



Trailer Rings
Slewing Rings
Slewing Drives



attributes production design total uniformity charter advertising market best conformance feedback competitive cus
requirements performance range world-class q
defects specifications standards satisfied
theory rating state-of-the-art optimization compliance manufacturing business implementation tested engineering improvement technological survey measurement characteristics
superior prize technical user-friendly investment focus objective value satisf
minimum client zero defects



.....turning your world

Warranty

QCB Slewing rings are guaranteed for 12 months after delivery to be free from material defect and manufacturing or assembly error. Any perceived faults should be documented and reported to QCB.

Limitation of Liability

The information in this manual is distilled from best practices, national standards and our own experience.

QCB assumes no liability for damages arising from

- Failure to follow the instructions and information in this manual
- Improper use of the product
- The use of untrained personnel
- Any modifications to the product as delivered

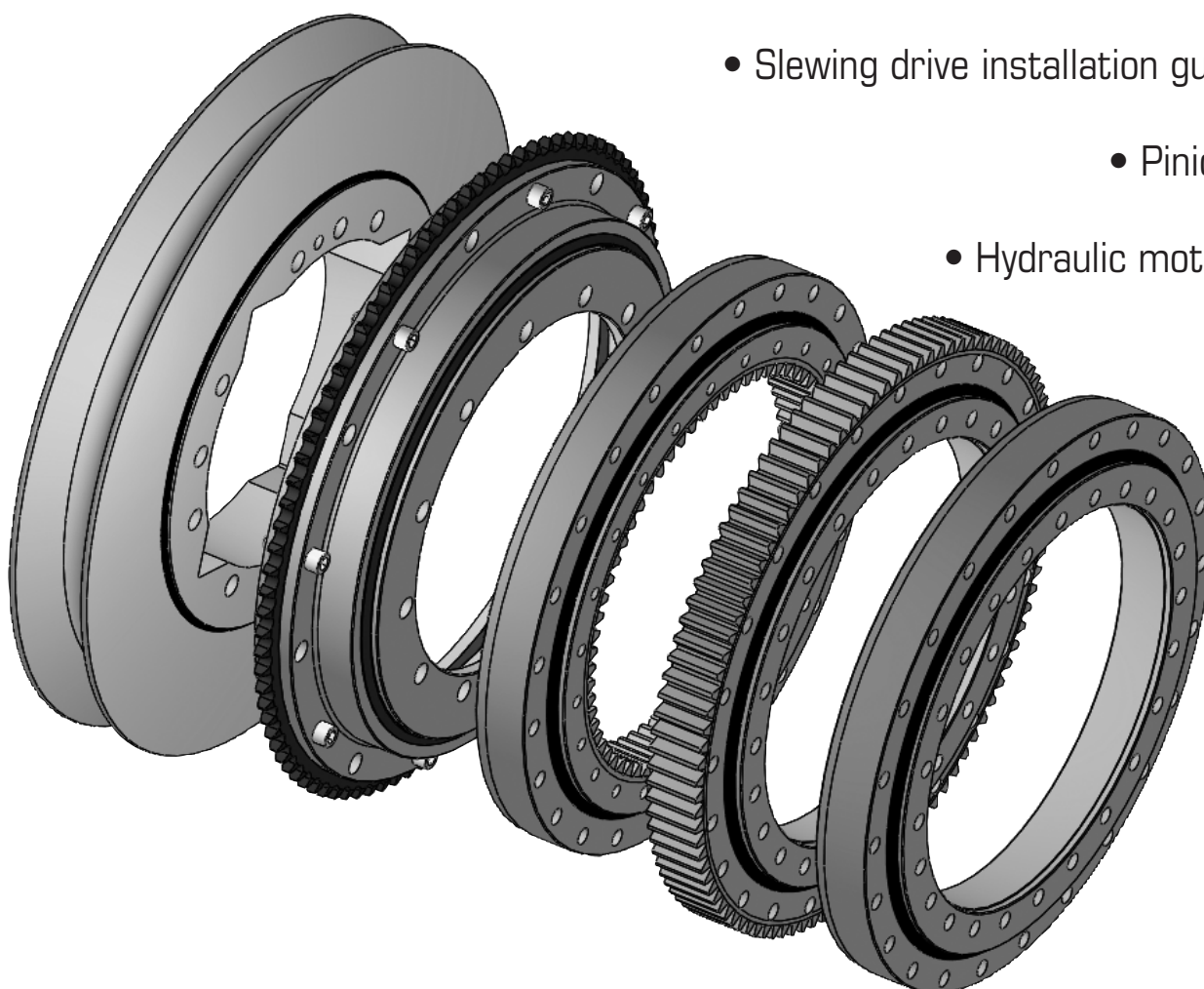
Cat RS 2019-1E Revision 1

In the interests of continuous product improvement, QCB reserves the right to modify any product or specification. All weights and measures are approximate and for guidance only. Detailed information is available from the QCB Technical Department.

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QCB offers one of the widest ranges of slewing rings, slewing drives and ring gears available from any single supplier.

The range includes:-

- Single and double row ball bearings
- Single row crossed roller bearings
- Triple row roller bearings
- Combination ball & roller bearings
- Ring gears and pinions
- Single and double slewing drives

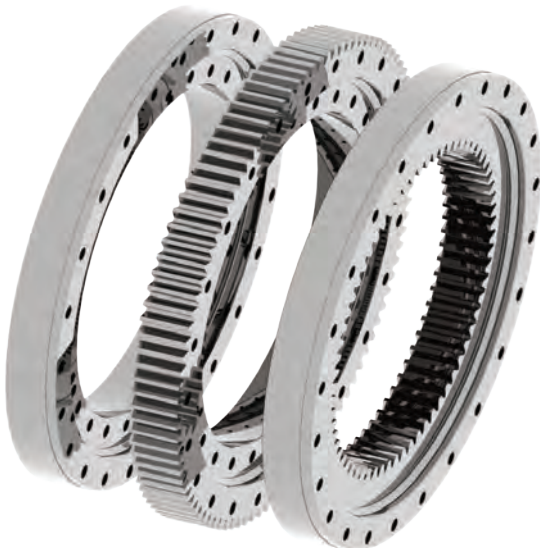
This catalogue illustrates the standard range of product: the full product range is far larger, and is backed by an interchange and database of over 5000 drawings, as well as the ability to design new, application specific units.

All manufacturers have been audited by QCB's engineering staff and are ISO registered. They operate some of the most modern machinery and manufacturing processes in the world, and are comparable with more traditional sources. Many have passed additional and separate audits from OEMs who operate safety critical equipment in the global market place.

QCB has become a trusted name in slewing ring bearings with a satisfied and international customer base in industries as diverse as mining machinery, materials handling, offshore oil and gas, access platforms, process treatment plants, wind power, special effects and art installations.

QCB Slewing rings and drives are renowned for Innovative Design, High Quality Manufacture and Customer Service

If the standard range of product does not satisfy your needs, contact us.



The standard QCB Slewing Ring range covers most industrial applications.

UK stock sizes up to 2000mm available

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QCB SLEWING RING NUMBERING SYSTEM

The QCB slewing ring numbering system includes numbers and letters in specific groups and with the following meanings:-

H	Helical gear (omit if not required)
SEG	Style or family type code
H	Hardened gear (omit if not required)
1166	Outer diameter (mm)
2	Number of raceways if > 1 (otherwise omit)
20	Size of major rolling element (add x for crossed roller; WR for wire race designs)
01	Design variant
6	Precision grade (omit for standard QCB specification)
CC	Material code for inner and outer ring
LM	QCB internal design code

Family types

- FUN Flanged, ungeared
- FIG Flanged, internal gear
- FEG Flanged, external gear
- SUN Solid section, ungeared
- SIG Solid section, internal gear
- SEG Solid section, external gear

Design number

- 5- OEM designs, or a combination of features
- 6- Reserved for imperial or inch size bearings
- Other combinations - usually related to seal/ spacer or surface treatment variations

Precision grade

- - Standard industrial clearances as per drawing
- 6 QCB Grade 6 reduced internal clearances
- 5 QCB Grade 5 reduced internal clearances
- A Light preload

Common materials

1st digit = inner ring material, 2nd digit = outer ring material

- CC 50Mn Carbon steel equiv. to C45N (common in Europe)
- AA 42CrMo4 V Alloy steel equiv. to EN19, 708M40 or DIN 1.7725
- EE AISI 52100 Through hardened steel
- xx Other materials such as aluminium and stainless steel have specific codes

All QCB bearings are marked with their part number, a serial number and a factory/date code.

THE QCB RANGE

Trailer Rings

Low precision large diameter bearings intended for articulation of slow speed trailer axles and light industrial applications.

Manufactured in mild steel only and usually unsealed and undrilled.

Slewing Bearings & Ring Gears

Large diameter rolling bearings that can accommodate axial, radial and moment loads in combination while rotating or making oscillatory motions.

Slewing rings consist of 2 or 3 rings between which either ball or cylindrical rolling elements are arranged with a cage or suitable spacers. The rings incorporate mounting and handling holes.

Lip seals prevent the ingress of contamination into the raceway.

Spur, helical or worm gears can be added to the rings to facilitate rotation.

Slewing Drives

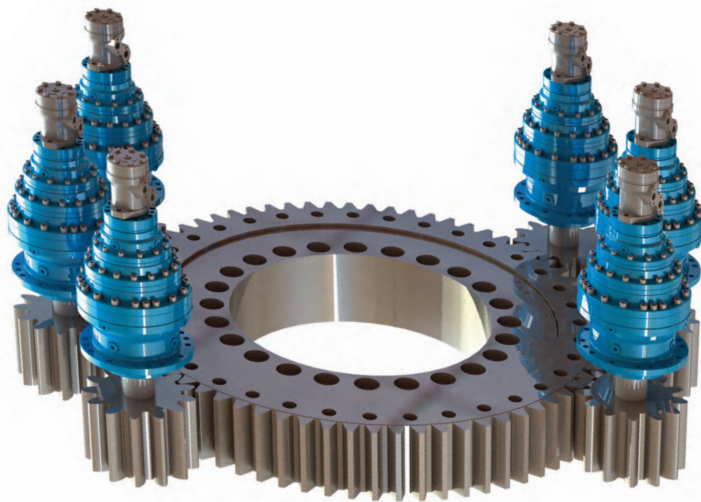
Increasingly popular, slewing drives consist of a slewing ring mounted on a base plate that incorporates a worm shaft that engages the external helical or worm gear.

Hydraulic or electric motors can be used to provide rotation. Rotation by hand crank is also possible.

Geared Motors

Geared rings require some form of drive. Working in conjunction with leading manufacturers QCB offers turnkey solutions with properly designed pinions with electric or hydraulically powered geared motors (helical-bevel, worm or planetary style).





Properly designed with matched pinions and geared motors, QCB slewing rings can transfer huge amounts of torque for use in areas such as offshore drilling equipment, winches or small and medium size tunnel boring machinery.

Don't guess - ask QCB Technical for a turnkey solution

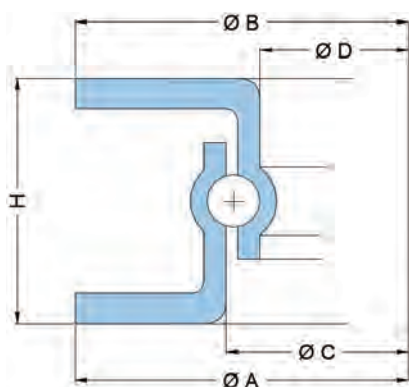
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Trailer Rings



Series U

Light Duty Trailer Rings



QCB reference	Outline dimensions					Ball mm	# Grease points	Minimum bolt requirements		Weight kg	Axial load KN
	H mm	A mm	B mm	C mm	D mm			#	Size		
U01 L030	55	298	293	220	200	12	1	4	M12	5	5
U01 L040	55	400	400	320	300	12	1	4	M12	8	7.5
U01 L050	55	500	500	420	400	12	1	4	M12	10	10
U01 N060	65	600	600	516	490	14	2	6	M14	18	17
U01 N065	65	650	650	568	543	14	2	6	M14	20	17
U01 N070	65	700	700	620	594	14	2	6	M14	22	22
U01 N075	65	750	750	668	640	14	2	6	M14	24	22
U01 N080	65	800	800	718	690	14	2	6	M16	26	25
U01 N085	65	850	850	767	742	14	2	6	M16	28	30
U01 N090	65	900	900	820	793	14	2	6	M16	30	35
U01 N095	65	950	950	870	846	14	2	6	M16	31	35
U01 N100	65	1000	1000	970	895	14	2	6	M16	33	40
U01 N105	65	1050	1050	970	945	14	2	6	M16	35	45
U01 P090	80	890	895	795	766	16	2	6	M16	36	50
U01 P100	80	1010	1015	916	888	16	2	6	M16	42	60
U01 P110	80	1100	1105	1005	976	16	2	6	M16	45	65
U01 T100	90	1000	1008	889	856	20	2	8	M16	60	80
U01 T110	90	1100	1100	980	948	20	2	8	M16	65	100

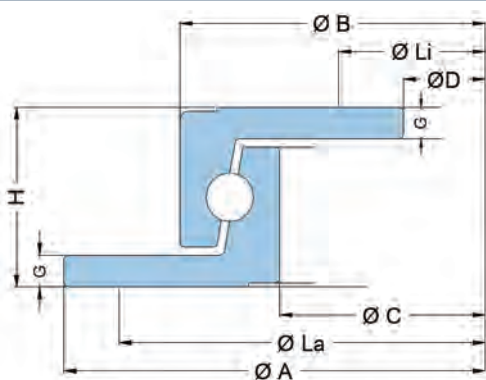


QCB slew rings can be seen operating in airbridges at some of the worlds major airports

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Series Z (L&N)

Medium Duty Trailer Rings



QCB reference	Outline dimensions								Weight kg	Axial Load kN
	A mm	B mm	C mm	D mm	La mm	Li mm	G mm	H mm		
400L	400	342	292	230	375	260	8	45	11	7.5
500L	500	442	392	330	475	360	8	45	15	9
650L	650	592	542	480	625	510	8	45	20	15
750L	750	692	642	580	725	610	8	45	23	18
850L	850	792	742	680	825	710	8	45	27	25
950L	950	892	842	780	925	810	8	45	30	30
1050L	1050	992	942	880	1025	910	8	45	34	35
500N	500	437	384	315	475	340	8	52	19	18
650N	650	587	534	465	625	490	8	52	25	25
750N	750	687	634	565	725	590	8	52	30	30
850N	850	787	734	665	825	690	8	52	35	35
950N	950	887	834	765	925	790	8	52	40	40
1050N	1050	987	934	865	1025	890	8	52	50	45

TRAILER RING INSTALLATION

Trailer rings generally do not have hardened raceways and therefore cannot be considered a replacement for a slewing ring under heavy load conditions. Trailer rings are NOT precision bearings and dimensions such as overall height of the Z and N series can vary by as much as 3mm, and diameters by as much as 5 mm!

Series U

Suitable for light farm trailers, light truck trailers, irrigation systems or airport luggage trolleys at speeds of less than 40 km/h

Series L

Suitable for light trailers at speeds of less than 30 km/h

Series N

Suitable for heavy farm vehicles or truck trailers at speeds in excess of 40 km/h.

Support Structure

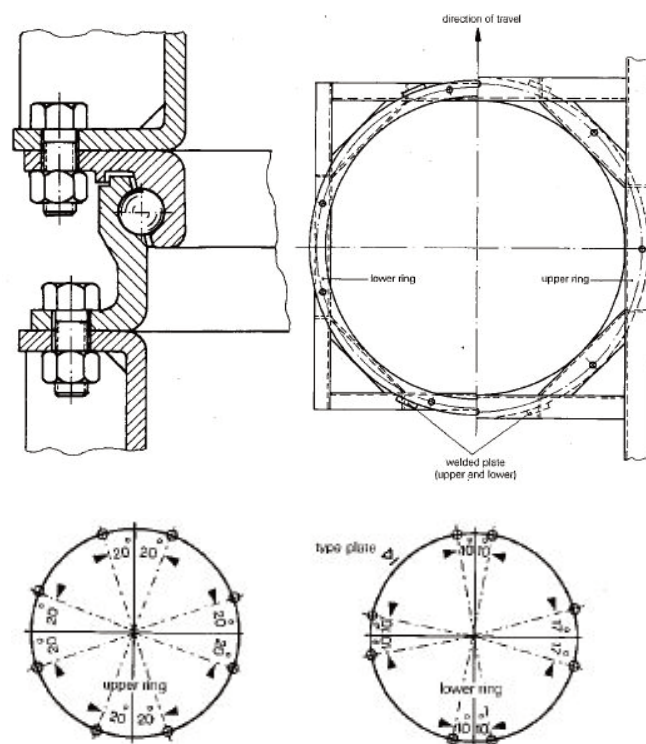
Trailer rings flanges should be supported by a stiff frame over at least 50% of the surface area, with the loading plug located away from the direction of any radial load.

Metal tabs, pre-welded to the frame, can be used to improve radial location and reduce shear stress on the bolts caused by acceleration or deceleration. **Trailer rings should never be welded directly to the frame.**



Bolt Data

Series U, L and N trailer rings are supplied undrilled. 6 to 8 bolts size M12 to M16 (depending on diameter) should be added to each flange. Typical bolt patterns are illustrated.



As trailer rings generally support lighter loads than slewing rings, Grade 8.8 bolts can be used. Bolt torques should be checked monthly, and are tabulated below.

Bolt size	Torque (Nm)
M12	78
M14	126
M16	193

Lubrication

Trailer rings are supplied lightly greased and must be greased during installation and service as they are unsealed. A good quality lithium or lithium-calcium EP2 grease will be adequate in most applications. Relubricate frequently to minimise contamination of the raceways - at least once per month. Always rotate the ring during regreasing.



