 x 200	5,28	60 x 130	1,18	70 x 220	4,44
50	79 x 80	2,10	80 x 235	5,60	64 x 160	1,35	79 x 240	5,95
57,5	90 x 80 x 102	2,85	102 x 260	10,75	80 x 170	2,90	-	-
63,5	90 x 85 x 102	2,62	102 x 300	10,87	90 x 200	4,25	-	-
75	100 x 80 x 108	2,36	108 x 270	9,00	102 x 210	5,30	-	-

* Para más información respecto de la capacidad de carga e instalación, consulte por favor la ficha técnica incluida en nuestra página web with regard to load capacity and installation, please note data sheet available on the homepage



SAS barra roscada laminada en caliente, rosca a derechas | SAS thread bar hot rolled, ribbed - right hand thread

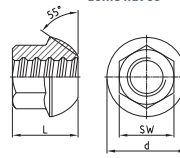
SAS 670 / 800 Ø 18 - 75mm | grado 97

Ø _{NENM} / Ø _{NEM}	[mm]	18	22	25	28	30	35	43	50	57,5	63,5	75
max d _A	[mm]	21	25	28	32	34	40	48	55	63	70	82
c	[mm]	8	8	10	11	11	14	17	18	20	21	24
f _{yk} (f _{0,2k}) / f _{tk} / A _{gt} ¹⁾		670 N/mm ² / 800 N/mm ² / ≥ 5%										
F _{yk} [F _{0,2k}]	[kN]	170	255	329	413	474	645	973	1315	1740	2122	2960
F _{tk}	[kN]	204	304	393	493	565	770	1162	1570	2077	2534	3535
A	[mm ²]	254	380	491	616	707	962	1452	1963	2597	3167	4418
G	[kg/m]	2,00	2,98	3,85	4,83	5,55	7,55	11,40	15,40	20,38	24,86	34,68

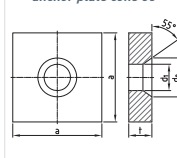
¹⁾ Deformación total porcentual para carga máxima | Percentage total elongation at maximum force
Los pesos reales pueden variar dentro de las tolerancias de fabricación. | Weight specifications of bar and accessories are average values. The actual values may deviate due to fabrication tolerances.

SAS SYSTEMS

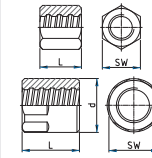
tuercas asiento esférico 55°
dome nut 55°



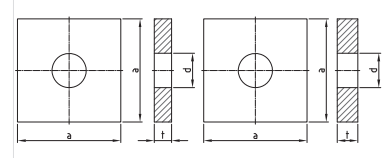
placa de anclaje asiento esférico 55°
anchor plate cone 55°



tuercas hexagonal anchor nut



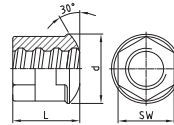
placa de anclaje lisa
anchor plate flat



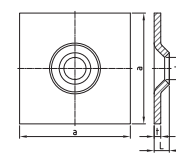
Ø [mm]	SW x L x d [mm]	[kg]	a x t x d ₂ [mm]	[kg]	SW x L x d [mm]	[kg]	a x t x d [mm]	[kg]	a x t x d [mm]	[kg]				
TR 2001 - Ø			TR 2011 - Ø **			TR 2002 - Ø			TR 2138 - Ø **			TR 2139 - Ø **		
18	32 x 35 x 43	0,18	100 x 25 x 27 x 39	1,83	36 x 45	0,29	100 x 20 x 23	1,51	100 x 25 x 23	1,88				
22	36 x 45 x 53	0,27	110 x 30 x 32 x 47	2,62	41 x 50	0,39	110 x 25 x 27	2,26	110 x 30 x 27	2,72				
25	41 x 50 x 60	0,47	125 x 30 x 35 x 53	3,40	46 x 55	0,53	110 x 25 x 30	2,20	115 x 30 x 30	2,95				
28	46 x 55 x 67	0,62	135 x 35 x 40 x 59	4,59	50 x 60	0,67	115 x 30 x 34	2,90	120 x 30 x 34	3,18				
30	50 x 60 x 71	0,66	145 x 35 x 40 x 63	5,32	55 x 65	0,90	130 x 30 x 36	3,74	130 x 35 x 36	4,36				
35	60 x 70 x 83	1,40	170 x 40 x 47 x 73	8,36	65 x 70	1,41	150 x 35 x 42	5,80	150 x 40 x 42	6,63				
43	70 x 85 x 102	2,22	210 x 50 x 58 x 90	15,96	79 x 90	2,62	185 x 45 x 50	11,40	185 x 55 x 50	13,93				
50	80 x 100 x 116	3,44	240 x 55 x 70 x 110	22,59	79 x 100	2,53	215 x 50 x 60	17,03	215 x 60 x 60	20,44				
57,5	90 x 115 x 137	5,69	275 x 60 x 75 x 119	32,77	90 x 120 x 102	4,53	250 x 55 x 67	25,46	245 x 65 x 67	28,83				
63,5	100 x 125 x 151	7,52	300 x 65 x 82 x 131	42,19	100 x 145 x 114	6,97	265 x 60 x 74	31,05	270 x 70 x 74	37,70				
75	120 x 150 x 178	12,94	325 x 70 x 100 x 159	51,89	100 x 130 x 108	3,86	320 x 70 x 86	53,10	325 x 70 x 86	54,85				

SAS SYSTEMS

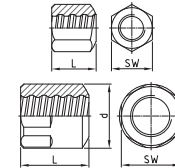
tuercas asiento esférico 30°
dome nut 30°



