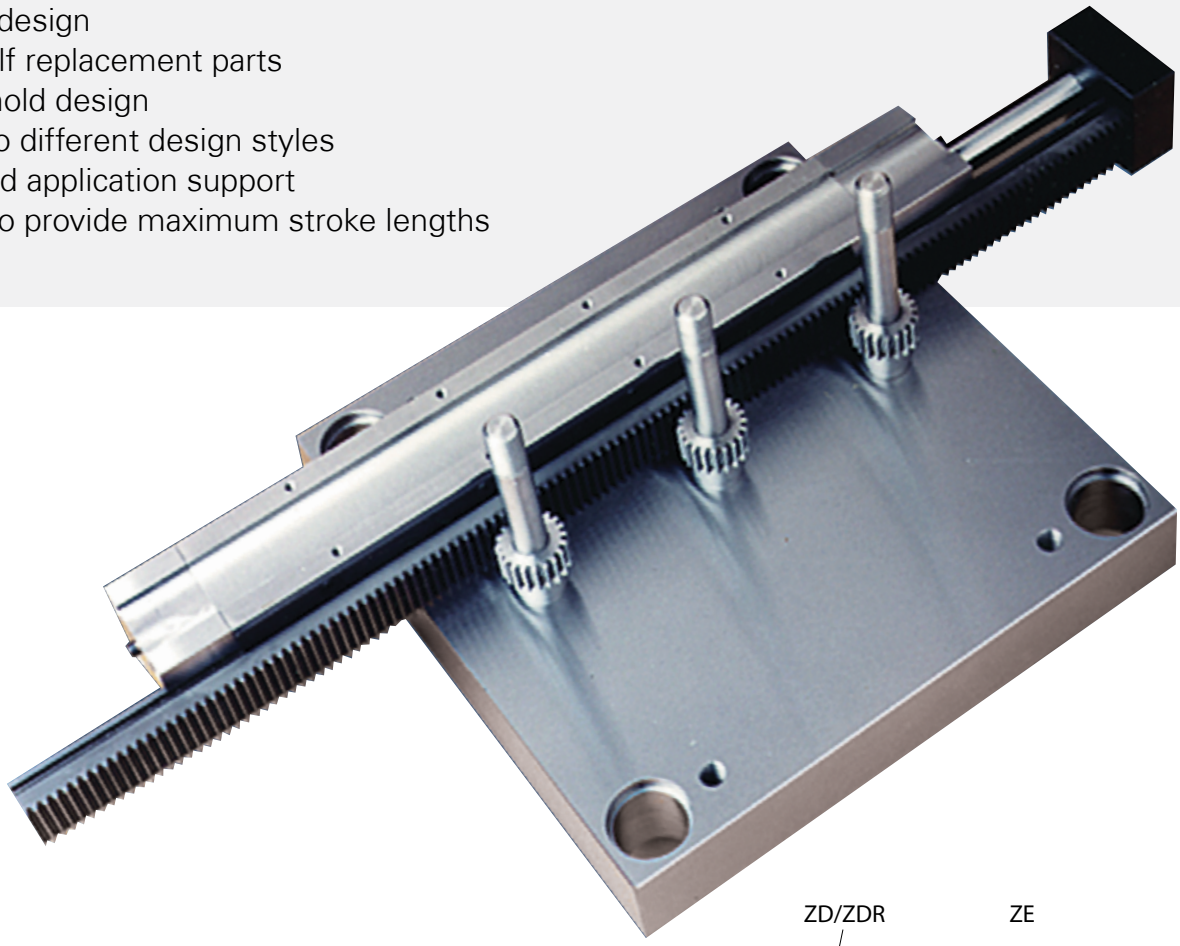
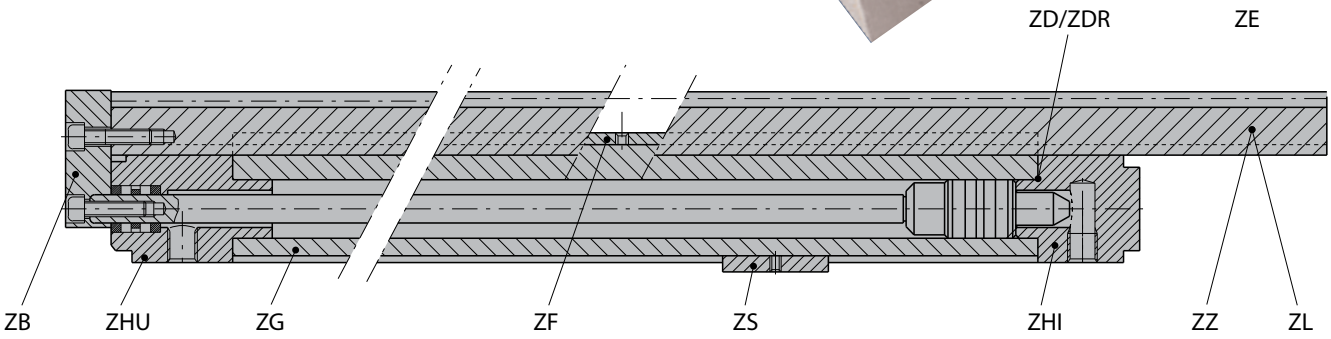
HYDRAULIC UNSCREWING DEVICE

Standardized System for Molding Internal Threads

- Metric-rack design
- Off -the-shelf replacement parts
- Simplifies mold design
- Applicable to different design styles
- Technical and application support
- Rack sized to provide maximum stroke lengths