QCB Triple ring Slewing rings are used to articulate the carriages in urban mass transit systems



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QCB Slewing rings are used in many offshore applications such as

Deck mounted cable carousels,
Cable laying equipment,
ROV LARS systems,
Boat davits,
Winches.
Trenching systems

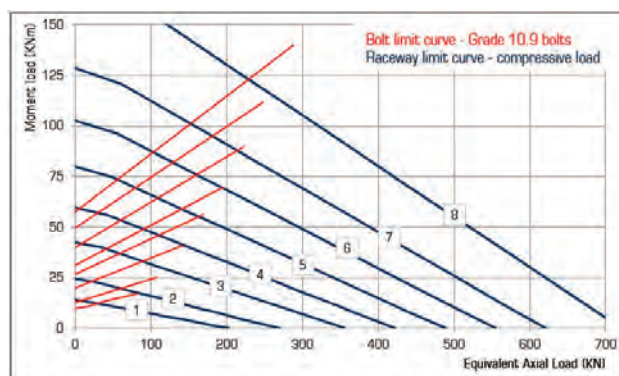
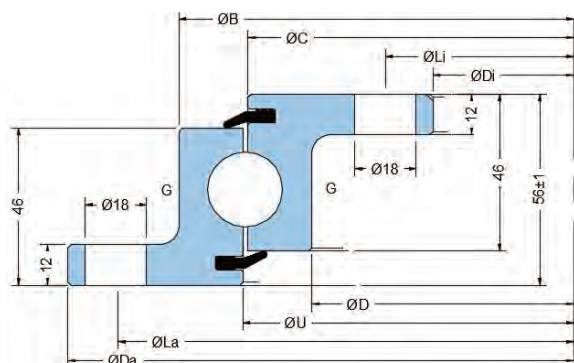
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Ungeared Slewing Rings



FUN 20 Series

Flanged Ring / 20mm Ball / Ungeared

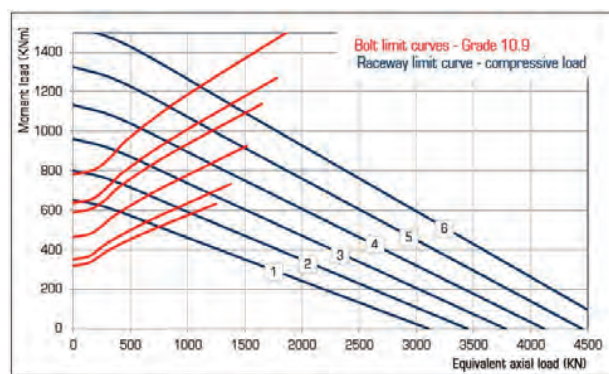
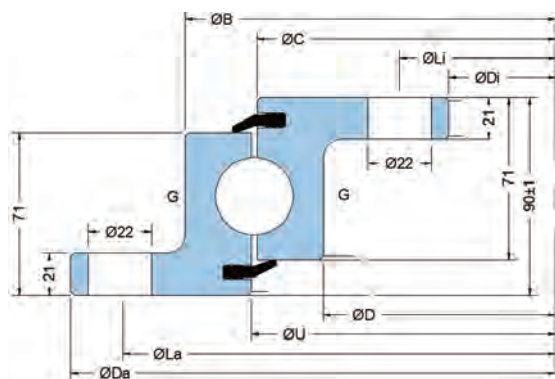


QCB reference	Outline dimensions						Outer holes		Inner holes			Weight	Load Curve
	Da	B	U	C	D	Dj	La	na	Li	ni			
	mm	mm	mm	mm	mm	mm	mm		mm				
FUN 318 20 00 CC LM	318	253	216	213	175	105	290	8	132	8		12	-
FUN 418 20 00 CC LM	418	353	316	313	275	204	390	8	232	12		19	1
FUN 505 20 00 CC LM	518	453	416	413	375	304	490	8	332	12		24	2
FUN 650 20 00 CC LM	648	583	546	543	505	434	620	10	462	14		31	3
FUN 750 20 00 CC LM	748	683	646	643	605	534	720	12	562	16		36.5	4
FUN 850 20 00 CC LM	848	783	746	743	705	634	820	12	662	16		43	5
FUN 950 20 00 CC LM	948	883	846	843	805	734	920	14	762	18		48	6
FUN 1050 20 00 AA LM	1048	983	946	943	905	834	1020	16	862	20		53	7
FUN 1200 20 00 AA LM	1198	1133	1096	1093	1055	984	1170	16	1012	20		62	8

This range extends to 1500mm outside diameter

FUN 32 Series

Flanged Ring / 32mm Ball / Ungearred

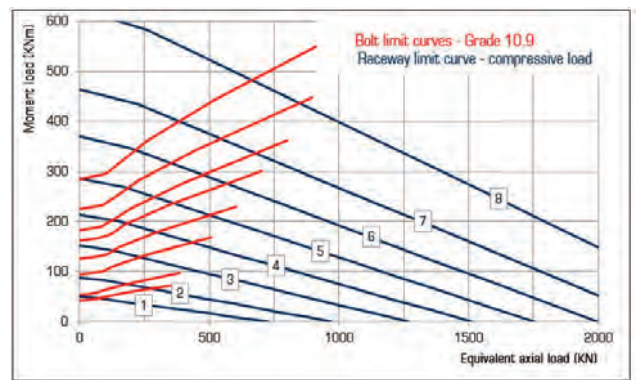
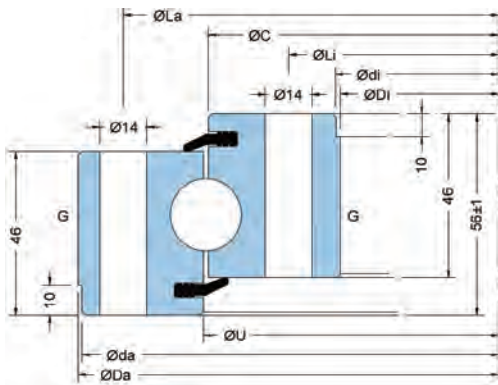


QCB reference	Outline dimensions						Outer holes		Inner holes			Weight	Load Curve
	Da	B	U	C	D	Di	La	na	Li	ni			
	mm	mm	mm	mm	mm	mm	mm		mm				
FUN 1100 32 00 AA LM	1100	1017	955	955	893	805	1060	30	845	30		131	1
FUN 1200 32 00 AA LM	1200	1117	1055	1055	993	905	1160	30	945	30		145	2
FUN 1300 32 00 AA LM	1300	1217	1155	1155	1093	1005	1260	36	1045	36		159	3
FUN 1400 32 00 AA LM	1400	1317	1255	1255	1193	1105	1360	42	1145	42		172	4
FUN 1500 32 00 AA LM	1500	1417	1355	1355	1293	1205	1460	42	1245	42		186	5
FUN 1600 32 00 AA LM	1600	1517	1455	1455	1393	1305	1560	48	1345	48		200	6

This range extends to 2200mm outside diameter

SUN 20 Series

Solid Ring / 20mm Ball / Ung geared

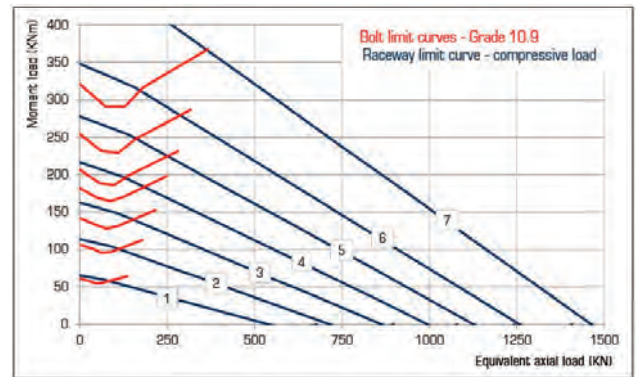
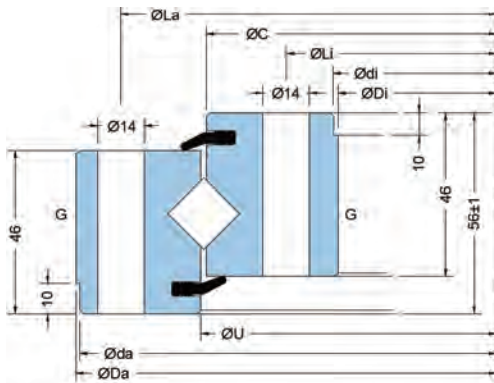


QCB reference	Outline dimensions						Outer holes		Inner holes			Weight	Load Curve
	Da	Di	U	C	da f9	di H9	La	na	Li	ni			
	mm	mm	mm	mm	mm	mm	mm		mm			kg	
SUN 386 20 01 CC LM	386	242	316	313	384	244	360	20	268	20		21	1
SUN 486 20 01 CC LM	486	342	416	413	484	344	460	24	368	24		29	2
SUN 616 20 01 CC LM	616	472	546	543	614	474	590	32	498	32		37	3
SUN 716 20 01 CC LM	716	572	646	643	714	574	690	36	598	36		44	4
SUN 816 20 01 CC LM	816	672	746	743	814	674	790	40	698	40		52	5
SUN 916 20 01 CC LM	916	772	846	843	914	774	890	40	798	40		60	6
SUN 1016 20 01 AA LM	1016	872	946	943	1014	874	990	44	898	44		67	7
SUN 1166 20 01 AA LM	1166	1022	1096	1093	1164	1024	1140	48	1048	48		77	8

This range extends to 1500mm outside diameter

SUN X14 Series

Solid Ring / 14mm Roller / Ung geared



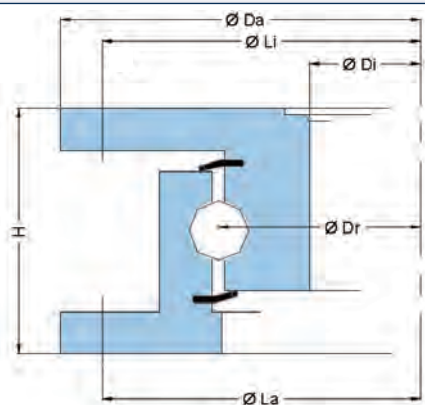
QCB reference	Outline dimensions						Outer holes		Inner holes			Weight	Load Curve
	Da	Di	U	C	da f9	di H9	La	na	Li	ni			
	mm	mm	mm	mm	mm	mm	mm		mm			kg	
SUN 486 X14 01 CC LM	486	342	416	413	484	344	460	24	368	24		30	1
SUN 616 X14 01 CC LM	616	472	546	543	614	474	590	32	498	32		40	2
SUN 716 X14 01 CC LM	716	572	646	643	714	574	690	36	598	36		47	3
SUN 816 X14 01 CC LM	816	672	746	743	814	674	790	40	698	40		55	5
SUN 916 X14 01 CC LM	916	772	846	843	914	774	890	40	798	40		63	6
SUN 1016 X14 01 AA LM	1016	872	946	943	1014	874	990	44	898	44		70	7
SUN 1166 X14 01 AA LM	1166	1022	1096	1093	1164	1024	1140	48	1048	48		82	8

This range extends to 1500mm outside diameter

14mm X-roller bearings have tighter internal clearances and greater rigidity compared to 20mm ball units. Improved mating surfaces are required for proper operation

UHU Series

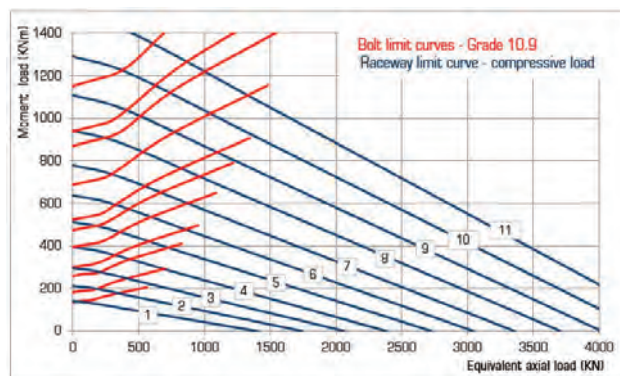
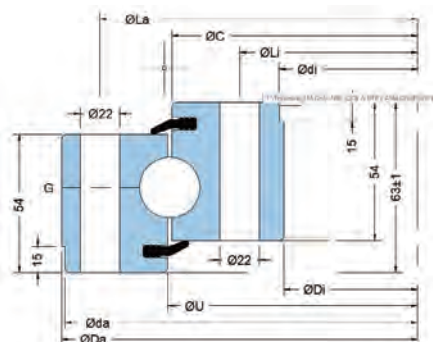
Double Flange Ungearing Rings



QCB reference	Outline dimensions					Outer holes		Inner holes			Weight	
	Da	Di	H	Dr		La	na	Li	ni			
	mm	mm	mm	mm		mm		mm			kg	
FUN 498 20 01 CC LM	498	331	82	392		470	16	470	16		40	
FUN 700 20 01 CC LM	700	530	82	593		670	24	670	24		63	
FUN 804 20 01 CC LM	804	636	82	700		774	30	774	30		73	
FUN 880 20 01 CC LM	880	708	82	774		850	36	850	36		82	
FUN 1000 20 01 CC LM	1000	830	82	895		970	36	970	36		94	

SUN 25 Series

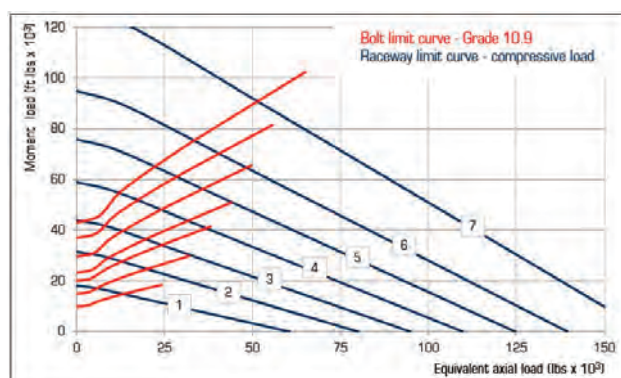
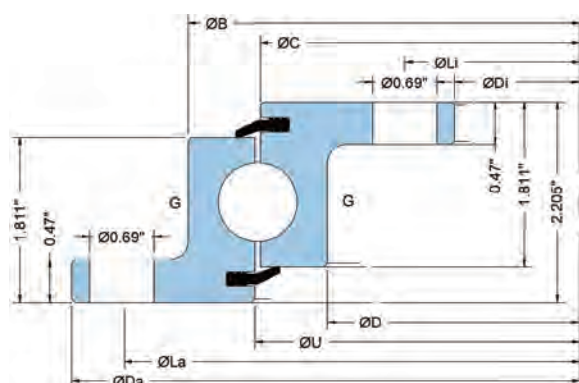
Solid Ring / 25mm Ball / Ungearing



QCB reference	Outline dimensions						Outer holes		Inner holes			Weight	Load Curve
	Da	Di	U	C	da f9	di H9	La	na	Li	ni			
	mm	mm	mm	mm	mm	mm	mm		mm				
SUN 555 25 01 AA LM	555	355	457	453	553	357	515	18	395	18		53	1
SUN 655 25 05 AA LM	655	455	557	553	653	457	615	20	495	20		65	2
SUN 755 25 01 AA LM	755	555	657	653	753	557	715	24	595	24		76	3
SUN 855 25 01 AA LM	855	655	757	753	853	657	815	24	695	24		90	4
SUN 955 25 01 AA LM	955	755	857	853	953	757	915	28	795	28		101	5
SUN 1055 25 01 AA LM	1055	855	957	953	1053	857	1015	30	895	30		115	6
SUN 1155 25 01 AA LM	1155	955	1057	1053	1153	957	1115	30	995	30		128	7
SUN 1255 25 01 AA LM	1255	1055	1157	1153	1253	1057	1215	36	1095	36		139	8
SUN 1355 25 01 AA LM	1355	1155	1257	1253	1353	1157	1315	42	1195	42		148	9
SUN 1455 25 01 AA LM	1455	1255	1357	1353	1564	1257	1415	42	1295	42		161	10
SUN 1555 25 01 AA LM	1555	1355	1457	1453	1553	1357	1555	48	1395	48		171	11

FUN 20 I Series

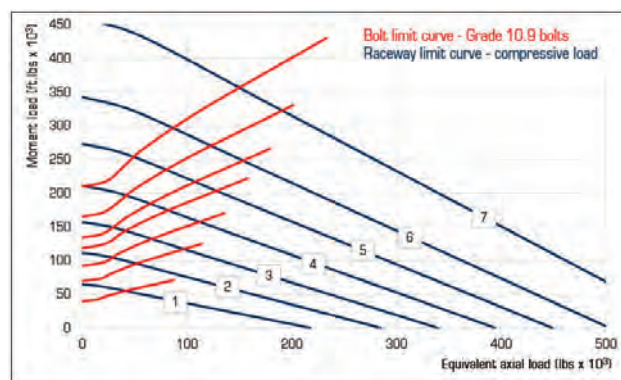
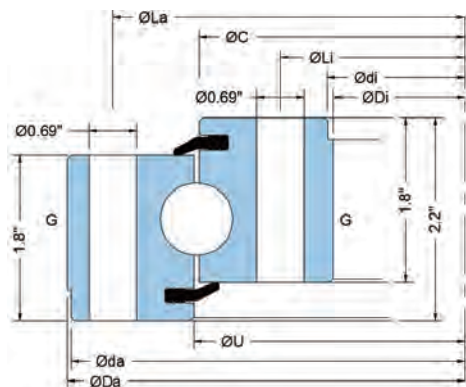
Flanged Ring / 20mm Ball / Ungeared / Inch



QCB reference	Outline dimensions						Outer holes		Inner holes			Weight	Load Curve
	Da	B	U	C	D	Di	La	na	Li	ni			
	in	in	in	in	in	in	in		in			lbs	
FUN 518 20 61 CC LM	20.39	17.87	16.22	16.14	14.49	11.97	19.25	8	13.13	12		58	1
FUN 648 20 61 CC LM	25.51	22.99	21.34	21.26	19.61	17.09	24.38	12	18.13	15		76	2
FUN 748 20 61 CC LM	29.45	26.93	25.28	25.20	23.55	21.03	28.38	12	22.13	18		89	3
FUN 848 20 61 CC LM	33.39	30.87	29.22	29.14	27.49	24.97	32.25	15	26.13	18		104	4
FUN 948 20 61 CC LM	37.32	34.80	33.15	33.07	31.42	28.90	36.25	18	30.00	18		118	5
FUN 1048 20 61 CC LM	41.26	38.74	37.09	37.01	35.36	32.84	40.13	18	34.00	20		132	6
FUN 1198 20 61 CC LM	47.17	44.65	43.00	42.92	41.27	38.75	46.00	18	39.88	24		153	7

SUN 20 I Series

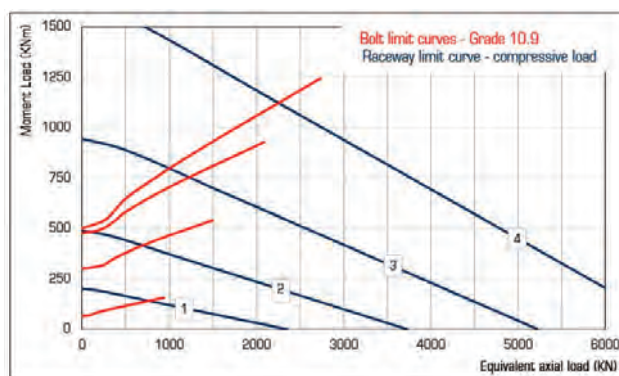
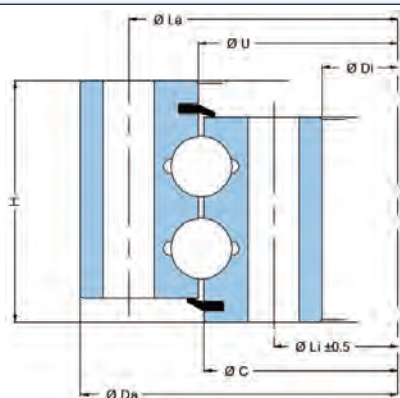
Solid Ring / 20mm Ball / Ungeared / Inch



QCB reference	Outline dimensions						Outer holes		Inner holes			Weight	Load Curve
	Da	Di	H				La	na	Li	ni			
	in	in	in				in		in				
SUN 518 20 61 CC LM	120.40	12.00	2.20				19.00	8	13.50	12		103	1
SUN 648 20 61 CC LM	25.50	17.00	2.20				24.00	12	18.50	15		137	2
SUN 748 20 61 CC LM	29.50	21.00	2.20				28.00	15	22.50	18		162	3
SUN 848 20 61 CC LM	33.40	25.00	2.20				32.00	15	26.50	18		186	4
SUN 950 20 61 CC LM	37.40	28.83	2.20				35.75	18	30.50	20		216	5
SUN 1048 20 61 AA LM	41.25	32.83	2.20				39.75	18	34.38	20		233	6
SUN 1198 20 61 AA LM	47.18	38.75	2.20				45.62	20	40.25	24		269	7

SUN 2-ball Series

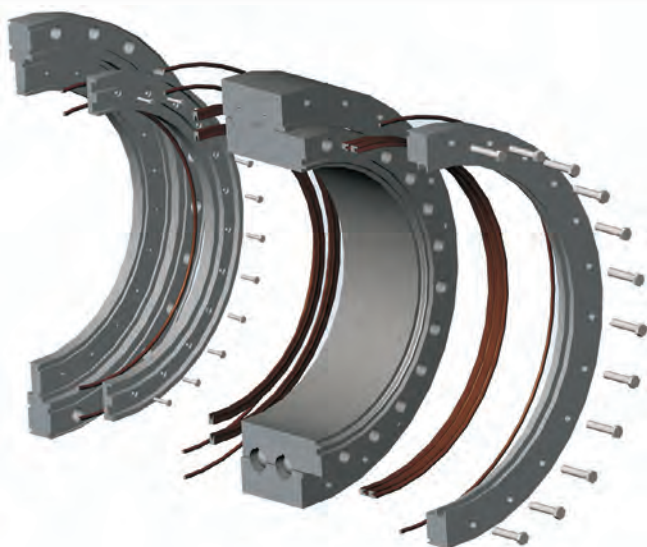
Solid Ring / Double Row Ball / Ungearing



QCB reference	Outline dimensions						Outer holes		Inner holes			Weight kg	Load Curve
	Da mm	Di mm	H mm				La mm	na	Li mm	ni			
SUN 504 2 25 01 AA LM	504	300	92				436	24	330	24		74	1
SUN 520 2 25 01 AA LM	520	292	119				476	24	339	24		110	1
SUN 577 2 20 01 AA LM	577	370	127				540	40-2	410	40		125	1
SUN 683 2 25 01 AA LM	683	490	92				651	48-2	537	48		110	2
SUN 692 2 25 01 AA L M	692	461	115				660	40-2	492	40		150	2
SUN 979 2 25 01 AA LM	979	718	102				893	36	753	36		208	3
SUN 1200 2 25 01 AA LM	1200	976	98				1135	36	1012	36		240	4

Overall dimensions only - variants of each size exist depending on application requirements. Sizes up to 8000mm can be supplied.