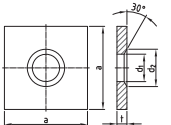
placa de anclaje abombada 30°
domed washer 30°



tuercas hexagonal sientos esférico 30°
bull nose nut 30°



placa de anclaje asiento esférico 30°
anchor plate cone 30°

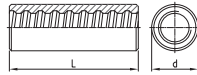


Ø [mm]	SW x L x d [mm]	[kg]	a x L x t x d [mm]	[kg]	SW x L x d [mm]	[kg]	a x t x d ₂ [mm]	[kg]
TR 2944 - Ø		TR 2132 - Ø **		TR 2963 - Ø		TR 1928 - Ø **		
18	30 x 35 x 46	0,20	150 x 25 x 10 x 26	1,76	36 x 45	0,28	70 x 10 x 25 x 35	0,34
22	36 x 40 x 51	0,29	150 x 25 x 10 x 34	1,74	41 x 50	0,39	90 x 12 x 30 x 40	0,69
25	41 x 50 x 58	0,45	200 x 25 x 10 x 34	3,11	46 x 55	0,53	100 x 12 x 33 x 45	0,85
28	46 x 60 x 62	0,67	200 x 27 x 12 x 40	3,70	50 x 60	0,66	120 x 20 x 40 x 50	2,06
30	46 x 60 x 62	0,65	200 x 27 x 12 x 40	3,70	55 x 65	0,82	120 x 20 x 40 x 50	2,06
35	-	-	-	-	65 x 70	1,35	150 x 30 x 47 x 60	4,88
43	-	-	-	-	79 x 90	2,50	190 x 45 x 58 x 75	11,79
50	-	-	-	-	79 x 100	2,46	215 x 50 x 60 x 80	16,99
57,5	-	-	-	-	90 x 120 x 102	4,32	245 x 50 x 70 x 90	22,00
63,5	-	-	-	-	100 x 145 x 114	6,67	280 x 60 x 78 x 100	34,60
75	-	-	-	-	100 x 130 x 108	3,93	325 x 70 x 88 x 120	54,52

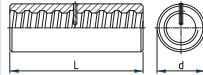
** La formación de óxido no se puede descartar debido al almacenamiento y a las condiciones de transporte | Rust formation cannot be ruled out due to storage and transport conditions

SAS SYSTEMS

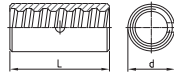
manguito estándar
coupler standard



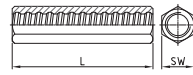
manguito de barra roscada
thread bar coupler



manguito de contacto
contact coupler



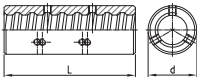
manguito hexagonal largo
hexagonal coupler long



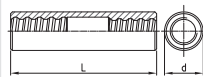
Ø [mm]	d x L [mm]	[kg]	d x L [mm]	[kg]	d x L [mm]	[kg]	SW x L [mm]	[kg]
	TR 3003 - Ø		TR 3043 - Ø		TR 3006 - Ø		TR 3010 - Ø	
18	36 x 100	0,57	36 x 100	0,57	27 x 70	0,16	36 x 120	0,78
22	40 x 110	0,55	40 x 110	0,71	32 x 75	0,22	41 x 135	1,08
25	45 x 130	1,05	45 x 130	1,05	40 x 80	0,43	46 x 150	1,49
28	50 x 140	1,36	50 x 140	1,39	45 x 90	0,67	50 x 170	1,96
30	55 x 150	1,84	55 x 150	1,85	45 x 90	0,60	55 x 185	2,63
35	65 x 180	3,14	65 x 180	3,17	50 x 120	0,82	60 x 210	3,36
43	80 x 200	5,42	80 x 200	5,35	65 x 160	2,08	79 x 245	7,27
50	90 x 210	6,92	90 x 210	6,92	70 x 170	2,23	-	-
57,5	102 x 250	10,37	102 x 250	10,38	83 x 180	3,55	-	-
63,5	114 x 300	15,85	114 x 300	15,86	90 x 200	4,24	-	-
75	108 x 260	8,98	108 x 260	8,76	102 x 230	5,83	-	-

SAS SYSTEMS

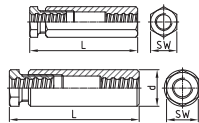
manguito con tornillos de apriete
coupler with set screws



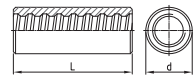
manguito reductor
reducing coupler



manguito tensor
turnbuckle



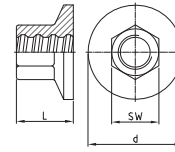
manguito acero templado
coupler tempered



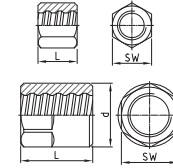
Ø [mm]	d x L [mm]	[kg]	Ø x d x L [mm]	[kg]	SW x L x d [mm]	[kg]	d x L [mm]	[kg]
	TR 3020 - Ø		TR 3102 - Ø		TR 3105 - Ø		TR 3927 - Ø	
18	36 x 100	0,56	-	-	41 x 175	1,34	-	-
22	40 x 110	0,70	22/18 x 40 x 145	1,00	46 x 190	1,78	36 x 90	0,41
25	45 x 130	1,03	25/22 x 45 x 160	1,40	55 x 205	2,94	38 x 100	0,45
28	50 x 140	1,37	28/25 x 50 x 180	2,00	60 x 225	3,74	42 x 120	0,64
30	55 x 150	1,85	30/28 x 55 x 195	2,50	65 x 260	5,11	50 x 130	1,18
35	65 x 180	3,13	35/30 x 60 x 215	3,00	79 x 275	8,27	55 x 150	1,52
43	80 x 200	5,40	43/35 x 80 x 250	5,50	90 x 330 x 105	15,14	65 x 170	2,26
50	90 x 210	6,82	50/43 x 85 x 270	7,68	100 x 350 x 115	19,04	75 x 180	3,17
57,5	102 x 250	10,00	57,5/50 x 100 x 295	11,94	100 x 405 x 125	24,46	85 x 220	4,92
63,5	114 x 300	14,70	63,5/57,5 x 110 x 305	14,89	100 x 425 x 120	21,56	95 x 240	6,81
75	108 x 260	8,90	75/63,5 x 110 x 335	13,24	110 x 460 x 130	25,20	-	-

SAS SYSTEMS

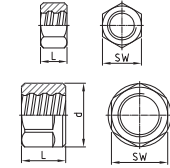
pieza de anclaje
anchor piece



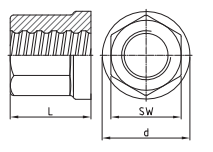
contratuercas larga
lock nut long



contratuercas corta
lock nut short



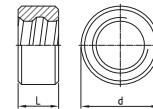
Tuerca hexagonal apoyo circular
anchornut with flange