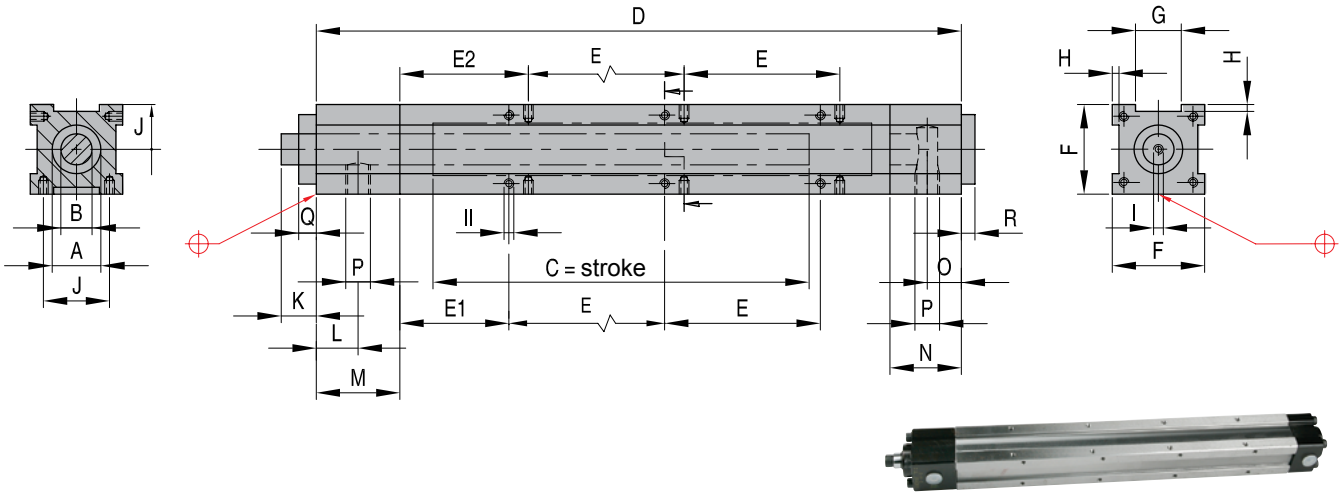


REF	Includes		
	Base construction	End caps-out	End Caps-in
ZG25300	ZG25300	ZHU25	ZHI25
ZG25400	ZG25400	ZHU25	ZHI25
ZG25500	ZG25500	ZHU25	ZHI25
ZG40300	ZG40300	ZHU40	ZHI40
ZG40400	ZG40400	ZHU40	ZHI40
ZG40500	ZG40500	ZHU40	ZHI40
ZG63400	ZG63400	ZHU63	ZHI63
ZG63500	ZG63500	ZHU63	ZHI63

UNSCREWING DEVICES
BASE CONSTRUCTION

ZG

Max T = 80°C - Max p = 150 bar

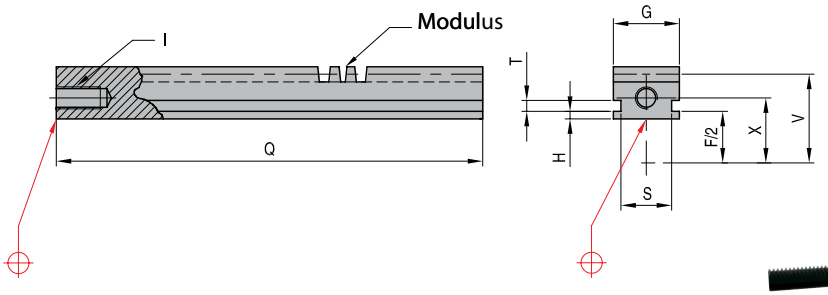


REF	A	B	C	D	E	E1	E2	F	G	H	J	K	L	M	N	O	P	Q	R	I	II
ZG25300	ø 25	ø 16	300	423,5	3x80	56	66	46	20	3,5	34	18	21,5	43	28,5	11	R 1/4"	9	6,5	M8x20	SM5x10
ZG25400	ø 25	ø 16	400	523,5	3x80	106	116	46	20	3,5	34	18	21,5	43	28,5	11	R 1/4"	9	6,5	M8x20	SM5x10
ZG25500	ø 25	ø 16	500	623,5	5x80	76	86	46	20	3,5	34	18	21,5	43	28,5	11	R 1/4"	9	6,5	M8x20	SM5x10
ZG40300	ø 40	ø 22	300	431,5	3x80	56	66	56	30	3,5	44	22	35	53	26,5	12,5	R 1/2"	9	8,5	M10x30	SM5x10
ZG40400	ø 40	ø 22	400	531,5	3x80	106	116	56	30	3,5	44	22	35	53	26,5	12,5	R 1/2"	9	8,5	M10x30	SM5x10
ZG40500	ø 40	ø 22	500	631,5	5x80	76	86	56	30	3,5	44	22	35	53	26,5	12,5	R 1/2"	9	8,5	M10x30	SM5x10
ZG63400	ø 63	ø 36	400	555,5	3x80	114	124	96	50	8	70	38	25	52	34,5	16	R 3/4"	22	12,5	M16x40	SM8x16
ZG63500	ø 63	ø 36	500	655,5	5x80	84	94	96	50	8	70	38	25	52	34,5	16	R 3/4"	22	12,5	M16x40	SM8x16

