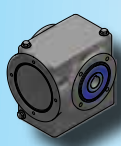




Stainless Steel Helical Worm Gearboxes





FS(A) Helical Worm Gearboxes

The FS(A) series helical wormgearboxes are being developed to achieve high torque, less energy use and less surface heat.

The high efficiency of the drive reduces the energy consumption.

The combination of a helical gearset with a wormgearset offers relatively better efficiency than wormgears only.

Using this combination the series offers higher maximum ratio's compared to single stage worm gear drives.

The footprint and shaft sizes are similar to common used standards in the market.

The design of the gearbox is organic round and the smooth design makes the gearboxes extremely applicable in the food industry.

The FS(A) helical worm gearbox offers high ratio's (up to 217,41) with a maximum output torque of 520 Nm.

The main features are:

Made of high quality carefully electro polished Stainless Steel AISI 316. (Mirror Polished on request)

The smooth design gives the gearbox a nice appearance, ready to suit all kinds of stainless steel machineries in the food industry.

All Hollow shafts are produced in Duplex Stainless Steel 2205.

The special PNS surface treatment ensures enough hardness to collaborate with our Special High Temperature Resistant Blue Shaft Seals.

The PNS treatment increases the lifetime of shaft / seal cooperation and helps to reduce wear on the shaft surface.

By this, the gearbox obtains a longer drip free operation compared to standard shaft / seal combinations made of SS304 with NBR or FKM.

The use of above combination offers all the positive characteristics of stainless steel and the surface hardness of a hardened shaft.

Our high performance engineered shaft seals have a blue colour.

It is a well overthought feature for food industry applications.

It might be clear that the colour "Blue" is a not existing organic colour.

In the context of food safety it is a common use to embed blue colours as these are very visible and easily to be recognised by Vision scanning systems.

All gearboxes are standard equipped with NSH H1 certified Synthetic Foodgrade lubrication.

On request it can be supplied with a Halal, Kosher or Nut Free certification.

To avoid dirt traps under the commonly used motor identification tagplate,

all our motors and gearboxes are being equipped with a laser engraved tagplate.

Besides for the food safety this also prevents against possible loss of information because of taking away the tagplate or loosing the tagplate from the driveparts.

As a part of our standard procedure every drive is tested in our production facility in the Netherlands to ensure correct functioning.

Properties and features :

Standard ratio's 22,5 : 1 up to 217,41 : 1

IEC motor adaption or with integrated motor

Standard hollow shafts 20, 25, 30, 35, 40 and 45mm

Extra hygienic optional shaft covers. (open and closed version)

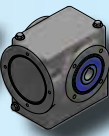
Easy Clean torque arm with built in elastic element to reduce alignment mistakes allows easy assembling of the gearbox on the machine shaft.

There is no need to laser cut and bend your own torque arm.

The Easy Clean torque arm has a very open design. This design offers better cleanability during the standard cleaning cycle.

For flange mounted applications we offer several types of secondary output flanges in Electro Polished SS316.

As a problem solver we are happy to investigate the best possible solutions for our customers that fits their budget.


FS (A) 38

Ratio's	22.5 : 1 up to 157.43 : 1
Standard shaft	20 mm
Torque	Max. 92 Nm
Power	Max. 0.55 kW

FS (A) 48

Ratio's	23.20 : 1 up to 201.00 : 1
Standard shaft	25 & 30 mm
Torque	Max. 170 Nm
Power	Max. 1.1 kW

FS (A) 58

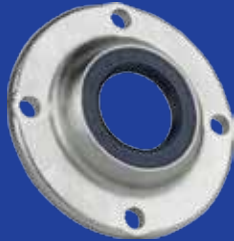
Ratio's	23.20 : 1 up to 201.00 : 1
Standard shaft	30 & 35 mm
Torque	Max. 295 Nm
Power	Max. 1.5 kW

FS (A) 68

Ratio's	26.93 : 1 up to 217.41 : 1
Standard shaft	40 & 45 mm
Torque	Max. 520 Nm
Power	Max. 3.0 kW


Easy Clean Closed Cover

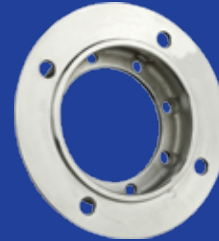
FS(A) 38	SS085 CC
FS(A) 48	SS095 CC
FS(A) 58	SS115 CC
FS(A) 68	SS130 CC


Easy Clean Open Cover

FS(A) 38	SS085 CO20
FS(A) 48	SS095 CO25
FS(A) 58	SS115 CO30
FS(A) 68	SS130 CO40


Torque Arms

FS(A) 38	SS085 MS
FS(A) 48	SS095 MS
FS(A) 58	SS115 MS
FS(A) 68	SS130 MS


Output Flanges

FS(A) 38	SS 085 FL125
FS(A) 48	SS 095 FL160
FS(A) 48	SS 095 FL180
FS(A) 58	SS 115 FL200
FS(A) 68	SS 130 FL250



Power P

This parameter can be found in the gearbox selection tables and represents the amount kW that can be safely transmitted into the gearbox

$$P_1 = \frac{P_2}{\eta} [\text{kW}]$$

$$P_{1n} \geq P_1 \cdot f_s [\text{kW}]$$

P_1	Input Power (kW)
P_2	Output Power (kW)
P_{1n}	Rated Input Power (kW)
f_s	Service Factor
η	Transmission Efficiency %

Rotation Speed n

n_1	Gear Units Input Speed
n_2	Gear Units Output Speed

All stated values are based on an input speed of 1500 min^{-1} .

We strongly advise, to obtain the expected lifetime, not to exceed the maximum input speed.

In case of a lower input speed the maximum input torque should be taken in consideration too.

Transmission ratio i

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

Torque M

$$M_2 = \frac{9550 \cdot P_1 \cdot \eta}{n_2} [\text{Nm}]$$

$$M_{2n} \geq M_2 \cdot f_s [\text{Nm}]$$

M_2	= Output Torque (Nm)
M_{2n}	= Selected Output Torque (Nm)
P_1	= Input Power (kW)
η	= Transmission Efficiency %
f_s	= Service Factor

Efficiency of gear units

The efficiency of gear units is mainly determined by the gearing and bearing friction. Keep in mind that the starting efficiency of a gear unit is always less than its efficiency at operating speed. This factor is particularly distinctive for worm & helical worm gear boxes.

The gearing in helical worm & worm gearboxes produces a high proportion of sliding friction.

As a result these gearboxes have higher gear efficiency losses than other gearboxes and therefore have a lower total efficiency.

A secondary result is that the surface temperature of these gearboxes will be higher than other gearboxes.

The efficiency of the Dertec Stainless Steel gearboxes can be found in the possible geometrical combinations page's of each gearbox serie.



Service Factor

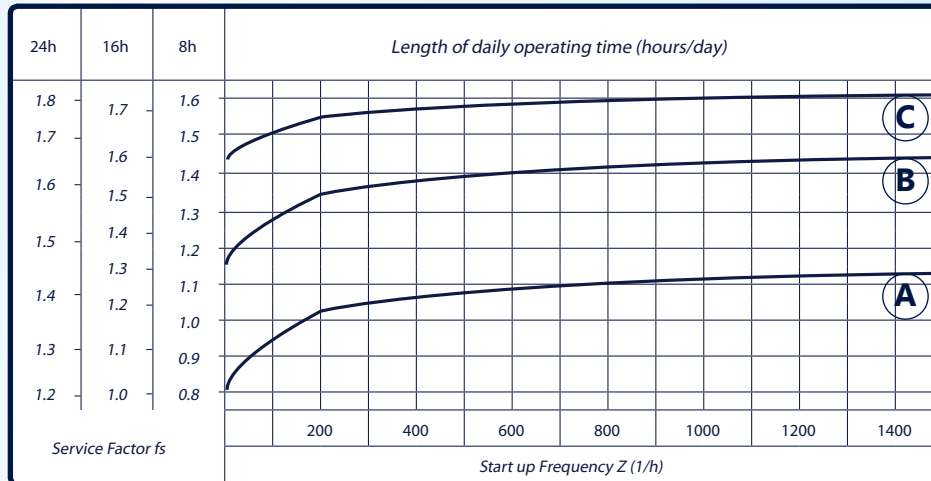
The effect of the driven machine on the gearbox is taken into account to a sufficient level of accuracy using the Service Factor f_s .

The Service Factor is determined according to the daily operating time and the starting frequency Z .

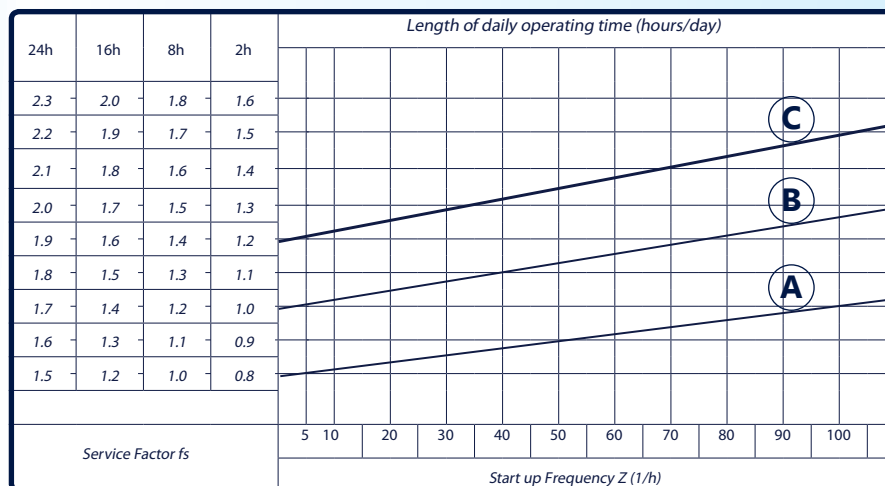
Three load classifications are considered depending on the mass acceleration factor.

You can read of the service factor applicable to your application in the figure below.

The service factor selected using this figure must be less than or equal to the service factor as given in the gearbox selection table.



Service Factor for wormgearboxes



Ambient temperature influence on the service factor for wormgearboxes

Service factor f_s should be adjusted as following

ambient temperature = 30 ~ 40 : $f_s \times 1.1 \sim 1.2$

ambient temperature = 40 ~ 50 : $f_s \times 1.3 \sim 1.4$

ambient temperature = 50 ~ 60 : $f_s \times 1.5 \sim 1.6$

ambient temperature = > 60, please contact Dertec.

Type of load:

A

Uniform load Permitted mass acceleration factor (f_a) ≤ 0.3

Screw feeders for light materials, fans, assembly lines, conveyor belts for light materials, small mixers, lifts, cleaning machines, fillers, control machines.

B

Moderate shock load Permitted mass acceleration factor (f_a) ≤ 3

Winding devices, woodworking machine feeders, goods lifts, balancers, threading machines, medium mixers, conveyor belts for heavy materials, winches, sliding doors, fertilizer scrapers, packing machines, concrete mixers, crane mechanism, milling cutters, folding machines, gear pumps.

C

Heavy Shock Load Permitted mass acceleration factor (f_a) ≤ 10

Mixers for heavy materials, shears, presses, centrifuges, rotating supports, winches and lifts for heavy materials, grinding lathes, stone mills, bucket elevators, drilling machines, hammer mills, cam presses, folding machines, turntables, tumbling barrels, vibrators, shredders.

To maintain the service life of the gear units,
the Service Factor mentioned in the gearbox selection table must be equal or slightly higher than the calculated service factor.



Mass Acceleration Factor

The Mass acceleration factor is calculated as follows:

$$f_a = \frac{J_c}{J_m}$$

f_a = Mass Acceleration Factor

J_c = All External Mass Moments Of Inertia [Kgm²]

J_m = Mass Moment Of Inertia on the Motor End [Kgm²]

If the mass acceleration factor is $f_a > 10$, please contact us.

Overhung and axial loads

Determining overhung loads

An important factor for determining the resulting overhung load is the type of transmission element mounted to the shaft end. The following transmission element factors f_z have to be considered for various transmission elements.

Transmission Element	Transmission Element Factor f_z	Comments
Gears	1.00	≥ 17 Teeth
	1.15	< 17 Teeth
Chain Sprockets	1.00	≥ 20 Teeth
	1.25	< 20 Teeth
	1.40	< 13 Teeth
Narrow V-belt pulleys	1.75	Influence of the tensile force
Flat Belt Pulleys	2.50	Influence of the tensile force
Toothed Belt Pulleys	2.50	Influence of the tensile force

The overhung load exerted on the motor or gearshaft is calculated as follows

$$F_r = \frac{M \cdot 2000}{d_0} \cdot f_z$$

F_r = Overhung load in N

M = Torque in Nm

d_0 = Mean Diameter of the mounted transmission element in mm

f_z = Transmission element factor

Permitted overhung load

The basis for determining the permitted overhung loads is the calculation of the rated bearing service life L_{10h} of the roller bearings (according ISO281)

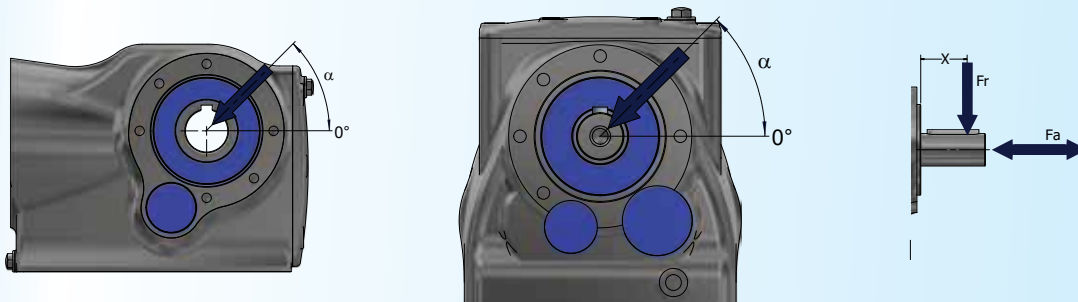
For special operating conditions, the permitted overhung loads can be determined with regard to the modified service life on request.

The values refer to force applied to the center of the shaft end (in right angle gear units as viewed onto drive end)

The values for the force application angle α and direction of rotation are based on the most unfavorable conditions.

Definition of force application

The force application is defined according to the following figure.



F_x = Permitted overhung load at point x [N]

F_a = Permitted axial load [N]


Permitted axial forces

If there is no overhung load, than an axial force F_a (Tension or Compression) amounting to 50% of the overhung load given in the selection tables is permitted.

Overhung load conversion for off-center force application

The permitted overhung loads must be calculated according to the selection tables using the following formula in the event that force is not applied at the center of the shaft end. Note that the calculations apply to $M2_{max}$.

