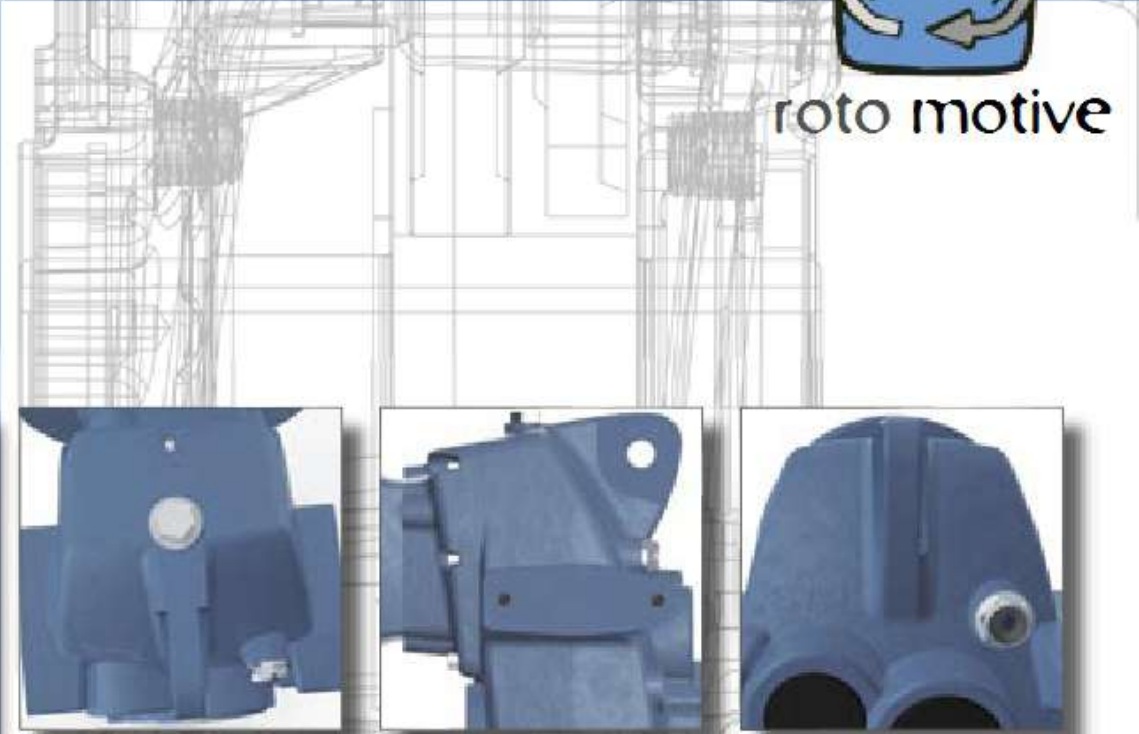


STON SHAFT MOUNTED GEARBOX



roto motive





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

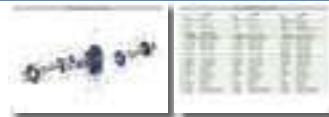


Shop Floor

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2 reduction stages pag. 4-5



List of components ston
3 reduction stages pag. 6-7



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Lubrication pag. 9

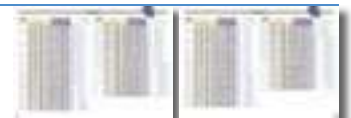


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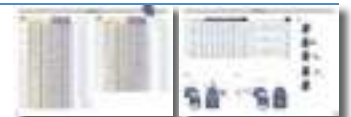


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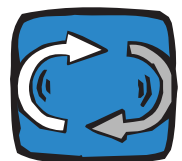


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technical characteristics



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

robust

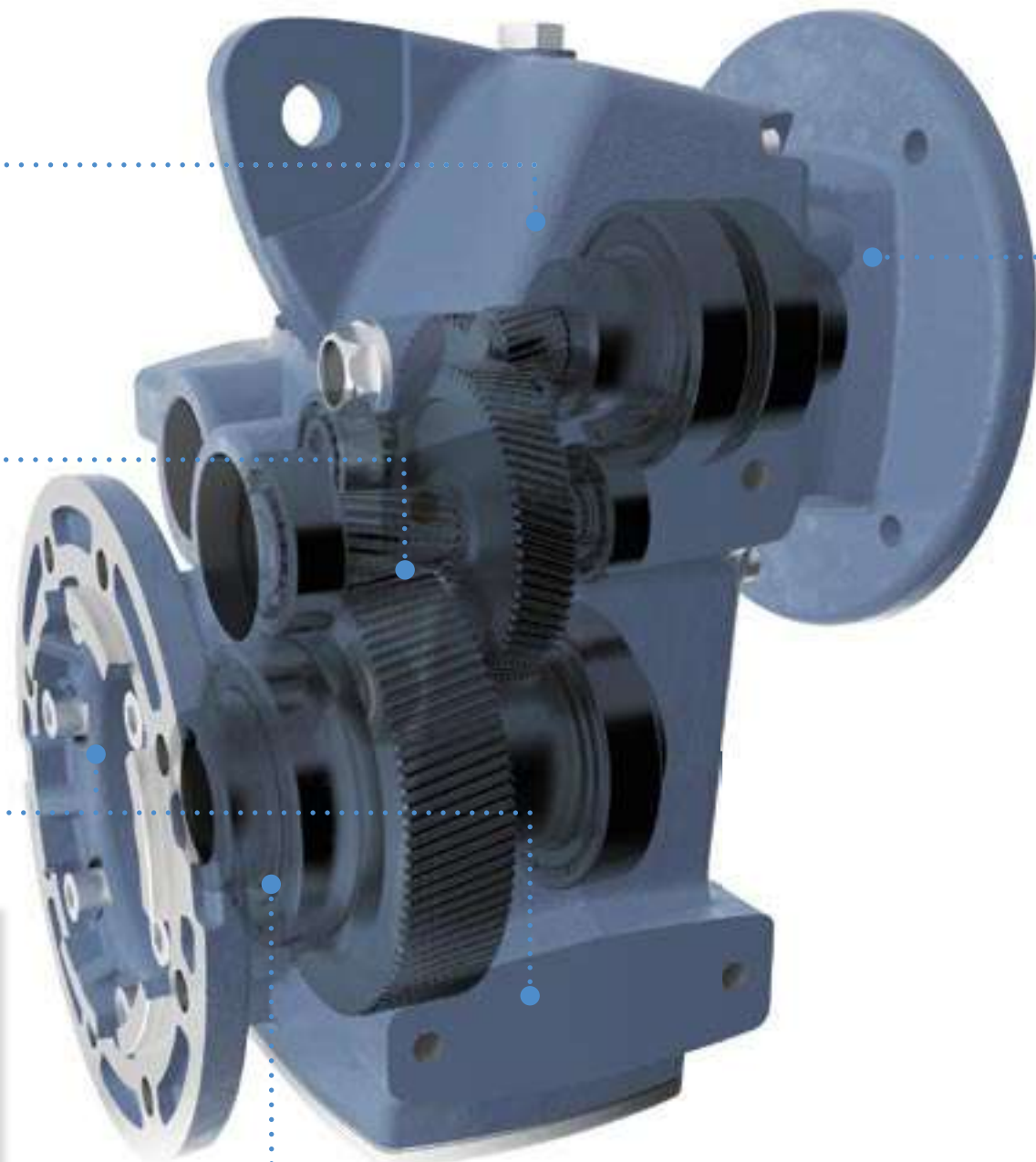


2 or 3 reduction stages inside the same body, in order to have a wider and more reliable range of ratios



versatile

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



registered design

flexible mounting



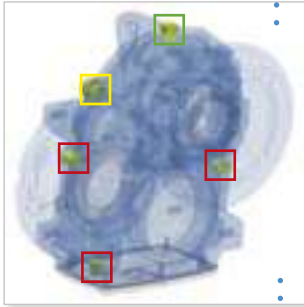
hollow shaft and flange for motor mounting.

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



unique construction of gearbox 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.



if the mechanical robustness and the service factor of an helical gearbox are mainly influenced by the centres distance of the last stage, ston confirms to be very robust (see "X2" at page 16)



