

BALL SCREWS AND PLANETARY ROLLER SCREWS



Rev. 1, 1108

CUSTOMIZED DESIGN AND SUPERIOR ACCURACY
FOR PRECISION POSITIONING APPLICATIONS
WITH HIGH LOADS AND ACCELERATIONS

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Moog, leader mondiale nella fornitura di soluzioni per il controllo del movimento, sviluppa e costruisce viti a ricircolo di sfere e a rulli satelliti ad alta precisione (classi 1-3-5 ISO3408), a catalogo e su specifica del cliente.

Ecco alcuni esempi delle personalizzazioni offerte da Moog:

- Varie combinazioni diametro-passo della vite (capacità di carico e prestazioni dinamiche della vite)
- Configurazione dei terminali della vite (sedi cuscinetto, filetti metrici, cave, chiavi di manovra, fori in testa, ecc.)
- Personalizzazione della chiocciola (forma, flange, accoppiamenti, numero dei circuiti, lavorazioni speciali)
- Lubrificazione (selezione del lubrificante ottimale in funzione dell'applicazione, posizionamento fori di lubrificazione)
- Scelta dei materiali (materiali standard e speciali o trattamenti superficiali ideali per il tipo di applicazione).

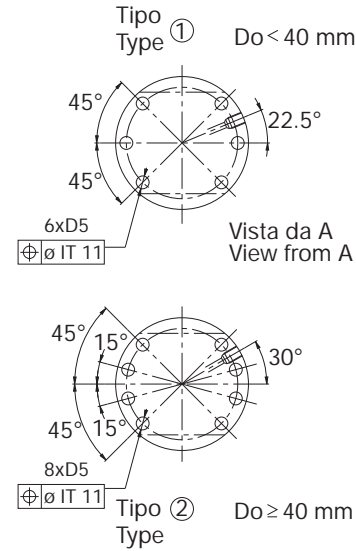
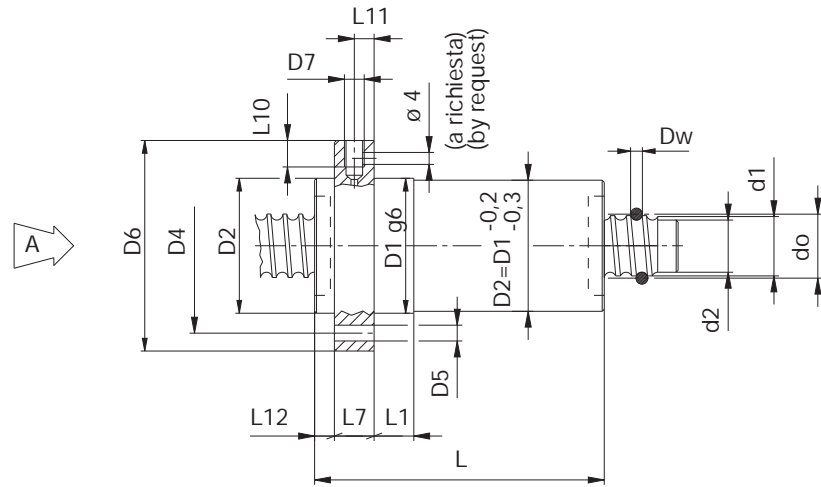
La gamma riportata sul catalogo è una semplice indicazione di alcuni prodotti disponibili; per una verifica delle esigenze ed uno sviluppo ad hoc delle viti a ricircolo di sfere e a rulli satelliti, contattare Moog.

Moog, a global supplier of motion control solutions, designs and manufactures high precision ball screws and planetary roller screws (grades 1-3-5 ISO3408), standard or custom-made according to customer's needs.

Here are some examples of customizations offered by Moog:

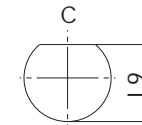
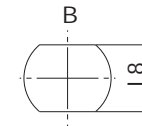
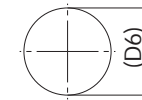
- Various screw diameter-pitch combinations (screw load capacity and dynamic performances)
- Configuration of screw end shafts (bearing housings, metric threads, socket heads, wrenches, bored heads, etc.)
- Nut customization (shape, flange, coupling, number of circuits, special machining processes)
- Lubrication (selecting the right lubricant for the application, positioning the lubrication holes)
- Selection of materials (standard and special materials or surface treatments appropriate for the type of application).

The line in the catalogue is a simple indication of several products available; if you have specific needs or need custom-made ball screws and planetary roller screws, contact Moog.



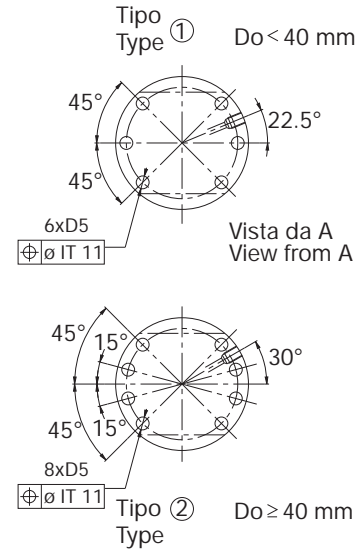
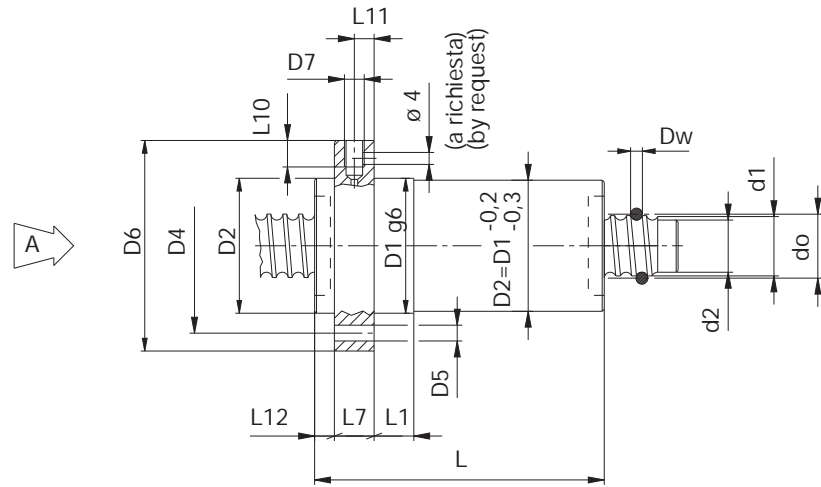
Flangia / Flange

A (Standard)



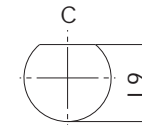
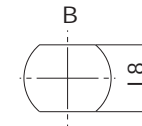
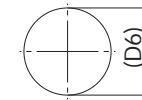
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads

d _o	Ph _o	D _w	d ₁	d ₂	D ₁	D ₄	Tipo type	D ₅	D ₆	D ₇	L ₁	L ₇	L ₈	L ₉	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns							
																		h ₈	-0,1 -0,2	g ₆	H ₁₃	h ₁₃	h ₁₃	h ₁₃	h ₁₃
16	4	2,381	15,45	13,6	28	38	1	5,5	48	M6	10	10	40	44	8	5	5,5	L ± 1	39	43	48	52	-	-	-
																		Ca [kN]	8,50	10,50	12,50	14,00	-	-	-
																		Coa [kN]	8,60	11,00	13,00	15,00	-	-	-
16	5	3,500	15,20	12,5	28	38	1	5,5	48	M6	10	10	40	44	8	5	5,5	L ± 1	42	48	55	-	-	-	
																		Ca [kN]	11,20	14,25	17,31	-	-	-	
																		Coa [kN]	11,25	17,39	22,50	-	-	-	
20	4	2,381	19,45	17,6	36	47	1	6,6	58	M6	10	10	44	51	8	5	5,5	L ± 1	39	43	48	-	-	-	
																		Ca [kN]	8,50	11,50	13,50	-	-	-	
																		Coa [kN]	11,20	16,50	22,00	-	-	-	
20	5	3,500	19,10	16,5	36	47	1	6,6	58	M6	10	10	44	51	8	5	5,5	L ± 1	43	45	55	-	-	-	
																		Ca [kN]	11,20	15,27	18,32	-	-	-	
																		Coa [kN]	15,35	22,51	29,67	-	-	-	
20	6	3,969	19,10	16,0	36	47	1	6,6	58	M6	10	10	44	51	8	5	5,5	L ± 1	46	53	59	-	-	-	
																		Ca [kN]	15,00	17,71	20,42	-	-	-	
																		Coa [kN]	25,60	34,40	43,20	-	-	-	
25	4	2,381	24,20	22,3	40	51	1	6,6	62	M6	10	10	48	55	8	5	6	L ± 1	-	45	49	53	-	-	-
																		Ca [kN]	-	12,00	14,50	16,50	-	-	-
																		Coa [kN]	-	22,00	30,00	37,00	-	-	-
25	5	3,500	24,10	21,5	40	51	1	6,6	62	M6	10	10	48	55	8	5	6	L ± 1	45	51	56	62	66	-	-
																		Ca [kN]	12,22	16,29	20,36	23,41	25,90	-	-
																		Coa [kN]	19,44	29,67	39,90	50,13	59,50	-	-



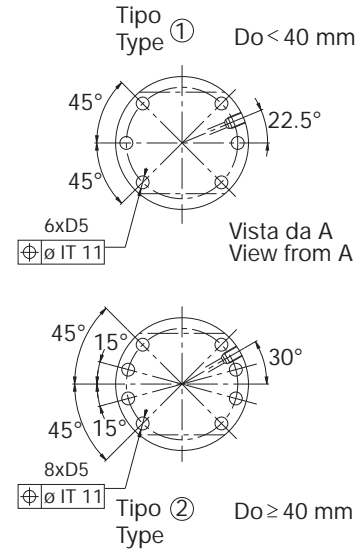
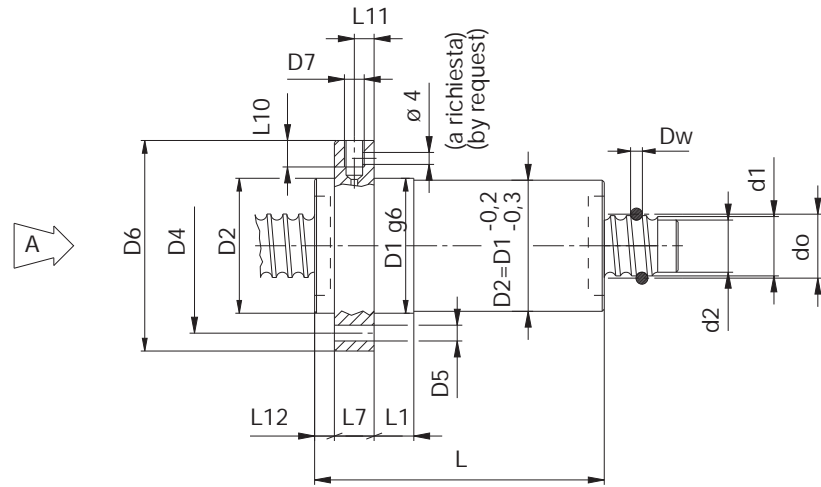
Flangia / Flange

A (Standard)



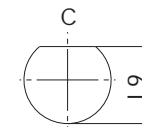
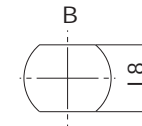
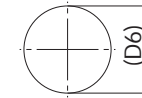
L ± 1 = Lunghezza della chiocciola - Nut length
Ca [kN] = Carichi dinamici - Dynamic loads
Coa [kN] = Carichi statici - Static loads

d _o	Ph _o	D _w	d ₁	d ₂	D ₁	D ₄	D ₅	D ₆	D ₇	L ₁	L ₇	L ₈	L ₉	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns																		
																	h ₈	-0,1 -0,2	g ₆	Tipo type	H ₁₃	h ₁₃	M6	h ₁₃	h ₁₃	h ₁₃	2	3	4	5	6	7	8		
25	6	3,969	24,10	21,0	40	51	1	6,6	62	M6	10	10	48	55	8	5	6	L ± 1	46	54	60	-	-	-	-	-	-	-	-	-					
																		Ca [kN]	16,50	19,50	23,20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
																		Coa [kN]	32,00	43,00	55,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	10	3,969	24,10	21,0	40	51	1	6,6	62	M6	16	10	48	55	8	5	6	L ± 1	63	74	84	-	-	-	-	-	-	-	-	-					
																		Ca [kN]	14,25	19,34	24,40	-	-	-	-	-	-	-	-	-	-	-	-	-	-
																		Coa [kN]	21,48	30,54	39,54	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	4	2,381	31,45	29,6	50	65	1	9	80	M6	10	12	62	71	8	6	6	L ± 1	-	48	51	56	60	-	-	-	-	-	-	-					
																		Ca [kN]	-	12,50	15,00	17,00	18,50	-	-	-	-	-	-	-	-	-	-	-	
																		Coa [kN]	-	30,00	39,00	49,00	61,00	-	-	-	-	-	-	-	-	-	-	-	-
32	5	3,500	31,10	28,5	50	65	1	9	80	M6	10	12	62	71	8	6	6	L ± 1	47	53	58	64	69	-	-	-	-	-	-	-					
																		Ca [kN]	13,23	17,31	21,38	25,45	28,50	-	-	-	-	-	-	-	-	-	-	-	
																		Coa [kN]	26,60	39,90	53,20	66,50	78,77	-	-	-	-	-	-	-	-	-	-	-	-
32	6	3,969	31,10	28,0	50	65	1	9	80	M6	10	12	62	71	8	6	6	L ± 1	-	56	62	69	76	-	-	-	-	-	-						
																		Ca [kN]	-	20,80	25,80	30,65	34,80	-	-	-	-	-	-	-	-	-	-	-	
																		Coa [kN]	-	44,00	59,00	73,50	88,60	-	-	-	-	-	-	-	-	-	-	-	-
32	8	5,556	30,70	26,4	50	65	1	9	80	M6	10	12	62	71	8	6	6	L ± 1	60	68	76	-	-	-	-	-	-	-	-						
																		Ca [kN]	26,47	34,61	42,76	-	-	-	-	-	-	-	-	-	-	-	-	-	
																		Coa [kN]	38,68	57,00	77,37	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	10	5,556	30,70	26,4	50	65	1	9	80	M6	16	12	62	71	8	6	6	L ± 1	65	76	87	-	-	-	-	-	-	-							
																		Ca [kN]	26,47	34,61	42,76	-	-	-	-	-	-	-	-	-	-	-	-	-	
																		Coa [kN]	38,68	57,00	77,37	-	-	-	-	-	-	-	-	-	-	-	-	-	-



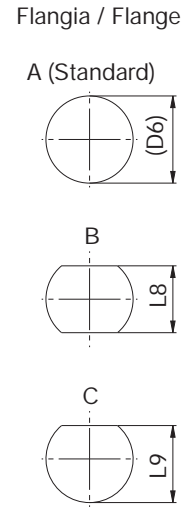
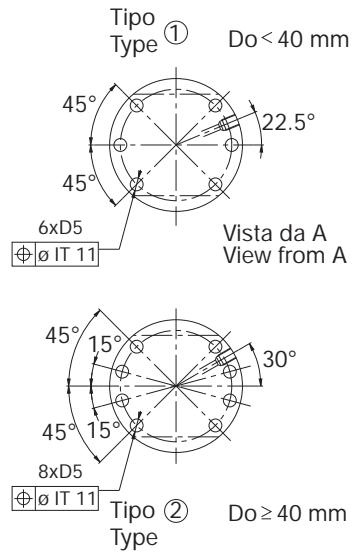
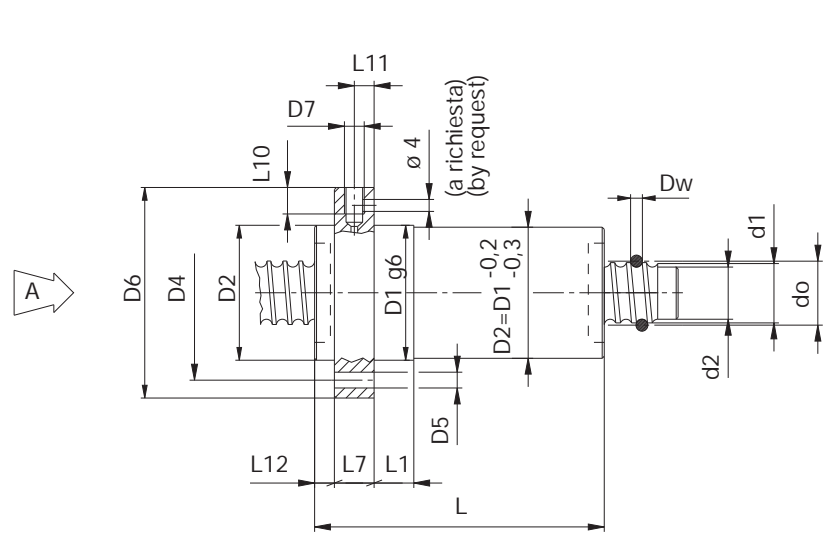
Flangia / Flange

A (Standard)



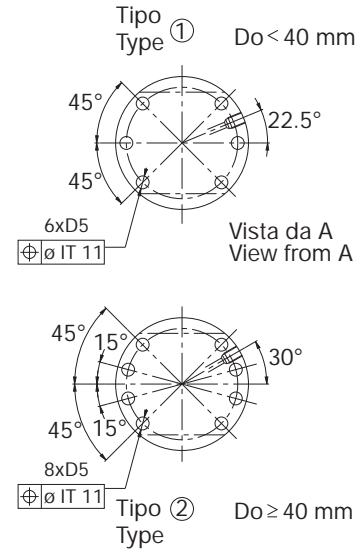
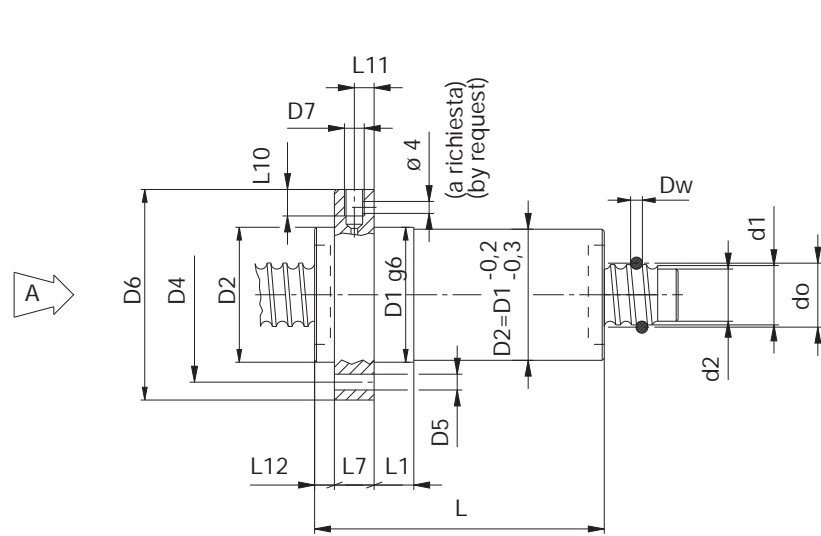
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads

d _o	Ph _o	D _w	d ₁	d ₂	D ₁	D ₄	Tipo type	D ₅	D ₆	D ₇	L ₁	L ₇	L ₈	L ₉	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns									
																		h ₈	-0,1 -0,2	g ₆	H ₁₃	h ₁₃	h ₁₃	h ₁₃	h ₁₃	2	3
32	12	5,556	30,70	26,4	50	65	1	9	80	M6	16	12	62	71	8	6	6	L ± 1	70	84	97	-	-	-	-	-	-
																		Ca [kN]	26,47	34,61	42,81	-	-	-	-	-	
																		Coa [kN]	38,68	57,00	75,14	-	-	-	-	-	
32	16	5,556	30,70	26,4	50	65	1	9	80	M6	16	12	62	71	8	6	6	L ± 1	79	99	116	-	-	-	-	-	-
																		Ca [kN]	26,47	34,61	42,81	-	-	-	-	-	
																		Coa [kN]	38,68	57,00	75,14	-	-	-	-	-	
32	20	5,556	30,70	26,4	50	65	1	9	80	M6	20	12	62	71	8	6	6	L ± 1	86	-	-	-	-	-	-	-	-
																		Ca [kN]	24,70	-	-	-	-	-	-	-	
																		Coa [kN]	35,20	-	-	-	-	-	-	-	
40	5	3,500	39,10	36,5	63	78	2	9	93	M8x1	10	14	70	81,5	10	7	7	L ± 1	-	56	62	67	72	-	-	-	-
																		Ca [kN]	-	19,34	23,41	27,49	30,54	-	-	-	
																		Coa [kN]	-	51,15	67,52	84,91	101,28	-	-	-	
40	6	3,969	39,10	36,0	63	78	2	9	93	M8x1	10	14	70	81,5	10	7	7	L ± 1	-	59	65	72	-	-	-	-	
																		Ca [kN]	-	22,00	27,00	31,00	-	-	-	-	
																		Coa [kN]	-	56,00	74,00	93,00	-	-	-	-	
40	8	5,556	38,70	34,4	63	78	2	9	93	M8x1	10	14	70	81,5	10	7	7	L ± 1	62	71	80	88	97	-	-	-	-
																		Ca [kN]	23,70	31,10	38,20	44,00	50,20	-	-	-	
																		Coa [kN]	45,20	68,20	92,00	113,00	135,60	-	-	-	
40	10	6,350	38,50	33,6	63	78	2	9	93	M8x1	16	14	70	81,5	10	7	7	L ± 1	-	80	90	101	111	-	-	-	-
																		Ca [kN]	-	45,81	56,00	66,17	75,33	-	-	-	
																		Coa [kN]	-	84,49	113,00	141,50	168,00	-	-	-	



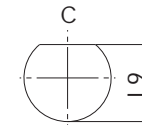
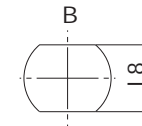
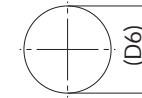
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads

d _o	Ph _o	D _w	d ₁	d ₂	D ₁	D ₄	Tipo type	D ₅	D ₆	D ₇	L ₁	L ₇	L ₈	L ₉	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns										
																		h ₈	-0,1 -0,2	g ₆	H ₁₃	h ₁₃	M8x1	h ₁₃	h ₁₃	h ₁₃	2	3
40	12	6,350	38,50	33,6	63	78	2	9	93	M8x1	16	14	70	81,5	10	7	7	L ± 1	-	96	109	122	-	-	-	-	-	-
																		Ca [kN]	-	45,81	56,00	66,17	-	-	-	-	-	
																		Coa [kN]	-	84,49	113,00	141,50	-	-	-	-	-	
40	16	6,350	40,00	35,1	63	78	2	9	93	M8x1	16	14	70	81,5	10	7	7	L ± 1	85	100	-	-	-	-	-	-	-	-
																		Ca [kN]	33,92	44,62	-	-	-	-	-	-		
																		Coa [kN]	53,73	80,64	-	-	-	-	-	-		
40	20	6,350	38,50	33,6	63	78	2	9	93	M8x1	25	14	70	81,5	10	7	7	L ± 1	100	118	-	-	-	-	-	-	-	-
																		Ca [kN]	32,32	43,43	-	-	-	-	-	-		
																		Coa [kN]	51,50	76,80	-	-	-	-	-	-		
50	5	3,500	49,10	46,5	75	93	2	11	110	M8x1	10	16	85	97,5	10	8	7	L ± 1	-	58	64	69	74	-	-	-	-	
																		Ca [kN]	-	20,36	24,23	29,52	32,58	-	-	-		
																		Coa [kN]	-	64,45	85,93	107,42	129,00	-	-	-		
50	6	3,969	49,10	46,0	75	93	2	11	110	M8x1	10	16	85	97,5	10	8	7	L ± 1	-	61	67	74	81	-	-	-	-	
																		Ca [kN]	-	24,00	29,00	34,00	38,50	-	-	-		
																		Coa [kN]	-	70,00	94,00	117,50	141,00	-	-	-		
50	8	5,556	48,70	44,4	75	93	2	11	110	M8x1	10	16	85	97,5	10	8	7	L ± 1	-	73	81	90	98	-	-	-	-	
																		Ca [kN]	-	32,00	41,00	46,00	52,50	-	-	-		
																		Coa [kN]	-	82,00	110,00	135,00	164,00	-	-	-		
50	10	7,144	48,35	42,8	75	93	2	11	110	M8x1	16	16	85	97,5	10	8	7	L ± 1	-	82	92	103	113	-	-	-	-	
																		Ca [kN]	-	59,04	72,28	84,49	95,69	-	-	-		
																		Coa [kN]	-	122,76	163,68	204,60	245,52	-	-	-		



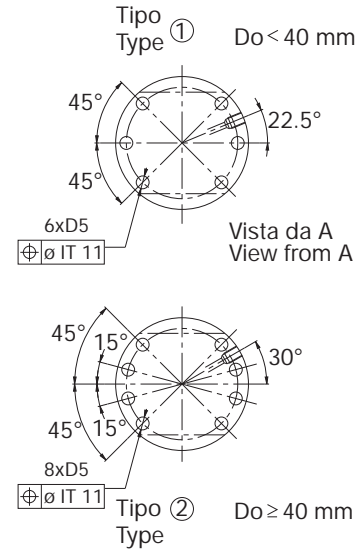
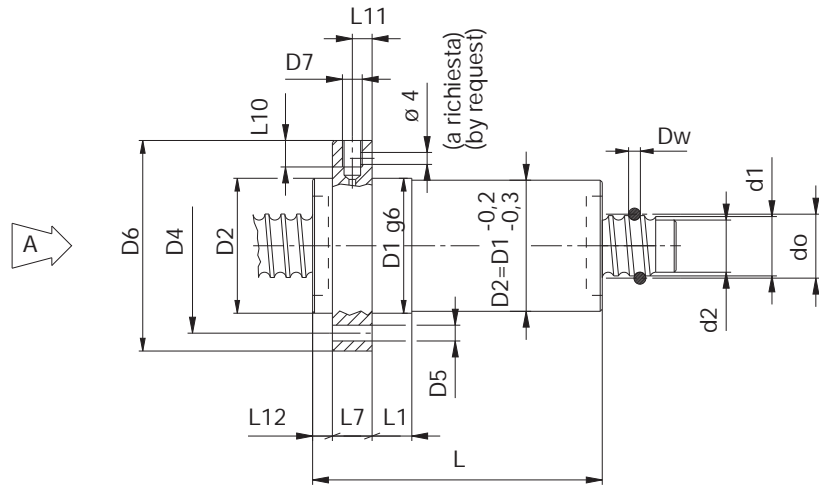
Flangia / Flange

A (Standard)



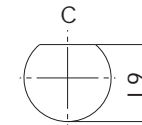
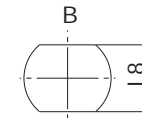
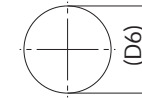
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads

d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	D ₄	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇ h ₁₃	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns							
																		2	3	4	5	6	7	8	
50	12	7,144	48,35	42,8	75	93	2	11	110	M8x1	16	16	85	97,5	10	8	7	L ± 1	-	98	111	123	136	-	-
																		Ca [kN]	-	59,04	72,28	84,49	95,69	-	-
																		Coa [kN]	-	122,76	163,68	204,60	245,52	-	-
50	16	7,144	48,35	42,8	75	93	2	11	110	M8x1	16	16	85	97,5	10	8	7	L ± 1	-	110	128	-	-	-	-
																		Ca [kN]	-	58,21	70,34	-	-	-	-
																		Coa [kN]	-	111,09	159,60	-	-	-	-
50	20	7,144	48,35	42,8	75	93	2	11	110	M8x1	25	16	85	97,5	10	8	7	L ± 1	-	125	151	-	-	-	-
																		Ca [kN]	-	57,00	68,65	-	-	-	-
																		Coa [kN]	-	106,23	153,40	-	-	-	-
63	5	3,500	62,10	59,5	90	108	2	11	125	M8x1	10	18	95	110	10	9	7	L ± 1	-	60	65	71	76	-	-
																		Ca [kN]	-	22,40	26,47	31,56	35,63	-	-
																		Coa [kN]	-	82,46	109,94	137,43	164,92	-	-
63	10	7,144	61,35	55,8	90	108	2	11	125	M8x1	16	18	95	110	10	9	7	L ± 1	-	84	94	105	115	-	-
																		Ca [kN]	-	63,12	77,37	90,60	102,82	-	-
																		Coa [kN]	-	158,81	213,81	267,00	320,20	-	-
63	20	9,525	60,80	53,3	95	115	2	13,5	135	M8x1	25	20	100	117,5	10	10	9	L ± 1	-	130	155	176	-	-	
																		Ca [kN]	-	94,80	116,00	135,00	-	-	-
																		Coa [kN]	-	196,50	262,00	327,00	-	-	-
80	5	3,500	79,10	76,5	105	125	2	13,5	145	M8x1	10	20	110	127,5	10	10	9	L ± 1	-	-	-	72	77	82	-
																		Ca [kN]	-	-	-	32,00	36,50	41,00	-
																		Coa [kN]	-	-	-	140,00	165,50	191,00	-