UNSCREWING DEVICES
RACKS

ZZ

Mat.: 1.6580 nitrided 60 HRc



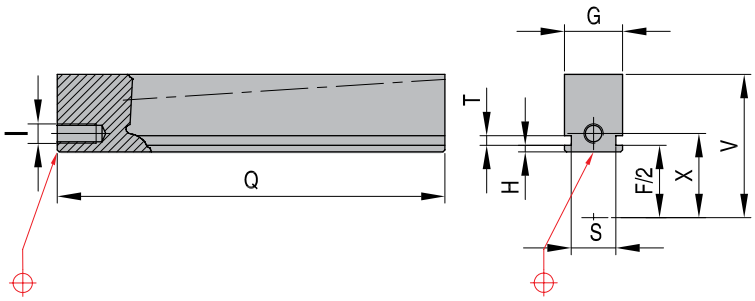
REF	A	F/2	G	H	Q	Modulus	S	T	V	X	I for
ZZ25600M1	Ø 25	23	20	3,4	600	1,00	13	5	36,3	27,1	M8 x 20
ZZ25800M1	Ø 25	23	20	3,4	800	1,00	13	5	36,3	27,1	M8 x 20
ZZ25600M1-25	Ø 25	23	20	3,4	600	1,25	13	5	36,3	27,1	M8 x 20
ZZ25800M1-25	Ø 25	23	20	3,4	800	1,25	13	5	36,3	27,1	M8 x 20
ZZ40600	Ø 40	28	30	3,4	600	1,5	23	5	43,1	34,1	M10 x 30
ZZ40800	Ø 40	28	30	3,4	800	1,5	23	5	43,1	34,1	M10 x 30
ZZ63800	Ø 63	48	50	7,9	800	2,00	40	7	68,1	55,1	M12 x 40
ZZ63900	Ø 63	48	50	7,9	900	2,00	40	7	68,1	55,1	M12 x 40

CAD reference point

UNSCREWING DEVICES GIBS

ZL

Mat.: 1.7225 ~30 HRc

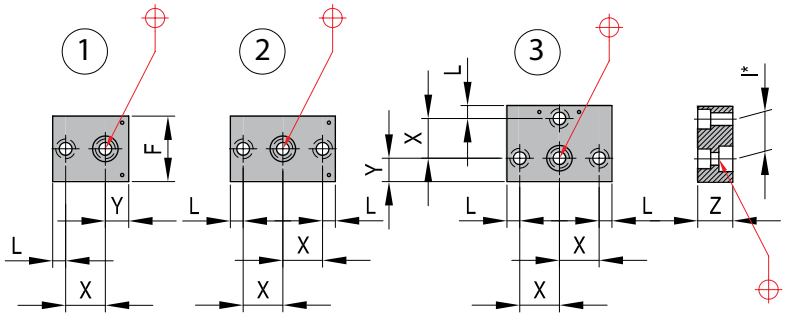


REF	A*	F/2	G	H	Q	S	T	V	X	I for
ZL25800	Ø 25	23	20	3,4	800	13	5	49,6	27,1	M8 x 20
ZL40800	Ø 40	28	30	3,4	800	23	5	64,6	34,1	M10 x 30
ZL63900	Ø 63	48	50	8,0	900	40	7	100,1	55,1	M12 x 40

*Suited for cylinder diameter

UNSCREWING DEVICES FLANGES

ZB



* I is the thread dimension

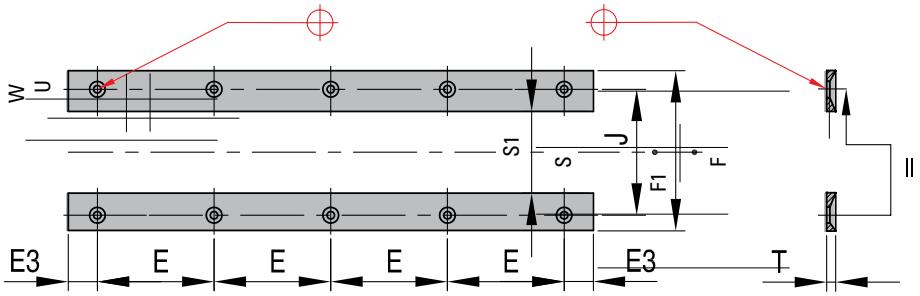
REF	A	X	Y	F	Z	L	I: for
ZB251	Ø 25	27	12,5	46	20	10,5	2 x M8 x 20
ZB252							3 x M8 x 20
ZB253							4 x M8 x 20
ZB401	Ø 40	34	20,0	56	30	11,0	2 x M10 x 30
ZB402							3 x M10 x 30
ZB403							4 x M10 x 30
ZB631	Ø 63	55	30,0	96	40	15,0	1 x M12 x 40 1 x M16 x 40
ZB632							2 x M12 x 40 1 x M16 x 40
ZB633							3 x M12 x 40 1 x M16 x 40

CAD reference point

UNSCREWING DEVICES GUIDEWAYS

ZF

Order per 2 pieces

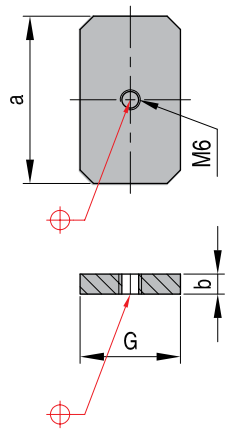


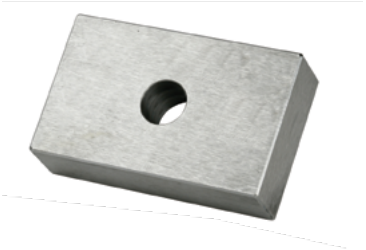
REF	A	C	E	E3	F	F1	J	S	S1	W	U	T	II
ZF2540300	Ø 25	300	3x80	46	46	45	34	13	15	15	5,5	4	SM 5x10
ZF2540400	Ø 25	400	3x80	96	46	45	34	13	15	15	5,5	4	SM 5x10
ZF2540500	Ø 25	500	5x80	66	46	45	34	13	15	15	5,5	4	SM 5x10
ZF2540300	Ø 40	300	3x80	46	56	55	44	23	25	15	5,5	4	SM 5x10
ZF2540400	Ø 40	400	3x80	96	56	55	44	23	25	15	5,5	4	SM 5x10
ZF2540500	Ø 40	500	5x80	66	56	55	44	23	25	15	5,5	4	SM 5x10
ZF63400	Ø 63	400	3x80	104	96	91,6	70	40	41,6	25	10,8	6	SM 8x16
ZF63500	Ø 63	500	5x80	74	96	91,6	70	40	41,6	25	10,8	6	SM 8x16

Guideways for diameter 25 and 40 are the same.