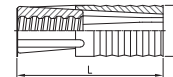
Ø [mm]	SW x L x d [mm]	[kg]	SW x L x d [mm]	[kg]	SW x L x d [mm]	[kg]	SW x L x d [mm]	[kg]
	TR 2073 - Ø		TR 2003 - Ø		TR 2040 - Ø		TR 2163 - Ø	
18	32 x 35 x 55	0,28	30 x 40	0,16	30 x 22	0,10	36 x 45 x 42	0,31
22	36 x 45 x 65	0,43	36 x 45	0,25	36 x 22	0,12	41 x 50 x 47	0,43
25	41 x 50 x 75	0,62	41 x 50	0,37	41 x 22	0,16	46 x 55 x 53	0,59
28	46 x 55 x 85	0,85	46 x 55	0,50	46 x 30	0,26	50 x 65 x 58	0,80
30	50 x 60 x 90	1,03	50 x 60	0,67	50 x 30	0,31	55 x 65 x 64	0,98
35	60 x 70 x 105	1,66	55 x 65	0,78	55 x 40	0,47	65 x 70 x 75	1,51
43	70 x 85 x 130	2,74	70 x 80	1,60	70 x 50	1,00	80 x 90 x 92	2,99
50	80 x 100 x 150	3,63	79 x 90	2,27	79 x 50	1,26	80 x 100 x 92	2,84
57,5	90 x 115 x 175	6,96	90 x 100 x 102	3,71	90 x 60 x 102	2,04	90 x 120 x 102	4,15
63,5	100 x 125 x 190	8,78	100 x 115 x 114	5,45	100 x 70 x 114	3,07	100 x 145 x 114	6,23
75	120 x 150 x 230	15,03	100 x 120 x 108	4,20	100 x 80 x 108	2,70	-	-

SAS SYSTEMS

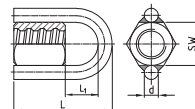
tuerca de fijación
fix ring



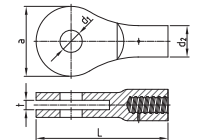
perno expansivo
expansion shell



tuerca hexagonal con argolla
ring nut



pieza de tenedor
fork piece

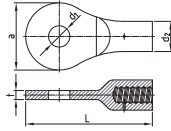


Ø [mm]	d x L [mm]	[kg]	d x L [mm]	[kg]	SW x L x d x L1 [mm]	[kg]	a x L x t x d1 x d2 [mm]	[kg]
	TR 5003 - Ø		TR 2136 - Ø *		TR 2927 - Ø *		TR 2090 - Ø EP	
18	-	-	39 x 109	0,44	36 x 120 x 16 x 59	0,68	-	-
22	31 x 20	0,06	49 x 121	0,60	41 x 135 x 16 x 69	0,83	-	-
25	-	-	49 x 121	0,60	46 x 145 x 16 x 74	1,02	-	-
28	45 x 20	0,14	59 x 149	1,00	50 x 155 x 16 x 79	1,19	-	-
30	45 x 20	0,06	59 x 149	1,00	55 x 165 x 16 x 84	1,46	-	-
35	50 x 20	0,13	-	-	65 x 193 x 20 x 103	2,42	147 x 315 x 27 x 53 x 75	7,40
43	65 x 25	0,33	-	-	79 x 220 x 20 x 110	3,78	197 x 384 x 29 x 63 x 92	12,80
50	70 x 30	0,39	-	-	79 x 220 x 20 x 100	3,69	221 x 406 x 35 x 75 x 94	14,75
57,5	81 x 35	0,60	-	-	90 x 270 x 20 x 130	5,97	248 x 454 x 42 x 88 x 96	20,40
63,5	89 x 40	0,85	-	-	100 x 305 x 20 x 140	8,60	298 x 553 x 42 x 98 x 114	34,50
75	102 x 40	1,01	-	-	100 x 279 x 20 x 129	5,30	328 x 627 x 54 x 108 x 116	44,40

* Para más información respecto de la capacidad de carga e instalación, consulte por favor la ficha técnica incluida en nuestra página web with regard to load capacity and installation, please note data sheet available on the homepage

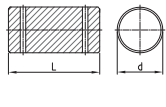
SAS SYSTEMS

pieza tipo argolla
eye piece



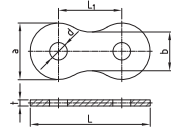
Ø [mm] a x L x t x d; x d; [mm] [kg]

pasador para pieza perforada
bolt eye piece



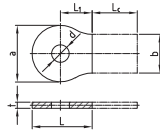
d x L [mm] [kg]

pieza de conexión tipo argolla
strap connection eye piece



a x L x t x d x L; x b [mm] [kg]

pieza tipo argolla para soldar
welding plate eye piece

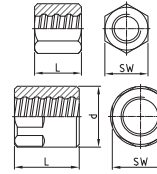


a x L x L; t x d x b [mm] [kg+Lc]

	TR 2080 - Ø EP **		TR 2081 - Ø		TR 3080 - Ø **		TR 3081 - Ø **	
18	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-
35	167 x 315 x 23 x 53 x 75	7,18	50 x 100	1,52	167 x 354 x 18 x 53 x 187 x 114	7,00	167 x 177 x 94 x 18 x 53 x 114 x Lc	3,10 + Lc
43	197 x 384 x 25 x 63 x 92	12,54	60 x 110	2,40	197 x 414 x 20 x 63 x 217 x 134	9,60	197 x 207 x 109 x 20 x 63 x 134 x Lc	4,72 + Lc
50	221 x 406 x 31 x 75 x 92	17,99	72 x 105	3,31	-	-	-	-
57,5	248 x 469 x 38 x 88 x 96	21,57	85 x 145	6,45	248 x 526 x 30 x 88 x 278 x 160	22,00	248 x 263 x 139 x 30 x 88 x 160 x Lc	10,95 + Lc
63,5	298 x 558 x 38 x 98 x 114	33,45	95 x 145	8,02	298 x 626 x 30 x 98 x 328 x 200	31,80	298 x 313 x 164 x 30 x 98 x 200 x Lc	17,95 + Lc
75	328 x 627 x 50 x 108 x 116	46,13	105 x 165	11,21	328 x 691 x 35 x 108 x 363 x 220	45,80	328 x 346 x 182 x 35 x 108 x 220 x Lc	22,75 + Lc