Bolt style can vary greatly in this series - the figure is for illustrative purposes only. Ask for the full PDF print or 3D model to avoid confusion!



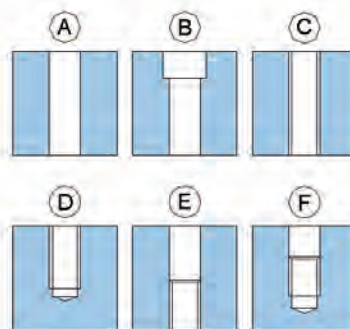
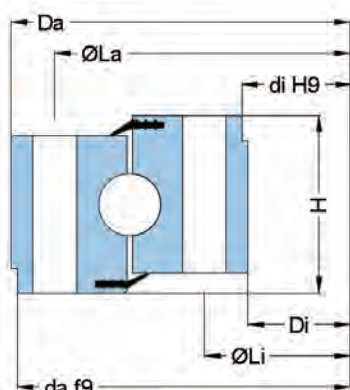
QCB Slewing rings with extreme sealing options are used in the white and green water areas of Single Point Mooring Systems.

Tailor made seals coupled with specialised surface treatments and lubricants will ensure this bearing offers long life in this hostile environment.

QCB... turning your world!

Other sizes

Other Popular Ung geared Stock Sizes



QCB Reference	Outline dimensions					Outer holes			Inner holes			Weight kg
	Da mm	Di mm	H mm	da f9 mm	di H9 mm	La mm	na	Style	Li mm	ni	Style	
SUN 192 15 01 CC LM	192	89	35	-	-	173	#16 Ø9	B	107	#16 Ø9	A	4.7
SUN 234 14 00 CC LM	234	125	35	-	-	214	#24 Ø11	A	144.5	#20 Ø11	A	7
SUN 234 14 01 CC LM	234	125	35	232	126.5	214	#12 Ø11	A	144.5	#12 Ø11	A	6.5
SUN 234 14 04 CC LM	234	125	25	-	-	214	#24 Ø11	A	145	#20-1 Ø11	A	5
SUN 300 12 01 CC LM	300	140	36	-	-	270	#12 M16	C	170	#12 Ø18	A	11
SUN 300 X12 01 CC LM	300	140	36	-	-	270	#12 M16	C	170	#12 Ø18	A	11
SUN 300 X14 02 CC LM	300	142	36	298	142	270	#12 Ø18	A	170	#12 Ø18	A	16
SUN 329 20 01 AA LM	329	190	45	328	192	305	#16 Ø14	A	215	#16 Ø14	A	18
SUN 329 20 02 AA LM	329	190	45	327	193	305	#20 Ø14	A	215	#20 Ø14	A	16
SUN 380 14 01 CC LM	380	270	35	378	272	360	#24 Ø11	A	290	#24 Ø11	A	12
SUN 380 X18 01 CC LM	380	233	55	-	235	358	#24 Ø13	A	259	#28-1 Ø13	A	21
SUN 400 16 51 CC LM X20 01	403	230	55	-	-	345	#9 Ø12.5	B	259	#8 Ø12.5	B	24
SUN 403 22 03 CC LM	404	234	55	-	235	358	#24 Ø13	B	259	#28-1 Ø13	A	24
SUN 403 X20 01 AA LM	404	235	55	-	235	358	#24 Ø13	A	259	#28-1 Ø13	A	24
SUN 475 20 01 AA LM	475	335	45	474	336	450	#24 Ø14	A	360	#24 Ø14	A	27
SUN 475 20 02 AA LM	475	335	45	474	336	450	#24 Ø15	A	360	#24 Ø15	A	27
SUN 522 25 01 AA LM	522	344	55	520	346	490	#20 Ø18	A	376	#20 Ø18	A	41
SUN 577 32 01 CC LM	577	382	88	-	-	540	#24 Ø18	A	410	#24-1 Ø18	A	78
SUN 589 18 01 AA LM	590	383	75	-	384	540	#36 Ø16	A	410	#36-1 Ø16	A	58
SUN 616 20 56 AA LM	616	472	56	-	474	590	#32 M12	E	498	#32 M12	E	40
SUN 665 25 03 CC LM	665	475	77	-	-	635	#18 Ø22	A	508	#18 Ø22	A	81
SUN 816 X25 01 CC LM	816	573	90	-	574	753	#18 Ø22	A	604	#18 Ø22	A	135
SUN 816 X25 02 CC LM	816	573	90	-	574	753	#36 Ø22	A	604	#36 Ø22	A	125
SUN 848 30 01 CC LM	848	634	66	-	-	820	#12 Ø18	A	662	#16 Ø18	A	82
SUN 900 40 01 AA LM	900	670	86	898	672	860	#36 Ø22	A	710	#36-1 Ø22	A	150
SUN 979 X25 01 AA LM	979	717	100	-	718	893	#36 Ø22	A	753	#36-1 Ø22	A	270
SUN 979 X25 02 AA LM	979	717	100	-	718	893	#28 Ø22	A	753	#28-1 Ø22	A	270

Overall dimensions only. Variants of each size exist depending on application requirements. Some dimensions may have been rounded up or down.

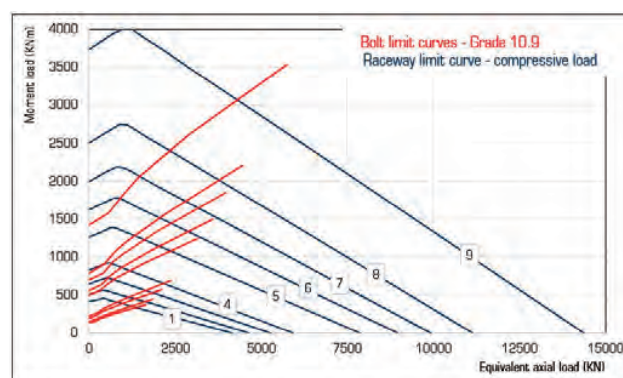
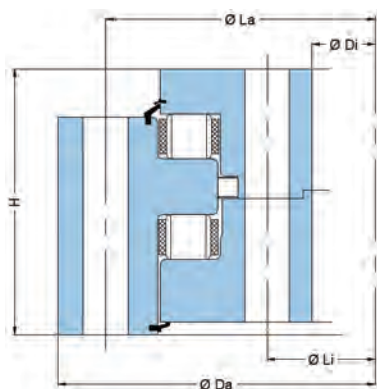
Bolt style can vary greatly - the figure is for illustrative purposes only. Ask for the PDF print or 3D model to avoid confusion.

Sizes to 11000mm can be supplied

This is by no means the limit of the QCB range. We have over 5 000 drawings on file!

SUN 3-row Series

Solid Ring / Triple Row Roller / Ungeared



QCB reference	Outline dimensions					Outer holes		Inner holes			Weight kg	Load Curve
	Da mm	Di mm	H mm			La mm	na	Li mm	ni			
SUN 634 3 25 01 AA LM	634	366	148			598	24	402	24		~224	1
SUN 694 3 25 01 AA LM	694	426	148			658	24	462	24		~240	-
SUN 764 3 25 01 AA LM	764	496	148			728	28	532	28		~270	-
SUN 844 3 25 01 AA LM	844	576	148			808	28	612	28		~300	-
SUN 964 3 32 01 AA LM	964	636	182			920	36	680	36		~500	4
SUN 1064 3 32 01 AA LM	1064	736	182			1020	36	780	36		~600	5
SUN 1164 3 32 01 AA LM	1164	836	182			1120	40	880	40		~680	6
SUN 1284 3 32 01 AA LM	1284	956	182			1240	40	1000	40		~820	7
SUN 1445 3 40 01 AA LM	1445	1055	220			1393	45	1107	45		~1000	8
SUN 1595 3 40 01 AA LM	1595	1205	220			1543	45	1257	45		~1150	9

Overall dimensions only. Variants of each size exist depending on application requirements. Some dimensions may have been rounded up or down.

Bolt style can vary greatly - the figure is for illustrative purposes only. Ask for the PDF print or 3D model to avoid confusion.

Sizes to 11000mm can be supplied



QCB Slewing rings are in service on some of the largest oil rigs and FPSO's worldwide and have developed a reputation for quality and superior design.

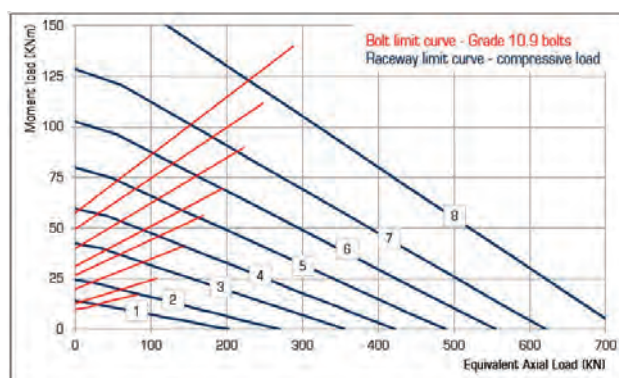
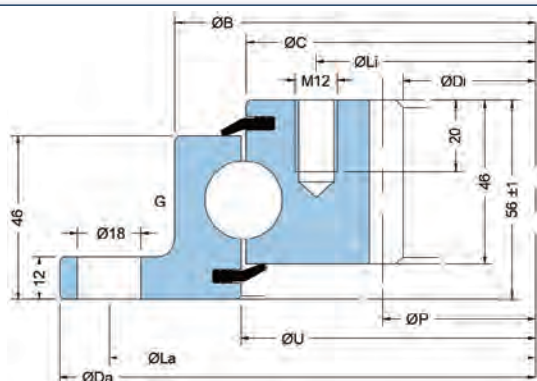
QCB... turning your world!

Internally Geared Slewing Rings



FIG 20 Series

Flanged Ring / 20mm Ball / Internal Gear

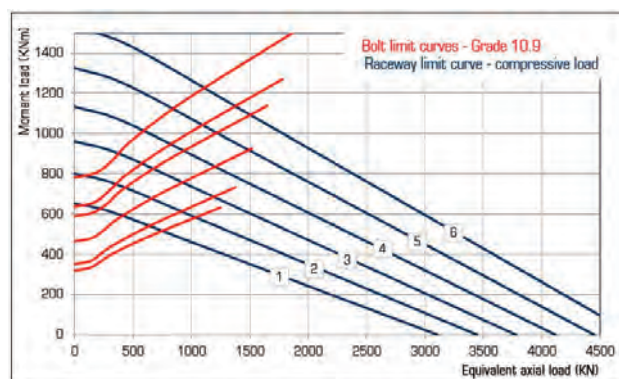
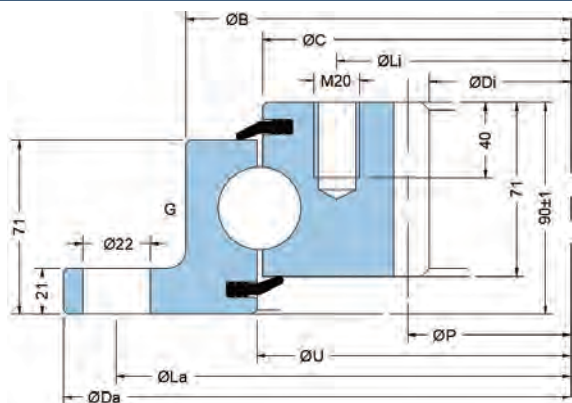


QCB reference	Outline dimensions						Outer holes		Inner holes		20° stub gear				Weight	Load Curve
	Da	B	U	C	Di		La	na	Li	ni	P	M	z	FzMAX		
	mm	mm	mm	mm	mm		mm		mm		mm			KN	kg	
FIG 418 20 00 AA LM	418	353	315.5	312.5	226.5		390	8	275	12	235	5	47	34	21	1
FIG 505 20 00 AA LM	518	453	415.5	412.5	326.5		490	8	375	12	335	5	67	34	27	2
FIG 650 20 00 AA LM	648	583	545.5	542.5	445.2		620	10	505	16	456	6	76	41	38	3
FIG 750 20 00 AA LM	748	683	646	643	547		720	12	605	18	558	6	93	41	45	4
FIG 850 20 00 AA LM	848	783	746	743	649		820	12	705	20	660	6	110	41	51	5
FIG 950 20 00 AA LM	948	883	846	843	738		920	14	805	20	752	8	94	55	61	6
FIG 1050 20 00 AA LM	1048	983	946	943	842		1020	16	905	22	856	8	107	55	65	7
FIG 1200 20 00 AA LM	1198	1133	1096	1093	986		1170	16	1055	24	1000	8	125	55	80	8

Range extends to 1500mm outside diameter

FIG 32 Series

Flanged Ring / 32mm Ball / Internal Gear

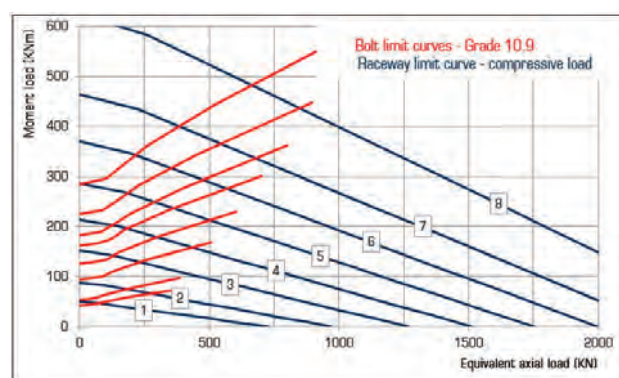
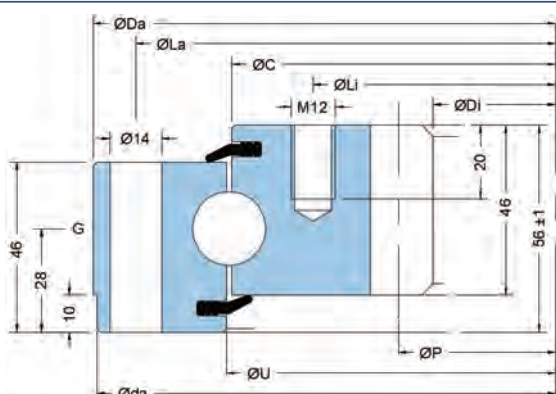


QCB reference	Outline dimensions						Outer holes		Inner holes		20° stub gear				Weight	Load Curve
	Da	B	U	C	Di		La	na	Li	ni	P	M	z	FzMAX		
	mm	mm	mm	mm	mm		mm		mm		mm			KN		
FIG 1100 32 00 AA LM	1100	1017	955	955	812		1060	30	894	30	830	10	83	105	159	1
FIG 1200 32 00 AA LM	1200	1117	1055	1055	912		1160	30	994	30	930	10	93	105	176	2
FIG 1300 32 00 AA LM	1300	1217	1155	1155	1012		1260	36	1094	36	1030	10	103	105	192	3
FIG 1400 32 00 AA LM	1400	1317	1255	1255	1112		1360	42	1194	42	1130	10	113	105	208	4
FIG 1500 32 00 AA LM	1500	1417	1355	1355	1212		1460	42	1294	42	1230	10	123	105	226	5
FIG 1600 32 00 AA LM	1600	1517	1455	1455	1312		1560	48	1394	48	1330	10	133	105	243	6

Range extends to 2200mm outside diameter

SIG 20 Series

Solid Ring / 20mm Ball / Internal Gear

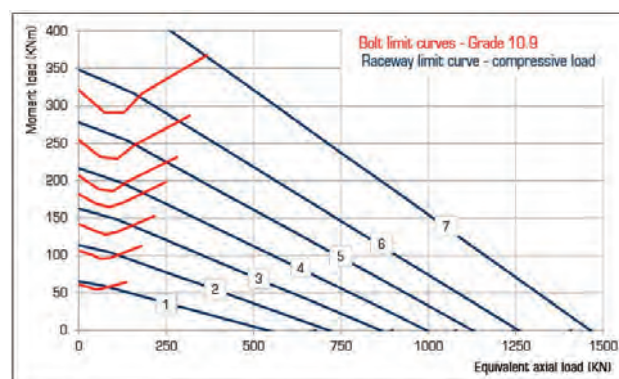
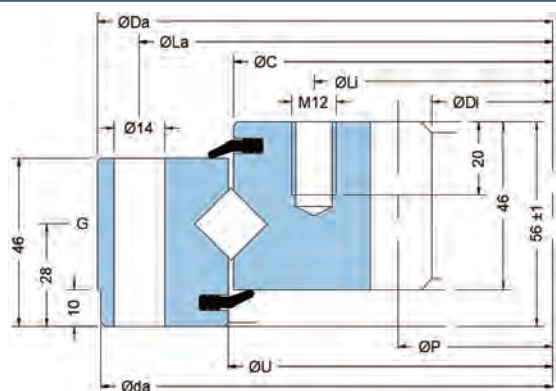


QCB reference	Outline dimensions						Outer holes		Inner holes			20° stub gear				Weight kg	Load Curve
	Da mm	Di mm	U mm	C mm	da f9 mm		La mm	na	Li mm	ni		P mm	M	z	FzMAX kN		
SIG 386 20 01 AA LM	386	224	315.5	312.5	384		360	24	275	24		235	5	47	34	22	1
SIG 486 20 01 AA LM	486	324	415.5	412.5	484		460	24	375	24		335	5	67	34	31	2
SIG 616 20 01 AA LM	616	444	545.5	542.5	614		590	32	505	32		456	6	76	41	42	3
SIG 716 20 01 AA LM	716	546	646	643	714		690	36	605	36		558	6	93	41	50	4
SIG 816 20 01 AA LM	816	648	746	743	814		790	40	705	40		660	6	110	41	58	5
SIG 916 20 01 AA LM	916	736	846	843	914		890	40	805	40		752	8	94	55	69	6
SIG 1016 20 01 AA LM	1016	840	946	943	1014		990	44	905	44		856	8	107	55	76	7
SIG 1166 20 01 AA LM	1166	984	1096	1093	1164		1140	48	1055	48		1000	8	125	55	91	8

Range extends to 1500mm outside diameter

SIG X14 Series

Solid Ring / 14mm Roller / Internal Gear



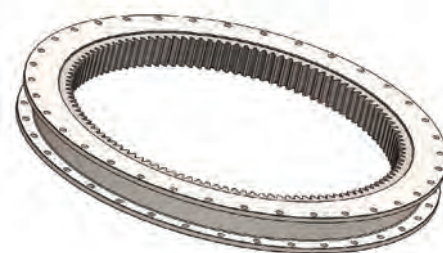
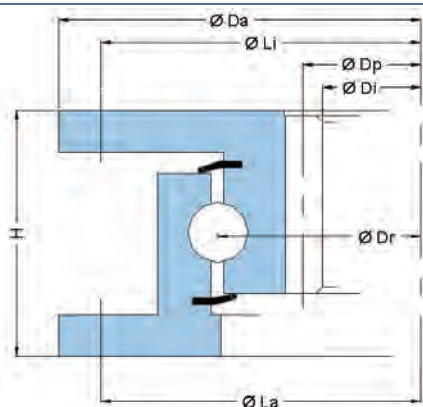
QCB reference	Outline dimensions							Outer holes		Inner holes			20° stub gear				Weight kg	Load Curve
	Da mm	Di mm	U mm	C mm	da f9 mm	ci H9 mm		La mm	na	Li mm	ni		P mm	M	z	FzMAX kN		
SIG 486 X14 01 AA LM	486	324	416	413	484			460	24	375	24		335	5	67	34	31	1
SIG 616 X14 01 AA LM	616	444	546	543	614			590	32	505	32		456	6	76	41	42	2
SIG 716 X14 01 AA LM	716	546	646	643	714			690	36	605	36		558	6	93	41	50	3
SIG 816 X14 01 AA LM	816	648	746	743	814			790	40	705	40		660	6	110	41	58	4
SIG 916 X14 01 AA LM	916	736	846	843	914			890	40	805	40		752	8	94	55	69	5
SIG 1016 X14 01 AA LM	1016	840	946	943	1014			990	44	905	44		856	8	107	55	76	6
SIG 1166 X14 01 AA LM	1166	984	1096	1093	1164			1140	48	1055	48		1000	8	125	55	91	7

Range extends to 1500mm outside diameter

14mm X-roller bearings have tighter internal clearances and greater rigidity compared to 20mm ball units. Improved mating surfaces are required for proper operation

