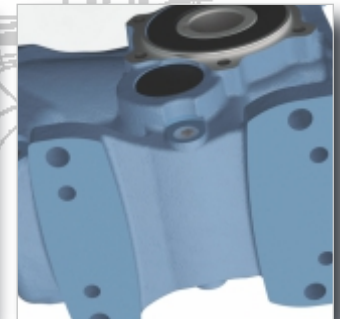
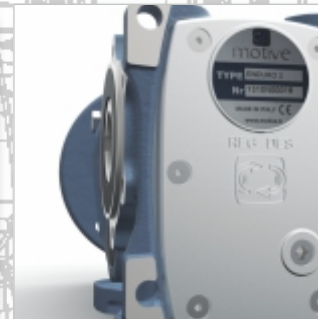
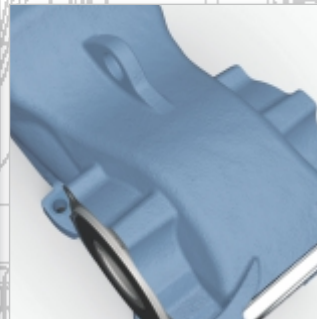
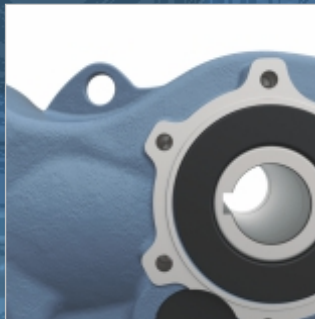
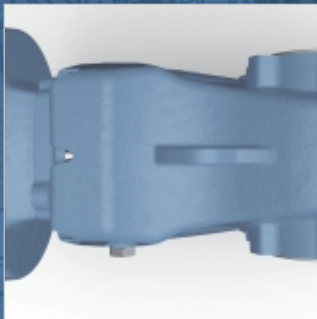


ENDURO BEVEL HELICAL GEARBOX



rotomotive
looks good. performs better.





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: 12615.

Our Manufacturing facility in India



Gearbox machining



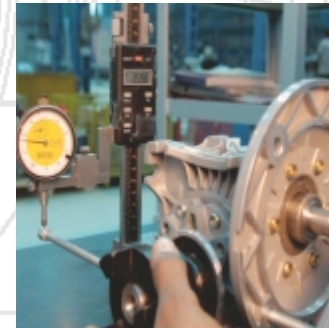
Lean Assembly Line



Geared Motor Testing



Hardness Testing



Backlash Checking



Shop Floor



Our Manufacturing facility in Italy

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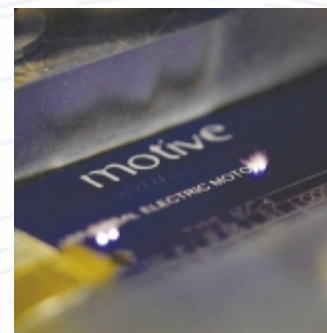
A



B



C



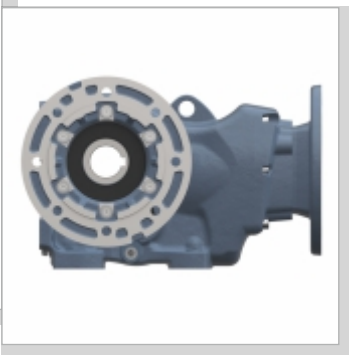
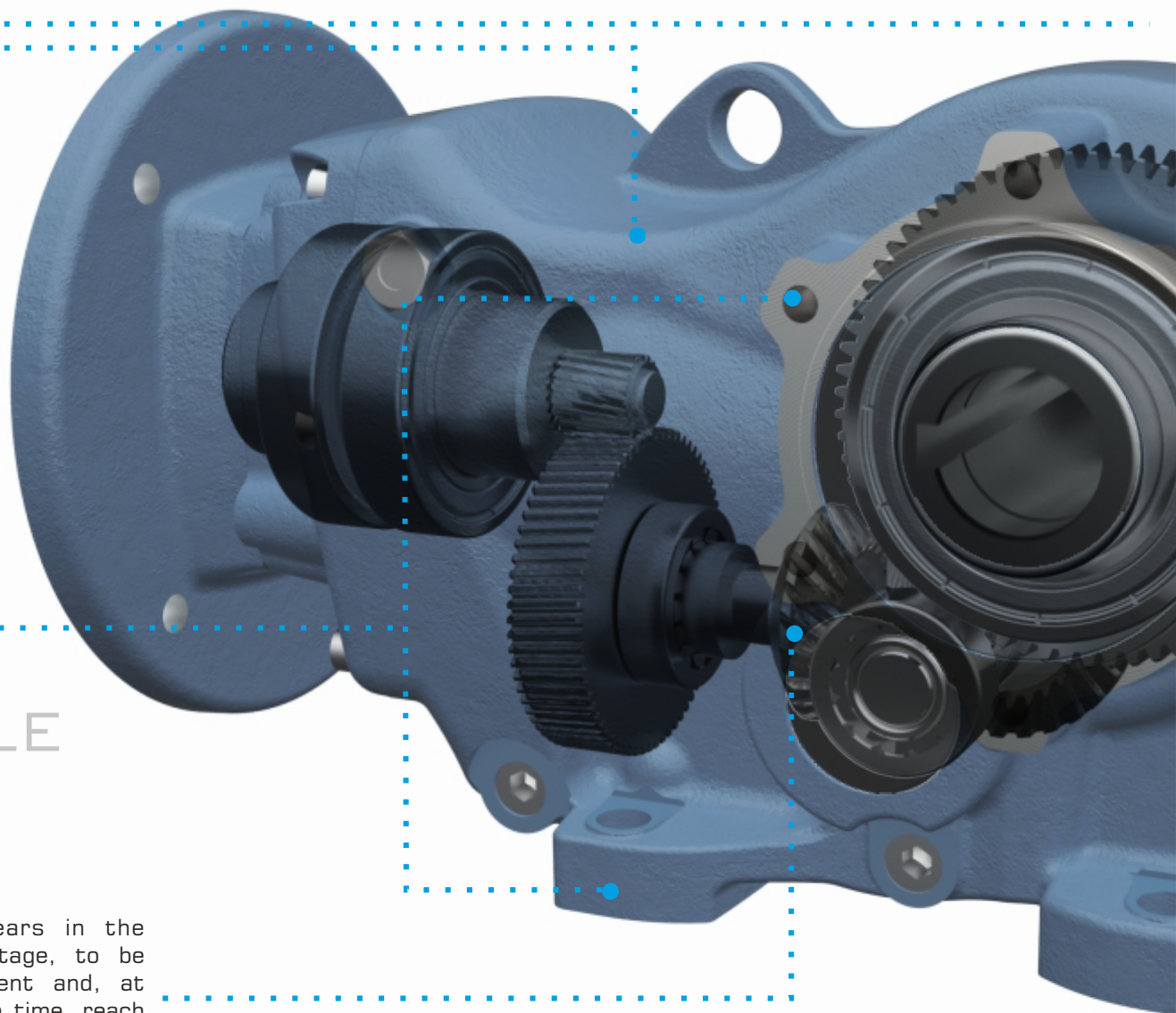
D





ROBUST

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



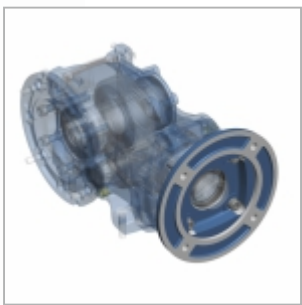
A modular design with detachable output flange and integral feet permits the easy and fast conversion between flange or foot mounting

VERSATILE



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

REGISTERED DESIGN



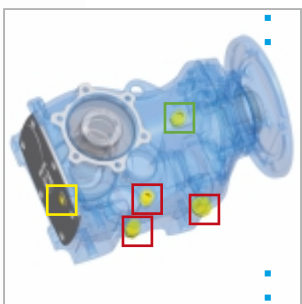
IEC flange and hollow shaft.

Choice of hollow input shaft & input flanges permits direct mounting of any IEC standard motor.



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

+ZZ pre-lubricated bearings on input and output shaft



5 interchangeable plugs, including one breather plug and a level plug. Breather plug allows to reduce the internal pressure on seals and thus increases the efficiency of the seals.



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



Use of high strength case hardened steels with case hardening to 58 ± 2 HRC reduce the wear rate. All components are profile ground to Din 3962 class 6 accuracy for low noise and high efficiency. Bevel pairs are lapped.



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 capability



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

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:

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

Torque demand M_{r2} [Nm]

Torque calculated based on application requirements. It must be $\leq M_{n2}$ of the chosen ENDURO 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:

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

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 Rotomotive catalogue of the motors.

Efficiency η [%]

An inherent factor in the selection of 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 is 94 %.

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 ENDURO unit is driven at.

Output speed n_2 [rpm]

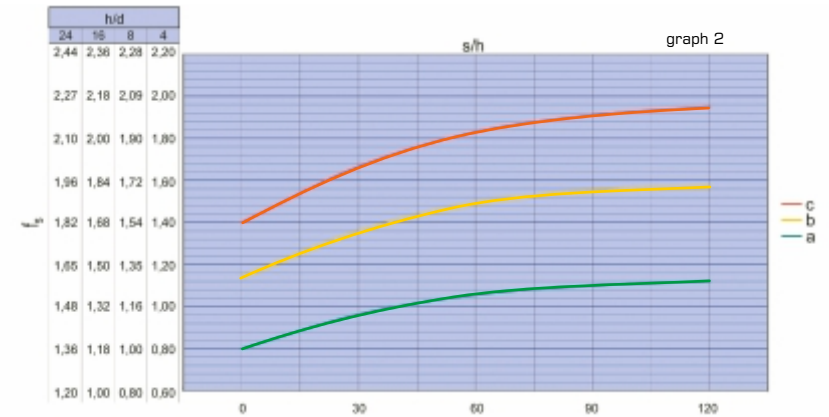
It is the rotation speed of the output shaft.