UNSCREWING DEVICES LOCATING PLATES

ZS



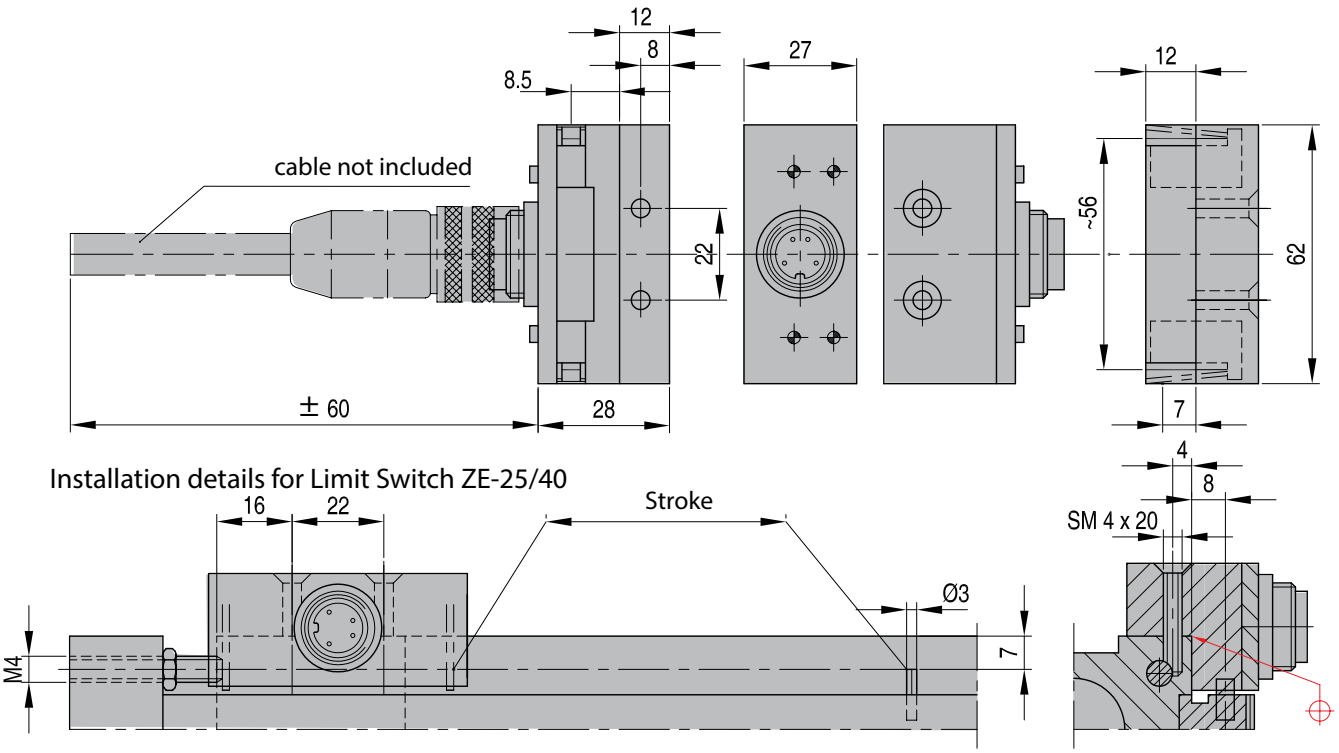


REF	A	G	a	b
ZS25	Ø 25	20	40	6
ZS40	Ø 40	30	50	6
ZS63	Ø 63	50	80	15

CAD reference point

UNSCREWING DEVICES
LIMIT SWITCHES

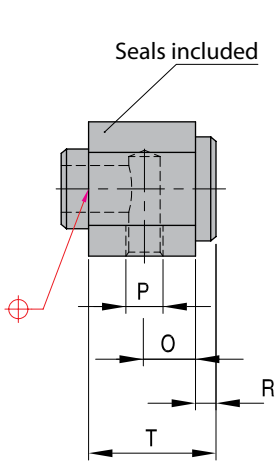
ZE

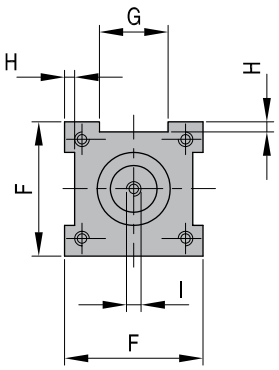


REF	Includes			
ZE2540	(2x) **SM4x20**	(1x) **DP3x16**	(1x) **GS4x20**	(1x) **M4 DIN 934**

