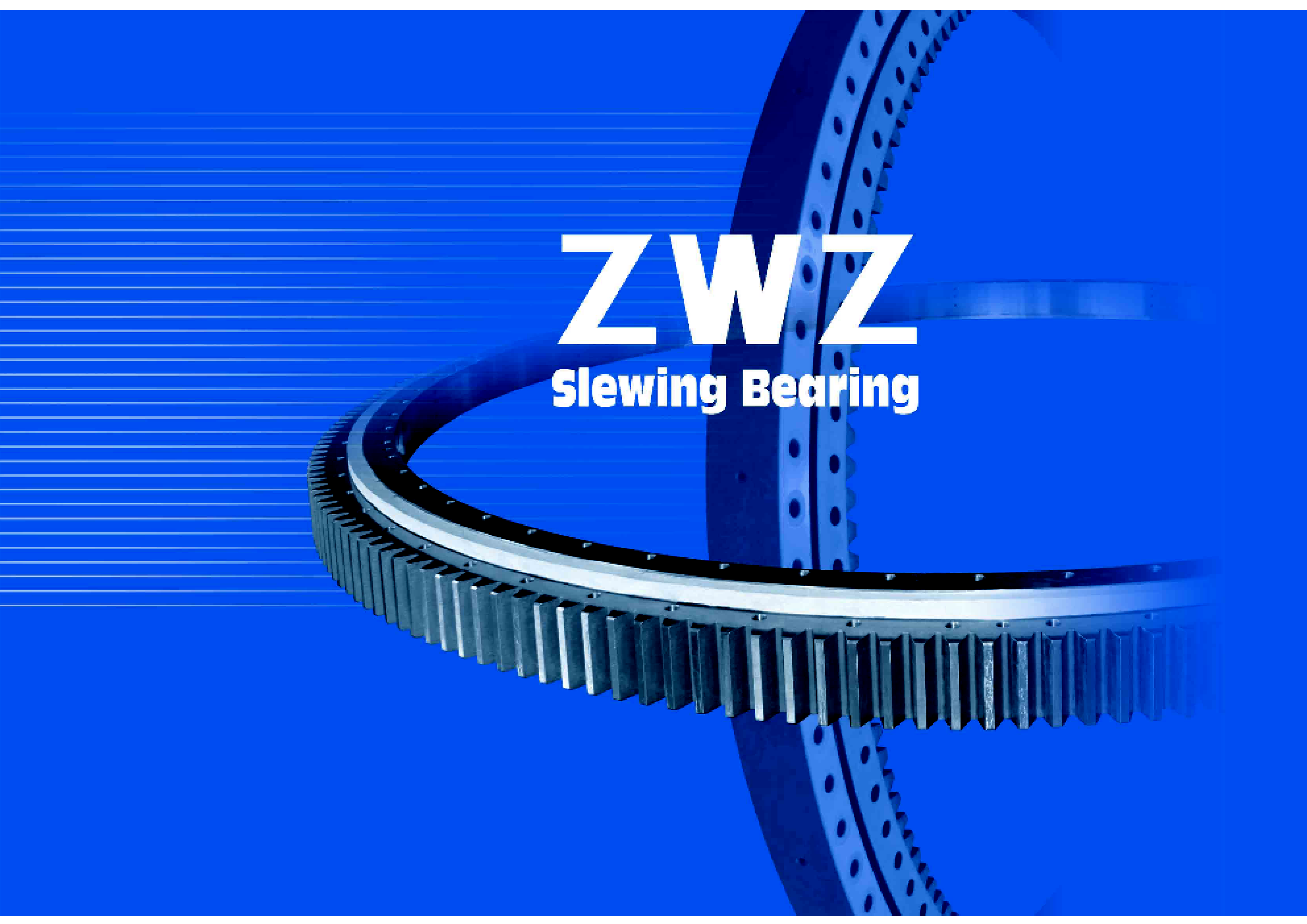




ZWZ

Slewing Bearing

ZWZ Slewing Bearing

- Production range: ID 100mm to OD 6300mm, the maximum tooth machining module is M30, tooth precision can be P7, hole positional precision less than 0.1mm, the maximum thread tapping diameter can be M60.
- Structure and type: Four point contact ball, double row different diameter (same diameter) ball, three row cylindrical roller, six row cylindrical roller, cross cylindrical roller, ball and cylindrical roller united type.
- Production capacity: 15,000 sets per year.

Application: Metallurgic, mining, engineering machine, port and offshore engineering, medical equipment and robot, wind power and etc.

Design

- Special material standards and forging techniques, reasonable internal streamline, higher yield strength and tensile strength after heat treating;
- Made FEA to the integral parts of bearing and its relative connecting pieces, assure bearing has sufficient strength and rigidity;
- Special sealing and lubrication system design, assure bearing sealing performance and good relubrication function.

■ National large size bearing engineering technology research center:

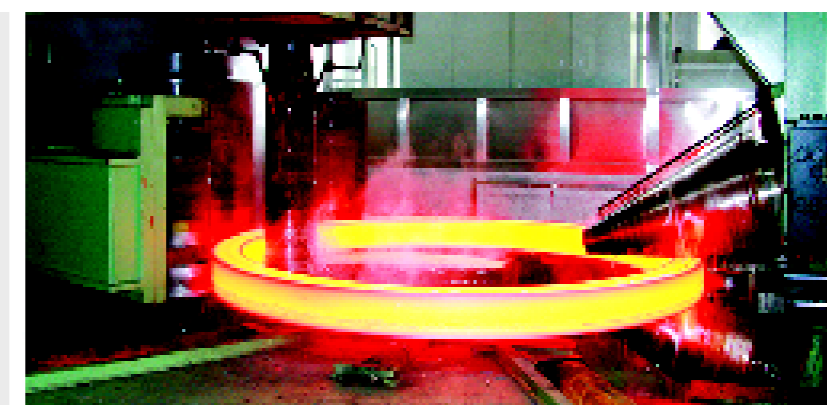
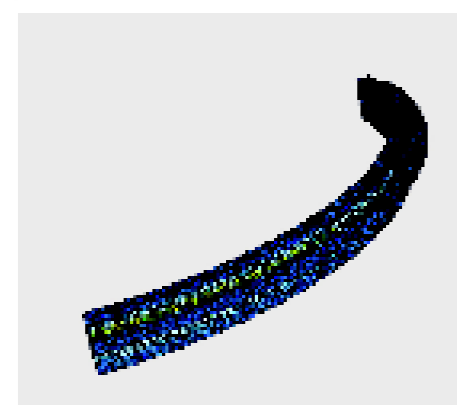
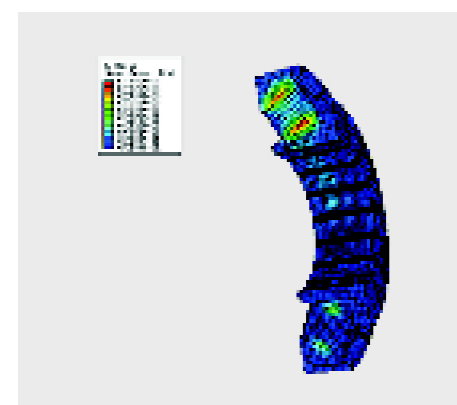
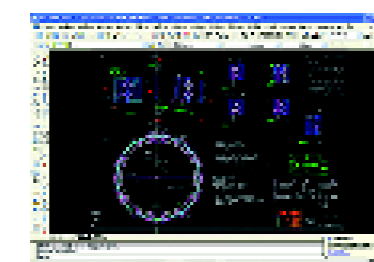
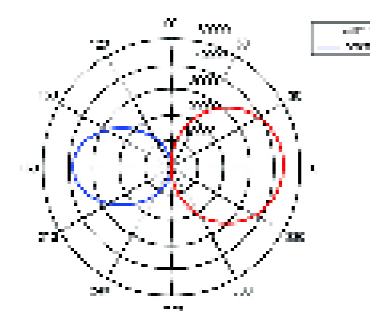
- 7 academicians of Chinese Academy of Engineering and 30 experts join in ZWZ R&D team;
- Collaboration with college and scientific research institute;
- 156 patented inventions and 68 scientific and technological achievements applied to bearing production;

■ Technical alliance with customers, offering personalized product R&D:

■ Special technology guidelines



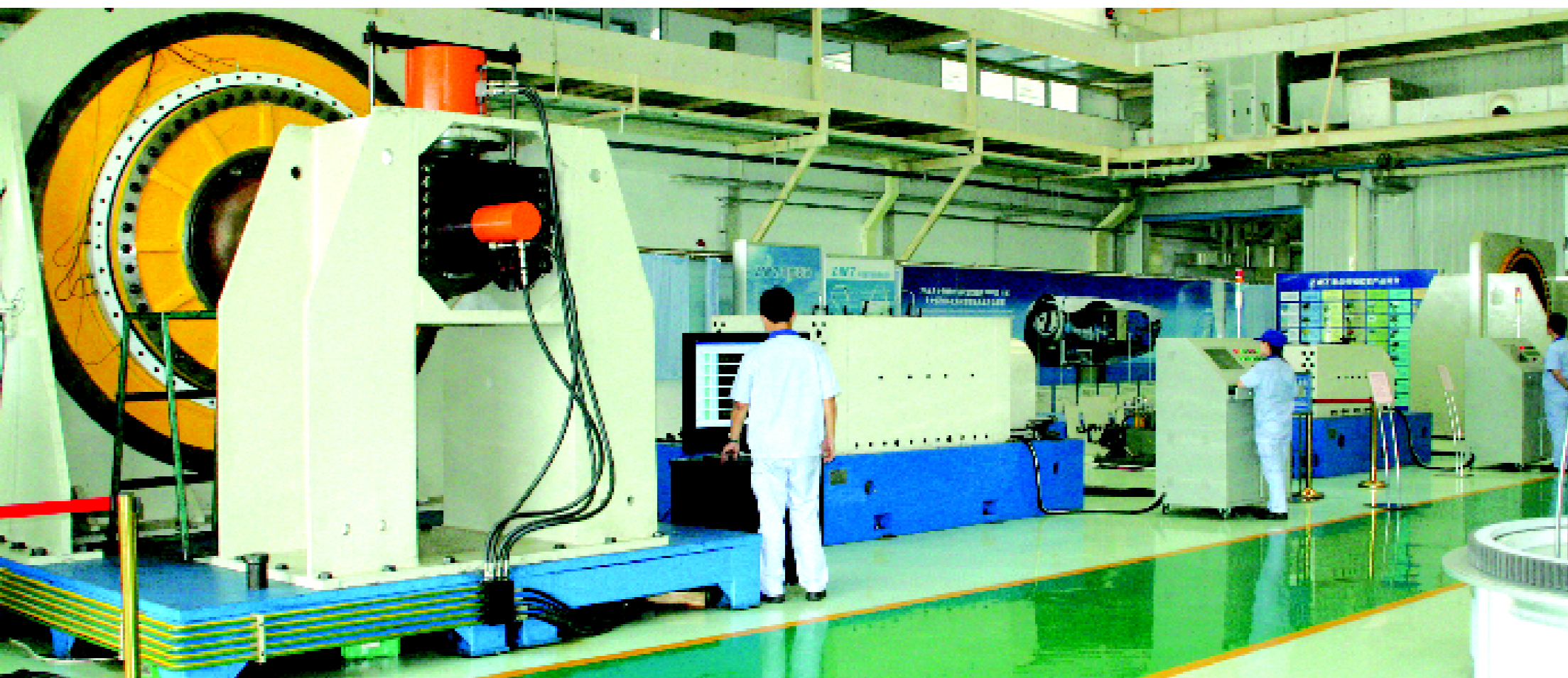
Pattern (applied to the bearing ring)





Test

- Slowing bearing test rig can test bearing performance like sealing, friction torque, vibration, temperature rise etc., and it can test bearing life under variable load and speed simulating to real working condition.