F_{xl} based on bearing life:

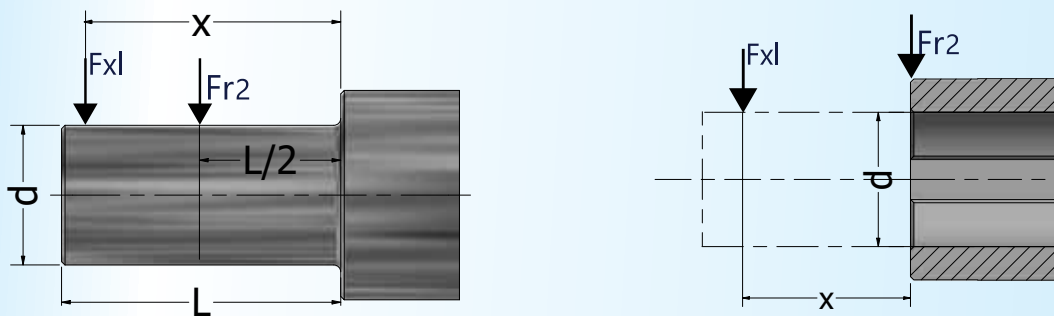
$$F_{xl} = F_{r2} \cdot \frac{a}{b + x} [N]$$

F_{r2} = Permitted overhung load ($x = L/2$) for foot mounted gear units according to the selection tables in [N]

X = Distance from the shaft shoulder to the force application point in [mm]

a, b , = Gear unit constant for overhung load conversions [mm]

The following figure shows the overhung load F_r with increased distance X to the gear unit.



Values of a & b in mm are given in the following table

FV	a	b	FR	a	b
FV 030	65	50	FR 38	118	93
FV 040	84	64	FR 48	137	107
FV 050	101	76	FR 68	168.5	133.5
FV 063	12	95			
FK	a	b	FS(A)	a	b
FK 28 B/C	104	78	FS(A) 38	118.5	98.5
FK 38 B/C	118	93	FS(A) 48	130	105
FK 48 B/C	131	101	FS(A) 58	150	120
FK 58 B/C	159	119	FS(A) 68	184	149
FRC	a	b	FKA	a	b
FRC 01	103	83	FKA 38	123.5	98.5
FRC 02	116.5	91.5	FKA 48	153.5	123.5
FRC 03	130	100	FKA 68	181.3	141.3
FFA	a	b	FKA 78	215.8	165.8
FFA 38	123.5	98.5	FKA 88	252	192
FFA 48	153.5	123.5			
FFA 68	181.3	141.3			
FFA 78	215.8	165.8			



Efficiency & Irreversibility Characteristics

Efficiency is an important parameter of a wormgear reducer.
Efficiency η depends on the following parameters:

- 1) Helix angle of gearing
- 2) Driving speed
- 3) Running in of gearing
- 4) The performance of the Lubricant, Oil Seals and Bearings.

The Mesh table shows the dynamic efficiency ($\eta_1=1400$) and static efficiency values.

Remember that these values are only achieved after the unit has been operating for ca. 24 hours. "Run in period"

Torque values M_{2n} indicated in the gearbox selection tables are calculated by considering the steady state performance of the gearboxes.
The actual values mentioned could have deflection.

Dynamic Irreversibility

Dynamic Irreversibility is achieved when the output shaft stops instantly when power is no longer transmitted through the wormshaft.
This condition requires a dynamic efficiency of $\eta_d < 0.4$. See mesh table.

η_d	> 0.6	0.5 ~ 0.6	0.4 ~ 0.5	< 0.4
Dynamic irreversibility	Dynamic reversibility	Low Dynamic reversibility	Good Dynamic irreversibility	Dynamic irreversibility

Static Irreversibility

Static Irreversibility is achieved when, at a standstill, the application of a load to the output shaft can't drive the wormshaft of the gear reducer.
This condition requires a static efficiency of $\eta_s < 0.5$. See mesh table.

η_s	> 0.55	0.5 ~ 0.55	< 0.5
Static irreversibility	Static reversibility	Low Static reversibility	Static irreversibility

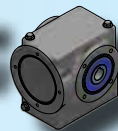
The table shows approximate irreversibility classes. Vibrations and shocks can effect a gear reducers irreversibility.

As it is virtual impossible to provide and guarantee total non reversing, we recommend the use of an external brake with sufficient capability to prevent vibrations in duced starting, where these circumstances are required.

For the irreversibility conditions of a combined geared unit one must consider that the efficiency of the group is given by the product of the efficiencies of each single reducer, i.e.: $N_{tot} = N_1 \times N_2$

Mesh Data

	i	7,5	10	15	20	25	30	40	50	60	80	100
FV 030	z1	4	3	2	2	1	1	1	1	1	1	
	Mn	1.36	1.39	1.42	1.09	1.69	1.43	1.10	0.89	0.74	0.56	
	Y	18°55'	14°25'	9°44'	7°50'	5°33'	4°54'	3°56'	3°17'	2°43'	2°7'	
	η_d	0.84	0.81	0.76	0.72	0.66	0.64	0.59	0.54	0.50	0.44	
	η_s	0.66	0.62	0.54	0.49	0.41	0.38	0.33	0.29	0.26	0.21	
FV 040	z1	4	3	2	2	2	1	1	1	1	1	1
	Mn	1.87	1.95	2.00	1.54	1.26	2.04	1.55	1.27	1.06	0.80	0.65
	Y	23°54'	18°23'	12°30'	10°3'	8°45'	6°19'	5°4'	4°24'	3°42'	2°52'	2°29'
	η_d	0.86	0.84	0.80	0.77	0.74	0.69	0.65	0.61	0.57	0.51	0.47
	η_s	0.70	0.66	0.59	0.54	0.51	0.44	0.39	0.36	0.32	0.27	0.24
FV 050	z1	4	3	2	2	2	1	1	1	1	1	1
	Mn	2.34	2.43	2.50	1.92	1.56	2.54	1.94	1.58	1.32	1.00	0.80
	Y	23°49'	18°19'	12°27'	10°3'	8°33'	6°18'	5°4'	4°18'	3°38'	2°52'	2°17'
	η_d	0.87	0.85	0.81	0.78	0.75	0.71	0.67	0.63	0.59	0.53	0.48
	η_s	0.70	0.66	0.59	0.54	0.51	0.44	0.39	0.36	0.32	0.27	0.24
FV 063	z1	4	3	2	2	2	1	1	1	1	1	1
	Mn	2.96	3.08	3.17	2.44	1.98	3.23	2.47	1.99	1.68	1.27	1.02
	Y	24°31'	18°53'	12°51'	10°29'	8°45'	6°30'	5°17'	4°24'	3°49'	2°59'	2°26'
	η_d	0.88	0.86	0.82	0.80	0.77	0.73	0.69	0.65	0.62	0.56	0.51
	η_s	0.70	0.66	0.59	0.55	0.51	0.44	0.40	0.36	0.33	0.28	0.24



P_{1n} [kW]	N_2 min^{-1}	M_{2n} [Nm]	i	F_{r2} [N]	f_s		
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= Combination With The Motor In The Header Row Is Not Possible

= Combination With The Motor In The Header Row Is Possible

P_{1n} [kW] = Rated Motor Power [kW]

$N_2 \text{ min}^{-1}$ = Output Speed [min^{-1}]

M_{2n} [Nm] = Rated Output Torque [Nm]

$M_{2\text{Max}}$ = Maximum Permissible Output Torque [Nm]

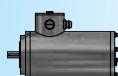
F_{r2} [N] = Permitted Overhung Load Output Side [N]

i = Gear Unit Ratio

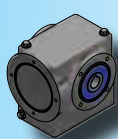
f_s = Service Factor



= Gear Unit Type



= Motor Type



FS(A) 38

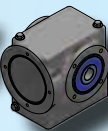
Maximum Torque = 92 Nm @ $N_1 = 1400\text{r/min}$

N_2 min^{-1}	$M_{2\text{max}}$ [Nm]	F_{r2} [N]	i	η %	63/71 B5T1 IEC 63/71 AM	80 B5T1 IEC 80 AM	90 B5T1 IEC 90 AM
8.9	92	3000	157.43	53			
9.7	92	3000	144.40	54			
11	91	3000	122.94	55			
13	88	3000	106.00	56			
14	87	3000	98.80	56			
16	86	3000	86.36	57			
17	85	3000	80.96	58			
20	84	3000	71.44	59			
22	82	3000	63.33	60			
25	81	3000	55.93	73			
26	80	3000	53.83	61			
27	81	3000	51.30	74			
32	81	3000	43.68	75			
37	79	3000	37.66	76			
40	78	3000	35.10	76			
46	76	2870	30.68	76			
49	75	2800	28.76	77			
55	74	2660	25.38	77			
62	73	2530	22.50	78			

FS(A) 48

Maximum Torque = 170 Nm @ $N_1 = 1400\text{r/min}$

N_2 min^{-1}	$M_{2\text{max}}$ [Nm]	F_{r2} [N]	i	η %	63/71 B5T1 IEC 63/71 AM	80 B5T1 IEC 80 AM	90 B5T1 IEC 90 AM	100 B5T1 IEC 100 AM
7.0	170	5340	201.00	55				
7.6	170	5340	184.80	56				
8.9	170	5340	158.12	57				
10	168	5350	137.05	58				
11	168	5350	128.10	58				
13	168	5350	110.73	59				
15	168	5350	94.08	60				
17	167	5360	84.00	61				
20	167	5360	71.75	62				
20	155	5370	69.39	75				
21	167	5360	67.20	63				
22	155	5370	63.80	75				
25	165	5320	56.61	64				
26	155	5150	54.59	76				
30	155	4850	47.32	77				
32	155	4710	44.22	77				
37	155	4430	38.23	78				
43	155	4120	32.48	79				
48	155	3920	29.00	79				
57	155	3650	24.77	80				
60	152	3570	23.20	80				



FS(A) 58

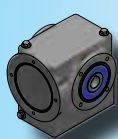
Maximum Torque = 295 Nm @ N1 = 1400r/min

N ₂ min ⁻¹	M _{2max} [Nm]	F _{r2} [N]	i	η %	63/71 B5T1 IEC 63/71 AM	80 B5T1 IEC 80 AM	90 B5T1 IEC 90 AM	100 B5T1 IEC 100 AM
7.0	295	7130	201.00	58				
7.6	295	7130	184.80	58				
8.9	295	7130	158.12	60				
10	295	7130	137.05	61				
11	295	7130	128.10	61				
13	295	7130	110.73	62				
15	295	7130	94.08	63				
17	295	7130	84.00	64				
20	290	7170	71.75	65				
20	245	7520	69.39	76				
21	285	7220	67.20	65				
22	245	7520	63.80	77				
25	265	7370	56.61	67				
26	245	7520	54.59	78				
30	245	7520	47.32	79				
32	245	7520	44.22	79				
37	245	7320	38.23	80				
43	245	6840	32.48	80				
48	245	6520	29.00	81				
57	245	6100	24.77	81				
60	245	5930	23.20	82				

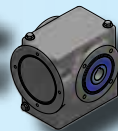
FS(A) 68

Maximum Torque = 520 Nm @ N1 = 1400r/min

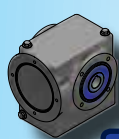
N ₂ min ⁻¹	M _{2max} [Nm]	F _{r2} [N]	i	η %	63/71 B5T2 IEC 63/71 AM	80 B5T2 IEC 80 AM	90 B5T2 IEC 90 AM	100 B5T2 IEC 100 AM	112 B5T2 IEC 112 AM	132 B5T2 IEC 132 AM
6.4	520	8680	217.41	61						
7.4	520	8680	190.11	62						
7.8	520	8680	180.60	62						
8.8	520	8680	158.45	63						
10	520	8680	134.40	64						
12	520	8680	121.33	65						
13	520	8680	106.75	66						
14	520	8680	100.80	66						
16	520	8680	85.83	67						
18	520	8680	78.00	68						
19	480	9020	75.06	79						
21	520	8680	67.57	69						
21	480	9020	65.63	79						
22	480	9020	62.35	79						
24	500	8850	58.80	69						
26	480	8670	54.70	80						
30	480	8060	46.40	81						
33	480	7690	41.89	81						
38	480	7250	36.85	82						
40	480	7060	34.80	82						
47	480	6540	29.63	83						
52	480	6240	26.93	83						



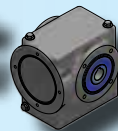
P_{1n} [kW]	N_2 min^{-1}	M_{2n} [Nm]	i	F_{r2} [N]	f_s		
0.12	8.8	74	157.43	3000	1.25	FS(A)38 AM63 FS(A)38 B5T1	631-4 B5 631-4 B5T1
	9.6	68	144.40	3000	1.35		
	11	60	122.94	3000	1.55		
	13	52	106.00	3000	1.70		
	14	49	98.80	3000	1.75		
	16	44	86.36	3000	1.95		
	17	41	80.96	3000	2.10		
	19	37	71.44	3000	2.30		
	22	33	63.33	3000	2.50		
	25	35	55.93	3000	2.30		
	27	33	51.30	3000	2.50		
	32	28	43.68	3000	2.90		
	37	25	37.66	3000	3.20		
	39	23	35.10	3000	3.40		
	45	20	30.68	3000	3.70		
	48	19	28.76	3000	3.90		
	54	17	25.38	3000	4.40		
	61	15	22.50	3000	4.80		
	6.9	95	201.00	5680	1.80	FS(A)48 AM63 FS(A)48 B5T1	631-4 B5 631-4 B5T1
	7.5	89	184.80	5700	1.90		
	8.7	77	158.12	5740	2.20		
	10	68	137.05	5780	2.50		
	11	64	128.10	5790	2.60		
	12	57	110.73	5810	3.00		