UNSCREWING DEVICES
SPARE PART: END CAP - IN

ZHI



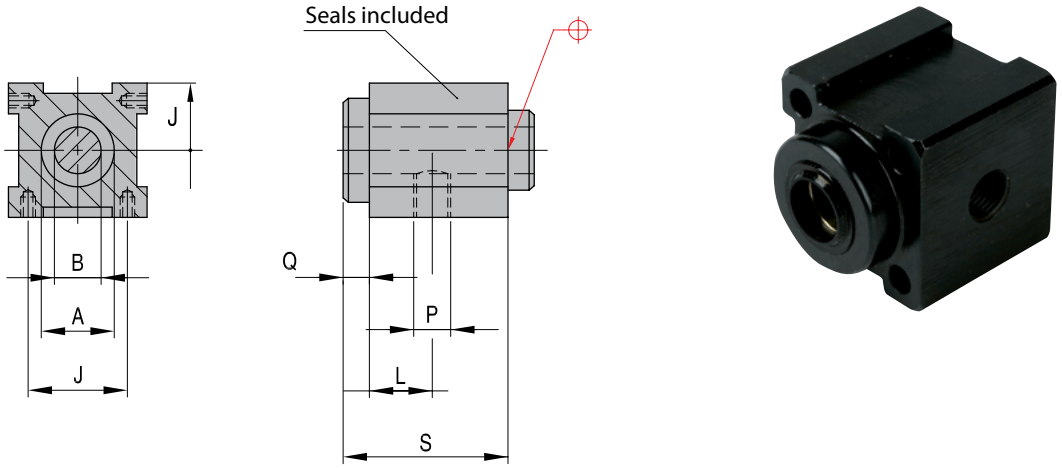


REF	O	R	P	T
ZHI25	11	6,5	R 1/4"	35
ZHI40	12,5	8,5	R 1/2"	35
ZHI63	16	12,5	R 3/4"	47

CAD reference point

UNSCREWING DEVICES
SPARE PART: END CAP - OUT

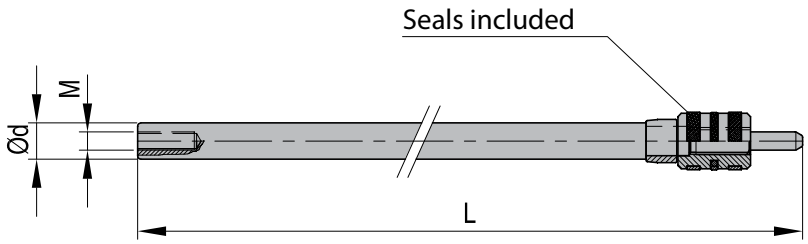
ZHU



REF	L	Q	P	S
ZHU25	21,5	9	R 1/4"	52
ZHU40	35	9	R 1/2"	62
ZHU63	25	22	R 3/4"	74

UNSCREWING DEVICES
SPARE PART: ROD & PIST

ZTP

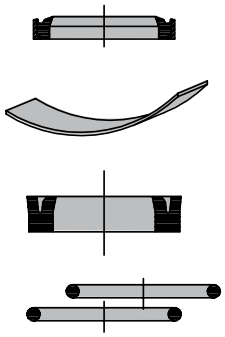


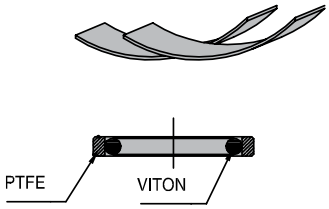
REF	Ø d	M	L
ZTP2530ZG25300	16	8	426
ZTP2540ZG25400	16	8	526
ZTP2550ZG25500	16	8	626
ZTP4030ZG40300	22	10	442
ZTP4040ZG40400	22	10	542
ZTP4050ZG40500	22	10	642
ZTP6340ZG63400	36	16	575
ZTP6350ZG63500	36	16	675

CAD reference point

UNSCREWING DEVICES
SPARE PART: SEALS (KIT)