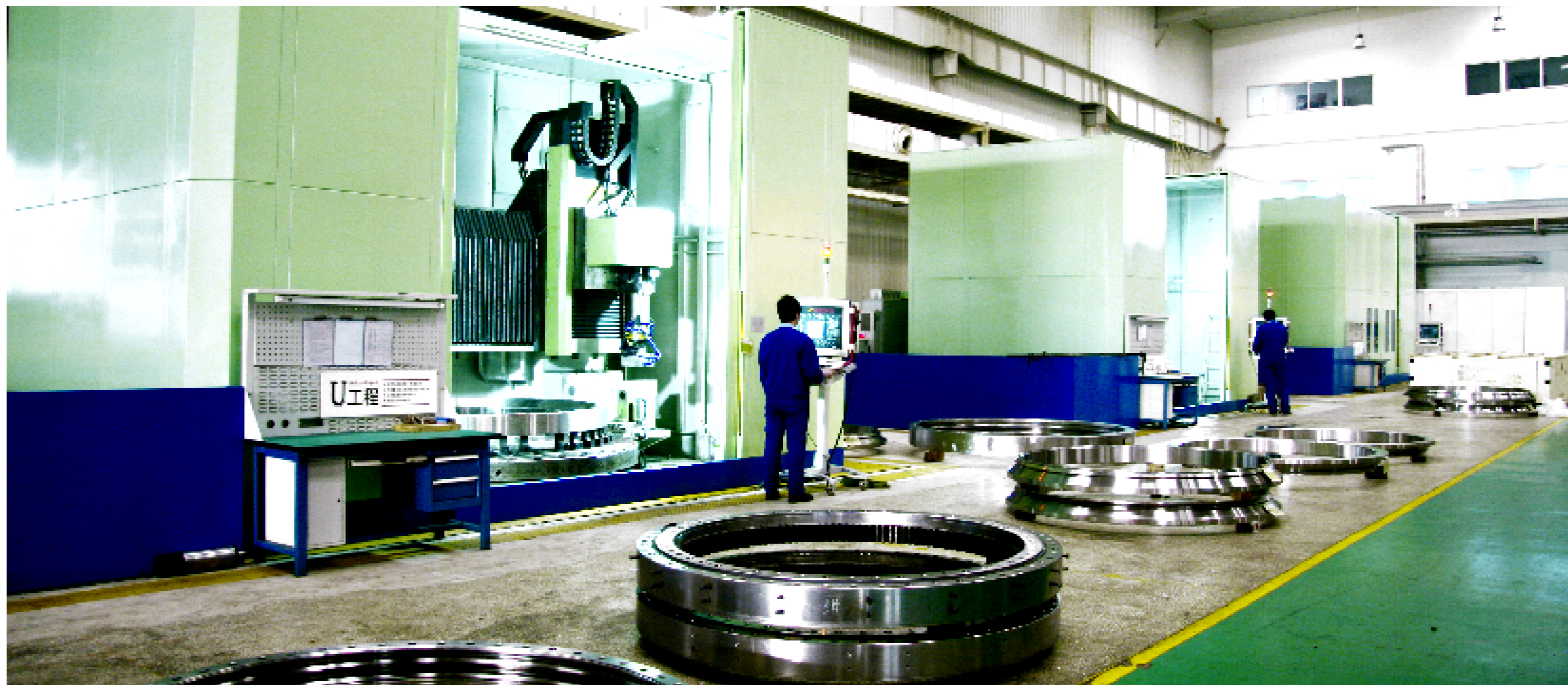


ZWZ



Production

- Fixed production line. Apply CNC double column vertical turning and grinding machine, high speed milling machine, CNC drilling production center, CNC boring machine. Heat treating hardness gradient curve is uniform, the hardening layer is well controlled for its gradient and depth, so the quenching crack and deformation are effectively solved.
- In process inspection and quality control assure zero defects. 100% inspection to hardness and hardening depth, 100% inspection to dimensional precision and 100% inspection to clearance.
- Products are trackable.



Product and application

Stacker-reclaimer

Application case:

1,200 tons per hour: Baosteel;
3,500 tons per hour: Qinghuangdao Port, Caofeidian Port;
4,500 tons per hour: Cupital Steel;
5,000 tons per hour: Fuxin coal mining, Zhoushan Port;
7,500 tons per hour: Yantai Port;

Product structure:

Three row cylindrical roller, four-point contact ball, applied to the stacker-reclaimer in metallurgy, mining, port etc.

Being develop above 10,000 tons per hour slewing bearings applied to stacker-reclaimer.



The On-site Installing of Baosteel 7500T Stacker-reclaimer

Metallurgical industry

Application case:

Blast furnace mud gun mechanism:
Simusteel Xi'an Machinery Co., Ltd

100 tons electric furnace lid:
Baosteel;

120 tons steel liquid pot:
Siemens VAI, Ansteel;

130 tons steel liquid pot:
German SMS, Wuhansteel;

180 tons steel liquid pot:
Jinan steel;

200 tons steel liquid pot:
Jiangsu Shasteel, Anyang steel;

280 tons steel liquid pot:
CISDI Engineering Yan steel project;

Product structure:

Three row cylindrical roller,
four-point contact ball.