Service factor f_s

It is a numeric value describing the ENDURO 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 buckets; roasting furnaces; heavy fans or mining purposes; mixers for heavy materials; machine-tools; planing kinds; alternating saws; shears; tumbling barrels; vibrators; shredders; turntables
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 mixed 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 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_{r2} and n_2 in the following performance tables, you don't find an ENDURO unit whose service factor f_s is $\geq$ 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_{sr} , you can choose another ENDURO 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 ENDURO 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 of f_s in

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 catalogue 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:

$$f_{s \text{ real}} = \frac{f_s \text{ on the table} \cdot M_{n2} \text{ on the table}}{M_{r2}}$$

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

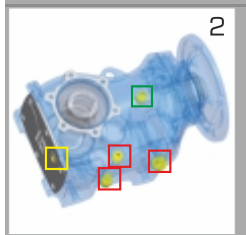
Each ENDURO is supplied with long-life synthetic oil and do not require any maintenance.
The oil quantity is suitable for B3 mounting position

ENDURO	Oil (ltr)						ISO	Temp.	Oil Type
	B3	B6	B7	B8	V5	V6			
EN020	0.37	1.20	1.20	1.25	1.40	1.00	VG 220	-25 +80°C	Mobil SHC 630 Shell Tivela S220 Klubersynth GH6-220
EN040	0.65	2.00	2.00	2.10	1.90	1.85			
EN060	0.90	2.90	2.90	3.00	2.80	2.50			
EN150	1.60	5.70	5.80	6.60	6.80	5.50			
EN270	2.50	10.00	10.30	10.80	10.40	9.10			
EN430	5.80	17.60	18.20	20.00	20.50	16.50			

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:



ZZ per-lubricated bearings on input and output shaft

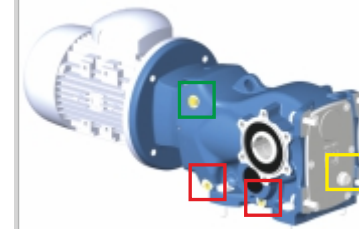


5 interchangeable plugs, including one breather plug and a level plug. Level and breather plug must be positioned according to this chart

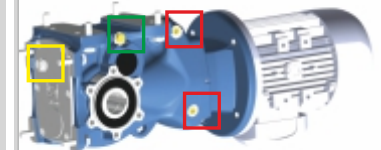


Mechanical parts locked in their positions by circlips. This also ensures better absorption of axial thrust and prolongs the life of bearings

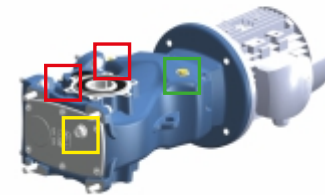
B3



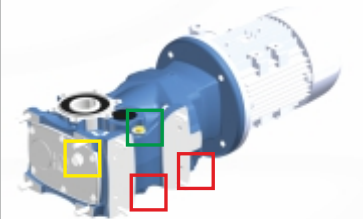
B8



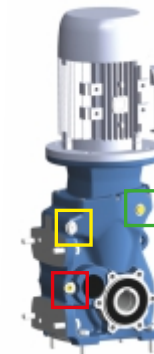
B6



B7



V5



V6



breather plug



level plug



filler plug

PERFORMANCE TABLE

ENDURO020																			Peak torque = 230 Nm				
Input: 63, 71, 80, 90, 100, 112	Rated ratio	4	5	7	10	13	17	20	25	30	32	35	40	50	55	60	75	90	100	110	120		
	Real ratio	4.73	5.76	8.86	11.09	13.53	17.24	20.56	26.04	31.0	32.19	33.18	39.27	50.05	55.18	59.67	75.58	92.84	96.33	106.21	115.07		
	Stages	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
	ENDURO 020 with 2 pole / 2880 RPM motors																						
	kW	Frame	Torque (Nm)																				
	Speed (rpm)	608.9	500.0	325.1	259.7	212.9	167.1	140.1	110.6	92.9	89.5	86.8	73.3	57.5	52.2	48.3	38.1	31.0	29.9	27.1	25.0		
	0.18	63A	2.7	3.2	5.0	6.2	7.6	9.7	11.5	14.6	17.4	18.1	18.6	22.0	28.1	31.0	33.5	42.4	52.1	54.0	59.6	64.6	
	0.25	63B	3.7	4.5	6.9	8.6	10.5	13.4	16.0	20.3	24.2	25.1	25.9	30.6	39.0	43.0	46.5	58.9	72.3	75.1	82.8	89.7	
	0.37	71A	5.5	6.6	10.2	12.8	15.6	19.9	23.7	30.0	35.8	37.1	38.3	45.3	57.7	63.6	68.8	87.2	107.1	111.1	122.5	132.7	
	0.55	71B	8.1	9.9	15.2	19.0	23.2	29.6	35.2	44.6	53.1	55.2	56.9	67.3	85.8	94.6	102.3	129.6	159.2	165.1	182.1	197.3	
	0.75	80A	11.1	13.5	20.7	25.9	31.6	40.3	48.1	60.9	72.5	75.3	77.6	91.8	117.0	129.0	139.5	176.7	217.0	ENDURO 040			
	1.1	80B	16.2	19.7	30.4	38.0	46.4	59.1	70.5	89.3	106.3	110.4	113.8	134.6	171.6	189.2	204.6	ENDURO 040			EN060		
	1.5	90S	22.1	26.9	41.4	51.9	63.3	80.6	96.1	121.8	144.9	150.5	ENDURO 040		ENDURO 060			ENDURO 150					
2.2	90L	32.4	39.5	60.8	76.0	92.8	118.2	141.0	178.6	212.6	220.7	ENDURO 040		ENDURO 060			ENDURO 150						
3.7	100L	54.6	66.4	ENDURO 040							ENDURO 060		ENDURO 150							ENDURO 270			
Output flange: Ø160	ENDURO 020 with 4 pole / 1440 RPM motors																						
	Speed (rpm)	304.4	250.0	162.5	129.8	106.4	83.5	70.0	55.3	46.5	44.7	43.4	36.7	28.8	26.1	24.1	19.1	15.5	14.9	13.6	12.5		
	0.12	63A	3.5	4.3	6.6	8.3	10.1	12.9	15.4	19.5	23.2	24.1	24.8	29.4	37.4	41.3	44.6	56.5	69.5	72.1	79.5	86.1	
	0.18	63B	5.3	6.5	9.9	12.4	15.2	19.3	23.1	29.2	34.8	36.1	37.2	44.1	56.2	61.9	67.0	84.8	104.2	108.1	119.2	129.1	
	0.25	71A	7.4	9.0	13.8	17.3	21.1	26.9	32.0	40.6	48.3	50.2	51.7	61.2	78.0	86.0	93.0	117.8	144.7	150.1	165.5	179.3	
	0.37	71B	10.9	13.3	20.4	25.6	31.2	39.8	47.4	60.1	71.5	74.2	76.5	90.6	115.4	127.3	137.6	174.3	214.1	222.2	ENDURO 040		
	0.55	80A	16.2	19.7	30.4	38.0	46.4	59.1	70.5	89.3	106.3	110.4	113.8	134.6	171.6	189.2	204.6	ENDURO 040			EN060		
	0.75	80B	22.1	26.9	41.4	51.9	63.3	80.6	96.1	121.8	144.9	150.5	155.1	183.6	ENDURO 040			ENDURO 060					
	1.1	90S	32.4	39.5	60.8	76.0	92.8	118.2	141.0	178.6	212.6	220.7	ENDURO 040		ENDURO 060			ENDURO 150					
	1.5	90L	44.2	53.9	82.9	103.7	126.5	161.2	192.3	ENDURO 040				ENDURO 060			ENDURO 150						
	2.2	100LA	64.9	79.0	ENDURO 040						ENDURO 060			ENDURO 150							ENDURO 270		
3.7	112M	109.1	132.9	ENDURO 040			ENDURO 060			ENDURO 150							ENDURO 270			EN430			
Hollow o/p shaft: 30	ENDURO 020 with 6 pole / 960 RPM motors																						
	Speed (rpm)	203.0	166.7	108.4	86.6	71.0	55.7	46.7	36.9	31.0	29.8	28.9	24.4	19.2	17.4	16.1	12.7	10.3	10.0	9.0	8.3		
	0.18	71A	8.0	9.7	14.9	18.7	22.8	29.0	34.6	43.8	52.2	54.2	55.8	66.1	84.2	92.9	100.4	127.2	156.3	162.1	178.8	193.7	
	0.25	71B	11.1	13.5	20.7	25.9	31.6	40.3	48.1	60.9	72.5	75.3	77.6	91.8	117.0	129.0	139.5	176.7	217.0	ENDURO 040			
	0.37	80A	16.4	19.9	30.7	38.4	46.8	59.6	71.1	90.1	107.3	111.4	114.8	135.9	173.2	190.9	206.5	ENDURO 040			EN060		
	0.55	80B	24.3	29.6	45.6	57.0	69.6	88.6	105.7	133.9	159.4	165.6	170.6	202.0	ENDURO 040			ENDURO 060			EN150		
	0.75	90S	33.2	40.4	62.1	77.8	94.9	120.9	144.2	182.6	217.4	225.8	ENDURO 040		ENDURO 060			ENDURO 150					
	1.1	90L	48.7	59.2	91.1	114.1	139.2	177.3	211.5	ENDURO 040				ENDURO 060			ENDURO 150						
	1.5	100L	66.3	80.8	ENDURO 040						ENDURO 060			ENDURO 150							ENDURO 270		
2.2	112M	97.3	118.5	ENDURO 040				ENDURO 060		ENDURO 150							ENDURO 270						