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

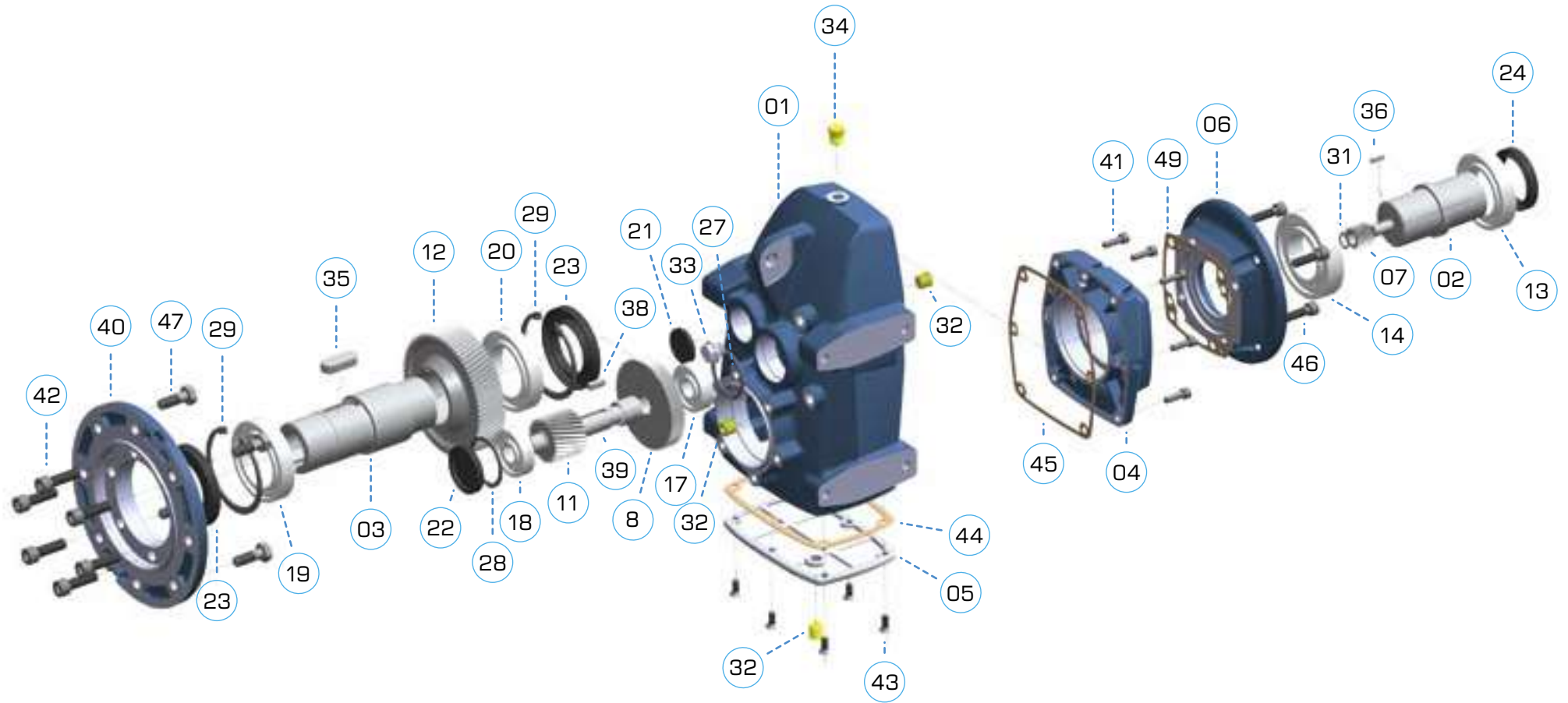


dual bearing support on the input shaft assures precise alignment of the first stage gears and reduces vibrations and consequent gear wear



abounding bearings size

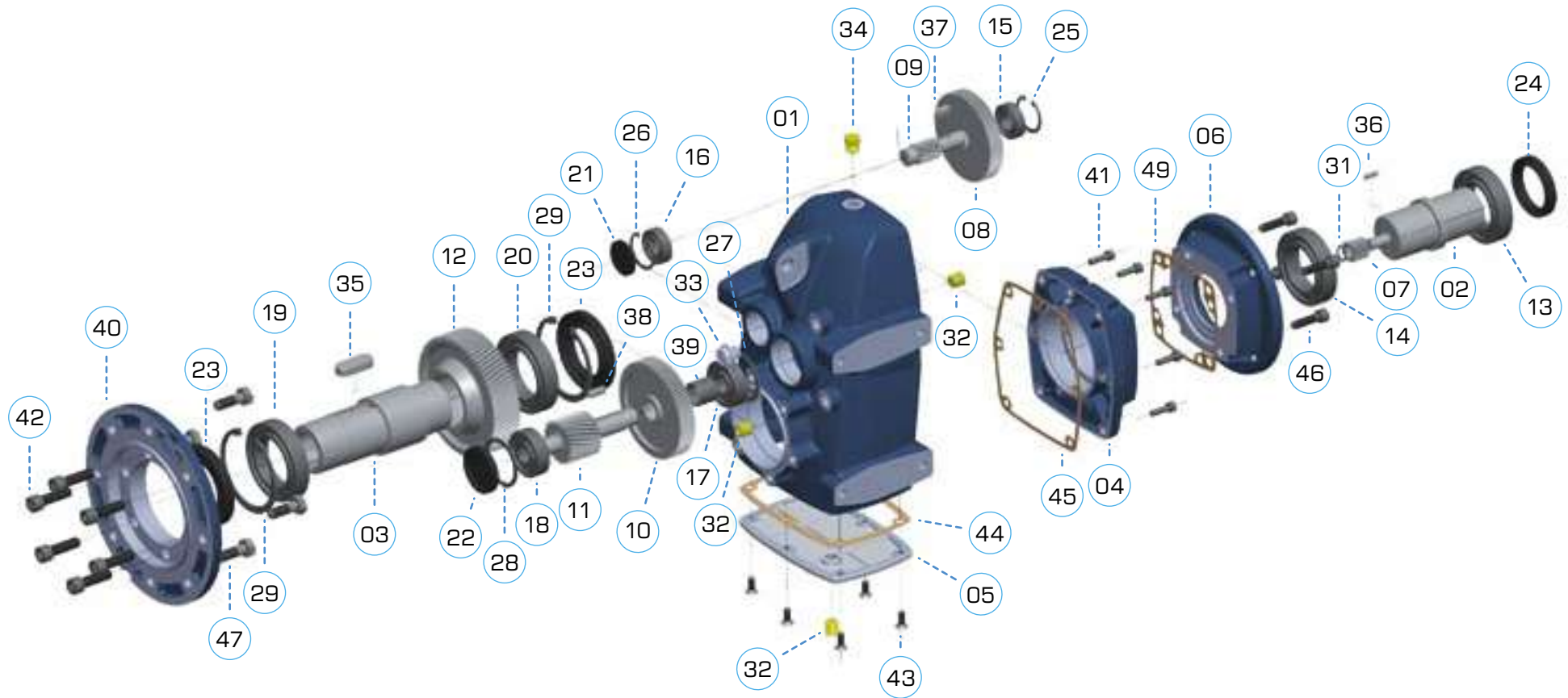
List of components ston 2 reduction stages



List of components ston 2 reduction stages

STON 3				STON 4				STON 5			
art.	code	description	q.ty	code	description	q.ty	code	description	q.ty		
1	Houst3	housing	1	Houst4	housing	1	Houst5	housing	1		
2	isHdm..id..rB25	input shaft	1	isHdm..id..rB30	input shaft	1	isHdm..id..rB35	input shaft	1		
3	osHst3	output shaft	1	osHst4	output shaft	1	osHst5	output shaft	1		
4	icVes3	input cover	1	icVes4	input cover	1	icVes5	input cover	1		
5	tcVes3	adapter cover	1	tcVes4	adapter cover	1	tcVes5	adapter cover	1		
6	ifL63B5rB25 ifL71B5rB25 ifL8090B5rB25 ifL100112B5rB25	input flange 63B5 input flange 71B5 input flange 80/90B5 input flange 100/112B5	1	ifL71B5rB30/35 ifL80B5rB30/35 ifL100B5rB30/35	input flange 71B5 input flange 80/90B5 input flange 100/112B5	1	ifL71B5rB30/35 ifL80B5rB30/35 ifL100B5rB30/35	input flange 71B5 input flange 80/90B5 input flange 100/112B5	1		
7	p1Z..d..id..	pinion first stage	1	p1Z..d..id..	pinion first stage	1	p1Z..d..id..	pinion first stage	1		
8	g1Z..d..rB25	gear first stage	1	g1Z..d..rB30	gear first stage	1	g1Z..d..rB35	gear first stage	1		
11	p3Z..d..st3	pinion third stage	1	p3Z..d..st4	pinion third stage	1	p3Z..d..st5	pinion third stage	1		
12	g3Z..d1..st3	gear third stage	1	g3Z..d1..st4	gear third stage	1	g3Z..d1..st5	gear third stage	1		
13	Bea6008ZZ	bearing 6008ZZ	2	Bea6009ZZ	bearing 6009ZZ	2	Bea6009ZZ	bearing 6009ZZ	2		
14	Bea7202ZZ	bearing 7202ZZ	1	Bea7303ZZ	bearing 7303ZZ	1	Bea7304ZZ	bearing 7304ZZ	1		
18	Bea7302ZZ	bearing 7302ZZ	1	Bea7303ZZ	bearing 7303ZZ	1	Bea7304ZZ	bearing 7304ZZ	1		
19	Bea6009ZZ	bearing 6009ZZ	1	Bea6010ZZ	bearing 6010ZZ	1	Bea6211ZZ	bearing 6211ZZ	1		
20	Bea6009ZZ	bearing 6009ZZ	1	Bea6010ZZ	bearing 6010ZZ	1	Bea6211ZZ	bearing 6211ZZ	1		
21	coVd35	plug seal d35X5	1	coVd35	plug seal d35X5	1	coVd40	plug seal d40X8	1		
22	coVd42	plug seal d42X6	1	coVd47	plug seal d47X7	1	coVd52	plug seal d52X7	1		
23	os45X75X8	oil seal 45x75x8	2	os50X80X10	oil seal 50x80x10	2	os55X100X10	oil seal 55x100x10	2		
24	os40X55X8	oil seal 40x55x8	1	os45X60X9	oil seal 45x60x9	1	os45X60X9	oil seal 45x60x9	1		
32	fLp1/4	filler plug 1/4''	3	fLp1/4	filler plug 1/4''	3	fLp1/4	filler plug 1/4''	3		
33	LpL1-4	level plug 1/4''	1	LpL1-4	level plug 1/4''	1	LpL1-4	level plug 1/4''	1		
34	BpL1/4	breather plug 1/4''	1	BpL1/4	breather plug 1/4''	1	BpL1/4	breather plug 1/4''	1		
39	spr39st3-2	spacer	1	spr39st4-2	spacer	1	spr39st5-2	spacer	1		
40	ofL...es3	output flange	1	ofL...es4	output flange	1	ofL...es5	output flange	1		
44	gK44es3	adapter cover gasket	1	gK44es4	adapter cover gasket	1	gK44es5	adapter cover gasket	1		
45	gK45es3	input cover gasket	1	gK45es4	input cover gasket	1	gK45es5	input cover gasket	1		
49	gK49rB25	input flange gasket	1	gK49rB30	input flange gasket	1	gK49rB35	input flange gasket	1		

