Insert Element FE 400 Z

with tension spring

Components

Freewheel	Insert element FE 400 Z
· Spring	Tension spring (Z)
· Cage	Stamped steel / plastic (PA)
· Sprags	Hardened bearing steel
	Start gap height h_0 = 4 mm
- Thrust rings	-
- Ball bearing	-
- Roller bearing	-
- Lubrication	-
- Seal	-

Characteristics

Installed width
12 mm

Operating temperature
max. 140°C
Higher temperatures on request

Indexing frequency
max. 10 Hz

Lubrication

Oil or grease lubrication *(Pg. 60–61)*
Delivered with corrosion protection.
Pre-greased on request.

Installation

Installation tolerances
Shaft h5; hub H6

Inner ring/shaft
steel, HRC 60^{+4} (HV 700^{+100}); Ehd ≥ 1.3 mm; Rz ≤ 2.5 µm

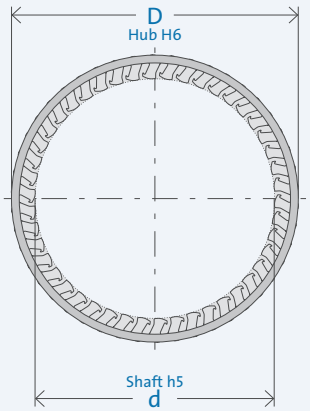
Outer ring/housing
steel, HRC 60^{+4} (HV 700^{+100}); Ehd ≥ 1.3 mm; Rz ≤ 2.5 µm

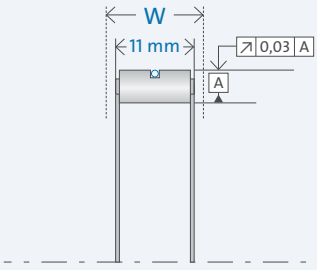
Constraints
The freewheel clutch insert element requires axial constraints on both sides.

Mating parts
Hardening and grinding of the mating parts is necessary.
Chamfered shafts and hubs ease installation *(Pg. 58)*.

Bearing
Freewheel clutch insert elements are not self-centering.
External bearing support to define the gap between mating parts (shaft and housing) is necessary.

Data





Drawing legend

d = inner diameter
D = outer diameter
W = width
T = torque
n = rotation speed

Designation	d [mm]	D [mm]	B [mm]	T_{nom} [Nm]	n_{max} [rpm]	Weight [kg]	Item no.
FE 412 Z	4	12	12	4	27,000	0.003	300393
FE 416 Z	8	16	12	16	19,200	0.006	300400
FE 420 Z	12	20	12	35	12,500	0.007	306041
FE 422 Z	14	22	12	53	10,100	0.008	300405
FE 423 Z	15	23	12	62	9,200	0.009	300411
FE 425 Z	17	25	12	72	8,100	0.011	300415
FE 427 Z	19	27	12	83	7,400	0.013	300422
FE 428 Z	20	28	12	93	7,500	0.013	300430
FE 430 Z	22	30	12	107	6,300	0.014	300435
FE 432 Z	24	32	12	117	5,900	0.016	300439
FE 433 Z	25	33	12	128	6,000	0.016	300445
FE 435 Z	27	35	12	143	5,100	0.017	300448
FE 437 Z	29	37	12	154	4,800	0.018	300455
FE 438 Z	30	38	12	166	4,900	0.019	300460
FE 442 Z	34	42	12	198	4,400	0.018	300463
FE 443 Z	35	43	12	207	4,300	0.022	300469
FE 448 Z	40	48	12	248	4,200	0.024	300478
FE 453 Z	45	53	12	293	3,400	0.022	300482
FE 455 Z	47	55	12	313	3,300	0.026	300487
FE 458 Z	50	58	12	344	3,100	0.029	300489
FE 459 Z	51	59	12	353	3,000	0.030	300494
FE 463 Z	55	63	12	393	2,900	0.032	300497
FE 468 Z	60	68	12	444	2,700	0.034	300501
FE 470 Z	62	70	12	465	2,600	0.035	300505
FE 473 Z	65	73	12	495	2,500	0.037	300508
FE 478 Z	70	78	12	548	2,600	0.039	300511
FE 488 Z	80	88	12	657	2,100	0.045	300514
FE 508 Z	100	108	12	889	1,700	0.055	300519
FE 528 Z	120	128	12	1,127	1,300	0.066	300522
FE 648 Z	240	248	12	2,673	800	0.131	300524