ZD

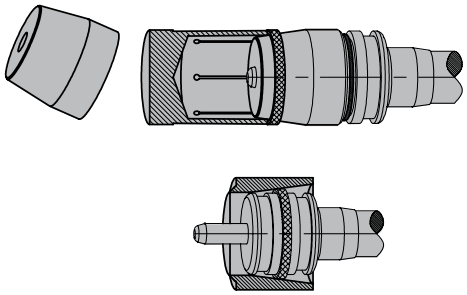




REF
ZD25
ZD40
ZD63

UNSCREWING DEVICES
MOUNTING TOOLS FOR ZD SEAL KIT

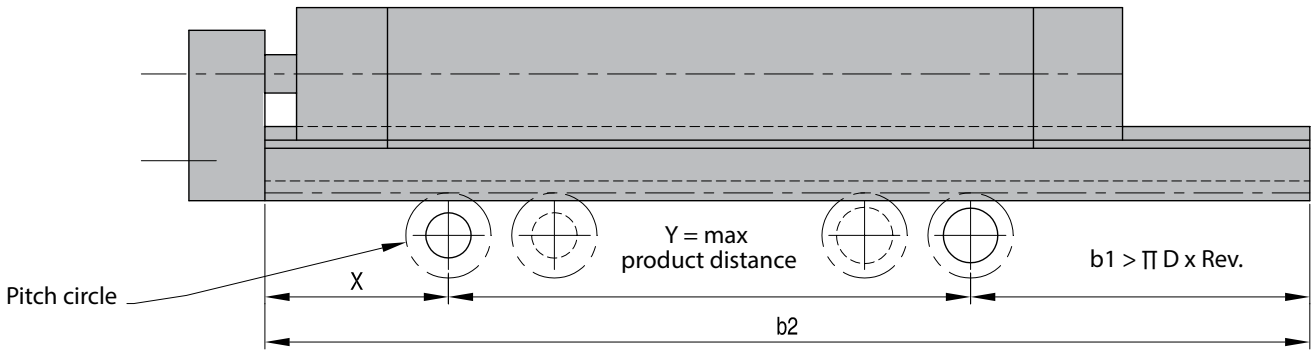
ZDR



REF
ZDR0025TOOL
ZDR0040TOOL
ZDR0063TOOL

UNSCREWING DEVICES
CALCULATION EXAMPLE

Info

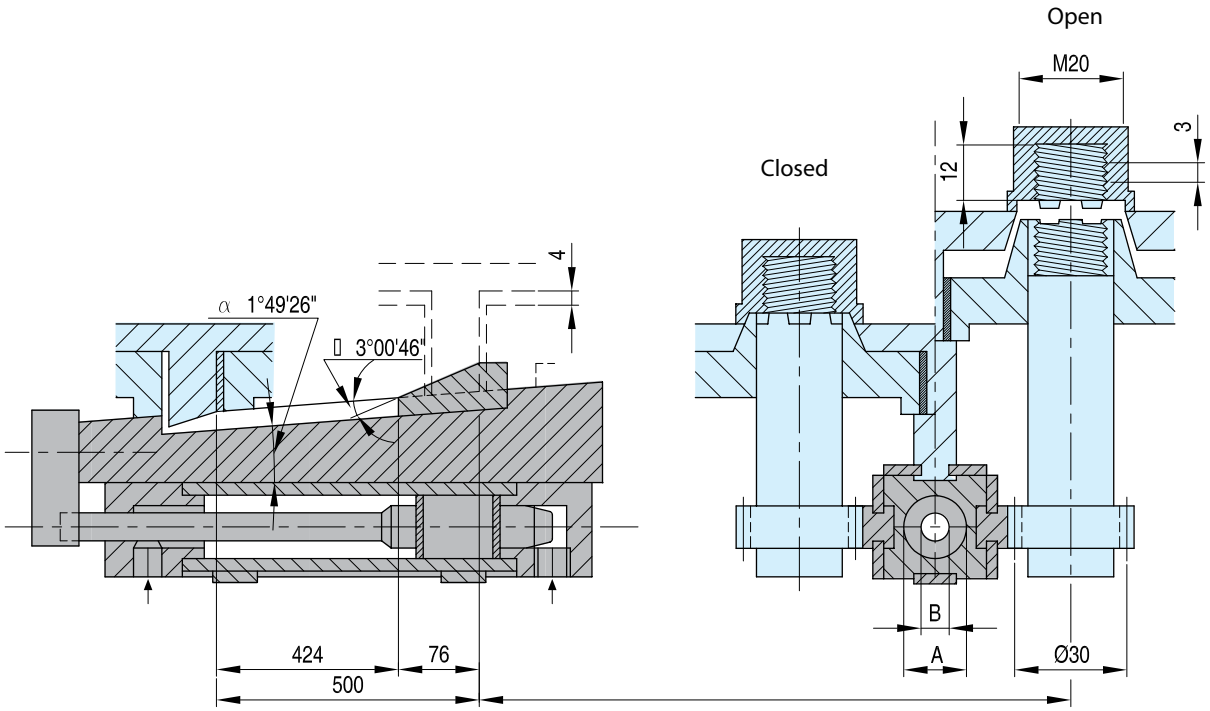


A. Stroke
a. Required revolutions (thread core) = thread height/thread lead + safety (min 0,5 t) = 12 mm/3 mm + 0,5 rev. = 4,5 rev.
b. 1. Required stroke (mm) = pitch circle x π x rev. = 30 mm x 3,14 x 4,5 rev. = 424 mm If required stroke is too long, a cog wheel transmission gear should be used 2. Length of rack b2 = X + Y + b1