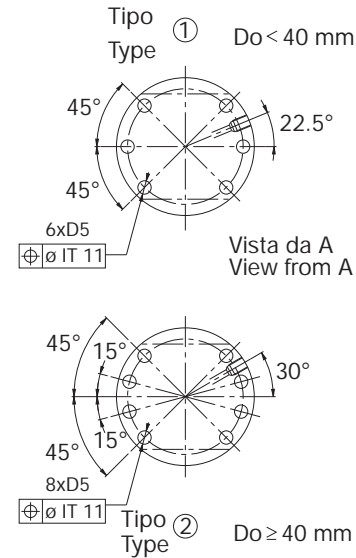
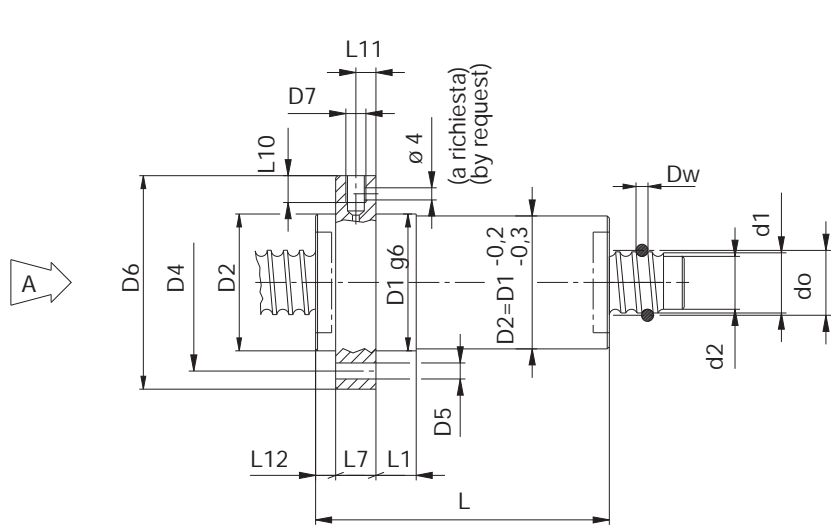
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A (Standard)

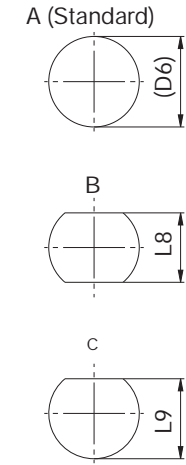


L ± 1 = Lunghezza della chiocciola / Nut length
Ca [kN] = Carichi dinamici / Dynamic loads
Coa [kN] = Carichi statici / Static loads

d _o	Ph _o	D _w	d ₁	d ₂	D ₁	D ₄	Tipo type	D ₅	D ₆	D ₇	L ₁	L ₇	L ₈	L ₉	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns							
																		h ₈	-0,1 -0,2	g ₆	H ₁₃	h ₁₃	M8x1	h ₁₃	h ₁₃
80	10	7,144	78,35	72,8	105	125	2	13,5	145	M8x1	16	20	110	127,5	10	10	9	L ± 1	-	88	98	109	119	130	141
																		Ca [kN]	-	68,00	83,20	97,44	110,64	122,80	135,00
																		Coa [kN]	-	207,00	277,00	346,00	415,00	485,00	554,00
80	20	9,525	77,80	70,3	125	145	2	13,5	165	M8x1	25	25	130	147,5	10	12,5	9	L ± 1	-	-	158	179	200	-	-
																		Ca [kN]	-	-	128,00	150,00	169,00	-	-
																		Coa [kN]	-	-	356,00	443,00	536,00	-	-
100	10	7,144	98,35	92,8	125	145	2	13,5	165	M8x1	16	22	130	147,5	10	11	10	L ± 1	-	-	101	112	122	133	143
																		Ca [kN]	-	-	89,67	105,00	119,22	132,47	145,72
																		Coa [kN]	-	-	370,92	441,23	529,88	617,51	706,00

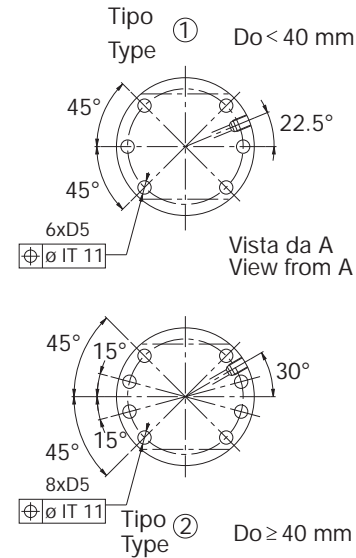
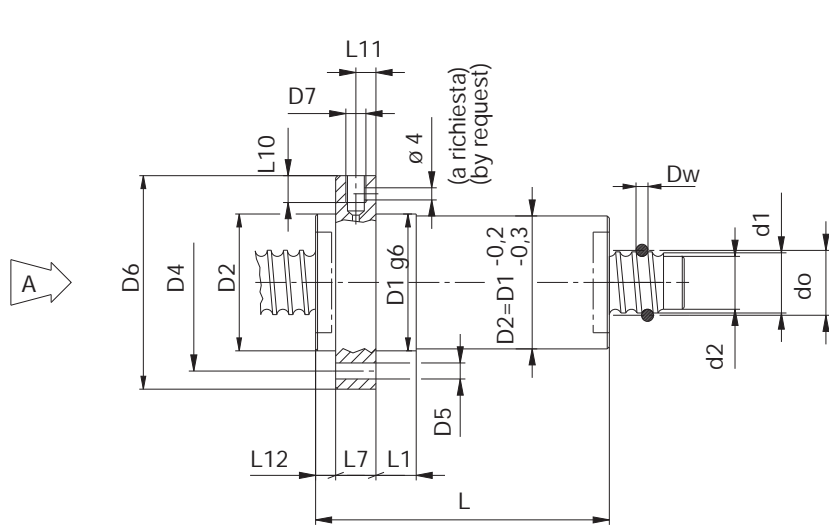


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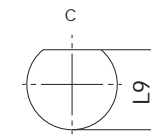
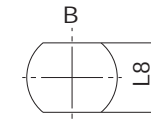
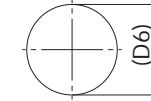
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rbt [kN/mm] = Rigidità Stiffness

d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	D ₄	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇	L ₈	L ₉	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns					
																			2 + 2	3 + 3	4 + 4	5 + 5	6 + 6
16	4	2,381	15,45	13,6	28	38	1	5,5	48	M6	10	10	40	44	8	5	5,5		L ± 1	48	60	-	-
																			Ca [kN]	8,50	10,50	-	-
																			Coa [kN]	8,60	11,00	-	-
																			Rb/t [kN/μm]	0,42	0,64	-	-
16	5	3,500	15,20	12,5	28	38	1	5,5	48	M6	10	10	40	44	8	5	5,5		L ± 1	55	-	-	-
																			Ca [kN]	11,20	-	-	-
																			Coa [kN]	11,25	-	-	-
																			Rb/t [kN/μm]	0,39	-	-	-
20	4	2,381	19,45	17,6	36	47	1	6,6	58	M6	10	10	44	51	8	5	5,5		L ± 1	50	58	68	-
																			Ca [kN]	8,50	11,50	13,50	-
																			Coa [kN]	11,20	16,50	22,00	-
																			Rb/t [kN/μm]	0,52	0,82	1,02	-
20	5	3,500	19,10	16,5	36	47	1	6,6	58	M6	10	10	44	51	8	5	5,5		L ± 1	56	67	80	-
																			Ca [kN]	11,20	15,27	18,32	-
																			Coa [kN]	15,35	22,51	29,67	-
																			Rb/t [kN/μm]	0,48	0,78	0,95	-
20	6	3,969	19,10	16,0	36	47	1	6,6	58	M6	10	10	44	51	8	5	5,5		L ± 1	60	75	-	-
																			Ca [kN]	15,00	17,71	-	-
																			Coa [kN]	25,60	34,40	-	-
																			Rb/t [kN/μm]	0,58	0,68	-	-



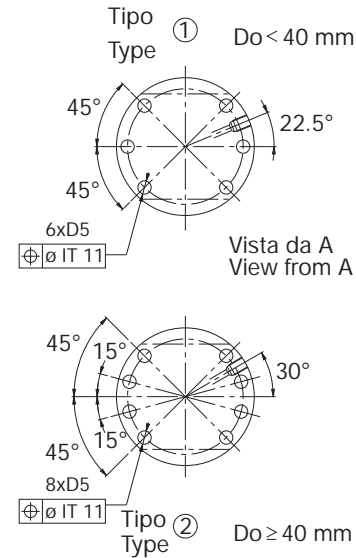
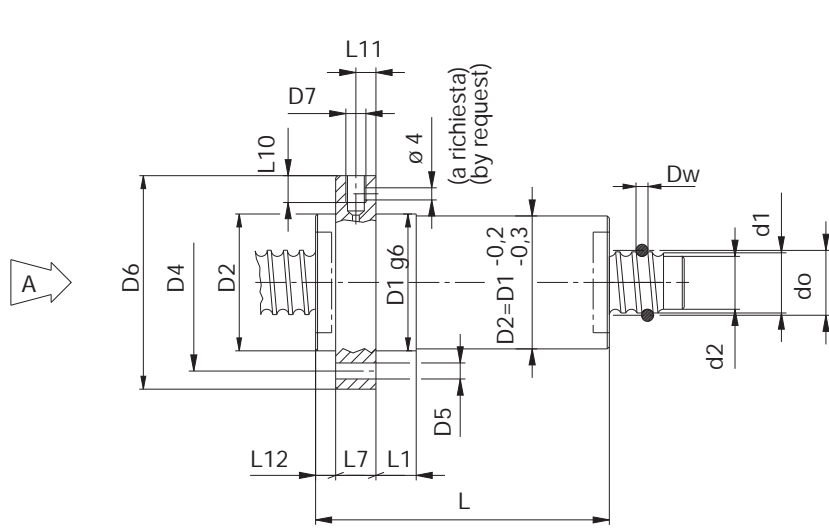
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A (Standard)

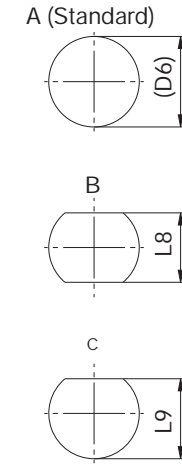


L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rb/t [kN/mm] = Rigidità Stiffness

d _o	Ph _o	D _w	d ₁	d ₂	D ₁	D ₄	Tipo type	D ₅	D ₆	D ₇	L ₁	L ₇	L ₈	L ₉	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns						
																			h ₈	-0,1 -0,2	g ₆	H ₁₃	h ₁₃	h ₁₃
25	4	2,381	24,20	22,3	40	51	1	6,6	62	M6	10	10	48	55	8	5	6		L ± 1	-	60	68	-	-
																			Ca [kN]	-	12,00	14,50	-	-
																			Coa [kN]	-	22,00	30,00	-	-
																			Rb/t [kN/μm]	-	0,98	1,22	-	-
25	5	3,500	24,10	21,5	40	51	1	6,6	62	M6	10	10	48	55	8	5	6		L ± 1	52	68	79	-	-
																			Ca [kN]	12,22	16,29	20,36	-	-
																			Coa [kN]	19,44	29,67	39,90	-	-
																			Rb/t [kN/μm]	0,68	0,97	1,18	-	-
25	6	3,969	24,10	21,0	40	51	1	6,6	62	M6	10	10	48	55	8	5	6		L ± 1	60	75	-	-	-
																			Ca [kN]	16,50	19,50	-	-	-
																			Coa [kN]	32,00	43,00	-	-	-
																			Rb/t [kN/μm]	0,75	0,89	-	-	-
25	10	3,969	24,10	21,0	40	51	1	6,6	62	M6	16	10	48	55	8	5	6		L ± 1	84	-	-	-	-
																			Ca [kN]	14,25	-	-	-	-
																			Coa [kN]	21,48	-	-	-	-
																			Rb/t [kN/μm]	0,56	-	-	-	-
32	4	2,381	31,45	29,6	50	65	1	9	80	M6	10	12	62	71	8	6	6		L ± 1	-	63	71	80	-
																			Ca [kN]	-	12,50	15,00	17,00	-
																			Coa [kN]	-	30,00	39,00	49,00	-
																			Rb/t [kN/μm]	-	1,24	1,56	1,96	-

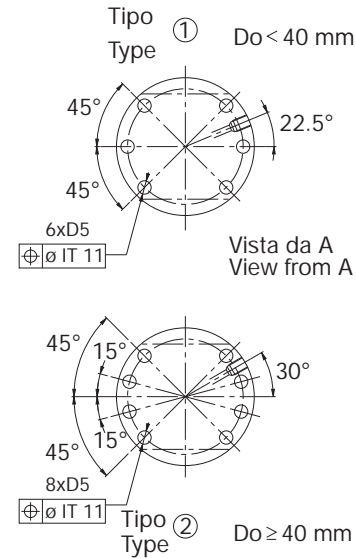
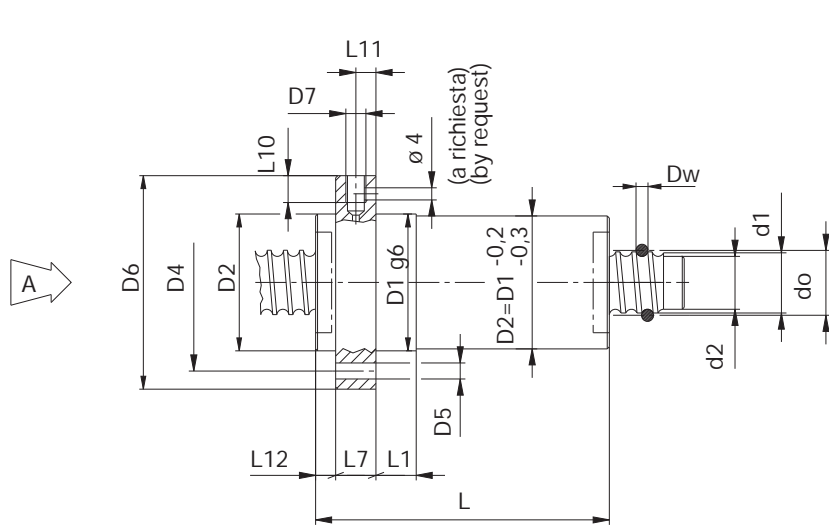


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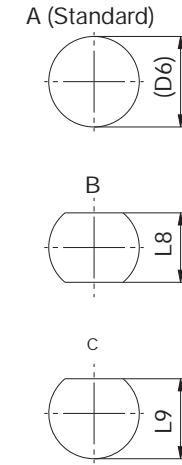


L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rb/t [kN/μm] = Rigidity Stiffness

d _o ø Nominale Norm. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	D ₄	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇ h ₁₃	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns						
																			2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	
32	5	3,500	31,10	28,5	50	65	1	9	80	M6	10	12	62	71	8	6	6		L ± 1	56	71	82	-	-
																			Ca [kN]	13,23	17,31	21,38	-	-
																			Coa [kN]	26,60	39,90	53,20	-	-
																			Rb/t [kN/μm]	0,78	1,17	1,48	-	-
32	6	3,969	31,10	28,0	50	65	1	9	80	M6	10	12	62	71	8	6	6		L ± 1	68	78	92	-	-
																			Ca [kN]	18,30	20,80	25,80	-	-
																			Coa [kN]	28,00	44,00	59,00	-	-
																			Rb/t [kN/μm]	1,05	1,18	1,50	-	-
32	8	5,556	30,70	26,4	50	65	1	9	80	M6	10	12	62	71	8	6	6		L ± 1	77	100	117	-	-
																			Ca [kN]	26,47	34,61	42,76	-	-
																			Coa [kN]	38,68	57,00	77,37	-	-
																			Rb/t [kN/μm]	0,79	1,18	1,57	-	-
32	10	5,556	30,70	26,4	50	65	1	9	80	M6	16	12	62	71	8	6	6		L ± 1	90	118	-	-	
																			Ca [kN]	26,47	34,61	-	-	
																			Coa [kN]	38,68	57,00	-	-	
																			Rb/t [kN/μm]	0,79	1,18	-	-	
32	12	5,556	30,70	26,4	50	65	1	9	80	M6	16	12	62	71	8	6	6		L ± 1	110	-	-	-	
																			Ca [kN]	26,47	-	-	-	
																			Coa [kN]	38,68	-	-	-	
																			Rb/t [kN/μm]	0,79	-	-	-	

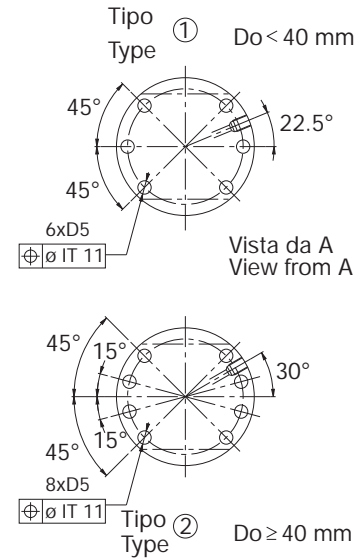
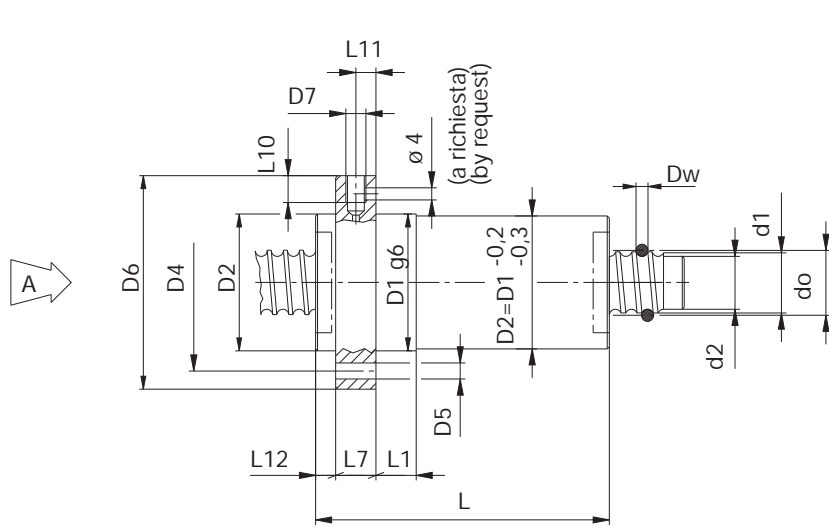


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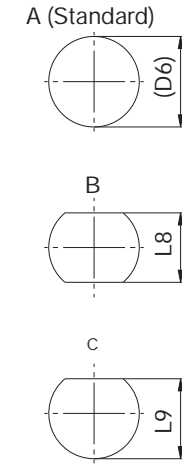


L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rb/t [kN/mm] = Rigidità Stiffness

d _o ø Nominale Norm. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	D ₄	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇ h ₁₃	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns						
																			2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	
40	4	2,381	39,45	37,6	63	78	2	9	93	M8x1	10	14	70	81,5	10	7	7	7	L ± 1	-	-	73	82	90
																			Ca [kN]	-	-	15,50	18,00	19,50
																			Coa [kN]	-	-	52,00	65,00	88,30
																			Rb/t [kN/μm]	-	-	1,93	2,38	2,85
40	5	3,500	39,10	36,5	63	78	2	9	93	M8x1	10	14	70	81,5	10	7	7	7	L ± 1	-	75	85	97	108
																			Ca [kN]	-	19,34	23,41	27,49	30,54
																			Coa [kN]	-	51,15	67,52	84,91	101,28
																			Rb/t [kN/μm]	-	1,38	1,79	2,27	2,69
40	6	3,969	39,10	36,0	63	78	2	9	93	M8x1	10	14	70	81,5	10	7	7	7	L ± 1	-	82	97	109	122
																			Ca [kN]	-	22,00	27,00	31,00	36,00
																			Coa [kN]	-	56,00	74,00	93,00	111,00
																			Rb/t [kN/μm]	-	1,40	1,80	2,30	2,72
40	8	5,556	38,70	34,4	63	78	2	9	93	M8x1	10	14	70	81,5	10	7	7	7	L ± 1	-	102	120	-	-
																			Ca [kN]	-	31,10	38,20	-	-
																			Coa [kN]	-	68,20	92,00	-	-
																			Rb/t [kN/μm]	-	1,50	1,95	-	-
40	10	6,350	38,50	33,6	63	78	2	9	93	M8x1	16	14	70	81,5	10	7	7	7	L ± 1	93	122	142	-	-
																			Ca [kN]	35,52	45,81	56,00	-	-
																			Coa [kN]	55,97	84,49	113,00	-	-
																			Rb/t [kN/μm]	1,05	1,47	1,89	-	-

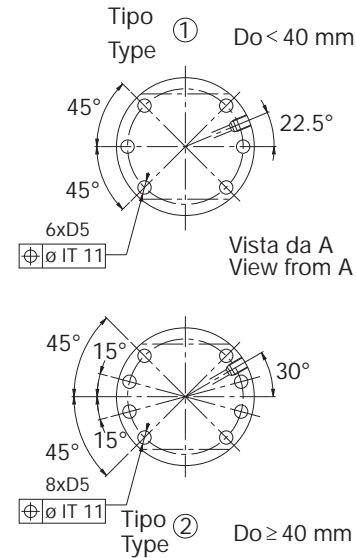
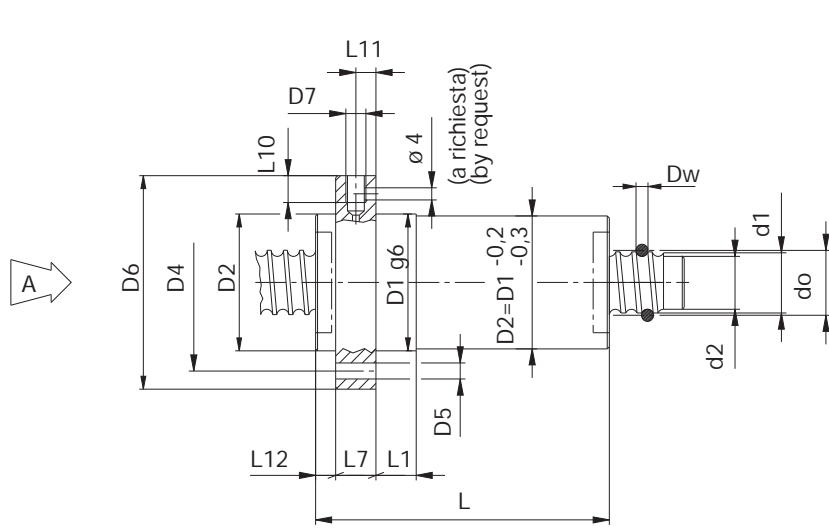


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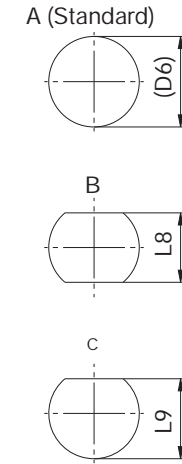


L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rb/t [kN/mm] = Rigidity Stiffness

d _o ø Nominale Norm. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	D ₄	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇ h ₁₃	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns						
																			2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	
40	12	6,350	38,50	33,6	63	78	2	9	93	M8x1	16	14	70	81,5	10	7	7		L ± 1	118	135	-	-	
																			Ca [kN]	35,52	45,81	-	-	
																			Coa [kN]	55,97	84,49	-	-	
																			Rb/t [kN/μm]	1,05	1,47	-	-	
40	16	6,350	40,00	35,1	63	78	2	9	93	M8x1	16	14	70	81,5	10	7	7		L ± 1	120	160	-	-	
																			Ca [kN]	33,92	44,62	-	-	
																			Coa [kN]	53,73	80,64	-	-	
																			Rb/t [kN/μm]	0,97	1,37	-	-	
40	20	6,350	38,50	33,6	63	78	2	9	93	M8x1	25	14	70	81,5	10	7	7		L ± 1	140	-	-	-	
																			Ca [kN]	32,32	-	-	-	
																			Coa [kN]	51,50	-	-	-	
																			Rb/t [kN/μm]	0,88	-	-	-	
50	5	3,500	49,10	46,5	75	93	2	11	110	M8x1	10	16	85	97,5	10	8	7		L ± 1	-	77	87	97	108
																			Ca [kN]	-	20,36	24,23	29,52	32,58
																			Coa [kN]	-	64,45	85,93	107,42	129,00
																			Rb/t [kN/μm]	-	1,68	2,19	2,67	3,16
50	6	3,969	49,10	46,0	75	93	2	11	110	M8x1	10	16	85	97,5	10	8	7		L ± 1	-	-	99	111	123
																			Ca [kN]	-	-	29,00	34,00	38,50
																			Coa [kN]	-	-	94,00	117,50	141,00
																			Rb/t [kN/μm]	-	-	2,21	2,72	3,21

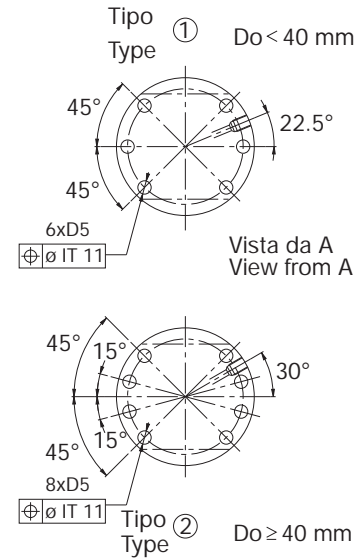
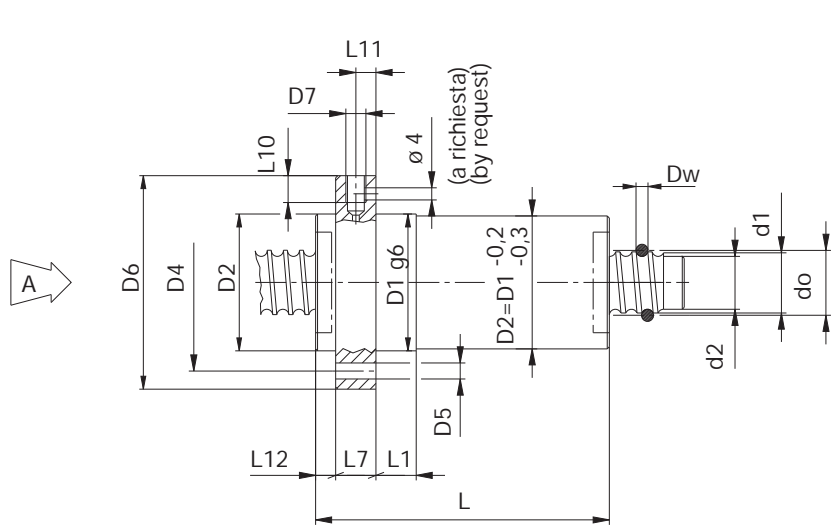


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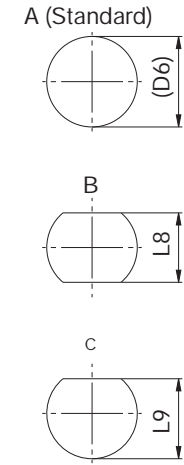


L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rb/t [kN/μm] = Rigidity Stiffness

d _o ø Nominale Norm. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	D ₄	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇	L ₈	L ₉	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns						
																			L ± 1	2 + 2	3 + 3	4 + 4	5 + 5	6 + 6
50	8	5,556	48,70	44,4	75	93	2	11	110	M8x1	10	16	85	97,5	10	8	7		L ± 1	-	104	122	-	-
																			Ca [kN]	-	32,00	41,00	-	-
																			Coa [kN]	-	82,00	110,00	-	-
																			Rb/t [kN/μm]	-	1,72	2,34	-	-
50	10	7,144	48,35	42,8	75	93	2	11	110	M8x1	16	16	85	97,5	10	8	7		L ± 1	103	123	144	166	-
																			Ca [kN]	44,85	59,04	72,28	84,49	-
																			Coa [kN]	81,85	122,76	163,68	204,60	-
																			Rb/t [kN/μm]	1,21	1,79	2,37	2,88	-
50	12	7,144	48,35	42,8	75	93	2	11	110	M8x1	16	16	85	97,5	10	8	7		L ± 1	110	142	167	-	-
																			Ca [kN]	44,85	59,04	72,28	-	-
																			Coa [kN]	81,85	122,76	163,68	-	-
																			Rb/t [kN/μm]	1,21	1,79	2,37	-	-
50	16	7,144	48,35	42,8	75	93	2	11	110	M8x1	16	16	85	97,5	10	8	7		L ± 1	128	162	-	-	-
																			Ca [kN]	41,80	58,21	-	-	-
																			Coa [kN]	78,72	111,09	-	-	-
																			Rb/t [kN/μm]	1,19	1,64	-	-	-
50	20	7,144	48,35	42,8	75	93	2	11	110	M8x1	25	16	85	97,5	10	8	7		L ± 1	148	-	-	-	-
																			Ca [kN]	40,70	-	-	-	-
																			Coa [kN]	75,63	-	-	-	-
																			Rb/t [kN/μm]	1,14	-	-	-	-