EN020 : Input 90 available upto 32 ratio;
Input 100 & 112 available upto 5 ratio

PERFORMANCE TABLE

ENDURO 040																							Peaktorque= 400Nm		
Input: 71, 80, 90, 100, 112	Rated ratio	4	5	7	10	13	15	16	18	20	25	30	35	40	50	55	60	70	75	85	100	110	120		
	Real ratio	4.73	5.85	7.11	9.95	13.13	14.25	16.22	18.36	20.65	26.3	29.93	37.5	41.36	47.08	53.29	58.99	71.78	76.33	86.89	96.6	108.86	116.81		
	Stages	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
	ENDURO 040 with 2 pole / 2880 RPM motors																								
	kW	Frame	Torque (Nm)																						
	Speed (rpm)	608.9	492.3	405.1	289.4	219.3	202.1	177.6	156.9	139.5	109.5	96.2	76.8	69.6	61.2	54.0	48.8	40.1	37.7	33.1	29.8	26.5	24.7		
	0.37	71A	ENDURO 020																						
	0.55	71B	ENDURO 020																						
	0.75	80A	ENDURO 020																						
	1.1	80B	ENDURO 020																	225.8	254.5	273.1			
1.5	90S	ENDURO 020											175.3	193.4	ENDURO 060				ENDURO 150						
2.2	90L	ENDURO 020											257.2	283.6	ENDURO 060				ENDURO 150						
3.7	100L	ENDURO 020		82.0	114.8	151.4	164.3	187.1	211.7	238.2	303.3	345.2	EN060	ENDURO 150								ENDURO 270			
Output flange: Ø200	ENDURO 040 with 4 pole / 1440 RPM motors																								
	Speed (rpm)	304.4	246.2	202.5	144.7	109.7	101.1	88.8	78.4	69.7	54.8	48.1	38.4	34.8	30.6	27.0	24.4	20.1	18.9	16.6	14.9	13.2	12.3		
	0.25	71A	ENDURO 020																						
	0.37	71B	ENDURO 020																						
	0.55	80A	ENDURO 020																	246.1	261.7	297.9	331.2	373.2	EN060
	0.75	80B	ENDURO 020													220.1	249.2	275.8	335.6	356.9	ENDURO 060				
	1.1	90S	ENDURO 020											257.2	283.6	ENDURO 060				ENDURO 150					
	1.5	90L	ENDURO 020										245.9	279.9	350.7	386.8	ENDURO 060			ENDURO 150					
	2.2	100L	ENDURO 020		97.5	136.5	180.1	195.4	222.5	251.8	283.2	360.7	ENDURO 060		ENDURO 150								ENDURO 270		
3.7	112M	ENDURO 020		164.0	229.5	302.9	328.7	374.1	ENDURO 060			ENDURO 150					ENDURO 270					EN430			
Hollow o/p shaft: 35	ENDURO 040 with 6 pole / 960 RPM motors																								
	Speed (rpm)	203.0	164.1	135.0	96.5	73.1	67.4	59.2	52.3	46.5	36.5	32.1	25.6	23.2	20.4	18.0	16.3	13.4	12.6	11.0	9.9	8.8	8.2		
	0.18	71A	ENDURO 020																						
	0.25	71B	ENDURO 020																						
	0.37	80A	ENDURO 020																	248.4	264.1	300.6	334.2	376.6	EN060
	0.55	80B	ENDURO 020													242.1	274.1	303.4	369.2	392.6	ENDURO 060			EN150	
	0.75	90S	33.2	41.0	49.9	69.8	92.1	99.9	113.8	128.8	144.8	184.4	209.9	263.0	290.1	ENDURO 060				ENDURO 150					
	1.1	90L	48.7	60.2	73.1	102.3	135.1	146.6	166.8	188.9	212.4	270.5	307.9	385.7	ENDURO 060			ENDURO 150							
	1.5	100L	66.3	82.1	99.7	139.6	184.2	199.9	227.5	257.5	289.6	368.9	ENDURO 060		ENDURO 150								ENDURO 270		
2.2	112M	97.3	120.3	146.3	204.7	270.1	293.2	333.7	377.7	ENDURO 060		ENDURO 150					ENDURO 270								

EN040 : Input 90 available upto 40 ratio;
Input 100 & 112 available upto 30 ratio

PERFORMANCE TABLE

ENDURO060																											Peak torque = 600 Nm							
Input: 71, 80, 90, 100, 112	Rated ratio	4	5	7	10	13	16	18	20	22	23	25	28	30	35	38	40	43	45	50	55	60	65	85	95	100	110	120						
	Real ratio	4.21	5.20	8.32	11.00	12.75	16.50	18.73	21.04	22.24	23.18	25.76	27.82	32.22	33.35	37.85	41.71	42.53	46.84	47.35	56.22	58.59	65.13	84.31	95.7	102.4	108.3	118.4						
	Stages	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3						
	ENDURO 060 with 2 pole / 2880 RPM motors																																	
	kW	Frame	Torque (Nm)																															
	Speed (rpm)	684.1	553.8	346.2	261.8	225.9	174.5	153.8	136.9	129.5	124.2	111.8	103.5	89.4	86.4	76.1	69.0	67.7	61.5	60.8	51.2	49.2	44.2	34.2	30.1	28.1	26.6	24.3						
	0.37	71A	ENDURO 020																															
	0.55	71B	ENDURO 020																															
	0.75	80A	ENDURO 020																					ENDURO 040										
	1.1	80B	ENDURO 020																				ENDURO 040						406.1					
1.5	90S	ENDURO 020												ENDURO 040			198.8	219.0	221.4	262.9	273.9	304.5	394.2	ENDURO 150										
2.2	90L	ENDURO 020												ENDURO 040			291.6	321.2	324.7	385.5	401.8	446.6	578.1	ENDURO 150										
3.7	100L	ENDURO 020	ENDURO 040											384.6	ENDURO 150											ENDURO 270								
Output flange: Ø250	ENDURO 060 with 4 pole / 1440 RPM motors																																	
	Speed (rpm)	342.0	276.9	173.1	130.9	112.9	87.3	76.9	68.4	64.7	62.1	55.9	51.8	44.7	43.2	38.0	34.5	33.9	30.7	30.4	25.6	24.6	22.1	17.1	15.0	14.1	13.3	12.2						
	0.25	71A	ENDURO 020																															
	0.37	71B	ENDURO 020																															
	0.55	80A	ENDURO 020																				ENDURO 040						371.3	406.1				
	0.75	80B	ENDURO 020															ENDURO 040					394.2	447.4	478.5	506.3	553.7							
	1.1	90S	ENDURO 020												ENDURO 040					401.8	446.6	578.1	ENDURO 150											
	1.5	90L	ENDURO 020								ENDURO 040							397.7	438.0	442.8	525.7	547.9	ENDURO 150											
	2.2	100L	ENDURO 020	ENDURO 040										381.5	441.9	457.4	ENDURO 150											ENDURO 270						
3.7	112M	ENDURO 020	ENDURO 040					432.0	485.3	513.0	534.7	594.2	ENDURO 150											ENDURO 270				EN430						
Hollow o/p shaft: 40	ENDURO 060 with 6 pole / 960 RPM motors																																	
	Speed (rpm)	228.0	184.6	115.4	87.3	75.3	58.2	51.3	45.6	43.2	41.4	37.3	34.5	29.8	28.8	25.4	23.0	22.6	20.5	20.3	17.1	16.4	14.7	11.4	10.0	9.4	8.9	8.1						
	0.18	71A	ENDURO 020																															
	0.25	71B	ENDURO 020																				ENDURO 040											
	0.37	80A	ENDURO 020																				ENDURO 040						409.8					
	0.55	80B	ENDURO 020															ENDURO 040					433.6	492.2	526.4	556.9	EN150							
	0.75	90S	ENDURO 020												ENDURO 040			298.3	328.5	332.1	394.3	410.9	456.8	591.3	ENDURO 150									
	1.1	90L	ENDURO 020								ENDURO 040							389.3	429.0	437.5	481.8	487.0	578.3	ENDURO 150										
	1.5	100L	ENDURO 020	ENDURO 040										390.2	451.9	467.8	ENDURO 150											ENDURO 270						
2.2	112M	ENDURO 020	ENDURO 040					432.8	457.5	476.9	529.9	572.3	ENDURO 150											ENDURO 270										

EN060 : Input 90 available upto 85 ratio;
Input 100 & 112 available upto 35 ratio

