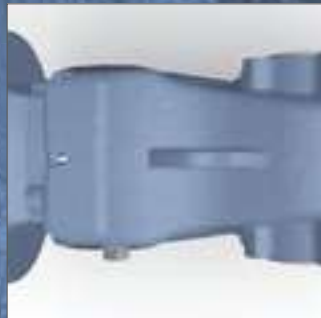


ENDURO BEVEL HELICAL GEARBOX



rotomotive





Rotomotive Powerdrives India Ltd is an Italian joint venture company operating in India since 2006. It has access to European technology and know-how from Motive srl, one of the joint venture partners and sources parts and components from Indian suppliers. We have a modern manufacturing facility in Gujarat, India. Rotomotive has the capacity to design, prototype and manufacture custom motors for various applications.

Our modern manufacturing plant has advanced machinery for automatic winding, trickle and vacuum pressure impregnation, precise balancing, conveyORIZED assembly, enclosed painting lines, automatic testing facilities with all components bar coded for traceability, consistent quality and low production time.

We also have an advanced testing facility for type testing motors and gearboxes which enables us to plot accurate speed torque curves and carry out temperature rise tests and other type tests as per IEC 60034/IS: 325 & IS: 12615.

Our Manufacturing facility in India



Gearbox machining



Assembly Line



Testing Line



Hardness Testing



CMM for mechanical inspection

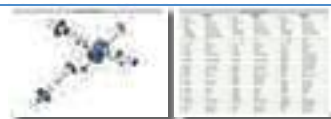


Shop Floor

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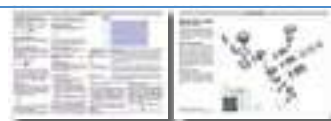
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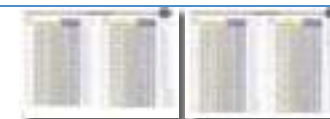


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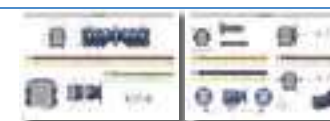


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robust

Uniquely contoured, rigid, precise, monobloc, cast iron Body, Base and flange ensure extreme robustness.

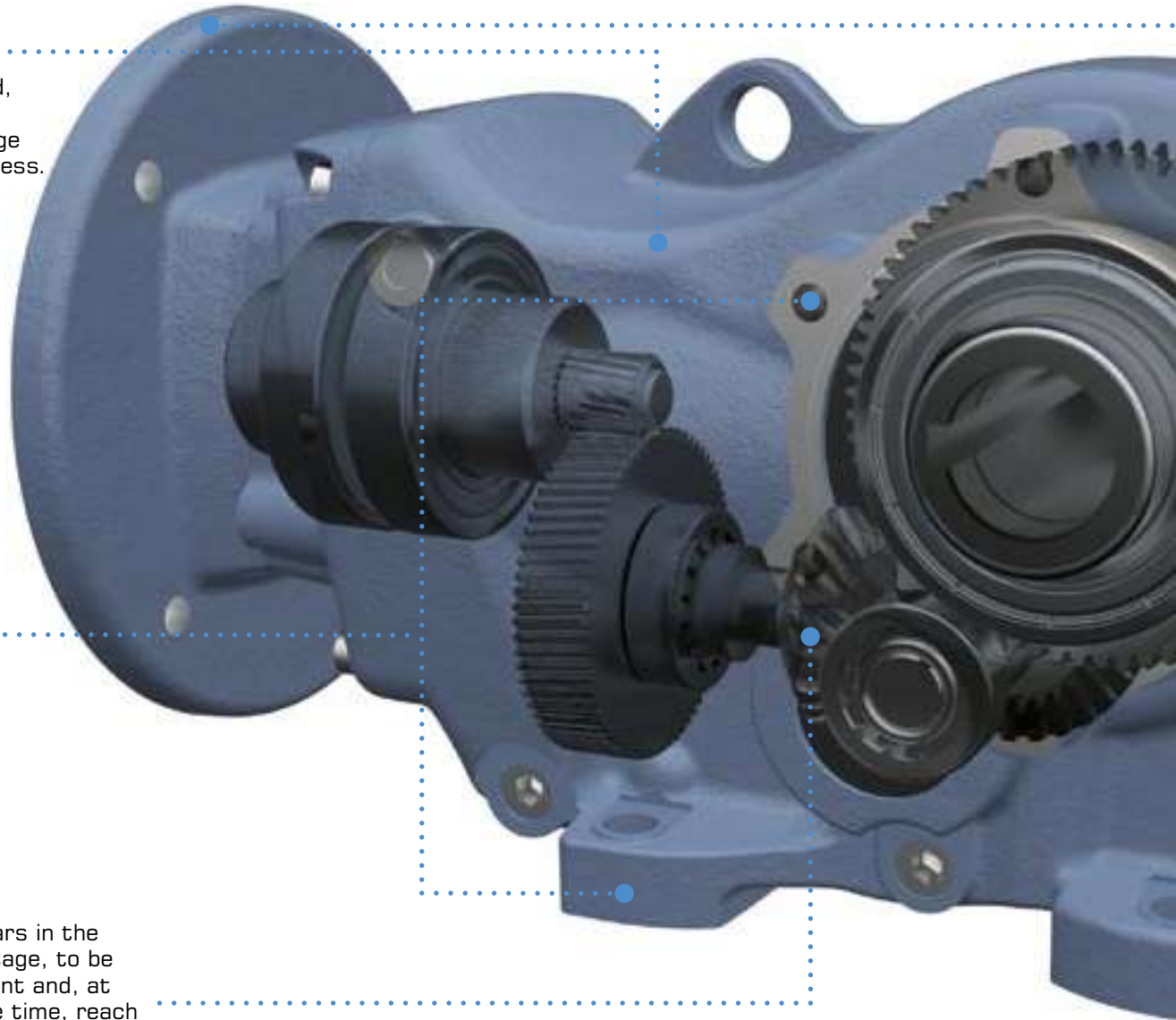


A modular design with detachable output flange and integral feet permits the easy and fast conversion between flange or foot mounting

versatile



Bevel gears in the middle stage, to be more silent and, at the same time, reach a higher service factor





flexible mounting



Input flange and hollow shaft.

choice of hollow input flanges permits direct mounting of any standard motor



Unique construction of enduro makes it possible to mount any size in any position. this flexibility is achieved by:

+ ZZ autolubricating bearings on input and output shaft



5 interchangeable plugs, including one breather plug and a level plug please note that the vent plug also allows you to reduce the internal pressure on seals, and thus increases the efficiency of the gearbox



+ mechanical parts locked in their positions by snap rings. this also ensures better absorption of axial thrust and prolongs the life of bearings

engineered for higher reliability



Use of high strength steels and case hardening to 58 ± 2 HRc reduce the wear rate in wheels. All wheels are profile ground to Din 3962 class 6 accuracy for low noise and high efficiency.



shafts are made from 42crmo4 steel and tempered to reach a hardness of 23-35 HRc, thus increasing their capacity to withstand shearing stresses.



single stages ratios between 2 and 6, together with proper gears sizes, result mathematically in higher teeth number and size (module) of each wheel and a better fractioned load among the reduction stages. that influences both durability and torque transmission