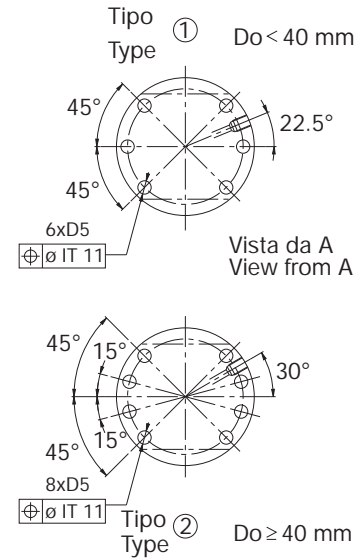
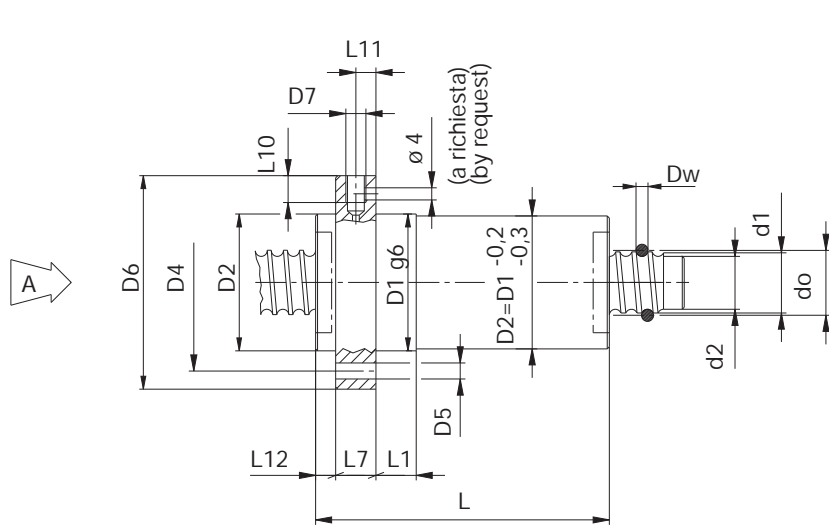


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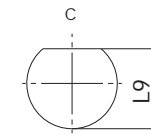
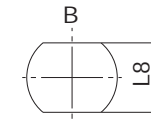
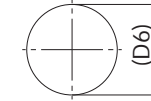
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rb/t [kN/μm] = Rigidità Stiffness

d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	D ₄	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇ h ₁₃	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns						
																			2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	
63	5	3,500	62,10	59,5	90	108	2	11	125	M8x1	10	18	95	110	10	9	7	-	L ± 1	-	-	89	99	111
																			Ca [kN]	-	-	26,47	31,56	35,63
																			Coa [kN]	-	-	109,94	137,43	164,92
																			Rb/t [kN/μm]	-	-	2,68	3,26	3,88
63	8	5,556	61,70	57,4	90	108	2	11	125	M8x1	10	18	95	110	10	9	7	-	L ± 1	-	106	124	-	-
																			Ca [kN]	-	34,24	43,87	-	-
																			Coa [kN]	-	106,60	143,00	-	-
																			Rb/t [kN/μm]	-	2,06	2,80	-	-
63	10	7,144	61,35	55,8	90	108	2	11	125	M8x1	16	18	95	110	10	9	7	-	L ± 1	-	126	147	166	188
																			Ca [kN]	-	63,12	77,37	90,60	102,82
																			Coa [kN]	-	158,81	213,81	267,00	320,20
																			Rb/t [kN/μm]	-	2,16	2,70	3,67	4,17
63	12	7,144	61,35	55,8	90	108	2	11	125	M8x1	16	18	95	110	10	9	7	-	L ± 1	-	-	171	193	-
																			Ca [kN]	-	-	77,37	90,60	-
																			Coa [kN]	-	-	213,81	267,00	-
																			Rb/t [kN/μm]	-	-	2,70	3,67	-
63	20	9,525	60,80	53,4	95	115	2	13,5	135	M8x1	25	20	100	117,5	10	10	9	-	L ± 1	155	205	-	-	
																			Ca [kN]	75,83	94,80	-	-	
																			Coa [kN]	140,48	196,50	-	-	
																			Rb/t [kN/μm]	1,60	2,10	-	-	



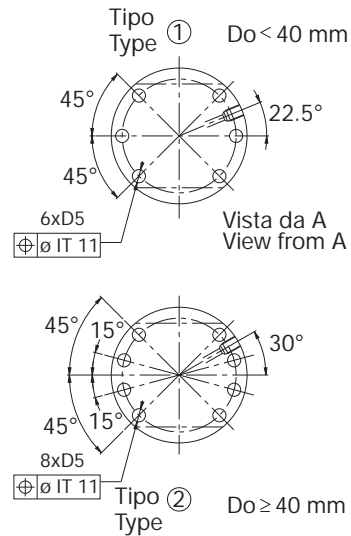
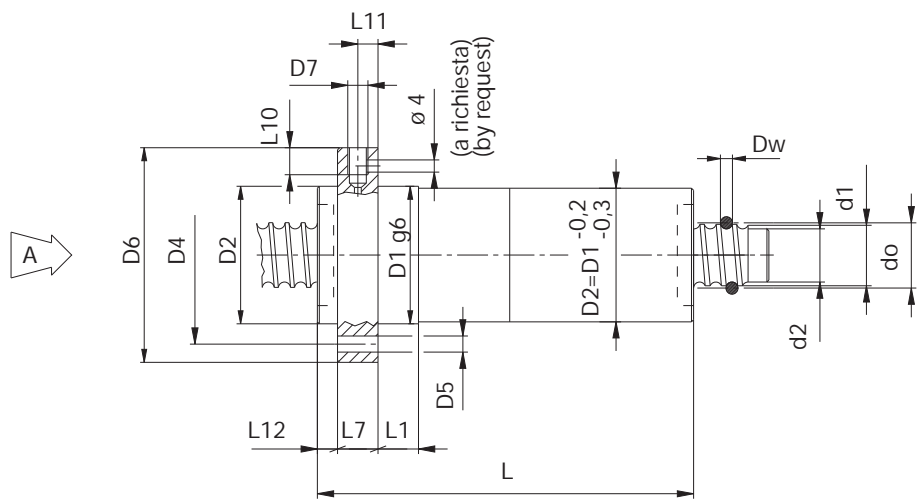
Flangia / Flange

A (Standard)



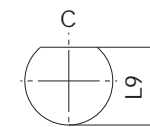
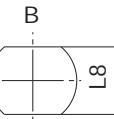
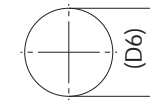
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rb/t [kN/mm] = Rigidità Stiffness

d _o ø Nominale Norm. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	D ₄	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇ M8x1	L ₁	L ₇ h ₁₃	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns						
																			2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	
80	5	3,500	79,10	76,5	105	125	2	13,5	145	M8x1	10	20	110	127,5	10	10	9		L ± 1	-	-	94	104	116
																			Ca [kN]	-	-	27,00	32,00	36,50
																			Coa [kN]	-	-	110,00	140,00	165,50
																			Rb/t [kN/μm]	-	-	2,80	3,40	3,92
80	10	7,144	78,35	72,8	105	125	2	13,5	145	M8x1	16	20	110	127,5	10	10	9		L ± 1	-	-	152	172	192
																			Ca [kN]	-	-	83,20	97,44	110,64
																			Coa [kN]	-	-	277,00	346,00	415,00
																			Rb/t [kN/μm]	-	-	3,48	4,29	4,99



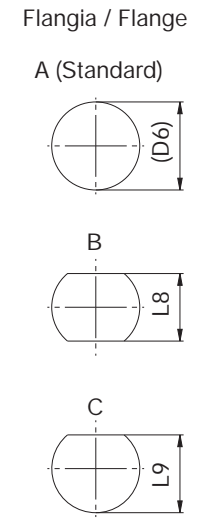
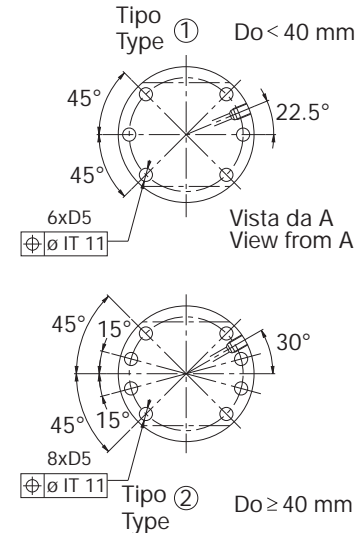
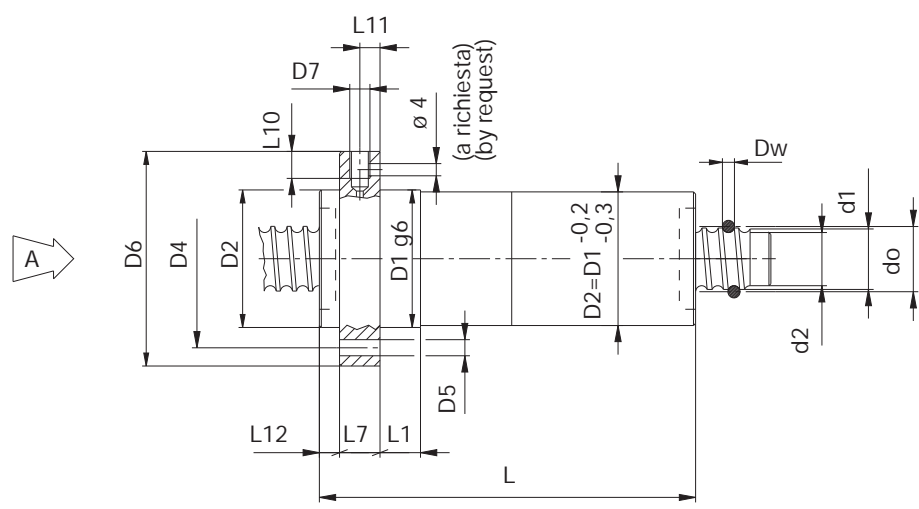
Flangia / Flange

A (Standard)



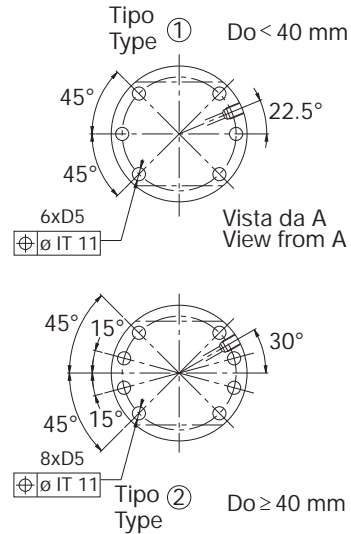
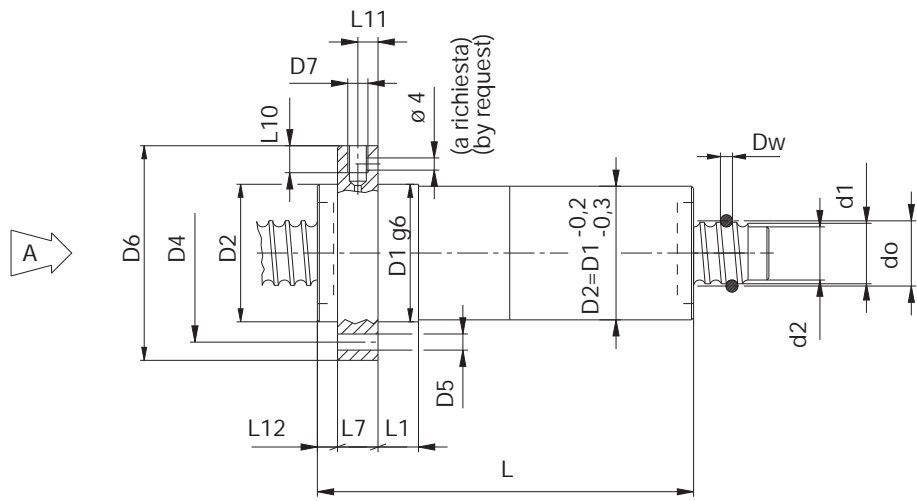
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rb/t [kN/mm] = Rigidità Stiffness

d _o ø Nominale Norm. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₆	d ₂ -0,1 -0,2	D ₁ g ₆	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇ h ₁₃	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns												
																		2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	7 + 7	8 + 8					
16	4	2,381	15,45	13,6	28	38	1	5,5	48	M6	10	10	40	44	8	5	5,5	L ± 1	64	73	82	-	-	-	-	-	-	-	-
																		Ca [kN]	8,50	10,50	12,50	-	-	-	-	-	-	-	-
																		Coa [kN]	8,60	11,00	13,00	-	-	-	-	-	-	-	-
																		Rb/t [kN/mm]	0,42	0,64	0,82	-	-	-	-	-	-	-	-
16	5	3,500	15,20	12,5	28	38	1	5,5	48	M6	10	10	40	44	8	5	5,5	L ± 1	75	86	97	-	-	-	-	-	-	-	-
																		Ca [kN]	11,20	14,25	17,31	-	-	-	-	-	-	-	-
																		Coa [kN]	11,25	17,39	22,50	-	-	-	-	-	-	-	-
																		Rb/t [kN/mm]	0,39	0,58	0,79	-	-	-	-	-	-	-	-
20	4	2,381	19,45	17,6	36	47	1	6,6	58	M6	10	10	44	51	8	5	5,5	L ± 1	64	73	82	-	-	-	-	-	-	-	
																		Ca [kN]	8,50	11,50	13,50	-	-	-	-	-	-	-	-
																		Coa [kN]	11,20	16,50	22,00	-	-	-	-	-	-	-	-
																		Rb/t [kN/mm]	0,52	0,82	1,02	-	-	-	-	-	-	-	-
20	5	3,500	19,10	16,5	36	47	1	6,6	58	M6	10	10	44	51	8	5	5,5	L ± 1	79	91	102	-	-	-	-	-	-	-	
																		Ca [kN]	11,20	15,27	18,32	-	-	-	-	-	-	-	-
																		Coa [kN]	15,35	22,51	29,67	-	-	-	-	-	-	-	-
																		Rb/t [kN/mm]	0,48	0,78	0,95	-	-	-	-	-	-	-	-
20	6	3,969	19,10	16,0	36	47	1	6,6	58	M6	10	10	44	51	8	5	5,5	L ± 1	82	94	-	-	-	-	-	-	-		
																		Ca [kN]	15,00	17,71	-	-	-	-	-	-	-	-	-
																		Coa [kN]	25,60	34,40	-	-	-	-	-	-	-	-	-
																		Rb/t [kN/mm]	0,58	0,68	-	-	-	-	-	-	-	-	-



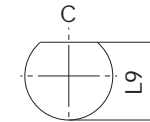
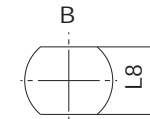
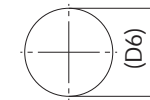
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rb/t [kN/μm] = Rigidità Stiffness

d _o	Ph _o	D _w	d ₁	d ₂	D ₁	D ₄	Tipo	D ₅	D ₆	D ₇	L ₁	L ₇	L ₈	L ₉	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns								
																			h ₆	-0,1 -0,2	g ₆	H ₁₃	h ₁₃	h ₁₃	h ₁₃	h ₁₃
25	4	2,381	24,20	22,3	40	51	1	6,6	62	M6	10	10	48	55	8	5	6	6	L ± 1	2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	7 + 7	8 + 8
																			Ca [kN]	65	74	83	91	-	-	-
																			Coa [kN]	9,00	12,00	14,50	16,50	-	-	-
																			Rb/t [kN/μm]	14,00	22,00	30,00	37,00	-	-	-
25	5	3,500	24,10	21,5	40	51	1	6,6	62	M6	10	10	48	55	8	5	6	6	L ± 1	2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	7 + 7	8 + 8
																			Ca [kN]	80	92	103	113	-	-	-
																			Coa [kN]	12,22	16,29	20,36	23,41	-	-	-
																			Rb/t [kN/μm]	19,44	29,67	39,90	50,13	-	-	-
25	6	3,969	24,10	21,0	40	51	1	6,6	62	M6	10	10	48	55	8	5	6	6	L ± 1	2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	7 + 7	8 + 8
																			Ca [kN]	82	96	109	121	-	-	-
																			Coa [kN]	16,50	19,50	23,20	28,00	-	-	-
																			Rb/t [kN/μm]	32,00	43,00	55,00	62,00	-	-	-
25	10	3,969	24,10	21,0	40	51	1	6,6	62	M6	16	10	48	55	8	5	6	6	L ± 1	2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	7 + 7	8 + 8
																			Ca [kN]	110	134	-	-	-	-	-
																			Coa [kN]	14,25	19,34	-	-	-	-	-
																			Rb/t [kN/μm]	21,48	30,54	-	-	-	-	-
32	4	2,381	31,45	29,6	50	65	1	9	80	M6	10	12	62	71	8	6	6	6	L ± 1	2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	7 + 7	8 + 8
																			Ca [kN]	67	76	85	93	101	-	-
																			Coa [kN]	9,50	12,50	15,00	17,00	18,50	-	-
																			Rb/t [kN/μm]	19,50	30,00	39,00	49,00	61,00	-	-



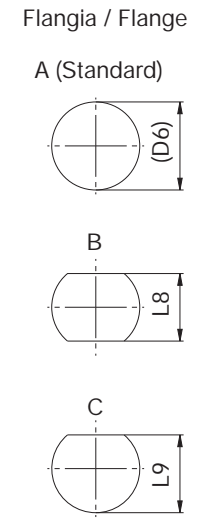
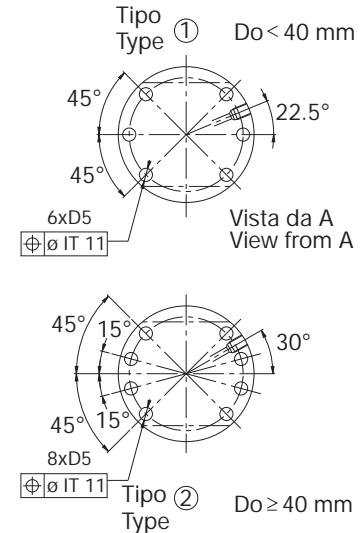
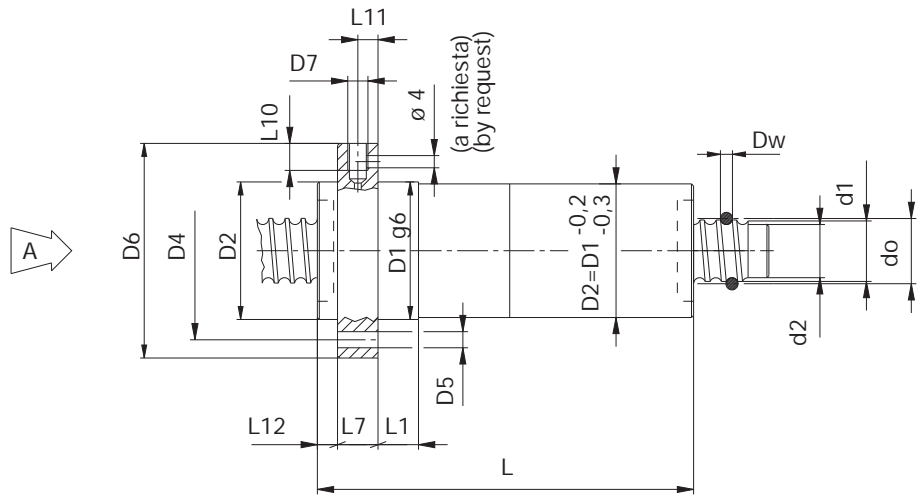
Flangia / Flange

A (Standard)



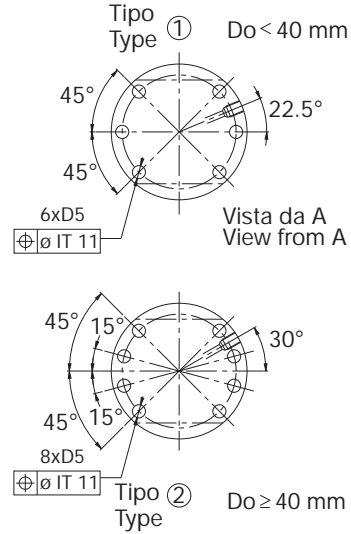
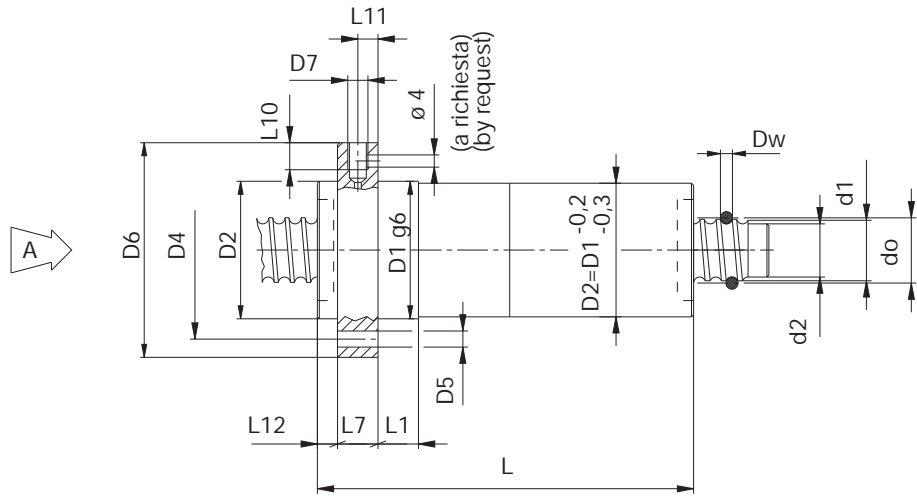
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rb/t [kN/μm] = Rigidity Stiffness

d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns								
																		L ± 1	2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	7 + 7	8 + 8
32	5	3,500	31,10	28,5	50	65	1	9	80	M6	10	12	62	71	8	6	6	L ± 1	82	94	105	115	125	-	-
																		Ca [kN]	13,23	17,31	21,38	25,45	28,50	-	-
																		Coa [kN]	26,60	39,90	53,20	66,50	78,77	-	-
																		Rb/t [kN/μm]	0,78	1,17	1,48	1,89	2,16	-	-
32	6	3,969	31,10	28,0	50	65	1	9	80	M6	10	12	62	71	8	6	6	L ± 1	84	98	111	123	136	-	-
																		Ca [kN]	18,30	20,80	25,80	30,65	34,80	-	-
																		Coa [kN]	28,00	44,00	59,00	73,50	88,60	-	-
																		Rb/t [kN/μm]	1,05	1,18	1,50	1,91	2,20	-	-
32	8	5,556	30,70	26,4	50	65	1	9	80	M6	16	12	62	71	8	6	6	L ± 1	100	118	136	-	-	-	-
																		Ca [kN]	26,47	34,61	42,76	-	-	-	-
																		Coa [kN]	38,68	57,00	77,37	-	-	-	-
																		Rb/t [kN/μm]	0,79	1,18	1,57	-	-	-	-
32	10	5,556	30,70	26,4	50	65	1	9	80	M6	16	12	62	71	8	6	6	L ± 1	112	136	157	-	-	-	-
																		Ca [kN]	26,47	34,61	42,76	-	-	-	-
																		Coa [kN]	38,68	57,00	77,37	-	-	-	-
																		Rb/t [kN/μm]	0,79	1,18	1,57	-	-	-	-
32	12	5,556	30,70	26,4	50	65	1	9	80	M6	16	12	62	71	8	6	6	L ± 1	121	148	-	-	-	-	
																		Ca [kN]	26,47	34,61	-	-	-	-	-
																		Coa [kN]	38,68	57,00	-	-	-	-	-
																		Rb/t [kN/μm]	0,79	1,18	-	-	-	-	-



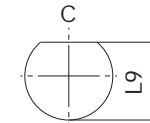
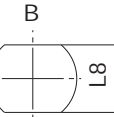
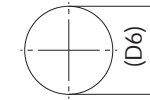
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rbt [kN/mm] = Rigidità Stiffness

d _o ø Nominale Norm. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns																		
																		2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	7 + 7	8 + 8											
32	16	5,556	30,70	26,4	50	65	1	9	80	M6	16	12	62	71	8	6	6	L ± 1	138	-	-	-	-	-	-	-	-	-	-						
																		Ca [kN]	26,47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
																		Coa [kN]	38,68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
																		Rbt [kN/μm]	0,79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	20	5,556	30,70	26,4	50	65	1	9	80	M6	20	12	62	71	8	6	6	L ± 1	148	-	-	-	-	-	-	-	-	-	-	-					
																		Ca [kN]	24,70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
																		Coa [kN]	35,20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
																		Rbt [kN/μm]	0,70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	5	3,500	39,10	36,5	63	78	2	9	93	M8x1	10	14	70	81,5	10	7	7	L ± 1	-	98	109	119	129	-	-	-	-	-	-						
																		Ca [kN]	-	19,34	23,41	27,49	30,54	-	-	-	-	-	-	-	-	-	-	-	
																		Coa [kN]	-	51,15	67,52	84,91	101,28	-	-	-	-	-	-	-	-	-	-	-	-
																		Rbt [kN/μm]	-	1,38	1,79	2,27	2,69	-	-	-	-	-	-	-	-	-	-	-	-
40	6	3,969	39,10	36,0	63	78	2	9	93	M8x1	10	14	70	81,5	10	7	7	L ± 1	-	101	114	126	139	-	-	-	-	-	-						
																		Ca [kN]	-	22,00	27,00	31,00	36,00	-	-	-	-	-	-	-	-	-	-	-	
																		Coa [kN]	-	56,00	74,00	93,00	111,00	-	-	-	-	-	-	-	-	-	-	-	-
																		Rbt [kN/μm]	-	1,40	1,80	2,30	2,72	-	-	-	-	-	-	-	-	-	-	-	-
40	8	5,556	38,70	34,4	63	78	2	9	93	M8x1	16	14	70	81,5	10	7	7	L ± 1	-	121	139	155	172	-	-	-	-	-	-						
																		Ca [kN]	-	31,10	38,20	44,00	50,20	-	-	-	-	-	-	-	-	-	-	-	
																		Coa [kN]	-	68,20	92,00	113,00	135,60	-	-	-	-	-	-	-	-	-	-	-	-
																		Rbt [kN/μm]	-	1,50	1,95	2,51	2,83	-	-	-	-	-	-	-	-	-	-	-	-



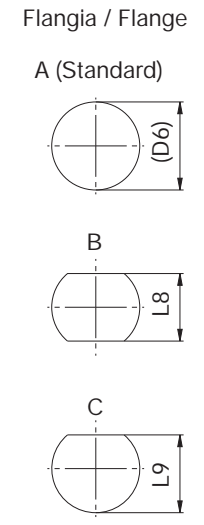
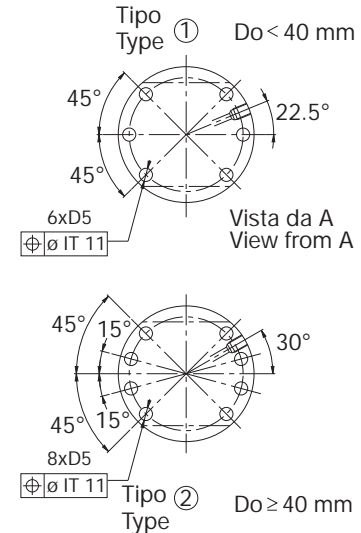
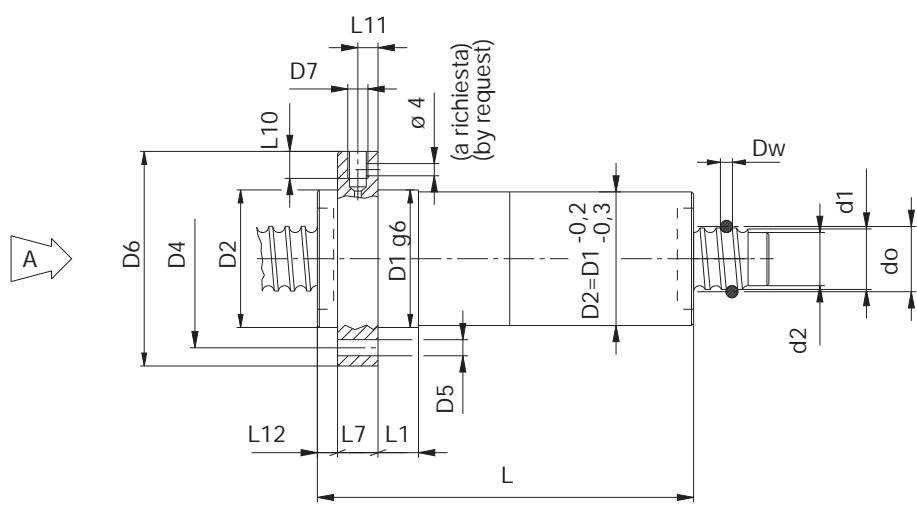
Flangia / Flange