PERFORMANCE TABLE

ENDURO 150																												Peak torque = 1550 Nm							
Input: 90, 100, 112, 132	Rated ratio	7	8	10	13	14	16	18	21	23	24	25	30	35	40	45	47	50	53	58	60	65	75	80	90	100	110	115							
	Real ratio	7.04	8.40	10.0	12.6	14.2	15.7	17.9	21.3	23.1	24.0	25.2	29.7	34.6	40.3	45.2	47.1	50.0	53.8	58.4	60.8	64.1	75.0	80.7	87.6	100.7	109.3	113.8							
	Stages	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3							
	ENDURO 150 with 2 pole / 2880 RPM motors																																		
	kW	Frame	Torque (Nm)																																
	Speed (rpm)	409.0	342.8	289.2	228.6	203.2	183.1	161.2	135.4	124.7	119.8	114.4	97.1	83.1	71.6	63.8	61.1	57.6	53.6	49.3	47.4	45.0	38.4	35.7	32.9	28.6	26.3	25.3							
	1.5	90S	ENDURO 020												ENDURO 040				ENDURO 060										409.5	470.7	511.0	532.0			
	2.2	90L	ENDURO 020												ENDURO 040				ENDURO 060										600.6	690.3	749.5	780.3			
	3.7	100L	ENDURO 040												EN060				464.2	520.9	543.4	576.4	620.2	673.4	701.1	738.8	864.6	930.4	1010	1161	ENDURO 270				
	5.5	132SA	120.7	144.0	170.8	216.0	242.9	269.6	306.4	364.6	396.0	412.2	431.6	508.3	593.9	ENDURO 270								ENDURO 430											
7.5	132SB	164.6	196.4	232.8	294.6	331.3	367.7	417.8	497.2	540.0	562.1	588.5	693.1	809.8	ENDURO 270								ENDURO 430												
Output flange: Ø300	ENDURO 150 with 4 pole / 1440 RPM motors																																		
	Speed (rpm)	204.5	171.4	144.6	114.3	101.6	91.6	80.6	67.7	62.3	59.9	57.2	48.6	41.6	35.8	31.9	30.6	28.8	26.8	24.7	23.7	22.5	19.2	17.9	16.4	14.3	13.2	12.7							
	1.1	90S	ENDURO 020												ENDURO 040				ENDURO 060										600.6	690.3	749.5	780.3			
	1.5	90L	ENDURO 020								ENDURO 040								ENDURO 060								599.0	701.0	754.3	819.1	941.3	1022	1064		
	2.2	100L	ENDURO 040												ENDURO 060				552.0	619.5	646.2	685.5	737.6	800.8	833.7	878.6	1028	1106	1201	1381	ENDURO 270				
	3.7	112M	ENDURO 040								ENDURO 060								683.9	799.0	928.4	1042	1087	1153	1240	1347	1402	1478	ENDURO 270				EN430		
	5.5	132S	241.4	288.1	341.5	432.0	485.8	539.2	612.7	729.3	792.0	824.4	863.1	1017	1188	ENDURO 270								ENDURO 430											
	7.5	132M	329.2	392.8	465.7	589.1	662.5	735.3	835.5	994.5	1080	1124	1177	1386	ENDURO 270								ENDURO 430												
Hollow o/p Shaft: 50	ENDURO 150 with 6 pole / 960 RPM motors																																		
	Speed (rpm)	136.3	114.3	96.4	76.2	67.7	61.0	53.7	45.1	41.6	39.9	38.1	32.4	27.7	23.9	21.3	20.4	19.2	17.9	16.4	15.8	15.0	12.8	11.9	11.0	9.5	8.8	8.4							
	0.75	90S	ENDURO 020												ENDURO 040				ENDURO 060										614.3	706.0	766.6	798.0			
	1.1	90L	ENDURO 020								ENDURO 040								ENDURO 060								600.6	625.3	658.9	771.2	829.8	901.0	1035	1124	1170
	1.5	100L	ENDURO 040												ENDURO 060				564.6	633.6	660.9	701.0	754.3	819.0	852.7	898.5	1052	1132	1229	1412	ENDURO 270				
	2.2	112M	ENDURO 040								ENDURO 060								610.0	712.6	828.0	929.3	969.4	1028	1106	1201	1251	1318	ENDURO 270						
	3.7	132S	243.6	290.7	344.6	435.9	490.3	544.1	618.3	735.9	799.2	831.9	871.0	1026	1199	ENDURO 270								ENDURO 430											
	5.5	132M	362.1	432.1	512.3	648.0	728.8	808.8	919.1	1094	1188	1237	1295	1525	ENDURO 270								ENDURO 430												

EN150 : Input 100 available upto 100 ratio;
 Input 112 available upto 65 ratio; Input 132 available upto 35 ratio

PERFORMANCE TABLE

ENDURO 270																								Peak torque = 2700 Nm					
Input: 90, 100, 112, 132, 160	Rated ratio	7	10	12	16	18	20	22	23	25	28	30	33	40	43	45	50	53	57	65	72	85	95	110	120				
	Real ratio	6.53	9.04	11.19	15.10	17.71	19.59	22.34	22.86	25.34	28.30	28.98	33.35	41.87	43.31	44.79	49.53	53.63	57.00	64.07	72.35	85.19	93.84	108.0	121.4				
	Stages	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3				
	ENDURO 270 with 2 pole / 2880 RPM motors																												
	kW	Frame	Torque (Nm)																										
	Speed (rpm)	441.0	318.6	257.4	190.7	162.6	147.0	128.9	126.0	113.7	101.8	99.4	86.4	68.8	66.5	64.3	58.1	53.7	50.5	45.0	39.8	33.8	30.7	26.7	23.7				
	1.5	90S	ENDURO 020											ENDURO 040		ENDURO 060								ENDURO 150					
	2.2	90L	ENDURO 020											ENDURO 040		ENDURO 060								ENDURO 150					
	3.7	100L	ENDURO 040											EN060		ENDURO 150								1246		1400			
	5.5	132SA	ENDURO 150											717.8		742.5	767.9	849.1	919.4	977.2	1098	1240	ENDURO430						
	7.5	132SB	ENDURO 150											978.8		1012	1047	1158	1254	1333	1498	ENDURO 430							
	11	160MA	223.9	310.0	383.7	517.7	607.2	671.7	766.0	783.8	868.8	970.3	993.6	1143	ENDURO430														
15	160MB	305.3	422.7	523.2	706.0	828.0	915.9	1045	1069	1185	1323	1355	1559	ENDURO430															
18.5	160L	376.6	521.3	645.3	870.7	1021	1130	1288	1318	1461	ENDURO 430																		
Output flange: Ø350	ENDURO 270 with 4 pole / 1440 RPM motors																												
	Speed (rpm)	220.5	159.3	128.7	95.4	81.3	73.5	64.5	63.0	56.8	50.9	49.7	43.2	34.4	33.2	32.2	29.1	26.9	25.3	22.5	19.9	16.9	15.3	13.3	11.9				
	1.1	90S	ENDURO 020											ENDURO 040				ENDURO 060				ENDURO 150							
	1.5	90L	ENDURO 020					ENDURO 040					ENDURO 060				ENDURO 150												
	2.2	100L	ENDURO 040					ENDURO 060					ENDURO 150										1481		1665				
	3.7	112M	ENDURO 040				ENDURO 060					ENDURO 150										1669	1965	2165	2491	EN430			
	5.5	132S	ENDURO 150											1436		1485	1536	1698	1839	1954	2197	2481	ENDURO430						
	7.5	132M	ENDURO 150											1559		1958	2025	2094	2316	2507	2665	ENDURO430							
	11	160M	447.8	619.9	767.3	1035	1214	1343	1532	1568	1738	1941	1987	2287	ENDURO430														
	15	160L	610.6	845.3	1046	1412	1656	1832	2089	2138	2370	2646	ENDURO430																
Hollow o/p Shaft: 60	ENDURO 270 with 6 pole / 960 RPM motors																												
	Speed (rpm)	147.0	106.2	85.8	63.6	54.2	49.0	43.0	42.0	37.9	33.9	33.1	28.8	22.9	22.2	21.4	19.4	17.9	16.8	15.0	13.3	11.3	10.2	8.9	7.9				
	0.75	90S	ENDURO 020											ENDURO 040		ENDURO 060								ENDURO 150					
	1.1	90L	ENDURO 020					ENDURO 040					ENDURO 060				ENDURO 150												
	1.5	100L	ENDURO 040							ENDURO 060				ENDURO 150										1515		1703			
	2.2	112M	ENDURO 040					ENDURO 060					ENDURO 150										1488	1753	1931	2222	2497		
	3.7	132S	ENDURO 150											1449		1498	1550	1714	1856	1972	2217	2503	ENDURO430						
	5.5	132M	ENDURO 150											1715		2153	2227	2304	2547	ENDURO430									
	7.5	160M	458.0	634.0	784.8	1059	1242	1374	1567	1603	1777	1985	2032	2339	ENDURO430														
11	160L	671.7	929.9	1151	1553	1822	2015	2298	2351	2607	ENDURO430																		