List of components ston 3 reduction stages



List of components ston 3 reduction stages

STON 3				STON 4				STON 5			
art.	code	description	q.ty	code	description	q.ty	code	description	q.ty		
1	Houst3	housing	1	Houst4	housing	1	Houst5	housing	1		
2	isHdm..id..rB25	input shaft	1	isHdm..id..rB30	input shaft	1	isHdm..id..rB35	input shaft	1		
3	osHst3	output shaft	1	osHst4	output shaft	1	osHst5	output shaft	1		
4	icVes30	input cover	1	icVes4	input cover	1	icVes5	input cover	1		
5	tcVes3	adapter cover	1	tcVes4	adapter cover	1	tcVes5	adapter cover	1		
6	ifL63B5rB25	input flange63B5	1	ifL71B5rB30/35	input flange71B5	1	ifL71B5rB30/35	input flange71B5	1		
	ifL71B5rB25	input flange71B5		ifL80B5rB30/35	input flange80/90B5		ifL80B5rB30/35	input flange80/90B5			
	ifL8090B5rB25	input flange80/90B5		ifL100B5rB30/35	input flange100/112B5		ifL100B5rB30/35	input flange100/112B5			
	ifL100112B5rB25	input flange100/112B5									
7	p1Z..d..id..	pinion first stage	1	p1Z..d..id..	pinion first stage	1	p1Z..d..id..	pinion first stage	1		
8	g1Z..d..rB25	gear first stage	1	g1Z..d..rB30	gear first stage	1	g1Z..d..rB35	gear first stage	1		
9	p2Z..d..rB25	pinion second stage	1	p2Z..d..rB30	pinion second stage	1	p2Z..d..rB35	pinion second stage	1		
10	g2Z..d..rB25	gear second stage	1	g2Z..d..rB30	gear second stage	1	g2Z..d..rB35	gear second stage	1		
11	p3Z..d..st3	pinion third stage	1	p3Z..d..st4	pinion third stage	1	p3Z..d..st5	pinion third stage	1		
12	g3Z..d1..st3	gear third stage	1	g3Z..d1..st4	gear third stage	1	g3Z..d1..st5	gear third stage	1		
13	Bea6008ZZ	bearing 6008ZZ	2	Bea6009ZZ	bearing 6009ZZ	2	Bea6009ZZ	bearing 6009ZZ	2		
14	Bea6002ZZ	bearing 6002ZZ	1	Bea6003ZZ	bearing 6003ZZ	1	Bea6203ZZ	bearing 6203ZZ	1		
15	Bea6202ZZ	bearing 6202ZZ	1	Bea6003ZZ	bearing 6003ZZ	1	Bea6203ZZ	bearing 6203ZZ	1		
16	Bea6202ZZ	bearing 6202ZZ	1	Bea6303ZZ	bearing 6303ZZ	1	Bea6304ZZ	bearing 6304ZZ	1		
17	Bea6202ZZ	bearing 6202ZZ	1	Bea6303ZZ	bearing 6303ZZ	1	Bea6304ZZ	bearing 6304ZZ	1		
18	Bea6302ZZ	bearing 6302ZZ	1	Bea6303ZZ	bearing 6303ZZ	1	Bea6304ZZ	bearing 6304ZZ	1		
19	Bea6009ZZ	bearing 6009ZZ	1	Bea6010ZZ	bearing 6010ZZ	1	Bea6211ZZ	bearing 6211ZZ	1		
20	Bea6009ZZ	bearing 6009ZZ	1	Bea6010ZZ	bearing 6010ZZ	1	Bea6211ZZ	bearing 6211ZZ	1		
21	coVd35	plug seal d35X5	1	coVd35	plug seal d35X5	1	coVd40	plug seal d40X8	1		
22	coVd42	plug seal d42X6	1	coVd47	plug seal d47X7	1	coVd52	plug seal d52X7	1		
23	os45X75X8	oil seal 45x75x8	2	os50X80X10	oil seal 50x80x10	2	os55X100X10	oil seal 55x100x10	2		
24	os40X55X8	oil seal 40x55x8	1	os45X60X9	oil seal 45x60x9	1	os45X60X9	oil seal 45x60x9	1		
32	fLp1/4	filler plug 1/4''	3	fLp1/4	filler plug 1/4''	3	fLp1/4	filler plug 1/4''	3		
33	LpL1-4	level plug 1/4''	1	LpL1-4	level plug 1/4''	1	LpL1-4	level plug 1/4''	1		
34	BpL1/4	breather plug 1/4''	1	BpL1/4	breather plug 1/4''	1	BpL1/4	breather plug 1/4''	1		
39	spr39st3-3	spacer	1	spr39st4-3	spacer	1	spr39st5-3	spacer	1		
40	ofL...es3	output flange	1	ofL...es4	output flange	1	ofL...es5	output flange	1		
44	gK44es3	adapter cover gasket	1	gK44es4	adapter cover gasket	1	gK44es5	adapter cover gasket	1		
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49	gK49rB25	input flange gasket	1	gK49rB30	input flange gasket	1	gK49rB35	input flange gasket	1		

1 first 4 digits describe the ston size

ST3 = ston 3
ST4 = ston 4
etc



2 then 1 digit tell the nr of stages

2 = 2 stages
3 = 3 stages

3 then 3 digits are the rated ratio

020 = i:20
120 = i:120
etc

For instance:

ST33070160805

ston 3

3 stages

ratio i:70

output flange d. 160mm

input pam flange 80 B5

4 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



5 3 digits for the input flange (that determines the input hole diameter too)

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



...

LUBRICA

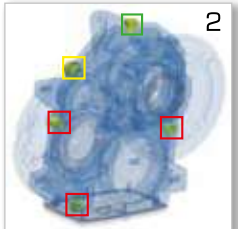
Each Ston is supplied with long-life synthetic oil and do not require any maintenance. the oil quantity is suitable for B3 mounting position

Ston	oil (lt)						ISo	temp.	oil type	
	B3	B6	B7	B8	V5	V6				
St3	0,55	0,65	0,65	0,6	0,8	1	VG 220	-25 +80°C	Mobil Glygoyle 30	Shell tivala S220
St4	1,65	1,2	1,2	1,1	1,8	1,9				
St5	2,6	1,5	1,5	1,4	2	2,1				

After adapting the oil quantity, each Ston 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



breather plug



level plug



filler plug

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:

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

Torque demand M_{r2} [nm]

torque calculated based on application requirements. it must be 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:

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

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 [%]

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

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

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

bearing friction.

the efficiency of ston 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 αX unit is driven at.

Output speed n_2 [rpm]

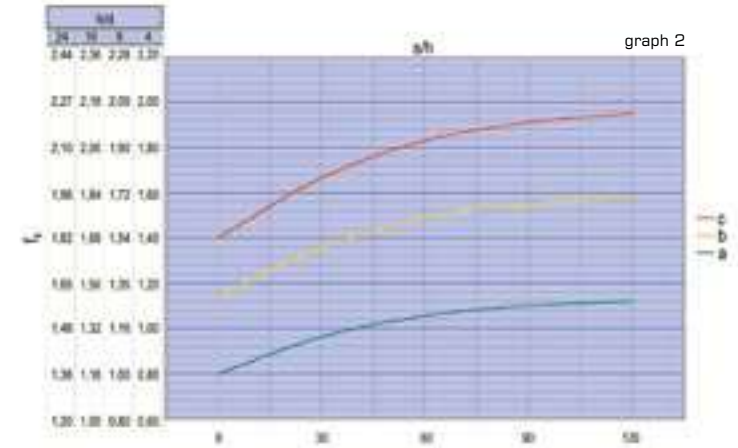
it is the rotation speed of the output shaft.

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 classification described in the table 2.



tab. 2

load classification	application
c	uneven operation, heavy loads, larger masses to be accelerated conveyors with violent jerks; compressors ad alternate pumps with 1 or more cylinders; machinery for bricks, tiles and clay; kneaders; milling machines; lifting winches with buckets; rotting 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

if, after the selection of the right M_{r2} and n_2 in the following performance tables, you don't find aston unit whose service factor f_s is \geq of the requested one f_{sr} , you can choose a ston unit in which $M_{n2} > M_{r2}$.

in fact, in order to satisfy f_{sr} , you can choose another B oX unit whose output torque is $\geq M_{r2}$ 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 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 $\geq f_{sr}$.

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

motive configurator allows you to shape motive products, combine them as you want, and finally to download 2 d/3d cad drawings, and a pdf datasheet.

