

For the food and processing industry

# High efficiency in hygienic design



STAINLESS STEEL HELICAL BEVEL GEARBOXES

# BJ-Gear A/S

We manufacture stainless steel gearboxes of superior quality. The gearboxes are specifically developed for the food industry and other industries, that continuously make heavier demands to the resistance of material and to a design, that is easy-to-clean.

The gearboxes are designed with a smooth, stainless steel gear housing and hollow shaft. The gears are lubricated for life and can be supplied with a lubricant approved for the food industry. The oil sealings are made of nitrile rubber.

In order to reduce the risk of bacteria growth, the design is characterised by smooth surfaces without unnecessary flanges, recesses and mounting holes.

The helical bevel gearboxes are characterised by high power density and an efficiency of 96%. The compact and modular design makes the gearbox easy to incorporate in numerous applications.

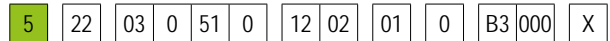


## Features and advantages of BJ Gear's helical bevel gearboxes:

- Reliable performance
- Compact hygienic design.
- Quiet, reliable and efficient operation
- High quality
- Can be equipped with AC, DC or servo motors, encoders and brakes
- Custom design

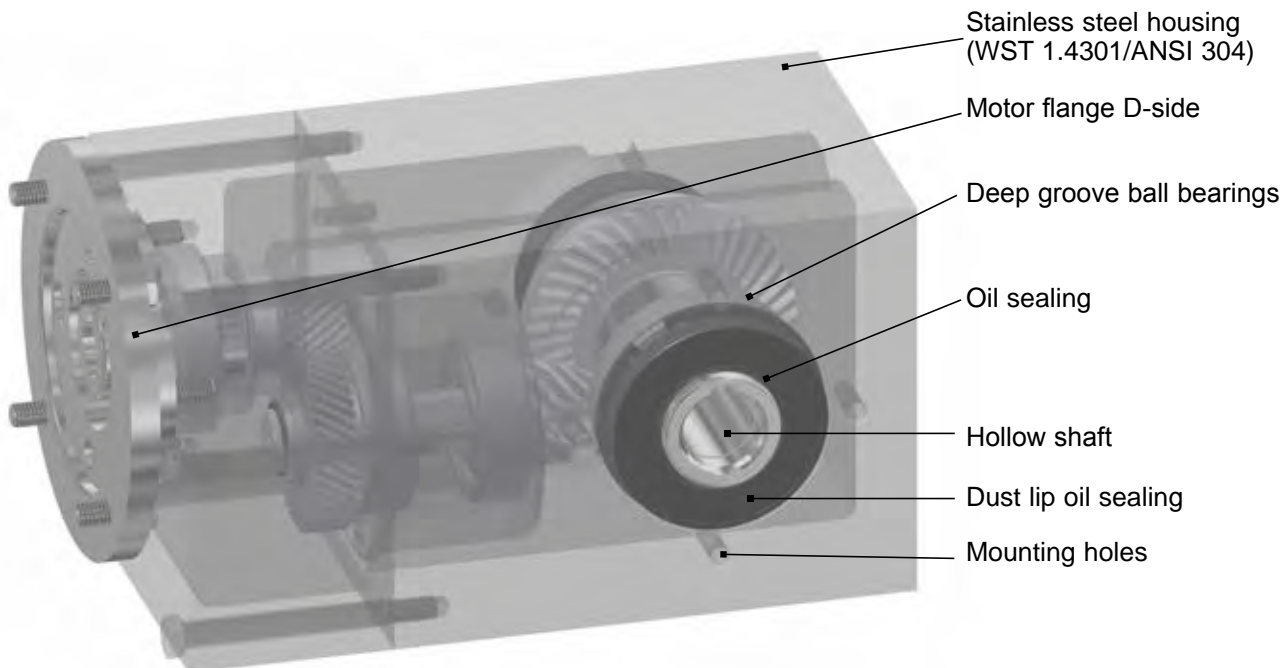


## Type designation



We believe, that an unambiguous type designation of our stainless steel helical bevel gearboxes eases the communication. Throughout this brochure the position of each item in the type designation will therefore be shown.

The first number (5) indicates that it is a helical bevel gearbox.