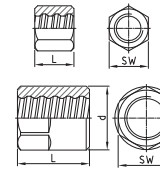
SAS SYSTEMS

tuerca hexagonal EP
anchor nut EP flat



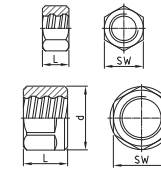
Ø [mm] SW x L x d [mm] [kg]

contratuera larga EP
lock nut EP long



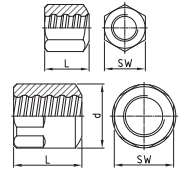
SW x L x d [mm] [kg]

contratuera corta EP
lock nut EP short



SW x L x d [mm] [kg]

tuerca hexagonal
asiento esférico 30° EP
bull nose EP 30°

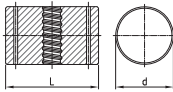


SW x L x d [mm] [kg]

	TR 2002 - Ø EP		TR 2003 - Ø EP		TR 2040 - Ø EP		TR 2963 - Ø EP	
18	36 x 55	0,40	30 x 50	0,20	30 x 40	0,15	36 x 55	0,38
22	41 x 60	0,45	36 x 60	0,33	36 x 45	0,24	41 x 60	0,43
25	46 x 70	0,65	41 x 65	0,44	41 x 50	0,36	46 x 70	0,64
28	50 x 75	0,90	46 x 70	0,59	46 x 55	0,50	50 x 75	0,67
30	55 x 80	1,00	50 x 75	0,77	50 x 60	0,66	55 x 80	0,98
35	65 x 85	1,75	55 x 80	0,94	55 x 65	0,76	65 x 85	1,70
43	79 x 105	3,30	70 x 100	2,00	70 x 80	1,65	79 x 105	3,20
50	79 x 115	2,91	79 x 110	2,78	79 x 90	2,26	79 x 115	2,83
57,5	90 x 140 x 102	5,34	90 x 120 x 102	4,51	90 x 100 x 102	3,54	90 x 140 x 102	5,14
63,5	100 x 170 x 114	8,27	100 x 140 x 114	6,73	100 x 115 x 114	5,44	100 x 170 x 114	7,79
75	100 x 150 x 108	4,67	100 x 140 x 108	4,32	100 x 120 x 108	3,65	100 x 150 x 108	4,60

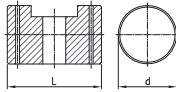
SAS SYSTEMS

tuerca articulada
joint nut



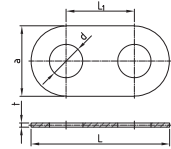
Ø [mm] d x L [mm] [kg]

perno articulado
joint bolt



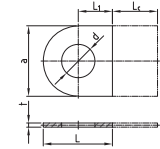
d x L [mm] [kg]

pieza de conexión para tuerca y perno articulados
strap connection joint bolt & nut



a x L x t x d x L1 [mm] [kg]

placa soldada para tuerca y perno articulados
welding plate joint bolt & nut



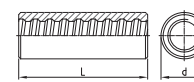
a x L x t x d x L; Lc [mm] [kg+Lc]

	TR 2020 - Ø		TR 2021 - Ø		TR 2022 - Ø **		TR 2023 - Ø **	
18	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-
35	120 x 193	16,00	120 x 193	14,60	260 x 512 x 15 x 123 x 252	11,00	260 x 256 x 15 x 123 x 126 x Lc	5,60 + Lc
43	140 x 212	23,80	140 x 212	21,20	320 x 626 x 15 x 145 x 306	16,60	320 x 313 x 15 x 145 x 153 x Lc	8,55 + Lc
50	-	-	-	-	-	-	-	-
57,5	150 x 222	27,00	150 x 222	24,60	420 x 780 x 20 x 155 x 360	40,20	420 x 390 x 20 x 155 x 180 x Lc	19,80 + Lc
63,5	190 x 265	53,40	190 x 265	51,06	460 x 894 x 25 x 195 x 434	59,60	460 x 447 x 25 x 195 x 217 x Lc	30,05 + Lc
75	190 x 279	55,00	190 x 279	52,00	470 x 912 x 35 x 195 x 442	88,40	470 x 456 x 35 x 195 x 221 x Lc	44,20 + Lc

Lc a petición del cliente / Lc on customer request

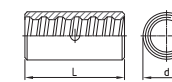
SAS SYSTEMS

manguito estándar EP
coupler EP standard



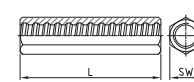
Ø [mm] d x L [mm] [kg]

manguito de contacto EP
contact coupler EP



d x L [mm] [kg]

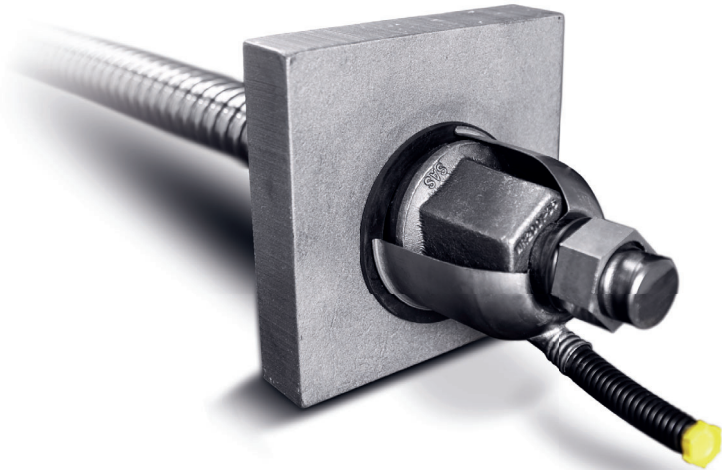
manguito hexagonal largo EP
hexagonal coupler EP long