The specified nominal torque is based on sufficient stiffness of mating parts *(Pg. 22)*.
Rotation speed n = insert element's inherent speed *(Pg. 57)*

Insert Element FE 400 M

with meander spring

Components

Freewheel	Insert element FE 400 M
· Spring	Meander spring (M)
· Cage	Stamped steel
· Sprags	Hardened bearing steel
	Start gap height h_0 = 4 mm
- Thrust rings	-
- Ball bearing	-
- Roller bearing	-
- Lubrication	-
- Seal	-

Characteristics

Installed width
12 mm

Operating temperature
max. 170°C

Indexing frequency
max. 60 Hz

Lubrication

Oil or grease lubrication *(Pg. 60–61)*
Delivered with corrosion protection.
Pre-greased on request.

Installation

Installation tolerances
Shaft h5; hub H6

Inner ring/shaft
steel, HRC 60^{+4} (HV 700^{+100}); Ehd ≥ 1.3 mm; Rz ≤ 2.5 µm

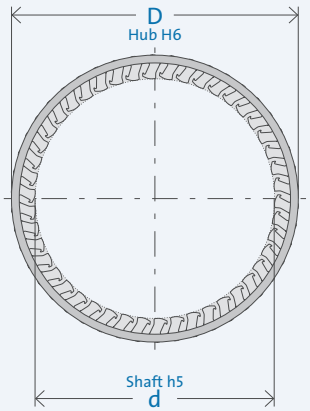
Outer ring/housing
steel, HRC 60^{+4} (HV 700^{+100}); Ehd ≥ 1.3 mm; Rz ≤ 2.5 µm

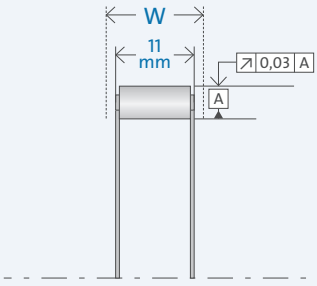
Constraints
The freewheel clutch insert element requires axial constraints on both sides.

Mating parts
Hardening and grinding of the mating parts is necessary.
Chamfered shafts and hubs ease installation *(Pg. 58)*.

Bearing
Freewheel clutch insert elements are not self-centering.
External bearing support to define the gap between mating parts (Shaft and housing) is necessary.

Data





Drawing legend

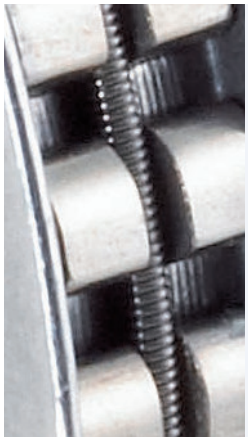
d = inner diameter
D = outer diameter
W = width
T = torque
n = rotation speed