UHI Series

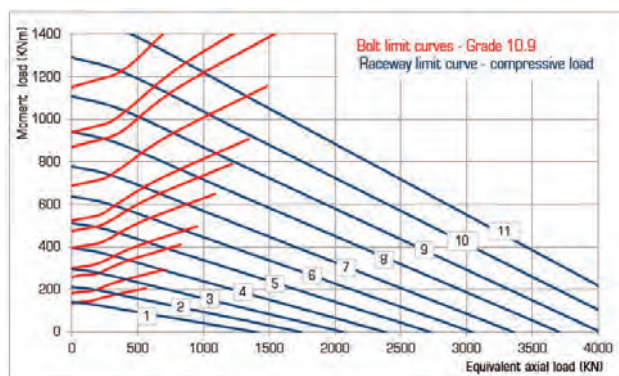
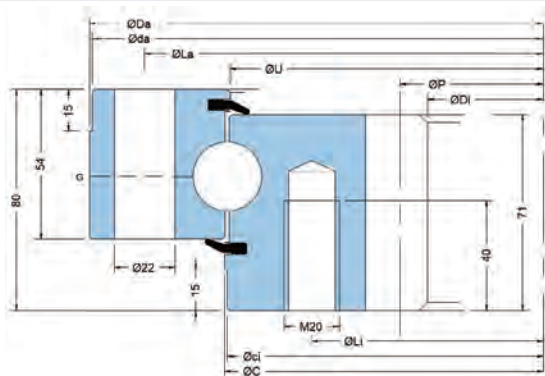
Double Flange / Internally Geared Rings



QCB reference	Outline dimensions					Outer holes		Inner holes		20° stub gear				Weight
	Da	Di	H	Dr		La	na	Li	ni	P	M	z	Fz Max	
	mm	mm	mm	mm		mm		mm		mm			kN	kg
FIG 498 20 01 CC LM	498	331	82	392		470	16	470	16	340	5	68	23	38
FIG 700 20 01 CC LM	700	530	82	593		670	24	670	24	540	5	108	23	59
FIG 804 20 01 CC LM	804	636	82	700		774	30	774	30	648	6	108	33	67
FIG 880 20 01 CC LM	880	708	82	774		850	36	850	36	720	6	120	33	75
FIG 1000 20 01 CC LM	1000	830	82	895		970	36	970	36	840	6	140	33	86

SIG 25 Series

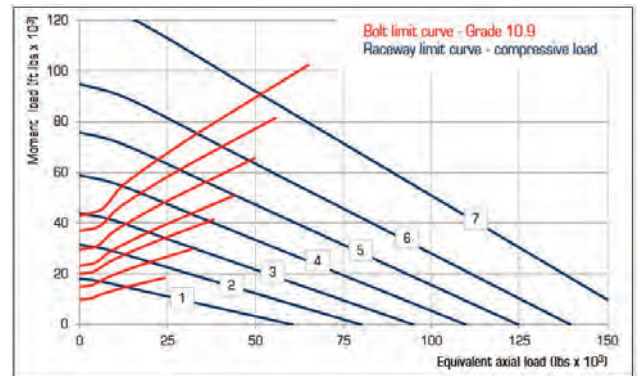
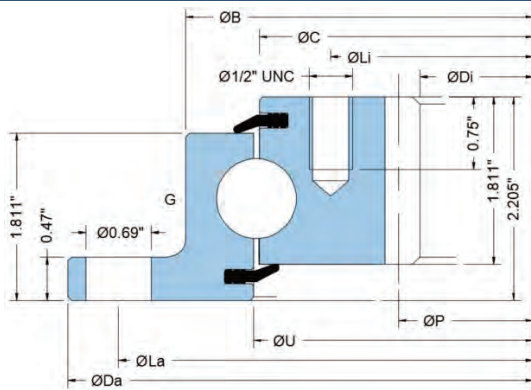
Solid Ring / 25mm Ball / Internal Gear



QCB reference	Outline dimensions						Outer holes		Inner holes		20° stub gear				Weight	Load Curve
	Da	Di	U	C	da f9	ci H9	La	na	Li	ni	P	M	z	FzMAX		
	mm	mm	mm	mm	mm	mm	mm		mm		mm			KN	kg	
SIG 555 25 01 AA LM	555	304	457	453	553	455	515	18	394	18	320	8	40	85	64	1
SIG 655 25 01 AA LM	655	416	557	553	653	555	615	20	494	20	432	8	54	85	76	2
SIG 755 25 01 AA LM	755	512	657	653	753	655	715	24	594	24	528	8	66	85	102	3
SIG 855 25 01 AA LM	855	610	757	753	853	755	815	24	694	24	630	10	63	105	119	4
SIG 955 25 01 AA LM	955	710	857	853	953	855	915	28	794	28	730	10	73	105	137	5
SIG 1055 25 01 AA LM	1055	810	957	953	1053	955	1015	30	894	30	830	10	83	105	149	6
SIG 1155 25 01 AA LM	1155	910	1057	1053	1153	1055	1115	30	994	30	930	10	93	105	165	7
SIG 1255 25 01 AA LM	1255	1010	1157	1153	1253	1155	1215	36	1094	36	1030	10	103	105	180	8
SIG 1355 25 01 AA LM	1355	1110	1257	1253	1353	1255	1315	42	1194	42	1130	10	113	105	195	9
SIG 1455 25 01 AA LM	1455	1210	1357	1353	1453	1355	1415	42	1294	42	1230	10	123	105	212	10
SIG 1555 25 01 AA LM	1555	1310	1457	1453	1553	1455	1515	48	1394	48	1330	10	133	105	227	11

FIG 20 I Series

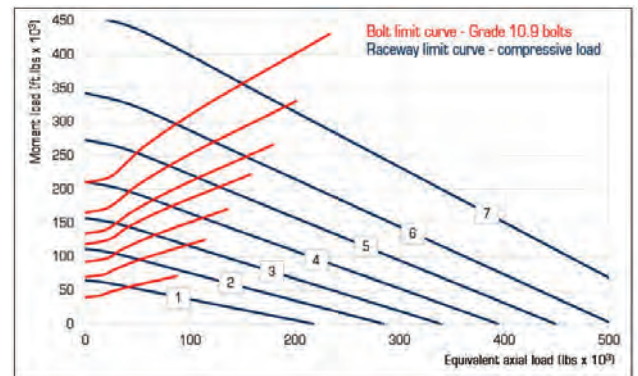
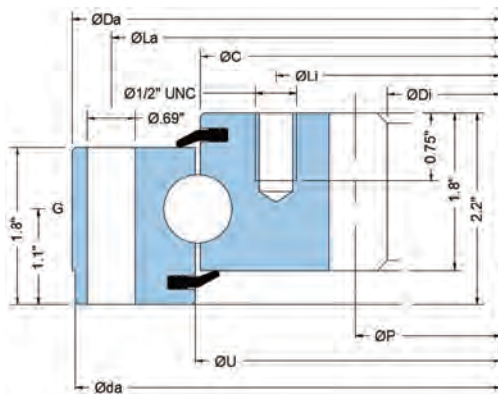
Flanged Ring / 20mm Ball / Internal Gear / Inch



QCB reference	Outline dimensions					Outer holes		Inner holes		20° stub gear				Weight	Load Curve
	Da	Di	U	B	C	La	na	Li	ni	P	DP	z	FzMAX		
	in	in	in	in	in	in		in		in			lb. <i>f</i>		
FIG 518 20 61 AA LM	20.39	12.85	16.22	17.87	16.14	19.25	8	14.88	12	13.25	4	53	7883	65	1
FIG 648 20 61 AA LM	25.51	17.60	21.34	22.99	21.26	24.38	10	19.63	15	18.00	4	72	7883	90	2
FIG 748 20 61 AA LM	29.45	21.60	25.28	26.93	25.20	28.38	12	23.63	18	22.00	4	88	7883	106	3
FIG 848 20 61 AA LM	33.39	25.60	29.22	30.87	29.14	32.25	15	27.63	18	26.00	4	104	7883	121	4
FIG 948 20 61 AA LM	37.32	29.13	33.15	34.80	33.07	36.25	18	31.50	18	29.67	3	89	10500	148	5
FIG 1048 20 61 AA LM	41.26	33.13	37.09	38.74	37.01	40.13	18	35.50	20	33.67	3	101	10500	165	6
FIG 1198 20 61 AA LM	47.17	39.13	43.00	44.65	42.92	46.00	18	41.50	24	39.67	3	119	10500	188	7

SIG 20 I Series

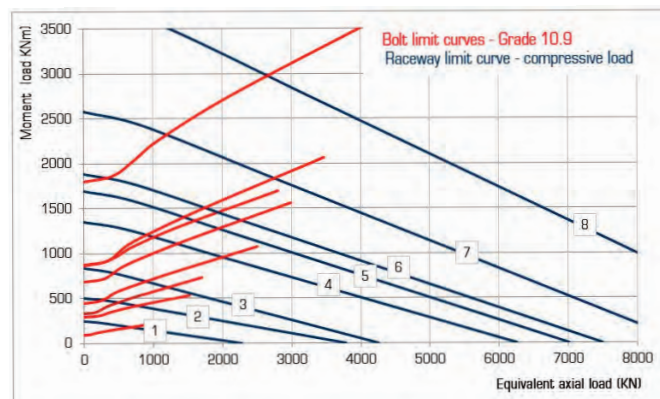
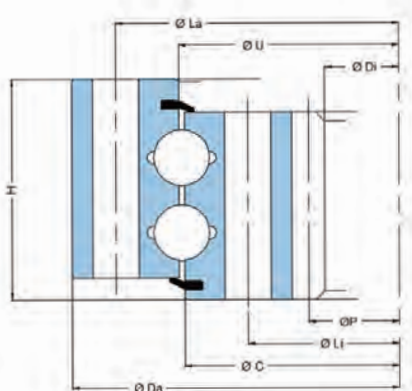
Solid Ring / 20mm Ball / Internal Gear / Inch



QCB reference	Outline dimensions				Outer holes		Inner holes		20° stub gear				Weight lbs	Load Curve
	Da		Di		La	na	Li	ni	P	DP	z	FzMAX		
	in		in		in		in		in			lb. <i>f</i>		
SIG 518 20 61 AA LM	20.40		12.85		19.00	8	14.88	16	13.25	4	53	7883	92	1
SIG 648 20 61 AA LM	25.50		17.60		24.00	12	19.63	20	18.00	4	72	7883	117	2
SIG 749 20 61 AA LM	29.50		21.60		28.00	15	23.63	24	22.00	4	88	7883	148	3
SIG 848 20 61 AA LM	33.40		25.60		32.00	15	27.63	28	26.00	4	104	7883	171	4
SIG 950 20 61 AA LM	37.40		29.13		35.75	18	31.50	30	29.67	3	89	10500	205	5
SIG 1048 20 61 AA LM	41.25		31.13		39.75	18	35.50	32	33.67	3	101	10500	226	6
SIG 1198 20 61 AA LM	47.18		39.13		45.62	20	41.50	36	39.67	3	119	10500	253	7

SIG 2-ball Series

Solid Ring / Double Row Ball / Internal Gear



QCB reference	Outline dimensions			Outer holes		Inner holes		20° stub gear				Weight kg	Load Curve
	Da mm	Di mm	H mm	La mm	na	Li mm	ni	P mm	M	z	FzMAX KN		
SIG 570 2 20 00 AA LM	570	368	84	540	18	436	18	384	8	48	84	77	1
SIG 700 2 25 01 AA LM	700	485	100	660	28	540	30	485	5	97	45	110	2
SIG 705 2 25 03 AA LM	705	504	92	675	32	575	32	520	8	65	88	103	2
SIG 712 2 25 03 AA LM	712	456	98	675	32	640	32	472	8	59	92	140	2
SIG 850 2 20 02 AA LM	850	641	92	820	36	705	36	648	8	81	95	127	2
SIG 976 2 20 01 AA LM	976	786	97	944	36	850	36	800	8	100	95	152	3
SIG 982 2 25 01 AA LM	982	754	97	944	36	826	36	760	8	95	95	170	~3
SIG 1072 2 25 01 AA LM	1072	831	97	1035	36	922	36	840	12	70	145	218	4
SIG 1200 2 25 01 AA LM	1200	964	110	1160	48	1040	48	980	10	98	132	232	5
SIG 1250 2 30 01 AA LM	1250	998	110	1208	36	1080	36	1000	10	100	148	280	6
SIG 1470 2 25 02 AA LM	1470	1182	108	1425	48	1270	48	1200	10	120	148	394	7
SIG 1750 2 30 02 AA LM	1780	1419	120	1705	48	1525	48	1440	12	120	175	600	8
SIG 2090 2 45 01 AA LM	2090	1778	130	2035	72	1890	72	1800	12	150		744	-
SIG 2300 2 45 01 AA LM	2300	1877	144	2240	80	2030	80	1910	18	105		1200	-
SIG 2928 2 40 01 AA LM	2928	2544	152	2866	60	2694	60	2560	16	160		1574	-

Overall dimensions only - variants of each size exist depending on application requirements. Sizes to 11000mm can be supplied
Bolt style can vary greatly in this series - the figure is for illustrative purposes only. Ask for the full PDF print or 3D model to avoid confusion.

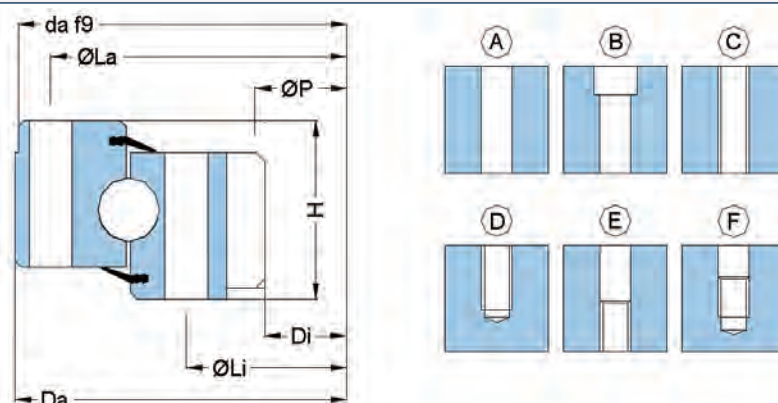


QCB Slewing rings are used in stacker/reclaimer systems and other mining machinery internationally, either replacing old units or purpose designed for new equipment.

QCB... turning your world!

Other Sizes

Other Popular Internally Geared Stock Sizes



QCB Reference	Outline dimensions					Outer holes			Inner holes			20° stub gear				Weight kg
	Da mm	Di mm	H mm	da f9 mm	di H9 mm	La mm	na	Style	Li mm	ni	Style	P mm	M	Z	FzMax kN	
SIG 340 16 00 AA LM	340	216	39	-	-	324	#20 Ø9	A	252	#20 Ø9	A	224	4	56	20	12
SIG 403 20 01 AA LM	403	216	55	-	-	358	#24 Ø13	A	259	#28-1 Ø13	A	224	4	56	25	26
SIG 486 16 00 CC LM	486	332	39	-	-	462	#14 Ø14	A	378	#14 Ø14	A	340	4	85	14	24
SIGH 521 25 01 AA LM	521	324	60	-	-	479	#30 M16	E	373	#30 M16	E	333	4.5	74	40	42
SIGH 535 22 03 CC LM	535	380	50	-	-	510	#16 Ø13	A	420	#16 M12	D	384	4	96	29	35
SIG 562 25 01 AA LM	562	385	60	-	-	538	#30 Ø13	A	440	#30 Ø13	A	396	6	66	40	46
SIG 562 X20 01 AA LM	562	385	60	560	-	538	#30 Ø13.5	A	440	#30 Ø13.5	A	396	6	66	38	43
SIG 620 X25 01 AA LM	620	386	85	618	-	580	#24 Ø21	A	448	#24 Ø21	A	396	6	66	47	85
SIGH 640 22 03 AA LM	640	472	55	-	-	615	#16 M14	E	520	#16 M14	E	480	5	96	43	45
SIG 695 X25 01 AA LM	695	446	85	693	-	640	#30 Ø21	A	508	#30 Ø21	A	608	8	76	47	100
SIG 750 25 01 AA LM	750	546	70	-	-	720	#30 Ø18	A	605	#20 Ø18	A	558	6	93	49	76
SIG 871 X20 02 AA LM	871	634	70	870	-	833	#36 M20	C	707	#36 M20	C	640	8	80	66	113
SIG 975 X20 02 AA LM	975	784	82	970	-	944	#36 M16	D	850	#36 M16	D	800	8	100	74	123
SIG 1170 X25 01 AA LM	1175	961	90	1165	-	1134	#36 M16	E	1040	#36 M16	D	980	10	98	93	181
SIGH 1175 28 01 AA LM	1175	961	90	1165	-	1134	#36 M16	E	1040	#36 M16	D	980	10	98	120	181
SIGH 1251 32 01 CC LM	1251	979	91	1250	-	1212	#40 Ø22	A	1068	#40 Ø22	A	990	10	99	122	289
SIGH 1939 30 01 AA LM	1939	1600	101	1939	-	1887	#72 Ø26	A	1738	#72 Ø26	A	1616	16	101	235	451

Overall dimensions only. Variants of each size exist depending on application requirements. Some dimensions may have been rounded up or down.

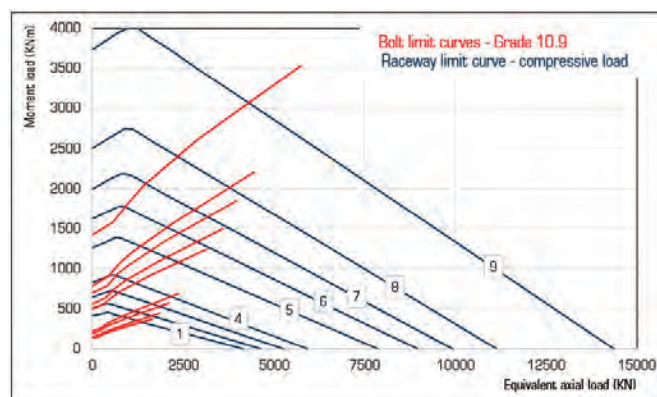
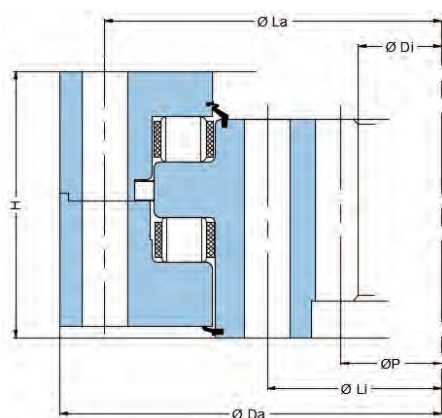
Bolt style can vary greatly - the figure is for illustrative purposes only. Ask for the PDF print or 3D model to avoid confusion.

Sizes to 11000mm can be supplied

This is by no means the limit of the QCB range. We have over 5 000 drawings on file!

SIG 3-row Series

Solid Ring / Triple Row Roller / Internal Gear



QCB reference	Outline dimensions				Outer holes		Inner holes		20° stub gear				Weight	Load Curve
	Da	Di	H		La	na	Li	ni	P	M	z	FzMAX		
	mm	mm	mm			mm		mm		mm			kN	kg
SIG 634 3 25 01 AA LM	634	338	148		598	24	402	24	342	6	57	72	224	1
SIG 694 3 25 01 AA LM	694	398	148		658	24	462	24	402	6	67	72	240	-
SIG 764 3 25 01 AA LM	764	459	148		728	28	532	28	464	8	58	96	270	-
SIG 844 3 25 01 AA LM	844	539	148		808	28	612	28	544	8	68	96	300	4
SIG 964 3 32 01 AA LM	964	594	182		920	36	680	36	600	10	60	120	500	5
SIG 1064 3 32 01 AA LM	1064	694	182		1020	36	780	36	700	10	70	120	600	6
SIG 1164 3 32 01 AA LM	1164	785	182		1120	40	880	40	792	12	66	144	680	7
SIG 1284 3 32 01 AA LM	1284	905	182		1240	40	1000	40	912	12	76	144	820	8
SIG 1445 3 40 01 AA LM	1445	986	210		1393	45	1107	45	994	14	71	168	1020	9
SIG 1595 3 40 01 AA LM	1595	1140	210		1543	45	1257	45	1148	14	82	168	1300	-

Overall dimensions only. Variants of each size exist depending on application requirements. Some dimensions may have been rounded up or down.
Bolt style can vary greatly - the figure is for illustrative purposes only. Ask for the PDF print or 3D model to avoid confusion.
Sizes to 11000mm can be supplied



High precision and wire race QCB Slewing rings and slewing drives are used in turrets, radar and other military equipment.

The rings can be made in aluminium to reduce weight.