# Gear sizes

5 22 03 0 51 0 12 02 01 0 B3 000 X

The stainless steel helical bevel gearboxes are made in three sizes. **22** indicates the size

SX22 50 Nm Ratio: 4.83 - 70.24	SX32 90 Nm Ratio: 7.33-77.55	SX42 150 Nm Ratio: 7.29-77.36
22	32	42

## Service factor

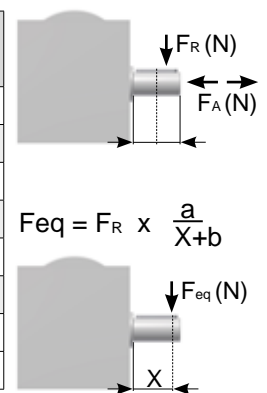
Type of load and starts per hour		Operation hours per day			
		3 hours	10 hours	24 hours	
Continuous or intermittent appl. with start/hour	≤ 10	Uniform	0.8	1.00	1.25
		Moderate	1.00	1.25	1.50
		Heavy	1.25	1.50	1.75
Intermittent application with start/hour	> 10	Uniform	1.00	1.25	1.50
		Moderate	1.25	1.50	1.75
		Heavy	1.50	1.75	2.15

The operating conditions are of importance to the durability of the gear. The gear should therefore be dimensioned according to the service factors.

Please note that the values applies for operation with an AC standard motor.

## Radial and axial loads for output shaft

Type	n <sup>2</sup> [min <sup>-1</sup> ]	F <sub>A</sub>	F <sub>R</sub>	Type	n <sup>2</sup> [min <sup>-1</sup> ]	F <sub>A</sub>	F <sub>R</sub> Ø20	F <sub>R</sub> Ø25	Type	n <sup>2</sup> [min <sup>-1</sup> ]	F <sub>A</sub>	F <sub>R</sub>	
SX22 a=40.5 b=20.3	400	360	1800	SX32 Ø20 a=46 b=26	250	400	2000	1650	SX42 a=55.5 b=25.5	250	500	2450	
	250	380	1900		150	450	2250	1850		150	600	2900	
	150	420	2100		100	500	2500	2050		100	700	3400	
	100	440	2200		75	560	2800	2300		75	800	3900	
	75	440	2200		50	560	2800	2300		50	960	4700	
	50	440	2200		Ø25 a=56 b=26	25	560	2800		2300	25	960	4700
	25	440	2200			15	560	2800		2300	15	960	4700
	15	440	2200										



## Radial and axial loads for input shaft

n <sup>1</sup> [min <sup>-1</sup> ]	F <sub>A</sub>	F <sub>R</sub>	F <sub>A</sub>	F <sub>R</sub>	F <sub>A</sub>	F <sub>R</sub>
1400	SX22	140	700	SX32	240	1200
900		160	800		280	1400
500		190	950		340	1700
					SX42	
					240	1200
					280	1400
					340	1700



\* Strong axial loads in the DX direction are not allowed.

# effect

## Tables of effect

### Service factor

- By normal use: Include the service factor on page 3 and choose a service factor >1.
- In case of special demands on safety or other special conditions, please contact BJ-Gear A/S for further information.

Motor		SX22 helical bevel gearboxes						
	Power	Gear ratio	Output torque	Output speed	Service factor	Nominal power	Nominal torque	Ratio code
[rpm]	P <sub>1M</sub> [kW]	i	M <sub>2M</sub> [Nm]	n <sub>2</sub> [min <sup>-1</sup> ]		P <sub>1R</sub> [kW]	M <sub>2R</sub> [Nm]	
1400	0.37	4.83	12	290	2.6	0.95	30	01
	0.37	7.40	18	189	1.7	0.62	30	02
	0.37	9.58	23	146	1.7	0.64	40	03
	0.37	10.98	27	128	1.7	0.63	45	04
	0.37	13.07	32	107	1.4	0.53	45	05
	0.37	14.66	35	95	1.3	0.47	45	06
	0.37	15.79	38	89	1.2	0.44	45	07
	0.37	16.81	41	83	1.1	0.41	45	08
	0.37	20.00	48	70	1.0	0.37	48	09
	0.37	21.93	53	64	0.9	0.35	50	10
	0.25	24.18	39	58	1.3	0.32	50	11
	0.25	29.04	47	48.2	1.1	0.26	50	12
	0.18	33.57	42	41.7	1.2	0.23	50	13
	0.18	38.67	48	36.2	1.0	0.20	50	14
	0.18	44.44	55	31.5	0.9	0.17	50	15
	0.12	59.18	48	23.7	1.0	0.13	50	16
0.09	70.24	45	19.9	1.1	0.11	50	17	

\*The dynamic efficiency is 0.96 for all ratios.

The values are for gearboxes that are run in and heated for operation.