A (Standard)



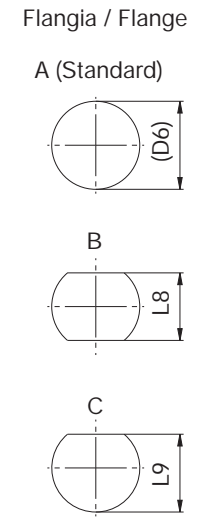
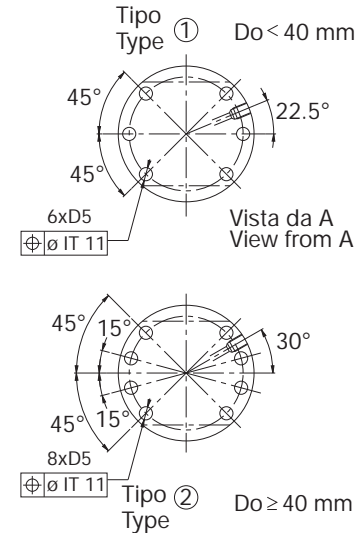
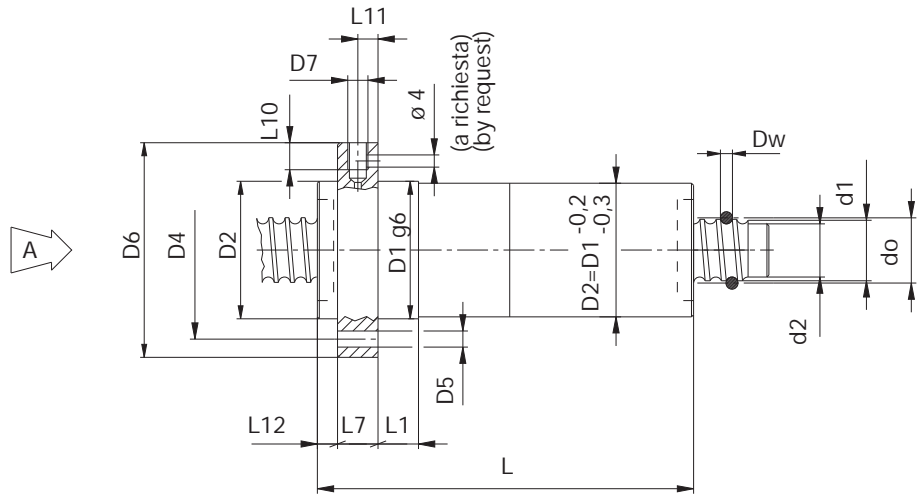
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rb/t [kN/mm] = Rigidità Stiffness

d _o Ø Nominale Nom. Screw Ø	Ph _o Passo Lead	D _w	d ₁ h ₆	d ₂ -0,1 -0,2	D ₁ g ₆	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇ h ₁₃	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns								
																		2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	7 + 7	8 + 8	
40	10	6,350	38,50	33,6	63	78	2	9	93	M8x1	16	14	70	81,5	10	7	7	L ± 1	118	144	167	187	208	-	-
																		Ca [kN]	35,52	45,81	56,00	66,17	75,33	-	-
																		Coa [kN]	55,97	84,49	113,00	141,50	168,00	-	-
																		Rb/t [kN/μm]	1,05	1,47	1,89	2,38	2,78	-	-
40	12	6,350	38,50	33,6	63	78	2	9	93	M8x1	16	14	70	81,5	10	7	7	L ± 1	-	162	188	213	-	-	-
																		Ca [kN]	-	45,81	56,00	66,17	-	-	-
																		Coa [kN]	-	84,49	113,00	141,50	-	-	-
																		Rb/t [kN/μm]	-	1,47	1,89	2,38	-	-	-
40	15	6,350	40,00	35,1	63	78	2	9	93	M8x1	16	14	70	81,5	10	7	7	L ± 1	141	178	215	-	-	-	-
																		Ca [kN]	33,92	44,62	54,75	-	-	-	-
																		Coa [kN]	53,73	80,64	107,50	-	-	-	-
																		Rb/t [kN/μm]	0,97	1,37	1,78	-	-	-	-
40	16	6,350	40,00	35,1	63	78	2	9	93	M8x1	16	14	70	81,5	10	7	7	L ± 1	145	181	215	-	-	-	-
																		Ca [kN]	33,92	44,62	54,75	-	-	-	-
																		Coa [kN]	53,73	80,64	107,50	-	-	-	-
																		Rb/t [kN/μm]	0,97	1,37	1,78	-	-	-	-
40	20	6,350	38,50	33,6	63	78	2	9	93	M8x1	25	14	70	81,5	10	7	7	L ± 1	158	202	-	-	-	-	-
																		Ca [kN]	32,32	43,43	-	-	-	-	-
																		Coa [kN]	51,50	76,80	-	-	-	-	-
																		Rb/t [kN/μm]	0,88	1,27	-	-	-	-	-



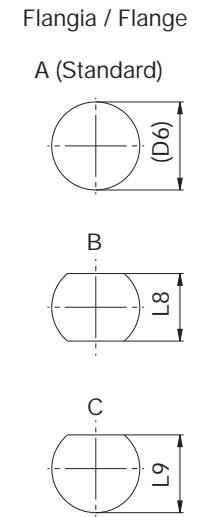
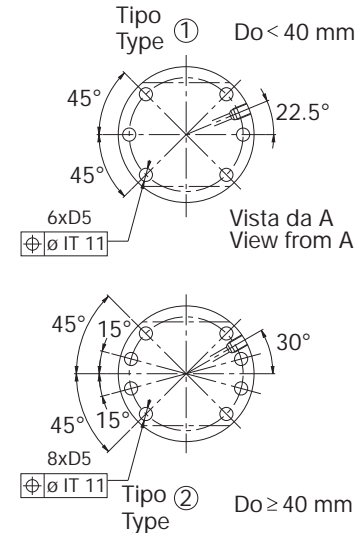
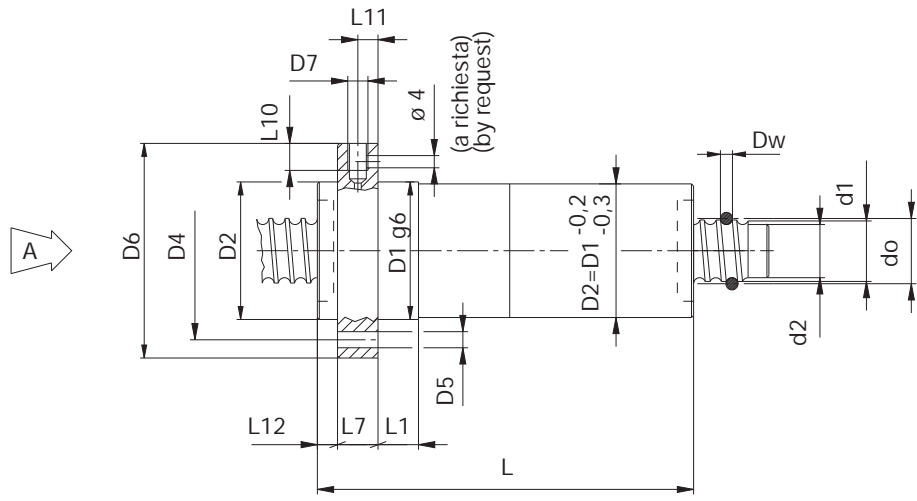
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rb/t [kN/μm] = Rigidità Stiffness

d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₆	d ₂ -0,1 -0,2	D ₁ g ₆	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇	L ₈	L ₉	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns								
																		2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	7 + 7	8 + 8	
50	4	2,381	49,45	47,6	75	93	2	11	110	M8x1	10	16	85	97,5	10	8	7	L ± 1	-	81	90	98	107	-	-
																		Ca [kN]	-	13,50	16,00	18,80	20,00	-	-
																		Coa [kN]	-	48,00	65,00	81,00	98,00	-	-
																		Rb/t [kN/μm]	-	1,75	2,30	2,80	3,40	-	-
50	5	3,500	49,10	46,5	75	93	2	11	110	M8x1	10	16	85	97,5	10	8	7	L ± 1	-	100	111	121	131	-	-
																		Ca [kN]	-	20,36	24,23	29,52	32,58	-	-
																		Coa [kN]	-	64,45	85,93	107,42	129,00	-	-
																		Rb/t [kN/μm]	-	1,68	2,19	2,67	3,16	-	-
50	6	3,969	49,10	46,0	75	93	2	11	110	M8x1	10	16	85	97,5	10	8	7	L ± 1	-	103	116	128	141	-	-
																		Ca [kN]	-	24,00	29,00	34,00	38,50	-	-
																		Coa [kN]	-	70,00	94,00	117,50	141,00	-	-
																		Rb/t [kN/μm]	-	1,70	2,21	2,72	3,21	-	-
50	8	5,556	48,70	44,4	75	93	2	11	110	M8x1	16	16	85	97,5	10	8	7	L ± 1	-	123	141	157	174	-	-
																		Ca [kN]	-	32,00	41,00	46,00	52,50	-	-
																		Coa [kN]	-	82,00	110,00	135,00	164,00	-	-
																		Rb/t [kN/μm]	-	1,72	2,34	2,78	3,32	-	-
50	10	7,144	48,35	42,8	75	93	2	11	110	M8x1	16	16	85	97,5	10	8	7	L ± 1	-	146	168	189	210	-	-
																		Ca [kN]	-	59,04	72,28	84,49	95,69	-	-
																		Coa [kN]	-	122,76	163,68	204,60	245,52	-	-
																		Rb/t [kN/μm]	-	1,79	2,37	2,88	3,49	-	-



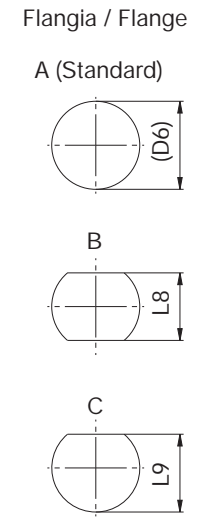
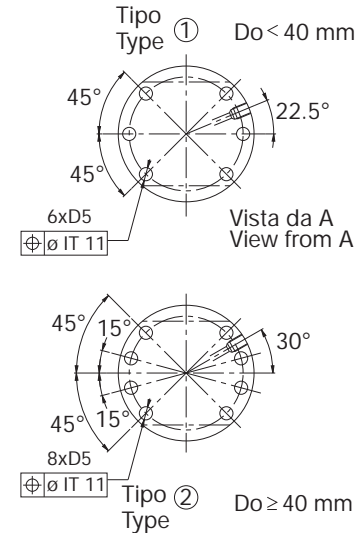
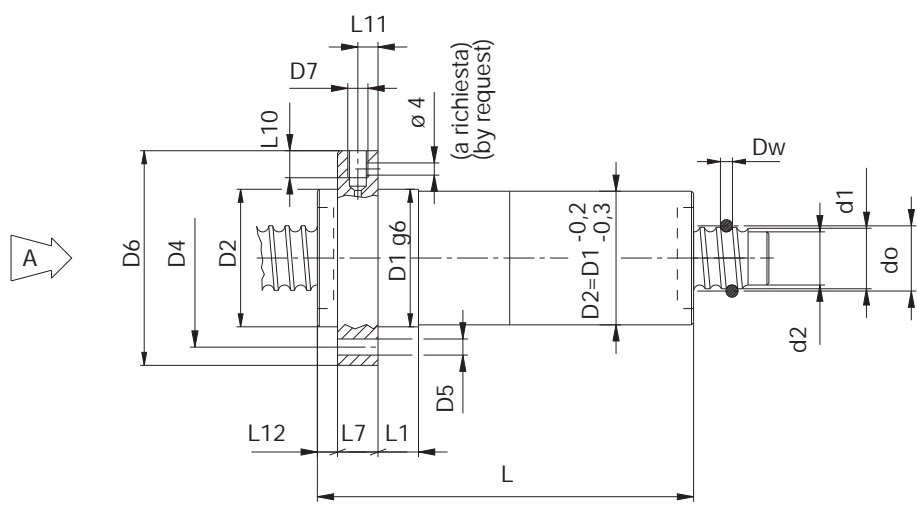
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rb/t [kN/μm] = Rigidità Stiffness

d _o ø Nominale Norm. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₆	d ₂ -0,1 -0,2	D ₁ g ₆	D ₄	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns								
																			2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	7 + 7	8 + 8	
50	12	7,144	48,35	42,8	75	93	2	11	110	M8x1	16	16	85	97,5	10	8	7	L ± 1	-	164	190	215	240	-	-	
																		Ca [kN]	-	59,04	72,28	84,49	95,69	-	-	
																		Coa [kN]	-	122,76	163,68	204,60	245,52	-	-	
																		Rb/t [kN/μm]	-	1,79	2,37	2,88	3,49	-	-	
50	16	7,144	48,35	42,8	75	93	2	11	110	M8x1	16	16	85	97,5	10	8	7	L ± 1	-	183	220	257	-	-		
																		Ca [kN]	-	58,21	70,34	80,32	-	-		
																		Coa [kN]	-	111,09	159,60	198,68	-	-		
																		Rb/t [kN/μm]	-	1,64	2,11	2,58	-	-		
50	20	7,144	48,35	42,8	75	93	2	11	110	M8x1	25	16	85	97,5	10	8	7	L ± 1	-	210	257	303	-	-		
																		Ca [kN]	-	57,00	68,65	78,34	-	-		
																		Coa [kN]	-	106,23	153,40	192,49	-	-		
																		Rb/t [kN/μm]	-	1,51	1,90	2,37	-	-		
63	5	3,500	62,10	59,5	90	108	2	11	125	M8x1	10	18	95	110	10	9	7	L ± 1	-	102	113	123	133	-	-	
																		Ca [kN]	-	22,40	26,47	31,56	35,63	-	-	
																		Coa [kN]	-	82,40	109,94	137,43	164,92	-	-	
																		Rb/t [kN/μm]	-	2,08	2,68	3,26	3,88	-	-	
63	6	3,969	62,10	59,0	90	108	2	11	125	M8x1	10	18	95	110	10	9	7	L ± 1	-	105	118	130	143	-	-	
																		Ca [kN]	-	25,20	28,20	32,00	37,20	-	-	
																		Coa [kN]	-	83,50	110,86	138,50	166,10	-	-	
																		Rb/t [kN/μm]	-	2,20	2,71	3,35	3,98	-	-	



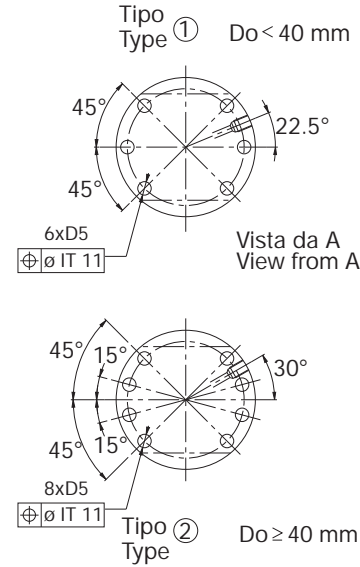
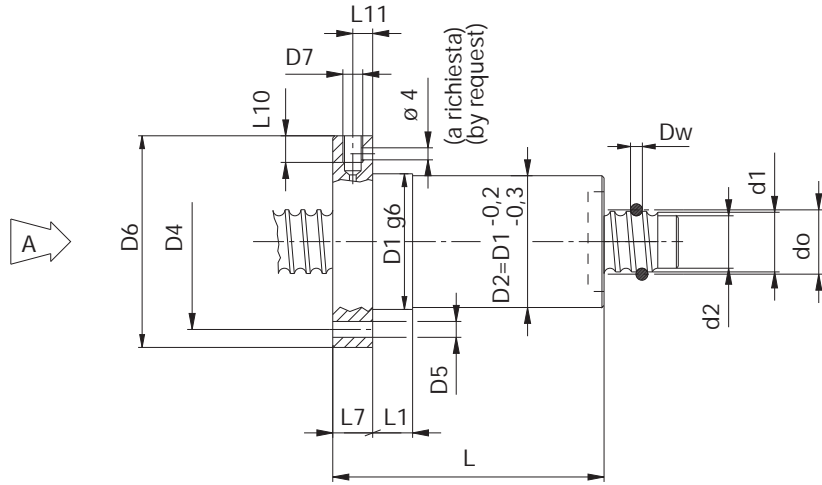
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rb/t [kN/μm] = Rigidità Stiffness

d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇ h ₁₃	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns								
																		2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	7 + 7	8 + 8	
63	10	7,144	61,35	55,8	90	108	2	11	125	M8x1	16	18	95	110	10	9	7	L ± 1	-	148	170	191	212	-	-
																		Ca [kN]	-	63,12	77,37	90,60	102,82	-	-
																		Coa [kN]	-	158,81	213,81	267,00	320,20	-	-
																		Rb/t [kN/μm]	-	2,16	2,70	3,67	4,17	-	-
63	12	7,144	61,35	55,8	90	108	2	11	125	M8x1	16	18	95	110	10	9	7	L ± 1	-	166	192	217	242	-	-
																		Ca [kN]	-	63,12	77,37	90,60	102,82	-	-
																		Coa [kN]	-	158,81	213,81	267,00	320,20	-	-
																		Rb/t [kN/μm]	-	2,16	2,70	3,67	4,17	-	-
63	20	9,525	60,80	53,4	95	115	2	13,5	135	M8x1	25	20	100	117,5	10	10	9	L ± 1	-	236	280	322	-	-	
																		Ca [kN]	-	94,80	116,00	135,00	-	-	
																		Coa [kN]	-	196,50	262,00	327,00	-	-	
																		Rb/t [kN/μm]	-	2,10	2,60	3,50	-	-	
80	5	3,500	79,10	76,5	105	125	2	13,5	145	M8x1	10	20	110	127,5	10	10	9	L ± 1	-	106	117	127	137	-	-
																		Ca [kN]	-	23,50	27,00	32,00	36,50	-	-
																		Coa [kN]	-	84,00	110,00	140,00	165,50	-	-
																		Rb/t [kN/μm]	-	2,10	2,80	3,40	3,92	-	-
80	10	7,144	78,35	72,8	105	125	2	13,5	145	M8x1	16	20	110	127,5	10	10	9	L ± 1	-	154	176	197	218	241	264
																		Ca [kN]	-	68,00	83,20	97,44	110,64	122,80	135,00
																		Coa [kN]	-	207,00	277,00	346,00	415,00	485,00	554,00
																		Rb/t [kN/μm]	-	2,68	3,48	4,29	4,99	5,80	6,58



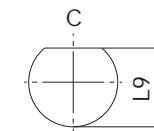
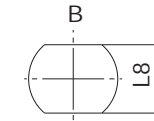
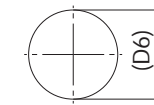
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads
Rb/t [kN/μm] = Rigidity Stiffness

d _o ø Nominale Norm. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇ h ₁₃	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	L ₁₂	n° di circuiti portanti No. of loaded turns								
																		2 + 2	3 + 3	4 + 4	5 + 5	6 + 6	7 + 7	8 + 8	
80	12	7,144	78,35	72,8	105	125	2	13,5	145	M8x1	16	20	110	127,5	10	10	9	L ± 1	-	-	175	219	243	-	-
																		Ca [kN]	-	-	83,20	97,44	110,64	-	-
																		Coa [kN]	-	-	277,00	346,00	415,00	-	-
																		Rb/t [kN/μm]	-	-	3,48	4,29	4,99	-	-
80	16	9,525	80,00	72,6	125	145	2	13,5	165	M8x1	25	25	130	147,5	10	12,5	9	L ± 1	-	204	243	280	-	-	
																		Ca [kN]	-	117,41	136,55	165,68	-	-	
																		Coa [kN]	-	265,43	362,44	453,02	-	-	
																		Rb/t [kN/μm]	-	2,86	3,82	4,70	-	-	
80	20	9,525	77,80	70,4	125	145	2	13,5	165	M8x1	25	25	130	147,5	10	12,5	9	L ± 1	-	250	293	335	376	-	-
																		Ca [kN]	-	104,00	128,00	150,00	169,00	-	-
																		Coa [kN]	-	260,00	356,00	443,00	536,00	-	-
																		Rb/t [kN/μm]	-	2,70	3,50	4,30	5,03	-	-
100	10	7,144	98,35	92,8	125	145	2	13,5	165	M8x1	16	22	130	147,5	10	11	10	L ± 1	-	-	182	203	224	247	270
																		Ca [kN]	-	-	89,67	105,00	119,22	132,47	145,72
																		Coa [kN]	-	-	370,92	441,23	529,88	617,51	706,00
																		Rb/t [kN/μm]	-	-	4,15	5,18	6,00	6,98	7,89
100	20	9,525	97,80	90,4	150	176	2	17,5	202	M8x1	25	30	155	179	10	15	10	L ± 1	-	-	306	348	389	-	-
																		Ca [kN]	-	-	135,00	156,00	178,00	-	-
																		Coa [kN]	-	-	446,00	557,00	668,00	-	-
																		Rb/t [kN/μm]	-	-	4,00	5,00	6,00	-	-



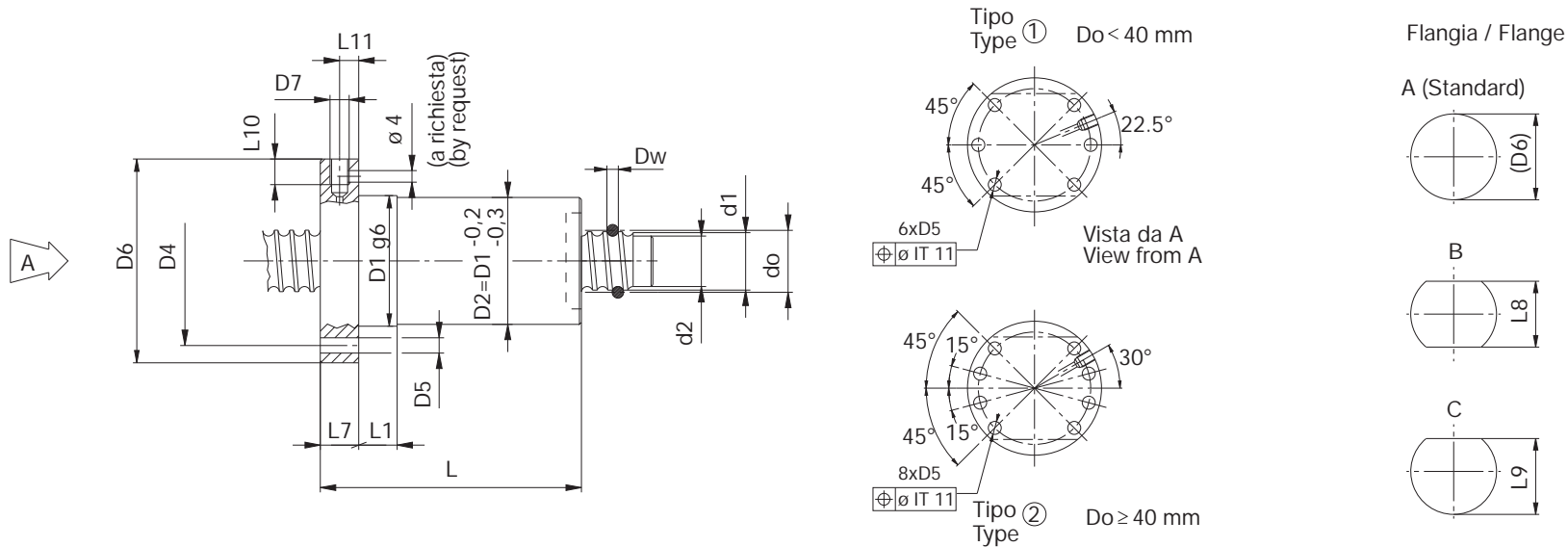
Flangia / Flange

A (Standard)



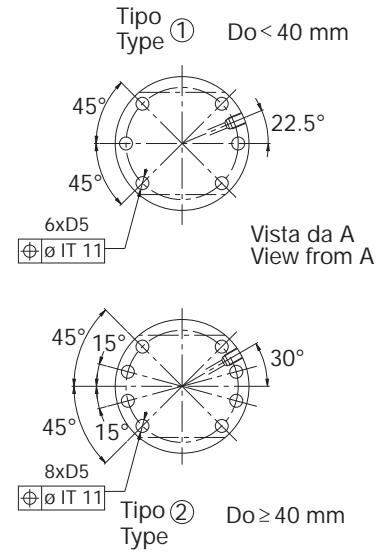
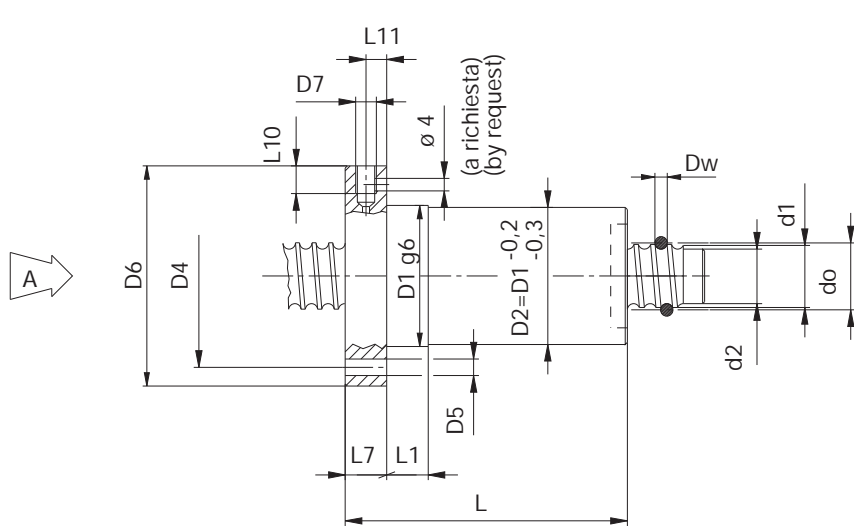
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads

d _o ø Nominale Norm. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	D ₄	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇ h ₁₃	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	n° di circuiti portanti No. of loaded turns			
																		2	3	4
16	10	2,381	16,0	14,2	28	38	1	5,5	48	M6	10	10	40	44	8	5	L ± 1	37	47	-
																	Ca [kN]	4,20	6,11	-
																	Coa [kN]	7,28	10,88	-
16	16	2,381	16,0	14,2	28	38	1	5,5	48	M6	10	10	40	44	8	5	L ± 1	48	-	-
																	Ca [kN]	3,99	-	-
																	Coa [kN]	7,06	-	-
20	10	3,500	20,0	17,3	36	47	1	6,6	58	M6	10	10	44	51	8	5	L ± 1	38	48	58
																	Ca [kN]	7,06	11,40	15,70
																	Coa [kN]	12,00	19,40	26,70
20	20	3,500	20,0	17,3	36	47	1	6,6	58	M6	10	10	44	51	8	5	L ± 1	57	-	-
																	Ca [kN]	6,80	-	-
																	Coa [kN]	11,62	-	-
25	20	3,500	24,0	21,3	40	51	1	6,6	62	M6	10	10	48	55	8	5	L ± 1	57	77	-
																	Ca [kN]	8,40	13,35	-
																	Coa [kN]	15,00	23,84	-
25	25	3,500	24,0	21,3	40	51	1	6,6	62	M6	10	10	48	55	8	5	L ± 1	66	91	-
																	Ca [kN]	8,36	13,17	-
																	Coa [kN]	14,87	23,62	-
32	20	6,350	30,0	25,9	56	70	1	9	85	M6	16	14	63	74	8	7	L ± 1	-	88	-
																	Ca [kN]	-	32,60	-
																	Coa [kN]	-	52,41	-