EN270 : Input 132 available upto 72 ratio;
Input 160 available upto 35 ratio

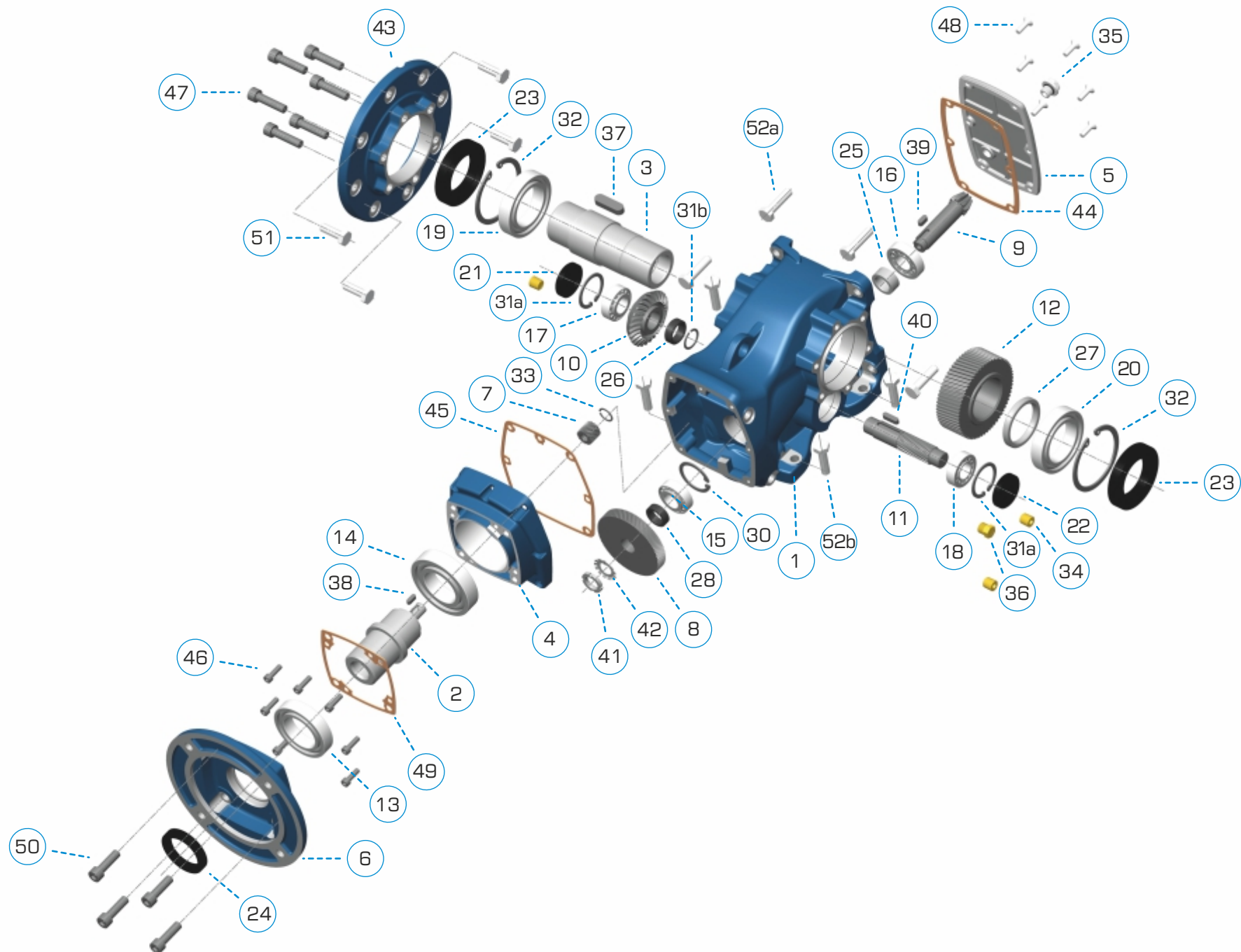
PERFORMANCE TABLE

ENDURO 430																												Peak torque = 4300 Nm									
Input: 100, 112, 132, 160, 180	Rated ratio	7	8	11	14	15	17	18	20	21	25	28	30	33	35	40	45	50	53	60	65	70	75	85	95	110	120										
	Real ratio	7.19	8.31	11.26	14.09	15.52	17.45	18.18	19.41	21.01	24.31	28.48	28.95	33.32	35.62	39.2	45.94	49.08	53.38	61.46	65.01	69.32	74.89	84.24	95.5	110.4	117.7										
	Stages	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3										
	ENDURO 430 with 2 pole / 2880 RPM motors																																				
	kW	Frame	Torque (Nm)																																		
	Speed (rpm)	400.6	346.6	255.8	204.4	185.6	165.0	158.4	148.4	137.1	118.5	101.1	99.5	86.4	80.9	73.4	62.7	58.7	54.0	46.9	44.3	41.5	38.46	34.2	30.1	26.1	24.5										
	3.7	100L	ENDURO 040												ENDURO 060		ENDURO 150												ENDURO 270								
	5.5	132SA	ENDURO 150												ENDURO 270												1284	1444	1638								
	7.5	132SB	ENDURO 150												ENDURO 270												1621	1751	1969	2233							
	11	160MA	ENDURO 270												1221	1345	1575	1683	1830	2107																	
	15	160MB	ENDURO 270												1665	1835	2148	2295	2496	2874																	
18.5	160L	ENDURO 270												1642	1669	1921	2054	2263	2649	2830	3078	3544															
22	180M	493.0	569.8	772.1	966.2	1064	1197	1247	1331	1441	1667	1953	1985	2285	2443																						
Output flange: Ø450	ENDURO 430 with 4 pole / 1440 RPM motors																																				
	Speed (rpm)	200.3	173.3	127.9	102.2	92.8	82.5	79.2	74.2	68.5	59.2	50.6	49.7	43.2	40.4	36.7	31.3	29.3	27.0	23.4	22.2	20.8	19.23	17.1	15.1	13.0	12.2										
	2.2	100L	ENDURO 040												ENDURO 060				ENDURO 150												ENDURO 270						
	3.7	112M	ENDURO 040						ENDURO 060						ENDURO 150												ENDURO 270						2715				
	5.5	132S	ENDURO 150						ENDURO 270												2568	2888	3275														
	7.5	132M	ENDURO 150												ENDURO 270						2874	3040	3241	3501	3939												
	11	160M	ENDURO 270												2443	2691	3150	3366	3660	4215																	
	15	160L	ENDURO 270												2707	3116	3331	3669																			
	18.5	180M	829.2	958.3	1299	1625	1790	2013	2097	2239	2423	2804	3285	3339	3843	4108																					
	22	180L	986.1	1140	1544	1932	2129	2393	2493	2662	2881	3334	3906	3970																							
Hollow o/p Shaft: 70	ENDURO 430 with 6 pole / 960 RPM motors																																				
	Speed (rpm)	133.5	115.5	85.3	68.1	61.9	55.0	52.8	49.5	45.7	39.5	33.7	33.2	28.8	27.0	24.5	20.9	19.6	18.0	15.6	14.8	13.8	12.82	11.4	10.0	8.7	8.2										
	1.5	100L	ENDURO 040												ENDURO 060				ENDURO 150												ENDURO 270						
	2.2	112M	ENDURO 040								ENDURO 060				ENDURO 150												ENDURO 270										
	3.7	132S	ENDURO 150												ENDURO 270												2591	2915	3305								
	5.5	132M	ENDURO 150												ENDURO 270						2745	3161															
	7.5	160M	ENDURO 270												2498	2752	3222	3442	3744																		
	11	160L	ENDURO 270												2929	2978	3427	3664	4036																		
15	180L	1009	1165	1579	1976	2177	2448	2550	2723	2947	3410	3995	4061																								

EN430 : Input 132 available upto 95 ratio; Input 160 available upto 60 ratio; Input 180 available upto 35 ratio

Note : Efficiency is computed considering the frictional losses of output seals, bearing frictional losses and lubrication losses. Torque increase by 3% in 2 stage gearboxes and 5% in 3 stage gearboxes if these losses are not considered.

LIST OF COMPONENTS



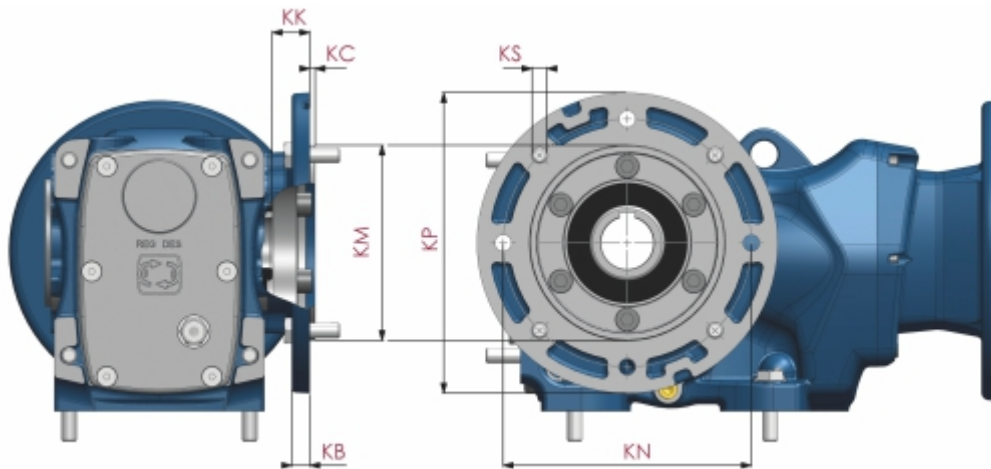
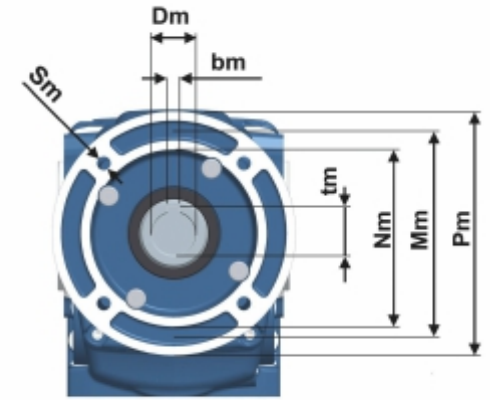
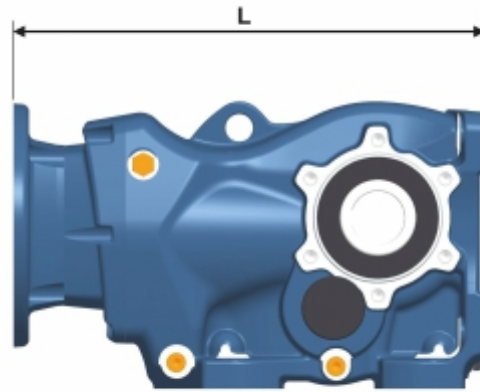
LIST OF COMPONENTS