Motor		SX32 helical bevel gearboxes						
	Power	Gear ratio	Output torque	Output speed	Service factor	Nominal power	Nominal torque	Ratio code
[rpm]	P <sub>1M</sub> [kW]	i	M <sub>2M</sub> [Nm]	n <sub>2</sub> [min <sup>-1</sup> ]		P <sub>1R</sub> [kW]	M <sub>2R</sub> [Nm]	
1400	1.5	7.33	72	191	1.0	1.5	70	01
	1.1	11.22	80	125	1.1	1.2	85	02
	1.1	13.26	95	106	0.9	0.98	85	03
	1.1	15.37	110	91	0.8	0.89	90	04
	0.75	18.04	89	78	1.0	0.76	90	05
	0.75	20.30	100	69	0.9	0.68	90	06
	0.75	21.54	106	65	0.9	0.64	90	07
	0.55	23.53	85	59	1.1	0.58	90	08
	0.55	27.62	100	51	0.9	0.50	90	09
	0.55	29.40	106	47.6	0.8	0.47	90	10
	0.37	32.97	80	42.5	1.1	0.42	90	11
	0.37	38.37	93	36.5	1.0	0.36	90	12
	0.25	45.00	73	31.1	1.2	0.31	90	13
	0.25	50.67	83	27.6	1.1	0.27	90	14
	0.18	58.73	73	23.8	1.2	0.23	90	15
	0.18	77.55	97	18.1	0.9	0.18	90	16

\*The dynamic efficiency is 0.96 for all ratios.

The values are for gearboxes that are run in and heated for operation.

# Tables of effect




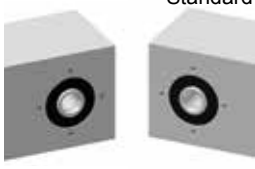



Motor		SX42 helical bevel gearboxes						
[rpm]	Power	Gear ratio	Output torque	Output speed	Service factor	Nominal power	Nominal torque	Ratio code
	$P_{1M}$ [kW]	i	$M_{2M}$ [Nm]	$n_2$ [min <sup>-1</sup> ]		$P_{1R}$ [kW]	$M_{2R}$ [Nm]	
1400	2.2	7.29	104	192	0.9	2.0	95	01
	2.2	11.20	159	125	0.9	2.0	150	02
	1.5	13.18	129	106	1.2	1.7	150	03
	1.1	15.27	109	92	1.4	1.5	150	04
	1.1	17.93	128	78	1.2	1.3	150	05
	1.1	20.25	145	69	1.0	1.1	150	06
	1.1	2140	153	65	1.0	1.1	150	07
	0.75	23.47	115	60	1.3	0.98	150	08
	0.75	27.55	135	51	1.1	0.83	150	09
	0.75	29.21	143	47.9	1.0	0.78	150	10
	0.75	32.88	161	42.6	0.9	0.70	150	11
	0.55	38.12	138	36.7	1.1	0.60	150	12
	0.55	44.89	163	31.2	0.9	0.51	150	13
	0.37	50.34	122	27.8	1.1	0.40	131	14
	0.37	58.58	142	23.9	1.1	0.39	150	15
	0.25	77.36	126	18.1	1.2	0.30	150	16

\*The dynamic efficiency is 0.96 for all ratios.

The values are for gearboxes that are run in and heated for operation.

# Threads in the housing

5 22 03 0 51 0 12 02 01 0 B3 000 X

	Housing with no threads	Housing with thread on the right side	Housing with thread on the left side	Housing with threads on both sides
Series 22, 32 and 42				 Standard
	00	01	02	03
	Housing with thread in the bottom	Housing with thread on the top	Housing with thread on the back	
				
	04	05	06	

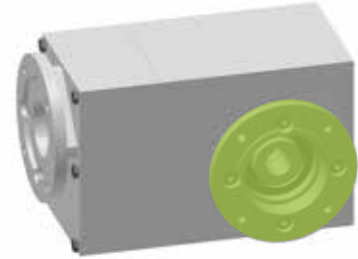


# Output flange

5 22 03 0 51 0 12 02 01 0 B3 000 X

BJ-Gear supply output flanges in different sizes depending on the size of the helical bevel gearbox.

	No output flange	SX22		SX32		SX42		
Sizes (BCD)		87	100	100	130	130	165	215
	0	1	2	3	4	5	6	7



# Choice of output shaft

5 22 03 0 51 0 12 02 01 0 B3 000 X

Free shaft Ø20x40	Free shaft Ø25x50	Double free shaft Ø20x40
10	15	30
Hollow shaft Ø20	Hollow shaft Ø25	Hollow shaft Ø30
51	53	54

BJ-Gear A/S supply different sizes of output shafts.

If the required dimension is not mentioned, please feel free to contact us for further information.