SW x L [mm] [kg]

	TR 3003 - Ø EP		TR 3006 - Ø EP		TR 3010 - Ø EP	
18	36 x 120	0,69	27 x 70	0,16	36 x 120	0,77
22	40 x 125	0,81	32 x 75	0,25	41 x 135	1,08
25	45 x 150	1,24	40 x 80	0,47	46 x 150	1,49
28	50 x 160	1,56	45 x 90	0,67	50 x 170	1,94
30	55 x 165	2,02	45 x 90	0,60	55 x 185	2,62
35	65 x 190	3,30	50 x 120	0,82	60 x 210	3,34
43	80 x 225	6,10	65 x 160	2,08	79 x 245	7,24
50	90 x 235	7,72	70 x 170	2,21	-	-
57,5	102 x 275	11,36	83 x 180	3,53	-	-
63,5	108 x 285	12,71	90 x 200	4,24	-	-
75	108 x 290	9,70	102 x 230	5,79	-	-

Barra SAS de pretensado | SAS stress bars



Barra SAS de pretensado laminada en caliente - rosca a derechas | SAS thread bar hot rolled, ribbed - right hand thread

SAS 950 / 1050 Ø 18 - 47 mm | SAS 835 / 1035 Ø 57 - 75 mm | grado 150

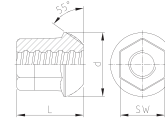
$\theta_{NEMN} / \theta_{NOM}$	[mm]	18	26,5	32	36	40	47	57	65	75
max d_A	[mm]	21	31	37	42	46	53	64	72	82
c	[mm]	8	13	16	18	20	21	21	21	24
$f_{p0,1k} / f_{pk} / A_{gt}^{11}$		950 N/mm ² / 1050 N/mm ² / $\geq 5\%$						835 N/mm ² / 1035 N/mm ² / $\geq 4\%$		
$F_{yk} (F_{0,1k})$	[kN]	230	525	760	960	1190	1650	2155	2780	3690
F_{pk}	[kN]	255	580	845	1070	1320	1820	2671	3447	4572
A	[mm ²]	241	551	804	1020	1257	1735	2581	3331	4418
G	[kg/m]	1,96	4,48	6,53	8,27	10,21	14,10	20,95	27,10	35,90

¹¹ Deformación total porcentual para carga máxima | Percentage total elongation at maximum force
Los pesos reales pueden variar dentro de las tolerancias de fabricación. | Weight specifications are average values. The actual values may deviate due to fabrication tolerances.

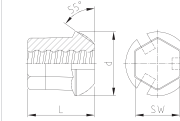
Accesorios | accessories

SAS SYSTEMS

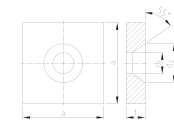
tuerca asiento esférico 55°
dome nut 55°



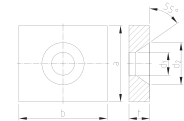
tuerca asiento esférico 55° con
ranuras de inyección
domed nut 55° with grout slots



placa de anclaje asiento esférico
55° cuadrada
anchor plate square 55°



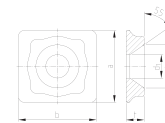
placa de anclaje asiento esférico
55° rectangular
anchor plate rectangular 55°



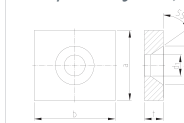
θ [mm]	WR 2001 - Ø		WR 2099 - Ø		WR 2011 - Ø **		WR 2012 - Ø **	
	SW x L x d [mm]	[kg]	SW x L x d [mm]	[kg]	a x t x d, x d _s [mm]	[kg]	a x b x t x d, x d _s [mm]	[kg]
18	36 x 55 x 50	0,43	36 x 55 x 50	0,40	110 x 30 x 28 x 45	2,66	100 x 130 x 30 x 28 x 45	2,39
26,5	50 x 75 x 72	1,09	50 x 75 x 72	1,02	150 x 35 x 39 x 72	5,61	130 x 150 x 35 x 39 x 72	4,50
32	60 x 90 x 80	1,70	60 x 90 x 80	1,65	180 x 40 x 45 x 82	9,33	140 x 180 x 40 x 45 x 82	7,07
36	65 x 100 x 90	2,24	65 x 100 x 90	2,13	200 x 45 x 49 x 92	12,95	150 x 220 x 50 x 49 x 92	11,70
40	70 x 115 x 100	2,91	70 x 115 x 100	2,71	220 x 45 x 54 x 100	15,64	160 x 250 x 60 x 54 x 100	17,10
47	80 x 135 x 110	4,09	80 x 135 x 110	3,79	260 x 50 x 64 x 110	24,49	200 x 280 x 60 x 64 x 110	24,12
57	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-

SAS SYSTEMS

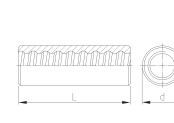
placa QR
QR plate



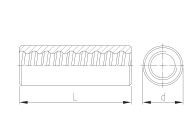
placa de anclaje asiento esférico
55° rectangular pequeña
anchor plate rectangular 55°, small



manguito estándar
coupler standard



manguito largo
coupler long



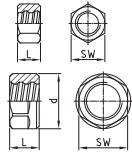
θ [mm]	WR 2074 - Ø **		WR 2076 - Ø **		WR 3003 - Ø		WR 3303 - Ø	
	b x a x t x d, x d _s [mm]	[kg]	a x b x t x d, x d _s [mm]	[kg]	d x L [mm]	[kg]	d x L [mm]	[kg]
18	-	-	80 x 90 x 25 x 28 x 45	1,25	36 x 100	0,56	36 x 115	0,64
26,5	130 x 120 x 30 x 39 x 72	2,00	120 x 130 x 30 x 39 x 72	3,15	50 x 170	1,73	50 x 195	2,00
32	165 x 140 x 35 x 45 x 82	3,30	140 x 165 x 35 x 45 x 82	5,57	60 x 200	2,91	60 x 230	3,40
36	180 x 160 x 40 x 49 x 93	4,90	160 x 180 x 40 x 49 x 92	7,94	68 x 210	3,98	68 x 245	4,68
40	195 x 180 x 45 x 54 x 100	7,20	180 x 195 x 45 x 54 x 100	10,95	70 x 245	4,59	70 x 285	5,38
47	-	-	210 x 235 x 55 x 64 x 110	19,20	83 x 270	7,23	-	-
57	-	-	-	-	95 x 240	7,75	-	-
65	-	-	-	-	106 x 260	10,37	-	-
75	-	-	-	-	114 x 290	12,14	-	-