ENDURO 020				ENDURO 040			ENDURO 060			ENDURO 150			ENDURO 270			ENDURO 430		
item	code	description	q.ty	code	description	q.ty	code	description	q.ty	code	description	q.ty	code	description	q.ty	code	description	q.ty
1	HOU EN020	housing	1	HOU EN040	housing	1	HOU EN060	housing	1	HOU EN150	housing	1	HOU EN270	housing	1	HOU EN430	housing	1
2	ISH	input shaft... RB021	1	ISH	input shaft...RB030	1	ISH	input shaft...RB060	1	ISH	input shaft...RB085	1	ISH	input shaft...RB150	1	ISH	input shaft...RB300	1
3	OSH	output shaft	1	OSH	output shaft	1	OSH	output shaft	1	OSH	output shaft	1	OSH	output shaft	1	OSH	output shaft	1
4	ICV	input cover	1	ICV	input cover	1	ICV	input cover	1	ICV	input cover	1	ICV	input cover	1	ICV	input cover	1
5	TCV	cover	1	TCV	cover	1	TCV	cover	1	TCV	cover	1	TCV	cover	1	TCV	cover	1
6	IFL	input flange 63B5 input flange 71B5 input flange 80/90B5 input flange 100/112B5	1	IFL	input flange 71B5 input flange 80/90B5 input flange 100/112B5	1	IFL	input flange 71B5 input flange 80/90B5 input flange 100/112B5	1	IFL	input flange 80/90B5 input flange 100/112B5 input flange 132B5	1	IFL	input flange 90B5 input flange 100/112B5 input flange 132B5 input flange 160/180B5	1	IFL	input flange 100/112B5 input flange 132B5 input flange 160/180B5	1
7	P1	pinion 1	1	P1	pinion 1	1	P1	pinion 1	1	P1	pinion 1	1	P1	pinion 1	1	P1	pinion 1	1
8	G2	Gear 1	1	G2	Gear 1	1	G2	Gear 1	1	G2	Gear 1	1	G2	Gear 1	1	G2	Gear 1	1
9	P2	pinion 2	1	P2	pinion 2	1	P2	pinion 2	1	P2	pinion 2	1	P2	pinion 2	1	P2	pinion 2	1
10	G2	Gear 2	1	G2	Gear 2	1	G2	Gear 2	1	G2	Gear 2	1	G2	Gear 2	1	G2	Gear 2	1
11	P3	pinion 3	1	P3	pinion 3	1	P3	pinion 3	1	P3	pinion 3	1	P3	pinion 3	1	P3	pinion 3	1
12	G3	Gear 3	1	G3	Gear 3	1	G3	Gear 3	1	G3	Gear 3	1	G3	Gear 3	1	G3	Gear 3	1
13	BEA	bearing 6008ZZ	1	BEA	bearing 6009ZZ	1	BEA	bearing 6009ZZ	1	BEA	bearing 6211ZZ	1	BEA	bearing 6009ZZ * bearing 6213ZZ **	1	BEA	bearing 6216ZZ	1
14	BEA	bearing 6008ZZ	1	BEA	bearing 6009ZZ	1	BEA	bearing 6009ZZ	1	BEA	bearing 6210ZZ	1	BEA	bearing 6009ZZ * bearing 6212ZZ **	1	BEA	bearing 6215ZZ	1
15	BEA	bearing 30203	1	BEA	Bearing 32004	1	BEA	Bearing 32005	1	BEA	Bearing 32206	1	BEA	Bearing 32007	1	BEA	Bearing 32208	1
16	BEA	bearing 30303	1	BEA	Bearing 30204	1	BEA	Bearing 30205	1	BEA	Bearing 32306	1	BEA	Bearing 32008	1	BEA	Bearing 32308	1
17,18	BEA	bearing 30202	2	BEA	Bearing 32004	2	BEA	Bearing 30204	2	BEA	Bearing 30306	2	BEA	Bearing 30307	2	BEA	Bearing 30308	2
19,20	BEA	bearing 6009ZZ	2	BEA	bearing 6010ZZ	2	BEA	bearing 6011ZZ	2	BEA	bearing 6014ZZ	2	BEA	bearing 6017ZZ	2	BEA	bearing 6219ZZ	2
21,22	COV	plug	2	COV	plug	2	COV	plug	2	COV	plug	2	COV	plug	2	COV	plug	2
23	OS	oil seal 45x75x8	2	OS	oil seal 45x80x12	2	OS	oil seal 45x75x8	2	OS	oil seal 70x110x12	2	OS	oil seal 85x130x12	2	OS	oil seal 95x170x12	2
24	OS	oil seal 40x55x8	1	OS	oil seal 45x60x9	1	OS	oil seal 40x55x8	1	OS	oil seal 55x80x10	1	OS	oil seal 45x65x10 * oil seal 65x90x12 **	1	OS	oil seal 80x105x12	1
25	SP	spacer	1	SP	spacer	1	SP	spacer	1	SP	spacer	1	SP	spacer	1	SP	spacer	1
26	SP	spacer	1	SP	spacer	1	SP	spacer	1	SP	spacer	1	SP	spacer	1	SP	spacer	1
27	SP	spacer	1	SP	spacer	1	SP	spacer	1	SP	spacer	1	SP	spacer	1	SP	spacer	1
28				SP	spacer	1				SP	spacer	1						
29	SP	spacer	2	SP	spacer	2	SP	spacer	2	SP	spacer	2	SP	spacer	2	SP	spacer	2
30	SNR	snap ring	1	SNR	snap ring	1	SNR	snap ring	1	SNR	snap ring	1	SNR	snap ring	1	SNR	snap ring	1
31a	SNR	snap ring	2	SNR	snap ring	2	SNR	snap ring	2	SNR	snap ring	2	SNR	snap ring	2	SNR	snap ring	2
31b				SNR	snap ring	1	SNR	snap ring	1	SNR	snap ring	1	SNR	snap ring	1	SNR	snap ring	1
32	SNR	snap ring	2	SNR	snap ring	2	SNR	snap ring	2	SNR	snap ring	2	SNR	snap ring	2	SNR	snap ring	2
33	SNR	snap ring	1	SNR	snap ring	1	SNR	snap ring	1	SNR	snap ring	1	SNR	snap ring	1	SNR	snap ring	1
34	FPL	filler plug	3	FPL	filler plug	3	FPL	filler plug	3	FPL	filler plug	3	FPL	filler plug	3	FPL	filler plug	3
35	LPL	level plug	1	LPL	level plug	1	LPL	level plug	1	LPL	level plug	1	LPL	level plug	1	LPL	level plug	1
36	BPL	breather plug	1	BPL	breather plug	1	BPL	breather plug	1	BPL	breather plug	1	BPL	breather plug	1	BPL	breather plug	1
37	KEY	key	1	KEY	key	1	KEY	key	1	KEY	key	1	KEY	key	1	KEY	key	1
38	KEY	key	1	KEY	key	1	KEY	key	1	KEY	key	1	KEY	key	1	KEY	key	1
39	KEY	key	1	KEY	key	1	KEY	key	1	KEY	key	1	KEY	key	1	KEY	key	1
40	KEY	key	1	KEY	key	1	KEY	key	1	KEY	key	1	KEY	key	1	KEY	key	1
41	G	gear GHIM 17x1	1	G	gear GHIM 17x1	1	G	gear GHIM 20x1	1	G	gear GHIM 20x1	1	G	gear GHIM 30x1.5	1	G	gear GHIM 35x1.5	1
42	SW	safety washer WSH2982M17	1	SW	safety washer WSH2982M17	1	SW	safety washer WSH2982M20	1	SW	safety washer WSH2982M20	1	SW	safety washer WSH2982M30	1	SW	safety washer WSH2982M35	1
43	OFL	output flange 160	1	OFL	output flange 200	1	OFL	output flange 250	1	OFL	output flange 300	1	OFL	output flange 350	1	OFL	output flange 450	1
44	GK44	gasket	1	GK44	gasket	1	GK44	gasket	1	GK44	gasket	1	GK44	gasket	1	GK44	gasket	1
45	GK45	gasket	1	GK45	gasket	1	GK45	gasket	1	GK45	gasket	1	GK45	gasket	1	GK45	gasket	1
46	SCR	screw	7	SCR	screw	7	SCR	screw	7	SCR	screw	7	SCR	screw	7	SCR	screw	7
47	SCR	screw	6	SCR	screw	6	SCR	screw	6	SCR	screw	6	SCR	screw	6	SCR	screw	6
48	SCR	screw	6	SCR	screw	6	SCR	screw	6	SCR	screw	6	SCR	screw	6	SCR	screw	6
49	GK49	gasket	1	GK49	gasket	1	GK49	gasket	1	GK49	gasket	1	GK49	gasket	1	GK49	gasket	1
50	SCR	screw	4	SCR	screw	4	SCR	screw	4	SCR	screw	4	SCR	screw	4	SCR	screw	4
51	SCR	screw	6	SCR	screw	6	SCR	screw	6	SCR	screw	6	SCR	screw	6	SCR	screw	6
52a	SCR	screw	4	SCR	screw	4	SCR	screw	4	SCR	screw	4	SCR	screw	4	SCR	screw	4
52b	SCR	screw	4	SCR	screw	4	SCR	screw	4	SCR	screw	4	SCR	screw	4	SCR	screw	4