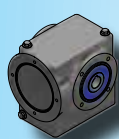
P_{1n} [kW]	N_2 min^{-1}	M_{2n} [Nm]	i	F_{r2} [N]	f_s		
0.18	11	93	122.94	3000	1.00	FS(A)38 AM63 FS(A)38 B5T1	632-4 B5 632-4 B5T1
	12	82	106.00	3000	1.10		
	13	77	98.80	3000	1.15		
	15	68	86.36	3000	1.25		
	16	64	80.96	3000	1.30		
	18	58	71.44	3000	1.45		
	21	52	63.33	3000	1.60		
	24	55	55.93	3000	1.45		
	26	51	51.30	3000	1.60		
	30	44	43.68	3000	1.85		
	35	38	37.66	3000	2.10		
	38	36	35.10	3000	2.20		
	43	32	30.68	3000	2.40		
	46	30	28.76	3000	2.50		
	52	27	25.38	3000	2.80		
	59	24	22.50	3000	3.10		
	6.6	149	201.00	5440	1.15	FS(A)48 AM63 FS(A)48 B5T1	632-4 B5 632-4 B5T1
	7.1	138	184.80	5490	1.25		
	8.3	121	158.12	5570	1.40		
	9.6	107	137.05	5630	1.60		
	10	100	128.10	5660	1.65		
	12	88	110.73	5700	1.90		
	14	77	94.08	5750	2.20		
	16	69	84.00	5770	2.40		
	18	60	71.75	5800	2.80		
	19	69	69.39	5750	2.20		
	5.5	173	158.12	5320	1.00	FS(A)48 AM71 FS(A)48 B5T1	711-6 B5 711-6 B5T1
	6.4	153	137.05	5420	1.10		
	6.8	144	128.10	5470	1.20		
	6.6	154	201.00	8010	1.90	FS(A)58 AM63 FS(A)58 B5T1	632-4 B5 632-4 B5T1
	7.1	143	184.80	8050	2.10		
	8.3	125	158.12	8120	2.40		
	9.6	110	137.05	8160	2.70		
	4.3	220	201.00	7670	1.35	FS(A)58 AM71 FS(A)58 B5T1	711-6 B5 711-6 B5T1
	4.7	205	184.80	7760	1.45		
	5.5	180	158.12	7900	1.65		
	6.4	159	137.05	7990	1.85		
	4.0	255	217.41	10300	2.20	FS(A)68 AM71 FS(A)68 B5T2	711-6 B5 711-6 B5T2
	4.6	225	190.11	10400	2.50		
	4.8	215	180.60	10400	2.60		



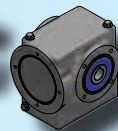
P_{1n} [kW]	N_2 min^{-1}	M_{2n} [Nm]	i	F_{r2} [N]	f_s		
0.25	18	81	71.44	3000	1.05	FS(A)38 AM71 FS(A)38 B5T1	711-4 B5 711-4 B5T1
	21	73	63.33	3000	1.10		
	23	78	55.93	3000	1.05		
	25	72	51.30	3000	1.15		
	30	62	43.68	3000	1.30		
	35	54	37.66	3000	1.45		
	37	51	35.10	3000	1.55		
	42	45	30.68	3000	1.70		
	45	42	28.76	3000	1.80		
	51	37	25.38	3000	2.00		
	58	33	22.50	3000	2.20		
	8.2	170	158.12	5340	1.00	FS(A)48 AM71 FS(A)48 B5T1	711-4 B14a 711-4 B5T1
	9.5	150	137.05	5440	1.10		
	10	141	128.10	5480	1.20		
	12	124	110.73	5560	1.35		
	14	108	94.08	5630	1.55		
	15	98	84.00	5670	1.70		
	18	85	71.75	5720	1.95		
	19	97	69.39	5640	1.60		
	19	80	67.20	5740	2.10		
	20	90	63.80	5670	1.70		
	24	78	54.59	5720	2.00		
	27	68	47.32	5760	2.30		
	6.5	215	201.00	7700	1.35	FS(A)58 AM71 FS(A)58 B5T1	711-4 B5 711-4 B5T1
	7.0	200	184.80	7790	1.45		
	8.2	176	158.12	7920	1.70		
	9.5	155	137.05	8010	1.90		
	10	146	128.10	8040	2.00		
	12	129	110.73	8110	2.30		
	14	111	94.08	8160	2.70		
	15	101	84.00	8190	2.90		
	4.4	305	201.00	7050	1.00	FS(A)58 AM71 FS(A)58 B5T1	712-6 B5 712-6 B5T1
	4.8	285	184.80	7230	1.05		
	5.6	245	158.12	7510	1.20		
	6.4	220	137.05	7690	1.35		
	6.9	205	128.10	7760	1.45		
	6.0	245	217.41	10300	2.10	FS(A)68 AM71 FS(A)68 B5T2	711-4 B5 711-4 B5T2
	6.8	220	190.11	10400	2.40		
	7.2	210	180.60	10500	2.50		
	8.2	187	158.45	10500	2.80		
	9.7	161	134.40	10600	3.20		
	11	147	121.33	10600	3.50		
	12	131	106.75	10700	4.00		
	4.0	350	217.41	9890	1.60	FS(A)68 AM71 FS(A)68 B5T2	712-6 B5 712-6 B5T2
	4.6	310	190.11	10100	1.80		
	4.9	295	180.60	10100	1.90		
	5.5	265	158.45	10300	2.10		
	3.1	435	217.41	9350	1.30	FS(A)68 AM80 FS(A)68 B5T2	802-8 B14a 802-8 B5T2
	3.6	390	190.11	9670	1.45		
	3.8	370	180.60	9770	1.50		
	4.3	330	158.45	9980	1.70		



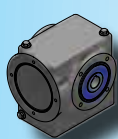
P_{1n} [kW]	N_2 min^{-1}	M_{2n} [Nm]	i	F_{r2} [N]	f_s		
0.37	37	76	37.66	3000	1.05	FS(A)38 AM71 FS(A)38 B5T1	712-4 B5 712-4 B5T1
	39	71	35.10	3000	1.10		
	45	63	30.68	3000	1.20		
	48	59	28.76	3000	1.30		
	54	52	25.38	2940	1.40		
	61	47	22.50	2870	1.55		
	15	151	94.08	5430	1.10	FS(A)48 AM71 FS(A)48 B5T1	712-4 B5 712-4 B5T1
	16	137	84.00	5500	1.20		
	19	119	71.75	5580	1.40		
	20	136	69.39	5460	1.15		
	21	112	67.20	5610	1.50		
	22	126	63.80	5510	1.25		
	25	109	54.59	5590	1.40		
	29	96	47.32	5410	1.60		
	31	90	44.22	5330	1.75		
	36	78	38.23	5140	2.00		
	42	67	32.48	4930	2.30		
	48	60	29.00	4790	2.60		
	56	52	24.77	4590	3.00		
	59	49	23.20	4510	3.10		
	7.5	285	184.80	7230	1.05	FS(A)58 AM71 FS(A)58 B5T1	712-4 B5 712-4 B5T1
	8.7	245	158.12	7510	1.20		
	10	220	137.05	7690	1.35		
	11	205	128.10	7770	1.45		
	12	180	110.73	7900	1.65		
	15	156	94.08	8000	1.90		
	16	141	84.00	8060	2.10		
	19	122	71.75	8130	2.40		
	20	139	69.39	8070	1.75		
	21	115	67.20	8150	2.50		
	22	128	63.80	8110	1.90		
	7.0	300	128.10	7100	1.00	FS(A)58 AM80 FS(A)58 B5T1	801-6 B14a 801-6 B5T1
	8.1	265	110.73	7390	1.10		
	9.6	230	94.08	7630	1.30		
	11	205	84.00	7760	1.45		
	6.4	345	217.41	9900	1.50	FS(A)68 AM71 FS(A)68 B5T2	712-4 B5 712-4 B5T2
	7.3	310	190.11	10100	1.70		
	7.6	295	180.60	10200	1.75		
	8.7	260	158.45	10300	2.00		
	10	225	134.40	10400	2.30		
	11	205	121.33	10500	2.50		
	4.1	505	217.41	8810	1.10	FS(A)68 AM80 FS(A)68 B5T2	801-6 B14a 801-6 B5T2
	4.7	450	190.11	9260	1.25		
	5.0	430	180.60	9400	1.30		
	5.7	380	158.45	9700	1.45		



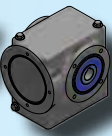
P_{1n} [kW]	N_2 min^{-1}	M_{2n} [Nm]	i	F_{r2} [N]	f_s		
0.55	60	70	22.50	2600	1.05	FS(A)38 AM - FS(A)38 B5T1	801-4 B14a - 801-4 B5T1
	20	169	67.20	5350	1.00	FS(A)48 AM80 FS(A)48 B5T1	801-4 B14a 801-4 B5T1
	29	144	47.32	5010	1.10		
	31	135	44.22	4950	1.15		
	36	118	38.23	4810	1.30		
	42	101	32.48	4650	1.55		
	47	91	29.00	4540	1.70		
	55	78	24.77	4380	2.00		
	59	74	23.20	4310	2.10		
	12	270	110.73	7320	1.10	FS(A)58 AM80 FS(A)58 B5T1	801-4 B14a 801-4 B5T1
	14	235	94.08	7590	1.25		
	16	210	84.00	7730	1.40		
	19	184	71.75	7880	1.55		
	20	174	67.20	7930	1.65		
	25	167	54.59	7960	1.45		
	29	146	47.32	8040	1.70		
	31	137	44.22	8080	1.80		
	36	120	38.23	8130	2.10		
	42	103	32.48	7970	2.40		
	47	92	29.00	7730	2.70		
	55	79	24.77	7390	3.10		
	59	75	23.20	7250	3.30		
	13	265	71.75	7360	1.10	FS(A)58 AM80 FS(A)58 B5T1	802-6 B14a 802-6 B5T1
	13	250	67.20	7470	1.15		
	16	245	54.59	7520	1.10		
	19	215	47.32	7710	1.25		
	20	200	44.22	7790	1.35		
	24	176	38.23	7920	1.55		
	6.3	520	217.41	8660	1.00	FS(A)68 AM80 FS(A)68 B5T2	801-4 B14a 801-4 B5T2
	7.2	465	190.11	9150	1.10		
	7.5	445	180.60	9300	1.15		
	8.6	395	158.45	9620	1.30		
	10	340	134.40	9930	1.55		
	11	310	121.33	10100	1.65		
	13	275	106.75	10200	1.85		
	13	265	100.80	10300	1.95		
	16	230	85.83	10400	2.30		
	18	230	75.06	10400	2.10		
	21	205	65.63	10500	2.40		



P_{1n} [kW]	N_2 min^{-1}	M_{2n} [Nm]	i	F_{r2} [N]	f_s		
0.75	36	159	38.23	4420	1.00	FS(A)48 AM80 FS(A)48 B5T1	802-4 B14a 802-4 B5T1
	42	136	32.48	4310	1.15		
	48	122	29.00	4230	1.25		
	56	106	24.77	4110	1.45		
	59	99	23.20	4060	1.55		
	16	285	84.00	7210	1.05	FS(A)58 AM80 FS(A)58 B5T1	802-4 B14a 802-4 B5T1
	19	250	71.75	7500	1.15		
	21	235	67.20	7590	1.20		
	25	225	54.59	7650	1.10		
	29	197	47.32	7810	1.25		
	31	185	44.22	7870	1.35		
	36	161	38.23	7980	1.50		
	42	138	32.48	7670	1.80		
	48	124	29.00	7450	2.00		
	56	107	24.77	7150	2.30		
	59	100	23.20	7030	2.50		
	16	295	56.61	7140	1.00	FS(A)58 AM90 FS(A)58 B5T1	90S-6 B14a 90S-6 B5T1
	20	275	44.22	7300	1.00		
	8.7	530	158.45	8570	1.00	FS(A)68 AM80 FS(A)68 B5T2	802-4 B14a 802-4 B5T2
	10	460	134.40	9180	1.15		
	11	420	121.33	9470	1.25		
	13	375	106.75	9750	1.40		
	14	355	100.80	9860	1.45		
	16	305	85.83	10100	1.70		
	18	310	75.06	10100	1.55		
	21	275	65.63	10200	1.75		
	22	260	62.35	10300	1.85		
	25	230	54.70	10300	2.10		
	30	198	46.40	9840	2.40		
1.1	57	153	24.77	3670	1.00	FS(A)48 AM90 FS(A)48 B5T1	90S-4 B14a 90S-4 B5T1
	60	143	23.20	3640	1.05		
	37	235	38.23	7410	1.05	FS(A)58 AM90 FS(A)58 B5T1	90S-4 B14a 90S-4 B5T1
	43	200	32.48	7170	1.25		
	48	179	29.00	7000	1.35		
	57	154	24.77	6760	1.60		
	60	145	23.20	6660	1.70		
	14	515	100.80	8740	1.00	FS(A)68 AM90 FS(A)68 B5T2	90S-4 B14a 90S-4 B5T2
	16	445	85.83	9300	1.15		
	18	405	78.00	9550	1.30		
	21	400	65.63	9610	1.20		
	22	380	62.35	9720	1.25		
	26	335	54.70	9560	1.45		
	30	285	46.40	9240	1.65		
	33	260	41.89	9040	1.85		
	38	230	36.85	8780	2.10		
	40	220	34.80	8660	2.20		
	47	187	29.63	8330	2.60		

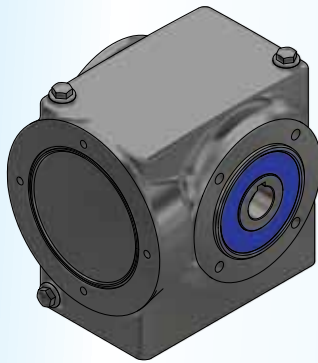


P_{1n} [kW]	N_2 min^{-1}	M_{2n} [Nm]	i	F_{r2} [N]	f_s		
1.5	49	245	29.00	6520	1.00	FS(A)58 AM90 FS(A)58 B5T1	90L-4 B14a 90L-4 B5T1
	57	210	24.77	6340	1.15		
	61	196	23.20	6270	1.25		
	26	455	54.70	8810	1.05	FS(A)68 AM90 FS(A)68 B5T2	90L-4 B14a 90L-4 B5T2
	30	390	46.40	8590	1.25		
	34	355	41.89	8450	1.35		
	38	310	36.85	8250	1.55		
	41	295	34.80	8160	1.60		
	48	255	29.63	7900	1.90		
	52	230	26.93	7740	2.10		
2.2	38	460	36.85	7360	1.05	FS(A)68 AM100 FS(A)68 B5T2	100L1-4 B14a 100L1-4 B5T2
	41	435	34.80	7320	1.10		
	48	370	29.63	7180	1.30		
	52	340	26.93	7080	1.40		
3.0	52	465	26.93	6330	1.05	FS(A)68 AM - FS(A)68 B5T2	100L2-4 B14a -100L2-4 B5T2

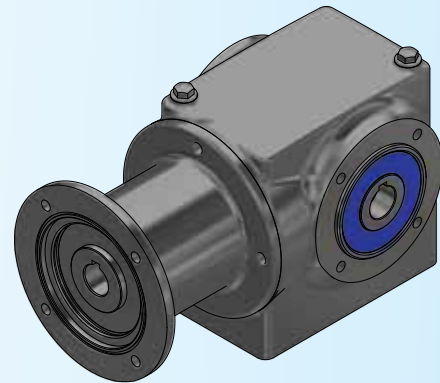


The FSA 38 can be supplied with an integrated motor (B5T1) as well as with an IEC motor adaptor (AM)
The B5T1 version is meant to be assembled with a special motor, made with a non IEC flange and a shouldered shaft.
The AM version can be assembled with a standard motor with flange and shaft according to IEC.