c. Stripper stroke (mm) = cylinder stroke - required rack stroke = 500 mm - 424 mm = 76 mm

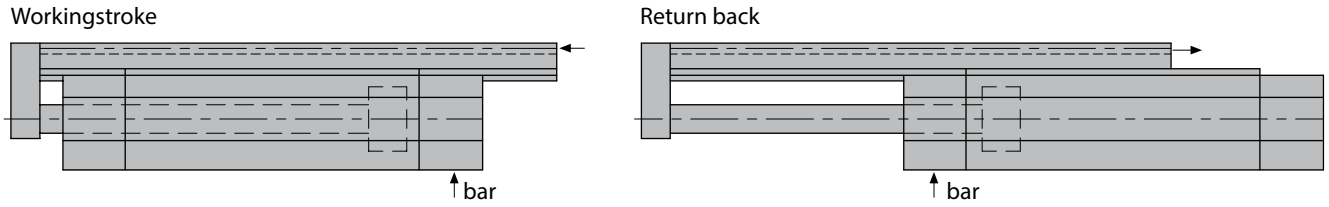
CAD reference point

UNSCREWING DEVICES
CALCULATION EXAMPLE

Info



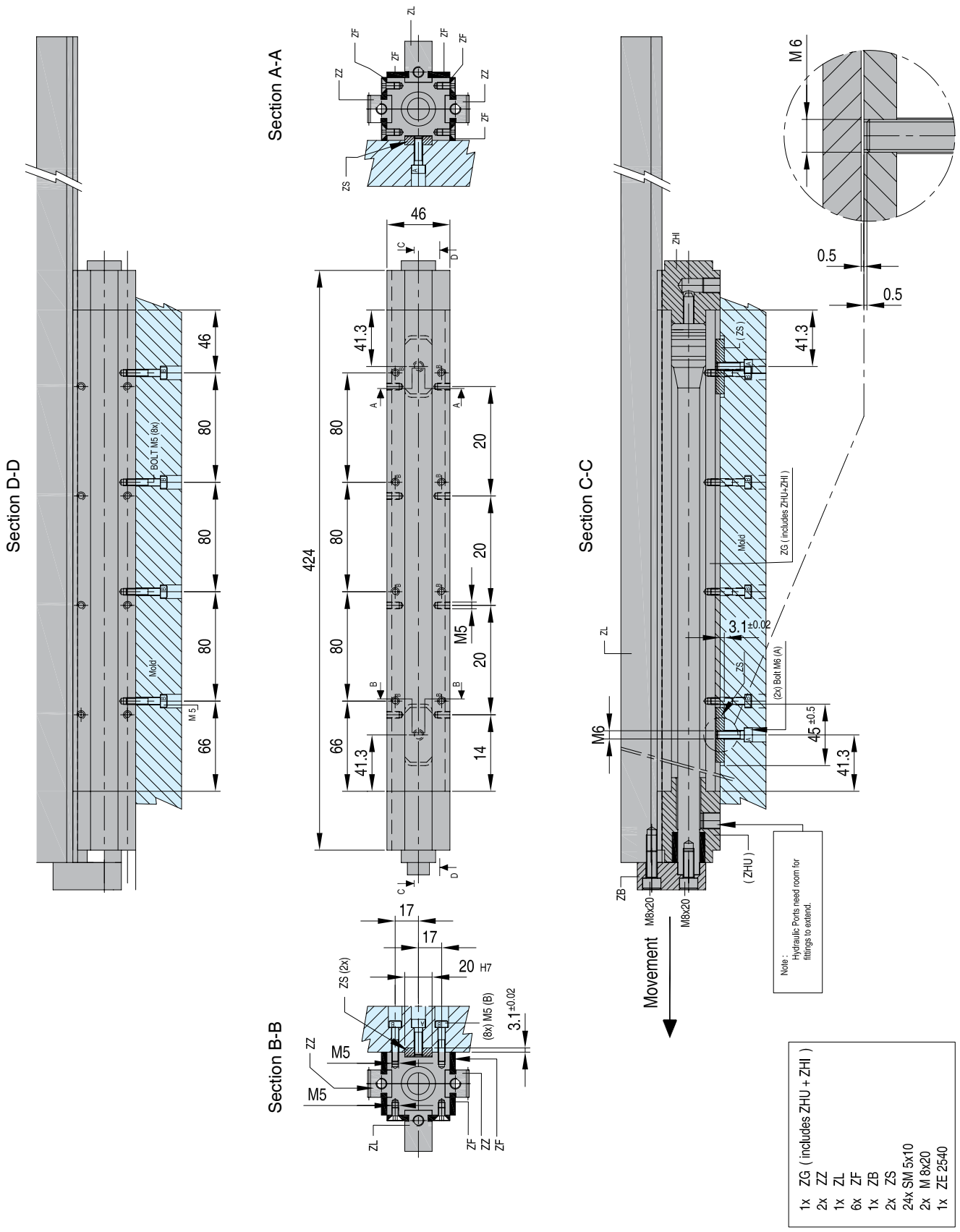
B. Control cam calculation
d. Moving cam (α) tan α = lead/dia. pitch circle x π = 3 mm/30 mm x 3,14 = 0,031847; α = 1° 49' 26"
e. Stripper cam (ß) tan ß = Stripper height/Stripper stroke = 4 mm/76 mm = 0,0526315; ß = 3°00'46"