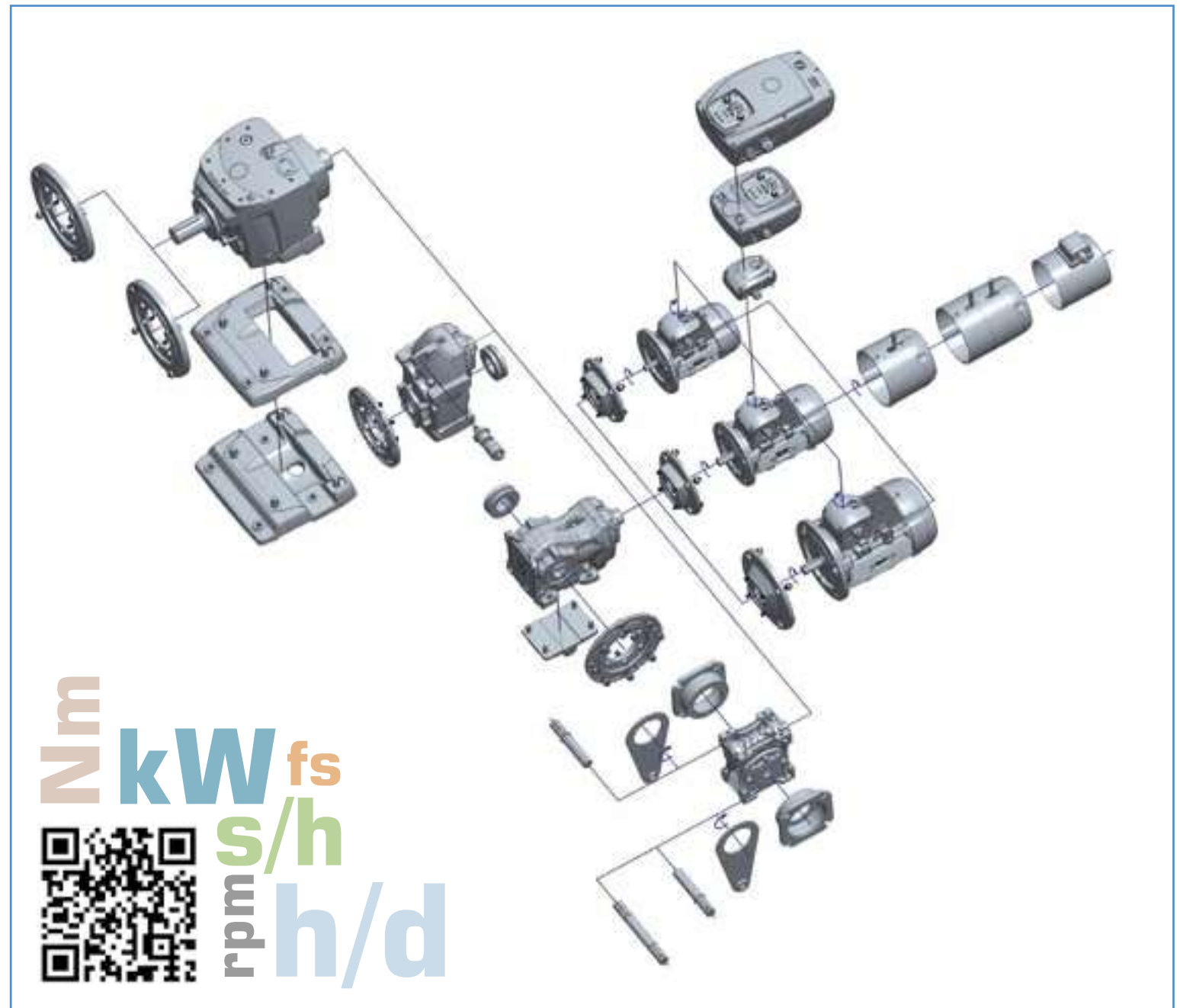
Search by performance

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.



free access without login
<http://www.motive.it/configuratore.php>

performance table



STON 3 (300 nm)		input				fs	output			stage	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
115	115,80	0,18	0,25	63B-4	1393	2,19	12,0	134,32	13,69	3					
		0,18	0,24	80a-8	650	1,13	5,6	287,86	29,34	3					
		0,13	0,18	71B-8	651	1,56	5,6	207,58	21,16	3					
		0,25	0,35	71a-4	1366	1,55	11,8	190,25	19,39	3					
		0,25	0,35	71B-6	910	1,03	7,9	285,58	29,11	3					
		0,18	0,25	71a-6	921	1,45	8,0	203,16	20,71	3					
110	108,71	0,37	0,5	71B-4	1400	1,07	12,1	274,73	28,00	3					
		0,18	0,25	63B-4	1393	2,41	12,8	126,11	12,85	3					
		0,25	0,35	71a-4	1366	1,70	12,6	178,61	18,21	3					
		0,18	0,25	80a-8	650	1,24	6,0	270,25	27,55	3					
		0,13	0,18	71B-8	651	1,72	6,0	194,88	19,87	3					
		0,25	0,35	71B-6	910	1,13	8,4	268,11	27,33	3					
100	99,76	0,18	0,25	71a-6	921	1,59	8,5	190,73	19,44	3					
		0,37	0,5	71B-4	1400	1,18	12,9	257,92	26,29	3					
		0,18	0,25	63B-4	1393	2,33	14,0	115,72	11,80	3					
		0,18	0,25	80a-8	650	1,19	6,5	248,00	25,28	3					
		0,13	0,18	71B-8	651	1,66	6,5	178,84	18,23	3					
		0,25	0,35	71a-4	1366	1,64	13,7	163,90	16,71	3					
90	90,27	0,25	0,35	71B-6	910	1,09	9,1	246,04	25,08	3					
		0,37	0,5	71B-4	1400	1,14	14,0	236,69	24,13	3					
		0,18	0,25	80a-8	650	1,66	7,2	224,41	22,88	3					
		0,25	0,35	71B-6	910	1,52	10,1	222,63	22,69	3					
		0,25	0,35	71a-4	1366	2,29	15,1	148,31	15,12	3					
		0,37	0,50	71B-4	1400	1,58	15,5	214,17	21,83	3					
75	75,31	0,55	0,75	80a-4	1391	1,06	15,4	320,41	32,66	3					
		0,25	0,35	71a-4	1366	2,39	18,1	123,74	12,61	3					
		0,37	0,5	71B-4	1400	1,66	18,6	178,68	18,21	3					
		0,55	0,75	80a-4	1391	1,11	18,5	267,33	27,25	3					
		0,25	0,35	71a-4	1366	2,76	19,6	114,60	11,68	3					
		0,37	0,5	71B-4	1400	1,91	20,1	165,49	16,87	3					
70	69,75	0,55	0,75	80a-4	1391	1,28	19,9	247,59	25,24	3					
		0,25	0,35	71a-4	1366	2,75	20,7	108,29	11,04	3					
		0,37	0,5	71B-4	1400	1,91	21,2	156,38	15,94	3					
		0,55	0,75	80a-4	1391	1,28	21,1	233,96	23,85	3					
		0,37	0,5	71B-4	1400	2,51	24,7	134,72	13,73	3					
		0,55	0,75	80a-4	1450	1,75	25,5	193,36	19,71	3					
65	65,91	0,75	1	80B-4	1394	1,23	24,5	274,27	27,96	3					
		0,37	0,5	71B-4	1400	2,51	24,7	134,72	13,73	3					
		0,55	0,75	80a-4	1391	1,28	21,1	233,96	23,85	3					
		0,37	0,5	71B-4	1400	2,51	24,7	134,72	13,73	3					
		0,55	0,75	80a-4	1450	1,75	25,5	193,36	19,71	3					
		0,75	1	80B-4	1394	1,23	24,5	274,27	27,96	3					
55	56,79	0,37	0,5	71B-4	1400	2,51	24,7	134,72	13,73	3					
		0,55	0,75	80a-4	1391	1,28	21,1	233,96	23,85	3					
		0,37	0,5	71B-4	1400	2,51	24,7	134,72	13,73	3					
		0,55	0,75	80a-4	1450	1,75	25,5	193,36	19,71	3					
		0,75	1	80B-4	1394	1,23	24,5	274,27	27,96	3					
		0,37	0,5	71B-4	1400	2,51	24,7	134,72	13,73	3					
50	49,56	0,55	0,75	80a-4	1391	1,68	28,1	175,93	17,93	3					
		0,37	0,5	71B-4	1400	2,51	24,7	134,72	13,73	3					
		0,55	0,75	80a-4	1391	1,68	28,1	175,93	17,93	3					
		0,75	1	80B-4	1394	1,23	28,1	239,39	24,40	3					
		0,37	0,5	71B-4	1400	2,51	24,7	134,72	13,73	3					
		0,55	0,75	80a-4	1391	1,89	31,9	154,93	15,79	3					
45	43,65	0,75	1,5	80B-4	1394	1,39	31,9	210,81	21,49	3					
		0,55	0,75	80a-4	1391	2,50	37,4	132,04	13,46	3					
		0,75	1,5	80B-4	1394	1,39	31,9	210,81	21,49	3					
		0,55	0,75	80a-4	1391	2,50	37,4	132,04	13,46	3					
		0,75	1	80B-4	1394	1,83	37,5	179,67	18,31	3					
		1,1	1,5	90s-4	1378	1,24	37,0	266,57	27,17	3					
40	37,20	0,55	0,75	80a-4	1391	2,37	41,4	119,16	12,15	3					
		0,75	1	80B-4	1394	1,74	41,5	162,14	16,53	3					
		0,55	0,75	80a-4	1391	2,37	41,4	119,16	12,15	3					
		0,75	1	80B-4	1394	1,74	41,5	162,14	16,53	3					
		1,1	1,5	90s-4	1378	1,17	41,0	240,56	24,52	3					
		1,1	1,5	90s-4	1378	1,17	41,0	240,56	24,52	3					