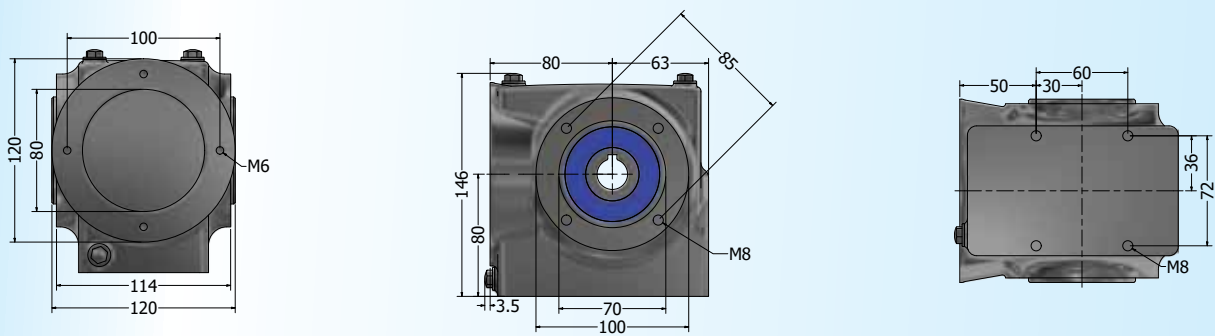
FSA 38 B5T1



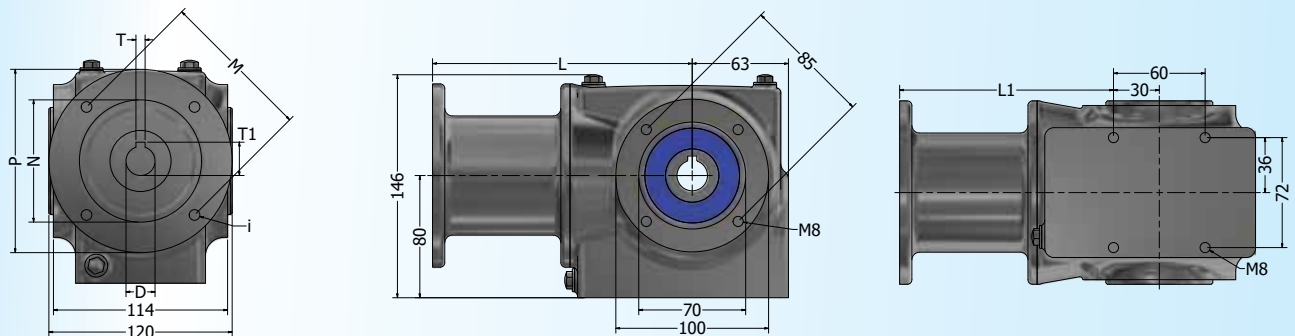
FSA 38 AM..



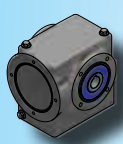
FSA 38 B5T1



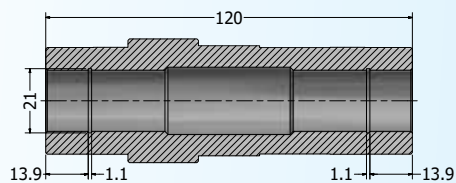
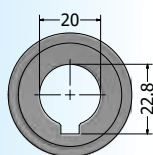
FSA 38 AM



		D	T	T1	i	M	N	P	L	L1
FSA 38 AM63	IEC63 B5	11	4	12.8	9	115	95	140	170	140
FSA 38 AM71	IEC71 B5	14	5	16.3	9	130	110	160	170	140
FSA 38 AM80	IEC80 B14A	19	6	21.8	7	100	80	120	170	140

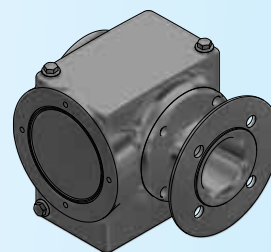
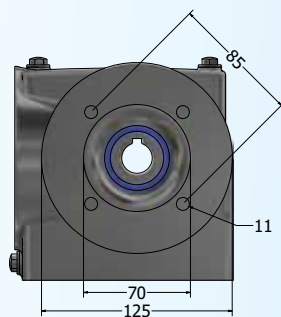
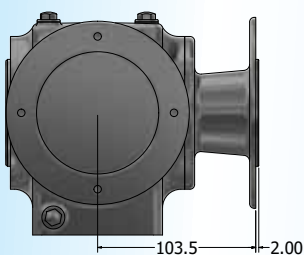


Hollow Shaft Dimensions HA20

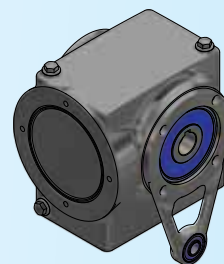
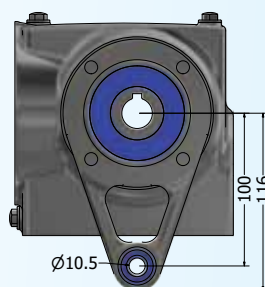
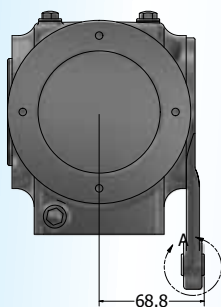


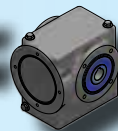
The standard hollow shaft diameter for a FSA 38 is 20mm
Different hollow shaft diameters on request

Output Flange SS085 FL125

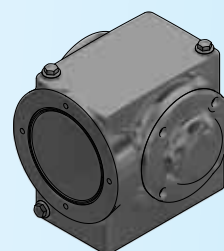
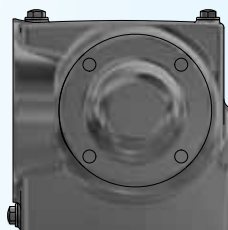
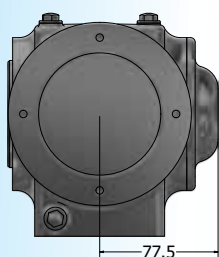


Torque Arm SS085 MS

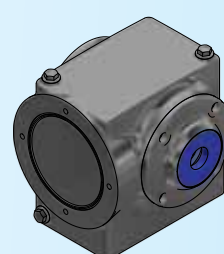
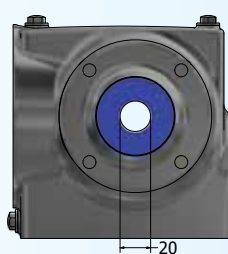
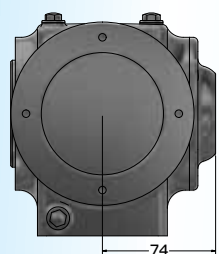




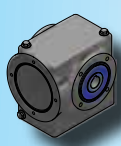
Closed Safety Cap SS085 CC



Open Safety Cap SS085 CO20

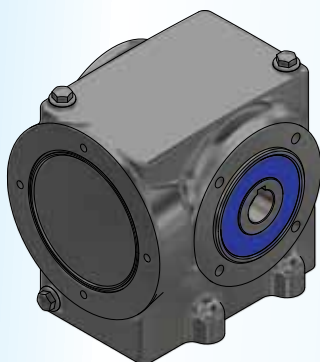


*The standard shaft diameter for a SS085 CO is 20mm
Different diameters on request*

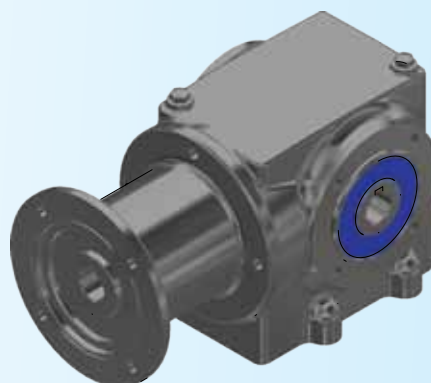


The FS 38 can be supplied with an integrated motor (B5T1) as well as with an IEC motor adaptor (AM)
The B5T1 version is meant to be assembled with a special motor, made with a non IEC flange and a shouldered shaft.
The AM version can be assembled with a standard motor with flange and shaft according to IEC.

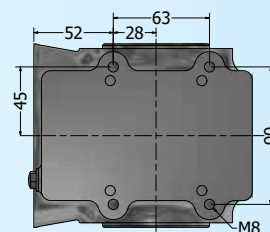
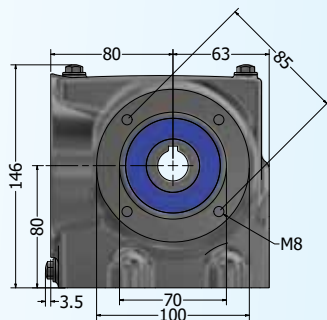
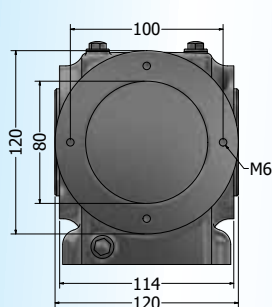
FS 38 B5T1



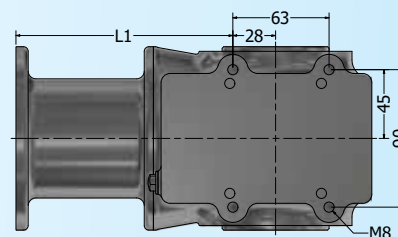
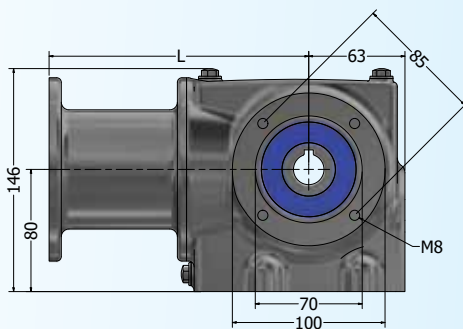
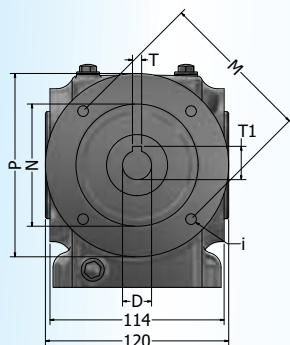
FS 38 AM..



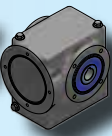
FS 38 B5T1



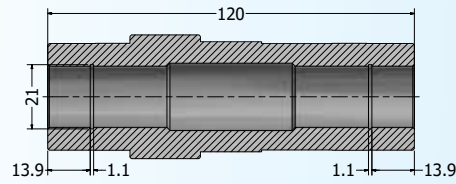
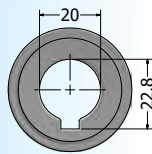
FS 38 AM



		D	T	T1	i	M	N	P	L	L1
FS 38 AM63	IEC63 B5	11	4	12.8	9	115	95	140	170	142
FS 38 AM71	IEC71 B5	14	5	16.3	9	130	110	160	170	142
FS 38 AM80	IEC80 B14A	19	6	21.8	7	100	80	120	170	142

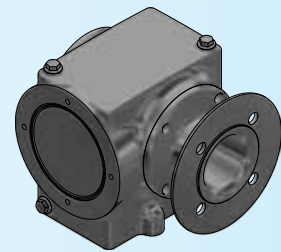
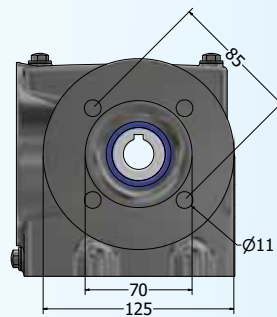
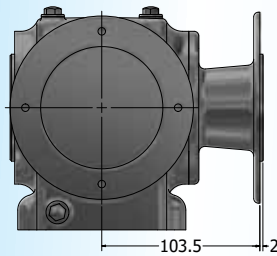


Hollow Shaft Dimensions HA20

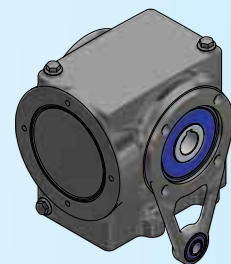
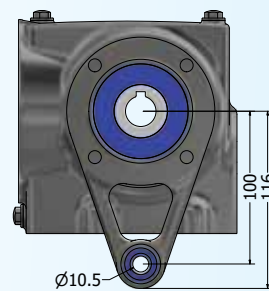
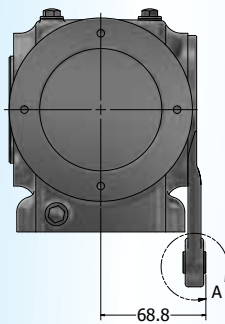


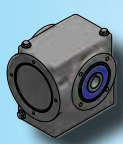
The standard hollow shaft diameter for a FS 38 is 20mm
 Different hollow shaft diameters on request

Output Flange SS085 FL125

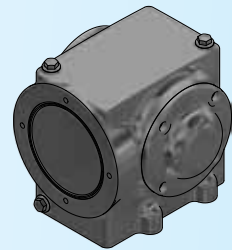
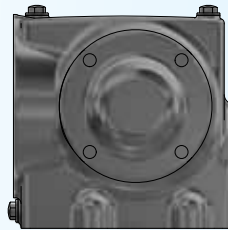
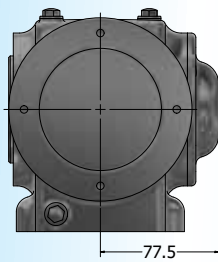


Torque Arm SS085 MS

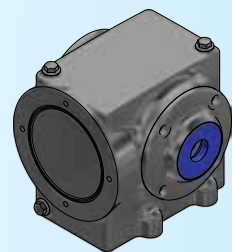
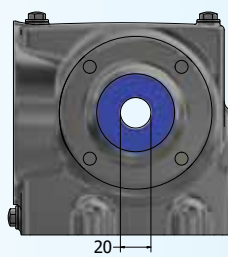
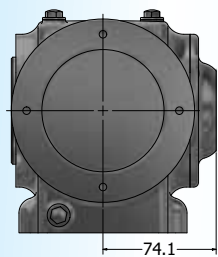




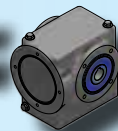
Closed Safety Cap SS085 CC



Open Safety Cap SS085 CO20

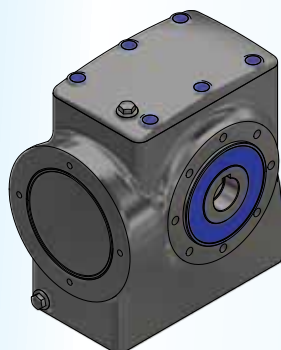


*The standard shaft diameter for a SS085 CO is 20mm
Different diameters on request*

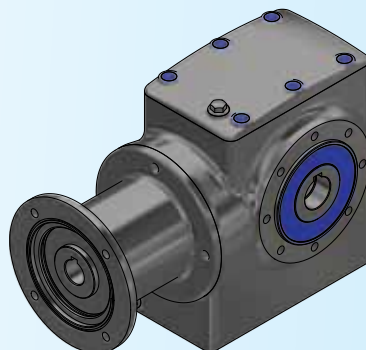


The FSA 48 can be supplied with an integrated motor (B5T1) as well as with an IEC motor adaptor (AM)
The B5T1 version is meant to be assembled with a special motor, made with a non IEC flange and a shouldered shaft.
The AM version can be assembled with a standard motor with flange and shaft according to IEC.