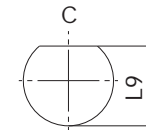
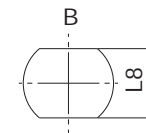
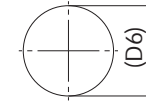
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici Dynamic loads
Coa [kN] = Carichi statici Static loads

d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	Tipo Type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇ h ₁₃	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	n° di circuiti portanti No. of loaded turns				
																2	3	4		
32	32	6,350	30,0	25,9	56	70	1	9	85	M6	16	14	63	74	8	7	L ± 1	86	-	-
																	Ca [kN]	20,38	-	-
																	Coa [kN]	33,42	-	-
40	40	6,350	38,0	33,9	63	78	2	9	93	M8x1	16	14	70	81,5	10	7	L ± 1	102	142	-
																	Ca [kN]	25,34	40,54	-
																	Coa [kN]	44,01	70,42	-
50	40	6,350	48,0	43,1	75	93	2	11	110	M8x1	16	12	85	97,5	10	6	L ± 1	107	-	-
																	Ca [kN]	30,93	-	-
																	Coa [kN]	56,87	-	-
50	50	6,350	48,0	43,1	75	93	2	11	110	M8x1	16	16	85	97,5	10	8	L ± 1	126	-	-
																	Ca [kN]	30,40	-	-
																	Coa [kN]	55,90	-	-
63	40	6,350	62,0	57,1	90	108	2	11	80	M8x1	16	16	95	110	10	8	L ± 1	108	-	-
																	Ca [kN]	38,80	-	-
																	Coa [kN]	76,75	-	-
63	50	6,350	62,0	57,1	90	108	2	11	125	M8x1	16	16	95	110	10	8	L ± 1	127	-	-
																	Ca [kN]	38,30	-	-
																	Coa [kN]	75,90	-	-



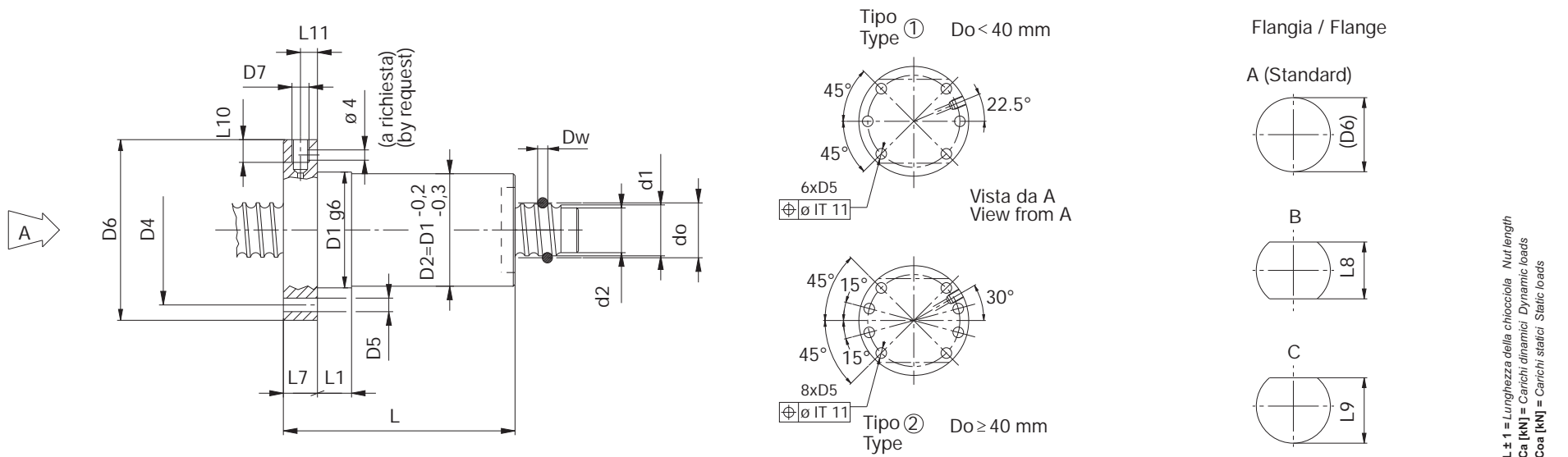
Flangia / Flange

A (Standard)



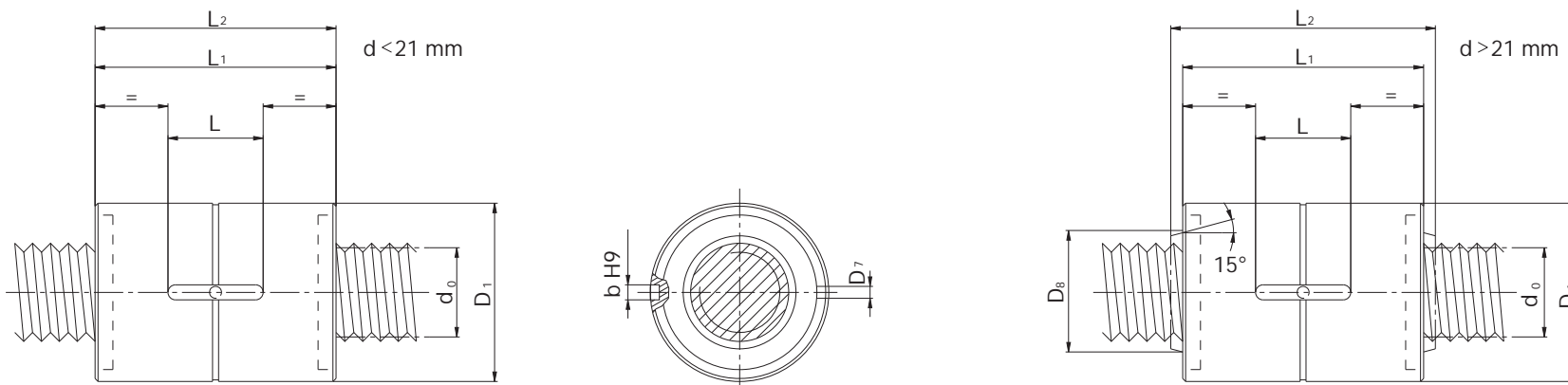
L ± 1 = Lunghezza della chiocciola Nut length
Ca [kN] = Carichi dinamici / Dynamic loads
Coa [kN] = Carichi statici / Static loads

d _o ø Nominale Norm. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	Tipo type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇ h ₁₃	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	n° di circuiti portanti No. of loaded turns				
																2	3	4		
16	16	2,381	16,0	14,2	28	38	1	5,5	48	M6	10	10	40	44	8	5	L ± 1	48	-	-
																	Ca [kN]	8,00	-	-
																	Coa [kN]	14,12	-	-
20	20	3,500	20,0	17,3	36	47	1	6,6	58	M6	10	10	44	51	8	5	L ± 1	57	-	-
																	Ca [kN]	14,40	-	-
																	Coa [kN]	24,00	-	-
25	20	3,500	24,0	21,3	40	51	1	6,6	62	M6	10	10	48	55	8	5	L ± 1	57	77	-
																	Ca [kN]	17,00	27,40	-
																	Coa [kN]	30,60	49,34	-
25	25	3,500	24,0	21,3	40	51	1	6,6	62	M6	10	10	48	55	8	5	L ± 1	66	91	-
																	Ca [kN]	16,80	26,34	-
																	Coa [kN]	30,00	47,24	-
32	32	5,556	32,0	27,6	56	70	1	9	85	M6	16	14	63	74	8	7	L ± 1	86	-	-
																	Ca [kN]	36,20	-	-
																	Coa [kN]	62,00	-	-
40	40	6,350	38,0	33,9	63	78	2	9	93	M8x1	16	14	70	81,5	10	7	L ± 1	102	142	-
																	Ca [kN]	50,60	81,08	-
																	Coa [kN]	88,00	140,84	-



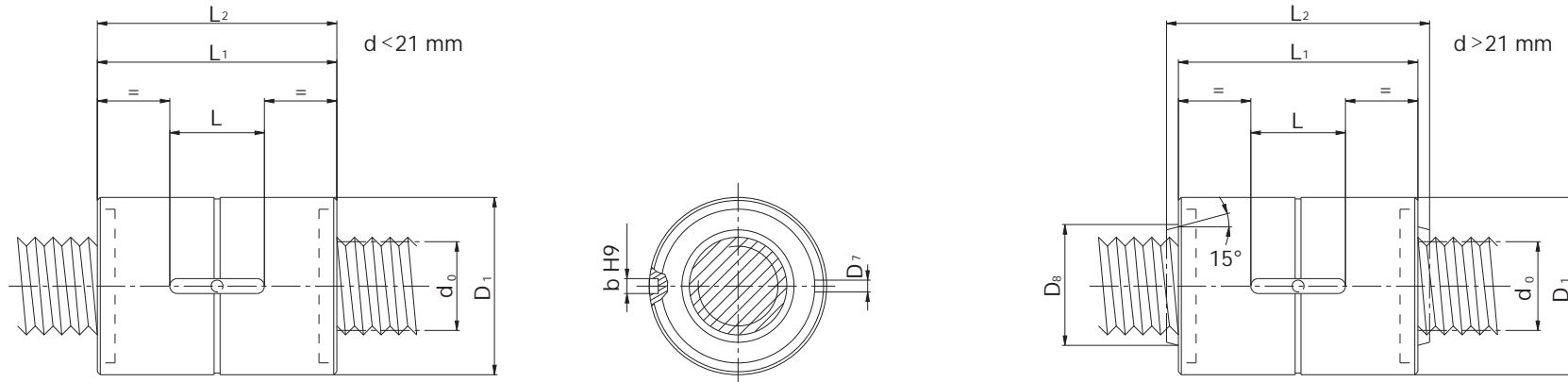
L ± 1 = Lunghezza della chiocciola - Nut length
Ca [kN] = Carichi dinamici - Dynamic loads
Coa [kN] = Carichi statici - Static loads

d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D _w	d ₁ h ₈	d ₂ -0,1 -0,2	D ₁ g ₆	D ₄	Tipo Type	D ₅ H ₁₃	D ₆ h ₁₃	D ₇	L ₁	L ₇ h ₁₃	L ₈ h ₁₃	L ₉ h ₁₃	L ₁₀	L ₁₁	n° di circuiti portanti No. of loaded turns			
																	2	3	4	
50	40	6,350	48,0	43,1	75	93	2	11	110	M8x1	16	12	85	97,5	10	6	L ± 1	107	-	-
																	Ca [kN]	61,05	-	-
																	Coa [kN]	112,14	-	-
50	50	6,350	48,0	43,1	75	93	2	11	110	M8x1	16	16	85	97,5	10	8	L ± 1	126	-	-
																	Ca [kN]	62,05	-	-
																	Coa [kN]	114,30	-	-



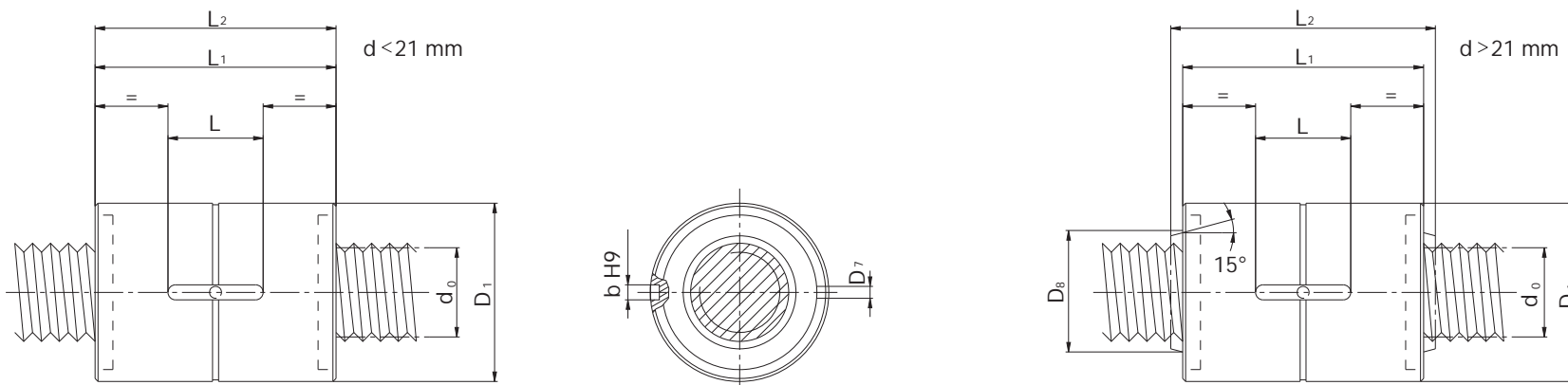
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o Ø Nominale Nom. Screw Ø	Ph _o Passo Lead	D ₁ g ₆	D ₇	D ₈	L x b x h	L ₁	L ₂ *	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{oa} kN	gioco backlash mm	N° rullini N° rollers	
							h ₁₂	h ₁₂				Standard	Max
VRS 8x02	8	2	21	3	-	10x3x3	31	41	6,98	17,91	0,02	6	8
VRS 8x04	8	4	21	3	-	10x3x3	31	41	5,43	18,63	0,02	6	8
VRS 12x02	12	2	26	3	-	10x3x3	31	41	10,24	26,72	0,02	6	10
VRS 12x04	12	4	26	3	-	10x3x3	31	41	8,92	27,74	0,02	6	10
VRS 12x05	12	5	26	3	-	10x3x3	31	41	8,31	31,00	0,02	6	10
VRS 15x02	15	2	34	3	-	14x4x4	35	51	13,47	31,74	0,02	6	11
VRS 15x04	15	4	34	3	-	14x4x4	35	51	11,94	33,00	0,02	6	11



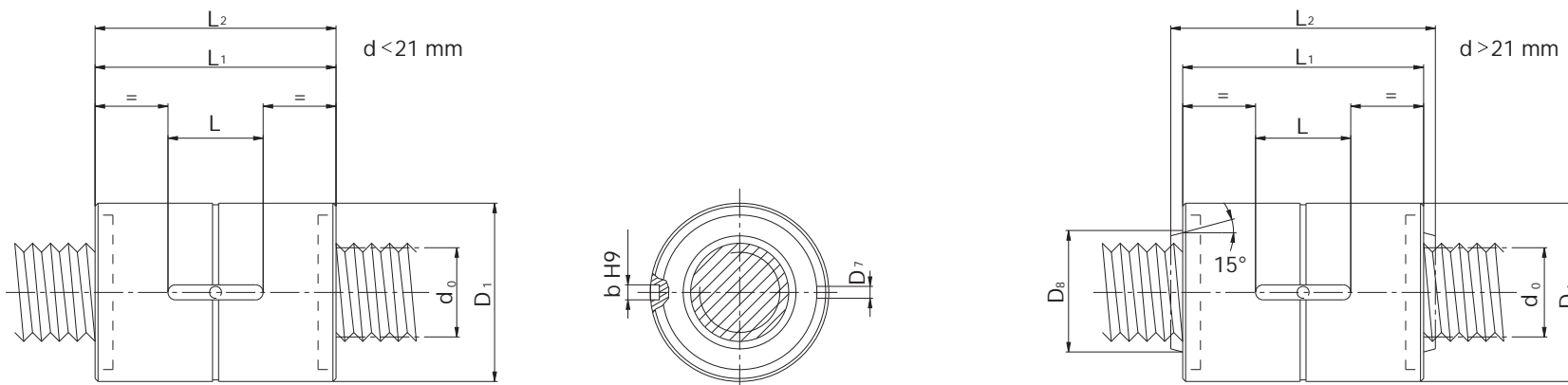
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁	D ₇	D ₈	L x b x h	L ₁	L ₂ *	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	gioco backlash mm	N° rullini N° rollers	
												Standard	Max
VRS 15x05	15	5	34	3	-	14x4x4	35	51	11,20	36,90	0,02	6	11
VRS 20x02	20	2	42	3	-	20x4x4	55	65	33,00	66,00	0,02	8	11
VRS 20x04	20	4	42	3	-	20x4x4	55	65	29,54	68,63	0,02	8	11
VRS 20x05	20	5	42	3	-	20x4x4	55	65	27,80	76,73	0,02	8	11
VRS 20x06	20	6	42	3	-	20x4x4	55	65	26,42	79,14	0,02	8	11
VRS 21x05	21	5	45	5	26	20x5x5	64	72	40,70	68,70	0,02	9	11
VRS 21x08	21	8	45	5	26	20x5x5	64	72	44,20	69,00	0,02	9	11



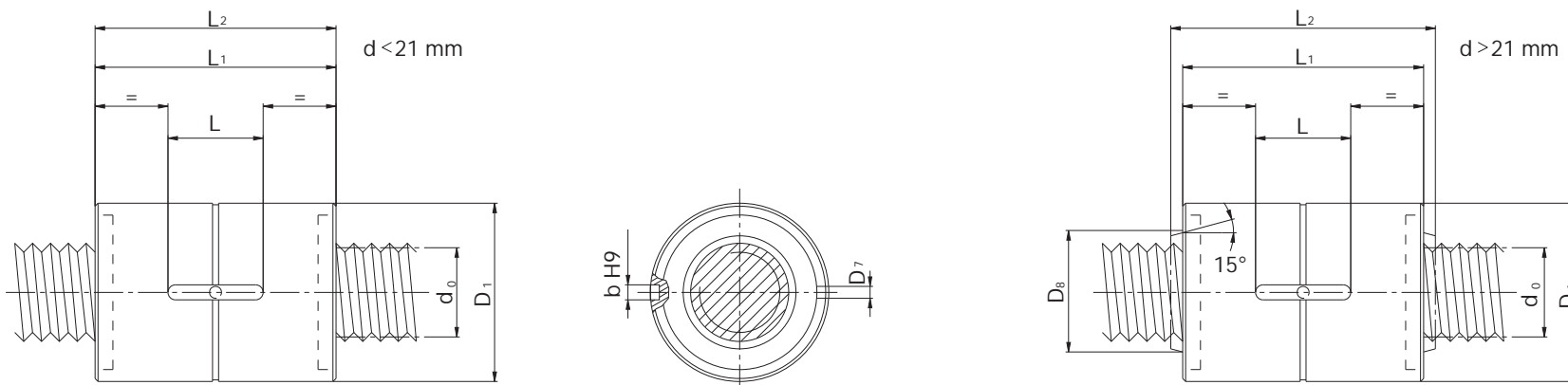
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁ g ₆	D ₇	D ₈	L x b x h	L ₁ h ₁₂	L ₂ [*] h ₁₂	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{oa} kN	gioco backlash mm	N° rullini N° rollers	
												Standard	Max
VRS 21x10	21	10	45	5	26	20x5x5	64	72	47,90	69,50	0,02	9	10
VRS 23x02	23	2	45	4	30	20x5x5	55	65	40,89	66,80	0,02	8	11
VRS 23x04	23	4	45	5	30	20x5x5	55	65	40,12	64,38	0,02	8	11
VRS 23x08	23	8	45	5	30	20x5x5	55	65	38,41	69,02	0,04	8	11
VRS 25x05	25	5	53	5	32	25x6x6	78	90	52,70	92,00	0,02	8	11
VRS 25x10	25	10	53	5	32	25x6x6	78	90	60,50	89,50	0,04	8	11
VRS 27x02	27	2	53	4	35	20x5x5	55	69	44,32	77,66	0,02	8	11



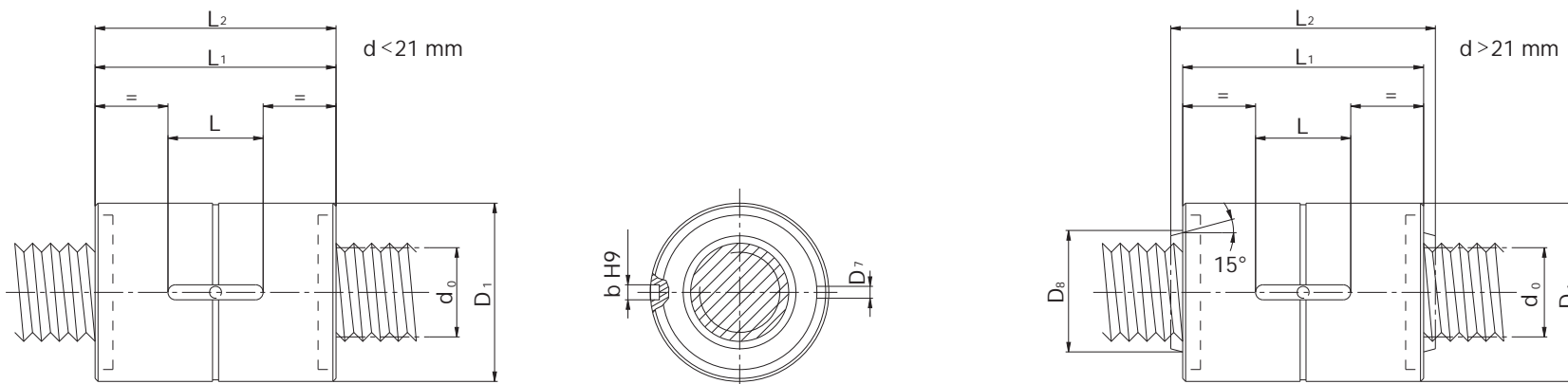
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁	D ₇	D ₈	L x b x h	L ₁	L ₂ *	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{oa} kN	gioco backlash mm	N° rullini N° rollers	
												Standard	Max
VRS 27x04	27	4	53	5	35	20x5x5	55	69	40,34	80,76	0,02	8	11
VRS 27x08	27	8	53	5	35	20x5x5	55	69	42,10	99,26	0,04	8	10
VRS 30x02	30	2	64	5	38	32x6x6	85	99	58,70	133,00	0,02	8	11
VRS 30x05	30	5	64	5	38	32x6x6	85	99	76,70	151,50	0,02	10	11
VRS 30x10	30	10	64	5	38	32x6x6	85	99	88,60	148,20	0,04	10	11
VRS 30x15	30	15	64	5	38	32x6x6	85	99	96,40	150,30	0,07	10	10
VRS 30x20	30	20	64	5	38	32x6x6	85	99	99,80	146,40	0,07	10	10



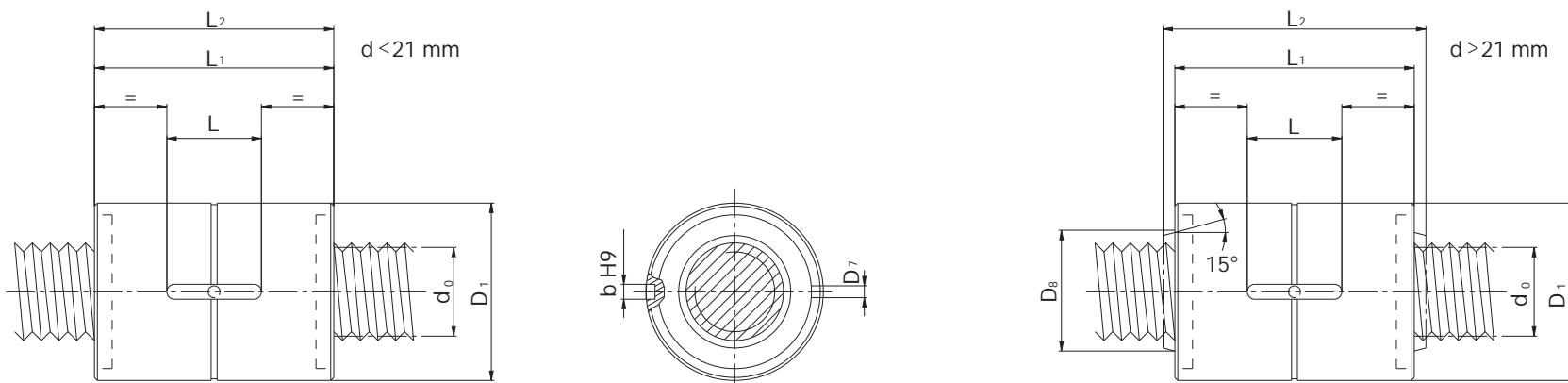
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o Ø Nominale Nom. Screw Ø	Ph _o Passo Lead	D ₁ g ₆	D ₇	D ₈	L x b x h	L ₁	L ₂ *	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{oa} kN	gioco backlash mm	N° rullini N° rollers	
							h ₁₂	h ₁₂				Standard	Max
VRS 30x25	30	25	64	5	38	32x6x6	85	99	102,40	143,20	0,07	10	10
VRS 39x05	39	5	80	7	50	40x8x7	100	116	107,70	228,50	0,02	10	11
VRS 39x10	39	10	80	7	50	40x8x7	100	116	127,30	230,30	0,04	10	11
VRS 39x15	39	15	80	7	50	40x8x7	100	116	138,30	228,10	0,04	10	11
VRS 39x20	39	20	80	7	50	40x8x7	100	116	144,70	218,60	0,04	10	11
VRS 44x12	44	12	80	7	56	32x6x6	90	106	115,90	217,20	0,04	12	14
VRS 44x18	44	18	80	7	56	32x6x6	90	106	127,40	218,60	0,07	12	13



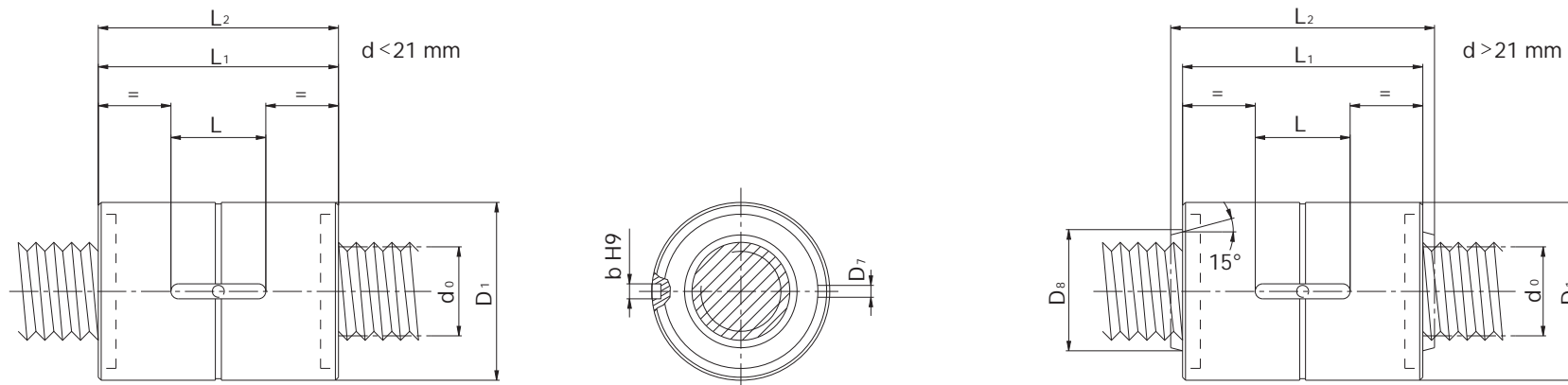
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁	D ₇	D ₈	L x b x h	L ₁ h ₁₂	L ₂ * h ₁₂	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	gioco backlash mm	N° rullini N° rollers	
												Standard	Max
VRS 44x24	44	24	80	7	56	32x6x6	90	106	136,50	221,40	0,07	12	13
VRS 44x30	44	30	80	7	56	32x6x6	90	106	133,80	206,30	0,07	12	13
VRS 48x05	48	5	100	7	60	45x8x7	127	145	165,10	409,30	0,02	10	11
VRS 48x10	48	10	100	7	60	45x8x7	127	145	193,00	403,80	0,04	10	11
VRS 48x20	48	20	100	7	60	45x8x7	127	145	215,10	381,90	0,07	10	11
VRS 60x10	60	10	122	10,5	71	45x10x8	152	170	282,30	662,60	0,04	10	11
VRS 60x15	60	15	122	10,5	71	45x10x8	152	170	307,00	656,30	0,07	10	11