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with regard to load capacity and installation, please note data sheet available on the homepage

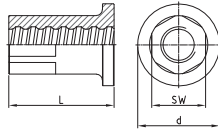
** La formación de óxido no se puede descartar debido al almacenamiento y a las condiciones de transporte | Rust formation cannot be ruled out due to storage and transport conditions

SAS SYSTEMS

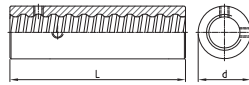
tuerca de fijación
fix nut



anclaje de tesado
stressing anchorage



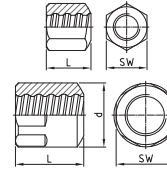
manguito de tesado
stressing-coupler



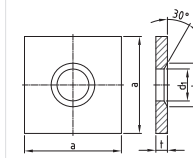
Ø [mm]	SW x L x d [mm]	[kg]	SW x L x d [mm]	[kg]	d x L [mm]	[kg]
	WR 5005 - Ø		WR 8002 - Ø		WR 8003 - Ø	
18	30 x 22	0,08	41 x 70 x 65	0,82	45 x 100	1,00
26,5	36 x 22	0,08	46 x 90 x 70	1,03	45 x 150	1,17
32	41 x 22	0,09	50 x 110 x 70	1,30	55 x 180	2,02
36	46 x 25	0,12	55 x 120 x 80	1,78	60 x 200	2,55
40	50 x 25	0,13	55 x 130 x 80	1,90	65 x 220	3,44
47	60 x 30	0,24	65 x 140 x 90	2,81	75 x 240	4,87
57	85 x 40 x 90	1,02	90 x 160 x 110	7,28	95 x 270	9,40
65	90 x 40 x 102	1,15	100 x 180 x 120	9,66	110 x 290	13,13
75	105 x 50 x 114	1,90	105 x 200 x 135	12,85	120 x 320	15,45

SAS SYSTEMS

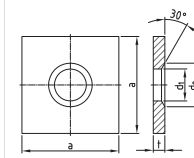
tuerca hexagonal 30°
bull nose nut 30°



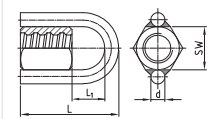
placa de anclaje cono 30°
anchor plate cone 30°



placa de anclaje cono 30°
anchor plate cone 30°



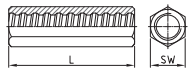
tuerca hexagonal con argolla
(Carga máxima de uso del anillo 60 kN)
ring nut
(working load of ring max. 60 kN)



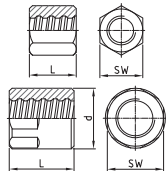
Ø [mm]	SW x L x L x d [mm]	[kg]	SW x L [mm]	[kg]	d x L [mm]	[kg]	SW x L [mm]	[kg]
	WR 2963 - Ø *		WR 1928 - Ø **		WR 1929 - Ø **		WR 2027 - Ø	
18	41 x 60	0,52	120 x 20 x 25 x 35	2,18	-	-	41 x 135 x 59 x 16	0,99
26,5	46 x 80	0,71	150 x 35 x 32 x 45	5,95	-	-	46 x 165 x 69 x 16	1,28
32	55 x 90	1,14	180 x 40 x 38 x 50	9,81	-	-	55 x 190 x 84 x 16	1,81
36	60 x 110	1,57	200 x 45 x 45 x 60	13,55	-	-	60 x 219 x 89 x 20	2,78
40	70 x 120	2,53	220 x 45 x 50 x 70	16,36	-	-	70 x 244 x 104 x 20	3,87
47	79 x 140	3,60	240 x 55 x 58 x 80	23,50	-	-	79 x 274 x 114 x 20	5,10
57	90 x 120 x 95	3,67	285 x 65 x 70 x 90	39,30	220 x 50 x 70 x 90	17,43	90 x 255 x 115 x 20	5,08
65	100 x 130 x 106	4,90	325 x 70 x 78 x 110	55,50	245 x 60 x 78 x 110	25,86	100 x 280 x 130 x 20	6,48
75	105 x 145 x 114	5,51	370 x 80 x 88 x 120	82,00	275 x 70 x 88 x 120	38,03	105 x 305 x 140 x 20	7,31

SAS SYSTEMS

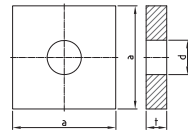
manguito hexagonal
hexagonal coupler



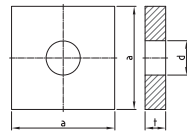
tuerca hexagonal
anchor nut flat



placa de anclaje lisa
anchor plate flat



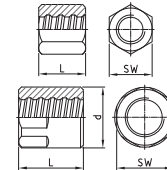
placa de anclaje lisa
anchor plate flat



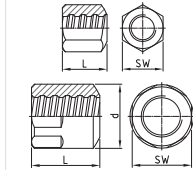
Ø [mm]	SW x L [mm]	[kg]	SW x L x d [mm]	[kg]	a x t x d [mm]	[kg]	a x t x d [mm]	[kg]
	WR 3009 - Ø		WR 2002 - Ø		WR 2139 - Ø**		WR 2140 - Ø**	
18	36 x 100	0,67	41 x 60	0,55	120 x 20 x 25	2,20	-	-
26,5	50 x 170	2,09	46 x 80	0,73	150 x 35 x 32	5,90	-	-
32	60 x 200	3,54	55 x 90	1,18	180 x 40 x 38	9,82	-	-
36	70 x 210	5,01	60 x 110	1,63	200 x 45 x 45	13,57	-	-
40	70 x 245	5,61	70 x 120	2,63	220 x 45 x 50	16,40	-	-
47	79 x 270	7,49	79 x 140	3,72	240 x 55 x 58	23,73	-	-
57	-	-	90 x 120 x 95	3,79	285 x 65 x 70	39,48	220 x 50 x 70	17,49
65	-	-	100 x 130 x 106	4,99	325 x 70 x 78	55,42	245 x 60 x 78	26,02
75	-	-	105 x 145 x 114	5,68	370 x 80 x 88	82,15	275 x 70 x 88	38,21