Designation	d [mm]	D [mm]	W [mm]	T_{nom} [Nm]	n_{max} [rpm]	Weight [kg]	Item no.
FE 422 M	14	22	12	59	10,100	0.011	300404
FE 423 M	15	23	12	66	9,200	0.012	300409
FE 425 M	17	25	12	79	8,100	0.013	300414
FE 427 M	19	27	12	92	7,400	0.014	300421
FE 428 M	20	28	12	99	7,500	0.014	300428
FE 430 M	22	30	12	114	6,300	0.016	300434
FE 432 M	24	32	12	128	5,900	0.016	300438
FE 433 M	25	33	12	140	6,000	0.017	300444
FE 435 M	27	35	12	153	5,100	0.018	300447
FE 437 M	29	37	12	169	4,800	0.019	300451
FE 438 M	30	38	12	178	4,900	0.020	300459
FE 442 M	34	42	12	213	4,200	0.022	300462
FE 443 M	35	43	12	224	4,300	0.023	300468
FE 448 M	40	48	12	271	4,300	0.025	300473
FE 453 M	45	53	12	321	3,400	0.028	300481
FE 458 M	50	58	12	372	3,400	0.031	300488
FE 459 M	51	59	12	381	3,000	0.032	300492
FE 463 M	55	63	12	426	2,900	0.035	300495
FE 468 M	60	68	12	481	2,700	0.036	300500
FE 470 M	62	70	12	505	2,600	0.037	300503
FE 473 M	65	73	12	538	2,500	0.040	300506
FE 478 M	70	78	12	596	2,600	0.043	300510
FE 488 M	80	88	12	715	2,100	0.048	300515

The specified nominal torque is based on sufficient stiffness of mating parts. *(Pg. 22)*
Rotation speed n = insert element's inherent speed *(Pg. 57)*

Insert Element FE 400 Z2

in narrow design with tension spring



Components

Freewheel	Insert element FE 400 Z2
· Spring	Tension spring (Z)
· Cage	Stamped steel / plastic (PA)
· Sprags	Hardened bearing steel
	Start gap height h_0 = 4 mm
- Thrust rings	-
- Ball bearing	-
- Roller bearing	-
- Lubrication	-
- Seal	-

Characteristics

Installed width
7 mm

Operating temperature
max. 140°C
higher temperatures on request

Indexing frequency
max. 10 Hz

Lubrication

Oil or grease lubrication *(Pg. 60–61)*
Delivered with corrosion protection.
Pre-greased on request.

Installation

Installation tolerances
Shaft h5; hub H6

Inner ring/shaft
steel, HRC 60^{+4} (HV 700^{+100}); Ehd ≥ 1.3 mm; Rz ≤ 2.5 µm

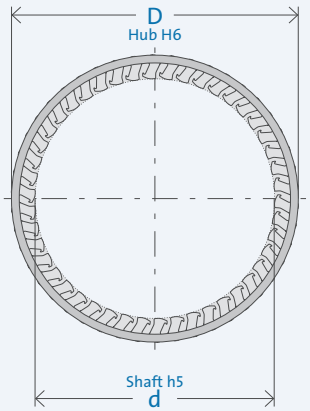
Outer ring/housing
steel, HRC 60^{+4} (HV 700^{+100}); Ehd ≥ 1.3 mm; Rz ≤ 2.5 µm

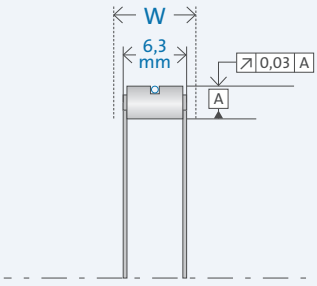
Constraints
The freewheel clutch insert element requires axial constraints on both sides.

Mating parts
Hardening and grinding of the mating parts is necessary.
Chamfered shafts and hubs ease installation *(Pg. 58)*.

Bearing
Freewheel clutch insert elements are not self-centering.
External bearing support to define the gap between mating parts (Shaft and housing) is necessary.