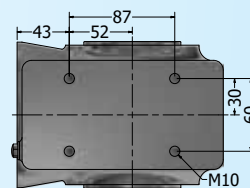
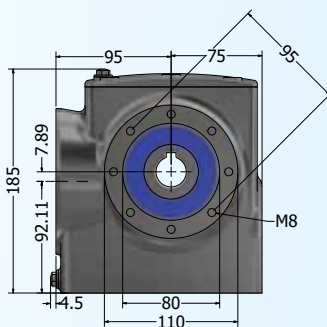
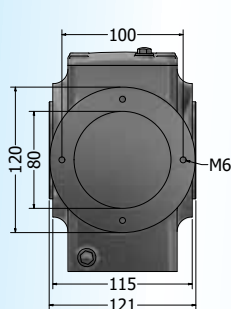
FSA 48 B5T1



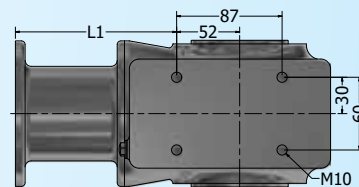
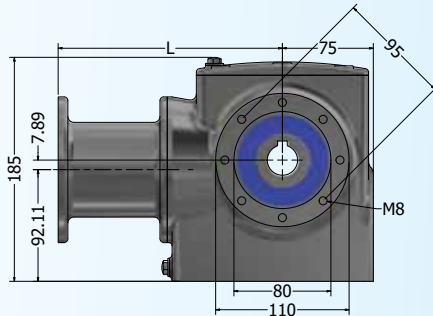
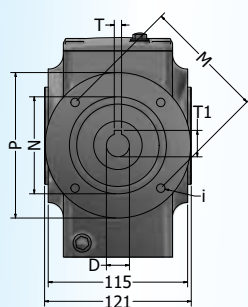
FSA 48 AM..



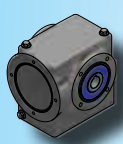
FSA 48 B5T1



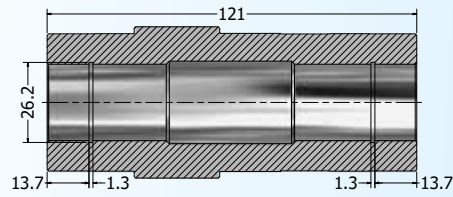
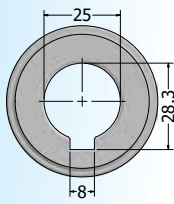
FSA 48 AM



		D	T	T1	i	M	N	P	L	L1
FSA 48 AM63	IEC63 B5	11	4	12.8	9	115	95	140	185	133
FSA 48 AM71	IEC71 B5	14	5	16.3	9	130	110	160	185	133
FSA 48 AM80	IEC80 B14A	19	6	21.8	7	100	80	120	185	133
FSA 48 AM90	IEC90 B14A	24	8	27.3	9	115	95	140	185	133

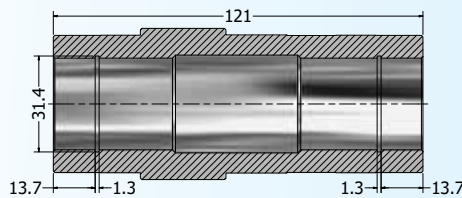
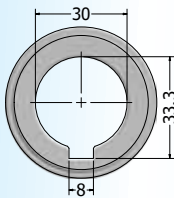


Hollow Shaft Dimensions HA25



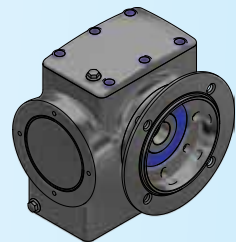
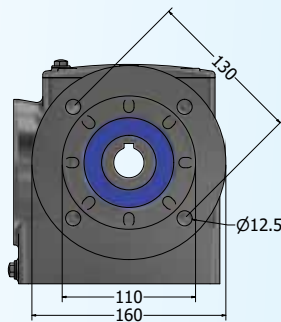
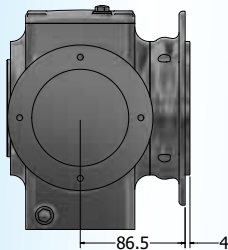
The standard hollow shaft diameters for a FSA 48 are
25 & 30 mm
Different hollow shaft diameters on request

Hollow Shaft Dimensions HA30

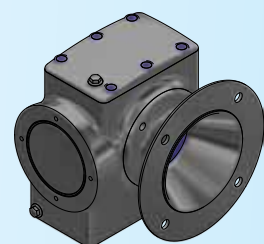
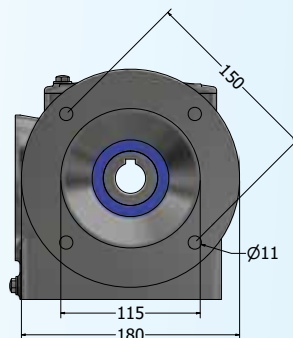
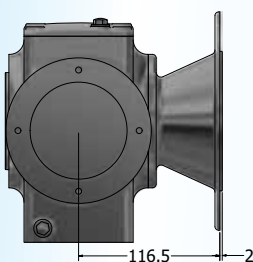


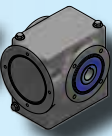
The standard hollow shaft diameters for a FSA 48 are
25 & 30 mm
Different hollow shaft diameters on request

Output Flange SS095 FL160

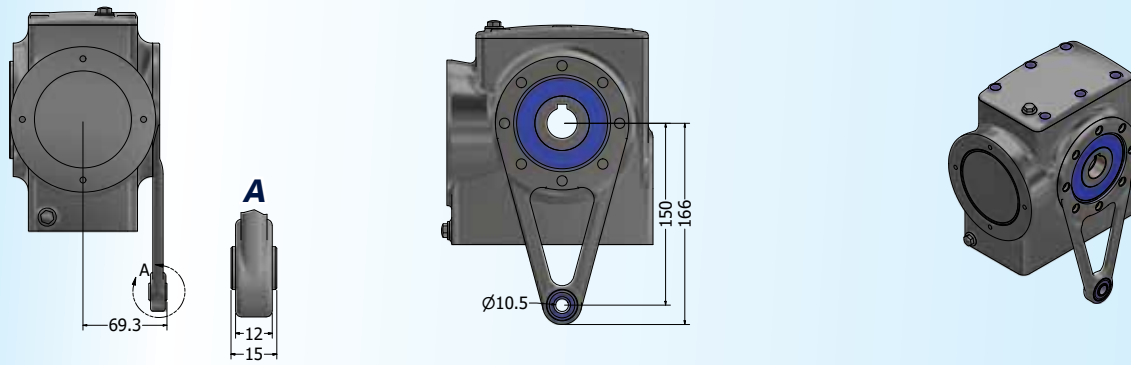


Output Flange SS095 FL180

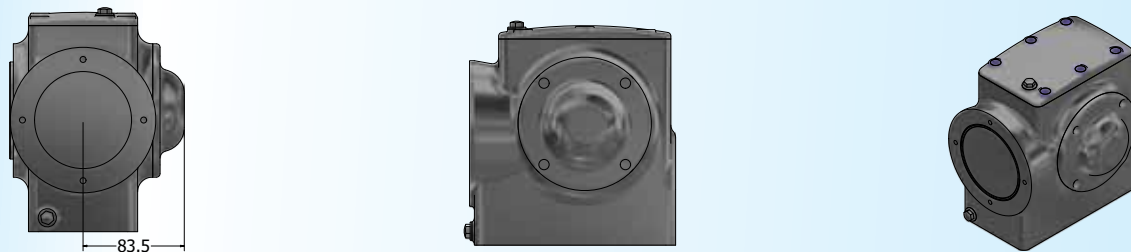




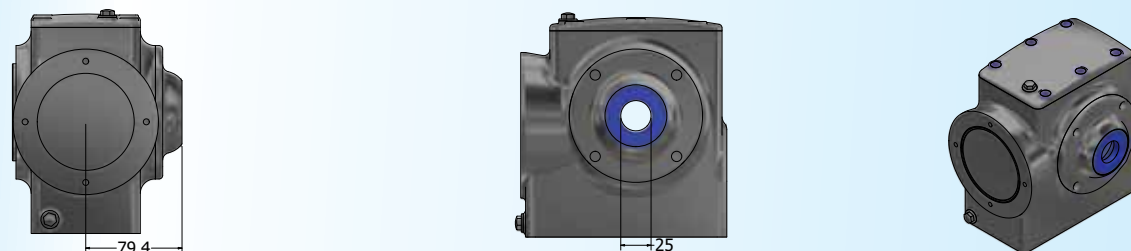
Torque Arm SS095 MS



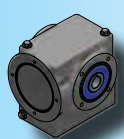
Closed Safety Cap SS095 CC



Open Safety Cap SS095 CO25

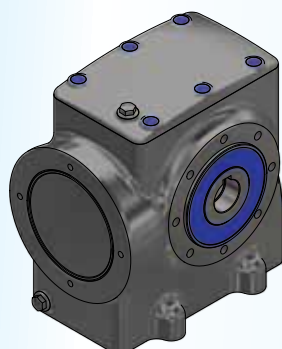


*The standard shaft diameter for a SS095 CO is 25mm
 Different diameters on request*

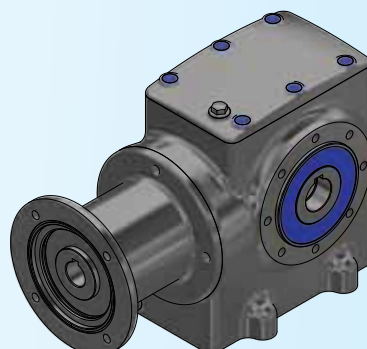


The FS 48 can be supplied with an integrated motor (B5T1) as well as with an IEC motor adaptor (AM)
The B5T1 version is meant to be assembled with a special motor, made with a non IEC flange and a shouldered shaft.
The AM version can be assembled with a standard motor with flange and shaft according to IEC.

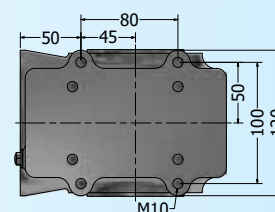
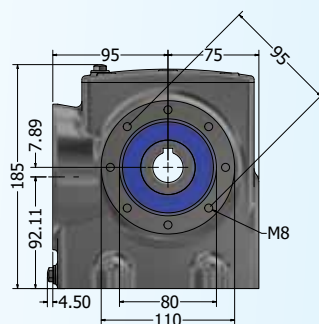
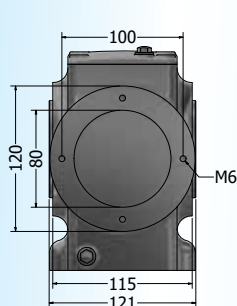
FS 48 B5T1



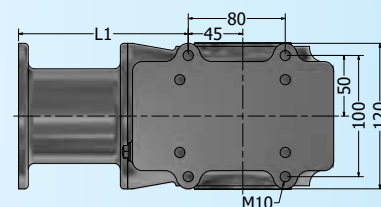
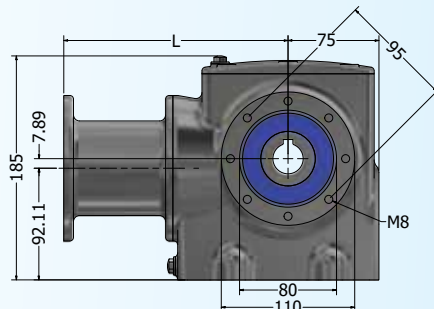
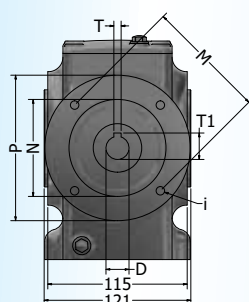
FS 48 AM..