SAS SYSTEMS

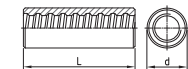
tuerca hexagonal EP
anchor nut EP flat



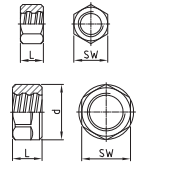
tuerca hexagonal asiento esférico 30°
bull nose nut EP 30°



manguito EP estándar
coupler EP standard

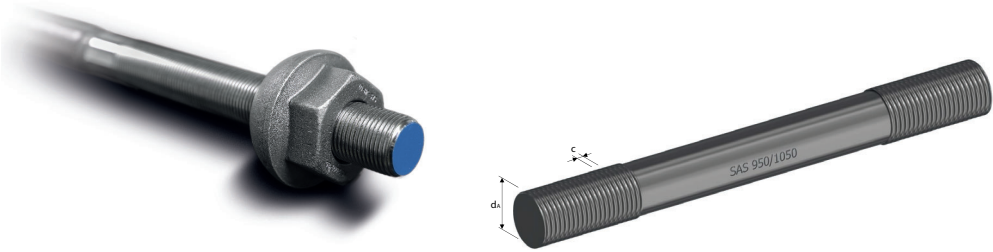


tuerca de fijación EP
fix nut EP



Ø [mm]	SW x L x d [mm]	[kg]	SW x L x d [mm]	[kg]	d x L [mm]	[kg]	SW x L x d [mm]	[kg]
	WR 2002 - Ø EP		WR 2963 - Ø EP		WR 3003 - Ø EP		WR 5005 - Ø EP	
18	41 x 70	0,62	41 x 70	0,60	36 x 120	0,69	30 x 22	0,08
26,5	46 x 90	0,81	46 x 90	0,79	50 x 185	1,94	36 x 22	0,08
32	55 x 100	1,30	55 x 100	1,27	60 x 220	3,33	41 x 22	0,09
36	60 x 120	1,75	60 x 120	1,71	68 x 240	4,72	46 x 25	0,11
40	70 x 130	2,77	70 x 130	2,70	70 x 270	5,26	50 x 25	0,12
47	79 x 150	3,92	79 x 150	3,81	83 x 310	8,65	60 x 30	0,23
57	90 x 145 x 95	4,59	90 x 145 x 95	4,46	95 x 270	9,32	85 x 40 x 90	1,01
65	100 x 155 x 106	5,82	100 x 155 x 106	5,66	106 x 290	12,01	90 x 40 x 102	1,13
75	105 x 180 x 114	7,60	105 x 180 x 114	6,96	114 x 320	14,15	105 x 50 x 114	1,92

** La formación de óxido no se puede descartar debido al almacenamiento y a las condiciones de transporte | Rust formation cannot be ruled out due to storage and transport conditions



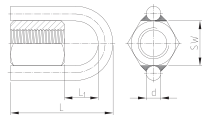
barra de pretensado lisa SAS con rosca laminada en frío - rosca a derechas | SAS smooth bar with cold rolled thread - right hand thread

SAS 950 / 1050 Ø 32 - 40 mm | grade 150 | lisa | smooth

Ø _{NEMN} / Ø _{NEM}	[mm]	32	36
c	[mm]	3	3
f _{p0,1k} /f _{p0k} /A _{gt}		950 N/mm ² / 1050 N/mm ² / ≥ 7%	
F _{yk} [F _{0,1k}]	[kN]	760	960
F _{pk}	[kN]	845	1070
A	[mm ²]	804	1018
G	[kg/m]	6,31	7,99

SAS SYSTEMS

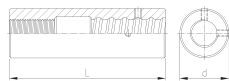
tuercas hexagonales con argolla
(Carga máxima de uso del anillo 60 kN)
ring nut (working load of ring max. 60 kN)



Ø [mm] SW x L x L₁ x d [mm] [kg]

WS 2927 - Ø *

manguito de tesado
stressing coupler for WS



d x L [mm] [kg]

WS 8004 - Ø

manguito de transición
transition coupler



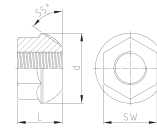
d x L [mm] [kg]

WS 3004 - Ø

32	55 x 125 x 59 x 16	1,22	60 x 190	2,74	60 x 200	2,94
36	60 x 149 x 64 x 20	1,86	65 x 230	3,80	68 x 235	4,47

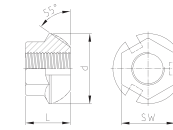
SAS SYSTEMS

tuercas de asiento esférico 55°
dome nut 55°



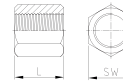
Ø [mm] SW x L x d [mm] [kg]

tuercas de asiento esférico 55°
con muescas por inyección
domed nut 55° with grout slots



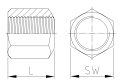
SW x L x d [mm] [kg]

tuercas hexagonales
anchor nut flat



SW x L [mm] [kg]

tuercas hexagonales
asiento esférico
bull nose 30°

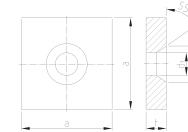


SW x L [mm] [kg]

	WS 2001 - Ø		WS 2099 - Ø		WS 2002 - Ø		WS 2963 - Ø	
32	55 x 46 x 72	0,78	55 x 46 x 72	0,74	55 x 50	0,79	55 x 50	0,68
36	65 x 60 x 90	1,55	65 x 60 x 90	1,41	60 x 65	1,06	60 x 65	1,03