The On-site Installing of Anyang Steel Converter in Deyuquan Jiao

Product and application

ZWZ

CT machine and robot

Application case

Radiotherapy facility:

Shanghai Yida Medical Machinery Co., Ltd

Gamma knife:

Northwest Machinery Co., Ltd

(Shanghai GammaStar Medical Group)

Robot:

Shenyang Xinsong Robot Co., Ltd

Product structure

Crossed cylindrical roller, four-point contact ball type

Being develop 120 rpm CT machinery slewing bearing



Wind turbine generator

Application case

2.0MW wind turbine yaw bearing and pitch bearing:

Beijing Guodian Union Power, Guangdong Mingyang Windpower Industry, CSRC Chenggong Haizhuang Windpower, Xiangtan Windpower, Haidong Tianwei Windpower Technology, Suzhou Tapu Windpower Technology, Taizhou Heavy Industry, Nuchang Xuji Windpower Technology, Xi'an Jinhe Power Technology.

2.3MW wind turbine yaw bearing and pitch bearing: Siemens Windpower Equipment (Shanghai) Co., Ltd.

3.0MW wind turbine yaw bearing and pitch bearing: Sinovent Windpower Technology Co., Ltd.

6.0MW wind turbine yaw bearing and pitch bearing:

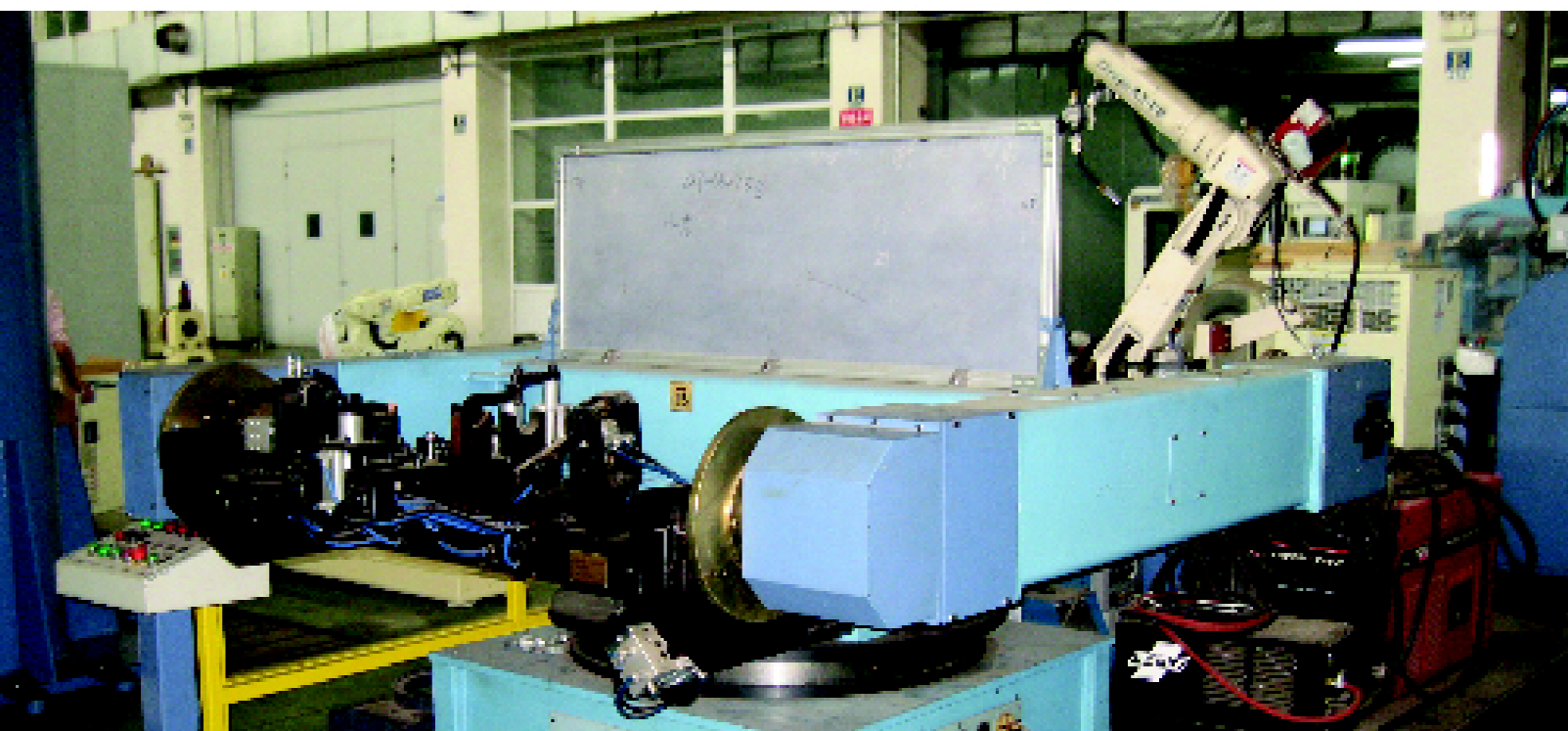
Beijing Guodian Union Power Technology.

Sinovent Windpower Technology.

Product structure:

Four-point contact ball type

Being develop 3.6MW wind turbine yaw bearing and pitch bearing for Siemens Windpower and develop 10MW Wind turbine yaw bearing and pitch bearing for Sinovent Windpower Technology.