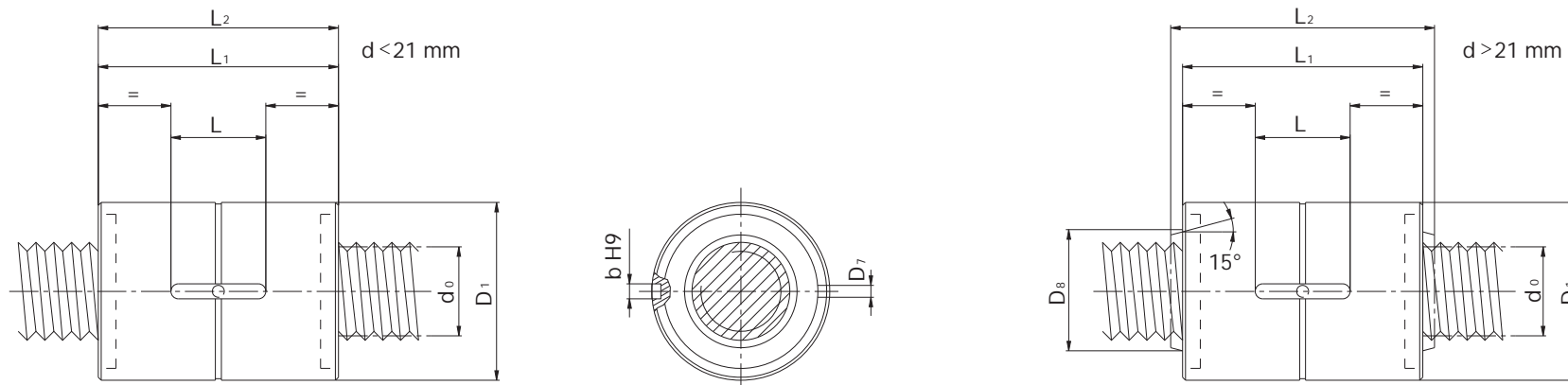
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o Nom. Screw ø	Ph _o Passo Lead	D ₁ g ₆	D ₇	D ₈	L x b x h	L ₁	L ₂ *	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	gioco backlash mm	N° rullini N° rollers	
							h ₁₂	h ₁₂				Standard	Max
VRS 60x20	60	20	122	10,5	71	45x10x8	152	170	325,00	653,00	0,07	10	11
VRS 64x30	64	30	115	7	75	45x8x7	129	151	260,90	515,00	0,07	12	13
VRS 64x36	64	36	115	7	75	45x8x7	129	151	260,00	493,10	0,07	12	13
VRS 64x42	64	42	115	7	75	45x8x7	129	151	258,20	471,40	0,07	12	13
VRS 75x10	75	10	150	10,5	87	63x10x8	191	211	411,10	1235,00	0,04	11	11
VRS 75x20	75	20	150	10,5	87	63x10x8	191	211	483,40	1243,00	0,07	11	11
VRS 75x30	75	30	150	10,5	87	63x10x8	191	211	461,40	1137,30	0,07	11	11



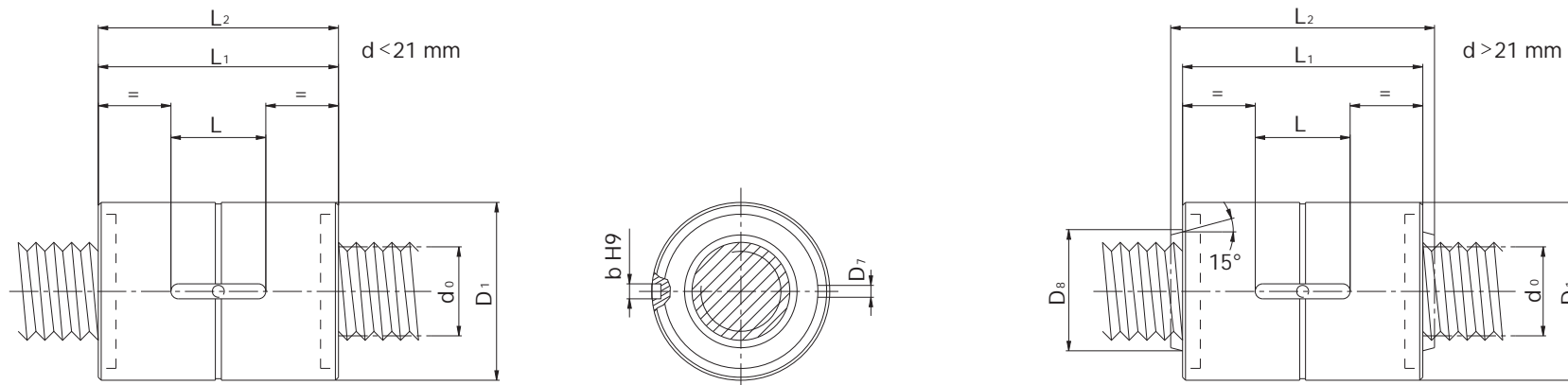
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁	D ₇	D ₈	L x b x h	L ₁	L ₂ *	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	N° rullini N° rollers	
											Standard	Max
VRS 8x02	8	2	21	3	-	10x3x3	31	41	4,19	8,90	6	8
VRS 8x04	8	4	21	3	-	10x3x3	31	41	3,26	9,31	6	8
VRS 12x02	12	2	26	3	-	10x3x3	31	41	6,14	13,36	6	10
VRS 12x04	12	4	26	3	-	10x3x3	31	41	5,35	13,87	6	10
VRS 12x05	12	5	26	3	-	10x3x3	31	41	4,88	15,50	6	10
VRS 15x02	15	2	34	3	-	14x4x4	35	51	8,08	15,87	6	11
VRS 15x04	15	4	34	3	-	14x4x4	35	51	7,16	16,50	6	11



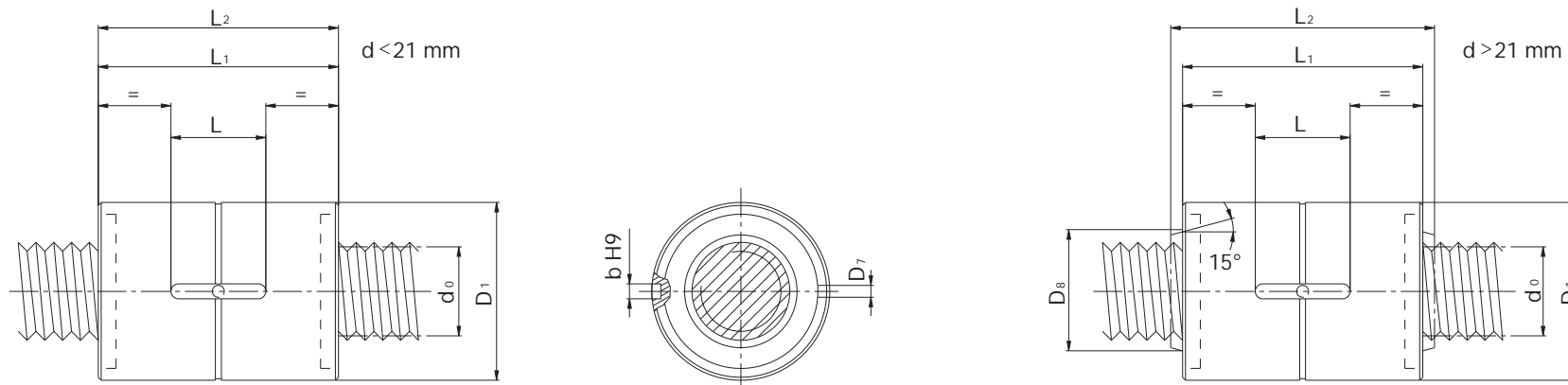
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁	D ₇	D ₈	L x b x h	L ₁	L ₂ *	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	N° rullini N° rollers	
											Standard	Max
VRS 15x05	15	5	34	3	-	14x4x4	35	51	6,72	18,45	6	11
VRS 20x02	20	2	42	3	-	20x4x4	55	65	19,80	33,00	8	11
VRS 20x04	20	4	42	3	-	20x4x4	55	65	17,72	34,31	8	11
VRS 20x05	20	5	42	3	-	20x4x4	55	65	16,68	38,37	8	11
VRS 20x06	20	6	42	3	-	20x4x4	55	65	15,91	39,13	8	11
VRS 21x05	21	5	45	5	26	20x5x5	64	72	24,40	34,20	9	11
VRS 21x08	21	8	45	5	26	20x5x5	64	72	26,50	34,50	9	11



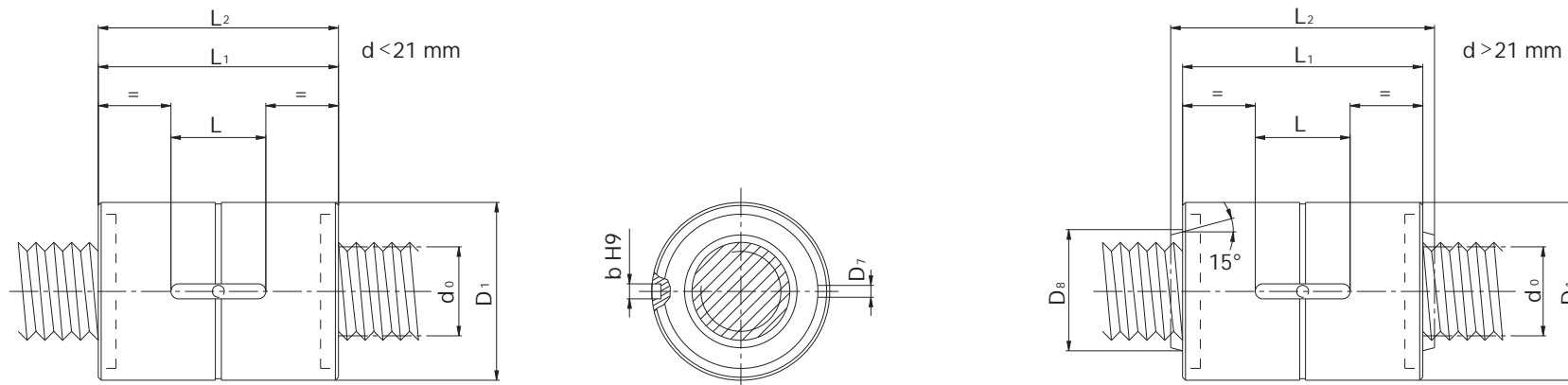
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁	D ₇	D ₈	L x b x h	L ₁	L ₂ *	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	N° rullini N° rollers	
											Standard	Max
VRS 21x10	21	10	45	5	26	20x5x5	64	72	28,70	35,00	9	10
VRS 23x02	23	2	45	4	30	20x5x5	55	65	24,63	33,40	8	11
VRS 23x04	23	4	45	5	30	20x5x5	55	65	24,17	32,19	8	11
VRS 23x08	23	8	45	5	30	20x5x5	55	65	23,14	34,51	8	11
VRS 25x05	25	5	53	5	32	25x6x6	78	90	31,60	46,00	8	11
VRS 25x10	25	10	53	5	32	25x6x6	78	90	36,30	44,70	8	11
VRS 27x02	27	2	53	4	35	20x5x5	55	69	26,70	38,83	8	11



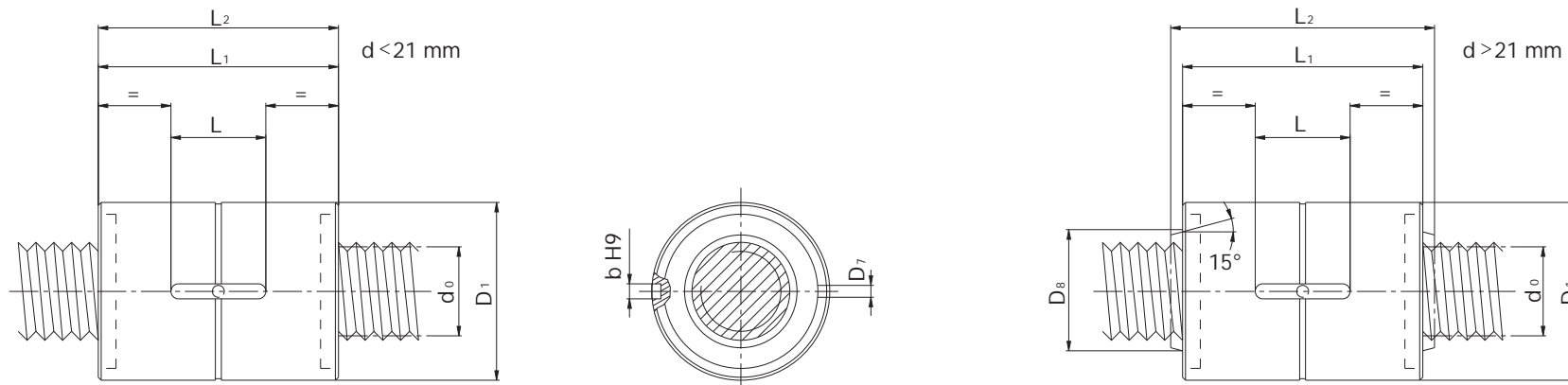
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁	D ₇	D ₈	L x b x h	L ₁	L ₂ [*]	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	N° rullini N° rollers	
											Standard	Max
VRS 27x04	27	4	53	5	35	20x5x5	55	69	24,30	40,38	8	11
VRS 27x08	27	8	53	5	35	20x5x5	55	69	25,36	49,63	8	10
VRS 30x02	30	2	64	5	38	32x6x6	85	99	35,20	66,50	8	11
VRS 30x05	30	5	64	5	38	32x6x6	85	99	46,00	75,70	10	11
VRS 30x10	30	10	64	5	38	32x6x6	85	99	53,20	74,10	10	11
VRS 30x15	30	15	64	5	38	32x6x6	85	99	57,80	75,10	10	10
VRS 30x20	30	20	64	5	38	32x6x6	85	99	59,80	73,20	10	10



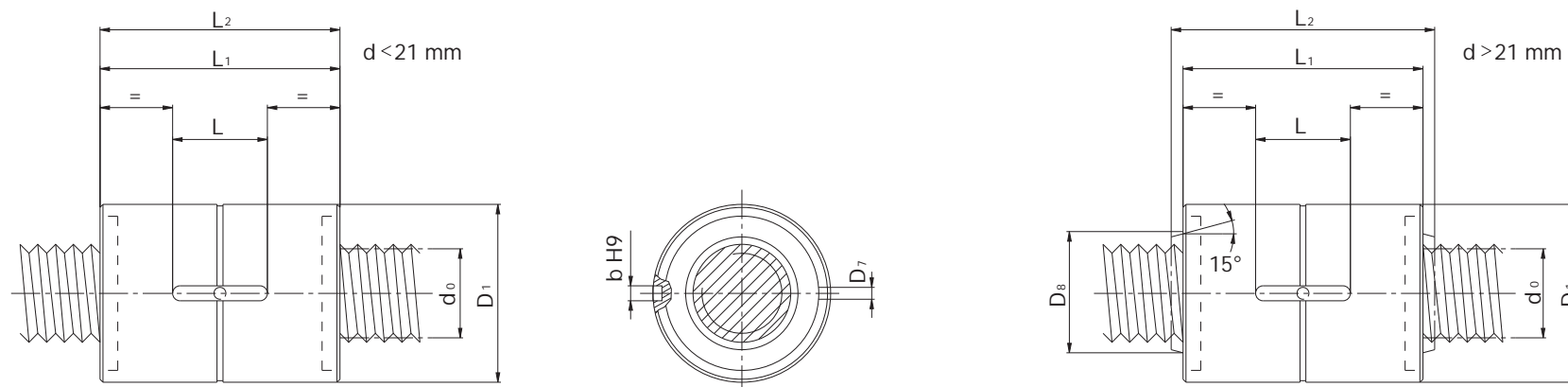
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁	D ₇	D ₈	L x b x h	L ₁	L ₂ *	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{oa} kN	N° rullini N° rollers	
											Standard	Max
VRS 30x25	30	25	64	5	38	32x6x6	85	99	61,40	71,60	10	10
VRS 39x05	39	5	80	7	50	40x8x7	100	116	64,60	114,30	10	11
VRS 39x10	39	10	80	7	50	40x8x7	100	116	76,30	115,10	10	11
VRS 39x15	39	15	80	7	50	40x8x7	100	116	82,80	114,00	10	11
VRS 39x20	39	20	80	7	50	40x8x7	100	116	86,70	109,20	10	11
VRS 44x12	44	12	80	7	56	32x6x6	90	106	69,50	108,60	12	14
VRS 44x18	44	18	80	7	56	32x6x6	90	106	76,40	109,30	12	13



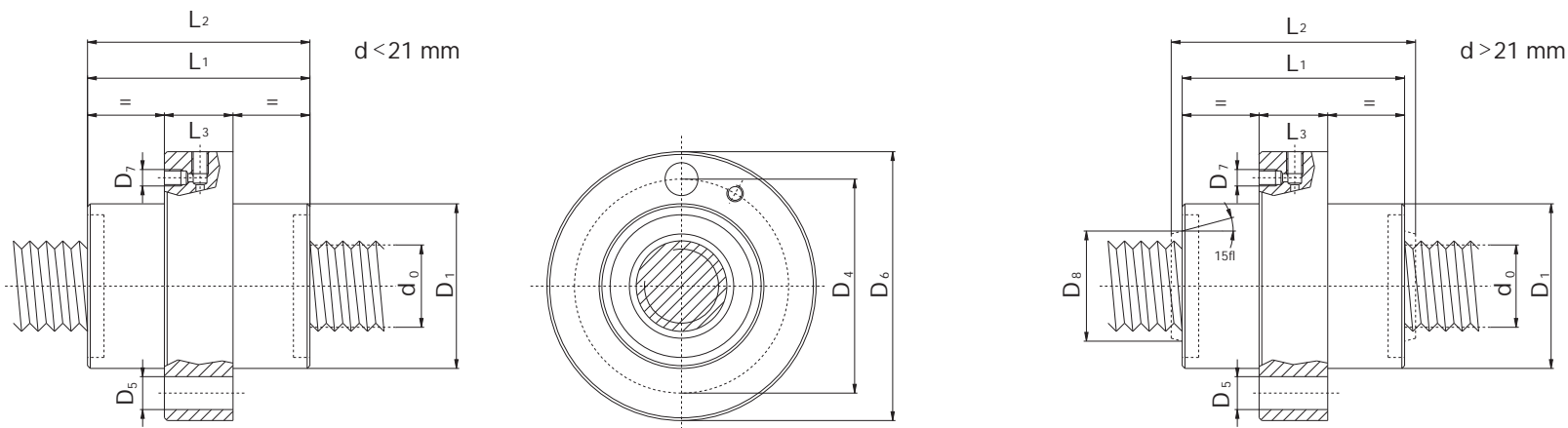
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁ g ₆	D ₇	D ₈	L x b x h	L ₁ h ₁₂	L ₂ * h ₁₂	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{oa} kN	N° rullini N° rollers	
											Standard	Max
VRS 44x24	44	24	80	7	56	32x6x6	90	106	81,90	110,70	12	13
VRS 44x30	44	30	80	7	56	32x6x6	90	106	80,20	103,10	12	13
VRS 48x05	48	5	100	7	60	45x8x7	127	145	99,00	204,60	10	11
VRS 48x10	48	10	100	7	60	45x8x7	127	145	115,80	201,90	10	11
VRS 48x20	48	20	100	7	60	45x8x7	127	145	129,00	190,90	10	11
VRS 60x10	60	10	122	10,5	71	45x10x8	152	170	169,40	331,30	10	11
VRS 60x15	60	15	122	10,5	71	45x10x8	152	170	184,20	328,20	10	11



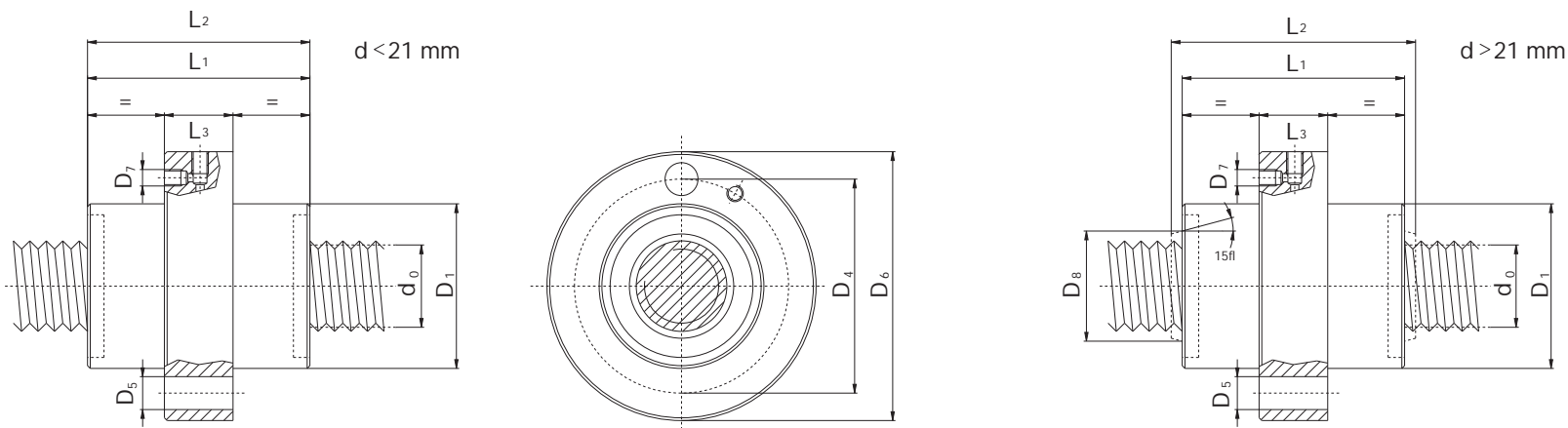
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁	D ₇	D ₈	L x b x h	L ₁	L ₂ *	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	N° rullini N° rollers	
											Standard	Max
VRS 60x20	60	20	122	10,5	71	45x10x8	152	170	195,00	326,50	10	11
VRS 64x30	64	30	115	7	75	45x8x7	129	151	156,50	257,50	12	13
VRS 64x36	64	36	115	7	75	45x8x7	129	151	156,00	246,50	12	13
VRS 64x42	64	42	115	7	75	45x8x7	129	151	154,90	235,70	12	13
VRS 75x10	75	10	150	10,5	87	63x10x8	191	211	246,00	617,50	11	11
VRS 75x20	75	20	150	10,5	87	63x10x8	191	211	290,00	621,50	11	11
VRS 75x30	75	30	150	10,5	87	63x10x8	191	211	276,80	568,60	11	11



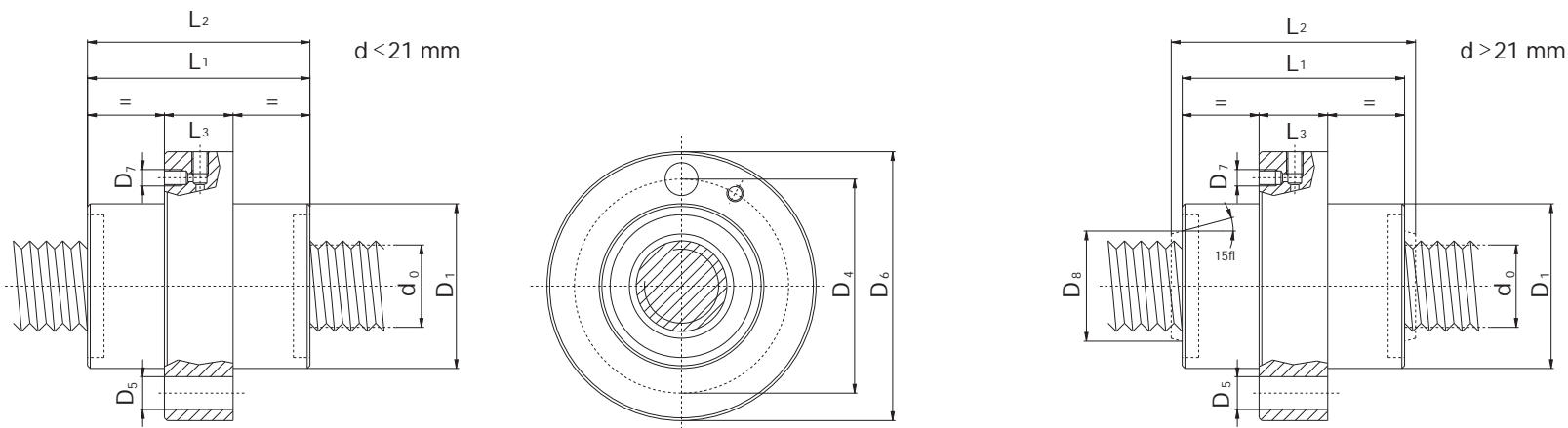
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁ g ₆	D ₄	n x D ₅	D ₆	D ₇	D ₈	L ₁ h ₁₂	L ₂ * h ₁₂	L ₃	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	gioco backlash mm	N° rullini N° rollers	
															Standard	Max
VRS 8x02	8	2	21	31	6x4,5	41	M4	-	31	41	13	6,98	17,91	0,02	6	8
VRS 8x04	8	4	21	31	6x4,5	41	M4	-	31	41	13	5,43	18,63	0,02	6	8
VRS 12x02	12	2	26	36	6x4,5	46	M4	-	31	41	13	10,24	26,72	0,02	6	10
VRS 12x04	12	4	26	36	6x4,5	46	M4	-	31	41	13	8,92	27,74	0,02	6	10
VRS 12x05	12	5	26	36	6x4,5	46	M4	-	31	41	13	8,31	31,00	0,02	6	10
VRS 15x02	15	2	34	45	6x5	56	M5	-	35	51	18	13,47	31,74	0,02	6	11
VRS 15x04	15	4	34	45	6x5	56	M5	-	35	51	18	11,94	33,00	0,02	6	11



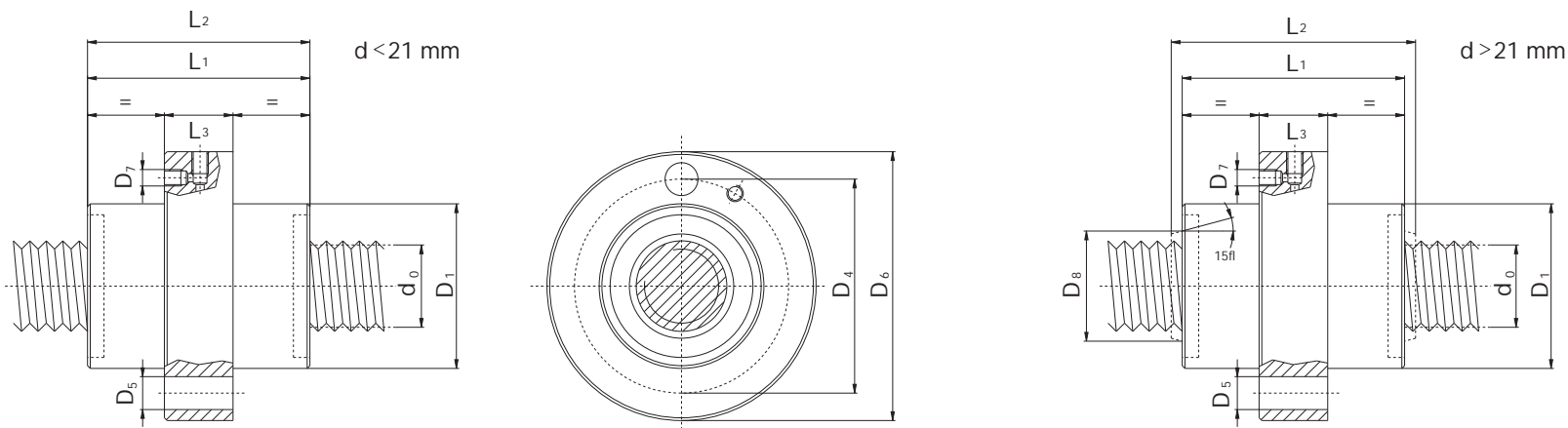
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁ g ₆	D ₄	n x D ₅	D ₆	D ₇	D ₈	L ₁ h ₁₂	L ₂ * h ₁₂	L ₃	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	gioco backlash mm	N° rullini N° rollers	
															Standard	Max
VRS 15x5	15	5	34	45	6x5	56	M5	-	35	51	18	11,20	36,90	0,02	6	11
VRS 20x02	20	2	42	53	6x6	64	M6	-	55	65	20	33,00	66,00	0,02	8	11
VRS 20x04	20	4	42	53	6x6	64	M6	-	55	65	20	29,54	68,63	0,02	8	11
VRS 20x05	20	5	42	53	6x6	64	M6	-	55	65	20	27,80	76,73	0,02	8	11
VRS 20x06	20	6	42	53	6x6	64	M6	-	55	65	20	26,42	79,14	0,02	8	11
VRS 21x05	21	5	45	56	6x6	68	M6	26	64	72	18	40,70	68,70	0,02	9	11
VRS 21x08	21	8	45	56	6x6	68	M6	26	64	72	18	44,20	69,00	0,02	9	11