Data



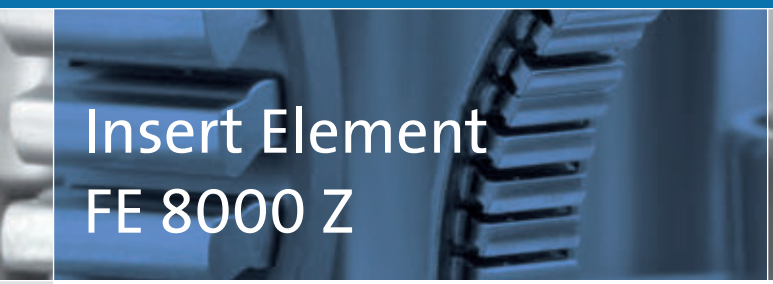


Designation	d [mm]	D [mm]	W [mm]	T_{nom} [Nm]	n_{max} [rpm]	Weight [kg]	Item no.
FE 410 Z2	2	10	7	0,6	52,600	0.001	300390
FE 412 Z2	4	12	7	2,5	40,900	0.002	300394
FE 413 Z2	5	13	7	4	34,900	0.003	300395
FE 414 Z2	6	14	7	6	31,200	0.003	300396
FE 416 Z2	8	16	7	10	27,200	0.004	300399
FE 418 Z2	10	18	7	16	18,900	0.005	300401
FE 422 Z2	14	22	7	30	13,200	0.006	300406
FE 423 Z2	15	23	7	40	13,200	0.006	300410
FE 425 Z2	17	25	7	43	10,600	0.007	300416
FE 428 Z2	20	28	7	55	9,700	0.008	300431
FE 433 Z2	25	33	7	78	7,700	0.010	300446
FE 437 Z2	29	37	7	97	6,100	0.011	300457
FE 438 Z2	30	38	7	105	6,400	0.011	300461
FE 442 Z2	34	42	7	125	5,400	0.012	300465
FE 443 Z2	35	43	7	131	5,600	0.013	300472
FE 448 Z2	40	48	7	156	5,500	0.014	300477
FE 453 Z2	45	53	7	185	4,400	0.016	300484
FE 458 Z2	50	58	7	216	4,400	0.017	300490
FE 463 Z2	55	63	7	246	3,700	0.019	300498
FE 468 Z2	60	68	7	277	3,500	0.020	300502

The specified nominal torque is based on sufficient stiffness of mating parts. *(Pg. 22)*
Rotation speed n = insert element's inherent speed *(Pg. 57)*

Drawing legend

d = inner diameter
D = outer diameter
W = width
T = torque
n = rotation speed



Insert Element FE 8000 Z

with tension spring

Components

Freewheel	Insert element FE 8000 Z
· Spring	Tension spring (Z)
· Cage	Stamped steel / drawn steel
· Sprags	Hardened bearing steel
	Start gap height h_0 = 8.33 mm
- Thrust rings	-
- Ball bearing	-
- Roller bearing	-
- Lubrication	-
- Seal	-

Characteristics

Width
16 / 19 / 25 mm

Operating temperature
max. 170°C

Indexing frequency
max. 5 Hz

Lubrication

Oil or grease lubrication *(Pg. 60–61)*
Delivered with corrosion protection.
Pre-greased on request.

Installation

Installation tolerances
Shaft h6; hub H6

Inner ring/shaft
steel, HRC 60^{+4} (HV 700^{+100}); Ehd ≥ 1.3 mm; Rz ≤ 2.5 µm

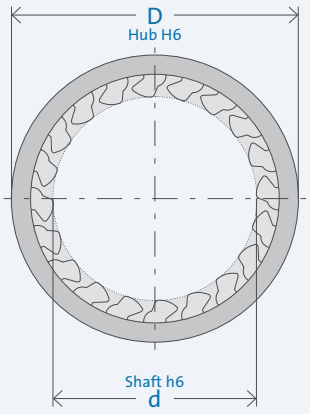
Outer ring/housing
steel, HRC 60^{+4} (HV 700^{+100}); Ehd ≥ 1.3 mm; Rz ≤ 2.5 µm

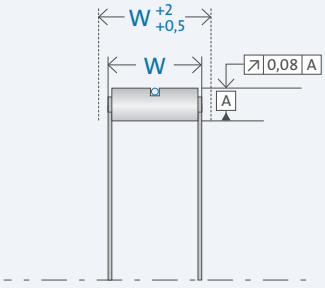
Constraints
The freewheel clutch insert element requires axial constraints on both sides.