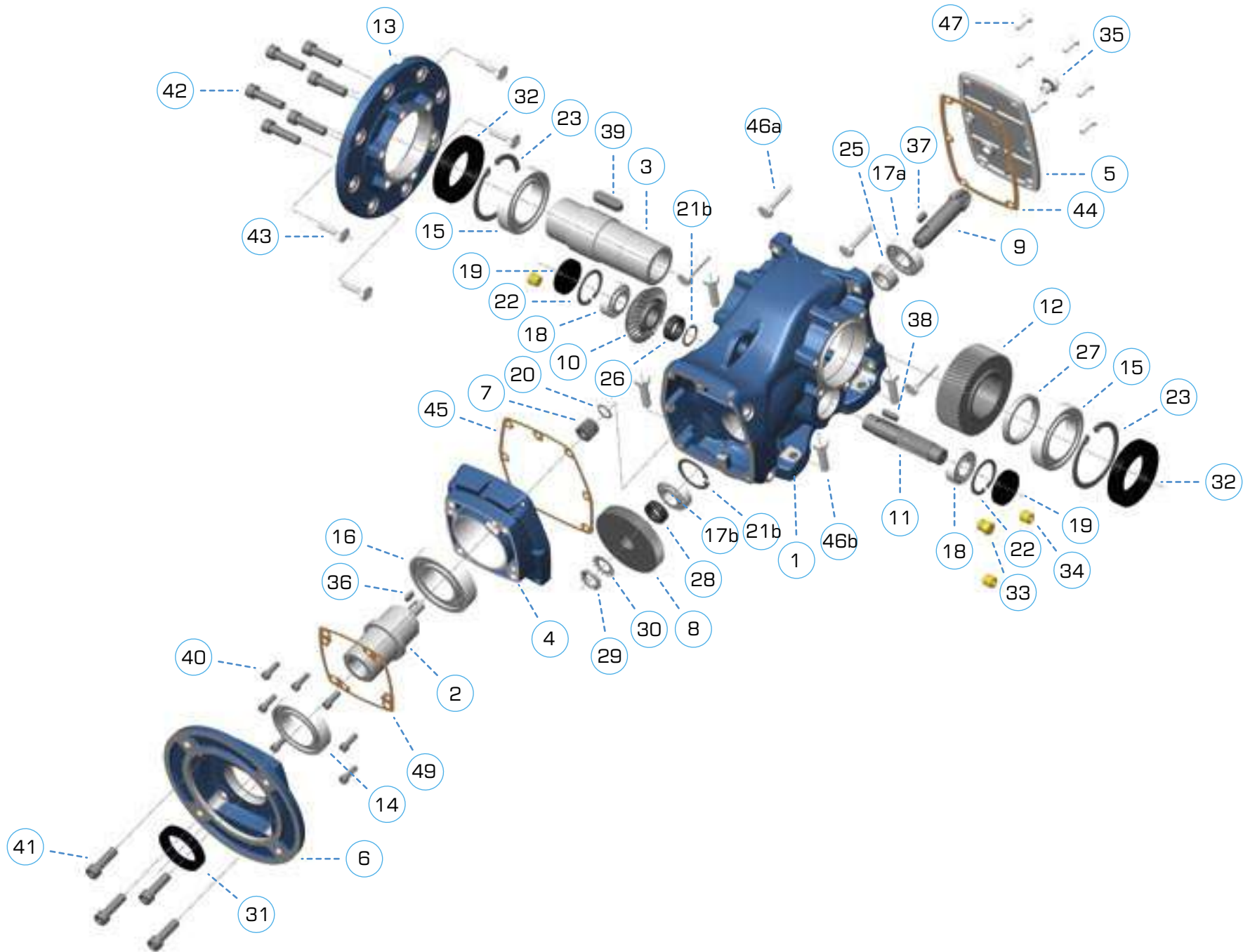


Dual bearing support on the input shaft assures precise alignment of the first stage gears and reduces vibrations and consequent gear wear



Abounding bearings size, in order to withstand higher loads

LIST OF COMPONENTS



LIST OF COMPONENTS

ENDURO 3				ENDURO 4				ENDURO 5			
item	code	description	q.ty	code	description	q.ty	code	description	q.ty		
1	HoUen3	housing	1	HoUen4	housing	1	HoUen5	housing	1		
2	isHDm..iD..RB25	input shaft	1	isHDm..iD..RB30	input shaft	1	isHDm..iD..RB35	input shaft	1		
3	osHen3	output shaft	1	osHen4	output shaft	1	osHen5	output shaft	1		
4	icVes3	input cover	1	icVes4	input cover	1	icVes5	input cover	1		
5	tcVes3	closing cover	1	tcVes4	closing cover	1	tcVes5	closing cover	1		
6	ifL63B5RB25	input flange 63B5	1	ifL71B5RB30/35	input flange 71B5	1	ifL71B5RB30/35	input flange 71B5	1		
	ifL71B5RB25	input flange 71B5		ifL80B5RB30/35	input flange 80/90B5		ifL80B5RB30/35	input flange 80/90B5			
	ifL8090B5RB25	input flange 80/90B5		ifL100B5RB30/35	input flange 100/112B5		ifL100B5RB30/35	input flange 100/112B5			
	ifL100112B5RB25	input flange 100/112B5									
7	p1.....RB25	pinion 1	1	p1.....RB30	pinion 1	1	p1.....RB35	pinion 1	1		
8	G1.....RB25	gear 1	1	G1.....RB30	gear 1	1	G1.....RB35	gear 1	1		
9	p2...en3	conical pinion	1	p2...en4	conical pinion	1	p2...en5	conical pinion	1		
10	G2...en3	conical gear	1	G2...en4	conical gear	1	G2...en5	conical gear	1		
11	p3...en3	pinion 3	1	p3...en4	pinion 3	1	p3...en5	pinion 3	1		
12	G3...en3	gear 3	1	G3...en4	gear 3	1	G3...en5	gear 3	1		
13	ofL160es3	output flange 160	1	ofL200es4	output flange 200	1	ofL250es5	output flange 250	1		
14	BeA6008ZZ	bearing 6008ZZ	2	BeA6009ZZ	bearing 6009ZZ	2	BeA6009ZZ	bearing 6009ZZ	2		
16				BeA6010ZZ	bearing 6010ZZ	2	BeA6011ZZ	bearing 6011ZZ	2		
15	BeA6009ZZ	bearing 6009ZZ	2	BeA6010ZZ	bearing 6010ZZ	2	BeA6011ZZ	bearing 6011ZZ	2		
17a	BeA30303	bearing 30303	1	BeA30204	bearing 30204	1	BeA30205	bearing 30205	1		
17b	BeA30203	bearing 30203	1	BeA32004	bearing 32004	1	BeA32005	bearing 32005	1		
18	BeA30202	bearing 30202	2	BeA32004	bearing 32004	2	BeA30204	bearing 30204	2		
19	coVD35	plug	2	coVD42	plug	2	coVD47	plug	2		
20	snRD..A	seeger ... input shaft	1	snRD..A	seeger ... input shaft	1	snRD..A	seeger ... input shaft	1		
21a	snRD40B	seeger holes	1	snRD42B	seeger D42 holes	1	snRD47B	seeger D47 holes	1		
21b				snRD22A	seeger D22 shaft	1					
22	snRD35B	seeger D35 holes	2	snRD42B	seeger D42 holes	2	snRD47B	seeger D47 holes	2		
23	snRD75B	seeger D75 holes	2	snRD80B	seeger D80 holes	2	snRD90B	seeger D90 holes	2		
24	snRD68B	seeger D68 holes	1	snRD85B	seeger D85 holes	1	snRD85B	seeger D85 holes	1		
25	spR25en3	spacer	1	spR25en4	spacer	1	spR25en5	spacer	1		
26	spR26en3	spacer	1	spR26en4	spacer	1	spR26en5	spacer	1		
27	spR27en3	spacer	1	spR27en4	spacer	1	spR27en5	spacer	1		
28				spR28en4	spacer	1					
29	GHim17X1	gear	1	GHim17X1	gear	1	GHim20X1	gear	1		
30	WsH2982m17	safety washer	1	WsH2982m17	safety washer	1	WsH2982m20	safety washer	1		
31	os40X55X8	oil seal 40x55x8	1	os45X60X9	oil seal 45X60X9	1	os45X60X9	oil seal 45X60X9	1		
32	os45X75X8	oil seal 45x75x8	2	os50X80X12	oil seal 50X80X12	2	os55X90X12	oil seal 55X90X12	2		
33	BpL1/4	breather plug 1/4	1	BpL1/4	breather plug 1/4	1	BpL1/4	breather plug 1/4	1		
34	fpL1/4	filler plug 1/4	3	fpL1/4	filler plug 1/4	3	fpL1/4	filler plug 1/4	3		
35	LpL1/4	level plug 1/4	1	LpL1/4	level plug 1/4	1	LpL1/4	level plug 1/4	1		

CODE SYSTEM

1 first 3 digits describe the enDURo size

- EN3** = enDURo 3
- EN4** = enDURo 4
- etc

2 then 3 digits are the rated ratio

- 020** =i:20
- 120** =i:120
- etc



3 then 3 digits for the mounting type

- 160** =output flange 71B5 Kp=160
- 200** =output flange 80/90B5 Kp=200
- 250** =output flange 100/112B5 Kp=250
- UNV** = without output flange
- ShR** = with shrink disk

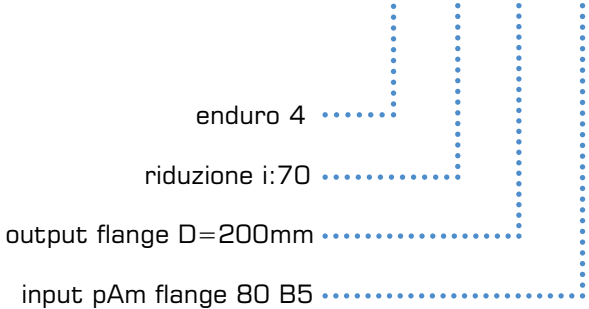


4 3 digits for the input flange (that determines the input hole diameter too)

- 805** =80B5
- 905** =90B5
- 125** =100-112B5
- 135** =132B5
- etc

for instance:

EN4070200805



LUBRICATION

each enduro is supplied with long-life synthetic oil and do not require any maintenance.
the oil quantity is suitable for B3 mounting position