C. Unscrewing force
These figures should only be used as a guideline as many other factors will affect the calculation. (Material, variation of dimensions, material shrinkage, core surface area, temperature, lubricant, etc...)
f. Residual pressure (bar) 1/100 of max. injection pressure = 1000 bar/100 ≈ 10 bar ≈ 1 N/mm²
g. Effective core surface area (mm²) = thread dia. x π x thread height x 2* = 20 mm x 3,14 x 12 mm x 2 = 1507 mm²
* - 2 x height for developped surface (^^^^) - frontal area is neglected
h. Unscrewing torque (Nmm) = Holding pressure x surface x thread radius = 1 N/mm² x 1507 mm² x 10 mm = 15070 Nmm
i. Unscrewing force rack (kN) = unscrewing torque/radius pitch circle x number of cores = 15070 Nmm/15 mm x 4 = 4019 N = 4,02 kN
k. Hydraulic force (kN) = Unscrewing force x 1,5 = 4,02 kN x 1,5 = 6,03 kN (50 % safety, hence x 1,5)

CAD reference point

UNSCREWING DEVICES
INSTALLATION INSTRUCTIONS

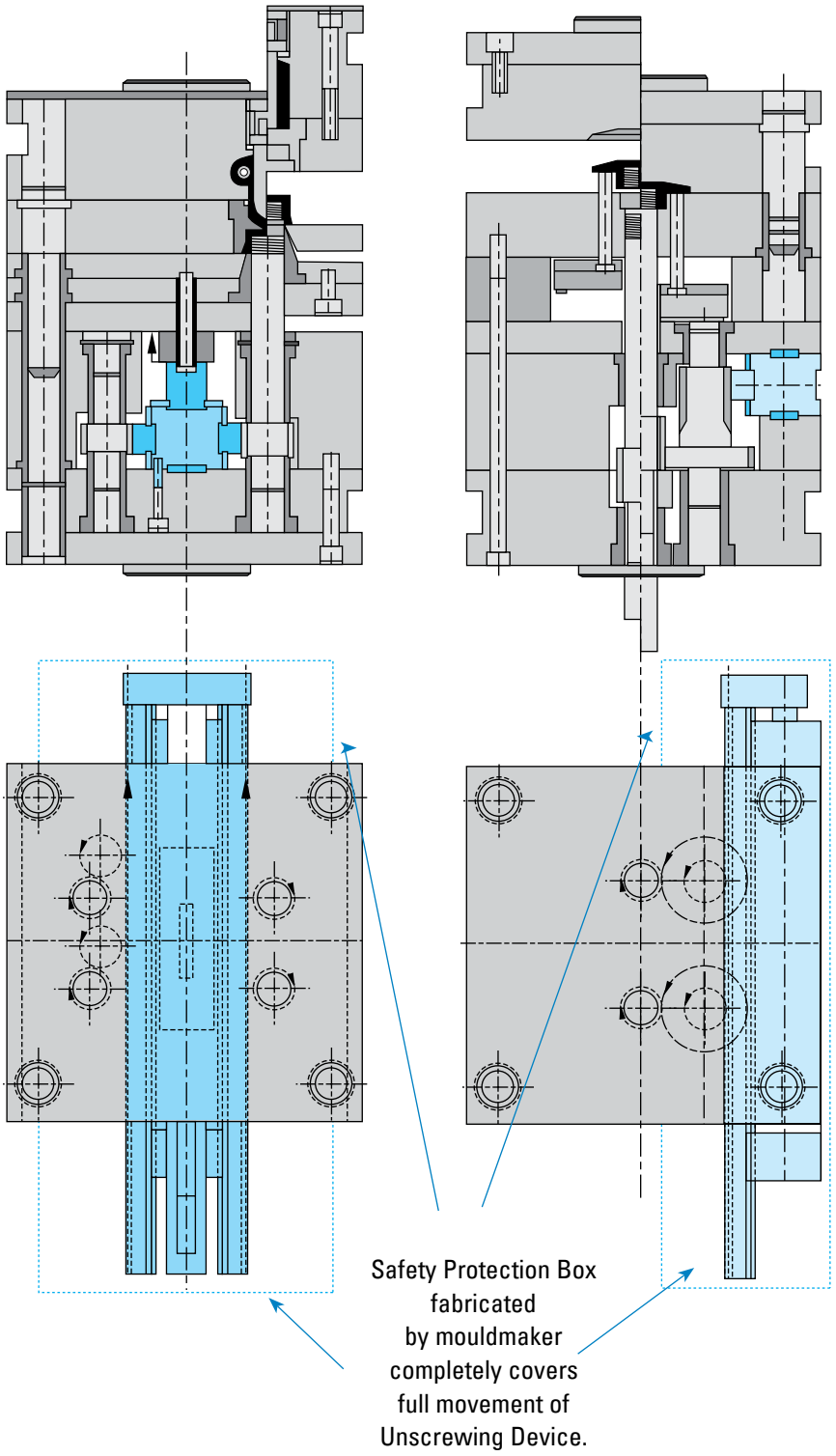


CAD reference point

UNSCREWING DEVICES APPLICATIONS

APPLICATION A WITHOUT GUIDING THREAD WITH CAM

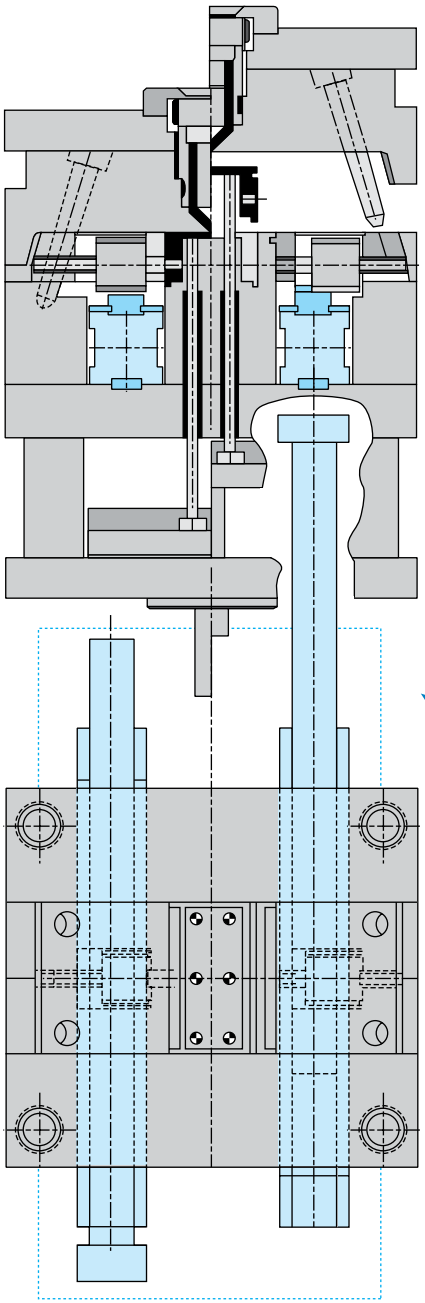
APPLICATION B WITH GUIDING THREAD



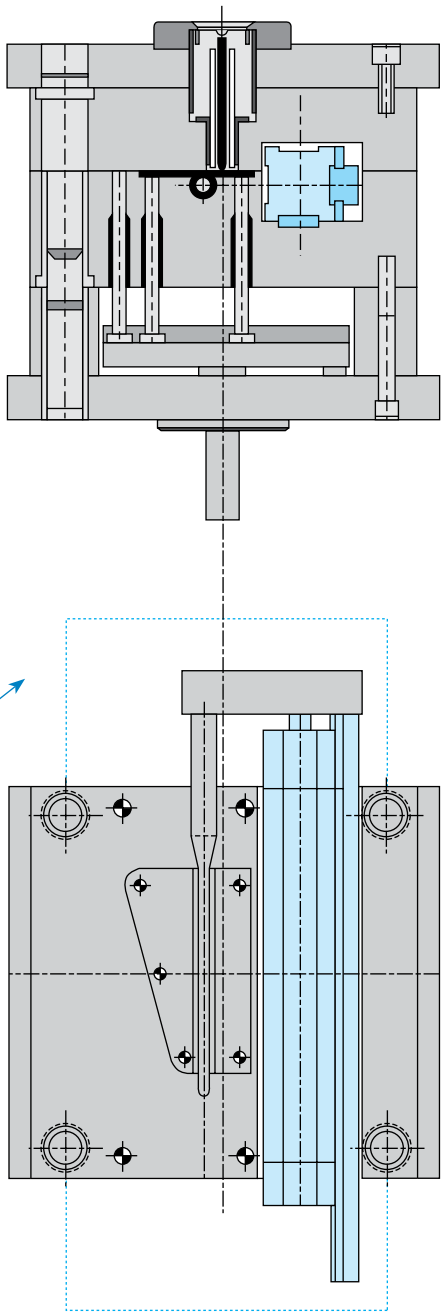
CAD reference point

UNSCREWING DEVICES
APPLICATIONS

APPLICATION C
WITH GUIDING THREAD



APPLICATION D
LONG GUIDING CORES



Safety Protection Box fabricated by mouldmaker completely covers full movement of Unscrewing Device.

Safety Considerations:
Mouldmaker must fabricate boxes over the rack areas which move to protect against injury to personnel. Mouldmaker must also use safety interlocks to prevent movement of unscrewing device if these protection boxes are removed for any reason. Also, sheet metal should be used to cover areas where the gears are, to prevent damage from loose debris falling between the gears and racks.

CAD reference point