# Position

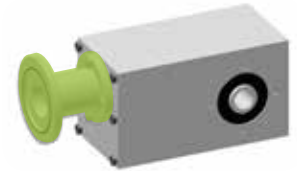
5 22 03 0 51 0 12 02 01 0 B3 000 X

No position	Free shaft Right side	Free shaft Left side	Flange Right side	Flange Left side
0	1	2	4	5

## D-side

5 22 03 0 51 0 12 02 01 0 B3 000 X

IEC norm (B14)	Motor flange [BCD]	SX22	SX32	SX42
No flange		00	00	00
56	65	10	-	-
63	75	11	-	-
71	85	12	12	12
80	100	-	13	13
90	115	-	14	14
100	130	-	-	15



For coupling inputs please ask our Sales Department.

## Choice of Input shaft

5 22 03 0 1 51 12 02 01 0 B3 000 X

	SX22	SX32	SX42
Ø9	00	-	-
Ø11	01	-	-
Ø14	02	02	02
Ø19	-	03	03
Ø24	-	04	04
Ø28	-	-	05
Free input Ø14	40	-	-
Free input Ø19	-	41	41



## Gearing

5 22 03 0 1 51 12 02 01 0 B3 000 X

SX22		SX32		SX42	
Gear ratio $n_2$ [rpm]	Ratio code	Gear ratio $n_2$ [rpm]	Ratio code	Gear ratio $n_2$ [rpm]	Ratio code
4.83	01	7.33	01	7.29	01
7.40	02	11.22	02	11.20	02
9.58	03	13.26	03	13.18	03
10.98	04	15.37	04	15.27	04
13.07	05	18.04	05	17.93	05
14.66	06	20.30	06	20.25	06
15.79	07	21.54	07	21.40	07
16.81	08	23.53	08	23.47	08
20.00	09	27.62	09	27.55	09
21.93	10	29.40	10	29.21	10
24.18	11	32.97	11	32.88	11
29.04	12	38.37	12	38.12	12
33.57	13	45.00	13	44.89	13
38.67	14	50.67	14	50.34	14
44.44	15	58.73	15	58.58	15
59.18	16	77.55	16	77.36	16
70.24	17				

# Choice of lubricants

5 22 03 0 1 51 12 02 01 0 B3 000 X








	Description	Application	Viscosity	Lubricant
0	<b>Fully synthetic gear oil, standard</b>	Normal load and ambient temp. -25°C to +40°C	220	Klübersynth GH 6-220
1	<b>Fully synthetic gear oil</b>	Heavy load and ambient temp. -20°C to >+40°C	460	Klübersynth GH 6-460
2	<b>Fully synthetic gear oil</b>	Heavy load and ambient temp. -20°C to >+40°C	680	Klübersynth GH 6-680
3	<b>Liquid grease</b>	Normal load and ambient temp. -40°C to >+40°C	1200	Klübersynth GE 46-1200
4	<b>Special lubricating oil for food and pharmaceutical industries</b>	Normal load and ambient temp. -20°C to +40°C	460	Klüberoil 4 UH1-460 N

Ambient temperatures are guide values which depend on the lubricant's composition, the intended use and the application method.

All data is based on synthetic oils. Do not mix synthetic oils with mineral oils.

# Mounting position

5 22 03 0 1 51 12 02 01 0 B3 000 X

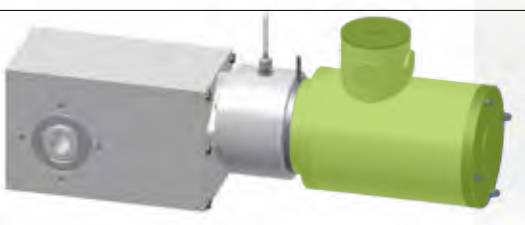
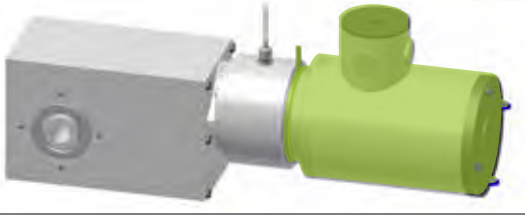
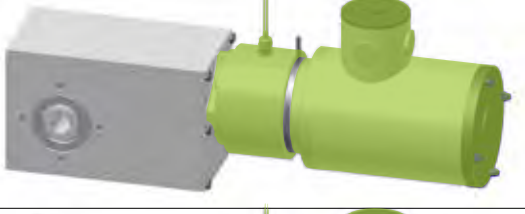
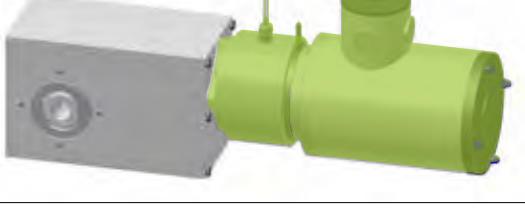