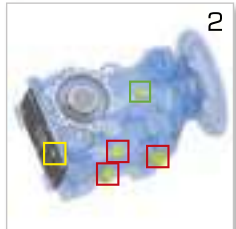
enDURo	oil (lt)						iso	temp.	oil type	
	B3	B6	B7	B8	V5	V6				
en3	0,37	1,23	1,23	1,35	1,31	0,9	VG 220	-25 +80°C	mobil Glygoyle 30	shell tivala s220
en4	0,41	1,38	1,38	1,51	1,47	1				
en5	0,48	1,61	1,61	1,76	1,72	1,17				

After adapting the oil quantity, each enDURo can be mounted in AnY position, thus giving big advantages in the stock management and lead time, thanks to the following 3 characteristics:



1

ZZ autolubricating bearings on input and output shaft



2

5 interchangeable plugs, including one breather plug and a level plug. Level and breather plug must be positioned according to this chart

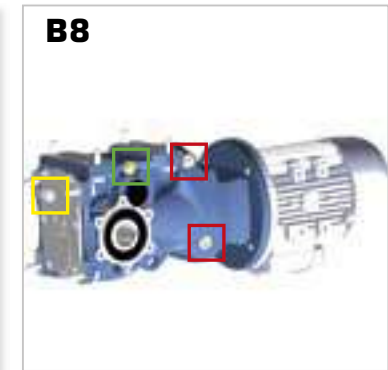


3

mechanical parts locked in their positions by circlips. this also ensures better absorption of axial thrust and prolongs the life of bearings



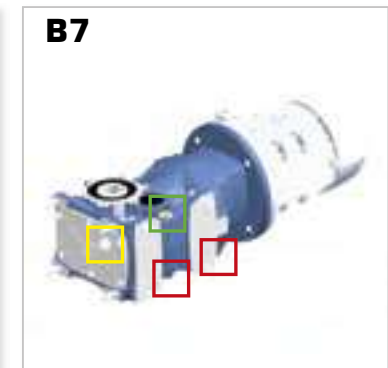
B3



B8



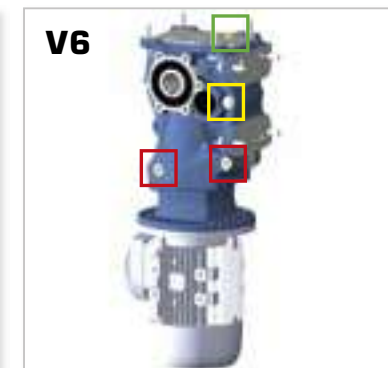
B6



B7



V5



V6



breather plug



level plug



filler plug

TECHNICAL DATA

Rated output torque M_{n2} [nm]
torque output transmissible under uniform loading and referred to the input speed n_1 and the corresponding output speed n_2 .
the output torque can be calculated with the following formula:

$$M_{n2} = \frac{P_{n1} \text{ [kW]} \cdot 9550}{n_2} \cdot ?$$

Torque demand M_{r2} [nm]
torque calculated based on application requirements. it must be $\geq M_{n2}$ of the chosen BoX unit.

Input power P_{n1} [kW]
this is the power value of the motor applied to the input shaft and corresponding to a certain input speed n_1 , a service factor $f_s = 1$ and a duty service s_1 .
it is even possible to calculate the motor-size necessary by using the formula:

$$P_{n1} \text{ [kW]} = \frac{M_{r2} \cdot n_2}{9550} \cdot ?$$

since the value calculated in this way could not really correspond to an input power actually available in the iec standardised motors, it will be necessary to choose, among the input powers available, the one which is immediately higher, checking this in the motive catalogue of the motors.

Efficiency η [%]

An inherent factor in the selection worm-gear boxes is the efficiency η , defined as the ratio between the mechanical power coming out from the output shaft, and the power in the input shaft:

$$\eta = \frac{P_{n2}}{P_{n1}}$$

the efficiency in helical gearboxes is mainly determined by the gearing and

bearing friction.
the efficiency of enDURo varies with the nr of stages: it's 94% when the reduction stages are 3, 96% when the stages are 2.
the starting efficiency is always less than the efficiency at rated speed

Gear ratio i

it is the relationship of the input speed n_1 and the output speed n_2

$$i = \frac{n_1}{n_2}$$

in the combined, the total ratio is the result of the product of the ratio of the two single boxes.

Input speed n_1 [rpm]

it is the speed the oBX unit is driven at.

Output speed n_2 [rpm]

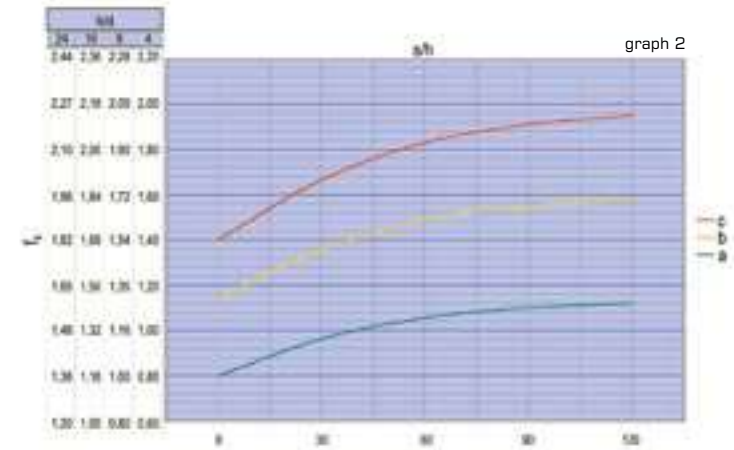
it is the rotation speed of the output shaft.

Service factor f_s

it is a numeric value describing the BoX unit service duty. With unavoidable approximation, it takes into consideration:

- the daily working hours **h/d**
- the load classification (see table 2), and then the moment of inertia of the driven masses.
- the number of starts per hour **s/h**
- the presence of brake motors, for which it is necessary to multiply for 1.12 the service factor value deducted by the graph 2.
- the significance of the application in terms of safety, for example lifting of parts

in the graph 2, the service factor f_{sr} required by a certain application can be attained, after having selected the proper "daily working hours" (h/d) column, by intersecting the number of starts per hour (s/h) and one of the a, b or c curves. the curves a, b and c are linked with the load



tab. 2

load classification	application
c uneven operation, heavy loads, larger masses to be accelerated	conveyors with violent jerks; compressors and alternate pumps with 1 or more cylinders; machinery for bricks, tiles and clay; kneaders; milling machines; lifting winches with bucket rotting furnaces; heavy fans or mining purposes; mixers for heavy materials; machine-tool planing kinds; alternating saws; shears; tumbling barrels; vibrators; shredders; turntable
b starting with moderate loads, uneven operating conditions, medium size masses to be accelerated	belt conveyors with varied load with transfer of bridge trucks for light duty; levelling machines; shakers and mixer for liquid with variable density and viscosity; machines for the food industry (kneading troughs, mincing machines, slicing machines, etc); sifting machines for sand gravel; textile industry machines; cranes, hoists, goodstifts; fertilizer scrapers; concrete mixers; folding machines; winches; crane mechanisms
a easy starting, smooth operation, small masses to be accelerated	belt conveyors for light material; centrifugal pumps; rotary gear pumps; screw feeders for light materials; lifts; bottling machines; auxiliary controls of tool machines; fans; power generators; fillers; small mixers

classification described in the table 2. if, after the selection of the right M_2 and n_2 in the following performance tables, you don't find a enDURo unit whose service factor $f_s \geq$ of the requested one f_{sr} , you can choose an enDURo unit in which $M_{n2} > M_{r2}$. in fact, in order to satisfy f_s , you can choose another BoX unit whose output torque is $\geq M_{c2}$ output torque, where:
 $M_{c2} = M_{r2} \cdot f_{sr}$
note: this rule is valid only if the new BoX unit that has been selected in this way has a service factor $f_s \geq 1$ in the performance tables.
from another point of view, the value $g_{fr} f$

the performance tables refers to a case in which the effective torque requested by the application M_{r2} matches perfectly with the one appearing on the catalog M_{n2} . Whenever the torque indicated in the performance table is higher than the requested one, the offered service factor of the performance table can be increased according to the formula:

$$f_{s \text{ real}} = \frac{f_s \text{ on the table} \cdot M_2 \text{ on the table}}{M_{r2}}$$

the value of f_s calculated in this way must be $\geq f_{sr}$.

Configure what you need by this automatic consultant, and get CAD files and data sheets

Rotomotive configurator allows you to shape rotomotive products, combine them as you want, and finally to download 2D/3D CAD drawings, and a PDF datasheet.