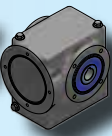
FS 48 B5T1



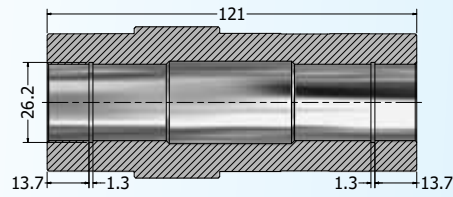
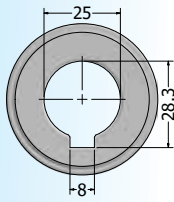
FS 48 AM



		D	T	T1	i	M	N	P	L	L1
FS 48 AM63	IEC63 B5	11	4	12.8	9	115	95	140	185	140
FS 48 AM71	IEC71 B5	14	5	16.3	9	130	110	160	185	140
FS 48 AM80	IEC80 B14A	19	6	21.8	7	100	80	120	185	140
FS 48 AM90	IEC90 B14A	24	8	27.3	9	115	95	140	185	140

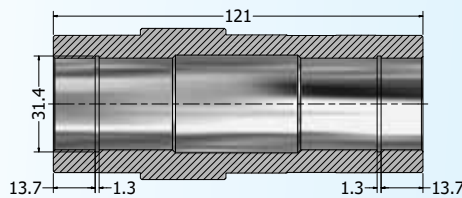
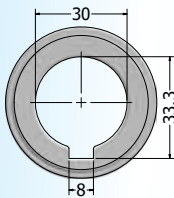


Hollow Shaft Dimensions HA25



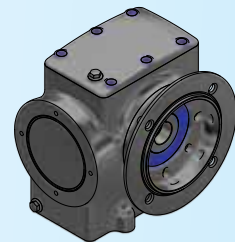
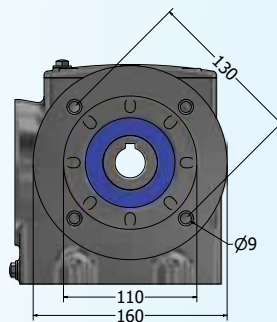
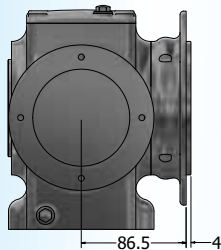
The standard hollow shaft diameters for a FS 48 are
 25 & 30 mm
 Different hollow shaft diameters on request

Hollow Shaft Dimensions HA30

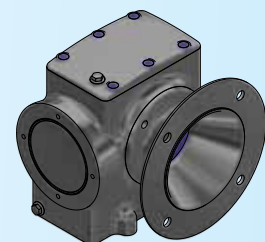
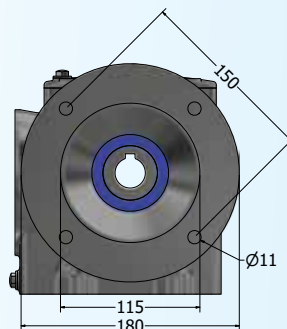
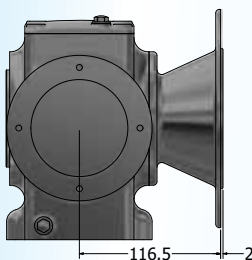


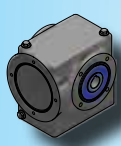
The standard hollow shaft diameters for a FS 48 are
 25 & 30 mm
 Different hollow shaft diameters on request

Output Flange SS095 FL160

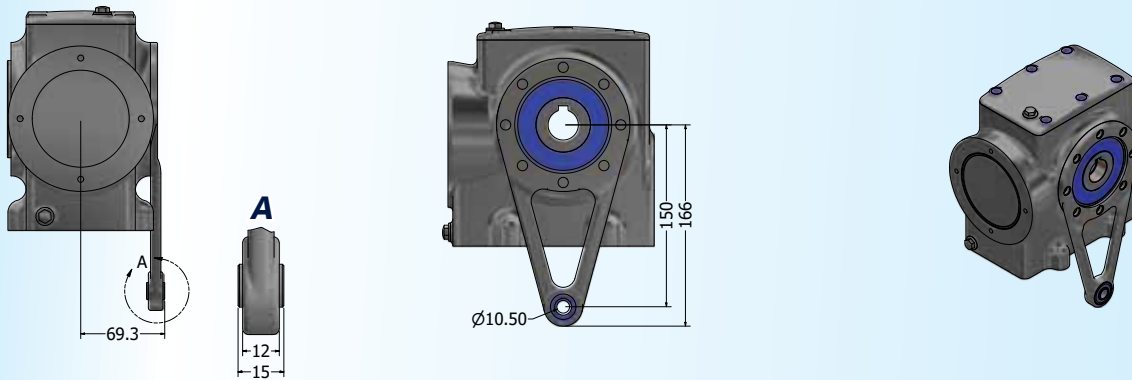


Output Flange SS095 FL180

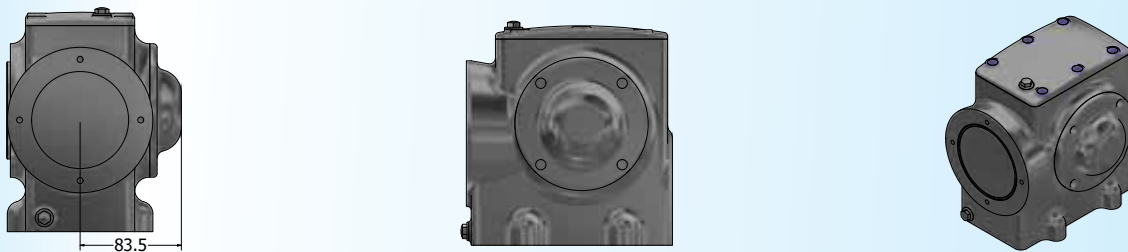




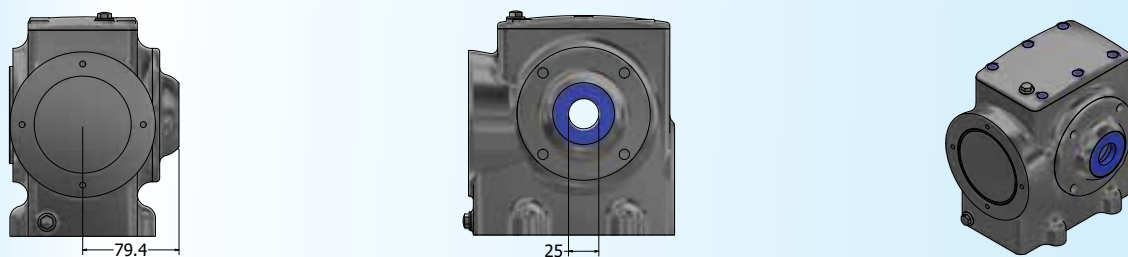
Torque Arm SS095 MS



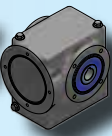
Closed Safety Cap SS095 CC



Open Safety Cap SS095 CO25

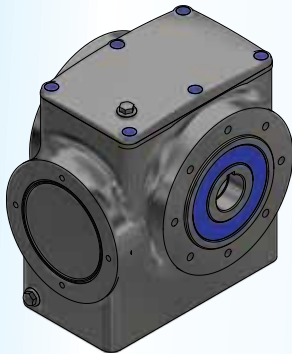


*The standard shaft diameter for a SS095 CO is 25mm
Different diameters on request*

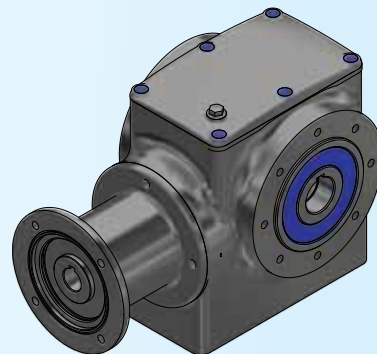


The FSA 58 can be supplied with an integrated motor (B5T1) as well as with an IEC motor adaptor (AM)
The B5T1 version is meant to be assembled with a special motor, made with a non IEC flange and a shouldered shaft.
The AM version can be assembled with a standard motor with flange and shaft according to IEC.

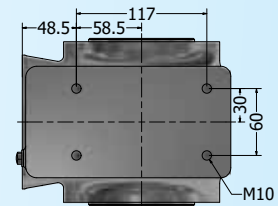
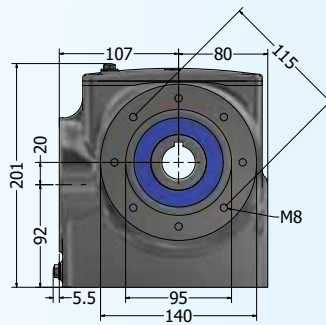
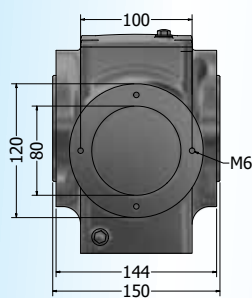
FSA 58 B5T1



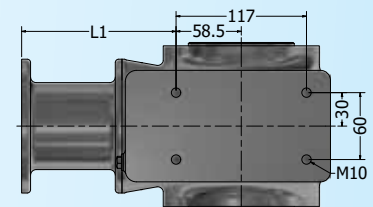
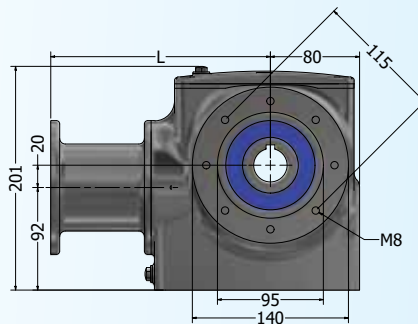
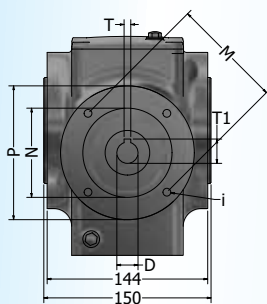
FSA 58 AM..



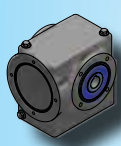
FSA 58 B5T1



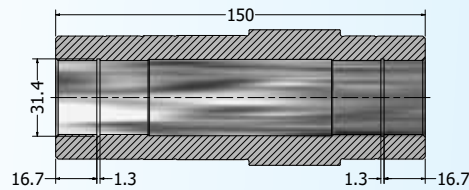
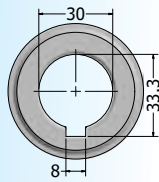
FSA 58 AM



		D	T	T1	i	M	N	P	L	L1
FSA 58 AM63	IEC63 B5	11	4	12.8	9	115	95	140	197	138.5
FSA 58 AM71	IEC71 B5	14	5	16.3	9	130	110	160	197	138.5
FSA 58 AM80	IEC80 B14A	19	6	21.8	7	100	80	120	197	138.5
FSA 58 AM90	IEC90 B14A	24	8	27.3	9	115	95	140	197	138.5

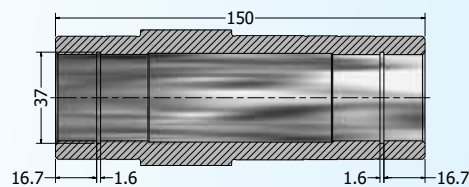
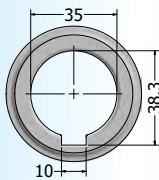


Hollow Shaft Dimensions HA30



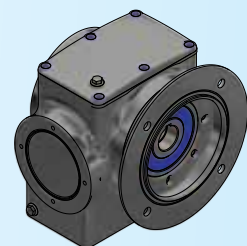
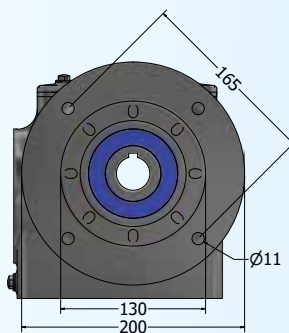
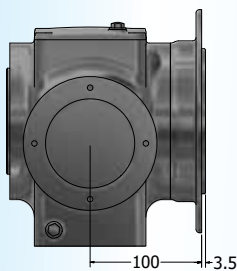
*The standard hollow shaft diameters for a FSA 58 are
30 & 35 mm
Different hollow shaft diameters on request*

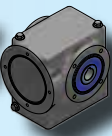
Hollow Shaft Dimensions HA35



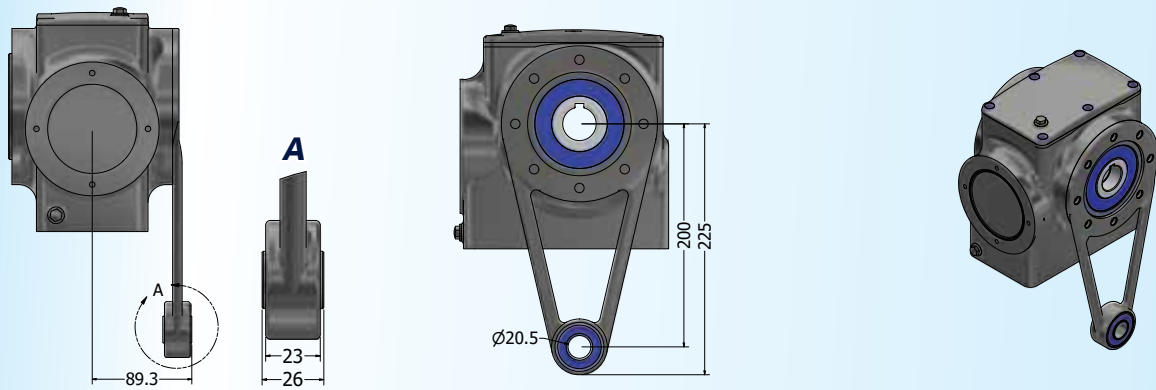
*The standard hollow shaft diameters for a FSA 58 are
30 & 35 mm
Different hollow shaft diameters on request*

Output Flange SS115 FL200

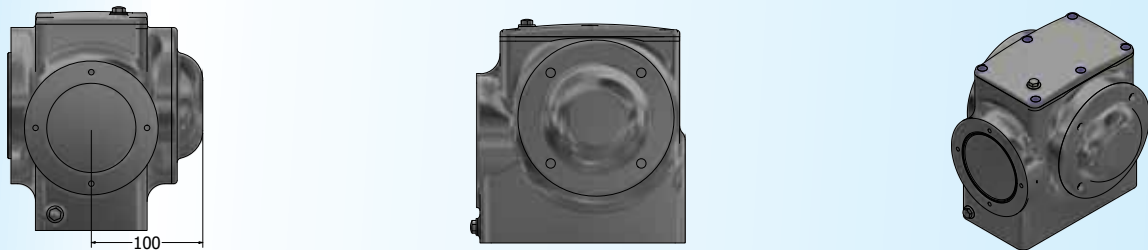




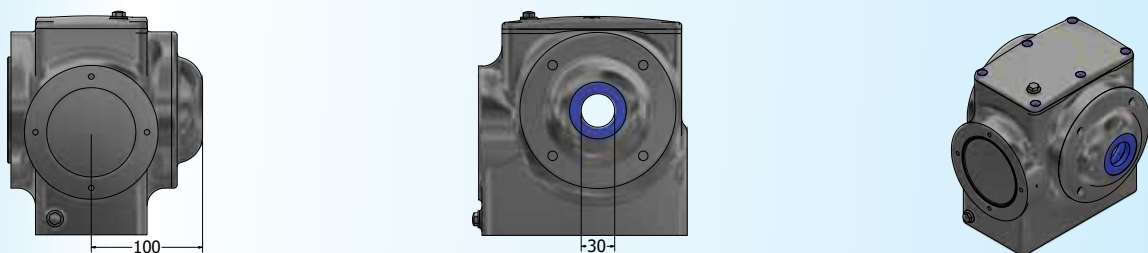
Torque Arm SS115 MS



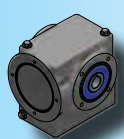
Closed Safety Cap SS115 CC



Open Safety Cap SS115 CO30

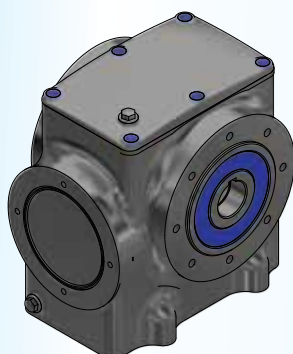


*The standard shaft diameter for a SS115 CO is 30mm
 Different diameters on request*

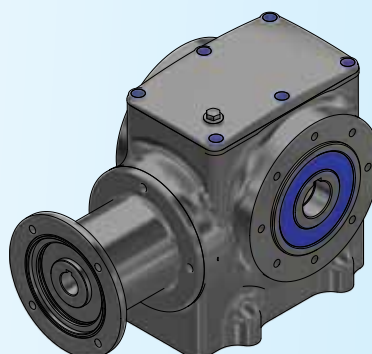


The FS 58 can be supplied with an integrated motor (B5T1) as well as with an IEC motor adaptor (AM)
The B5T1 version is meant to be assembled with a special motor, made with a non IEC flange and a shouldered shaft.
The AM version can be assembled with a standard motor with flange and shaft according to IEC.