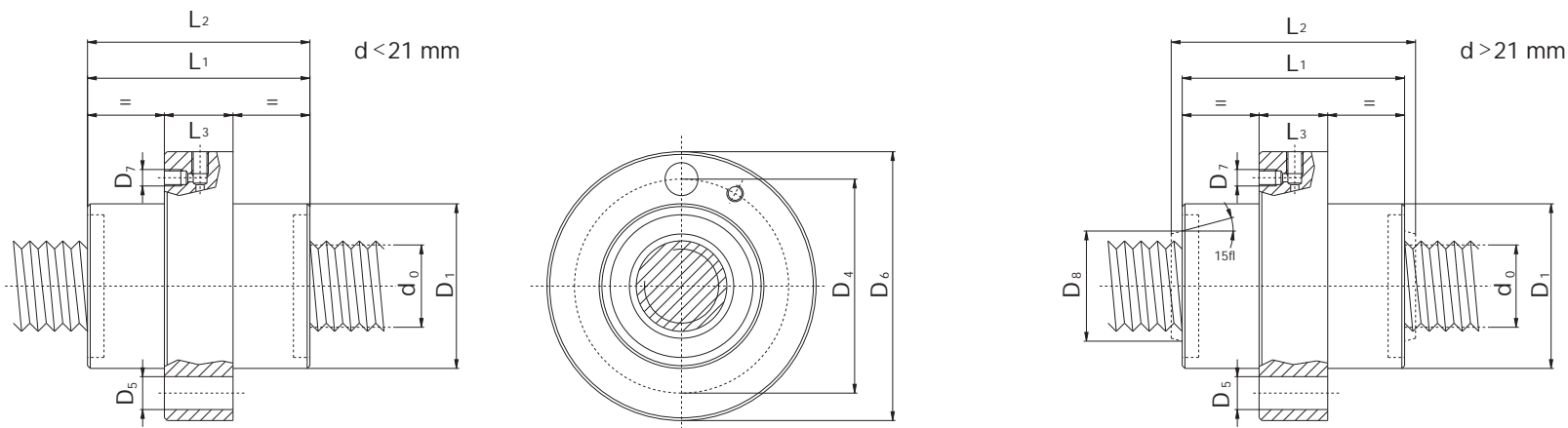
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁ g ₆	D ₄	n x D ₅	D ₆	D ₇	D ₈	L ₁ h ₁₂	L ₂ * h ₁₂	L ₃	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	gioco backlash mm	N° rullini N° rollers	
															Standard	Max
VRS 21x10	21	10	45	56	6x6	68	M6	26	64	72	18	47,90	69,50	0,02	9	10
VRS 23x02	23	2	45	56	6x7	67	M6	30	55	65	20	24,63	33,40	0,02	8	11
VRS 23x04	23	4	45	56	6x7	67	M6	30	55	65	20	24,17	32,19	0,02	8	11
VRS 23x08	23	8	45	56	6x7	67	M6	30	55	65	20	23,14	34,51	0,04	8	11
VRS 25x05	25	5	53	70	6x7	84	M6	32	78	90	20	52,70	92,00	0,02	8	11
VRS 25x10	25	10	53	70	6x7	84	M6	32	78	90	20	60,50	89,50	0,04	8	11
VRS 27x02	27	2	53	68	6x7	83	M6	35	55	69	22	44,32	77,66	0,02	8	11



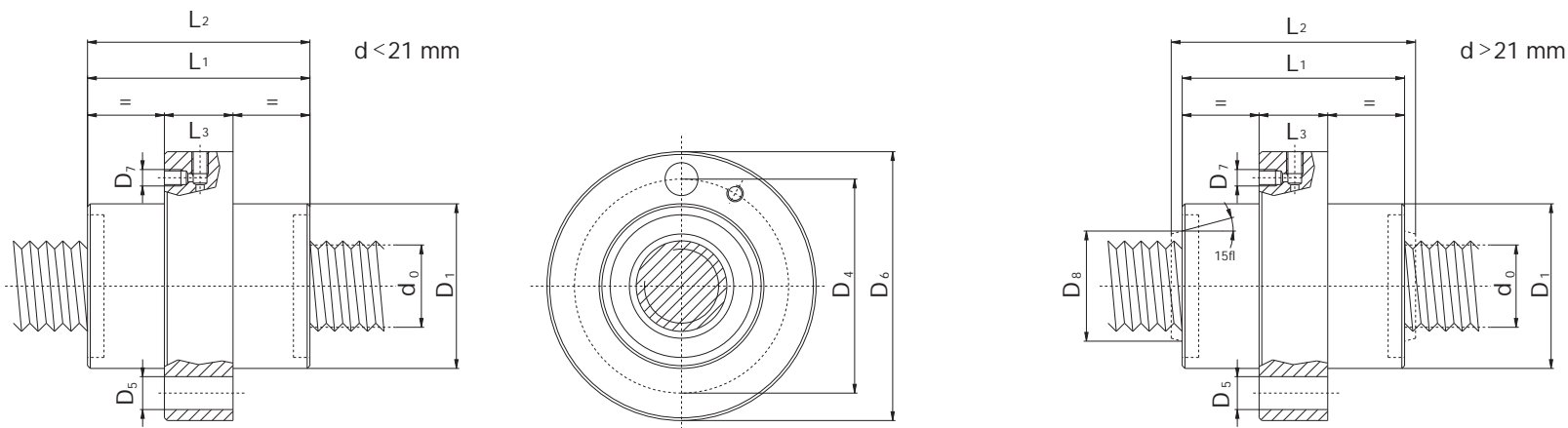
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁ g ₆	D ₄	n x D ₅	D ₆	D ₇	D ₈	L ₁ h ₁₂	L ₂ * h ₁₂	L ₃	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	gioco backlash mm	N° rullini N° rollers	
															Standard	Max
VRS 27x04	27	4	53	68	6x7	83	M6	35	55	69	22	40,34	80,76	0,02	8	11
VRS 27x08	27	8	53	68	6x7	83	M6	35	55	69	22	42,10	99,26	0,04	8	10
VRS 30x02	30	2	64	81	6x9	98	M6	38	85	99	27	58,70	133,00	0,02	8	11
VRS 30x05	30	5	64	81	6x9	98	M6	38	85	99	27	76,70	151,50	0,02	10	11
VRS 30x10	30	10	64	81	6x9	98	M6	38	85	99	27	88,60	148,20	0,04	10	11
VRS 30x15	30	15	64	81	6x9	98	M6	38	85	99	27	96,40	150,30	0,07	10	10
VRS 30x20	30	20	64	81	6x9	98	M6	38	85	99	27	99,80	146,40	0,07	10	10



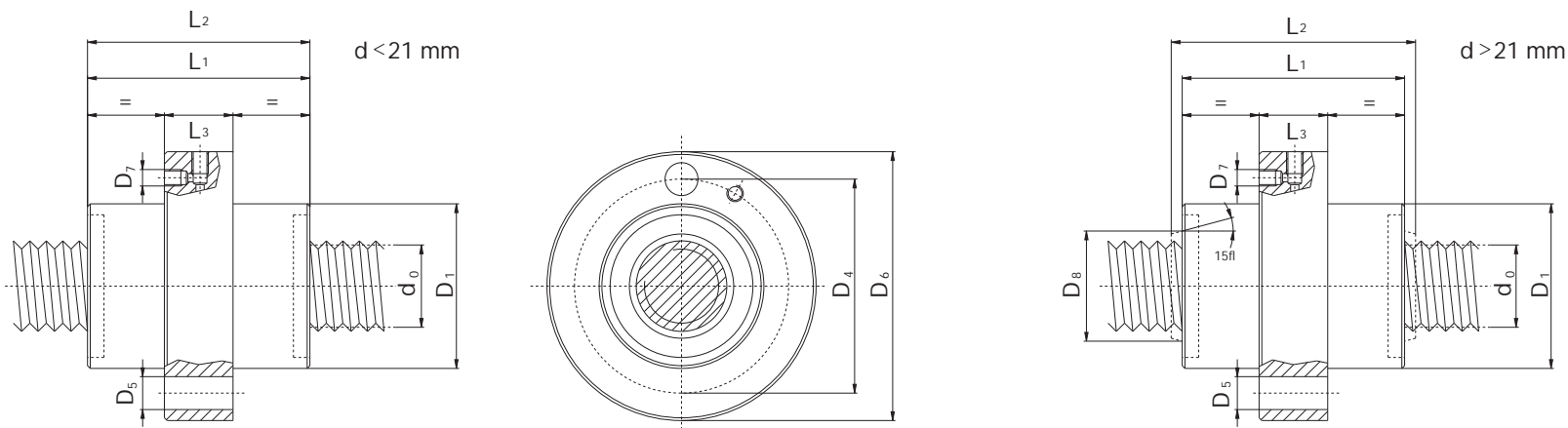
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁ g ₆	D ₄	n x D ₅	D ₆	D ₇	D ₈	L ₁ h ₁₂	L ₂ * h ₁₂	L ₃	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{oa} kN	gioco backlash mm	N° rullini N° rollers	
															Standard	Max
VRS 30x25	30	25	64	81	6x9	98	M6	38	85	99	27	102,40	143,20	0,07	10	10
VRS 39x05	39	5	80	102	6x11	124	M6	50	100	116	33	107,70	228,50	0,02	10	11
VRS 39x10	39	10	80	102	6x11	124	M6	50	100	116	33	127,30	230,30	0,04	10	11
VRS 39x15	39	15	80	102	6x11	124	M6	50	100	116	33	138,30	228,10	0,04	10	11
VRS 39x20	39	20	80	102	6x11	124	M6	50	100	116	33	144,70	218,60	0,04	10	11
VRS 44x12	44	12	80	102	6x11	124	M8x1	56	90	106	33	115,90	217,20	0,04	12	14
VRS 44x18	44	18	80	102	6x11	124	M8x1	56	90	106	33	127,40	218,60	0,07	12	13



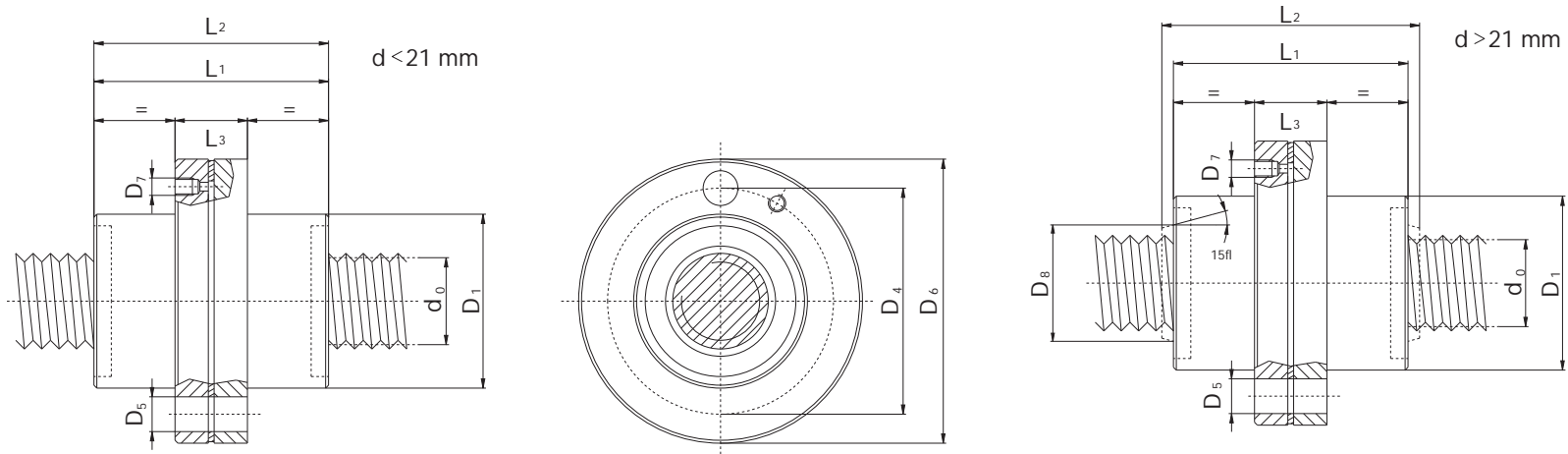
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁ g ₆	D ₄	n x D ₅	D ₆	D ₇	D ₈	L ₁ h ₁₂	L ₂ * h ₁₂	L ₃	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	gioco backlash mm	N° rullini N° rollers	
															Standard	Max
VRS 44x24	44	24	80	102	6x11	124	M8x1	56	90	106	33	136,50	221,40	0,07	12	13
VRS 44x30	44	30	80	102	6x11	124	M8x1	56	90	106	33	133,80	206,30	0,07	12	13
VRS 48x05	48	5	100	127	6x13,5	150	M8x1	60	127	145	37	165,10	409,30	0,02	10	11
VRS 48x10	48	10	100	127	6x13,5	150	M8x1	60	127	145	37	193,00	403,80	0,04	10	11
VRS 48x20	48	20	100	127	6x13,5	150	M8x1	60	127	145	37	215,10	381,90	0,07	10	11
VRS 60x10	60	10	122	150	6x17,5	180	M8x1	71	152	170	45	282,30	662,60	0,04	10	11
VRS 60x15	60	15	122	150	6x17,5	180	M8x1	71	152	170	45	307,00	656,30	0,07	10	11



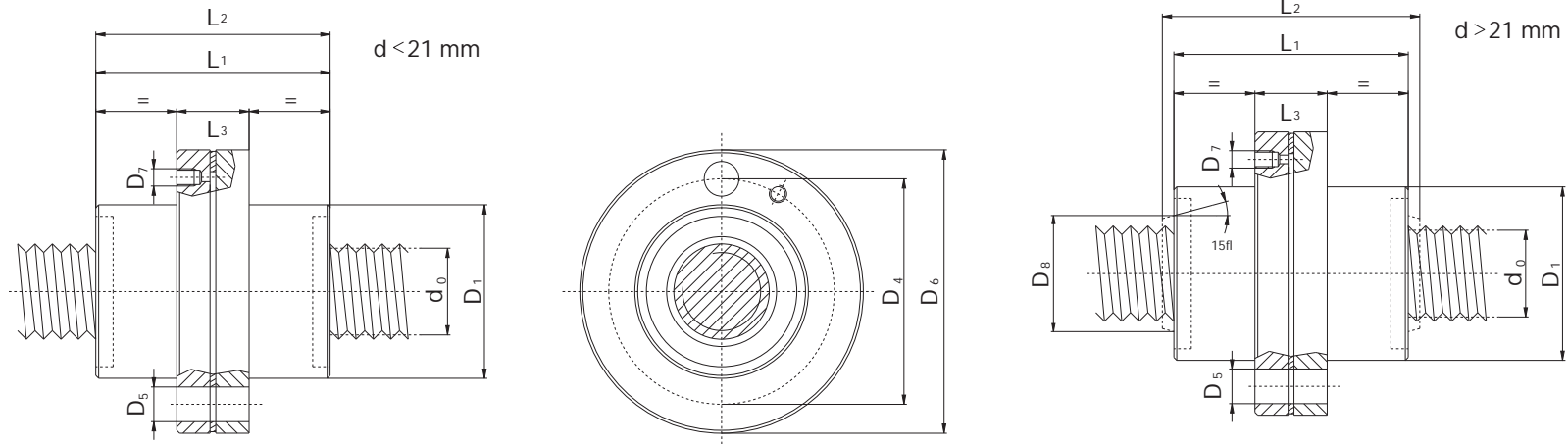
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁ g ₆	D ₄	n x D ₅	D ₆	D ₇	D ₈	L ₁ h ₁₂	L ₂ * h ₁₂	L ₃	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	gioco backlash mm	N° rullini N° rollers	
															Standard	Max
VRS 60x20	60	20	122	150	6x17,5	180	M8x1	71	152	170	45	325,00	653,00	0,07	10	11
VRS 64x30	64	30	115	150	6x17,5	180	M8x1	75	129	151	45	260,90	515,00	0,07	12	13
VRS 64x36	64	36	115	150	6x17,5	180	M8x1	75	129	151	45	260,00	493,10	0,07	12	13
VRS 64x42	64	42	115	150	6x17,5	180	M8x1	75	129	151	45	258,20	471,40	0,07	12	13
VRS 75x10	75	10	150	180	8x17,5	210	M8x1	87	191	211	45	411,10	1235,00	0,04	11	11
VRS 75x20	75	20	150	180	8x17,5	210	M8x1	87	191	211	45	483,40	1243,00	0,07	11	11
VRS 75x30	75	30	150	180	8x17,5	210	M8x1	87	191	211	45	461,40	1137,30	0,07	11	11



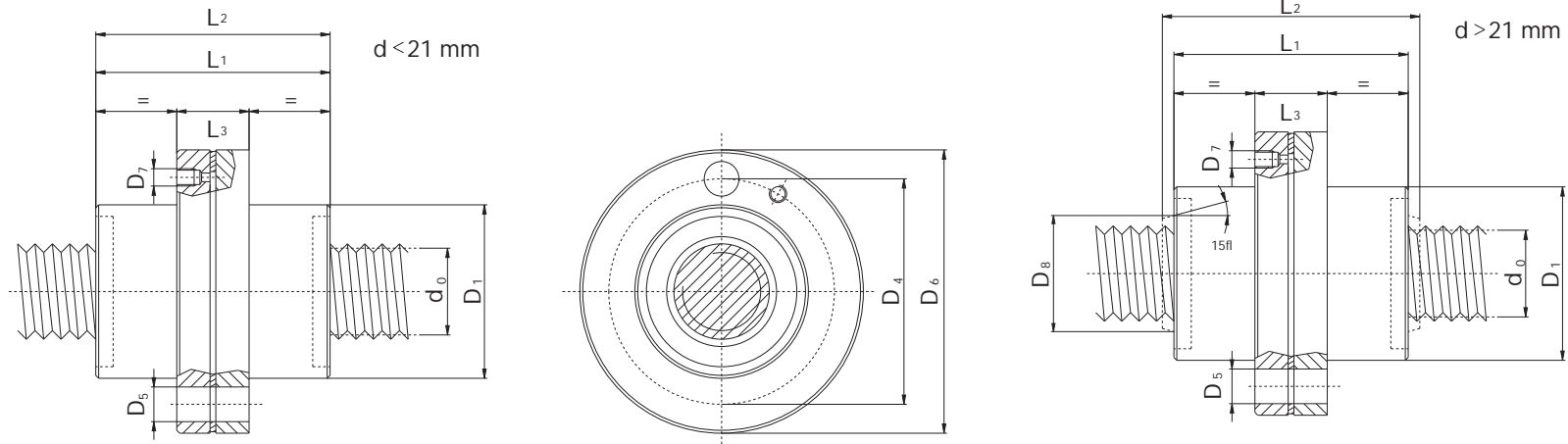
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o Nom. Screw ø	Ph _o Passo Lead	D ₁	D ₄	n x D ₅	D ₆	D ₇	D ₈	L ₁	L ₂ *	L ₃	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	N° rullini N° rollers	
														Standard	Max
VRS 8x02	8	2	21	31	6x4,5	41	M4	-	31	41	13	4,19	8,90	6	8
VRS 8x04	8	4	21	31	6x4,5	41	M4	-	31	41	13	3,26	9,31	6	8
VRS 12x02	12	2	26	36	6x4,5	46	M4	-	31	41	13	6,14	13,36	6	10
VRS 12x04	12	4	26	36	6x4,5	46	M4	-	31	41	13	5,35	13,87	6	10
VRS 12x05	12	5	26	36	6x4,5	46	M4	-	31	41	13	4,88	15,50	6	10
VRS 15x02	15	2	34	45	6x5	56	M5	-	35	51	18	8,08	15,87	6	11
VRS 15x04	15	4	34	45	6x5	56	M5	-	35	51	18	7,16	16,50	6	11



* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

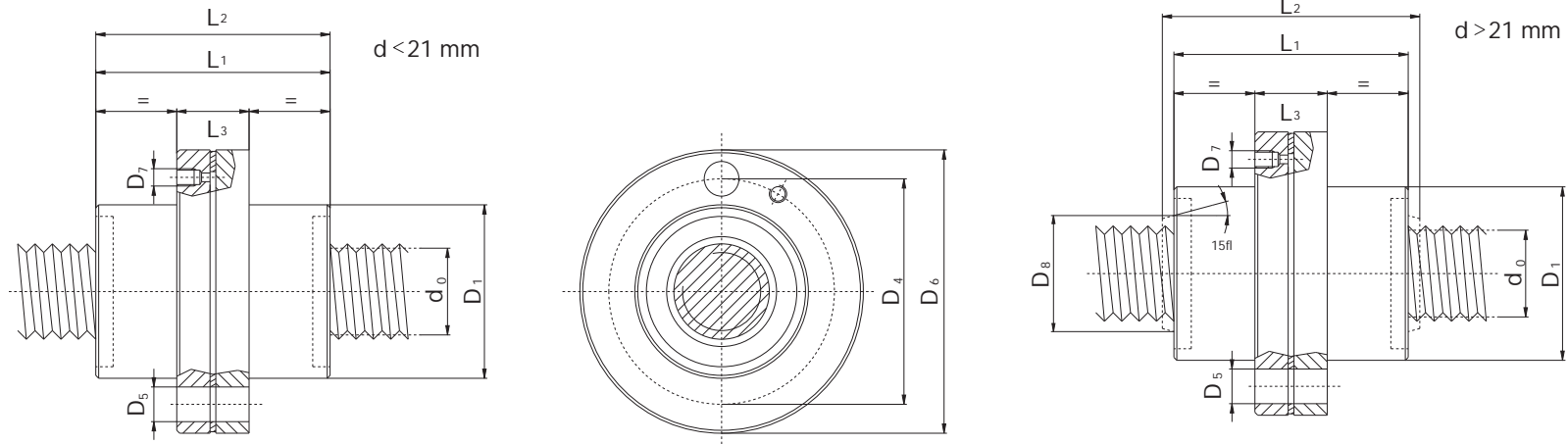
Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁	D ₄	n x D ₅	D ₆	D ₇	D ₈	L ₁	L ₂ *	L ₃	Carichi dinamici Dynamic loads C_a kN	Carichi statici Static loads C_{oa} kN	N° rullini N° rollers	
														Standard	Max
VRS 15x5	15	5	34	45	6x5	56	M5	-	35	51	18	6,72	18,45	6	11
VRS 20x02	20	2	42	53	6x6	64	M6	-	55	65	20	19,80	33,00	8	11
VRS 20x04	20	4	42	53	6x6	64	M6	-	55	65	20	17,72	34,31	8	11
VRS 20x05	20	5	42	53	6x6	64	M6	-	55	65	20	16,68	38,37	8	11
VRS 20x06	20	6	42	53	6x6	64	M6	-	55	65	20	15,91	39,13	8	11
VRS 21x05	21	5	45	56	6x6	68	M6	26	64	72	18	24,40	34,20	9	11
VRS 21x08	21	8	45	56	6x6	68	M6	26	64	72	18	26,50	34,50	9	11



* dimensioni con anelli raschiatori (su richiesta)

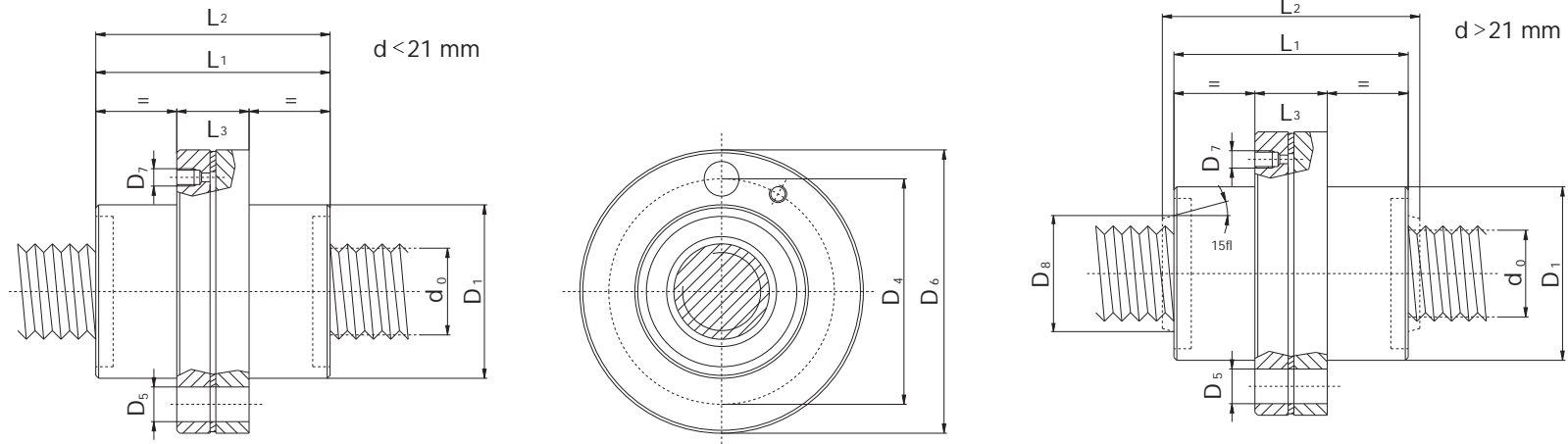
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁	D ₄	n x D ₅	D ₆	D ₇	D ₈	L ₁	L ₂ *	L ₃	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	N° rullini N° rollers	
														Standard	Max
VRS 21x10	21	10	45	56	6x6	68	M6	26	64	72	18	28,70	35,00	9	10
VRS 23x02	23	2	45	56	6x7	67	M6	30	55	65	20	24,63	33,40	8	11
VRS 23x04	23	4	45	56	6x7	67	M6	30	55	65	20	24,17	32,19	8	11
VRS 23x08	23	8	45	56	6x7	67	M6	30	55	65	20	23,14	34,51	8	11
VRS 25x05	25	5	53	70	6x7	84	M6	32	78	90	20	31,60	46,00	8	11
VRS 25x10	25	10	53	70	6x7	84	M6	32	78	90	20	36,30	44,70	8	11
VRS 27x02	27	2	53	68	6x7	83	M6	35	55	69	22	26,70	38,83	8	11



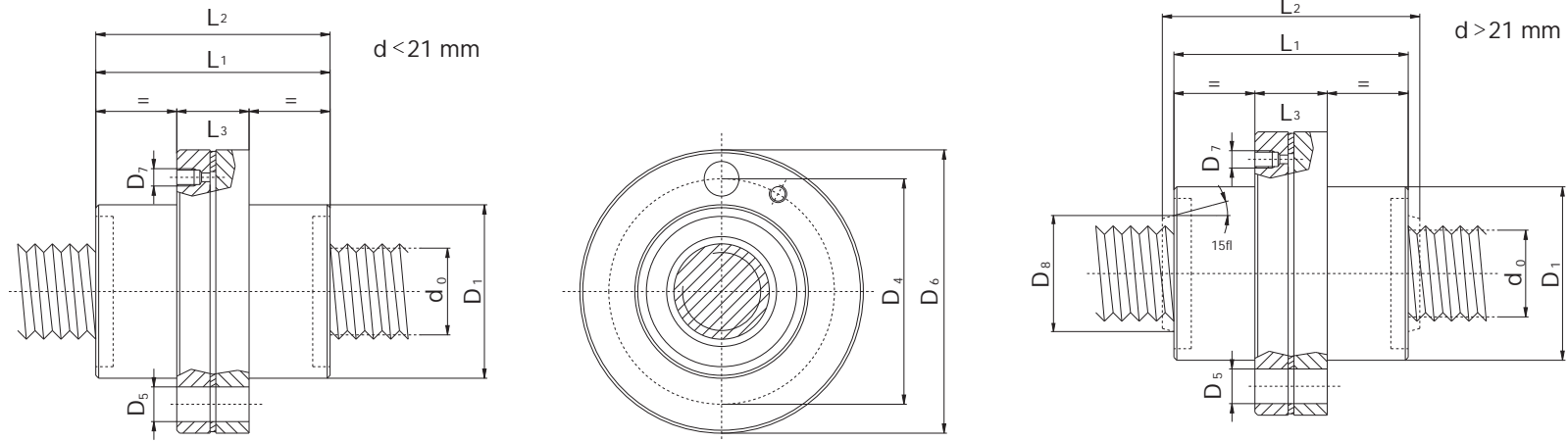
* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁	D ₄	n x D ₅	D ₆	D ₇	D ₈	L ₁	L ₂ *	L ₃	Carichi dinamici Dynamic loads C_a kN	Carichi statici Static loads C_{0a} kN	N° rullini N° rollers	
														Standard	Max
VRS 27x04	27	4	53	68	6x7	83	M6	35	55	69	22	24,30	40,38	8	11
VRS 27x08	27	8	53	68	6x7	83	M6	35	55	69	22	25,36	49,63	8	10
VRS 30x02	30	2	64	81	6x9	98	M6	38	85	99	27	35,20	66,50	8	11
VRS 30x05	30	5	64	81	6x9	98	M6	38	85	99	27	46,00	75,70	10	11
VRS 30x10	30	10	64	81	6x9	98	M6	38	85	99	27	53,20	74,10	10	11
VRS 30x15	30	15	64	81	6x9	98	M6	38	85	99	27	57,80	75,10	10	10
VRS 30x20	30	20	64	81	6x9	98	M6	38	85	99	27	59,80	73,20	10	10



* dimensioni con anelli raschiatori (su richiesta)
* dimensions with wipers (by request)