Mounting position				
	B3	B6	B7	B8
Mounting position				
	V5	V6	V8	



# Accessories

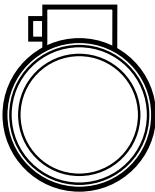
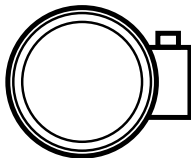
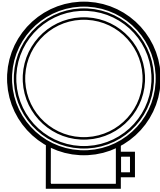
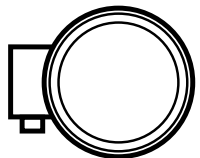
5 22 03 0 1 51 12 02 01 0 B3 000 X

We can supply our helical bevel gearboxes with a wide range of accessories if needed. Below you will find our codes for mounting of stainless steel brake, encoder and motor. If you have any questions please do not hesitate to contact our Sales Department for further assistance.

000	No accessories mounted	
110	Mounting of stainless steel motor	
120	Mounting of encoder and stainless steel motor	
130	Mounting of stainless steel brake and motor	
140	Mounting of stainless steel brake, encoder and stainless steel motor.	

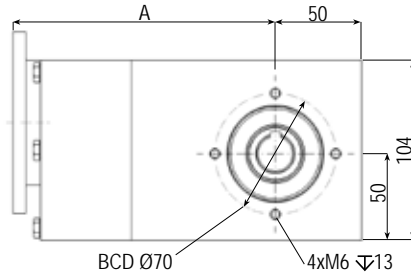
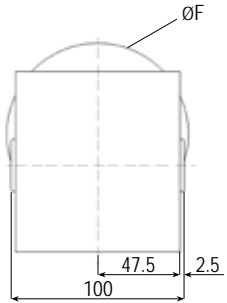
# Terminal box position

5 22 03 0 1 51 12 02 01 0 B3 000 X

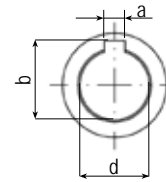
				
No terminal box	0°	90°	180°	270°
X	0	3	6	9

# SX22

## Dimensional drawings for SX22



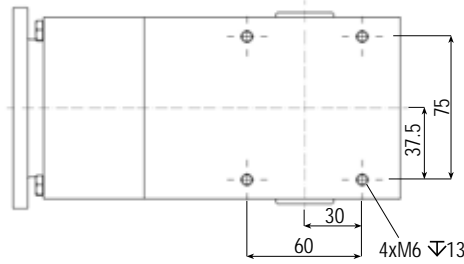
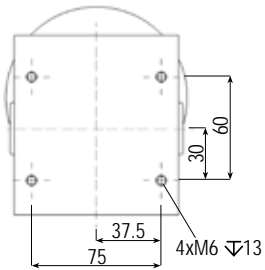
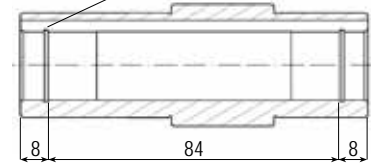
### Hollow output shaft



d	a	b
Ø18 H8	6	20.8
Ø20 H8	6	22.8

Threads on both sides as standard.  
Threads on only one of the sides or no threads at all is possible on request.

Seeger ring  
DIN 472

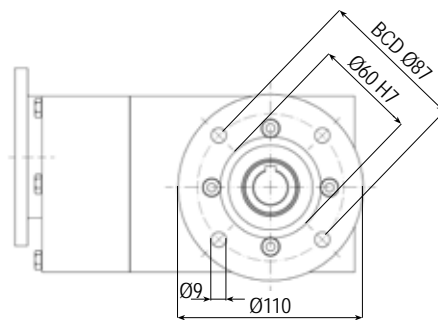
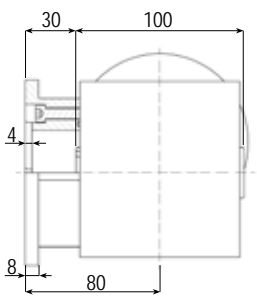


Threads on the back is possible on request.

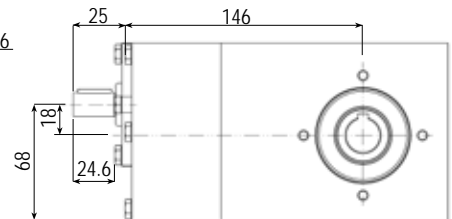
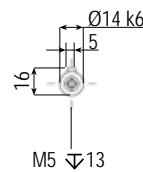
Threads on the top and bottom is possible on request.