STON 3 (300 nm)		input				fs	output			stage	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
30	28,59	0,55	0,75	80a-4	1391	2,81	48,6	101,49	10,35	3					
		0,75	1	80B-4	1394	2,07	48,8	138,10	14,08	3					
		1,1	1,5	90s-4	1378	1,39	48,2	204,89	20,89	3					
25	24,96	0,55	0,75	80a-4	1391	3,09	55,7	88,58	9,03	3					
		0,75	1	80B-4	1394	2,27	55,9	120,54	12,29	3					
		1,1	1,5	90s-4	1378	1,53	55,2	178,84	18,23	3					
20	21,11	0,75	1	80B-4	1450	2,60	68,7	98,03	9,99	3					
		1,1	1,5	90s-4	1378	1,69	65,3	151,29	15,42	3					
		1,5	2	90L-4	1413	1,27	66,9	201,20	20,51	3					
25	25,09	0,55	0,75	80a-4	1391	2,49	55,4	90,94	9,27	2					
		0,75	1	80B-4	1394	1,83	55,6	123,75	12,61	2					
		1,1	1,5	90s-4	1378	1,23	54,9	183,60	18,72	2					
20	19,68	0,55	0,75	80a-4	1391	2,79	70,7	71,36	7,27	2					
		0,75	1	80B-4	1394	2,05	70,8	97,09	9,90	2					
		1,1	1,5	90s-4	1378	1,38	70,0	144,06	14,68	2					
15	15,54	0,75	1	80B-4	1394	2,67	89,7	76,65	7,81	2					
		1,1	1,5	90s-4	1378	1,80	88,7	113,73	11,59	2					
		1,5	2	90L-4	1413	1,35	90,9	151,24	15,42	2					
13	12,01	0,75	1	80B-4	1394	2,90	116,1	59,23	6,04	2					
		1,1	1,5	90s-4	1378	1,96	114,8	87,88	8,96	2					
		1,5	2	90L-4	1413	1,47	117,7	116,87	11,91	2					
10	10,48	0,75	1	80B-4	1394	2,90	133,0	51,70	5,27	2					
		1,1	1,5	90s-4	1378	1,96	131,5	76,71	7,82	2					
		1,5	1	90L-4	1413	1,47	134,8	102,01	10,40	2					
7	6,48	1,1	1,5	90s-4	1378	3,20	212,7	47,42	4,83	2					
		1,5	2	90L-4	1413	2,41	218,1	63,06	6,43	2					
		2,2	3	90L-2	2859	3,00	441,3	45,71	4,66	2					
		2,2	3	100La-4	1435	1,67	221,5	91,07	9,28	2					
		3	4	100L-2	2882	2,22	444,8	61,83	6,30	2					
		1,1	1,5	90s-4	1378	3,20	273,5	36,87	3,76	2					
5	5,04	1,5	2	90L-4	1413	2,41	280,5	49,03	5,00	2					
		2,2	3	90L-2	2859	3,00	567,5	35,54	3,62	2					
		2,2	3	100La-4	1435	1,67	284,9	70,80	7,22	2					
		3	4	100L-2	2882	2,22	572,1	48,07	4,90	2					
		4	5	112m-2	2887	1,67	573,1	63,99	6,52	2					
		1,1	1,5	90s-4	1378	3,43	333,6	30,23	3,08	2					
4	4,13	1,5	2	90L-4	1413	2,58	342,1	40,20	4,10	2					

performance table



STON 4 (450 nm)		input				fs	output			stage	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	118,81	0,13	0,18	71B-8	651	1,97	5,5	212,98	21,71	3					
		0,18	0,25	80a-8	650	1,42	5,5	295,34	30,11	3					
		0,18	0,25	71a-6	921	2,02	7,8	208,44	21,25	3					
		0,25	0,35	71B-6	910	1,41	7,7	293,00	29,87	3					
		0,25	0,35	71a-4	1366	2,15	11,5	195,19	19,90	3					
		0,37	0,5	71B-4	1450	1,43	12,2	272,15	27,74	3					
110	106,41	0,13	0,18	71B-8	651	2,17	6,1	190,75	19,44	3					
		0,18	0,25	80a-8	650	1,42	6,1	264,52	26,96	3					
		0,18	0,25	71a-6	921	2,02	8,7	186,69	19,03	3					
		0,25	0,35	71B-6	910	1,41	8,6	262,43	26,75	3					
		0,25	0,35	71a-4	1366	2,15	12,8	174,82	17,82	3					
		0,37	0,5	71B-4	1450	1,43	13,6	243,75	24,85	3					
100	98,61	0,18	0,25	71a-6	921	2,01	9,3	173,01	17,64	3					
		0,25	0,35	71a-4	1366	2,15	13,9	162,01	16,51	3					
		0,37	0,5	71B-4	1400	1,49	14,2	233,95	23,85	3					
		0,55	0,75	80a-4	1391	1,28	14,1	350,01	35,68	3					
90	87,80	0,18	0,25	71a-6	921	2,92	10,5	154,05	15,70	3					
		0,25	0,35	71a-4	1366	3,12	15,6	144,26	14,70	3					
		0,37	0,5	71B-4	1400	2,16	15,9	208,31	21,23	3					
		0,55	0,75	80a-4	1450	1,36	16,5	298,98	30,48	3					
80	81,08	0,25	0,35	71a-4	1366	3,06	16,8	133,22	13,58	3					
		0,37	0,5	71B-4	1400	2,12	17,3	192,37	19,61	3					
		0,55	0,74	80a-4	1391	1,41	17,2	287,81	29,34	3					
70	69,57	0,37	0,5	71B-4	1400	2,45	20,1	165,05	16,82	3					
		0,55	0,75	80a-4	1391	1,64	20,0	246,93	25,17	3					
		0,75	1	80B-4	1394	1,39	20,0	336,00	34,25	3					
60	57,89	0,37	0,5	71B-4	1400	3,40	24,2	137,35	14,00	3					
		0,55	0,75	80a-4	1391	2,27	24,0	205,49	20,95	3					
		0,75	1	80B-4	1394	1,25	24,1	279,61	28,50	3					
55	53,46	0,37	0,5	71B-4	1400	2,76	26,2	126,84	12,93	3					
		0,55	0,75	80a-4	1391	1,84	26,0	189,76	19,34	3					
		0,75	1	80B-4	1394	1,29	26,1	258,21	26,32	3					
50	49,50	0,37	0,5	71B-4	1400	2,84	28,3	117,43	11,97	3					
		0,55	0,75	80a-4	1391	1,90	28,1	175,69	17,91	3					
		0,75	1	80B-4	1394	1,33	28,2	239,06	24,37	3					
45	45,87	0,37	0,50	71B-4	1400	2,92	30,5	108,82	11,09	3					
		0,55	0,74	80a-4	1391	1,95	30,3	162,81	16,60	3					
		0,75	1	80B-4	1394	1,33	30,4	221,54	22,58	3					
40	38,15	0,37	0,5	71B-4	1400	3,25	36,7	90,51	9,23	3					
		0,55	0,75	80a-4	1391	2,18	36,5	135,42	13,80	3					
		0,75	1	80B-4	1394	1,29	36,5	184,26	18,78	3					
35	35,60	0,37	0,5	71B-4	1400	2,81	39,3	84,45	8,61	3					
		0,55	0,75	80a-4	1391	1,88	39,1	126,35	12,88	3					
		0,75	1	80B-4	1394	1,25	39,2	171,92	17,53	3					
30	29,58	0,55	0,75	80a-4	1391	2,05	47,0	104,98	10,70	3					
		0,75	1	80B-4	1394	1,50	47,1	142,85	14,56	3					
		1,1	1,5	90s-4	1378	1,57	46,6	211,94	21,60	3					

STON 4 (450 nm)		input				fs	output			stage	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	25,48	0,55	0,75	80a-4	1391	3,01	54,6	90,45	9,22	3					
		0,75	1	80B-4	1394	2,21	54,7	123,08	12,55	3					
		1,1	1,5	90s-4	1450	1,57	56,9	173,55	17,69	3					
20	22,39	0,55	0,75	80a-4	1391	3,26	62,1	79,47	8,10	3					
		0,75	1	80B-4	1394	2,40	62,3	108,13	11,02	3					
		1,1	1,5	90s-4	1378	1,62	61,5	160,43	16,35	3					
23	22,75	0,75	1	80B-4	1394	2,65	61,3	112,22	11,44	2					
		1,1	1,5	90s-4	1450	1,88	63,7	158,23	16,13	2					
		1,5	2	90L-4	1413	1,34	62,1	221,41	22,57	2					
20	20,38	0,75	1	80B-4	1394	2,65	68,4	100,51	10,25	2					
		1,1	1,5	90s-4	1450	1,88	71,2	141,72	14,45	2					
		1,5	2	90L-4	1413	1,34	69,3	198,31	20,22	2					
18	18,16	1,1	1,5	90s-4	1450	2,75	79,9	126,29	12,87	2					
		1,5	2	90L-4	1413	1,96	77,8	176,72	18,01	2					
		2,2	3	100La-4	1435	1,36	79,0	255,22	26,02	2					
15	14,29	1,1	1,5	90s-4	1450	2,97	101,5	99,37	10,13	2					
		1,5	2	90L-4	1413	2,12	98,9	139,06	14,17	2					
		2,2	3	100La-4	1435	1,47	100,4	200,82	20,47	2					
10	9,97	1,5	2	90L-4	1413	3,03	141,7	97,07	9,90	2					
		2,2	3	100La-4	1435	2,10	143,9	140,19	14,29	2					
		3	4	100LB-4	1407	1,51	141,1	194,98	19,88	2					
7	6,60	1,5	2	90L-4	1413	3,20	214,2	64,20	6,54	2					
		2,2	3	100La-4	1435	2,21	217,6	92,71	9,45	2					
		3	4	100LB-4	1407	1,59	213,3	128,94	13,14	2					
		3	4	100L-2	2882	2,87	436,9	62,95	6,42	2					
5	5,68	4	5	112m-2	2887	2,15	437,7	83,79	8,54	2					
		1,5	2	90L-4	1413	3,20	248,6	55,31	5,64	2					
		2,2	3	100La-4	1435	2,21	252,5	79,88	8,14	2					
		3	4	100LB-4	1407	1,59	247,6	111,10	11,33	2					
4	4,06	3	4	100L-2	2882	2,87	507,1	54,24	5,53	2					
		4	5	112m-2	2887	2,15	508,0	72,19	7,36	2					
		2,2	3	100La-4	1435	3,07	353,1	57,12	5,82	2					
		3	4	100LB-4	1407	2,21	346,2	79,44	8,10	2					
4	4,06	4	5,5	112m-4	1415	1,67	348,2	105,32	10,74	2					
		3	4	100L-2	2882	3,98	709,2	38,78	3,95	2					
		4	5	112m-2	2887	2,99	710,4	51,62	5,26	2					
		5,5	7,5	112mB-2	2883	2,17	709,4	71,08	7,25	2					