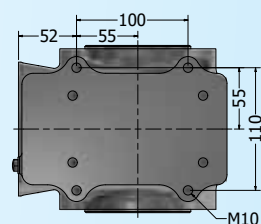
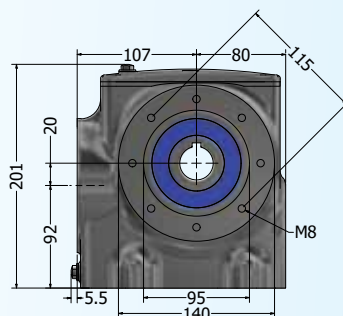
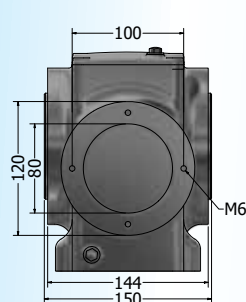
FS 58 B5T1



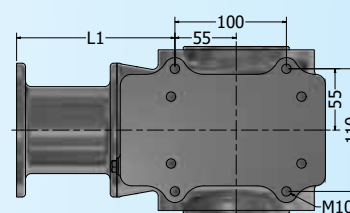
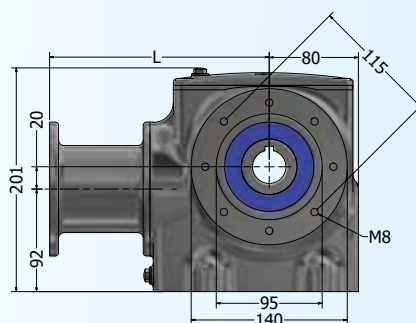
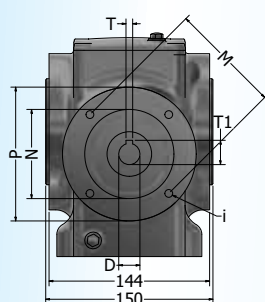
FS 58 AM..



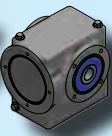
FS 58 B5T1



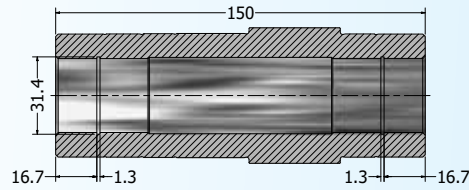
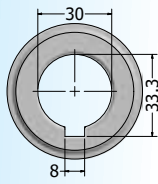
FS 58 AM



		D	T	T1	i	M	N	P	L	L1
FS 58 AM63	IEC63 B5	11	4	12.8	9	115	95	140	197	142
FS 58 AM71	IEC71 B5	14	5	16.3	9	130	110	160	197	142
FS 58 AM80	IEC80 B14A	19	6	21.8	7	100	80	120	197	142
FS 58 AM90	IEC90 B14A	24	8	27.3	9	115	95	140	197	142

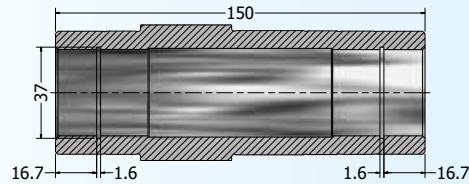
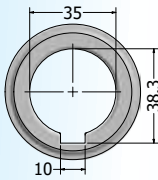


Hollow Shaft Dimensions HA30



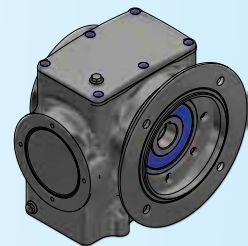
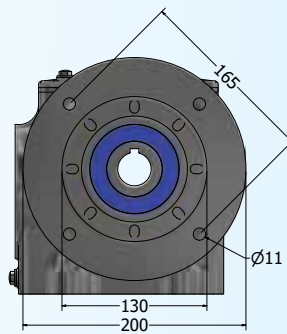
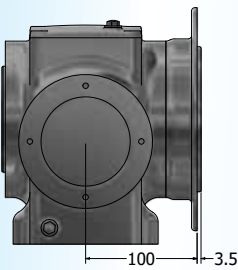
The standard hollow shaft diameters for a FS 58 are
 30 & 35 mm
 Different hollow shaft diameters on request

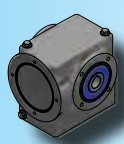
Hollow Shaft Dimensions HA35



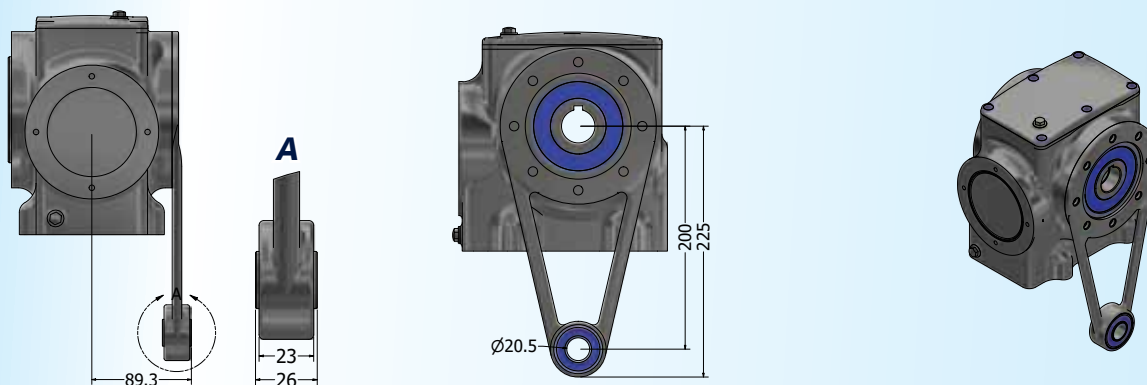
The standard hollow shaft diameters for a FS 58 are
 30 & 35 mm
 Different hollow shaft diameters on request

Output Flange SS115 FL200

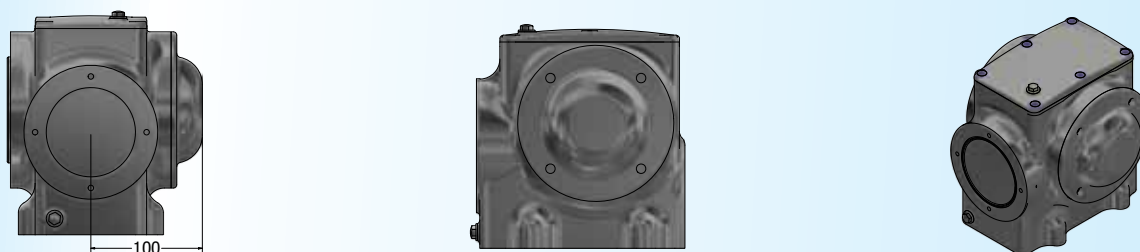




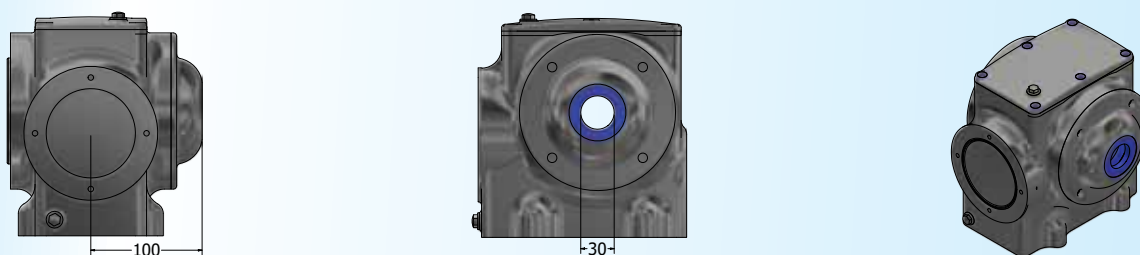
Torque Arm SS115 MS



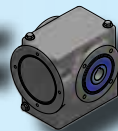
Closed Safety Cap SS115 CC



Open Safety Cap SS115 CO30

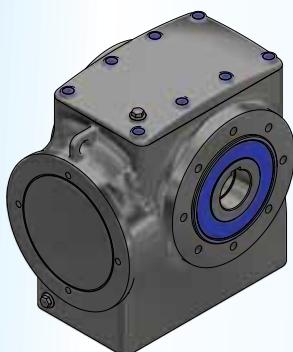


*The standard shaft diameter for a SS115 CO is 30mm
Different diameters on request*

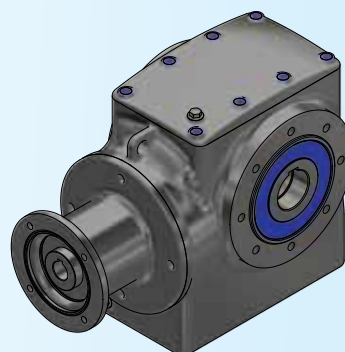


The FSA 68 can be supplied with an integrated motor (B5T2) as well as with an IEC motor adaptor (AM)
The B5T2 version is meant to be assembled with a special motor, made with a non IEC flange and a shouldered shaft.
The AM version can be assembled with a standard motor with flange and shaft according to IEC.

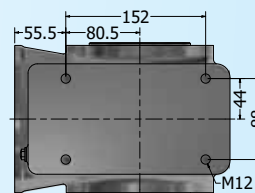
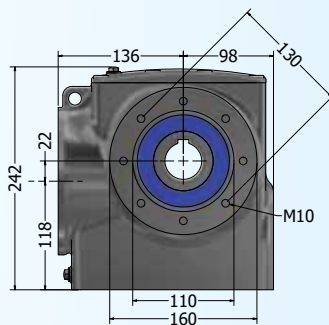
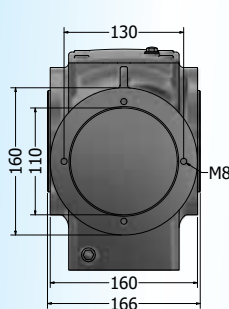
FSA 68 B5T2



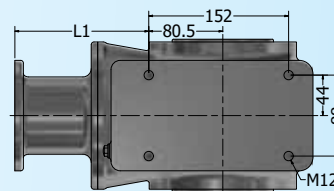
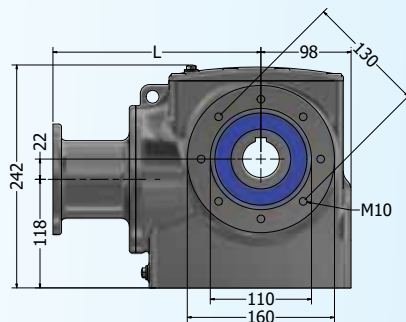
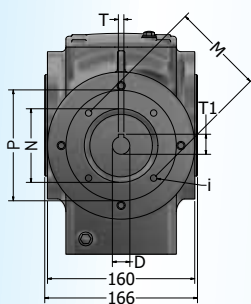
FSA 68 AM..



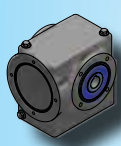
FSA 68 B5T2



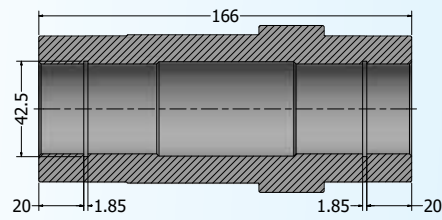
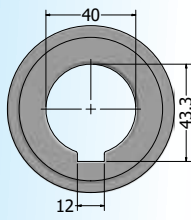
FSA 68 AM



		D	T	T1	i	M	N	P	L	L1
FSA 68 AM71	IEC71 B5	14	5	16.3	9	130	110	160	226	145.5
FSA 68 AM80	IEC80 B14A	19	6	21.8	7	100	80	120	226	145.5
FSA 68 AM90	IEC90 B14A	24	8	27.3	9	115	95	140	226	145.5
FSA 68 AM100	IEC100 B14A	28	8	31.3	9	130	110	160	226	145.5

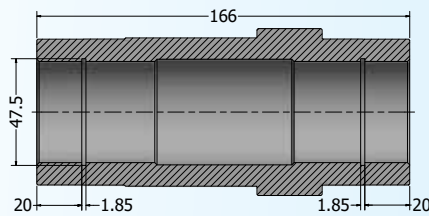
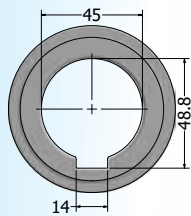


Hollow Shaft Dimensions HA40



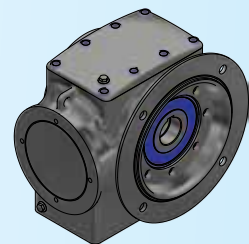
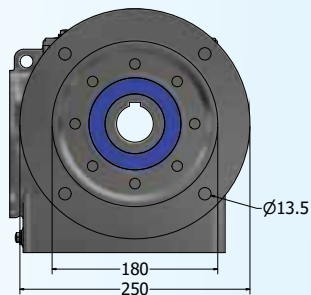
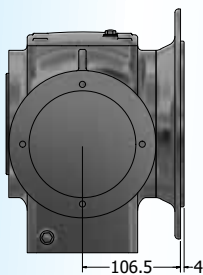
*The standard hollow shaft diameters for a FSA 68 are
40 & 45 mm
Different hollow shaft diameters on request*

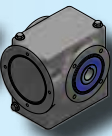
Hollow Shaft Dimensions HA45



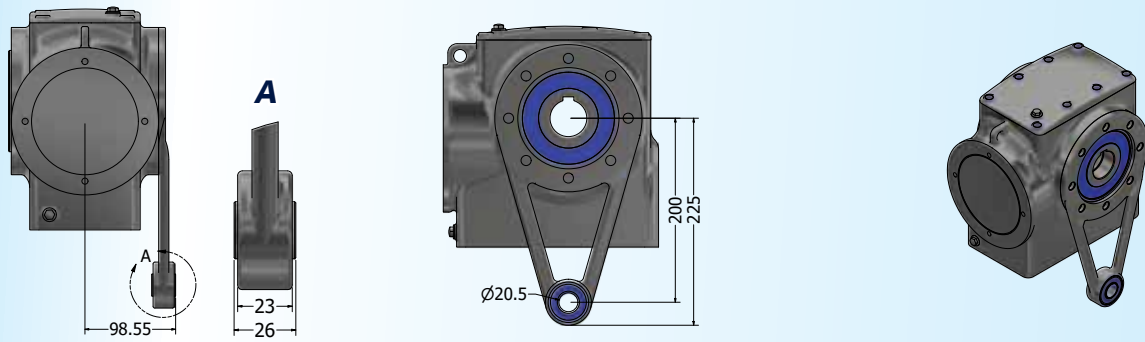
*The standard hollow shaft diameters for a FSA 68 are
40 & 45 mm
Different hollow shaft diameters on request*