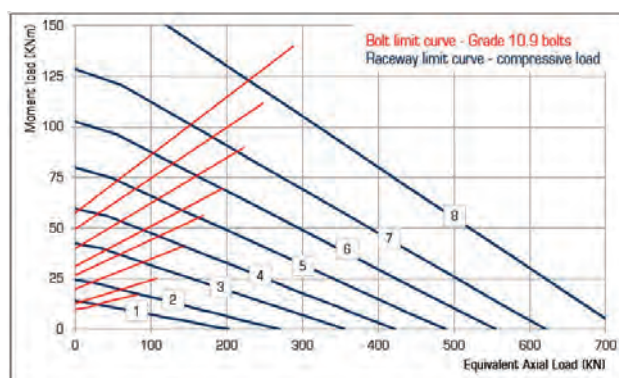
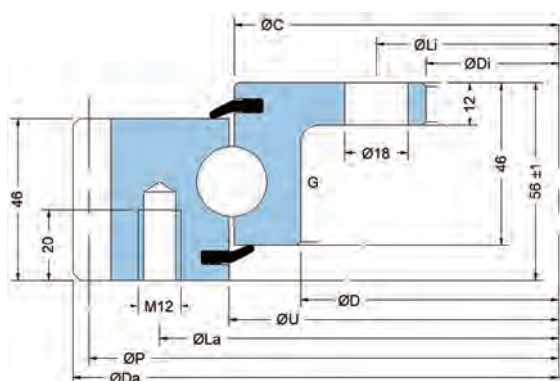
QCB... turning your world!

Externally Geared Slewing Rings



FEG 20 Series

Flanged Ring / 20mm Ball / External Gear

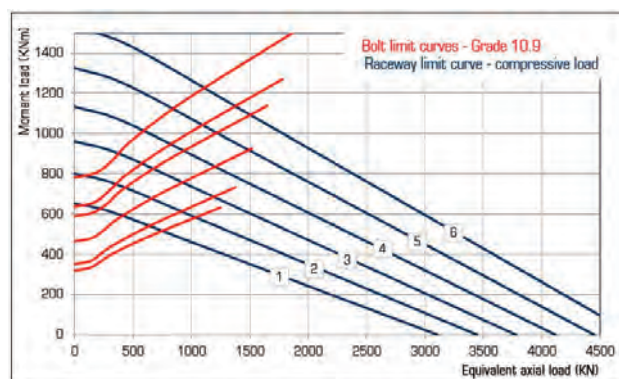
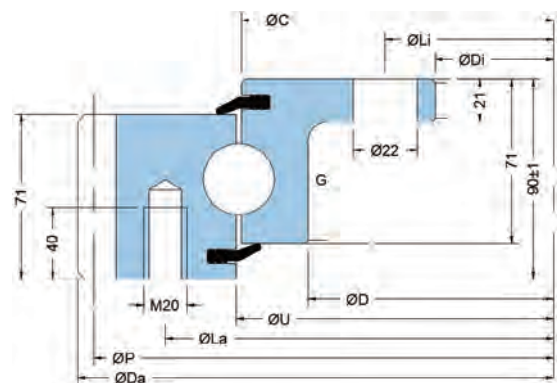


QCB reference	Outline dimensions						Outer holes		Inner holes		20° stub gear				Weight	Load Curve
	Da	Di	U	C		D	La	na	Li	ni	P	M	z	FzMAX		
	mm	mm	mm	mm		mm	mm		mm		mm			KN	kg	
FEG 404 20 00 AA LM	404	204	315.5	312.5		275	355	10	232	12	395	5	79	33	23	1
FEG 505 20 00 AA LM	504	304	415.5	412.5		375	455	10	332	12	495	5	99	33	29	2
FEG 650 20 00 AA LM	641	434	545.5	542.5		505	585	14	462	14	630	6	105	39	40	3
FEG 750 20 00 AA LM	743	534	646	643		605	685	16	562	16	732	6	122	39	47	4
FEG 850 20 00 AA LM	839	634	746	743		705	785	18	662	16	828	6	138	39	53	5
FEG 950 20 00 AA LM	950	734	846	843		805	885	18	762	18	936	8	117	52	64	6
FEG 1050 20 00 AA LM	1046	834	946	943		905	985	20	862	20	1032	8	129	52	69	7
FEG 1200 20 00 AA LM	1198	984	1096	1093		1055	1135	22	1012	20	1184	8	148	52	82	8

Range extends to 1500mm outside diameter

FEG 32 Series

Flanged Ring / 32mm Ball / External Gear

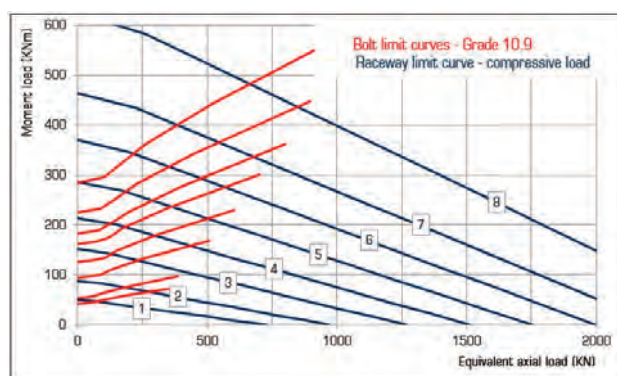
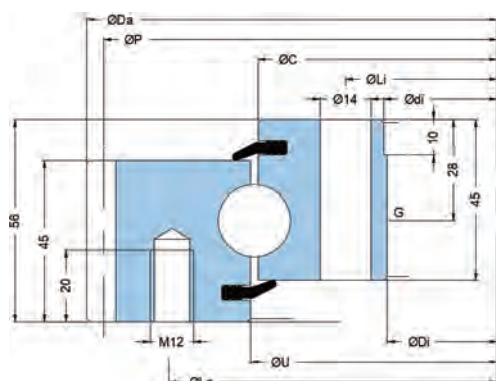


QCB reference	Outline dimensions						Outer holes		Inner holes		20° stub gear				Weight	Load Curve
	Da	Di	U	C		D	La	na	Li	ni	P	M	z	FzMAX		
	mm	mm	mm	mm		mm	mm		mm		mm			KN		
FEG 1100 32 00 AA LM	1098	805	955	955		893	1016	30	845	30	1080	9	120	92	165	1
FEG 1200 32 00 AA LM	1200	905	1055	1055		993	1116	30	945	30	1180	10	118	102	183	2
FEG 1300 32 00 AA LM	1300	1005	1155	1155		1093	1216	36	1045	36	1280	10	128	102	200	3
FEG 1400 32 00 AA LM	1400	1105	1255	1255		1193	1316	42	1145	42	1380	10	138	102	216	4
FEG 1500 32 00 AA LM	1500	1205	1355	1355		1293	1416	42	1245	42	1480	10	148	102	234	5
FEG 1600 32 00 AA LM	1600	1305	1455	1455		1393	1516	48	1345	48	1580	10	158	102	250	6

Range extends to 2200mm outside diameter

SEG 20 Series

Solid Ring / 20mm Ball / External Gear

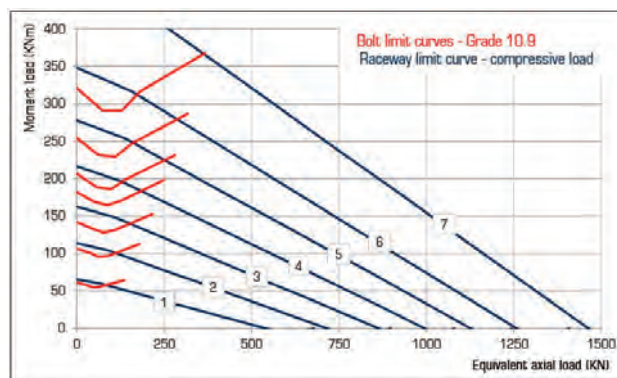
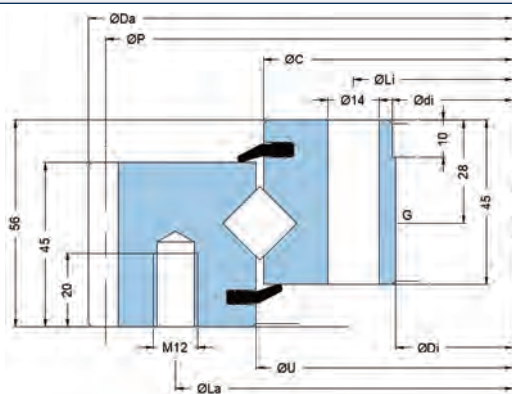


QCB reference	Outline dimensions					Outer holes		Inner holes			20° stub gear				Weight kg	Load Curve
	Da mm	Di mm	U mm	C mm		di H9 mm	La mm	na	Li mm	ni	P mm	M	z	FzMAX kN		
SEG 404 20 01 AA LM	404	242	315.5	312.5		244	355	20	268	20	395	5	79	33	23	1
SEG 505 20 01 AA LM	503.3	342	415.5	412.5		344	455	20	368	24	495	5	99	33	31	2
SEG 650 20 01 AA LM	640.6	472	545.5	542.5		474	585	28	498	32	630	6	105	39	43	3
SEG 750 20 01 AA LM	742	572	646	643		574	685	32	598	36	732	6	122	39	52	4
SEG 850 20 01 AA LM	838	672	746	743		674	785	36	698	40	828	6	138	39	59	5
SEG 950 20 01 AA LM	950	772	846	843		774	885	36	798	40	936	8	117	52	71	6
SEG 1050 20 01 AA LM	1046	872	946	943		874	985	40	898	44	1032	8	129	52	77	7
SEG 1200 20 01 AA LM	1198	1022	1096	1093		1024	1135	44	1048	48	1184	8	148	52	91	8

Range extends to 1500mm outside diameter

SEG X14 Series

Solid Ring / 14mm Roller / External Gear



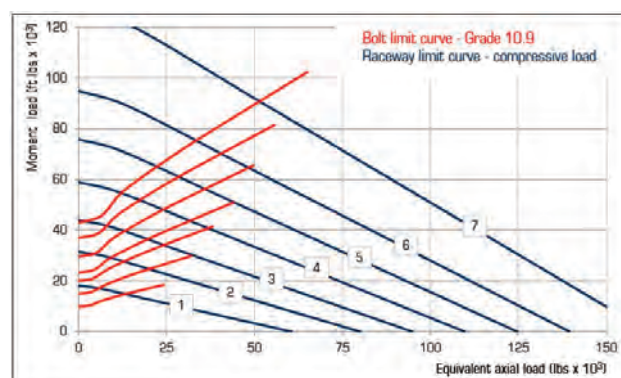
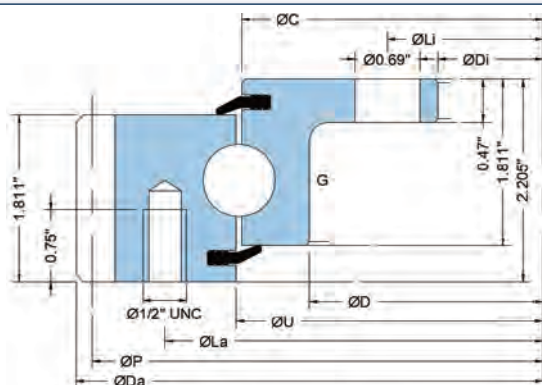
QCB reference	Outline dimensions					Outer holes		Inner holes			20° stub gear				Weight kg	Load Curve
	Da mm	Di mm	U mm	C mm		di H9 mm	La mm	na	Li mm	ni	P mm	M	z	FzMAX kN		
SEG 505 X14 01 AA LM	503.3	342	415.5	412.5		344	455	20	368	24	495	5	99	33	32	1
SEG 650 X14 01 AA LM	640.6	472	545.5	542.5		474	585	28	498	32	630	6	105	39	44	2
SEG 750 X14 01 AA LM	742	572	646	643		574	685	32	598	36	732	6	122	39	52	3
SEG 850 X14 01 AA LM	838	672	746	743		674	785	36	698	40	828	6	138	39	59	4
SEG 950 X14 01 AA LM	950	772	846	843		774	885	36	798	40	936	8	117	52	71	5
SEG 1050 X14 01 AA LM	1046	872	946	943		874	985	40	898	44	1032	8	129	52	77	6
SEG 1200 X14 01 AA LM	1198	1022	1096	1093		1024	1135	44	1048	48	1184	8	148	52	91	7

Range extends to 1500mm outside diameter

14mm X-roller bearings have tighter internal clearances and greater rigidity compared to 20mm ball units. Improved mating surfaces are required for proper operation

FEG 20 | Series

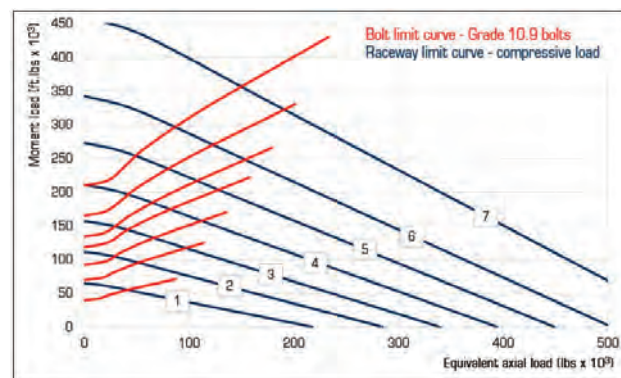
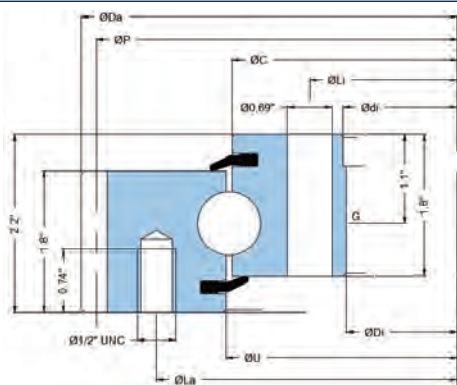
Flanged Ring / 20mm Ball / External Gear / Inch



QCB reference	Outline dimensions						Outer holes		Inner holes		20° stub gear				Weight	Load Curve
	Da	Di	U	C		D	La	na	Li	ni	P	DP	z	FzMAX		
	in	in	in	in		in	in		in		in			lb.f	lbs	
FEG 506 20 61 AA LM	19.90	11.97	16.22	16.14		14.49	18.00	8	13.13	12	19.50	4	78	7095	72	1
FEG 639 20 61 AA LM	25.15	17.09	21.34	21.26		19.61	23.25	12	18.13	15	24.75	4	99	7095	96	2
FEG 740 20 61 AA LM	29.15	21.03	25.28	25.20		23.55	27.25	15	22.13	18	28.75	4	115	7095	115	3
FEG 836 20 61 AA LM	32.90	24.97	29.22	29.14		27.49	31.00	18	26.13	18	32.50	4	130	7095	128	4
FEG 945 20 61 AA LM	37.20	28.90	33.15	33.07		31.42	35.00	18	30.00	18	36.67	3	110	9450	152	5
FEG 1047 20 61 AA LM	41.20	32.84	37.09	37.01		35.36	38.88	18	34.00	20	40.67	3	122	9450	172	6
FEG 1190 20 61 AA LM	46.87	38.75	43.00	42.92		41.27	44.63	20	39.88	24	46.33	3	139	9450	189	7

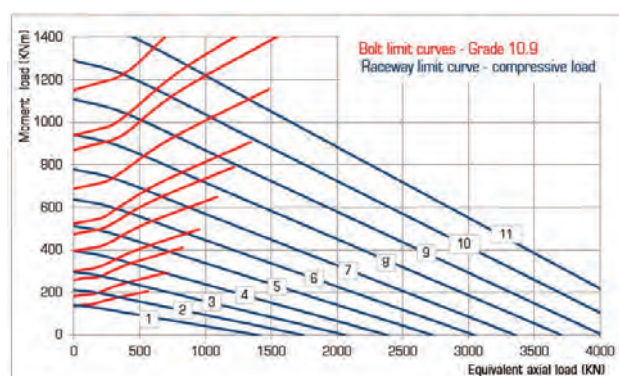
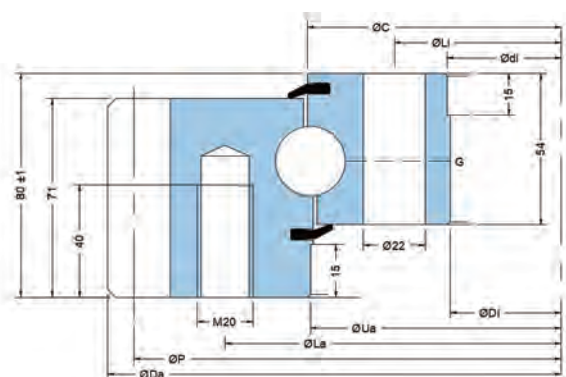
SEG 20 | Series

Solid Ring / 20mm Ball / External Gear / Inch



QCB reference	Outline dimensions				Outer holes		Inner holes		20° stub gear				Weight	Load Curve	
	Da		Di			La	na	Li	ni	P	DP	z			FzMAX
	in		in			in		in		in					lb.f
SEG 506 20 61 AA LM	19.90		11.97			18.00	14	13.50	12	19.50	4	78	7095	85	1
SEG 639 20 61 AA LM	25.15		17.09			23.25	18	18.50	15	24.75	4	99	7095	108	
SEG 740 20 61 AA LM	29.15		21.03			27.25	20	22.50	18	28.75	4	115	7095	137	3
SEG 836 20 61 AA LM	32.90		24.97			31.00	24	26.50	18	32.50	4	130	7095	158	4
SEG 945 20 61 AA LM	37.20		28.90			35.00	28	30.50	20	36.67	3	110	9460	188	5
SEG 1047 20 61 AA LM	41.20		32.84			38.88	28	34.38	20	40.67	3	122	9460	207	6
SEG 1191 20 61 AA LM	46.87		38.75			44.63	32	40.25	24	46.33	3	139	9460	237	7

Solid Ring / 25mm Ball / External Gear



QCB reference	Outline dimensions						Outer holes		Inner holes		20° stub gear				Weight	Load Curve
	Da	Di	U	C	Ua f9	di H9	La	na	Li	ni	P	M	z	FzMAX		
	mm	mm	mm	mm		mm	mm		mm		mm			KN	kg	
SEG 600 25 01 AA LM	590.4	355	457	453	455	357	516	18	395	18	576	8	72	81	74	1
SEG 700 25 01 AA LM	694.4	455	557	553	555	457	616	20	495	20	680	8	85	81	93	2
SEG 800 25 01 AA LM	798.4	555	657	653	655	557	716	24	595	24	784	8	98	81	111	3
SEG 900 25 01 AA LM	898	655	757	753	755	657	816	24	695	24	882	9	98	92	125	4
SEG 1000 25 01 AA LM	997	755	857	853	855	757	916	28	795	28	981	9	109	92	145	5
SEG 1100 25 01 AA LM	1096	855	957	953	955	857	1016	30	895	30	1080	9	120	92	155	6
SEG 1200 25 01 AA LM	1198	955	1057	1053	1055	957	1116	30	995	30	1180	10	118	105	171	7
SEG 1300 25 01 AA LM	1298	1055	1157	1153	1155	1057	1216	36	1095	36	1280	10	128	105	186	8
SEG 1400 25 01 AA LM	1398	1155	1257	1253	1255	1157	1316	42	1195	42	1380	10	138	105	201	9
SEG 1500 25 01 AA LM	1498	1255	1357	1353	1355	1257	1416	42	1295	42	1480	10	148	105	218	10
SEG 1600 25 01 AA LM	1598	1355	1457	1453	1455	1357	1516	48	1395	48	1580	10	158	105	233	11



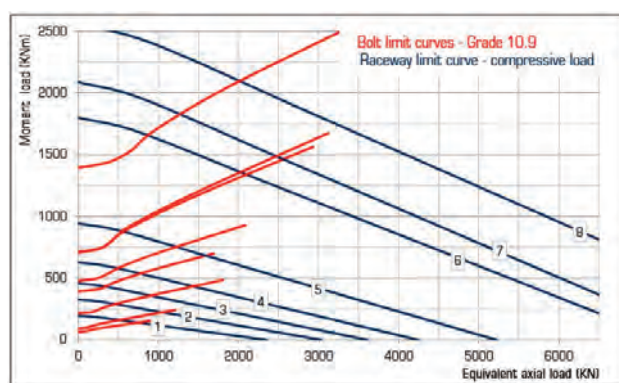
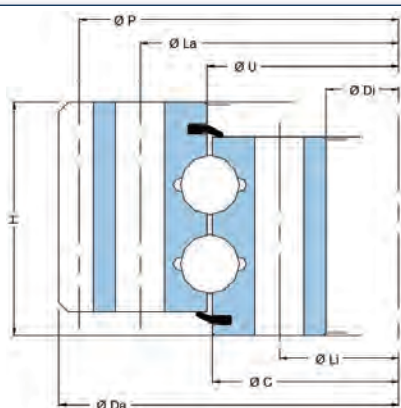
QCB Slewing rings and slewing drives are used in long reach cranes on fishing trawlers and other workboats.