Connecting parts
Hardening and grinding of the mating parts is necessary.
Chamfered shafts and hubs ease installation *(Pg. 58)*.

Bearing
Freewheel clutch insert elements are not self-centering.
External bearing support to define the gap between mating parts (Shaft and housing) is necessary.

Data





Drawing legend

d = inner diameter
D = outer diameter
W = width
T = torque

Designation	d [mm]	D [mm]	W [mm]	T_{nom} [Nm]	Weight [kg]	Item no.
FE 8038 Z 16	38.09	54.75	16	609	0.082	300527
FE 8038 Z 19	38.09	54.75	19	801	0.096	300528
FE 8040 Z 16	40.00	56.66	16	668	0.084	300530
FE 8040 Z 19	40.00	56.66	19	880	0.102	300531
FE 8044 Z 16	44.45	61.11	16	799	0.091	300535
FE 8044 Z 19	44.45	61.11	19	1.052	0.112	300536
FE 8049 Z 16	49.72	66.38	16	923	0.100	300538
FE 8049 Z 19	49.72	66.38	19	1.201	0.118	300539
FE 8050 Z 16	50.00	66.66	16	942	0.100	306637
FE 8050 Z 25	50.00	66.66	19	1,237	0.123	306638
FE 8054 Z 16	54.76	71.42	16	1,080	0.107	300541
FE 8054 Z 19	54.76	71.42	19	1,424	0.128	300542
FE 8054 Z 25	54.76	71.42	25	2,015	0.172	300543
FE 8060 Z 16	60.00	76.66	16	1,243	0.113	306639
FE 8060 Z 19	60.00	76.66	19	1,560	0.141	306640
FE 8060 Z 25	60.00	76.66	25	2,111	0.188	306641
FE 8072 Z 16	72.21	88.87	16	1,740	0.135	300548
FE 8072 Z 19	72.21	88.87	19	2,145	0.163	300549
FE 8072 Z 25	72.21	88.87	25	2,918	0.220	300550
FE 8079 Z 25	79.69	96.36	25	3,295	0.227	300551
FE 8080 Z 16	80.00	96.66	16	1,848	0.141	306642
FE 8080 Z 19	80.00	96.66	19	2,278	0.176	306643
FE 8080 Z 25	80.00	96.66	25	3,101	0.235	306644
FE 8083 Z 25	83.34	100.00	25	3,640	0.245	300553
FE 8100 Z 16	100.00	116.66	16	2,632	0.188	306645
FE 8100 Z 19	100.00	116.66	19	3,303	0.228	306646
FE 8100 Z 25	100.00	116.66	25	4,535	0.306	306647
FE 8103 Z 16	103.23	119.89	16	2,887	0.184	300556
FE 8103 Z 19	103.23	119.89	19	3,582	0.290	300557
FE 8103 Z 25	103.23	119.89	25	4,920	0.300	300558
FES 8123 Z 25	123.34	140.00	25	6,600	0.370	300561
FE 8123 Z 25	123.88	140.54	25	6,604	0.370	300559
FE 8126 Z 25	126.22	142.88	25	6,744	0.375	300562
FE 8140 Z 25	140.00	156.66	25	7,388	0.410	300565
FE 8150 Z 25	150.00	166.66	25	8,272	0.440	300567
FE 8160 Z 25	160.00	176.66	25	9,096	0.470	306344
FE 8180 Z 25	180.00	196.66	25	10,463	0.520	306274
FE 8220 Z 25	220.00	236.66	25	14,060	0.640	306148

The specified nominal torque is based on sufficient stiffness of mating parts. *(Pg. 22)*