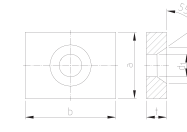
SAS SYSTEMS

placa de anclaje asiento esférico
55° cuadrada
anchor plate square 55°



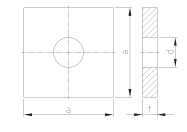
Ø [mm] a x t x d₁ x d₂ [mm] [kg]

placa de anclaje asiento esférico
55° rectangular
anchor plate rectangular 55°



a x b x t x d₁ x d₂ [mm] [kg]

placa de anclaje lisa
anchor plate flat

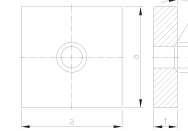


a x t x d [mm] [kg]

	WS 2011 - Ø **		WS 2012 - Ø **		WS 2139 - Ø **	
32	180 x 40 x 45 x 72	9,50	140 x 180 x 40 x 45 x 72	7,24	180 x 40 x 38	9,82
36	200 x 45 x 49 x 92	12,95	150 x 220 x 50 x 49 x 92	11,70	200 x 45 x 45	13,57

SAS SYSTEMS

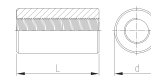
placa de anclaje asiento esférico
30° rectangular
anchor plate rectangular 30°



Ø [mm] a x t x d₁ x d₂ [mm] [kg]

WS 1928 - Ø **

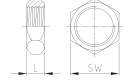
manguito estándar
coupler standard



d x L [mm] [kg]

WS 3003 - Ø

tuercas de fijación
fix nut



SW x L [mm] [kg]

WS 5005 - Ø

32	180 x 40 x 38 x 50	9,81	60 x 110	1,74	41 x 15	0,08
36	200 x 45 x 45 x 60	13,55	68 x 160	3,25	46 x 15	0,09

* Para más información respecto de la capacidad de carga e instalación, consulte por favor la ficha técnica incluida en nuestra página web with regard to load capacity and installation, please note data sheet available on the homepage

** La formación de óxido no se puede descartar debido al almacenamiento y a las condiciones de transporte | Rust formation cannot be ruled out due to storage and transport conditions

Barras roscadas SAS | SAS thread bar

Límite elástico / Tensión última | *yield stress / ultimate stress*
Áreas de aplicación | *areas of application*

Ø-nominal
nom.-Ø

Carga en límite elástico
yield load

Carga última
ultimate load

Sección
cross section area

Peso
weight

Elongación
elongation

SAS 500 / 550 – grado 75/80



Sistemas de armadura de hormigón |
reinforcing systems

[mm]	[kN]	[kN]	[mm ²]	[m/to]	[kg/m]
12	57	62	113	1123,6	0,89
14	77	85	154	826,4	1,21
16	100	110	201	632,9	1,58
20	160	175	314	404,9	2,47
25	245	270	491	259,7	3,85
28	310	340	616	207,0	4,83
32	405	440	804	158,5	6,31
36	510	560	1020	125,2	7,99
40	630	690	1260	101,3	9,87
43	726	799	1452	87,7	11,40
50	980	1080	1960	64,9	15,40

6 10



Sistemas geotécnicos | *geotechnical systems*

SAS 555 / 700 – grado 80

SAS 555 / 700 – grado 80

SAS 500 / 550 – grado 75

57,5	1441	1818	2597	49,1	20,38
63,5	1760	2215	3167	40,2	24,86
75	2209	2430	4418	28,8	34,68

5 ---
5 ---
5 ---

Disponible también SAS 550 | *alternative SAS 550 grade 75 available*

SAS 450 / 700 – grado 60



Minería | *mining*

16	93	145	207	617,3	1,62
25	220	345	491	259,7	3,85

[A₅] 15
[A₅] 20

SAS 650 / 800 – grado 90



Minería | *mining*

22	247	304	380	335,6	2,98
25	319	393	491	259,7	3,85
28	400	493	616	207,0	4,83
30	460	565	707	180,2	5,55

[A₅] 18

SAS 670 / 800 – grado 97



Sistemas geotécnicos | *geotechnical systems*

18	170	204	254	500,0	2,00
22	255	304	380	335,6	2,98
25	329	393	491	259,7	3,85
28	413	493	616	207,0	4,83
30	474	565	707	180,2	5,55
35	645	770	962	132,5	7,55
43	973	1162	1452	87,7	11,40
50	1315	1570	1963	64,9	15,40
57,5	1740	2077	2597	49,1	20,38
63,5	2122	2534	3167	40,2	24,86
75	2960	3535	4418	28,8	34,68

5 10



Túneles y minería | *tunneling & mining*



Sistemas de armadura de hormigón de alta resistencia |
high-strength reinforcement

SAS 950 / 1050 – grado 150



Sistemas de postesado | *post-tensioning systems*

18	230	255	241	510,2	1,96
26,5	525	580	551	223,2	4,48
32	760	845	804	153,1	6,53
36	960	1070	1020	120,9	8,27
40	1190	1320	1257	97,9	10,21
47	1650	1820	1735	70,9	14,10

5 7



Sistemas geotécnicos | *geotechnical systems*

SAS 835 / 1035 – grado 150



Sistemas geotécnicos | *geotechnical systems*

57	2155	2671	2581	47,7	20,95
65	2780	3447	3331	36,9	27,10
75	3690	4572	4418	27,9	35,90

4 ---

SAS 900 / 1100 FA – grado 160 FA



Sistemas de encofrado | *formwork ties*

15	159	195	177	694,4	1,44
20	283	345	314	390,6	2,56
26,5	495	606	551	223,2	4,48

3 7
2

SAS 900 / 1050 FC – grado 150 FC



Sistemas de encofrado | *formwork ties*

15	159	186	177	694,4	1,44
20	283	330	314	390,6	2,56

3 7

SAS 950 / 1050 E – grado 150

26,5	525	580	551	223,2	4,48
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5 7

SAS 750 / 875 FS – lamindao en frío | *cold rolled – grado 120 FS*



Sistemas de encofrado | *formwork ties*

12,5	90	120	132,5	961,5	1,04
15	142	165	189	675,7	1,48
20	245	285	326	390,6	2,56

2 5,5

Accesorios disponibles para todas las dimensiones y aplicaciones | *accessories for all dimensions and applications available*

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