performance table



STON 5 (700nm)		input				fs	output			stage	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	117,93	0,37	0,5	90s-8	670	1,61	5,7	584,64	59,60	3					
		0,55	0,75	80B-6	917	1,43	7,8	634,97	64,73	3					
		0,75	1	80B-4	1394	1,24	11,8	569,59	58,06	3					
		0,25	0,35	80B-8	691	2,45	5,9	383,02	39,04	3					
		0,37	0,5	80a-6	928	2,16	7,9	422,10	43,03	3					
		0,55	0,75	80a-4	1391	1,68	11,8	418,60	42,67	3					
110	101,08	0,37	0,5	90s-8	670	1,34	6,6	501,12	51,08	3					
		0,55	0,75	80B-6	917	1,27	9,1	544,26	55,48	3					
		0,75	1	80B-4	1394	1,29	13,8	488,22	49,77	3					
		0,25	0,35	80B-8	691	2,04	6,8	328,30	33,47	3					
		0,37	0,5	80a-6	928	1,91	9,2	361,80	36,88	3					
		0,55	0,75	80a-4	1391	1,76	13,8	358,80	36,57	3					
100	98,70	0,37	0,5	71B-4	1400	2,52	11,9	279,79	28,52	3					
		0,75	1	80B-4	1394	1,24	14,1	476,70	48,59	3					
		0,55	0,75	80a-4	1391	1,69	14,1	350,34	35,71	3					
		0,37	0,5	71B-4	1400	2,53	14,2	234,17	23,87	3					
		0,37	0,5	90s-8	670	1,33	6,8	489,30	49,88	3					
		0,55	0,75	80B-6	917	1,11	9,3	531,42	54,17	3					
90	84,60	1,1	1,5	90s-4	1378	1,21	16,3	606,24	61,80	3					
		0,75	1	80B-4	1394	1,79	16,5	408,60	41,65	3					
		0,55	0,75	80a-4	1391	2,43	16,4	300,29	30,61	3					
80	79,76	1,1	1,5	90s-4	1378	1,17	17,3	571,54	58,26	3					
		0,75	1	80B-4	1394	1,73	17,5	385,21	39,27	3					
		0,55	0,75	80a-4	1391	2,35	17,4	283,10	28,86	3					
70	68,36	1,1	1,5	90s-4	1378	1,29	20,2	489,89	49,94	3					
		0,75	1	80B-4	1394	1,92	20,4	330,18	33,66	3					
		0,55	0,75	80a-4	1391	2,61	20,3	242,66	24,74	3					
60	58,67	1,1	1,5	90s-4	1378	1,17	23,5	420,40	42,85	3					
		0,75	1	80B-4	1394	1,73	23,8	283,35	28,88	3					
		0,55	0,75	80a-4	1391	2,35	23,7	208,24	21,23	3					
55	55,55	1,5	2	90L-4	1413	1,30	25,4	529,33	53,96	3					
		1,1	1,5	90s-4	1378	1,73	24,8	398,04	40,57	3					
		0,75	1	80B-4	1394	2,57	25,1	268,27	27,35	3					
50	50,29	1,5	2	90L-4	1413	1,16	28,1	479,21	48,85	3					
		1,1	1,5	90s-4	1378	1,54	27,4	360,35	36,73	3					
		0,75	1	80B-4	1394	2,29	27,7	242,87	24,76	3					
45	46,07	1,5	2	90L-4	1413	1,38	30,7	439,05	44,75	3					
		1,1	1,5	90s-4	1378	1,84	29,9	330,14	33,65	3					
		0,75	1	80B-4	1394	2,73	30,3	222,51	22,68	3					
40	40,86	1,5	2	90L-4	1413	1,32	34,6	389,36	39,69	3					
		1,1	1,5	90s-4	1378	1,75	33,7	292,78	29,85	3					
		0,75	1	80B-4	1394	2,60	34,1	197,33	20,12	3					
35	33,89	2,2	3	100La-4	1435	1,27	42,3	466,39	47,54	3					
		1,5	2	90L-4	1413	1,84	41,7	322,95	32,92	3					
		1,1	1,5	90s-4	1378	2,45	40,7	242,84	24,75	3					
30	29,85	2,2	3	100La-4	1435	1,33	48,1	410,87	41,88	3					
		1,5	2	90L-4	1413	1,92	47,3	284,50	29,00	3					
		1,1	1,5	90s-4	1378	2,56	46,2	213,93	21,81	3					

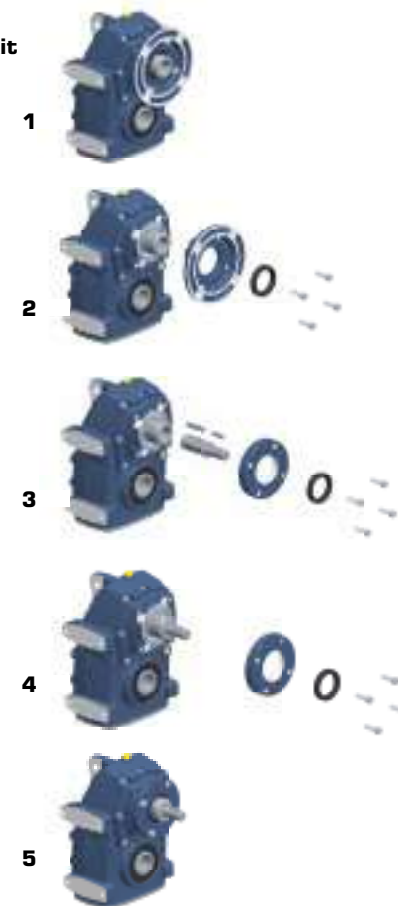
STON 5 (700nm)		input				fs	output			stage	input B5 iec 72-1				
ratio i: rated	ratio i: real	kW	Hp	motor	n ₁ [rpm]		n ₂ [rpm]	m ₂ [nm]	m ₂ [Kgm]		63	71	80	90	100/112
25	25,45	2,2	3	100La-4	1435	1,20	56,4	350,26	35,70	3					
		1,5	2	90L-4	1413	1,73	55,5	242,53	24,72	3					
		1,1	1,5	90s-4	1378	2,30	54,1	182,37	18,59	3					
20	21,23	2,2	3	100La-4	1435	1,77	67,6	292,23	29,79	3					
		1,5	2	90L-4	1413	2,56	66,5	202,35	20,63	3					
		1,1	1,5	90s-4	1378	3,40	64,9	152,16	15,51	3					
15	16,31	2,2	3	100La-4	1435	1,77	88,0	224,43	22,88	3					
		1,5	2	90L-4	1413	2,56	86,6	155,40	15,84	3					
		1,1	1,5	90s-4	1378	3,40	84,5	116,86	11,91	3					
25	25,27	3	4	100LB-4	1407	1,11	55,7	494,00	50,36	2					
		2,2	3	100La-4	1435	1,54	56,8	355,20	36,21	2					
		1,5	2	90L-4	1413	2,23	55,9	245,95	25,07	2					
20	17,99	5	6,8	112m-4	1415	1,15	78,7	582,80	59,41	2					
		3	4	100LB-4	1407	1,91	78,2	351,67	35,85	2					
		2,2	3	100La-4	1435	2,66	79,8	252,86	25,78	2					
15	15,06	4	5,5	112m-4	1415	1,25	94,0	390,21	39,78	2					
		3	4	100LB-4	1407	1,65	93,4	294,32	30,00	2					
		2,2	3	100La-4	1435	2,30	95,3	211,62	21,57	2					
13	12,00	5	6,8	112mB-4	1445	1,29	120,4	380,59	38,80	2					
		4	5,5	112m-4	1415	1,58	117,9	310,93	31,70	2					
		3	4	100LB-4	1407	2,10	117,3	234,52	23,91	2					
10	10,04	5	6,8	112mB-4	1445	1,45	143,9	318,53	32,47	2					
		4	5,5	112m-4	1415	1,77	140,9	260,23	26,53	2					
		3	4	100LB-4	1407	2,35	140,1	196,28	20,01	2					
7	7,39	5	6,8	112mB-4	1445	1,45	195,6	234,30	23,88	2					
		4	5,5	112m-4	1415	1,77	191,6	191,41	19,51	2					
		3	4	100LB-4	1407	2,35	190,5	144,38	14,72	2					
5	5,22	5	6,8	112mB-4	1445	1,45	276,7	165,67	16,89	2					
		4	5,5	112m-4	1415	1,77	271,0	135,34	13,80	2					
		3	4	100LB-4	1407	2,35	269,4	102,08	10,41	2					
		4	5	112m-2	2882	4,23	551,9	49,84	5,08	2					
		4	5	112m-2	2887	3,18	552,8	66,34	6,76	2					
		5,5	7,5	112mB-2	2883	2,31	552,1	91,34	9,31	2					
4	3,95	5	6,8	112mB-4	1445	1,61	365,8	125,33	12,78	2					
		4	5,5	112m-4	1415	1,97	358,2	102,39	10,44	2					
		3	4	100LB-4	1407	2,61	356,1	77,23	7,87	2					
		3	4	100L-2	2882	4,70	729,5	37,70	3,84	2					
		4	5	112m-2	2887	3,53	730,8	50,18	5,12	2					
		5,5	7,5	112mB-2	2883	2,56	729,8	69,10	7,04	2					