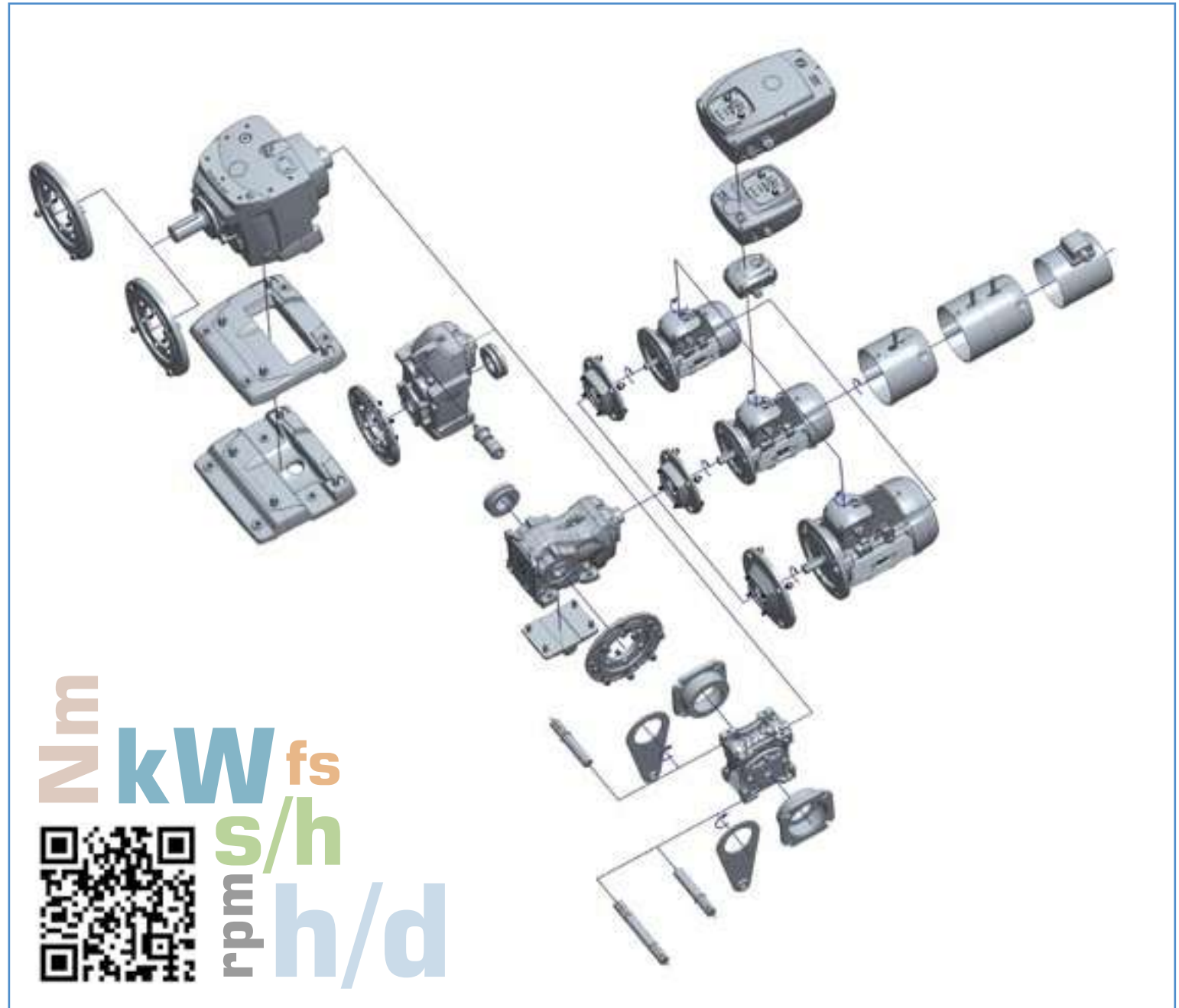
Search by performance

If you're not sure about the best products combination that you should select for your purpose, you can input your wishes, like final torque, final speed, use, etc, and the configurator will act like a consultant.

It will give you a list of applicable product configurations; you can then download a PDF data sheet featuring performance data and dimensional drawings for each configuration, as well as 2D and 3D drawings.

Search by product

To be used if you already know the product configuration that you want, and you just want to get quicker a PDF data sheet featuring performance data and dimensional drawings for 2D and 3D drawings.



PERFORMANCE TABLE



ENDURO 3 (230 Nm)		INPUT				fs	OUTPUT			INPUT B5 IEC 72-1				
ratio i: rated	ratio i: real	kW	Hp	motor	n ₁ [rpm]		n ₂ [rpm]	M ₂ [Nm]	M ₂ [Kgm]	63	71	80	90	100/112
120	115,07	0,13	0,18	71B-8	651	1,18	5,7	206,28	21,03					
		0,18	0,25	80A-8	650	0,85	5,6	286,05	29,16					
		0,18	0,25	71A-6	910	1,19	7,9	204,32	20,83					
		0,18	0,25	63B-4	1393	1,61	11,6	139,20	14,19					
		0,25	0,34	71B-6	910	0,85	7,9	283,78	28,93					
		0,25	0,35	71A-4	1400	1,22	12,2	184,46	18,80					
		0,37	0,5	71B-4	1450	0,85	12,6	263,59	26,87					
110	106,21	0,13	0,18	71B-8	651	1,18	6,1	190,39	19,41					
		0,18	0,25	80A-8	650	0,85	6,1	264,02	26,91					
		0,18	0,25	71A-6	910	1,19	8,6	188,59	19,22					
		0,18	0,25	63B-4	1393	1,62	12,7	127,60	13,01					
		0,25	0,35	71A-4	1400	1,22	13,2	170,25	17,35					
		0,37	0,5	71B-4	1450	0,85	13,7	243,28	24,80					
100	96,33	0,18	0,25	71A-6	921	1,50	9,6	169,00	17,23					
		0,18	0,25	63B-4	1393	1,82	13,9	116,00	11,82					
		0,25	0,35	71A-4	1400	1,37	14,5	154,41	15,74					
		0,37	0,5	71B-4	1450	0,96	15,1	220,65	22,49					
90	92,84	0,18	0,25	71A-6	921	1,25	9,9	162,88	16,60					
		0,18	0,25	63B-4	1393	1,95	15,5	104,40	10,64					
		0,25	0,35	71A-4	1400	1,37	15,1	148,82	15,17					
		0,25	0,35	71B-6	910	0,89	9,8	228,96	23,34					
		0,37	0,5	71B-4	1450	0,96	15,6	212,67	21,68					
75	75,58	0,18	0,25	63B-4	1393	2,52	18,6	87,00	8,87					
		0,25	0,35	71A-4	1400	1,81	18,5	121,16	12,35					
		0,37	0,5	71B-4	1450	1,27	19,2	173,13	17,65					
		0,55	0,74	80A-4	1450	0,85	19,2	257,35	26,23					
60	59,67	0,18	0,25	63B-4	1393	3,11	23,2	69,60	7,09					
		0,25	0,34	71B-6	910	1,49	15,3	147,15	15,00					
		0,25	0,35	71A-4	1400	2,26	23,5	95,65	9,75					
		0,37	0,5	71B-4	1450	1,58	24,3	136,68	13,93					
		0,55	0,74	80A-4	1450	1,06	24,3	203,17	20,71					
		0,18	0,25	71A-6	921	2,06	15,4	104,68	10,67					
55	55,18	0,18	0,25	63B-4	1393	2,82	25,3	63,80	6,50					
		0,25	0,35	71B-6	910	1,59	16,5	136,09	13,87					
		0,25	0,35	71A-4	1400	2,03	25,4	88,46	9,02					
		0,37	0,5	71B-4	1450	1,42	26,3	126,41	12,89					
		0,55	0,74	80A-4	1450	0,96	26,3	187,90	19,15					
50	50,05	0,25	0,34	71B-6	910	1,46	18,2	123,43	12,58					
		0,25	0,35	71A-4	1400	2,24	28,0	80,23	8,18					
		0,37	0,5	71B-4	1450	1,57	29,0	114,65	11,69					
		0,55	0,75	80A-4	1450	1,06	29,0	170,42	17,37					
40	39,27	0,25	0,35	71A-4	1400	3,14	35,7	62,95	6,42					
		0,37	0,5	71B-4	1450	2,20	36,9	89,96	9,17					
		0,55	0,75	80A-4	1450	1,48	36,9	133,72	13,63					
		0,75	1	80B-4	1450	0,96	36,9	182,34	18,59					