Supplied complete with gearboxes and motors they have developed a reputation for compact design and quality.

QCB... turning your world!

SEG 2-ball Series

Solid Ring / Double Row Ball / External Gear

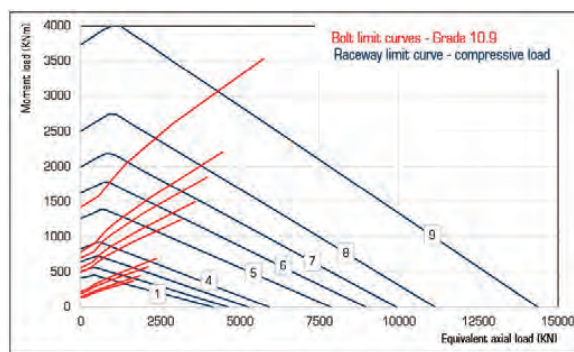
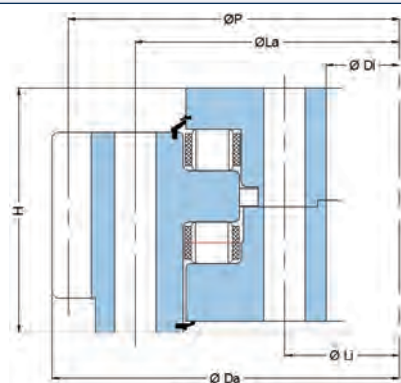


QCB reference	Outline dimensions					Outer holes		Inner holes		20° stub gear				Weight kg	Load Curve
	Da mm	Di mm	H mm			La mm	na	Li mm	ni	P mm	M	z	FzMAX kN		
SEG 504 2 25 01 AA LM	504	299	92			436	16	330	16	488	8	61	85	64	1
SEG 610 2 20 01 AA LM	610	390	90			540	18	436	18	600	6	100	65	98	2
SEG 614 2 20 01 AA LM	614	378	98			540	24	410	24	592	8	74	90	113	2
SEG 712 2 25 03 AA LM	712	470	98			640	36	508	36	696	8	87	85	103	3
SEG 816 2 25 01 AA LM	816	572	113			753	18	604	18	792	6	132	55	165	4
SEG 979 2 25 01 AA LM	979	716	102			893	36	753	36	940	10	94	115	208	5
SEG 1200 2 25 01 AA LM	1200	976	98			1135	36	1012	36	1184	8	148	86	210	6
SEG 1289 2 30 01 AA LM	1286	985	110			1198	40	1035	40	1250	10	125	120	340	7
SEG 1380 2 25 01 AA LM	1380	1095	108			1290	36	1135	36	1360	10	136	125	350	8
SEG 1474 2 40 01 AA LM	1474	1085	144			1350	36	1150	36	1440	12	120	205	750	-
SEG 2094 2 40 01 AA LM	2094	1595	224			1974	96	1684	96	2064	16	128	546	1945	-
SEG 2265 2 40 01 AA LM	2265	1815	180			2124	60	1880	60	2240	14	159	414	1561	-
SEG 3144 2 45 53 AA LM	3144	2683	206			2960	60	2750	60	3080	22	140	940	2900	-
SEG 3584 2 45 01 AA LM	3584	3090	200			3405	60	3165	60	3520	22	160	688	3550	-

Overall dimensions only - variants of each exist depending on application requirements - Sizes up to 11000mm can be supplied.

SEG 3-row Series

Solid Ring / Triple Row Roller / External Gear



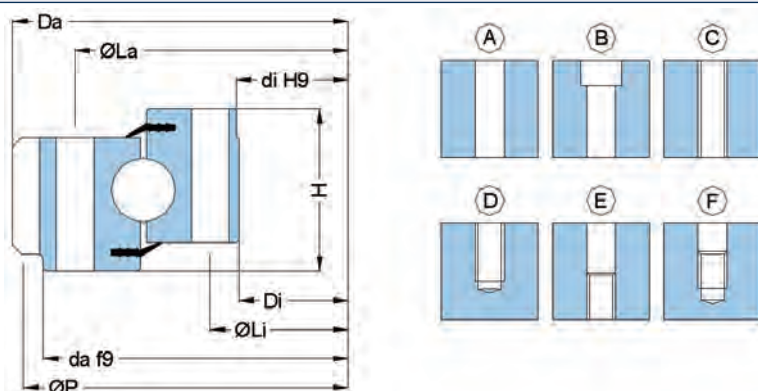
QCB reference	Outline dimensions					Outer holes		Inner holes		20° stub gear				Weight kg	Load Curve
	Da mm	Di mm	H mm			La mm	na	Li mm	ni	P mm	M	z	FzMAX kN		
SEG 665 3 25 01 AA LM	665	366	148			598	24	402	24	648	6	108	69	224	1
SEG 725 3 25 01 AA LM	725	426	148			658	24	462	24	708	6	118	69	240	-
SEG 806 3 25 01 AA LM	806	496	148			728	28	532	28	784	8	98	92	270	-
SEG 886 3 25 01 AA LM	886	576	148			808	28	612	28	864	8	108	92	300	4
SEG 1008 3 32 01 AA LM	1008	636	182			920	36	680	36	980	10	98	115	500	5
SEG 1108 3 32 01 AA LM	1108	736	182			1020	36	780	36	1080	10	108	115	600	6
SEG 1222 3 32 01 AA LM	1222	836	182			1120	40	880	40	1188	12	99	138	680	7
SEG 1342 3 32 01 AA LM	1342	956	182			1240	40	1000	40	1308	12	109	138	820	8
SEG 1509 3 40 01 AA LM	1509	1055	210			1393	45	1107	45	1470	14	105	160	1020	9
SEG 1663 3 40 01 AA LM	1663	1205	210			1543	45	1257	45	1624	14	116	160	1300	-

Overall dimensions only. Variants of each size exist depending on application requirements. Some dimensions may have been rounded up or down.

Bolt style can vary greatly - figure is for illustrative purposes only. Ask for the PDF print or 3D model to avoid confusion. Sizes to 11000mm can be supplied

Other Sizes

Other Popular Externally Geared Stock Sizes



QCB Reference	Outline dimensions					Outer holes			Inner holes			20° stub gear				Weight
	Da mm	Di mm	H mm	$da f9$ mm	$di H9$ mm	La mm	na	Style	Li mm	ni	Style	P mm	M	Z	$FzMax$ kN	
SEG 244 14 01 CC LM	244	125	25	-	-	214	#24 Ø11	A	145	#20-1 Ø11	A	240	2	120	4	6
SEG 244 14 03 CC LM	244	125	35	-	-	214	#24 Ø11	A	145	#20-1 Ø11	A	240	2	120	5.5	6.5
SEG 314 20 01 AA LM	314	145	50	-	-	270	#16 Ø13	A	175	#16-1 Ø13	A	306	4.5	68	28	17
SEG 318 15 01 AA LM	318	169	45	-	170	275	#20 Ø13	A	195	#20-1 M12	C	312	3	104	12.9	14
SEG 318 22 01 CC LM	318	150	55	-	-	275	#12 Ø13	A	175	#12 Ø13	A	310.5	4.5	69	18	17
SEG 379 20 02 AA LM	379	210	45	-	212	335	#24 Ø13.5	A	240	#24-1 Ø13.5	A	368	4	92	23	20
SEG 379 20 04 AA LM	379	210	45	-	212	335	#24 Ø13.5	A	240	#24-1 M12	C	368	2	92	23	20
SEG 403 20 01 AA LM	403.5	234	55	-	235	358	#24 Ø13.5	B	259	#28-1 Ø13	A	396	4.5	88	29	26
SEG 403 X20 04 AA LM	403.5	234	55	-	235	358	#24 Ø13.5	A	259	#28-1 Ø13	A	396	4.5	88	29	26
SEG 437 20 02 CC LM	437	265	50	-	267	390	#16 Ø17.5	A	295	#16 Ø17.5	A	427.5	45	95	21	28
SEG 535 25 01 CC LM	535	305	75	-	306	466	#18 Ø22	A	336	#18 Ø22	A	520	8	65	45	65
SEG 535 X20 01 AA LM	535	305	75	-	306	466	#18 Ø20	A	336	#18-1 Ø20	A	520	8	65	63	60
SEG 589 25 00 AA LM	589.5	382	75	-	384	540	#36 Ø18	A	410	#36-1 Ø18	A	580.5	4.5	129	32	80
SEG 589 X18 00 AA LM	589.5	378	75	-	384	540	#24 Ø16	A	410	#36-1 Ø16	A	580.5	4.5	129	32	62
SEG 589 X18 01 AA LM	589	378	75	-	384	540	#24 Ø16	A	410	#36-1 Ø16	A	580	5	116	36	62
SEG 595 25 02 AA LM	595	381	65	-	-	540	#18 Ø17	B	410	#18 Ø17	B	585	5	117	36	62
SEG 595 32 01 AA LM	595	382	88	-	384	540	#24 Ø18	A	410	#24-1 Ø18	A	585	5	117	46	80
SEG 654 X25 01 AA LM	654	390	85	-	392	582	#30 Ø22	A	432	#30-1 Ø22	A	640	8	80	69	100
SEG 695 X20 01 AA LM	695	470	85	-	480	640	#36 Ø20	A	508	#36-1 Ø20	A	680	5	136	30	82
SEG 700 X20 01 CC LM	700	477	77	-	480	640	#36 Ø18	A	508	#36-1 Ø18	A	684	6	114	37	85
SEG 737 X20 01 AA LM	737	518	65	-	519	676	#28 Ø17	A	554	#28-1 M16	B	720	6	120	47	76
SEG 816 32 02 AA LM	816	571	90	-	574	753	#36 Ø22	A	604	#36-1 Ø22	A	792	6	132	65	118
SEG 816 X25 01 AA LM	816	571	90	-	574	753	#18 Ø22	A	604	#18-1 Ø22	A	792	6	132	65	118
SEG 816 X25 02 AA LM	816	571	90	-	574	753	#36 Ø22	A	604	#36-1 Ø22	A	792	6	132	65	115
SEGH 864 X20 01 AALM	864	679	82	-	-	800	#24 M16	D	706	#24 M16	E	852	6	142	63	100
SEGH 864 X20 02 AALM	864	668	82	-	-	800	#24 M16	D	706	#24 Ø17	C	852	6	142	63	100
SEGH 886 X25 01 AALM	886	610	85	-	615	810	#30 Ø22	A	658	#30 Ø22	A	864	8	108	110	156
SEG 972 25 01 AA LM	972	764	70	-	764	912	#36 Ø17	B	796	#36 Ø17	B	960	6	160	51	108
SEG 979 X25 02 AA LM	979	717	100	-	718	893	#36 Ø22	A	753	#36 Ø22	A	940	10	94	113	176
SEG 979 X25 04 AA LM	979	718	100	-	718	893	#36 Ø22	B	753	#36 Ø22	B	940	10	94	139	205
SEG 1080 X20 02 AALM	1080	890	82	-	895	1015	#30 M16	D	922	#30 M16	E	1064	8	133	71	120
SEG 1289 32 01 AA LM	1290	980	114	-	985	1198	#40 Ø22	A	1035	#40 Ø22	A	1250	10	125	135	338
SEG 1470 30 00 AA LM	1470	1190	84	-	1188	1380	#48 M24	D	1235	#48 Ø26	A	1450	10	145	108	270
SEG 1604 X40 01 AALM	1604	1208	130	-	1208	1500	#48 Ø30	A	1280	#48-1 Ø30	A	1570	10	157	147	646

Overall dimensions only. Variants of each size exist depending on application requirements. Some dimensions may have been rounded up or down.

Bolt style can vary greatly - the figure is for illustrative purposes only. Ask for the PDF print or 3D model to avoid confusion.

Sizes to 11000 mm can be supplied.

This is by no means the limit of the QCB range. We have over 5 000 drawings on file!

Slewing Ring Installation

Transport, Handling & Storage

Slewing rings should only be transported and stored in a horizontal position or on a specially built incline cradle. Shock loads should be avoided to limit any damage to the raceways.

2 or 3 lifting bolts should be used to lift large bearings. Use either the standard threaded bolt holes or those specifically machined for the purpose as indicated on the drawing. Check the weight of the ring to ensure slings and/or chains are of sufficient capacity.

Care must be taken not to dislodge seals or grease fittings during movement. Wooden or rubber spacers should be used to separate unwrapped bearings stacked vertically to avoid surface damage. Gear teeth must be protected from impact damage.

As supplied, slewing rings are generally packed for storage in a dry, covered store and for a period not exceeding 6 months.

Light surface corrosion may occur in humid conditions but this can usually be removed easily from external surfaces – it is more important that the raceways are well greased to remain rust free.

In extreme cases of long term storage the bearings should be professionally dismantled, cleaned, inspected and reassembled before use.

Standard commercial solvents (without chlorine) can be used to degrease the slewing rings if required. Use sparingly and do not let this work under the seals into the raceway volume.

Grease is a most effective barrier to contamination.

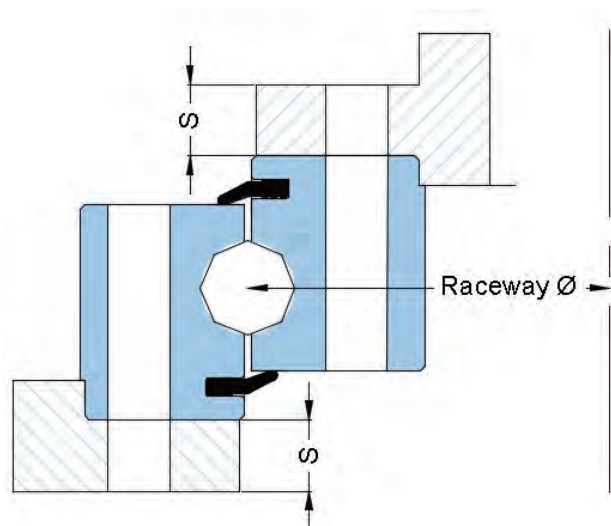


Support Structures

Although slewing rings are designed to support large axial, radial and moment loads, they are inherently elastic structures that must be supported by flat, machined companion surfaces which are rigid enough to eliminate torsional buckling under load that would affect the smooth operation of the ring.

The width of the supporting flanges must at least equal the width of the ring it supports. Thick circular supports are preferred over thinner supports with reinforcement ribs. With modern finite element analysis it may be possible to work with thinner support materials.

The suggested minimum thickness (S) of the supporting material is indicated below.



Raceway dia (mm)	500	750	1000	1250	1500	2000	2500	3000
Minimum support thickness (mm)	25	30	35	40	50	60	70	80

Under load, flatness defects must not exceed the values tabulated below to avoid tight spots or seizure; both of which will reduce the life of the ring.



The values (in mm) tabulated below are for “long wave deviations” around the circumference.

SRB – single row ball bearings

XRB – double row ball, crossed roller and preloaded ball bearings

Raceway (mm)	500	750	1000	1250	1500	2000	2500	3000
SRB	0.12	0.18	0.21	0.25	0.28	0.33	0.38	0.42
XRB	0.10	0.12	0.15	0.18	0.20	0.25	0.29	0.32

Shorter wave defects (e.g. between 2 bolt holes) must not exceed 1/4 of these values.

Defects in the radial direction, sometimes referred to as “conicity”, must not exceed 0.05mm /m based on the raceway diameter.

If the above tolerances cannot be met, epoxy resins may be used.

Slew Ring Orientation

Rolling elements and spacers are inserted through the filling plug(s). These are usually positioned at the relevant raceway hardening junction. They are held in place with a tapered pin and a subtle modification in the raceway limits the load carrying characteristics of that area of the raceway.

As a result, the filling plugs should be positioned at the point of minimum strain (usually at right angles to the main load axis).

In some cases the bolt pattern will be asymmetric to force this orientation.

Dowel Pins Or Spigots

In the event of high radial loads, or if a slew ring is used with a horizontal axis of rotation, either the circularity of the slewing ring may be affected, or the shear stresses generated may be too high for the bolts to carry the load safely.

If circularity cannot be maintained by use of a structural adhesive (e.g. LOCTITE 586 or similar), the toleranced location diameters on the bearing rings should be used.

Dowel pins can also be an effective way to limit radial forces and to achieve a similar effect.



Fastening Bolts

Flanged QCB slewing rings are designed to be used with Grade 8.8 hexagon head bolts. Solid ring slewing rings are designed to be used with Grade 10.9 hexagon head or Grade 12.9 cap screws.

QCB bolt curves are calculated using standard design recommendations (e.g. VDI 2230)

Check you have the correct grade of bolt in line with our recommendations especially if a QCB bearing is replacing another manufacturer's part.

For "CC" steel (C45/50Mn) the use of flat hardened washers is recommended to reduce surface pressures under the bolt head and nut. If cap screws are used the specific pressure under the bolt head should not exceed the limits of the material.

The use of any elastic (spring washers or Bellville washers) or serrated washers is prohibited and will negate the warranty.

Untreated bolts should be lightly oiled and tightened progressively in steps of 60%, 80% and 100% bolt torque using either a calibrated torque wrench or a hydraulic system, moving around the periphery of the slewing ring in approximately 120° steps.

Ensure that the slew ring rotation is rotated during the tightening process (if possible) as any "tight points" will become evident and prompt immediate investigation.

Large diameter bolts should be tightened hydraulically.

The bolt torque figures should be checked again before the machine enters service as a degree of "settling" may occur, then after 100 hours of operation, and thereafter at least on an annual basis.

Recommended bolt torque figures are tabulated opposite.

Bolt tightening torques

Strength Class DIN/ISO 898			Grade 8.8		Grade 10.9		Grade 12.9	
Yield point Rp 0.2			<=M16 640 MPa		940 MPa		1100 MPa	
			> M16 660 MPa					
ISO Thread DIN 13	Stress x- section area	Core x- section area	Tension force	Tightening torque	Tension force	Tightening torque	Tension force	Tightening torque
	mm2	mm2	KN	Nm	KN	Nm	KN	Nm
M12	84.3	76.2	38.5	78	56	117	66	135
M14	115	105	53	126	77	184	90	216
M16	157	144	72	193	106	279	124	333
M18	193	175	92	270	129	384	151	459
M20	245	225	117	387	166	558	194	648
M22	303	282	146	522	208	747	243	873
M24	353	324	168	666	239	954	280	1116
M27	459	427	221	990	315	1395	370	1665
M30	561	519	270	1350	385	1890	450	2250
M33	694	547	335	To be determined by bolt elongation measurement	450	To be determined by bolt elongation measurement	560	To be determined by bolt elongation measurement
M36	817	759	395		560		660	
M39	976	913	475		670		790	
M42	1120	1045	542		772		904	
M45	1300	1224	632		905		1059	
M48	1470	1377	714		1018		1191	
M52	1760	1652	857		1221		1429	
M56	2030	1905	989		1408		1648	
M60	2360	2227	1156		1647		1927	

Bolt tightening torques ANSI B1.1 SAE Grade 8 Coarse thread

Bolt size	Tensile area in ²	Tightening torque ft-lbs
1/4-20 UNC	0.0318	7.2
5/16-18 UNC	0.0524	15
3/8-16 UNC	0.0775	25.9
7/16-14 UNC	0.1063	40.9
1/2-13 UNC	0.1419	78
5/8-12 UNC	0.226	154
3/4-10 UNC	0.334	272
7/8-9 UNC	0.462	436
1-8 UNC	0.606	653
1.1/8-7 UNC	0.763	927
1.1/4-7 UNC	0.969	1299

Gearing

Metric slewing rings generally exhibit a 20 deg involute spur gear, but helical and worm gear bearings are also common.

Imperial slewing rings generally use either a Fellows stub, an American stub or American full depth gear.

All standard QCB geared bearings are manufactured in 42CrMo4 V steel for superior gear strength when compared against other economy brands.

Slewing ring gears often have an addendum correction to improve gear strength or meshing characteristics; if so, the pinion gear should be suitably corrected to mesh most effectively.