* for input flange 90-112, ** for input flange 132-160

DIMENSIONS

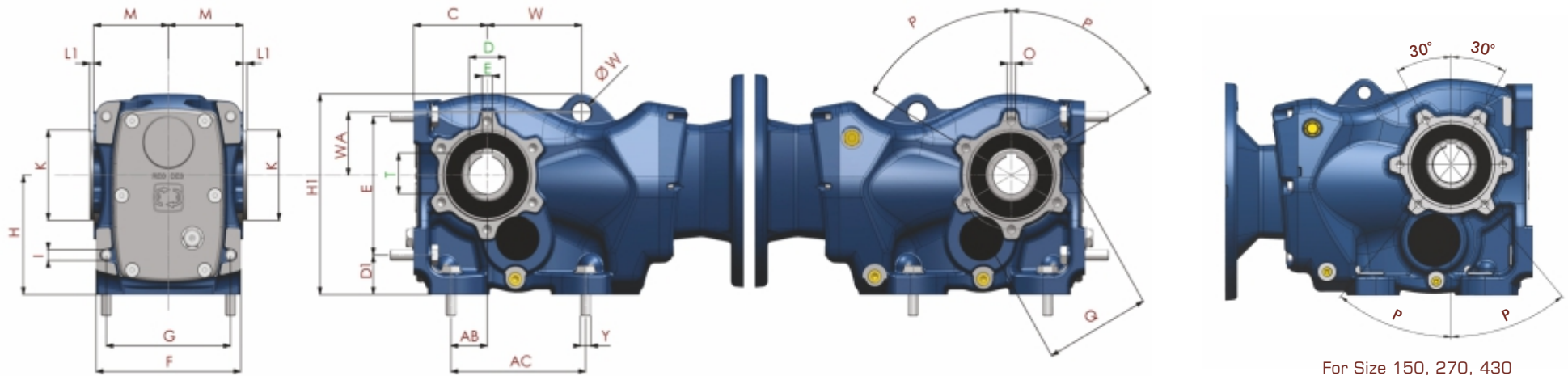
ENDURO	Motor type		Nm	Mm	Pm	Sm	Dm	tm	bm	L (PAM)
020	63	B5	95	115	140	10	11	12.8	4	264.5
	71	B5	110	130	160	M8	14	16.3	5	
	80	B5	130	165	200	M10	19	21.8	6	265.5
	90	B5	130	165	200	M10	24	27.3	8	
040	100/112	B5	180	215	250	M12	28	31.3	8	271.5
	71	B5	110	130	160	M8	14	16.3	5	309.5
	80	B5	130	165	200	M10	19	21.8	6	318.5
	90	B5	130	165	200	M10	24	27.3	8	
060	100/112	B5	180	215	250	M12	28	31.3	8	319.5
	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	130	165	200	M10	24	27.3	8	
150	100/112	B5	180	215	250	M12	28	31.3	8	339.4
	90	B5	130	165	200	M10	24	27.3	8	409.5
	100/112	B5	180	215	250	M12	28	31.3	8	411.5
	132	B5	230	265	300	M12	38	41.3	12	423.5
270	90	B5	130	165	200	M10	24	27.3	8	459
	100/112	B5	180	215	250	M12	28	31.3	8	462.5
	132	B5	230	265	300	M12	38	41.3	12	
	160	B5	250	300	350	M16	42	45.3	12	530
430	100/112	B5	180	215	250	M12	28	31.3	8	570.7
	132	B5	230	265	300	M12	38	41.3	12	
	160	B5	250	300	350	M16	42	45.3	12	588.8
	180	B5	250	300	350	M16	48	51.8	14	



Flange Mounting

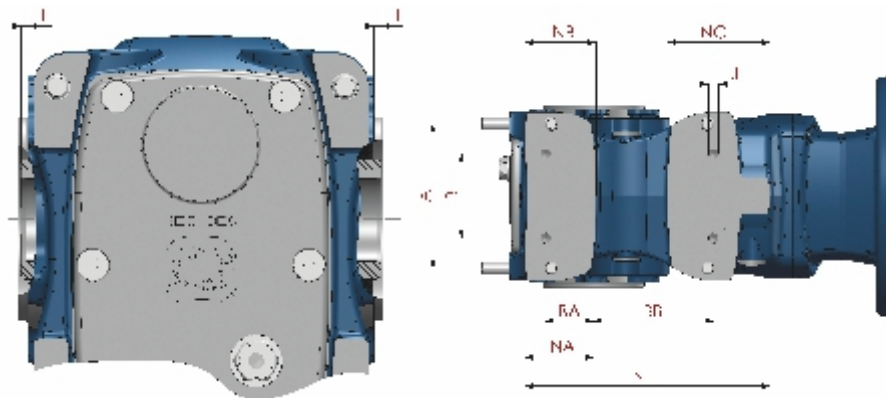
ENDURO	OFL	IEC	KP	KM (j6)	KN	KS	KK	KB	KC (0; -0,5)
020	OFL160	71B5	160	110	130	M8x30	24	10	3.5
040	OFL200	80/90B5	200	130	165	M10x30	25	12	3.5
060	OFL250	100/112B5	250	180	215	M12x40	23.5	12	4
150	OFL300	132B5	300	230	265	M12x45	37	18	4
270	OFL350	160/180B5	350	250	300	M16x50	30	18	4
430	OFL450	225B5	450	350	400	M16x55	42	23	5

DIMENSIONS



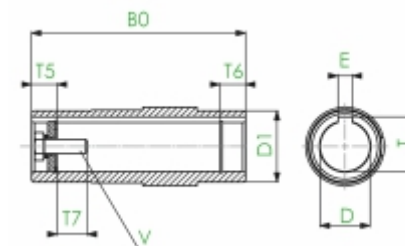
Foot Mounting

ENDURO	A	AB	AC	B	BA	BB	C	D1	E	F	G	H	H1	I	J	K (Ø h8)	L	L1	M	N	NA	NB	NC	O	P	Q	Y	ØW	W	WA
020	100	28	110	60	35	82	63	32	115	119	100	100	165	M10x30	M10	80	2	2.6	58	149	50.5	49	41	M8	60°	94	M10x35	15	75	50
040	120	35	130	70	40	100	71	37	130	140	120	112	188	M10x40	M10	85	3	4	72	204	57	59.5	85.5	M10	60°	102	M10x40	18	91	59
060	130	30	130	88	47	105	80	45	150	158	130	132	218	M12x40	M12	105	3	3	80	200	65	66	65	M12	60°	125	M12x45	20	100	65
150	165	40	150	102	48	122	112	55	200	200	165	180	295	M16x55	M16	120	4.5	4.5	101	236	92	86	73	M12	40°	142	M16x60	18	120	99
270	180	55	180	118	65	160	132	70	233	230	180	212	348	M20x65	M16	140	4	4	116	293	113	93	94	M16	45°	178	M20x70	18	140	116
430	240	75	240	160	83	165	160	75	295	290	240	265	418	M24x75	M20	185	4.5	4.5	145	355	141	125	111	M16	45°	220	M24x80	25	154	128

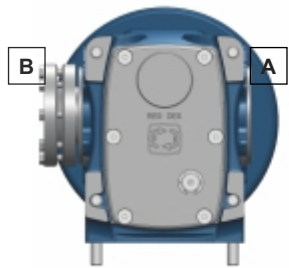


Standard Output Shaft

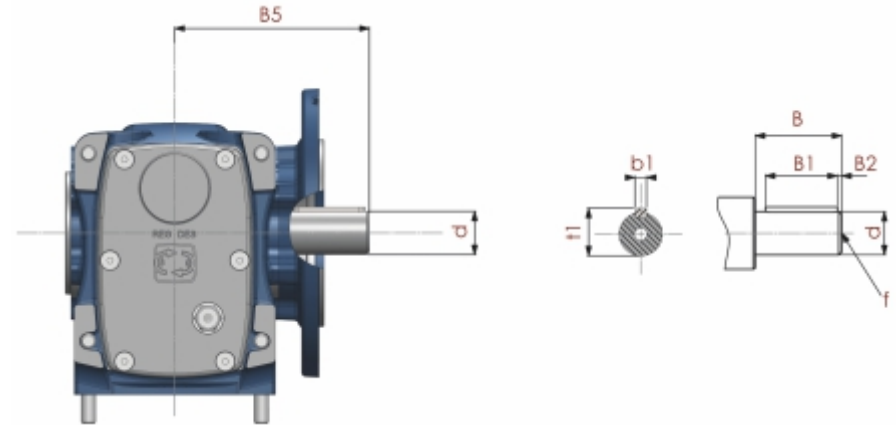
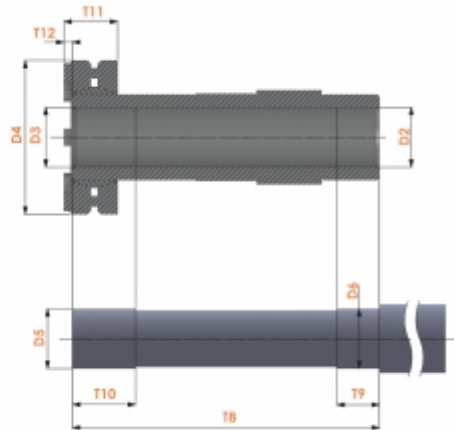
ENDURO	ØD1	ØD (H7)	B0 (+0,2;0)	T5	T6	V	T (+0,2;0)	E (E9)
020	45	30	120	15	15	M10x25	33.3	8
040	50	35	150	18	18	M12x30	38.5	10
060	55	40	166	24	24	M16x40	43.3	12
150	70	50	210	27	27	M16x45	53.8	14
270	85	60	240	30	30	M20x50	64.5	18
430	95	70	300	30	30	M20x50	74.9	20