ENDURO 3 (230 Nm)		INPUT				fs	OUTPUT			INPUT B5 IEC 72-1				
ratio i: rated	ratio i: real	kW	Hp	motor	n ₁ [rpm]		n ₂ [rpm]	M ₂ [Nm]	M ₂ [Kgm]	63	71	80	90	100/112
35	33,18	0,25	0,35	71A-4	1400	3,28	42,2	53,20	5,42					
		0,37	0,5	71B-4	1450	2,30	43,7	76,01	7,75					
		0,55	0,75	80A-4	1450	1,55	43,7	112,99	11,52					
		0,75	1	80B-4	1450	1,06	43,7	154,08	15,71					
32	32,19	0,37	0,5	71B-4	1450	2,22	45,0	73,75	7,52					
		0,55	0,75	80A-4	1450	1,50	45,0	109,62	11,17					
		0,75	1	80B-4	1450	1,10	45,0	149,49	15,24					
30	31,00	0,37	0,5	71B-4	1450	3,28	46,8	71,02	7,24					
		0,55	0,75	80A-4	1450	2,21	46,8	105,57	10,76					
		0,75	1	80B-4	1450	1,62	46,8	143,95	14,67					
25	26,04	0,37	0,5	71B-4	1450	3,77	55,7	59,64	6,08					
		0,55	0,75	80A-4	1450	2,53	55,7	88,66	9,04					
		0,75	1	80B-4	1450	1,86	55,7	120,90	12,32					
20	20,56	1,1	1,5	90S-4	1450	0,96	55,7	177,31	18,07					
		0,37	0,5	71B-4	1450	3,61	70,5	47,09	4,80					
		0,55	0,75	80A-4	1450	2,43	70,5	69,99	7,13					
17	17,24	0,75	1	80B-4	1450	1,78	70,5	95,44	9,73					
		1,5	2	90L-4	1450	1,16	70,5	190,89	19,46					
		0,37	0,5	71B-4	1450	5,58	84,1	39,50	4,03					
13	13,53	0,55	0,75	80A-4	1450	3,76	84,1	58,71	5,98					
		0,75	1	80B-4	1450	2,75	84,1	80,06	8,16					
		1,1	1,5	90S-4	1450	0,97	84,1	117,42	11,97					
10	11,09	0,37	0,5	71B-4	1450	3,67	107,2	30,99	3,16					
		0,55	0,75	80A-4	1450	2,47	107,2	46,07	4,70					
		0,75	1	80B-4	1450	1,81	107,2	62,82	6,40					
7	8,86	1,1	1,5	90S-4	1450	1,12	107,2	92,13	9,39					
		0,55	0,75	80A-4	1450	2,73	130,7	37,76	3,85					
		0,75	1,00	80B-4	1450	2,00	130,7	51,50	5,25					
5	5,76	1,1	1,5	90S-4	1450	1,36	130,7	75,53	7,70					
		1,5	2	90L-4	1450	1,17	130,7	102,99	10,50					
		0,75	1	80B-4	1450	2,47	163,6	41,15	4,19					
		1,1	1,5	90S-4	1450	1,68	163,6	60,35	6,15					
		1,5	2	90L-4	1450	1,23	163,6	82,30	8,39					
4	4,73	2,2	3	90L-2	2859	1,44	322,6	61,22	6,24					
		1,1	1,5	90S-4	1450	2,24	251,6	39,24	4,00					
		1,5	2	90L-4	1450	1,64	251,6	53,51	5,46					
		2,2	3	100LA-4	1450	1,17	251,6	78,49	8,00					
4	4,73	2,2	3	90L-2	2859	2,59	496,1	39,81	4,06					
		3	4	100L-2	2882	1,91	500,1	53,85	5,49					
		0,75	1	80B-4	1450	4,69	306,9	21,94	2,24					
		1,1	1,5	90S-4	1450	3,20	306,9	32,18	3,28					
		1,5	2	90L-4	1450	2,35	306,9	43,88	4,47					
		2,2	3	100LA-4	1450	1,28	306,9	64,36	6,56					
4	4,73	2,2	3	90L-2	2859	2,30	605,1	32,64	3,33					
		3	4	100L-2	2882	1,70	609,9	44,15	4,50					

PERFORMANCE TABLE



ENDURO 4 (400 nm)		inpUt				fs	oUtpUt			inpUt B5 iec 72-1				
ratio i: rated	ratio i: real	kW	Hp	motor	n ₁ [rpm]		n ₂ [rpm]	m ₂ [nm]	m ₂ [Kgm]	63	71	80	90	100/112
120	116,81	0,37	0,5	71B-4	1450	1,24	12,4	267,58	27,28					
		0,25	0,35	71B-6	910	1,24	7,8	288,08	29,37					
		0,25	0,35	71A-4	1400	1,91	12,0	187,25	19,09					
		0,18	0,25	80A-8	650	1,24	5,6	290,38	29,60					
		0,18	0,25	71A-6	921	1,76	7,9	204,94	20,89					
		0,13	0,18	71B-8	651	1,73	5,6	209,40	21,35					
110	108,86	0,37	0,5	71B-4	1450	1,24	13,3	249,36	25,42					
		0,25	0,35	71B-6	910	1,24	8,4	268,47	27,37					
		0,25	0,35	71A-4	1400	1,91	12,9	174,50	17,79					
		0,18	0,25	80A-8	650	1,24	6,0	270,62	27,59					
		0,18	0,25	71A-6	921	1,76	8,5	190,99	19,47					
		0,13	0,18	71B-8	651	1,73	6,0	195,14	19,89					
100	96,90	0,55	0,75	80A-4	1450	1,11	15,0	329,94	33,63					
		0,37	0,5	71B-4	1450	1,64	15,0	221,96	22,63					
		0,25	0,35	71A-4	1400	2,35	14,4	155,33	15,83					
85	86,89	0,55	0,75	80A-4	1450	1,24	16,7	295,85	30,16					
		0,37	0,5	71B-4	1450	1,85	16,7	199,03	20,29					
		0,25	0,35	71A-4	1400	2,64	16,1	139,28	14,20					
75	76,33	0,75	1	80B-4	1450	1,11	19,0	354,43	36,13					
		0,55	0,75	80A-4	1450	1,51	19,0	259,92	26,50					
		0,37	0,5	71B-4	1450	2,24	19,0	174,85	17,82					
		0,25	0,35	71A-4	1400	3,20	18,3	122,36	12,47					
70	71,78	0,75	1	80B-4	1450	1,11	20,2	333,27	33,97					
		0,55	0,75	80A-4	1450	1,51	20,2	244,40	24,91					
		0,37	0,5	71B-4	1450	2,24	20,2	164,41	16,76					
		0,25	0,35	71A-4	1400	3,20	19,5	115,06	11,73					
60	58,99	0,75	1	80B-4	1450	1,11	24,6	273,90	27,92					
		0,55	0,75	80A-4	1450	1,51	24,6	200,86	20,47					
		0,37	0,5	71B-4	1450	2,24	24,6	135,12	13,77					
		0,25	0,35	71A-4	1400	3,20	23,7	94,56	9,64					
55	53,29	1,1	1,5	80B-4	1450	1,24	27,2	362,90	36,99					
		0,55	0,75	80A-4	1450	2,49	27,2	181,45	18,50					
		0,37	0,5	71B-4	1450	3,70	27,2	122,06	12,44					
		0,25	0,35	71A-4	1400	5,29	26,3	85,42	8,71					
50	47,08	1,1	1,5	80B-4	1450	1,24	30,8	320,63	32,68					
		0,55	0,75	80A-4	1450	2,49	30,8	160,31	16,34					
		0,37	0,5	71B-4	1450	3,70	30,8	107,85	10,99					
		0,25	0,35	71A-4	1400	5,29	29,7	75,47	7,69					
40	41,36	1,1	1,5	80B-4	1450	1,11	35,1	281,68	28,71					
		0,55	0,75	80A-4	1450	2,21	35,1	140,84	14,36					
		0,37	0,5	71B-4	1450	3,29	35,1	94,75	9,66					
		0,25	0,35	71A-4	1400	4,70	33,8	66,31	6,76					
35	37,50	1,1	1,5	90s-4	1450	1,31	38,7	255,39	26,03					
		0,75	1	80B-4	1450	1,93	38,7	174,13	17,75					
		0,55	0,75	80A-4	1450	2,63	38,7	127,70	13,02					
		0,37	0,5	71B-4	1450	3,91	38,7	85,90	8,76					
30	29,93	1,10	1,50	90s-4	1450	1,38	48,4	203,84	20,78					
		0,75	1	80B-4	1450	2,03	48,4	138,98	14,17					
		0,55	0,75	80A-4	1450	2,77	48,4	101,92	10,39					
		0,37	0,5	71B-4	1450	4,11	48,4	68,56	6,99					