Product and application

ZWZ

Port and ocean engineering

Application case

30 tons portal crane:

Shanghai ship manufacturer;

30 tons ship unloaders:

Japan Sumitomo Engineering
Service Co., Ltd

120 tons portal crane:

Hudong Zhonghua Shipbuilding
Co., Ltd

150 tons portal crane:

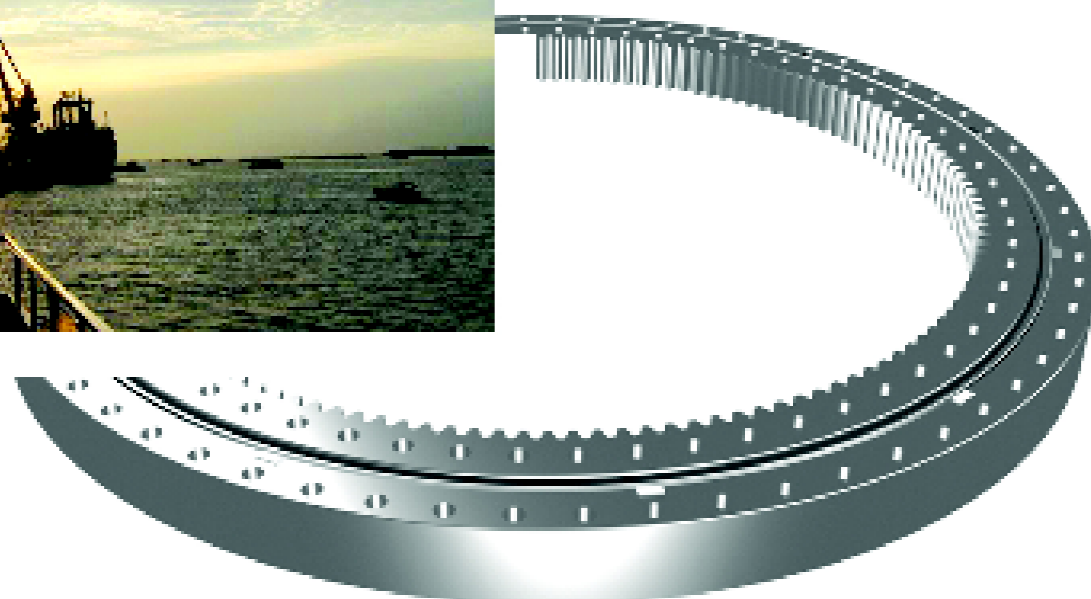
Hudong Zhonghua Shipbuilding Co., Ltd

800 tons floating crane:

India Essar Group

Product structure

Three row cylindrical roller type



Car crane and crawler crane

Application case

150 tons crawler crane:

Liaoning Fuwa Heavy Industry Machinery Co., Ltd;

400 tons crawler crane:

Liaoning Fuwa Heavy Industry Machinery Co., Ltd;

500 tons crawler crane:

Liaoning Fuwa Heavy Industry Machinery Co., Ltd;

750 tons crawler crane:

Dalian Heavy Industry Group,

180 tons car crane:

Liaoning Fuwa Heavy Industry Machinery Co., Ltd;

260 tons car crane:

Zoomlion Heavy Industry Science & Technology
Development Co., Ltd

350 tons car crane:

Zoomlion Heavy Industry Science & Technology
Development Co., Ltd

1,000 tons car crane:

Zoomlion Heavy Industry Science & Technology
Development Co., Ltd

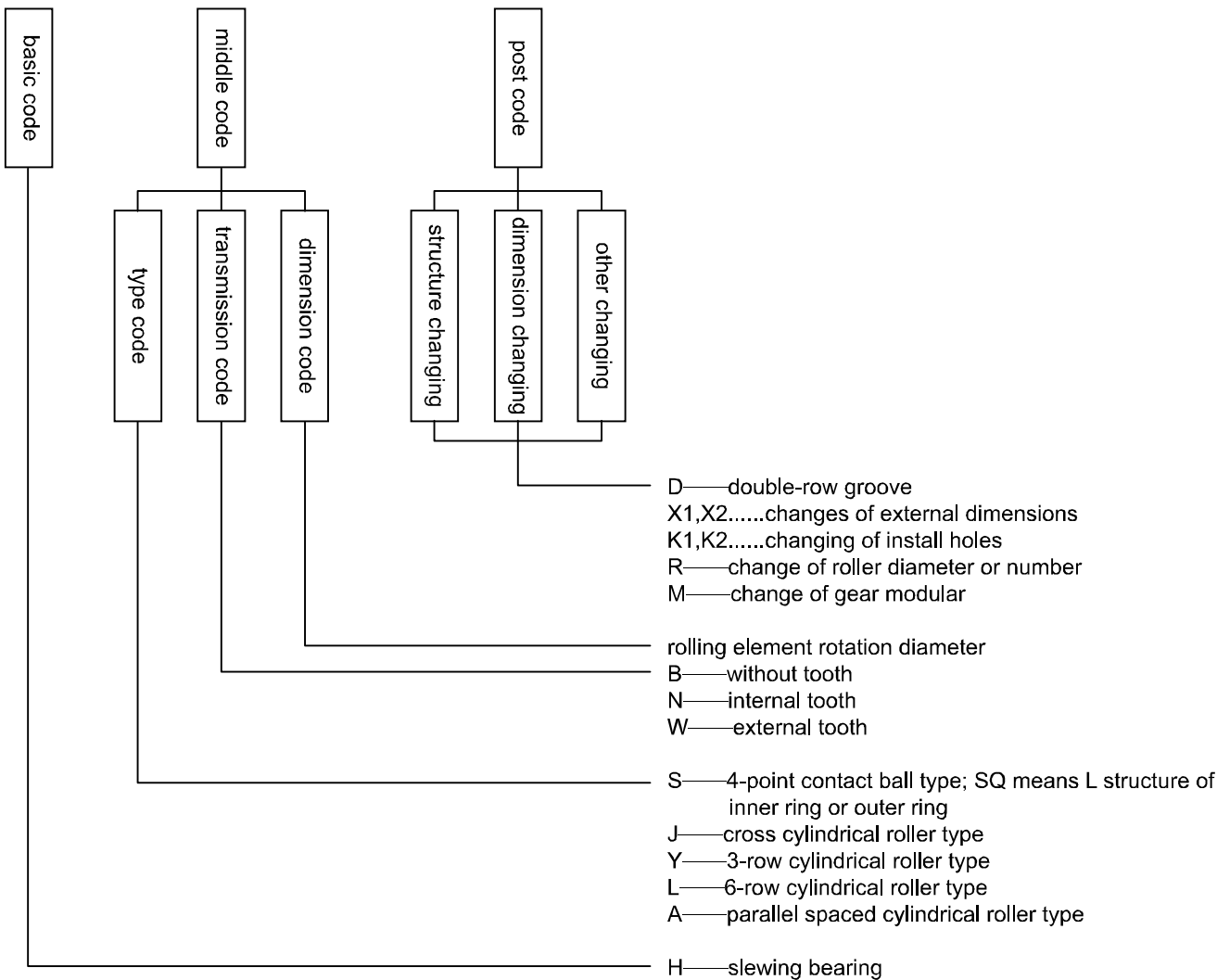
Product structure

Three row cylindrical roller, six-row cylindrical
roller type.



1. Coding of Slewing Bearing

ZWZ slewing bearing code consists of basic code, middle code and post code.



2. modeling of slewing bearing

As illustration above, slewing bearings have many types. By reasonable modeling, bearings' property can be sufficiently used in service.

2.1 Loading of slewing bearing

During running, slewing bearing bears combined forces of axial force F_a , radial force F_r and tilting moment M . Due to machines' different operation methods and structures, for different applications, above combined loading may different. Sometimes, only 2 forces work, whereas sometimes only one force works.

Generally, for slewing bearings, there are 3 installation methods:

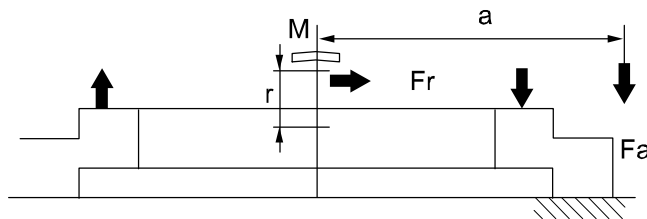


Chart 2.1-1 horizontal installation

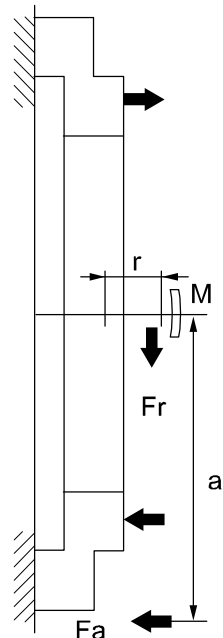


Chart2.1-1 vertical installation

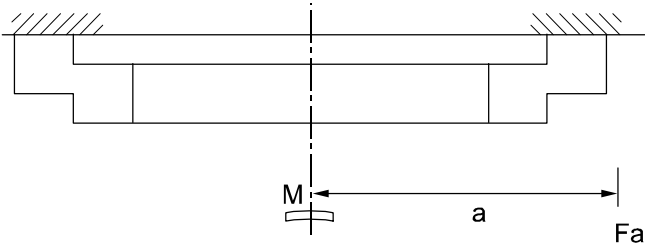


Chart 2.1-3 hung installation

2.2 Considerations of bearing modeling

• external dimension

External dimensions (ID, OD, assembly height) are pre-conditions for ensuring bearings' strength, rigidity, loading, service life, and installation requirements. Loading capacity and service life can be calculated through theoretical calculation. Safety requirements are shown in chart 1.

Generally, under certain loading, service life and safety property, roller bearings' external dimensions are smaller than those of ball bearings, and single row bearings' external dimensions are smaller than those of multirow bearings.

Regarding calculation of bearings' strength and rigidity, please consult with ZWZ.

• Loading capacity

For bearings whose external dimensions are more or less the same, ratings by the loading capacity, from high to low are: 6-row cylindrical roller bearings, 3-row cylindrical roller bearings, 4-point contact ball bearings, and cross roller bearings.

• Friction moment

Ball bearings are better than roller bearings; single row rollers are better than multirow rollers; the one with cage is better than that without cage. Regarding calculation of bearing starting moment and rotation moment, please consult with ZWZ.

• Installation precision requirements

For ball bearings, the contact is point contact. They bear small resistance during rotation. Production error, installation clearance and supporting base distortion have small effect to bearing internal contact of balls and raceway. Under condition of the same loading, point contact stress is higher than linear contact. So the loading capacity is smaller than that of linear contact.

For roller bearings, they are linear contact. Roller bearings' contact stress is lower than that of ball bearings. Their loading capacity requirement is higher than ball bearings'. Friction resistance caused by linear contact movement is higher than that of point contact. Meanwhile, for roller bearings, they have higher requirements on manufacture precision, installation precision, supporting base's manufacture precision and rigidity.

So, for occasion of insufficient supporting base rigidity and bad installation environment, roller bearings are not supposed to be used for good.

• Rigidity

The pre-condition of bearing loading calculation is to presume enough rigidity of the bearing. Bearings' rigidity refers to the elastic distortion caused by contact of rings and rolling elements under certain loading. Generally, rigidity of roller bearings is higher than that of ball bearings. Proper pre-tension (like minus clearance, etc.) and enhancing supporting base's rigidity can improve bearings' rigidity.

• Liability

Generally, slewing bearings bear high loads. Under preconditions of sufficient loading and service life, it should maintain certain safety parameter, so that bearings' liability during usage can be ensured.

2.3 Slewing bearing's loading curve

In product catalogue, each bearing has a loading curve chart. The curve can help customers choose bearing type. There are 2 type curves. One is static loading curve, which shows max. loading when bearing is still, and the other is limit loading curve of slewing bearing bolt (10.9 curve), which is determined when bolt holding length is 5 times bolt nominal diameter and the pre-tension is 70% that of bolt material yield limit.