DIMENSIONS

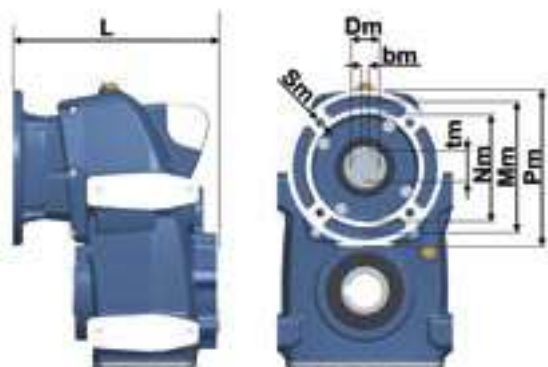
STON input and combinations

Ston	motor type		Nm	Mm	Pm	Sm	Dm	tm	bm	L	L*	L1	D1	f	b1	t1	M2	L (MF)	
3	63	B5	95	115	140	M8	11	12,8	4	177,5	4,5	40	19	M6x16	6	21,5	50	223	
	71	B5	110	130	160		14	16,3	5										
	80	B5	130	165	200	M10	19	21,8	6	178,5	5,5								
	90	B5					24	27,3	8										
4	100/112	B5	180	215	250	M12	28	31,3	8	184,5	5,5	40	19	M6x16	6	21,5	50	229	
	71	B5	110	130	160	M8	14	16,3	5	211,5	5,5								
	80	B5	130	165	200	M10	19	21,8	6	220,5	6								
	90	B5					24	27,3	8										
5	100/112	B5	180	215	250	M12	28	31,3	8	221,5	6,5	50	24	M8x25	8	27	60	265	
	71	B5	110	130	160	M8	14	16,3	5	226,5	7,5								
	80	B5	130	165	200	M10	19	21,8	6	235,5	6								
	90	B5					24	27,3	8										
	100/112	B5	180	215	250	M12	28	31,3	8	236,5	6,5							279	
																			289,5
																			290

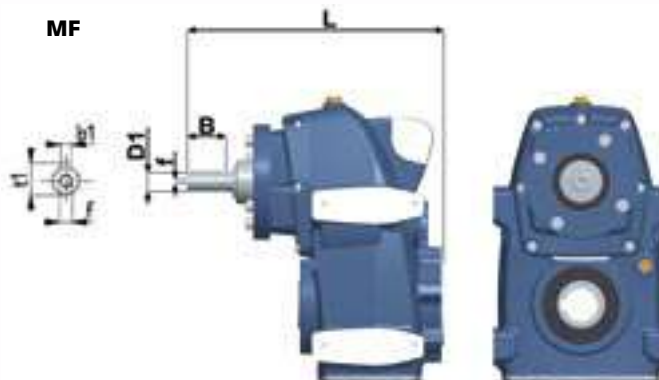
MF kit



PAM



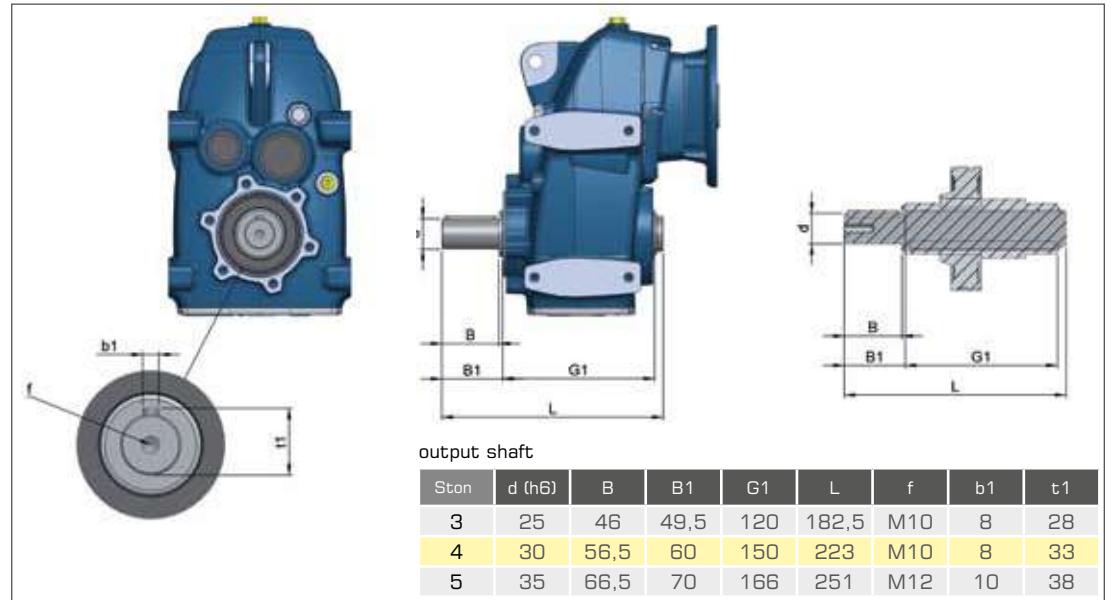
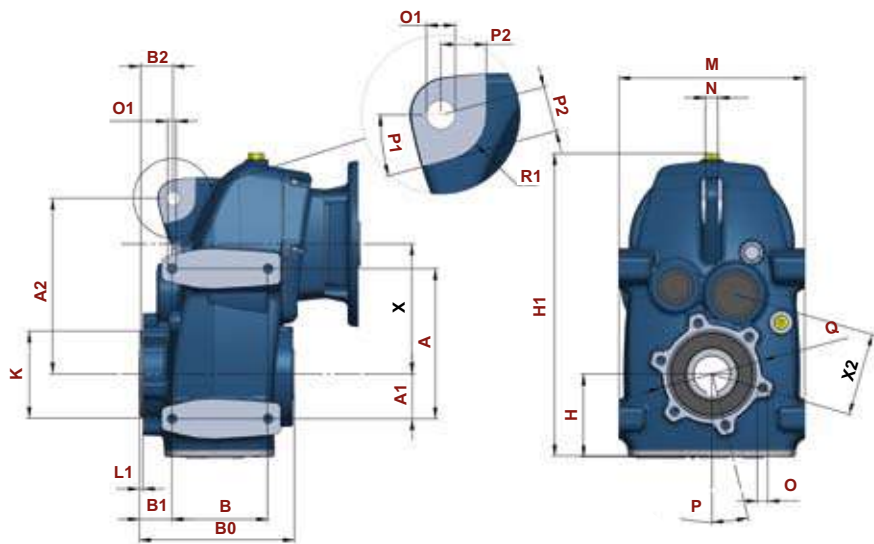
MF



output flange

STON	OFL	KP	KM (j6)	KN	KS	KL	KA	KB	KC (0; -0,5)
3	OFL160	160	110	130	M8x30	22	26	10	3,5
4	OFL200	200	130	165	M10x30	20	28	12	3,5
5	OFL250	250	180	215	M12x40	29,5	26,5	12	4

DiMenSionS



foot mounting

Ston	B2	A2	K (Øg7)	A	A1	o1	L1	B1	B	X	X2	P1	R1	P2	o1 (Ø)	M	n	H1	H	P	o	Q (Ø)	D1 (Øk6)	D (ØH7)	B0 (±0,1)	t5	t6	t7	V	t (+0,2;0)	e (e9)
3	31,5	158	80	115	31	M8x15	2,5	23	77	105	66	17°	22	22	14	165	12	250,5	71,5	15°	M8x15	94	45	30	120	15	15	17	iSo 4762 M10x25	33,3	8
4	32	170	85	145	43	M10x15	3	31	93	126	80	15°	22	22	14	180	12	294,5	81	15°	M10x15	102	50	35	150	18	18	22	iSo 4762 M12x30	38,5	10
5	40,5	198	105	170	55	M12x20	3	33,5	102	137	88	15°	22	22	14	200	14	328	93,5	15°	M12x20	125	55	40	166	24	24	29	iSo 4762 M16x40	43,3	12

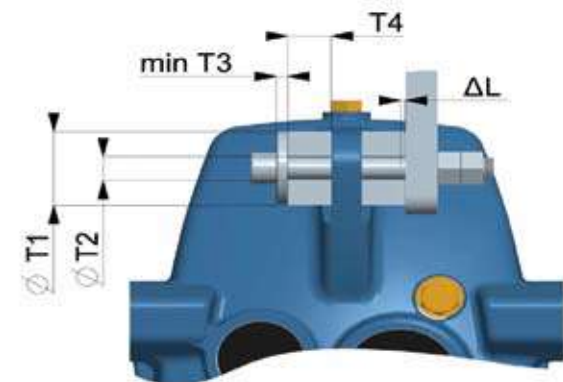
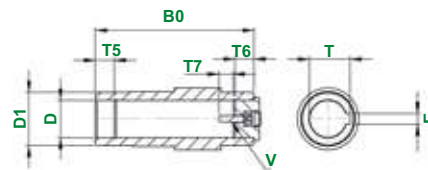
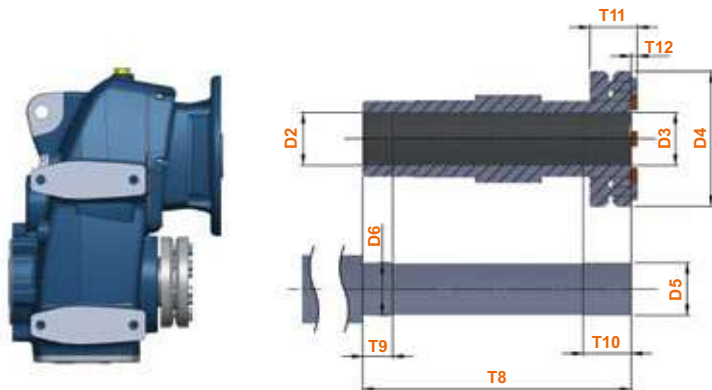
standard input shaft

shrink disc shaft

Ston	D2 (ØH6)	D3 (ØH6)	D4 (Ø)	D5 (Øh6)	ØD6 (h6)	t8 (±0,1)	t9	t10	t11	t12
3	30	30	80	30	30	148	20	31	24,2	5,3
4	35	35	90	35	35	179	20	32	26,1	5,3
5	40	40	100	40	40	195	20	26	29	5,3

torque arm

Ston	Øt1	Øt2	t3	t4	ΔL
3	40	12,5	5	20	1
4	40	12,5	5	20	1,5
5	40	12,5	5	20	1,5



TERMS OF SALE AND WARRANTY

ARTICLE 1 - **GUARANTEE**

1.1 Barring written agreements, entered into between the parties hereto each time, Motive hereby guarantees compliance with specific agreements.