QCB utilises the most up to date calculation software available to offer an optimal solution for high torque or multi-drive applications.

Theoretical tangential gear strength figures ($F_{z_{normal}}$ and $F_{z_{max}}$) are listed on most drawings.

Other gearing products available:-

- Induction hardened gears
- Ring gears (whole or segmented)
- Gear racks
- Pinion shafts

Pinions

A comprehensive range of metric and imperial pilot bore pinions is stocked to suit the light series slewing rings.

Larger module pinions (to Mod 28) are made to order to suit customer requirements.

Seals

QCB slewing rings are fitted with a nitrile or NBR rubber lip seal which rides on the surface of the adjacent ring.

For high temperature applications VITON lip seals are available.

Special seal arrangements are available for specific applications. These include:

- Double (secondary) seal systems
- V-ring seals
- Quad section seals
- Metal shields
- Labyrinth seals with grease injection port

When unwrapping, take care not to cut and damage the integral seal strips.

After long term storage it is not uncommon for the seal rubber to stick to the steel surface – creating the illusion that the bearing has seized. A blunt instrument such as a pallet knife should be run around the circumference to free the seal surfaces. A spray with a light oil (as well as proper regreasing of the ring) will avoid seal damage on start-up.

Seals require annual inspection and may require replacement.

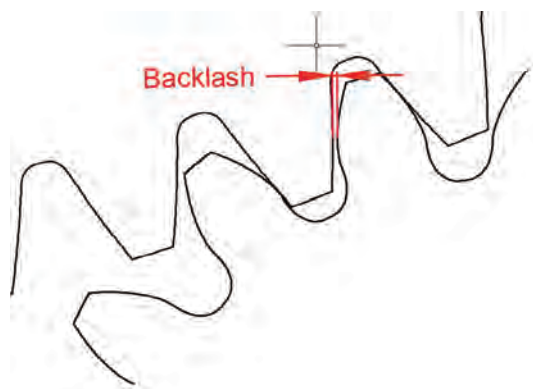
Are Replacement Seals Available?

Where possible, QCB slewing rings use a standard seal profile which is stocked in NBR (black) and VITON (Green).

If the QCB part and serial number are known, the seal size can be determined and replacement seals provided.

Setting Pinion Backlash

Pinion backlash must be set at the point of maximum eccentricity on the slew ring, usually indicated by 3 painted teeth.



Ensure each pinion is properly aligned to the gear with good contact maintained over the full face width.

A backlash or clearance of between 0.03 – 0.05 x module is recommended under normal circumstances. This distance is set by either moving the pinion in a radial direction, or turning the drive motor on an eccentric flange mount.

Mod	Backlash (mm)	Mod	Backlash (mm)
4	0.12-0.16	14	0.42-0.56
5	0.15-0.20	16	0.48-0.64
6	0.18-0.24	18	0.54-0.72
8	0.24-0.32	20	0.60-0.80
10	0.30-0.40	22	0.66-0.88
12	0.36-0.48	24	0.72-0.96

During installation the slewing rings should be rotated a few times to check the gear mesh.

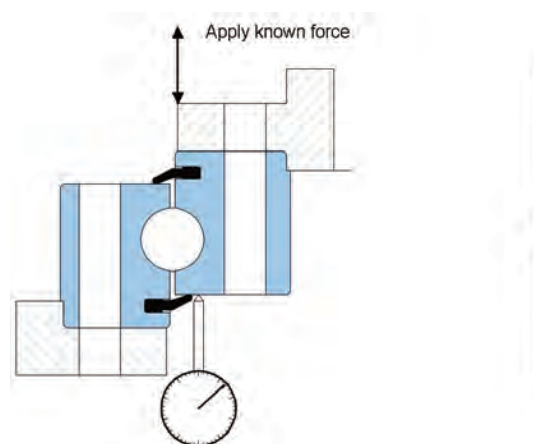
During maintenance the backlash should be checked. Wear on the gear flanks of up to 0.1 x module is permissible.

NOTE: For fixed centre designs either the pinion or slew ring addendum correction can be modified to achieve a suitable backlash figure for any specific centre distance.

Operational Clearance And Wear In The Raceway

Properly specified and maintained, QCB slewing rings will offer years of satisfactory service.

After assembly the clearance or total deflection of the slewing ring should be determined under recorded test conditions to serve as reference data for future clearance checks. This will allow the amount of wear in the slewing ring raceway to be determined during regular maintenance.



- The degree of “tilt” in the bearing should be measured, or the relative axial and radial movement of the rings using dial gauges.
- Apply a load in one direction to “zero” the dial gauge. The load direction is then reversed.
- An average of at least 4 measurements around the circumference should be recorded.
- Measurements should be taken as close to the raceways as possible to minimise the effects of elastic deflections in the structure.
- The measurement points should be marked and numbered so that the test can be recreated accurately in the future.

In general, slewing rings will wear at a linear rate in service.

Once the rate of wear accelerates it is a sign that the bearing is approaching the end of its service life.

As a “rule of thumb”, once the measured deflection exceeds 1.5x the initial figure, plans for the replacement of the slew ring should be made. If the measured deflection exceeds 2x the initial clearance then the ring should be replaced immediately for safety reasons.

Proper maintenance and record keeping will ensure that a replacement can be obtained in the most economical fashion.

Customers should bear in mind that larger slewing rings can be long lead time items.

Typical allowable wear figures for normal applications are tabulated below:-

Single row and double row ball bearings

Track dia	Ball dia. & allowable bearing clearance increase						
	20	22	25	30	35	40	45
1000	1.4	1.4	1.4	1.5	1.7	1.9	2.1
1250		1.5	1.5	1.6	1.7	2	2.2
1500			1.6	1.7	1.7	2	2.3
1750				1.8	1.8	2.1	2.3
2000					1.9	2.2	2.4
2250					2	2.3	2.5
2500					2	2.3	2.6
2750						2.4	2.6
3000						2.5	2.7
3250						2.6	2.8
3500							2.9
3750							3.0

For single row x-roller bearings

Track dia	Roller size & allowable bearing clearance increase				
	16	20	25	32	40
400	0.22	0.22	0.24		
800	0.25	0.27	0.29	0.33	0.38
1000	0.30	0.32	0.34	0.38	0.43
1500	0.50	0.52	0.54	0.58	0.63
2000		0.62	0.64	0.68	0.73
2500			0.74	0.78	0.83

What about reconditioning?

In some cases rings can be reconditioned.

What are the steps?

1. Send the bearing to your QCB dealer where it will be inspected and catalogued.
2. A non-refundable standard charge will be raised to cover cleaning and inspection costs.
3. QCB will advise if the ring can be reconditioned economically and safely and await instruction.
5. QCB will quote for a new bearing if appropriate.
6. All transport costs are for the customers account.
7. Unless otherwise instructed, QCB will dispose of scrap parts if not collected within 6 months.

Raceway Lubrication

QCB standard stock slewing rings are factory filled with standard NLGI class 2 mineral oil based EP grease.

QCB Special order slewing rings can be delivered with varying amounts and types of grease depending on customer requirements.

Regreasing is mandatory after long storage.

WARNING: The onus is on customers to check that any slewing ring is properly lubricated when entered into service.

The raceways can be adequately lubricated with any good quality standard lithium based EP2 bearing grease. In general, and as slewing rings operate at high loads and low speeds the raceways can be entirely filled with grease which will then form an additional barrier to the entry of contaminants.

Typical raceway lubricants include:-

Brand	Raceway grease	Operating temp range
BP	Energrease LS EP2	-20 to +120 C
ESSO	Beacon EP2	-20 to + 120C
TOTAL	Multis EP2	-30 to + 120C
	Ceran XM460	-30 to + 180C
EXXONMOBIL	Mobilith SHC460	-30 to + 120C
SHELL	Retina EP2 or Alvania EP	-25 to + 120C
FUCHS	Stabyl LT #50	-50 to + 120C

The regreasing interval in service is best determined by the environment.

Environmental conditions	Recommended relube interval
Dry, clean / Workshop	300 hours duty or 6 months
Outside & exposed	-150 hours duty or 4 months
Aggressive	-50 hours duty or 2 months
Extreme	- continuous lubrication

Grease nipples are provided on one ring or the other, sometimes both. Use whichever is convenient.

During regreasing it is advisable to rotate the bearing to ensure distribution of the fresh grease as well as to avoid over pressurising the seals as this may force them out of their grooves. Ideally a thin smear of fresh grease should start to weep from under the lip seals.

A simple formula helps to determine the approximate amount of grease required in grams (all dimensions in mm)

- Single row ball brg

$$\text{Grease qty} = 0.7 \times \text{Raceway } \varnothing \times \text{ball } \varnothing^2 / 1000$$

- Single row roller brg

$$\text{Grease qty} = 0.5 \times \text{Raceway } \varnothing \times \text{roller } \varnothing^2 / 1000$$

Automatic relubrication systems such as the GreaseMax System are recommended as they maintain a positive pressure of grease in the raceways.

Gear Lubrication

The gear should be lubricated immediately after assembly and setting of the backlash.

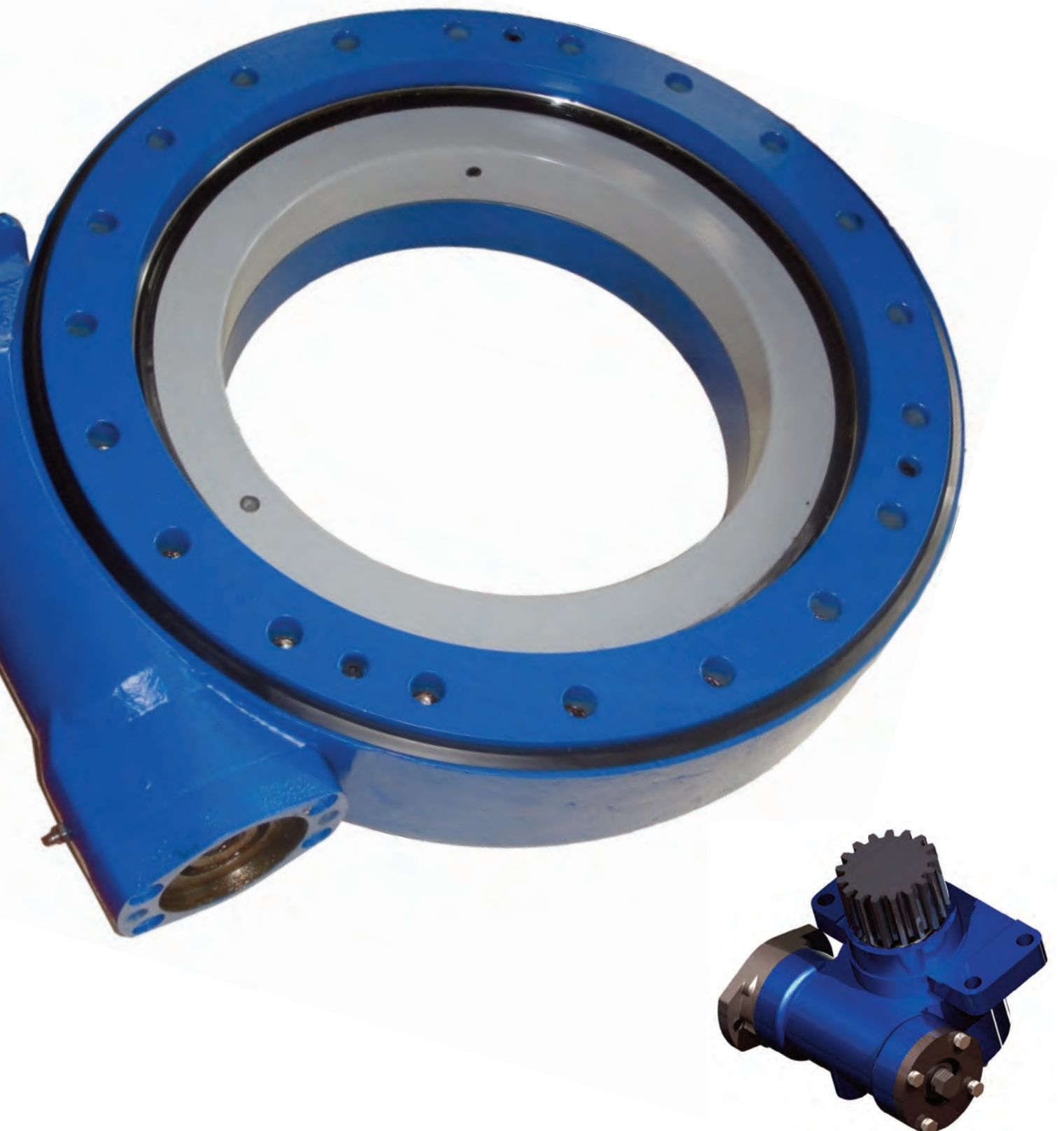
Suitable open gear grease should be brushed or sprayed on to cover the teeth completely. Such greases will typically have a base oil viscosity of > 500 mm²/s at 40C; good adhesive properties and a high resistance to water washout.

Common gear lubricants include

Brand	Grease / Oil	Operating temp range
BP	Energol WRL GR-XP Gear oils	-20 to + 120C
TOTAL	Carter open gear Ceran AD	-20 to + 125C
EXXONMOBIL	Mobiltac 81 Mobilgear OGL007	-20 to +120C
SHELL	Aeroshell Grease 14 Malleus GL 205	-54 to + 93C

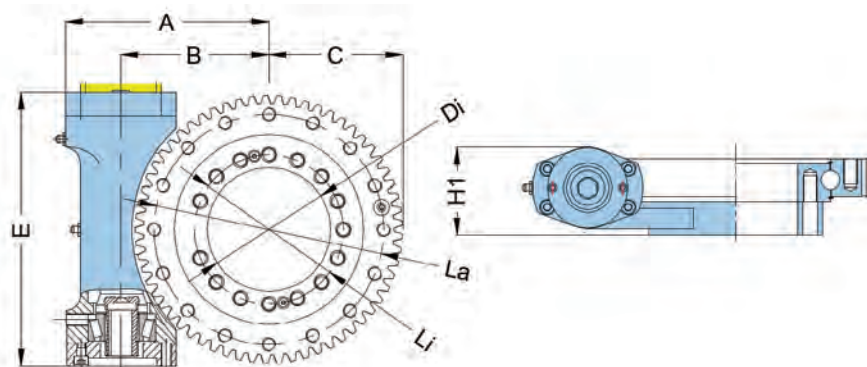


Slewing Drives & Rotation Drives



WGS Series

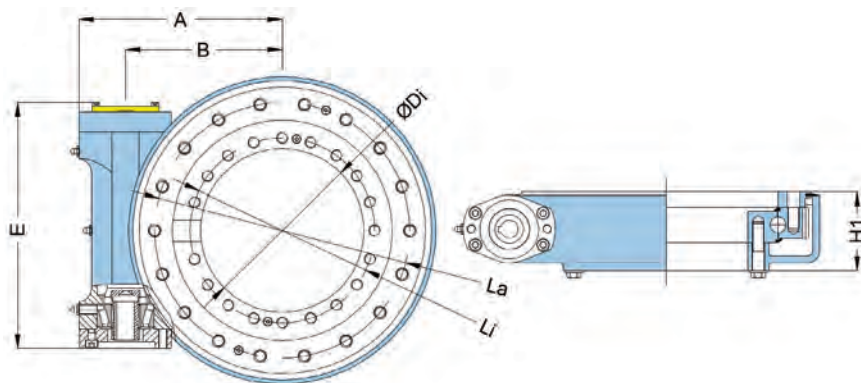
Worm Shaft / Open Helical Gear



QCB reference	Outline dimensions						Outer holes		Inner holes			Gear ratio	Output torque	Accuracy	Weight	Load Curve
	A	B	C	Di	E	H1	La	na	Li	ni						
	mm	mm	mm	mm	mm	mm	mm		mm							
WGS 9 61 25 H R	239	174	157	145	322	104	270	16	175	16-1	M16	61:1	6.5	<0.17°	37	ASK FOR DETAILS
WGS 12 78 25 H R	285	220	200	229	332	114	358	18	259	20-1	M16	78:1	7.5	<0.17°	41	
WGS 14 85 25 H R	303	238	217	265	338	114	390	18	295	24-1	M16	85:1	8	<0.17°	47	
WGS 17 102 25 H R	340	275	261	324	385	123	479	20	365	20	M16	102:1	10	<0.15°	87	

WGSE Series

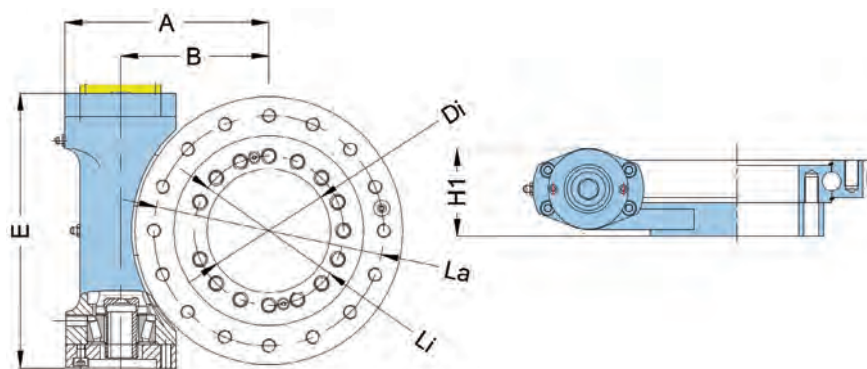
Worm Shaft / Enclosed Helical Gear



QCB reference	Outline dimensions						Outer holes		Inner holes			Gear ratio	Output torque	Accuracy	Weight	Load Curve
	A	B	C	Di	E	H1	La	na	Li	ni						
	mm	mm	mm	mm	mm	mm	mm		mm	ni						
WGSE 3C 62 16 R	114	80	157			98	100	6	100	6	M10	62:1	0.4	<0.2°	12	ASK FOR DETAILS
WGSE 5 62 16 R	132	94	173			79	128	6	100	8-1	M10	62:1	0.4	<0.2°	16	
WGSE 5A 62 16 R	138	100	173			119	128	6	100	6	M10	62:1	0.6	<0.2°	20	
WGSE 7 73 16 H R	170	133	211	98		81	203	8	121	10	M12	73:1	1.5	<0.2°	25	
WGSE 9A 61 25 H R	239	174	314	145		108	270	16	175	16-1	M16	61:1	6.5	<0.17°	49	
WGSE 12A 78 25 H R	285	220	332	229		111	358	18	259	20-1	M16	78:1	7.5	<0.17°	60	
WGSE 14A 85 25 H R	303	238	338	265		110	390	18	295	24-1	M16	85:1	8	<0.17°	73	
WGSE 17A 102 25 H R	348	282	385	324		126	479	20	365	20	M16	102:1	10	<0.15°	110	
WGSE 21 125 25 H R	403	339	469	432		137	584	36	467	36-1	M20	125:1	15	<0.15°	158	
WGSE 25 150 25 H R	467	402	462	512		130	675	36	565	36-1	M20	150:1	18	<0.15°	204	

WGW Series

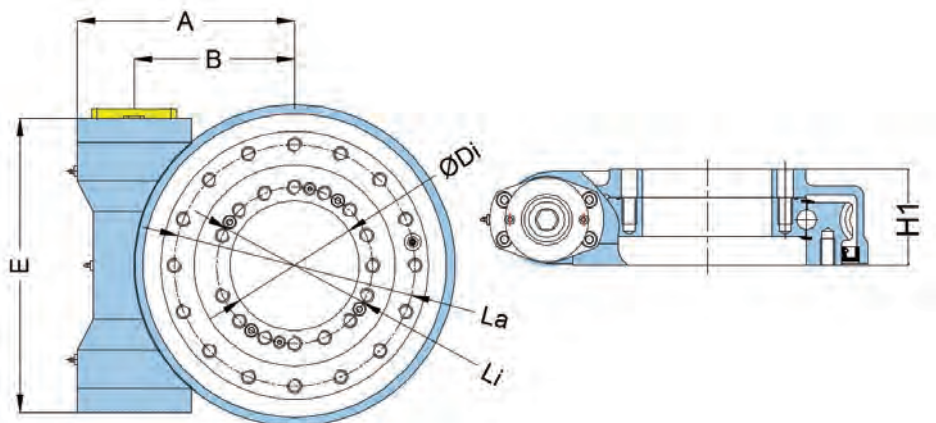
Worm Shaft / Open Worm Gear



QCB reference	Outline dimensions					Outer holes		Inner holes			Gear ratio	Output torque KNm	Accuracy	Weight kg	Load Curve
	A mm	B mm	Di mm	E mm	H1 mm	La mm	na	Li mm	ni						
WGW 7 47 25 H R	207	143	105	295	100	205	10	135	12-1	M12	47:1	3.5	<0.15°	29	ASK FOR DETAILS
WGW 9 62 25 H R	244	180	145	330	106	270	16	175	16-1	M16	62:1	8	<0.15°	40	
WGW 12 79 25 H R	287	223	229	370	106	358	18	259	20-1	M16	79:1	9.5	<0.15°	52	
WGW 14 86 25 H R	302	238	255	380	111	390	18	295	24-1	M16	86:1	10.8	<0.13°	62	
WGW 17 104 25 H R	349	285	312	405	106	479	20	365	20	M16	104:1	12.9	<0.1°	82	
WGW 21 90 25 H R	415	350	425	483	130	584	36	467	36-1	M20	90:1	29	<0.1°	139	
WGW 25 104 25 H R	464	399	525	513	130	675	24	565	24	M20	104:1	34.2	<0.1°	176	