2. modeling of slewing bearing

Chart 1 Bearing application safety factor

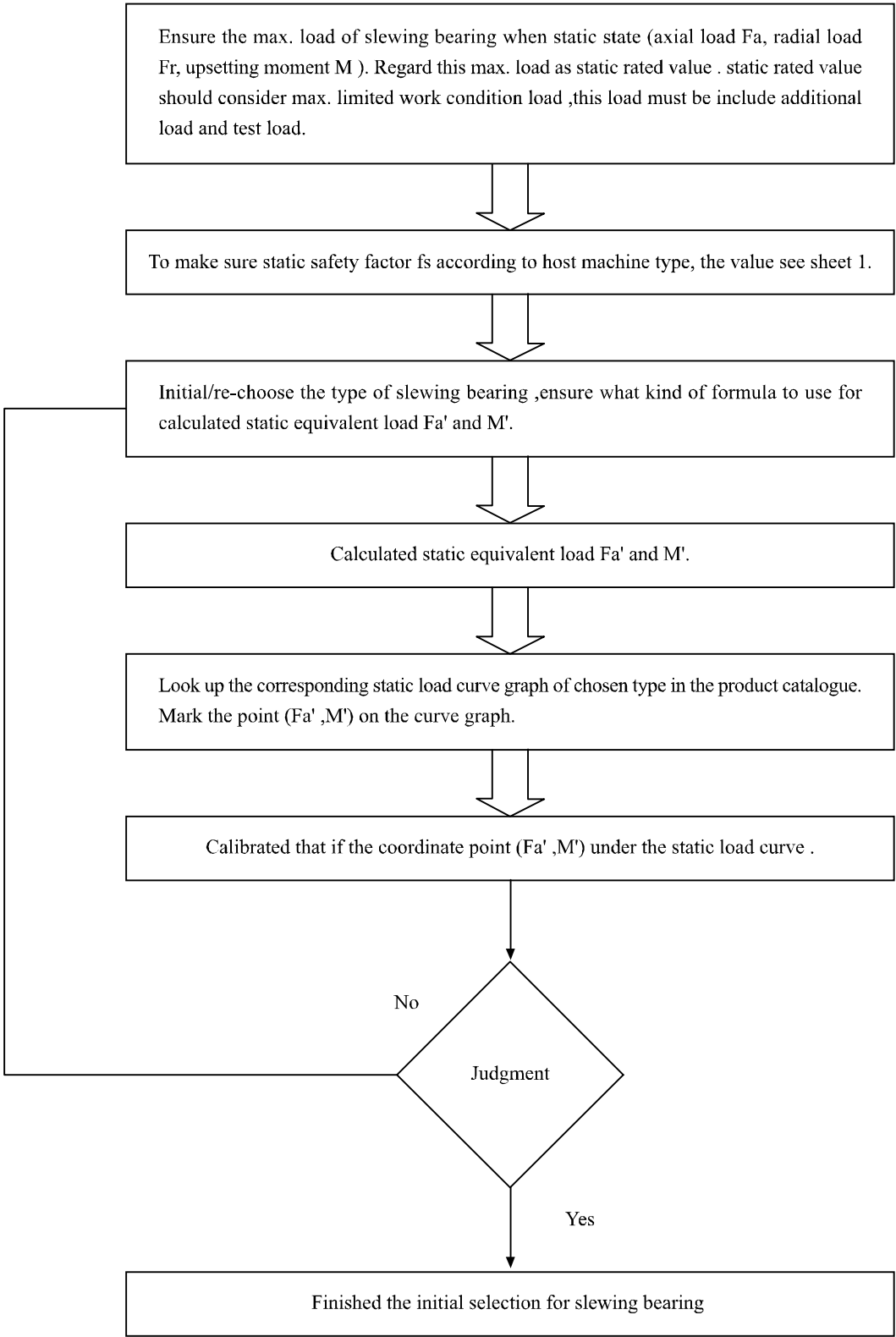
equipment			static load safety parameter fs	service life load parameter fl
Marine crane, Automobile crane, Grabbing deck crane, Turntable (continuous rotation is required during usage)			1.10	1.0
Tower crane for construction	bearings are installed on tower	Mf≤0.5M	1.25	1.0
		0.5M<Mf<0.8M		1.15
		Mf≥0.8M		1.25
	bearings are installed on base			1.0
Port gantry crane, marine crane				
crane for metallurgy factory				1.5
Automobile crane(grabbing type or heavy load manual operated) slewing crane (grab or magnet) Wheel crane (grab or magnet) Bridge crane (grab or magnet) Floating crane (grab or magnet)			1.45	1.7
Rope excavator Stacker reclaimer Belt cargo conveyor				2.15
Railway crane			1.0	For the slewing bearings are working under significant change conditions and rotating continously or intermittently, the dynamic life calculation is needful.
mini cargo conveyor			1.1	
pulling shovel			1.25	
hydraulic tunneller 4-point contact ball slewing bearings are adopted			1.25	
other slewing bearings are adopted Bucket capacity<1.5M³			1.45	
Bucket capacity*1.5M³			1.75	
ladle car			1.75	

Note: fl is the dynamic safety parameter. It is used considering dynamic loading curve (dynamic loading curve is not shown in this catalogue). It is conclusion from experience and experiments. If bearings are chosen according to service life, please contact with ZWZ technical department.