The guarantee for defects shall be restricted to product defects following design, materials or manufacturing defects leading back to Motive.

The guarantee shall not include:

- * Faults or damages ensuing from transport. Faults or damages ensuing from installation defects; incompetent use of the product, or any other unsuitable use.
- * Tampering or damages ensuing from use by non-authorized staff and/or use of non-original parts and/or spare parts;
- * Defects and/or damages ensuing from chemical agents and/or atmospheric phenomena (e.g. burnt out material, etc.); routine maintenance and required action or checks;
- * Products lacking a plate or having a tempered plate.

1.2 Returns to credit or replace will be accepted only in exceptional cases; however returns of goods already used to credit or replace won't be accepted in any case.

The guarantee shall be effective for all Motive products, with a term of validity of 12 months, starting from the date of shipment.

The guarantee shall be subject to specific written request for Motive to take action, according to statements, as described at the paragraphs herein below. By virtue of aforesaid approval, and as regards the claim, Motive shall be bound at its discretion, and within a reasonable time-limit, to alternatively take the following actions:

a) To supply the Buyer with products

of the same type and quality as those having proven defective and not complying with agreements, free ex-works; in aforesaid case, Motive shall have the right to request, at Buyer's charge, early return of defective goods, which shall become Motive's property;

b) To repair, at its charge, the defective product or to modify the product which does not comply with agreements, by performing aforesaid action at its facilities; in aforesaid cases, all costs regarding product transport shall be sustained by the Buyer.

c) To send spare parts free of charge: all costs regarding product transport shall be sustained by the Buyer.

1.3. The guarantee herein shall assimilate and replace legal guarantees for defects and discrepancies, and shall exclude any other eventual Motive liability, however caused by supplied products; in particular, the Buyer shall have no right to submit any further claims.

Motive shall not be liable for the enforcement of any further claims, as of the date the guarantee's term of validity expires.

ARTICLE 2 - **CLAIMS**

2.1. Claims, regarding quantity, weight, gross weight and colour, or claims regarding faults and defects in quality or compliance, and which the Buyer may discover on goods delivery, shall be submitted by a max. 7 days of aforesaid discovery, under penalty of nullity.

ARTICLE 3 - **DELIVERY**

3.1. Any liability for damages ensuing from total or partial delayed or

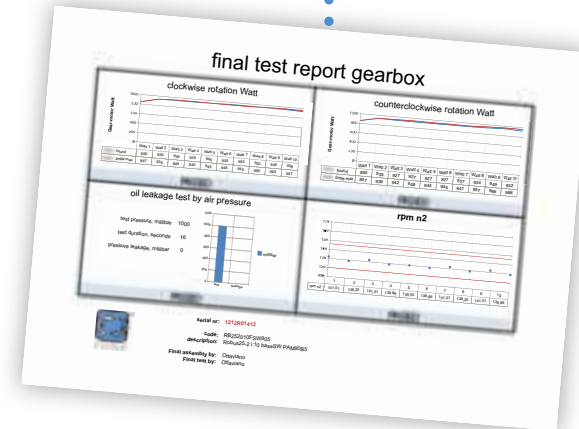
failed delivery, shall be excluded.

3.2. Unless differently communicated by written to the Client, the transport terms have to be intended ex-works.

ARTICLE 4 - **PAYMENT**

4.1. Any delayed or irregular payments shall entitle Motive to cancel ongoing agreement, including agreements which do not regard the payments at issue, as well as entitling Motive to claim damages, if any. Motive shall, however, have the right, as of payment's due date and without placing in arrears, to claim interest for arrears, to the extent of the discount rate in force in Italy, increased by 12 points. Motive shall also have the right to withhold material under repair for replacement. In the case of failed payment, Motive shall have the right to cancel all guarantees of materials, as regards the insolvent Client.

4.2. The Buyer shall be bound to complete payment, including cases whereby claims or disputes are underway.



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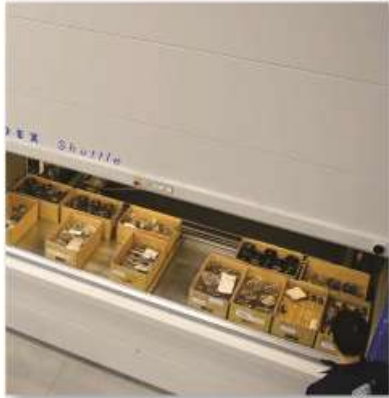
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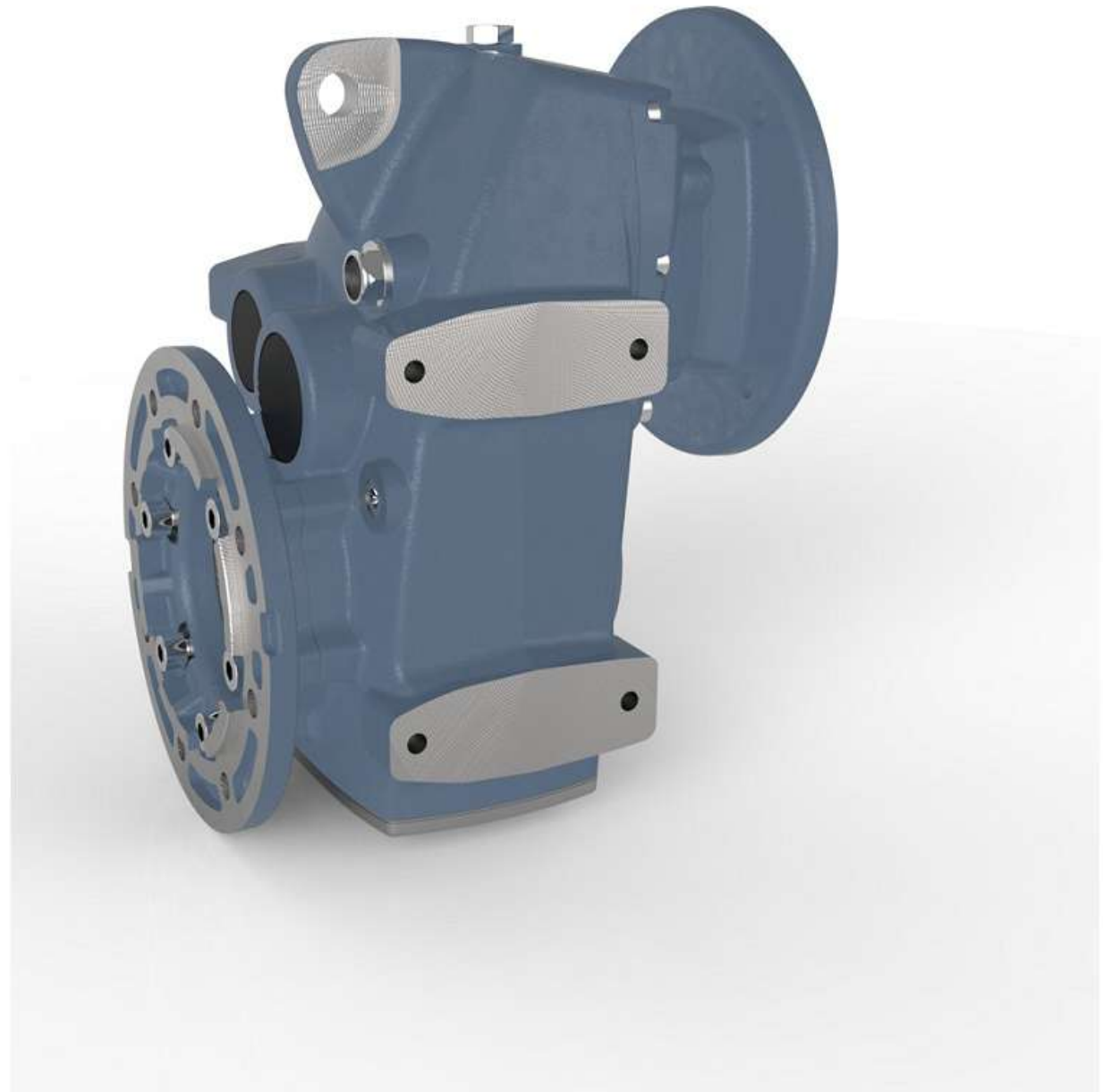
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