ENDURO 4 (400 nm)		inpUt				fs	oUtpUt			inpUt B5 iec 72-1				
ratio i: rated	ratio i: real	kW	Hp	motor	n ₁ [rpm]		n ₂ [rpm]	m ₂ [nm]	m ₂ [Kgm]	63	71	80	90	100/112
25	26,30	1,1	1,5	90s-4	1450	1,38	55,1	179,08	18,25					
		0,75	1	80B-4	1450	2,03	55,1	122,10	12,45					
		0,55	0,75	80A-4	1450	2,77	55,1	89,54	9,13					
		0,37	0,5	71B-4	1450	4,11	55,1	60,24	6,14					
20	20,65	1,5	2	90L-4	1450	1,33	70,2	191,74	19,55					
		1,1	1,5	90s-4	1450	1,81	70,2	140,61	14,33					
		0,75	1	80B-4	1450	2,66	70,2	95,87	9,77					
17	18,36	0,55	0,75	80A-4	1450	3,62	70,2	70,30	7,17					
		1,5	2	90L-4	1450	1,38	79,0	170,48	17,38					
		1,1	1,5	90s-4	1450	1,89	79,0	125,02	12,74					
16	16,22	0,75	1	80B-4	1450	2,77	79,0	85,24	8,69					
		0,55	0,75	80A-4	1450	3,77	79,0	62,51	6,37					
		2,2	3	100LA-4	1450	1,38	89,4	220,91	22,52					
		1,90	2,6	90LB-4	1415	1,56	87,2	195,51	19,93					
15	14,25	1,5	2	90L-4	1450	2,03	89,4	150,62	15,35					
		1,1	1,5	90s-4	1450	2,77	89,4	110,46	11,26					
		2,2	3	100LA-4	1450	1,52	101,8	194,08	19,78					
		1,9	2,6	90LB-4	1415	1,72	99,3	171,76	17,51					
13	13,13	1,5	2	90L-4	1450	2,23	101,8	132,33	13,49					
		1,1	1,5	90s-4	1450	3,04	101,8	97,04	9,89					
		3	4	100LB-4	1450	1,41	110,5	243,80	24,85					
		2,2	3	100LA-4	1450	1,92	110,5	178,78	18,22					
10	9,95	1,9	2,6	90LB-4	1415	2,17	107,8	158,22	16,13					
		1,5	2	90L-4	1450	2,82	110,5	121,90	12,43					
		3	4	100LB-4	1450	1,52	145,8	184,75	18,83					
		2,2	3	100LA-4	1450	2,07	145,8	135,49	13,81					
7	7,11	1,9	2,6	90LB-4	1415	2,34	142,2	119,90	12,22					
		1,5	2	90L-4	1450	3,04	145,8	92,38	9,42					
		4	5,5	112m-4	1450	1,52	203,9	176,14	17,96					
		4	5,5	112m-2	2887	3,73	405,9	88,47	9,02					
5	5,85	3	4	100LB-4	1450	2,50	203,9	132,11	13,47					
		3	4	100L-2	2882	4,97	405,2	66,47	6,78					
		2,2	3	100LA-4	1450	3,41	203,9	96,88	9,88					
		2,2	3	90L-2	2859	6,72	402,0	49,13	5,01					
4	4,73	1,90	2,6	90LB-4	1415	3,85	198,9	85,74	8,74					
		4	5,5	112m-4	1450	1,66	247,8	144,93	14,77					
		4	5,5	112m-2	2887	6,14	493,3	72,79	7,42					
		3	4	100LB-4	1450	4,11	247,8	108,69	11,08					
3	3,73	3	4	100L-2	2882	8,17	492,5	54,69	5,57					
		2,2	3	100LA-4	1450	5,60	247,8	79,71	8,13					
		2,2	3	90L-2	2859	11,05	488,5	40,43	4,12					
		1,9	2,6	90LB-4	1415	6,33	241,8	70,54	7,19					
2	2,66	5,5	7,5	112mB-2	2883	2,60	609,7	80,99	8,26					
		4	5,5	112m-4	1450	1,80	306,6	117,11	11,94					
		4	5,5	112m-2	2887	10,09	610,5	58,82	6,00					
		3	4	100LB-4	1450	6,76	306,6	87,83	8,95					
1	1,33	3	4	100L-2	2882	6,76	609,4	44,19	4,50					
		2,2	3	100LA-4	1450	4,64	306,6	64,41	6,57					
		2,2	3	90L-2	2859	4,64	604,6	32,67	3,33					
		1,9	2,6	90LB-4	1415	2,66	299,2	57,00	5,81					



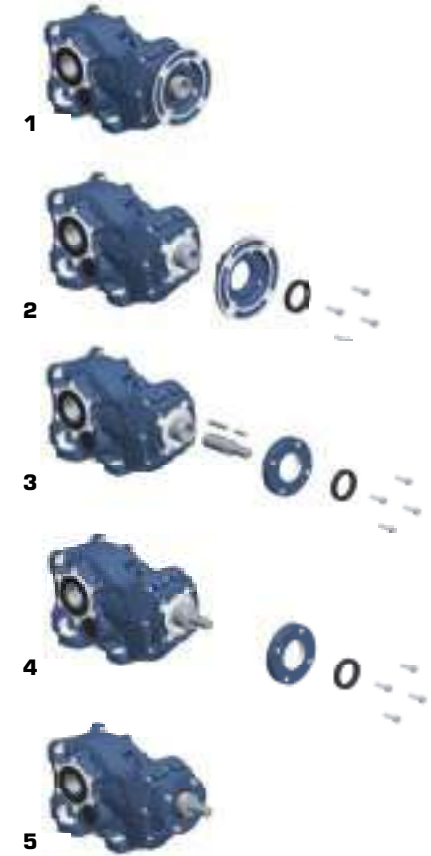
ENDURO 5 (600 nm)		inpUt				fs	oUtpUt			inpUt B5 iec 72-1									
		kW	Hp		n ₁ [rpm]		n ₂ [rpm]	m ₂ [nm]	m ₂ [Kg/m]	63	71	80	90	100/112					
120	118,4	0,55	0,75	80B-6	910	0,85	7,7	642,55	65,50										
		0,37	0,5	80A-6	928	1,29	7,8	423,88	43,21										
		0,37	0,5	90s-8	650	0,96	5,5	605,17	61,69										
		0,75	1	80B-4	1450	0,96	12,2	549,90	56,05										
		0,55	0,75	80A-4	1450	1,44	12,2	403,26	41,11										
		0,37	0,5	71B-4	1366	2,01	11,5	287,96	29,35										
		0,25	0,35	71A-4	1400	3,05	11,8	189,85	19,35										
110	108,3	0,55	0,75	80B-6	910	0,96	8,4	587,56	59,89										
		0,37	0,5	80A-6	928	1,45	8,6	387,60	39,51										
		0,37	0,5	90s-8	650	0,96	6,0	553,37	56,41										
		0,75	1	80B-4	1394	0,96	12,9	523,03	53,32										
		0,55	0,75	80A-4	1450	1,36	13,4	368,74	37,59										
		0,37	0,5	71B-4	1366	1,90	12,6	263,32	26,84										
		0,25	0,35	71A-4	1400	2,88	12,9	173,60	17,70										
100	102,3	0,75	1	80B-4	1394	1,12	13,6	494,31	50,39										
		0,55	0,75	80A-4	1450	1,58	14,2	348,49	35,52										
		0,37	0,5	71B-4	1366	2,22	13,3	248,86	25,37										
		0,25	0,35	71A-4	1400	3,37	13,7	164,06	16,72										
95	95,7	0,75	1	80B-4	1394	1,12	14,6	462,21	47,12										
		0,55	0,75	80A-4	1450	1,58	15,2	325,87	33,22										
		0,37	0,5	71B-4	1366	2,22	14,3	232,70	23,72										
85	84,3	0,25	0,35	71A-4	1400	3,37	14,6	153,41	15,64										
		1,1	1,5	90s-4	1450	1,17	17,2	574,14	58,53										
		0,75	1	80B-4	1394	1,65	16,5	407,19	41,51										
65	65,1	0,55	0,75	80A-4	1450	2,25	16,5	299,25	30,50										
		1,1	1,5	90s-4	1378	1,28	21,2	466,71	47,58										
		0,75	1	80B-4	1450	1,97	22,3	302,41	30,83										
60	58,6	0,55	0,75	80A-4	1450	2,69	22,3	221,77	22,61										
		1,1	1,5	90s-4	1450	1,11	24,7	399,03	40,68										
		0,75	1	80B-4	1450	1,62	24,7	272,06	27,73										
55	56,2	0,55	0,75	80A-4	1450	2,21	24,7	199,51	20,34										
		0,37	0,5	71B-4	1366	3,10	23,3	142,47	14,52										
		1,5	2	90L-4	1450	1,38	25,8	522,12	53,22										
		1,1	1,5	90s-4	1450	1,89	25,8	382,89	39,03										
50	47,3	0,75	1	80B-4	1450	2,77	25,8	261,06	26,61										
		0,55	0,75	80A-4	1450	3,77	25,8	191,45	19,52										
		1,5	2	90L-4	1450	1,11	30,6	439,70	44,82										
		1,1	1,5	90s-4	1450	1,51	30,6	322,45	32,87										
45	46,8	0,75	1	80B-4	1450	2,21	30,6	219,85	22,41										
		0,55	0,75	80A-4	1450	3,02	30,6	161,22	16,43										
		1,5	2	90L-4	1450	1,38	31,0	435,01	44,34										
		1,1	1,5	90s-4	1450	1,89	31,0	319,00	32,52										
43	42,5	0,75	1	80B-4	1450	2,77	31,0	217,50	22,17										
		0,55	0,75	80A-4	1450	3,77	31,0	159,50	16,26										
		1,5	2	90L-4	1450	1,38	34,1	394,99	40,26										
		1,10	1,50	90s-4	1450	1,89	34,1	289,66	29,53										
40	41,7	0,75	1	80B-4	1450	2,77	34,1	197,49	20,13										
		0,55	0,75	80A-4	1450	3,77	34,1	144,83	14,76										
		1,5	2	90L-4	1450	1,24	34,8	387,35	39,49										
		1,1	1,5	90s-4	1450	1,70	34,8	284,06	28,96										
38	37,9	0,75	1	80B-4	1450	2,49	34,8	193,68	19,74										
		0,55	0,75	80A-4	1450	3,39	34,8	142,03	14,48										
		1,5	2	90L-4	1450	1,52	38,3	351,52	35,83										
		1,1	1,5	90s-4	1450	2,07	38,3	257,78	26,28										
35	33,3	0,75	1	80B-4	1450	3,04	38,3	175,76	17,92										
		0,55	0,75	80A-4	1450	4,15	38,3	128,89	13,14										
		2,2	3	100LA-4	1450	1,40	43,5	454,19	46,30										
		1,9	2,6	90LB-4	1415	1,58	42,4	401,95	40,97										
30	32,2	1,5	2	90L-4	1450	2,05	43,5	309,67	31,57										
		1,10	1,50	90s-4	1450	2,79	43,5	227,09	23,15										
		2,2	3	100LA-4	1450	1,11	45,0	438,88	44,74										
		1,9	2,6	90LB-4	1415	1,25	43,9	388,41	39,59										