Motor flanges	BCD	ØF	A
56B14	65	80	152
63B14	75	90	154.5
71B14	85	105	152

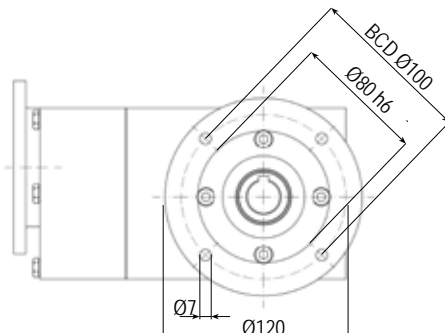
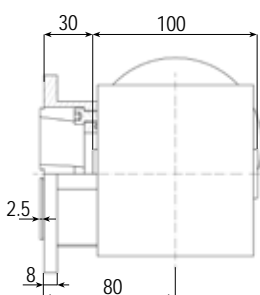
### Output flange, size 87



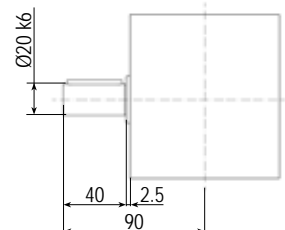
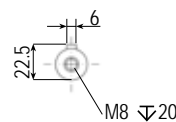
### Free input shaft



### Output flange, size 100

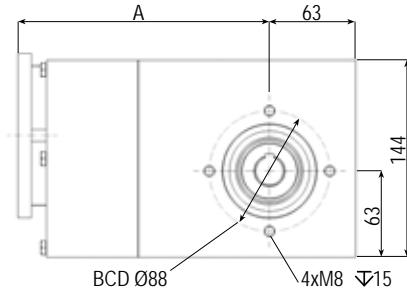
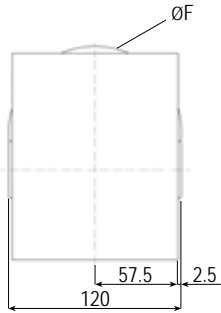


### Free single output shaft

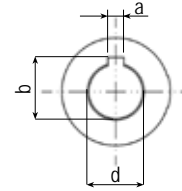


# SX32

## Dimensional drawings for SX32

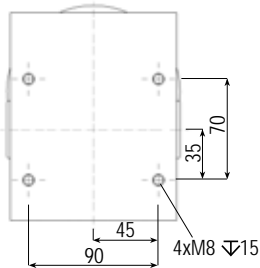
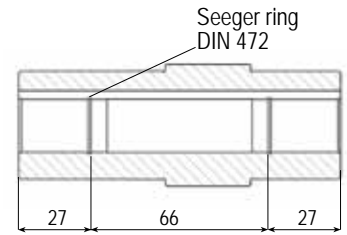


### Hollow output shaft

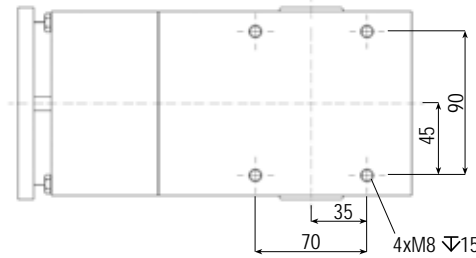


d	a	b
Ø20 H8	6	22.8
Ø25 H8	8	28.3

Threads on both sides as standard.  
Threads on only one of the sides or no threads at all is possible on request.



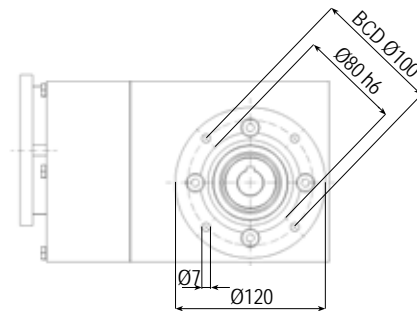
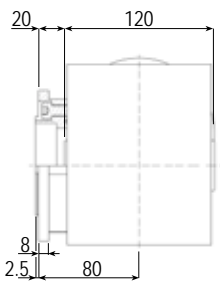
Threads on the back is possible on request.



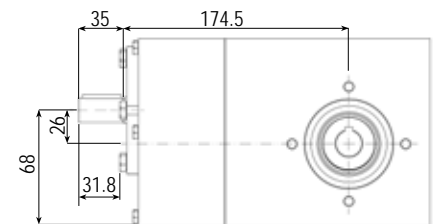
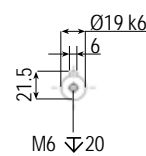
Threads on the top and bottom is possible on request.