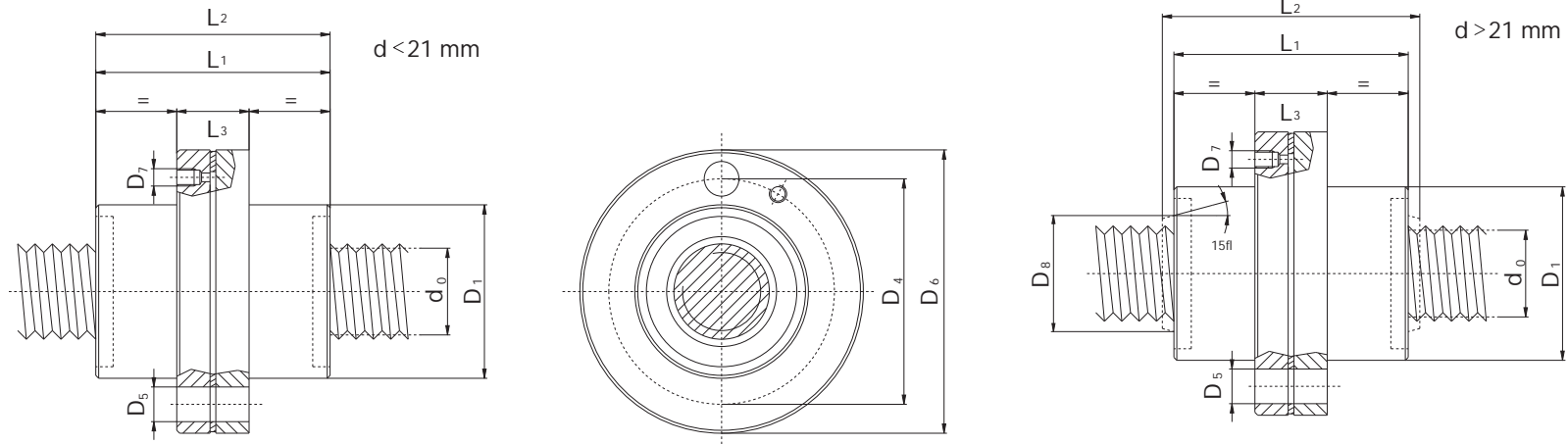
Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁ g ₆	D ₄	n x D ₅	D ₆	D ₇	D ₈	L ₁ h ₁₂	L ₂ * h ₁₂	L ₃	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	N° rullini N° rollers	
														Standard	Max
VRS 30x25	30	25	64	81	6x9	98	M6	38	85	99	27	61,40	71,60	10	10
VRS 39x05	39	5	80	102	6x11	124	M6	50	100	116	33	64,60	114,30	10	11
VRS 39x10	39	10	80	102	6x11	124	M6	50	100	116	33	76,30	115,10	10	11
VRS 39x15	39	15	80	102	6x11	124	M6	50	100	116	33	82,80	114,00	10	11
VRS 39x20	39	20	80	102	6x11	124	M6	50	100	116	33	86,70	109,20	10	11
VRS 44x12	44	12	80	102	6x11	124	M8x1	56	90	106	33	69,50	108,60	12	14
VRS 44x18	44	18	80	102	6x11	124	M8x1	56	90	106	33	76,40	109,30	12	13



* dimensioni con anelli raschiatori (su richiesta)

* dimensions with wipers (by request)

Tipo type	d _o ø Normale Nom. Screw ø	Ph _o Passo Lead	D ₁	D ₄	n x D ₅	D ₆	D ₇	D ₈	L ₁	L ₂ *	L ₃	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	N° rullini N° rollers	
														Standard	Max
VRS 44x24	44	24	80	102	6x11	124	M8x1	56	90	106	33	81,90	110,70	12	13
VRS 44x30	44	30	80	102	6x11	124	M8x1	56	90	106	33	80,20	103,10	12	13
VRS 48x05	48	5	100	127	6x13,5	150	M8x1	60	127	145	37	99,00	204,60	10	11
VRS 48x10	48	10	100	127	6x13,5	150	M8x1	60	127	145	37	115,80	201,90	10	11
VRS 48x20	48	20	100	127	6x13,5	150	M8x1	60	127	145	37	129,00	190,90	10	11
VRS 60x10	60	10	122	150	6x17,5	180	M8x1	71	152	170	45	169,40	331,30	10	11
VRS 60x15	60	15	122	150	6x17,5	180	M8x1	71	152	170	45	184,20	328,20	10	11



* dimensioni con anelli raschiatori (su richiesta)

* dimensions with wipers (by request)

Tipo type	d _o ø Nominale Nom. Screw ø	Ph _o Passo Lead	D ₁	D ₄	n x D ₅	D ₆	D ₇	D ₈	L ₁	L ₂ *	L ₃	Carichi dinamici Dynamic loads C _a kN	Carichi statici Static loads C _{0a} kN	N° rullini N° rollers	
														Standard	Max
VRS 60x20	60	20	122	150	6x17,5	180	M8x1	71	152	170	45	195,00	326,50	10	11
VRS 64x30	64	30	115	150	6x17,5	180	M8x1	75	129	151	45	156,50	257,50	12	13
VRS 64x36	64	36	115	150	6x17,5	180	M8x1	75	129	151	45	156,00	246,50	12	13
VRS 64x42	64	42	115	150	6x17,5	180	M8x1	75	129	151	45	154,90	235,70	12	13
VRS 75x10	75	10	150	180	8x17,5	210	M8x1	87	191	211	45	246,00	617,50	11	11
VRS 75x20	75	20	150	180	8x17,5	210	M8x1	87	191	211	45	290,00	621,50	11	11
VRS 75x30	75	30	150	180	8x17,5	210	M8x1	87	191	211	45	276,80	568,60	11	11

ELEMENTI DI CALCOLO

Nei paragrafi che seguiranno vengono specificati gli elementi fondamentali per poter determinare in maniera corretta la tipologia di vite (a ricircolazione di sfere o a rulli satelliti) da adottare:

- carico statico
- carico dinamico
- rendimento
- coppia e potenza
- carico di punta
- velocità critica della vite
- velocità limite del sistema
- velocità media
- precarico
- carico medio
- rigidità
- durata

Carico statico (Coa)

È il carico assiale concentrico determinato dall'accoppiamento tra i vari corpi che, applicato ad una vite in condizione statiche, produce una deformazione permanente dei profili pari a 1/10000 del diametro dei corpi volventi.

Carico dinamico (Ca)

È il carico assiale concentrico ammissibile che permette al 90% delle viti a ricircolo di sfere o a rulli satelliti geometricamente simili e sollecitate nel medesimo modo, di raggiungere una durata pari o superiore ad 1 milione di giri, prima che insorgano fenomeni di fatica.

Rendimento (η)

Tale parametro è correlato con la reversibilità e si possono distinguere due condizioni:

- rendimento diretto teorico (η) : è il rapporto che lega il valore di coppia trasmessa (alla vite o alla chiocciola) con la forza che il sistema è in grado di generare.
- rendimento indiretto teorico (η_1) : è il rapporto che lega il valore della forza applicata al sistema con la coppia prodotta (alla vite o alla chiocciola).

CALCULATIONS

In the following paragraphs will be examined the essential elements required to select which type of screw (ball screw or planetary roller screw) is the most suitable for your linear motion application:

- static load rating
- dynamic load rating
- efficiency
- torque and power
- column strength
- critical screw speed
- system speed limit
- mean speed
- preload
- mean load
- rigidity
- life

Static load rating (Coa)

Axial concentric load which, applied on a screw in static conditions, produces a permanent deformation of the most heavily loaded contact equal to 1/10000 of the rolling element diameter.

Dynamic load rating (Ca)

Axial concentric load that allows 90% of geometrically similar screws (ball screws or planetary roller screws) and subjected to the same load, to reach an operating life equal or greater than 1 million revolutions, before the onset of metal fatigue.

Efficiency (η)

This parameter relates to the reversibility of the device and has two distinct values:

- theoretical driving efficiency (η): ratio between the torque value transmitted (to the screw or to the nut) and the force generated by the systems output
- theoretical back-driving efficiency (η_1): ratio between the force value applied to the system and the generated torque (onto the screw or to the nut).

RENDIMENTO DIRETTO TEORICO

$$\eta = \frac{\tan(\alpha)}{\tan(\alpha + \rho)}$$

α = angolo di inclinazione dell'elica (°)

ρ = angolo di attrito (0,25° - 0,35°)

RENDIMENTO INDIRETTO TEORICO

$$\eta_1 = \frac{\tan(\alpha - \rho)}{\tan(\alpha)}$$

α = angolo di inclinazione dell'elica (°)

ρ = angolo di attrito (0,25° - 0,35°)

Coppia (T) e potenza (P)

Per facilitare il dimensionamento degli organi di trasmissione e delle parti motrici collegate con le viti (a ricircolo di sfere e a rulli satelliti), riportiamo le formule per il calcolo della coppia di trasmissione per il caso in cui si converta la coppia in movimento lineare (1), mentre per l'eventualità opposta otteniamo una coppia detta risultante (2).

$$1) T_a := \frac{(F \cdot p)}{2000 \cdot \pi \cdot \eta}$$

$$2) T_e := \frac{(F \cdot p \cdot \eta)}{2000 \cdot \pi}$$

T_a = coppia di trasmissione (Nm)

T_e = coppia risultante (Nm)

F = forza applicata (N)

p = passo (mm)

η = rendimento

La potenza di trasmissione richiesta, espressa in KW è data dalla relazione

$$P_a := \frac{(T_a \cdot \eta)}{9550}$$

P_a = potenza di trasmissione (KW)

T_a = coppia di trasmissione (Nm)

η = rendimento

THEORETICAL DRIVING EFFICIENCY

$$\eta = \frac{\tan(\alpha)}{\tan(\alpha + \rho)}$$

α = lead angle (°)

ρ = friction angle (0,25° - 0,35°)

THEORETICAL BACK-DRIVING EFFICIENCY

$$\eta_1 = \frac{\tan(\alpha - \rho)}{\tan(\alpha)}$$

α = lead angle (°)

ρ = friction angle (0,25° - 0,35°)

Torque (T) and power (P)

To aid in the design/sizing of the transmission components and the driving parts related to the screw (both ball screws and planetary roller screws), it is necessary to determine the torque required by the system. The required torque can be calculated with the following formulae. The first one will allow the determination of the torque required to move a load (rotary to linear movement) while the second will allow the determination of the holding torque to withstand a load (linear to rotary motion). For constant velocity:

$$1) T_a := \frac{(F \cdot p)}{2000 \cdot \pi \cdot \eta}$$

$$2) T_e := \frac{(F \cdot p \cdot \eta)}{2000 \cdot \pi}$$

T_a = torque required (Nm)

T_e = braking/holding torque (Nm)

F = applied force (N)

p = lead (mm)

η = efficiency

The required power can be calculated as follows:

$$P_a := \frac{(T_a \cdot \eta)}{9550}$$

P_a = required power (KW)

T_a = required torque (Nm)

η = efficiency

Carico di punta (F_k)

La verifica del carico di punta è necessaria ogni qual volta, in qualsiasi fase di lavoro, vi sia applicato sulla vite un carico di compressione, specialmente nei casi in cui il rapporto tra la distanza tra i supporti e il diametro della vite risulti considerevole. Tale analisi può essere semplificata riconducendo le modalità di vincolo degli alberi ai quattro casi sotto indicati e adottando di conseguenza il relativo coefficiente correttivo (f) nella formula riportata, confrontando il risultato ottenuto con la forza realmente applicata.

$$F_k := \frac{\pi^2 \cdot E \cdot I}{(\ell \cdot f)^2 \cdot k}$$

F_k = carico di punta (N)

E = modulo di elasticità (N/mm²)

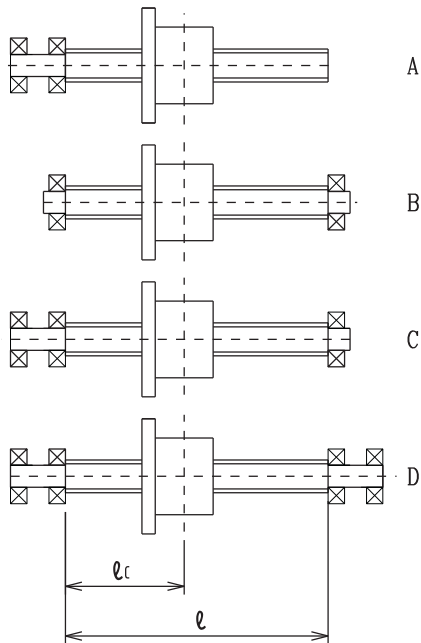
I = momento quadratico d'inerzia (mm⁴)

ℓ = distanza tra i vincoli (mm)

f = coefficiente correttivo in relazione al vincolo

k = coefficiente di sicurezza (adottato da VCS=3)

• incastro - libero (tipo A)	$f = 2$
• appoggio - appoggio (tipo B)	$f = 1$
• incastro - appoggio (tipo C)	$f = 0,7$
• incastro - incastro (tipo D)	$f = 0,5$



Column strength (F_k)

It is necessary to verify the column strength when, in each operating condition, a compression load is applied to the screw, especially where the ratio between the support distance and the screw diameter is high. This analysis can be simplified using the four cases indicated below and using the resulting corrective coefficient (f) in the formula, comparing the obtained result to the actual applied force.

$$F_k := \frac{\pi^2 \cdot E \cdot I}{(\ell \cdot f)^2 \cdot k}$$

F_k = column strength (N)

E = young's modulus of elasticity (N/mm²)

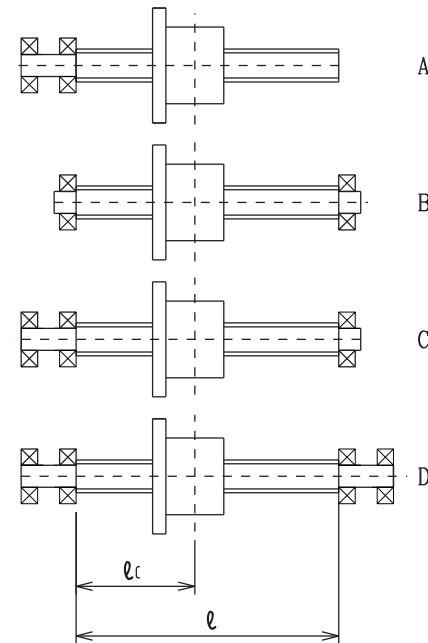
I = section moment of inertia (mm⁴)

ℓ = distance between the constraints (mm)

f = coefficient dependent on support type

k = safety facto (adopted by VCS=3)

• fixed - free (type A)	$f = 2$
• supported - supported (type B)	$f = 1$
• fixed - supported (type C)	$f = 0,7$
• fixed - fixed (type D)	$f = 0,5$



Velocità critica della vite (n_{cr})

E' la velocità limite oltre la quale si generano forze che squilibrano il regolare moto di rotazione del sistema, dovuto alla flessione ciclica della vite stessa. La flessione ciclica è resa evidente dal parametro δ denominato freccia massima mentre per determinare la velocità critica si utilizzano gli stessi parametri della verifica del carico di punta: tipo di vincolo dell'albero (tipo A, B, C, D), diametro nominale e distanza tra i supporti. Vengono di seguito riportate le formule per determinarne i valori.

$$\delta := \frac{W \cdot \ell^3}{c \cdot I \cdot E}$$

δ = freccia massima della vite (mm)

W = peso della vite (kg)

ℓ = distanza tra i vincoli (mm)

c = coefficiente relativo al tipo di vincolo

I = momento quadratico d'inerzia (mm⁴)

E = modulo di elasticità (21400 kg/mm²)

• incastro - libero (tipo A)	c = 8
• appoggio - appoggio (tipo B)	c = 76,8
• incastro - appoggio (tipo C)	c = 192
• incastro - incastro (tipo D)	c = 384

E' da precisare che, al fine di mantenere un coefficiente di sicurezza tale da garantire una durata ottimale, si considera di inserire, nel calcolo del momento quadratico di inerzia, il diametro di nocciolo della vite anziché il diametro di cresta.

$$n_{cr} := \frac{(0,8 \cdot 30)}{\pi} \cdot \sqrt{\frac{g}{\delta}}$$

n_{cr} = velocità critica (giri/min)

g = accelerazione di gravità (9810 mm/s²)

δ = freccia massima della vite (mm)

Critical screw speed (n_{cr})

The critical speed is defined as the speed at which the system will reach its first order critical frequency. This limit is found by first calculating the parameter δ , which is also called maximum deflection. The same parameters used to calculate the column strength are used here (i.e. type of constraints of the screw (type A, B, C, D), nominal diameter and distance between the supports). Following the formulae to determine the values

$$\delta := \frac{W \cdot \ell^3}{c \cdot I \cdot E}$$

δ = screw maximum elastic deflection e (mm)

W = screw weight (kg)

ℓ = distance between the constraints (mm)

c = coefficient dependent on support type

I = section moment of Inertia (mm⁴)

E = young's modulus of Elasticity (21400 kg/mm²)

• fixed - free (type A)	c = 8
• supported - supported (tipo B)	c = 76,8
• fixed - supported (tipo C)	c = 192
• fixed - fixed (tipo D)	c = 384

In order to maintain a safety factor to guarantee the desired operating life, we suggest to consider the root diameter of the screw instead of the outside diameter in the calculation of the section moment of inertia.

$$n_{cr} := \frac{(0,8 \cdot 30)}{\pi} \cdot \sqrt{\frac{g}{\delta}}$$

n_{cr} = critical speed (giri/min)

g = acceleration of gravity (9810 mm/s²)

δ = screw maximum elastic deflection (mm)

Velocità limite del sistema

Per operare in condizioni di affidabilità del sistema, è consigliabile non superare un parametro costruttivo derivante dal prodotto tra il diametro della vite ed il numero di giri massimo pre-scetto nell'applicazione. I valori che Moog prende in considerazione per contraddistinguere le due tipologie di prodotto sono:

$D_o \times n = 120000$ per viti a sfere

$D_o \times n = 140000$ per viti a rulli satelliti

Per applicazioni con esigenze di velocità più elevate siete pregati di contattare il nostro Ufficio Tecnico.

Velocità media (n_m)

È la velocità risultante dalla media ponderata delle diverse velocità di rotazione in rapporto al tempo specifico che esse rivestono all'interno del ciclo di lavoro.

$$n_m := \frac{\left\{ \sum_{i=1}^n n_i \cdot t_i \right\}}{\sum_{i=1}^n t_i}$$

n_m = velocità media (giri/min)

n_i = velocità per singola fase (giri/min)

t_i = tempo per singola fase (s)

i = i-esima fase

Prearico (F_p)

È una forza che viene intenzionalmente introdotta in fase progettuale, e di conseguenza generata in fase costruttiva, per l'eliminazione di giochi in applicazioni in cui le condizioni di lavoro richiedono inversioni di moto o fasi di ciclo con cambi di velocità repentini (a livello inerziale). Tale forza garantisce una maggior rigidità che si traduce in posizionamenti più precisi in fase di traslazione.

Il prearico viene introdotto sia su sistemi a sfere che a rulli satelliti attraverso l'interposizione di anello calibrato tra due semi-chiocciole oppure, per le viti a ricircolo di sfere, con variazione di passo in corrispondenza di tratti filettati non portanti della madrevite. Naturalmente una forza aggiuntiva al sistema ne può limitare la durata a causa della maggior sollecitazione che il prodotto deve sopportare.

System speed limit

In order to function reliably, the system cannot exceed a design parameter resulting from the screw diameter and the maximum required operating speed in revolutions per minutes (RPM). In order to choose the right type of product, Moog takes into consideration the following values:

$D_o \times n = 120000$ = for ball screws

$D_o \times n = 140000$ = for planetary roller screws

For applications requiring higher speeds, please contact our technical department.

Mean speed (n_m)

As a result of the average of the different rotating speeds in relation with the specific time step in the operating cycle.

$$n_m := \frac{\left\{ \sum_{i=1}^n n_i \cdot t_i \right\}}{\sum_{i=1}^n t_i}$$

n_m = mean speed (giri/min)

n_i = speed for each operating step (giri/min)

t_i = time step (s)

i = i-step

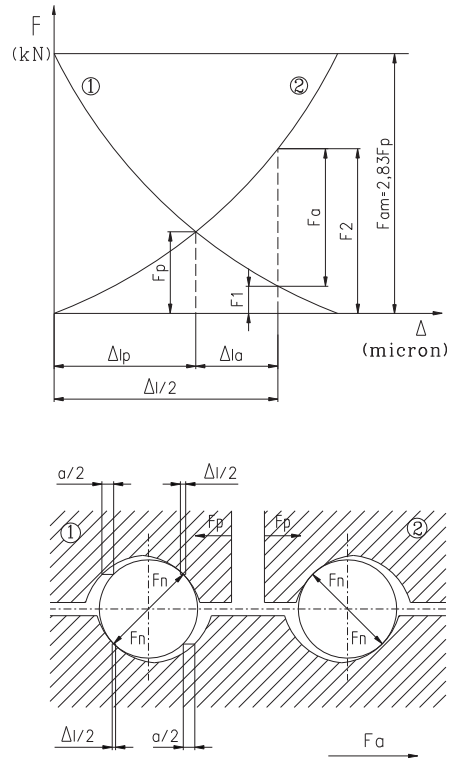
Preload (F_p)

The preload is a load intentionally introduced during the design, and generated during the manufacturing/assembly operation, in order to avoid axial play in all working conditions that require reversible motion or steps with sudden speed changes (to the inertial level).

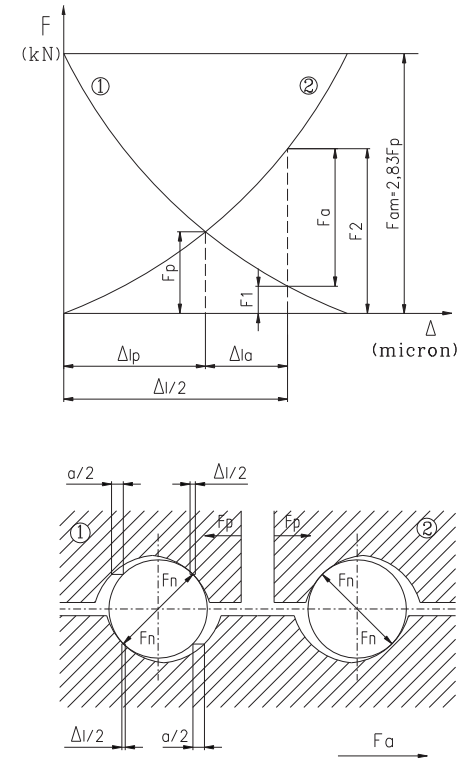
This load guarantees more rigidity and more precise positioning in the translation phase.

Preload is introduced both in balls and planetary roller systems, through the placement of calibrated shims between two half-nuts or, for the ball screws, with the pitch shift in the nut threads. Obviously any load added to the system can limit the durability due to the increased stress within the system.

E' da tenere in considerazione il carico massimo applicato durante la lavorazione in modo tale da evitare il rischio di perdita di contatto tra gli elementi del sistema, per effetto dell'annullamento del precarico; è importante che la forza massima di lavoro sia inferiore a 2,83 volte il valore di precarico (F_p). Il grafico sottostante riporta gli sforzi e le deformazioni relative ad una madre vite precaricata mettendo in evidenza, attraverso le due curve, la forza di precarico identificata come il loro punto di intersezione. Applicando un carico esterno (F_a) è possibile determinare sulle rispettive parti in presa quale forza sia realmente esercitata: F_1 sulla madre vite 1 ed F_2 come somma di $F_1 + F_a$ sulla madre vite 2 (vedi figura).



Further, the maximum load should be verified order to prevent the risk of lost contact between the elements of the system, as a result of the complete preload relief. It is important that the maximum applied load is below 2.83 times the preload value (F_p). The graph below shows the load vs. deformation and indicates, at the intersecting points F_p the two deflection curves, the preload. Applying an external load (F_a) it is possible to determine its effect on the two elements: F_1 is the resulting load of the nut 1 and F_2 is the resulting load of $F_1 + F_a$ on the nut 2 (see figure).



Carico medio (C_m)

È il valore medio dei carichi variabili presenti in un ciclo. Si precisa che, nei sistemi precaricati, il valore di precarico deve essere sommato al carico delle singole fasi di lavoro.

$$C_m := \sqrt[3]{\frac{\sum_{i=1}^n n_i \cdot t_i \cdot (C_i + F_p)^3}{n_m \cdot \sum_{i=1}^n t_i}} \cdot t_i \cdot (C_i + F_p)$$

C_m = carico medio (N)

C_i = carico per i-esima fase (N)

F_p = forza di precarico (N)

n_i = velocità per singola fase (giri/min)

t_i = tempo per singola fase (s)

i = i-esima fase

Rigidità

Per chiarire il concetto di rigidità prenderemo come riferimento la rigidità statica assiale, intesa come la resistenza alla deformazione che determina un cedimento pari a 1 mm nella direzione di applicazione del carico sotto l'azione di una forza F.

$$R := \frac{F}{\varepsilon}$$

R = rigidità (N/ μ m)

F = carico normale al contatto (N)

ε = deformazione (μ m)

La rigidità totale del sistema di una vite (a ricircolazione di sfere o a rulli satelliti) è la somma delle rigidità delle singole parti che costituiscono l'assieme quindi:

- rigidità della vite (R_V)
- rigidità della madrevite (R_M)
- rigidità della zona di contatto tra corpi volventi e piste di rotolamento (R_P)

Mean load (C_m)

It is the mean value of the different loads in a cycle. It is important to notice that in the preloaded systems, the preload value must be added to the load of each single load step.

$$C_m := \sqrt[3]{\frac{\sum_{i=1}^n n_i \cdot t_i \cdot (C_i + F_p)^3}{n_m \cdot \sum_{i=1}^n t_i}} \cdot t_i \cdot (C_i + F_p)$$

C_m = mean load (N)

C_i = load for i- revolutions (N)

F_p = preload (N)

n_i = speed for each operating step (giri/min)

t_i = time for single step (s)

i = i-each step

Rigidity

Rigidity is defined as the resistance to elastic deflection. In this case, we assess the value as the load that would cause a deflection of 1mm in direction of the load application under a force F.

$$R := \frac{F}{\varepsilon}$$

R = rigidity (N/ μ m)

F = load (N)

ε = deflection (μ m)

The screw system total rigidity (both for ball screws and planetary rollers crews) is the sum of the rigidities of the single parts that compose the system and thus:

- screw rigidity (R_V)
- nut rigidity (R_M)
- contact point rigidity (R_P)

$$\frac{1}{R_{tot}} := \frac{1}{R_V} + \frac{1}{R_m} + \frac{1}{R_p}$$

R_{tot} = rigidità totale (N/μm)

R_V = rigidità della vite (N/μm)

R_m = rigidità della madrevite (N/μm)

R_p = rigidità sul punto di contatto(N/μm)

La rigidità della vite varia in funzione del tipo di vincolo:
montaggio rigido ad un'estremità e libero dell'altra (tipo A)

$$R_V := \frac{S_t \cdot E}{l \cdot 10^3}$$

R_V = rigidità della vite (N/μm)

S_t = sezione trasversale (mm²)

E = modulo di elasticità (210000 N/mm²)

l = distanza tra i vincoli (mm)

montaggio rigido da entrambe le estremità (tipo D)

$$R_m := \left[\frac{S_t \cdot E}{l \cdot 10^3} \right] \cdot \left\{ \frac{l}{l - l_c} \right\}$$

R_m = rigidità della madrevite (N/μm)

S_t = sezione trasversale (mm²)

E = modulo di elasticità (210000 N/mm²)

l = distanza tra i vincoli (mm)

l_c = distanza tra i vincoli e il centro madrevite (mm)

Durata

Per durata nominale di una vite si intende il periodo di impiego che la vite stessa può raggiungere, in prima approssimazione vale la formula

$$L := \left\{ \frac{C_a}{C_m} \right\}^3 \cdot 10^6$$

L = durata (n° di giri)

C_a = carico dinamico (N)

C_m = carico medio (N)

$$\frac{1}{R_{tot}} := \frac{1}{R_V} + \frac{1}{R_m} + \frac{1}{R_p}$$

R_{tot} = total rigidity (N/μm)

R_V = screw rigidity (N/μm)

R_m = nut rigidity (N/μm)

R_p = Contact point rigidity (N/μm)

The screw rigidity changes according to the type of end constraint:
Fixed - free assembly (type A)

$$R_V := \frac{S_t \cdot E}{l \cdot 10^3}$$

R_V = screw rigidity (N/μm)

S_t = section area (mm²)

E = young's modulus of Elasticity (210000 N/mm²)

l = constraints distance (mm)

Fixed- fixed assembly (type D)

$$R_m := \left[\frac{S_t \cdot E}{l \cdot 10^3} \right] \cdot \left\{ \frac{l}{l - l_c} \right\}$$

R_m = nut rigidity (N/μm)

S_t = section area (mm²)

E = young's modulus of elasticity (210000 N/mm²)

l = constraints distance (mm)

l_c = distance between the constraint and the nut centre (mm)

Life

The nominal life of a ball screw is defined as the duration the screw can operate before the onset of fatigue. The following formula is valid, just as an approximate indication

$$L := \left\{ \frac{C_a}{C_m} \right\}^3 \cdot 10^6$$

L = life (n° di giri)

C_a = dynamic load rating (N)

C_m = mean load (N)

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