ENDURO 5 (600 nm)		inpUt				fs	oUtpUt			inpUt B5 iec 72-1								
		kW	Hp		n ₁ [rpm]		n ₂ [rpm]	m ₂ [nm]	m ₂ [Kg/m]	63	71	80	90	100/112				
28	27,8	2,2	3	100LA-4	1450	1,11	52,1	378,87	38,62									
		1,9	2,6	90LB-4	1415	1,25	50,9	335,30	34,18									
		1,5	2	90L-4	1450	1,62	52,1	258,32	26,33									
25	25,8	1,1	1,5	90s-4	1450	2,21	52,1	189,44	19,31									
		2,2	3	100LA-4	1450	1,66	56,3	350,87	35,77									
		1,9	2,6	90LB-4	1415	1,88	54,9	310,52	31,65									
23	23,2	1,5	2	90L-4	1450	2,43	56,3	239,23	24,39									
		1,1	1,5	90s-4	1450	3,32	56,3	175,43	17,88									
		3	4	100LB-4	1450	1,18	62,6	430,44	43,88									
		2,2	3	100LA-4	1450	1,60	62,6	315,66	32,18									
22	22,2	1,9	2,6	90LB-4	1415	1,81	61,1	279,36	28,48									
		1,5	2	90L-4	1450	2,35	62,6	215,22	21,94									
		3	4	100LB-4	1450	1,56	65,2	413,04	42,10									
20	21,0	2,2	3	100LA-4	1450	2,13	65,2	302,89	30,88									
		1,9	2,6	90LB-4	1415	2,41	63,6	268,06	27,33									
		1,5	2	90L-4	1450	3,13	65,2	206,52	21,05									
18	18,7	4	5,5	112m-4	1450	1,24	68,9	521,12	53,12									
		3	4	100LB-4	1450	1,66	68,9	390,84	39,84									
		2,2	3	100LA-4	1450	2,26	68,9	286,62	29,22									
16	16,5	1,9	2,6	90LB-4	1415	2,56	67,2	253,66	25,86									
		4	5,5	112m-4	1450	1,18	77,4	463,78	47,28									
		3	4	100LB-4	1450	1,57	77,4	347,83	35,46									
13	12,7	2,2	3	100LA-4	1450	2,14	77,4	255,08	26,00									
		1,9	2,6	90LB-4	1415	2,42	75,6	225,74	23,01									
		4	5,5	112m-4	1450	1,30	87,9	408,56	41,65									
10	11,0	3	4	100LB-4	1450	1,73	87,9	306,42	31,24									
		2,2	3,00	100LA-4	1450	2,36	87,9	224,71	22,91									
		1,9	2,6	90LB-4	1415	2,67	85,8	198,87	20,27									
7	8,3	5	6,8	112mB-4	1450	1,38	113,8	394,53	40,22									
		4	5,5	112m-4	1450	1,73	113,8	315,62	32,17									
		3	4	100LB-4	1450	2,30	113,8	236,72	24,13									
		2,2	3	100LA-4	1450	3,14	113,8	173,59	17,70									
5	5,2	1,9	2,6	90LB-4	1415	3,55	111											

DIMENSIONS

enDURo	motor type		nm	mm	pm	sm	Dm	tm	bm	L (pAm)	B	D1	f	b1	t1	m2	L (mf)	
3	63	B5	95	115	140	m8	11	12,8	4	264,5	40	19	m6X16	6	21,5	50	309,5	
	71	B5	110	130	160		14	16,3	5									
	80	B5	130	165	200	m10	19	21,8	6								265,5	
	90	B5					24	27,3	8									
4	100/112	B5	180	215	250	m12	28	31,3	8	271,5	40	19	m6X16	6	21,5	50	316	
	71	B5	110	130	160	m8	14	16,3	5									309,5
	80	B5	130	165	200	m10	19	21,8	6								318,5	
	90	B5					24	27,3	8									
5	100/112	B5	180	215	250	m12	28	31,3	8	319,5	50	24	m8X25	8	27	60	363	
	71	B5	110	130	160	m8	14	16,3	5									329,4
	80	B5	130	165	200	m10	19	21,8	6								338,4	
	90	B5					24	27,3	8									
	100/112	B5	180	215	250	m12	28	31,3	8	339,4								

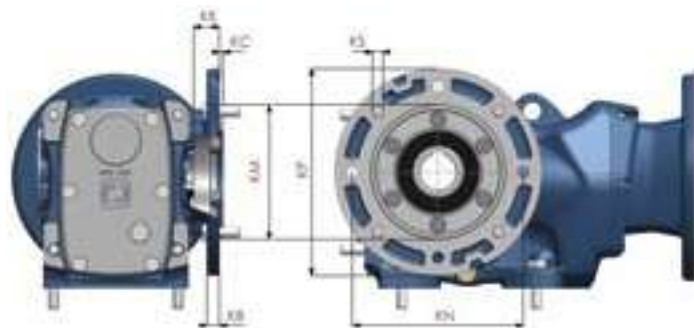
Mf kit



PAM

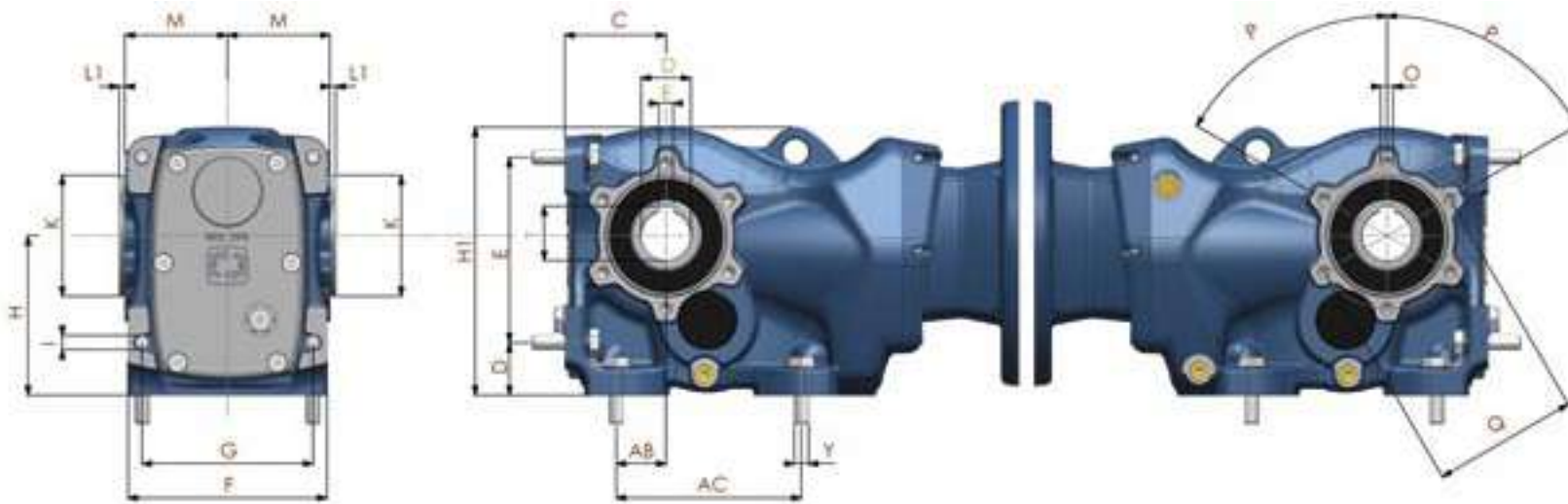


Mf



enDURo	ofL	iec	Kp	Km (jB)	Kn	Ks	KK	KB	Kc (0; -0,5)
3	ofL160	71B5	160	110	130	m8x30	24	10	3,5
4	ofL200	80/90B5	200	130	165	m10x30	25	12	3,5
5	ofL250	100/112B5	250	180	215	m12x40	23,5	12	4