Motor flanges	BCD	ØF	A
71B14	85	105	182
80B14	100	120	184
90B14	115	140	184

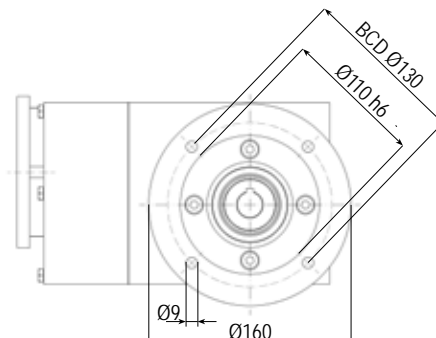
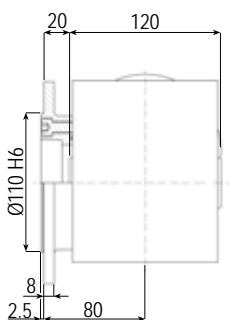
### Output flange, size 100



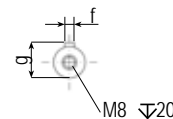
### Free input shaft



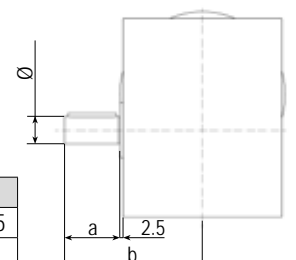
### Output flange, size 130



### Free single output shaft

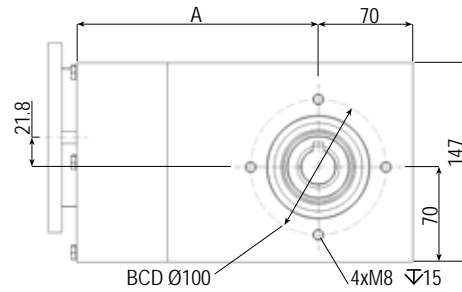
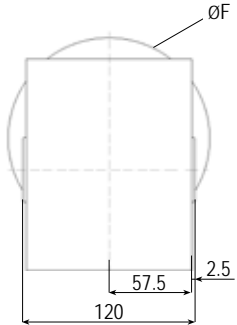


d	a	b	f	g
Ø20 k6	40	100	6	22.5
Ø25 k6	60	120	8	28

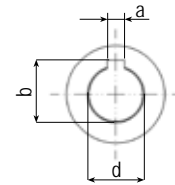


# SX42

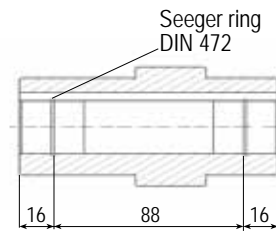
## Dimensional drawings for SX42



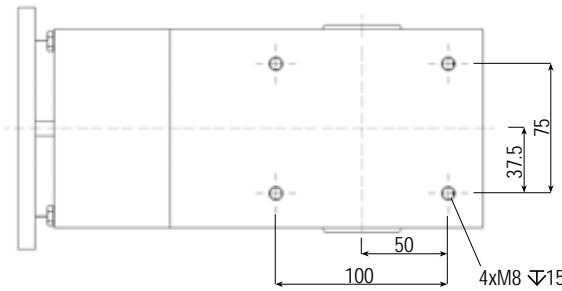
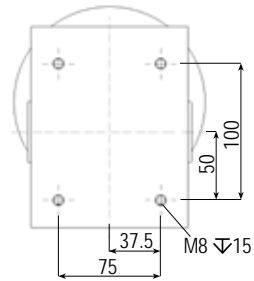
### Hollow output shaft



d	a	b
Ø25 H8	8	28.3
Ø30 H8	8	33.3



Threads on both sides as standard. Threads on only one of the sides or no threads at all is possible on request.

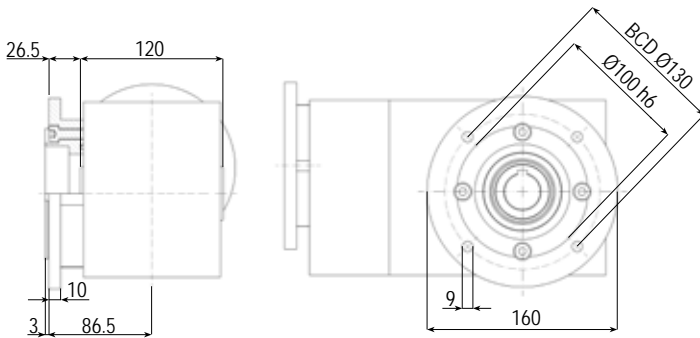


Motor flanges	BCD	ØF	A
71B14	85	105	182
80B14	100	120	184
90B14	115	140	184

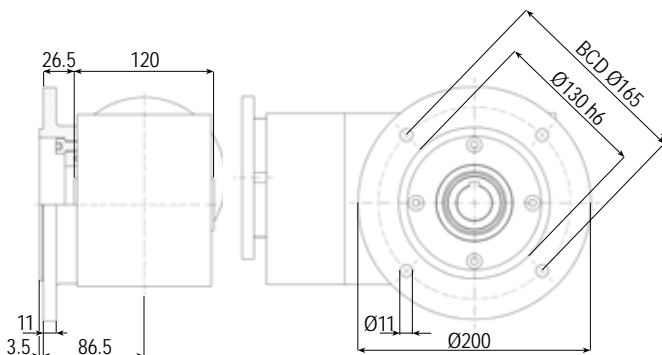
Threads on the back is possible on request.