WGWEA Series

Worm Shaft / Enclosed Worm Gear / Improved Seals



QCB reference	Outline dimensions					Outer holes		Inner holes			Gear ratio	Output torque KNm	Accuracy	Weight kg	Load Curve
	A mm	B mm	E mm	Di mm	H mm	La mm	na	Li mm	ni						
WGWEA 7 47 25 H R	207	143	295	105	97	205	10	135	12-1	M12	47:1	3.5	<0.15°	35	ASK FOR DETAILS
WGWEA 9 62 25 H R	244	180	330	145	108	270	16	175	16-1	M16	62:1	8	<0.15°	53	
WGWEA 12 79 25 H R	287	223	370	229	108	358	18	259	20-1	M16	79:1	9.5	<0.15°	67	
WGWEA 14 86 25 H R	302	238	380	265	108	390	18	295	24-1	M16	86:1	10.8	<0.13°	75	
WGWEA 17 104 25 H R	349	285	405	332	108	479	20	365	20	M16	104:1	12.9	<0.1°	96	
WGWEA 19B 94 25 H R	378	313	435	380	108	520	32	420	32-1	M16	94:1	18.5	<0.1°	118	
WGWEA 21 90 R MTAP*	415	350	483	425	130	584	36	467	36-1	M20	90:1	28.7	<0.1°	172	
WGWEA 25 104 R MTAP*	464	399	513	525	130	675	36	565	36-1	M20	104:1	34	<0.1°	202	

WGR Series

Worm Gearbox With Spur Gear Pinion Output Shaft



QCB reference		Gear ratio	Output torque	Weight
			KNm	kg
WGR 72 30 25 HR 32	Standard unit with 32mm output shaft	30:1	0.9	23
WGR 72 30 25 HR M5Z12	Standard unit with Mod 5 Z12 pinion output for use with F20/S20/SX14 light series slew rings	30:1	0.9	24
WGR 72 30 25 HR M6Z12	Standard unit with Mod 6 Z12 pinion output for use with F20/S20/SX14 light series slew rings	30:1	0.9	24
WGR 72 30 25 HR M6Z20	Standard unit with Mod 6 Z20 pinion output for use with F20/S20/SX14 light series slew rings	30:1	0.9	24
WGR 110 39 25 HR 50	Standard unit with 50mm dual key output shaft	39:1	1.6	38
WGR 114 44 25 HR 60	Standard unit with 60mm dual key output shaft	44:1	2.8	52
WGR 114 44 25 HR M9Z11	Standard unit with Mod 9 Z11 pinion output for use with S25 medium series slew rings	44:1	2.8	61



In some applications where access is restricted or for very large diameter bearings, QCB Split race slewing rings are designed to be built up around a central core.

A series of dowels and bolts ensure accurate location and roundness .

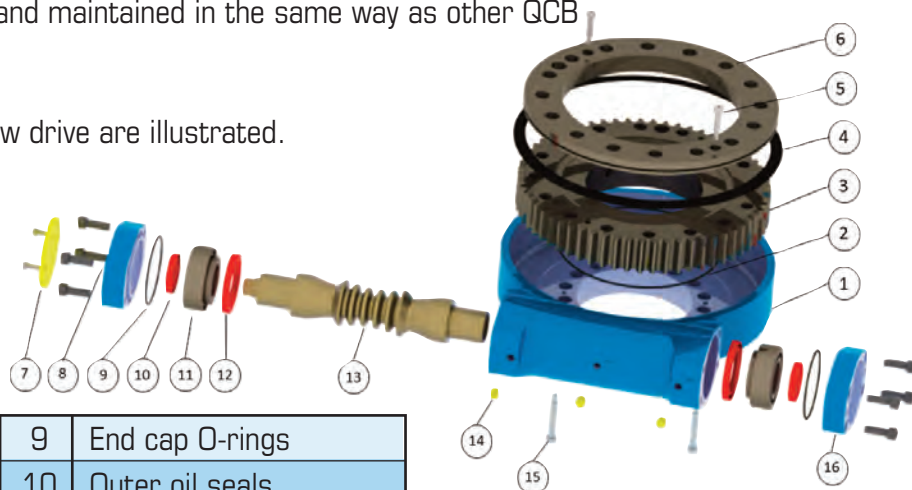
QCB... turning your world!

SLEWING DRIVE INSTALLATION DATA

Slewing drives consist of a slewing ring bearing with an associate worm shaft and support bearings in an open or enclosed housing.

The slewing ring should be installed and maintained in the same way as other QCB slewing rings.

The constituent parts of a typical slew drive are illustrated.



1	Enclosed housing	9	End cap O-rings
2	Large O-ring	10	Outer oil seals
3	Slewing ring	11	Taper roller bearing
4	Top plate seal	12	Inner oil seals
5	Upper positioning bolts	13	Worm shaft
6	Top plate	14	Grease nipples
7	Non-drive end cover	15	Lower positioning bolts
8	End cap and bolts	16	Drive end adapter cap

Slew Drive Part Number Breakdown

Example WGSE 14A-85 BT-25H- 2R

WGSE 14 A	Model code ; Raceway diameter in inches; Design revision	
85	Reduction ratio	
B	Imperial threads	
	Option [Omitted]	Metric threads
T	Mounting hole style	Inner ring through holes/ Outer ring blind tapped holes
	Option [C]	Inner and outer ring threaded holes through
	Option [Omitted]	Inner and outer ring blind tapped holes
25	Input shaft size	
	Options	12 / 14 / 16 / 20 / 32 mm; 1" and SAE 68 spline
H	Hex head on non drive end ;	
	Option [E]	Encoder
2	Number of worm shafts ;	
	Option [Omitted]	Single shaft units
R	Motor position Right	
	Option [L]	Left

Support Structure

Under load, flatness defects must not exceed the values tabulated below to avoid tight spots or seizure; both of which will reduce the life of the ring. The tabulated values are for 'long waves' around the circumference. Shorter wave defects between 2 bolts must not exceed 1/4 of these values.

Flatness
defect



Basic Drive dia.	3"	5"	7"	9"	12"
Flatness deviation (mm)	0.04	0.10	0.10	0.12	0.15
Basic Drive dia.	14"	17"	19"	21"	25"
Flatness deviation (mm)	0.15	0.15	0.17	0.20	0.20

Fastening Bolts

QCB recommends use of Grade 10.9 Hex head bolts or Grade 12.9 Cap Screw bolts.

Tightening torque figures are tabulated on page 42.

Lubrication

After 100 hours of operation, grease in the WGR Rotation Drives should be refreshed. Grease should be injected into one grease port, while old grease is purged from the other.

Size	Grease qty (grammes)
WGR 72	350 - 400
WGR 110	1200 - 1300
WGR 114	1700 - 1800

QCB Slewing Drives are factory lubricated and ready for installation, but the most frequent cause of slewing drive failure is inadequate relubrication. It is recommended that lubricant is applied to the slewing

ring, the worm gearing and worm shaft support bearings on a regular maintenance schedule. The amount of grease required is tabulated below:-

Basic size	3"	5"	7"	9"	12"
Raceway	-	15	20	35	50
Worm gear	35	60	65	100	110
Taper brgs	7	7	7	10	10
Basic Size	14"	17"	19"	21"	25"
Raceway	60	75	105	130	150
Worm gear	110	120	130	140	150
Taper brgs	10	10	10	10	10

The regreasing interval is determined by the environment. In aggressive environments, grease can be used as a barrier to contaminant entry.

Environmental conditions	Recommended relubrication interval
Dry, clean workshop	- 1000 hours use or 12 months
Outside & exposed	- 500 hours use or 6 months
Aggressive outdoors	-150 hours use or 3 months
Extreme conditions	-50 hours or 2 months

Suitable lubricants include:-

Brand	Grease
QCB	YP 7014-1
Kluber	Isoflex NBU 15
Mobil	Mobiltemp SHC 100

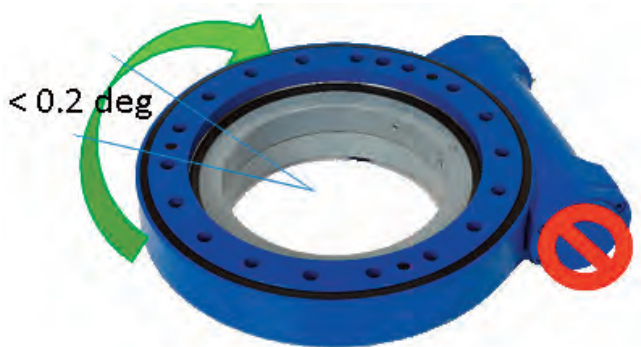
Mobiltemp SHC 100 is available in 380gr cartridges or in GreaseMax Autolubricators (lubricant code F239) from QCB.

Tracking Accuracy & Backlash

The tracking accuracy of all QCB slewing drives is tested and recorded during assembly. The difference between tracking accuracy and backlash is illustrated below.

Tracking accuracy is catalogued

- Input (worm shaft) is locked in place
- The worm wheel rotates $< 0.2^\circ$



Backlash is measured

- Worm wheel is locked in place
- Worm shaft can move axially by $\text{Gear PCD}/2 \times \tan$ (tracking precision)



e.g. WGSE 7 73 – worm shaft can move axially by $229.95/2 \times \tan 0.2 = 0.401\text{mm}$

Backlash is calculated

- Worm wheel is locked in place
- Worm shaft can rotate $0.2 \times \text{reduction ratio}$



e.g. WGSE 7 73 – worm shaft can rotate $0.2 \times 73 = 14.6^\circ$

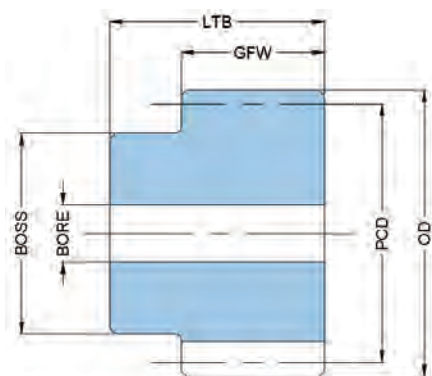
High precision slewing drives are imported to order, and only after full technical evaluation with the factory engineering team. These can include an encoder on the non-drive side of the worm shaft.





Pinions

Stock Pinions For Light Duty Applications



QCB reference	Module	# teeth	Dimensions							
			PCD	GFW	LTB	OD	Boss	Bore	Key	
			mm	mm	mm	mm	mm	mm		
M5 Z12	5	12	60	50	75	70	45	16	-	
M5 Z13	5	13	65	50	75	75	50	16	-	
M5 Z14	5	14	70	50	75	80	55	20	-	
M5 Z15	5	15	75	50	75	85	60	20	-	
M5 Z16	5	16	80	50	75	90	65	20	-	
M5 Z17	5	17	85	50	75	95	70	20	-	
M5 Z18	5	18	90	50	75	100	70	20	-	
M5 Z19	5	19	95	50	75	105	70	20	-	

QCB reference	Module	# teeth	Dimensions							
			PCD	GFW	LTB	OD	Boss	Bore	Key	
			mm	mm	mm	mm	mm	mm		
M6 Z12	6	12	72	60	80	84	54	20	-	
M6 Z14	6	14	84	60	80	96	65	20	-	
M6 Z15	6	15	90	60	80	102	70	20	-	
M6 Z16	6	16	96	60	80	108	75	20	-	
M6 Z18	6	18	108	60	80	120	80	20	-	
M6 Z20	6	20	120	60	80	132	90	20	-	

QCB reference	Module	# teeth	Dimensions							
			PCD	GFW	LTB	OD	Boss	Bore	Key	
			mm	mm	mm	mm	mm	mm		
MR Z15 PB	8	15	120	80	110	135	90	20	-	

QCB reference	Module	# teeth	Dimensions							
			PCD	GFW	LTB	OD	Boss	Bore	Key	
			in	in	in	in	in	in		
DP 4 Z14 ##1	4	14	3.500	2	2.88	3.90	2.88	1	1/4	
DP 4 Z17 ##1	4	17	4.250	2	2.88	4.65	3.63	1	1/4	
DP 3 Z14 ##1	3	14	4.667	2	2.88	5.20	3.88	1.25	5/16	
DP 3 Z17 ##1	3	17	5.667	2	2.88	6.20	4.88	1.25	5/16	

Most high strength pinions are custom made for specific applications.

QCB uses "state of the art" software to ensure pinions match the selected slewing ring gears and drive engines correctly.



Hydraulic Motors

The table illustrates the largest motor using typical system pressures and flow rates to make use of the full capacity of QCB slew drives. Other options are available such as braked motors, geared reducers. Overcenter valves for load control are recommended.

Should you do your own calculations remember to take into account the low efficiency of the worm gear systems (30-40% maximum).

QCB Reference	Output torque	Ratio	Max Speed	Motor Speed		Motor ref	Pressure	Flow Rate
	KNm		rpm	Torque KNm	Speed rpm		bar	lpm
WGSE 3C 62 16 R ##1	0.4	62:1	2	21	124	AMM 50 P	32	7
WGSE 5A 62 16 R ##1	1	62:1	2	32	124	AMM 50 P	50	7
WGSE 7 73 16 H R##1	1.5	73:1	3	44	219	AMM 50 P	70	12
WGSE 9 61 25 H R	7	61:1	3	266	183	MSA 125 2 M	150	26
WGSE 12 78 25 H R	7.5	78:1	3	240	234	MSA 125 2 M	140	32
WGSE 14 85 25 H R	8	85:1	3	235	255	MSA 125 2 M	140	34
WGSE 17 102 25 H R	10	102:1	3	245	306	MSA 125 2 M	140	40
WGSE 21 125 25 H R	15	125:1	3	300	375	MSA 150 2 M	130	64
WGSE 25 150 25 H R	18	150:1	3	300	450	MSA 150 2 M	140	75

##1 modification = 3 bolt fixing and 16mm input shaft for AMM Series motors

QCB Reference	Output torque	Ratio	Max Speed	Motor Speed		Motor ref	Pressure	Flow Rate
	KNm		rpm	Torque KNm	Speed rpm		bar	lpm
WGWEA 9 62 25 H R	8	62:1	2.5	323	155	MSA 150 2 M	150	22
WGWEA 12 79 25 H R	10	79:1	3	316	198	MSA 150 2 M	140	33
WGWEA 14 86 25 H R	10.8	86:1	2.5	314	215	MSA 150 2 M	150	36
WGWEA 17 104 25 H R	13	105:1	3	309	263	MSA 200 2 M	110	65
WGWEA 19B 94 25 H R	18.5	94:1	2.5	492	235	MSA 300 2 M	100	75
WGWEA 21 90 R MTAP	29	90:1	3	797	225	MTAP 300P	165	75
WGWEA 25 104 R MTAP	34.2	104:1	2.5	822	260	MTAP 300P	180	95

MTAP modification = 4 bolt fixing and 32mm input shaft to achieve maximum load torque

QCB Reference	Output torque	Ratio	Max Speed	Motor Speed		Motor ref	Pressure	Flow Rate
	KNm		rpm	Torque KNm	Speed rpm		bar	lpm
WGR 72	0.9	63:1	8	48	500	MSA 75 2 M	35	40
WGR 114	3	44:1	8	214	350	MSA 150 2 M	100	68

Note: The flow rates & pressures tabulated are calculated at maximum torque & speed.

AMM



MSA



MTAP



OCV





Other QCB products include

QCB Thermoplastic housings and inserts

with stainless steel bearing inserts for the food, beverage and chemical industry



QCB Stainless steel housings and inserts

for the food, beverage, chemical and fishing industries



QCB Split housings

for general industrial applications

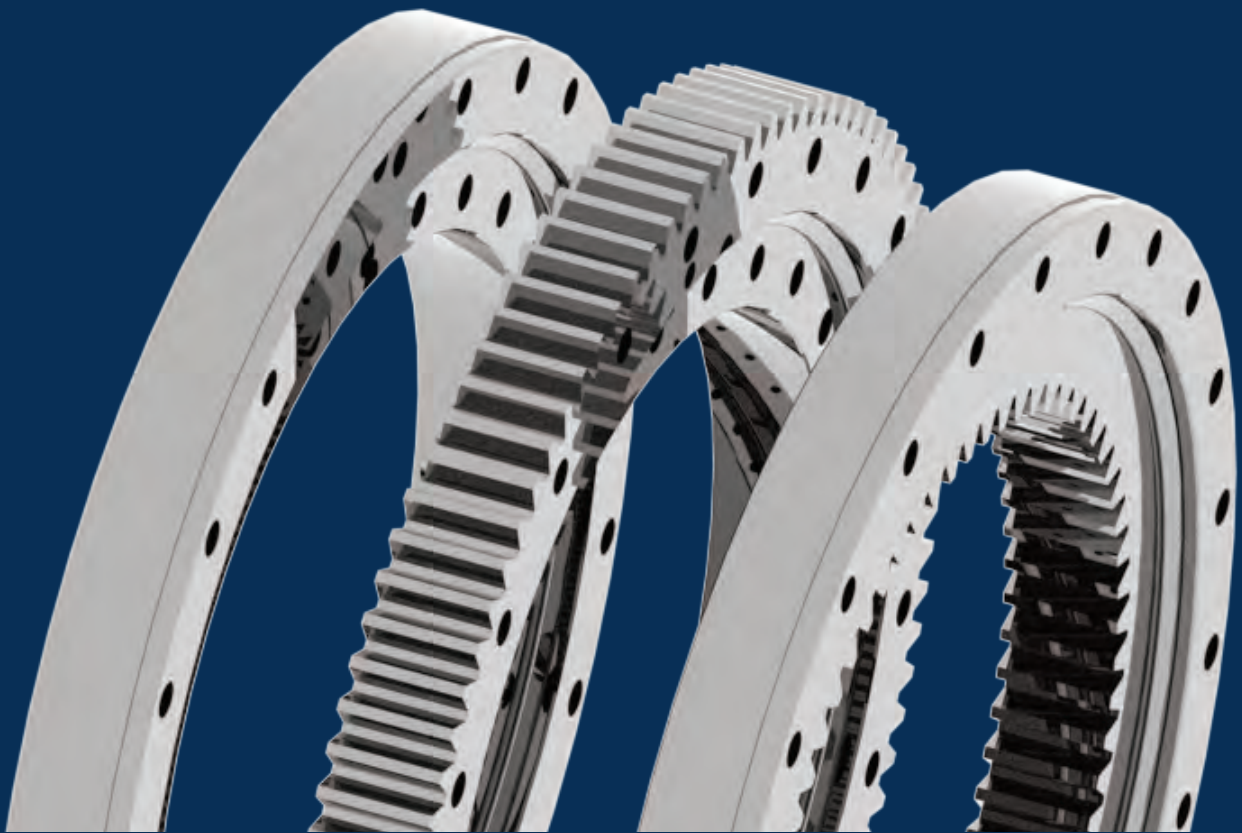


QCB Bearings

Ball bearings / Cylindrical roller bearings / Tapered roller bearings / Spherical roller bearings / Shaker screen bearings / Needle roller bearings



QCB – Turning Your World.....



UK Mainland & Export

Telford OEM Division
Orleton Lane, Wellington, Telford, TF1 2BG

Phone: +44 (0) 1952 222300
e-mail: oemsales@nbcgroup.co.uk

Northern & Southern Ireland

Belfast Division
20 Ravenshill Road, Belfast, BT6 8EA

Phone: 02890 732321
e-mail: belfast@nbcgroup.co.uk