DIMENSIONS

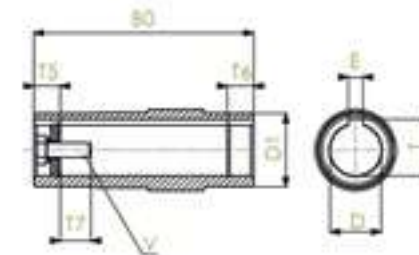
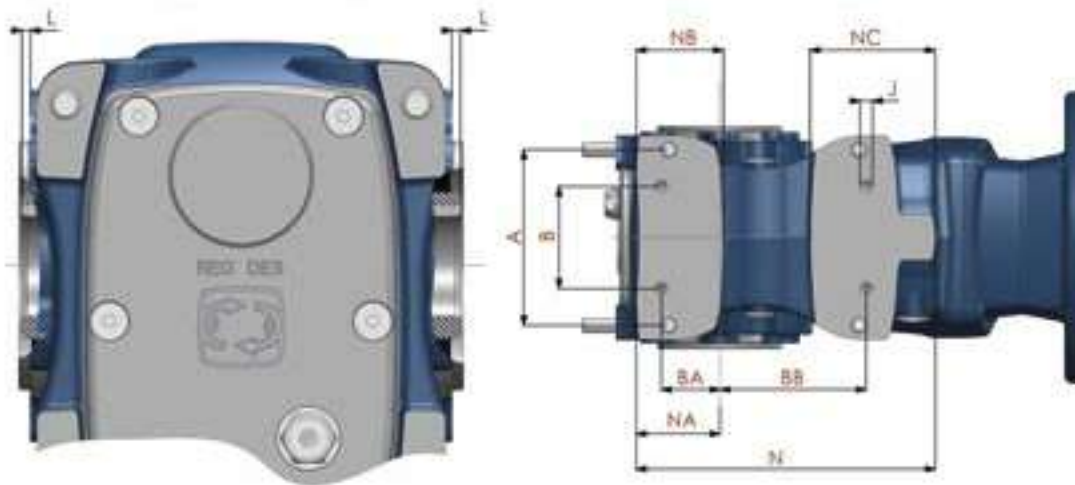


foot mounting

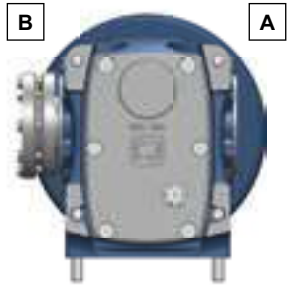
enDURo	A	AB	Ac	B	BA	BB	c	D	e	f	G	H	H1	i	J	K (Ø h8)	L	L1	m	n	nA	nB	nc	o	p	Q	Y
3	100	28	110	60	35	82	63	32	115	119	100	100	164,5	m10x30	m10	80	2	2,6	58	149	50,5	49	41	m8	60°	94	m10x35
4	120	35	130	70	40	100	71	37	130	139,5	120	112	188	m10x40	m10	85	3	4	72	204	57	59,5	85,5	m10	60°	102	m10x40
5	130	30	130	88	47	105	80	45	150	157,5	130	132	218	m12x40	m12	105	3	3	80	200	65	66	65	m12	60°	125	m12x45

standard output shaft

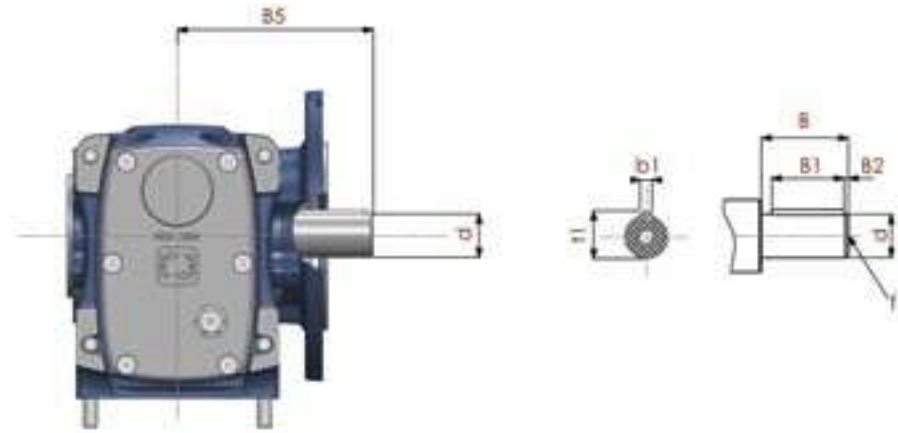
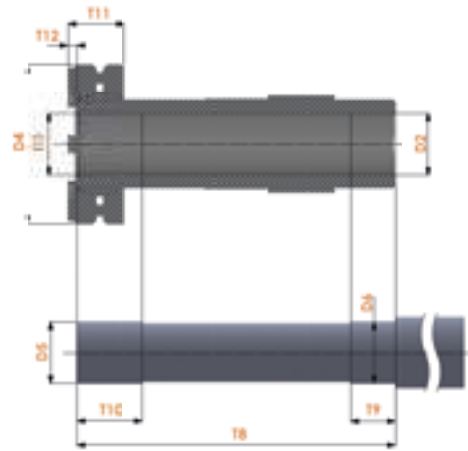
enDURo	ØD1 (k6)	ØD (H7)	B0 (+0,2;0)	t5	t6	V	t (+0,2;0)	e (e9)
3	45	30	120	15	15	iso 4017 m10x25	33,3	8
4	50	35	150	18	18	iso 4017 m12x30	38,5	10
5	55	40	166	24	24	iso 4017 m16x40	43,3	12



DIMENSIONS



in standard configuration, the shrink disc is mounted on B side



shrink disc shaft

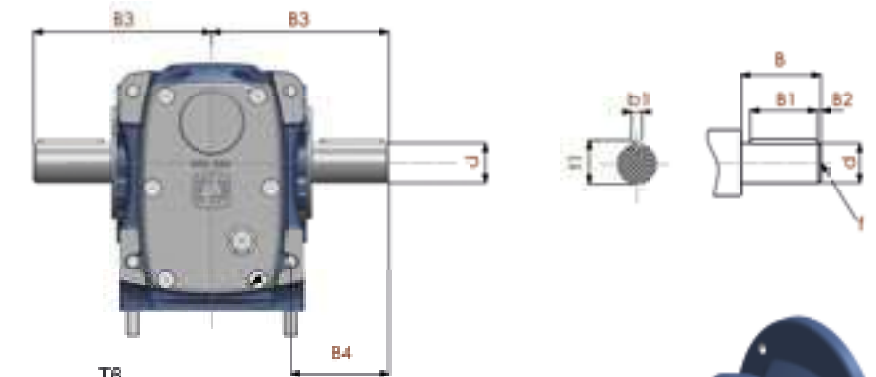
enDURo	D2 (Øh6)	D4 (Ø)	D5 (Øh6)	ØD6 (h6)	t8 (±0,1)	t9	t10	t11	t12
3	30	80	30	30	150	20	31	24,2	5,3
4	35	90	35	35	180	20	32	26,1	5,3
5	40	100	40	40	200	20	26	29	5,3

single and double output shaft

enDURo	d (k6)	B	B1	B2	B3	B4	B5	b1	t1	f
3	25	50	40	5	110	60	134	8	28	m10x20
4	30	60	50	3	135	75	160	8	33	m10x20
5	35	70	56	5	153	88	176,5	10	38	m12x24

torque arm

enDURo	t1	t2	t3	t4	t5	R	?	m	t6	t7	d ± 0.08
3	100	10	140	20	23,5	22,5	60	n°4 m10	36	31	Ø10,4
4	112	12	160	20	30	22,5	55	n°4 m10	36	31	Ø10,4
5	132	13	192	18	40	29	55	n°4 m12	60	54	Ø16,4





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