Threads on the top and bottom is possible on request.

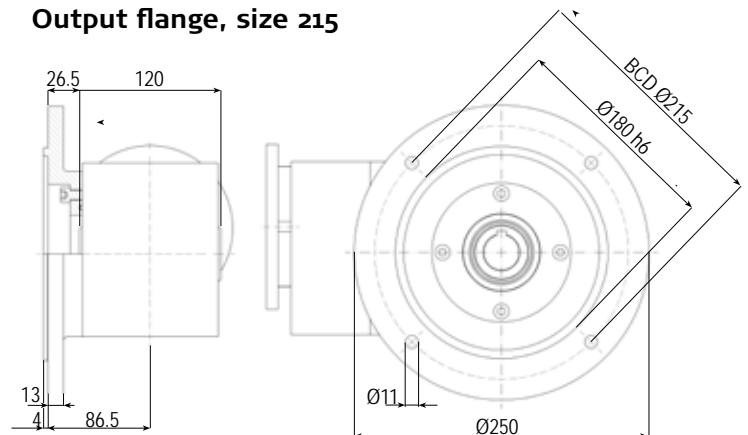
### Output flange, size 130



### Output flange, size 165

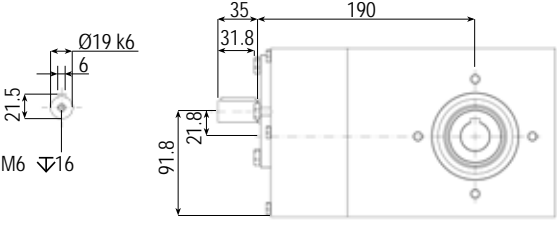


### Output flange, size 215

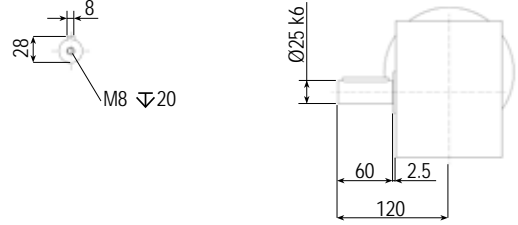


# Dimensional drawings for SX42

Free input shaft



Free single output shaft



# Additional products high demand

BJ-Gear A/S offers a wide range of products for the food industry and industries where the requirements for material resistance and an easy-to-clean design are continuously stringent.

## /// Worm gearboxes

### Features and advantages

- Hygienic design
- Sturdy and reliable
- Compact design
- High quality
- Can be equipped with stainless AC motors, servo motors, encoders & brakes
- High efficiency or self locking
- Custom design



Standard stainless steel worm gearbox



Standard stainless steel worm gearbox



Stainless worm gearbox with a special motor flange for DC motor and a stainless motor shield.



Integrated stainless steel worm gearbox with enhanced bearings and special output shaft.



Stainless steel worm gearbox with a special narrow housing.

## /// Stainless steel motors

The stainless steel AC motors are of acid-resistant steel and in protection classes from IP66 to IP69K. They are available as TENV (Totally Enclosed Non-Ventilated) up to effects of 0.75 kW or as TEFV (Totally Enclosed Fan Cooled). The motors are equipped with thermistors as standard. The com-

pletely smooth surface makes them ideal for use within the food industry or where an easy-to-clean design is important.





# for ding industries

## /// Brake, module system

The brake meets the strict requirements for products to be used directly in a process line. The brake is designed to be mounted between a flanged motor and a gearbox, and is available in three sizes with torques from 5-20 Nm.



## /// Actuators & worm gear screw jacks



Worm gear screw jack with stainless steel spindle and protecting tube.



Stainless steel actuator with motor and the stainless steel BJ-Gear brake

Actuator based on toothed belt drive made of stainless steel with motor of stainless steel.



## /// Flange bearings

NG bearing units are of high material resistance and a design, that is easy-to-clean. To reduce the risk of bacteria growth the design is characterised by a smooth surface and rounded corners. The bearings are maintenance free and resistant to all cleaning products and to most chemicals.

We also offer bearing units of stainless steel.



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**bj·gear**

dedicated gear drive solutions