DIMENSIONS



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



Shrink disc shaft

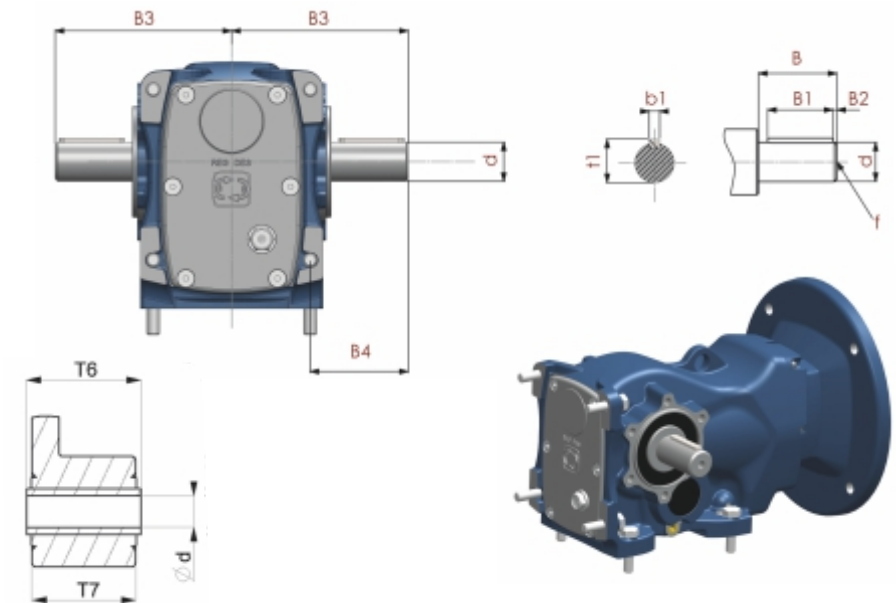
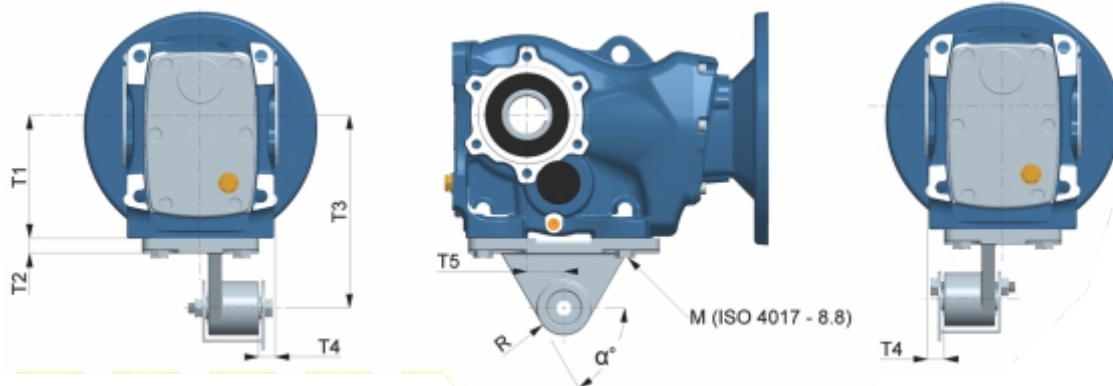
ENDURO	D2 (ØH7)	D3 (ØH7)	D4 (Ø)	D5 (Øh6)	ØD6 (h6)	T8 (±0,1)	T9	T10	T11	T12
020	30	30	80	30	30	150	20	31	24.2	5.3
040	35	35	90	35	35	180	20	32	26.1	5.3
060	40	40	100	40	40	200	20	26	29	5.3
150	50	50	138	50	50	241	30	36	37.3	5.3
270	65	65	155	65	65	281	40	41	44.3	5.3
430	75	75	170	75	75	345	50	55	49.3	5.3

Single and double output shaft

ENDURO	d (h6)	B	B1	B2	B3	B4	B5	b1	t1	f
020	25	50	40	5	110	60	134	8	28	M10x20
040	30	60	50	3	135	75	160	8	33	M10x20
060	35	70	56	5	153	88	176.5	10	38	M12x24
150	50	100	80	10	206	123.5	242	14	44.5	M16x32
270	60	120	100	5	240	150	270	18	53	M20x40
430	70	140	125	7.5	291	171	332	20	62.5	M20x40

Torque Arm

ENDURO	T1	T2	T3	T4	T5	R	α	M	T6	T7	d ± 0.08
020	100	10	140	20	23.5	22.5	60	n°4 M10	36	31	Ø10,4
040	112	12	160	20	30	22.5	55	n°4 M10	36	31	Ø10,4
060	132	13	192	18	40	29	55	n°4 M12	60	54	Ø16,4
150	180	20	250	25	52.5	29	60	n°4 M16	60	54	Ø16,4
270	212	25	300	30	60	41	60	n°4 M16	80	72	Ø25
430	265	25	350	40	70	41	50	n°4 M20	100	92	Ø25

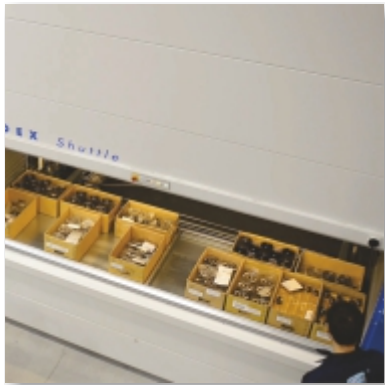




CMM for Mechanical Inspection



Gear Lead & Profile Tester



KARDEX for Gear Storage



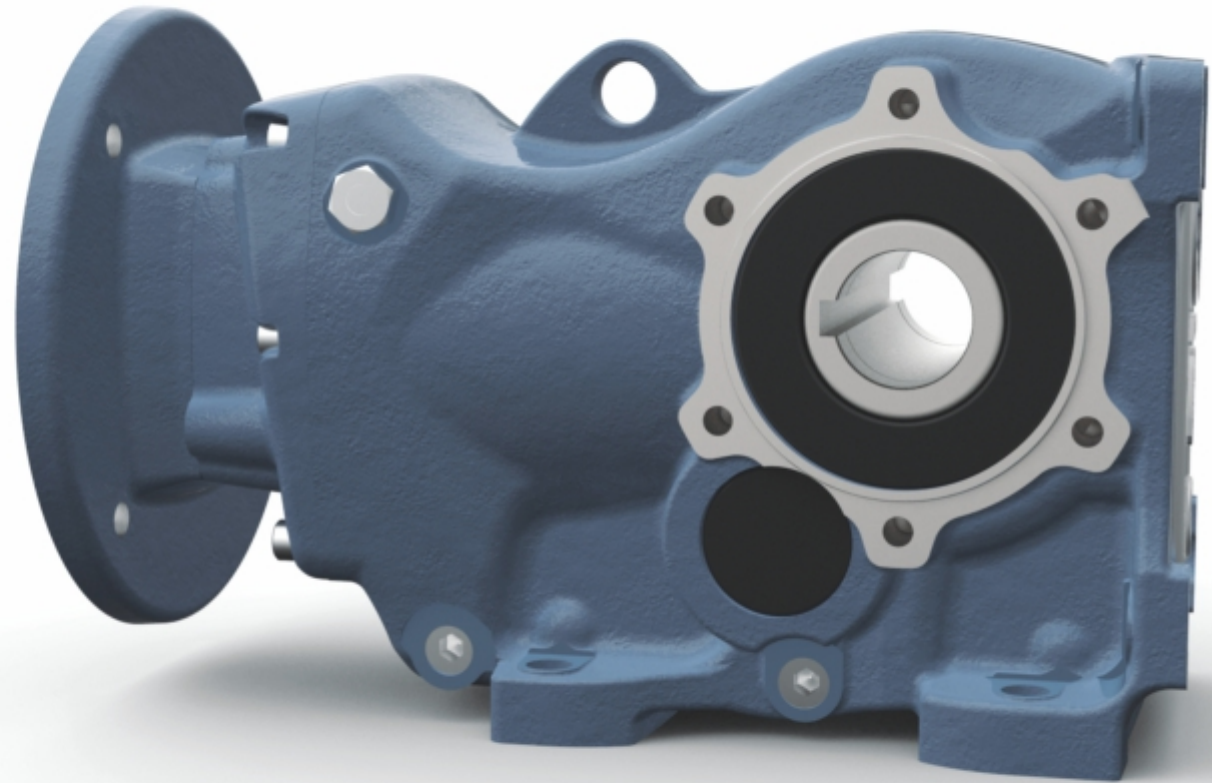
Gear Profile Grinding



Magnifying Glass to Check Gear



Gearbox Machining



All information and data presented in this catalogue have been checked with greatest care. We however do not assume responsible for any unintended errors and omissions. Our designs are being continuously improved, so please reconfirm specifications and dimensions prior to ordering.