Output Flange SS130 FL250

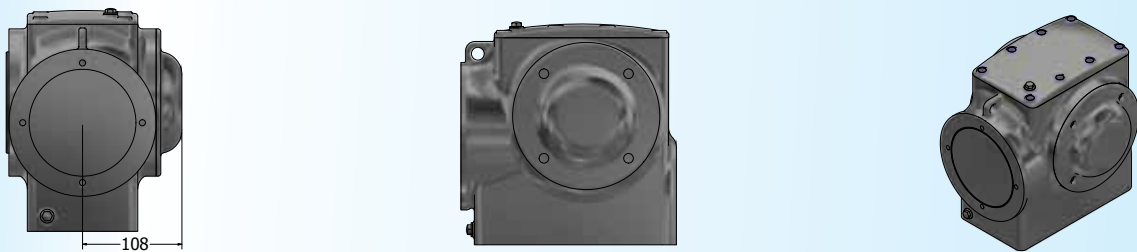




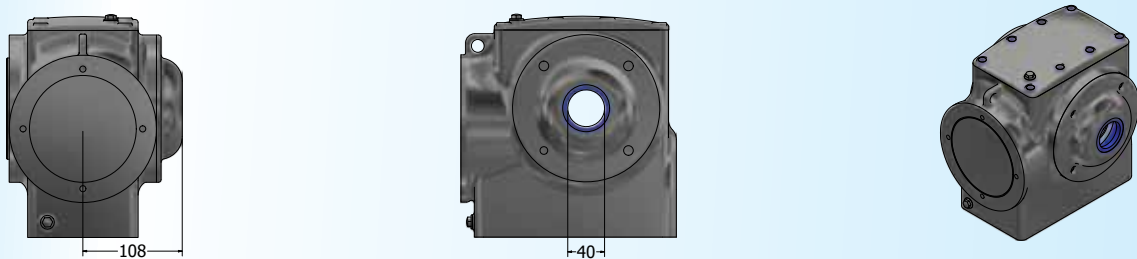
Torque Arm SS130 MS



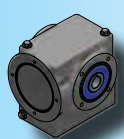
Closed Safety Cap SS130 CC



Open Safety Cap SS130 CO40

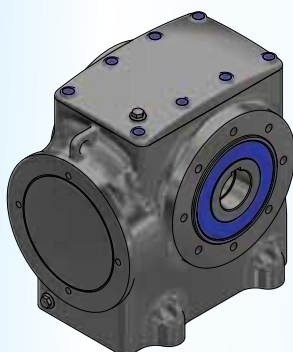


*The standard shaft diameter for a SS130 CO is 40mm
 Different diameters on request*

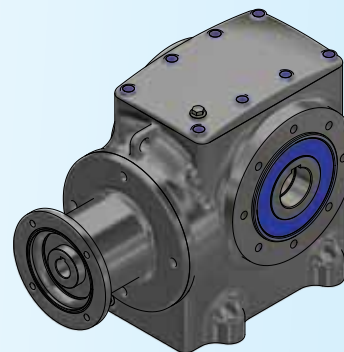


The FS 68 can be supplied with an integrated motor (B5T2) as well as with an IEC motor adaptor (AM)
The B5T2 version is meant to be assembled with a special motor, made with a non IEC flange and a shouldered shaft.
The AM version can be assembled with a standard motor with flange and shaft according to IEC.

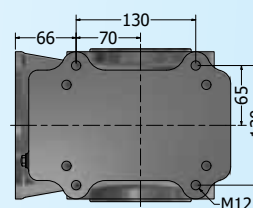
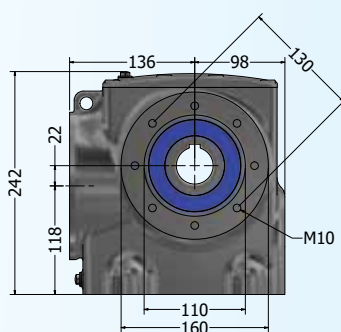
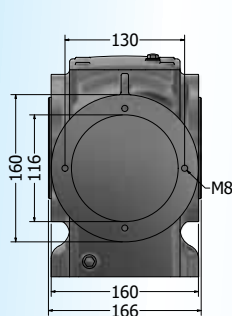
FS 68 B5T2



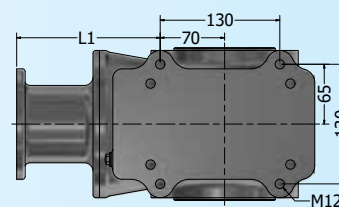
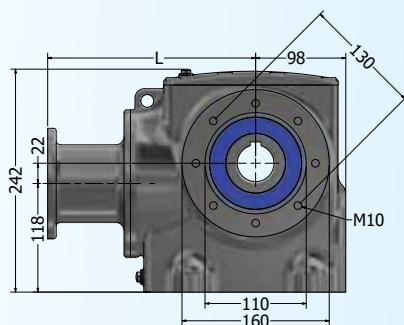
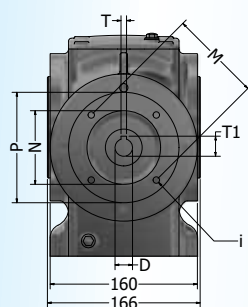
FS 68 AM..



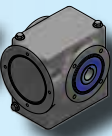
FS 68 B5T2



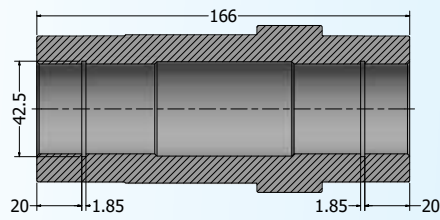
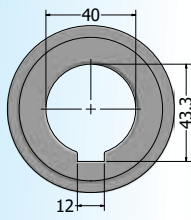
FS 68 AM



		D	T	T1	i	M	N	P	L	L1
FS 68 AM71	IEC71 B5	14	5	16.3	9	130	110	160	226	156
FS 68 AM80	IEC80 B14A	19	6	21.8	7	100	80	120	226	156
FS 68 AM90	IEC90 B14A	24	8	27.3	9	115	95	140	226	156
FS 68 AM100	IEC100 B14A	28	8	31.3	9	130	110	160	226	156

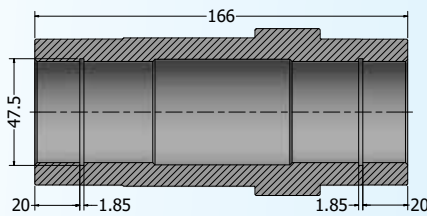
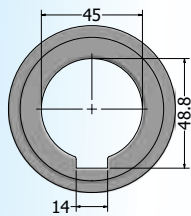


Hollow Shaft Dimensions HA40



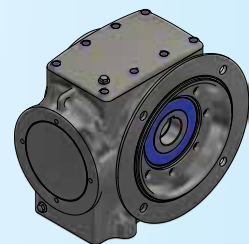
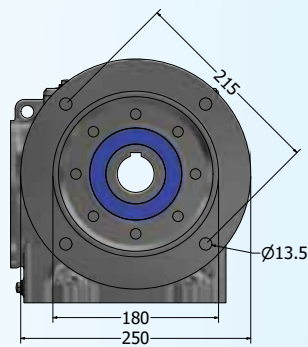
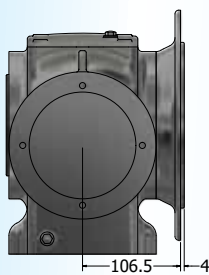
The standard hollow shaft diameters for a FS 68 are
 40 & 45 mm
 Different hollow shaft diameters on request

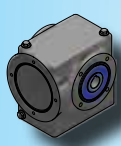
Hollow Shaft Dimensions HA45



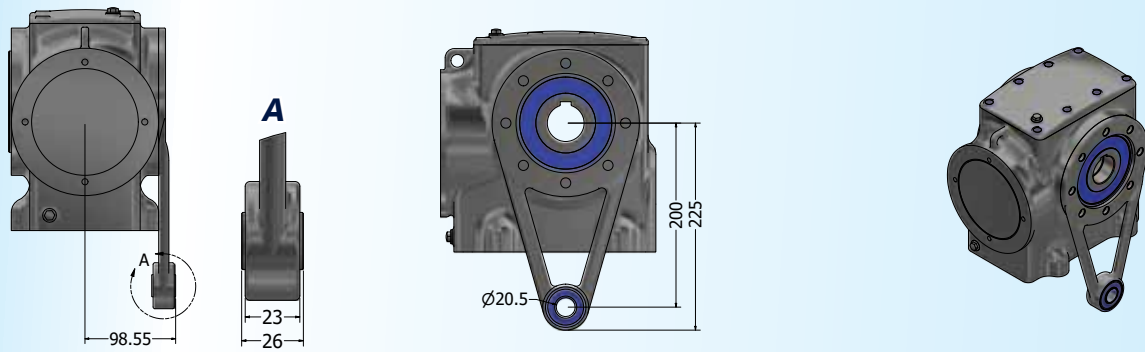
The standard hollow shaft diameters for a FS 68 are
 40 & 45 mm
 Different hollow shaft diameters on request

Output Flange SS130 FL250

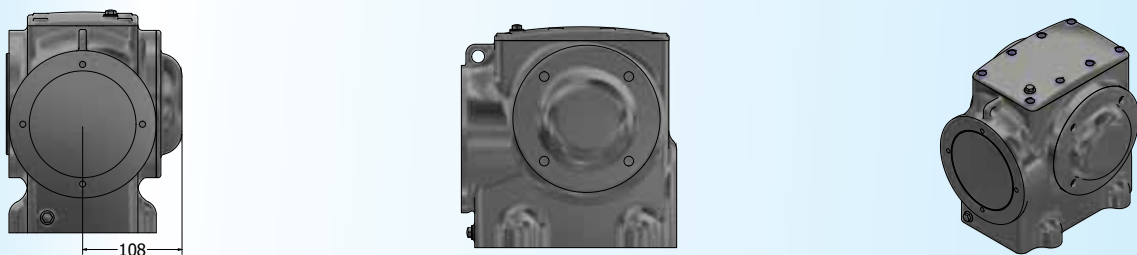




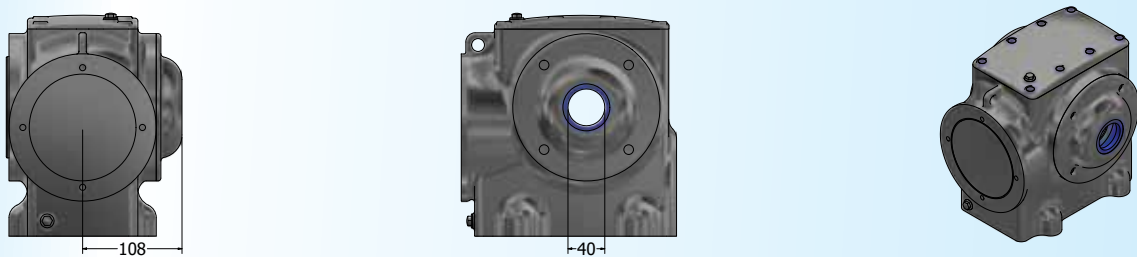
Torque Arm SS130 MS



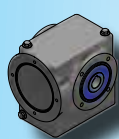
Closed Safety Cap SS130 CC



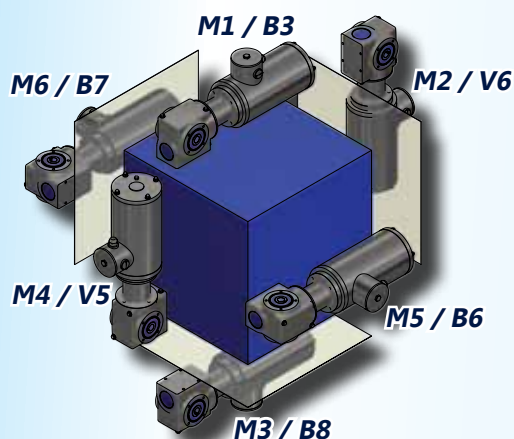
Open Safety Cap SS130 CO40



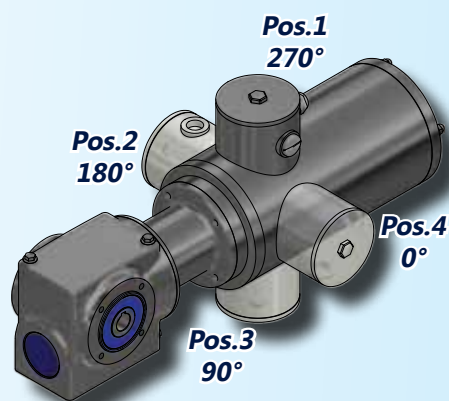
*The standard shaft diameter for a SS130 CO is 40mm
Different diameters on request*



Mounting Positions



Terminal Box Positions



Lubrication Quantity

Oil Quantity in ML.	Mounting Position					
Gearbox	M1 (B3)	M3 (B8)	M6 (B7)	M5 (B6)	M4 (V5)	M2 (V6)
FS (A) 38 B5T1 / AM..	400	1350	1250	1250	1250	1250
FS (A) 48 B5T1 / AM..	750	2100	2000	2000	1950	2000
FS (A) 58 B5T1 / AM..	1300	3900	3900	3900	3900	3900
FS (A) 68 B5T2 / AM..	2500	7200	6500	6500	6500	7200

Lubrication Type

Gearbox	Oil Type	Temp. Range
FS (A) 38 FS (A) 48 FS (A) 58 FS (A) 68	Matrix Foodmax 460	-20°C ~ +40°C
	Castrol Optileb GT 460	-20°C ~ +40°C
	Bechem Berusynth 460 H1	-20°C ~ +40°C
	Shell Casida Fluid GL460	-20°C ~ +40°C
	Mobil SHC Cibus 460	-20°C ~ +40°C

Weight

Gearbox	Weight	Gearbox	Weight
FS(A) 38 B5T1	7.5 Kg.	FS(A) 38 AM	11 Kg.
FS(A) 48 B5T1	10.5 Kg.	FS(A) 48 AM	14 Kg.
FS(A) 58 B5T1	14.5 Kg.	FS(A) 58 AM	18 Kg.
FS(A) 68 B5T2	22.5 Kg.	FS(A) 68 AM	27 Kg.

Given values are average values and may vary depending on oil quantity and number of gear stage's

Maintenance

For maintenance instructions
please see our maintenance manual on page

Positioning of the debreather