2.4 Slewing bearing type selection method

• Static type selection

1. Type selection calculation process flow



2. modeling of slewing bearing

2) Static equivalent load calculation method (see chart 2)

chart 2

Calculation method Slewing bearing Structure type	Type select according to static working conditi
Four-point contact ball slewing bearing (α =45°)	When $Fr \leq 0.44Fa$, $Fa' = (Fa + 2.3Fr) \cdot fs$ when $Fr > 0.44Fa$, please contact with ZWZ for Fa' calculation $M' = Mofs$
Double row angular contact thrust ball slewing bearing	When $Fr \leq 10\%Fa$, $Fa' = Fa \cdot fs$ when $Fr > 10\%Fa$, please contact with ZWZ for Fa' calculation $M' = Mofs$
Crossed cylindrical roller slewing bearing	When $Fr \leq 0.44Fa$, $Fa' = (Fa + 2.3Fr)ofs$ when $Fr \geq 0.44Fa$, please contact with ZWZ for Fa' calculation $M' = Mofs$
Three row cylindrical roller combined roller slewing bearing	$Fa' = Fa \cdot fs$ $M' = Mofs$ the radial load Fr is accommodated by one row of rollers which bear the radial load

2.4.2 Dynamic type selection

For continuous operation, high-speed rotation or other applications that have specific requirements for the lifespan of slewing bearings, please contact with ZWZ technical department.

2.4.3 Bolt load capacity check

- 1) Regard the limit load of slewing bearing as the load of selected bolts;
- 2) Check whether the load is below the bolt load curve;
- 3) If the bolt load capacity is insufficient, you can re-select slewing bearing or contact with ZWZ technical department.

2.5 Type selection parameter

In order to guarantee the bearing satisfy the application requirements, before the customer decide to choose ZWZ product, please fill in relevant information about type selection as per chart 3.

chart 3 Type selection sheet

Type selection sheet					
Machine name			Machine type		
Work condition	Axial load (kN)	Radial load (kN)	Tilting torque (kN.m)	Rotational speed (rpm)	Working time (%)
Load	Static				
	Max.:				
	Test:				
					
	Dynamic				
	max.:				
	test:				
	over load :				
.....					
Vibration, impact level		mild: moderate: severe:			
Use	lifetime (h)				
	install method	horizontal: seat type, hung type		vertical:	others:
	Use method	continuous: interval:		swing:	others:
	Rotating parts	Outer ring:		inner ringL	
	method of lubrication	GreaseL		oilL	othersL
	Seal	Machine SettingsL		Bearing SettingsL	
	Bearing drive circumferential force	N			
	environment condition	humidity(%):		temperature (℃):	contaminate:
	Bearing working temperature	℃			

3. Installation and maintenance

3.1 Assembly and store

- Slewing bearings should be assembled and disassembled carefully.
- Slewing bearings should be kept horizontally in dry, ventilated and flat area, it should be separated from chemical materials and other corrosive matters when stored.
- When several slewing bearings are overlapped with each other, at least three wooden pillows with equal height should be put amid each bearing along the circle direction, and the location of the upper and lower pillows should be identical.
- Lift installation should apply ringbolt and be dealt with horizontally. Impact is forbidden, especially in radial direction.

- ZWZ slewing bearings have already been anti-rusted when leaving the factory. In normal maintenance, and normally the preventive period is one year. If expired the anti-rust term, and need to be stored for longer, the slewing bearing should be anti-rusted again.

3.2 Requirements for assembling the holders

- There must be enough and equal radial and horizontal stability.
- After welding assembled holders, they should be heated to relieve the stress, and should be machined and reserve the fixed convex (concave) platform's flange plate, in order to avoid radial displacement.
- The flatness (including the angular deviation with horizontal plane) of assembled holders should be controlled in limits (see chart 4).

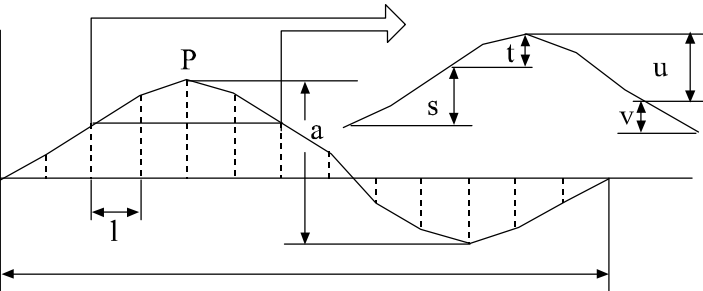
Coding of Slewing Bearing

Chart 4 Flatness of installing support bracket

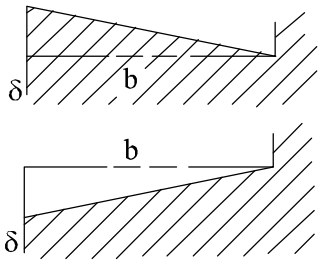
Raceway center diameter (mm)		Flatness(mm)		
Over	To	Single row four contact ball slewing bearing	Double-row ball slewing bearing	Cylindrical roller slewing bearing
~	1000	0.15	0.20	0.10
1000	1500	0.19	0.25	0.12
1500	2000	0.22	0.30	0.15
2000	2500	0.25	0.35	0.17
2500	4000	0.30	0.40	0.20
4000	6000	0.40	0.50	0.30
6000	8000	0.50	0.60	0.40

- The maximum flatness of the assembled holder is allowed just once in 180° , several wave type peaks is forbidden. See Picture 3-1.

Flatness of workbench face



The lean of workbench face of width at radial direction



πd Peripheral expansion

- Assembled holders should have good rigidity. With the biggest permissible load, flexural deformation should be controlled some limits from chart 5.

Chart 5

Raceway center diameter (mm)	-1000	>1000 - 1500	>1500 - 2000	>2000 - 2500	>2500 - 3000	>3000 - 3500	>3500 - 4000	>4000 - 4500	>4500 - 5000	>5000 - 5500	>5500 - 6000	>6000 - 6500	>7000 - 8000
Biggest bending of holder flatness (mm)	0.6	0.8	1.0	1.3	1.6	2.0	2.5	3.0	3.6	4.2	4.8	5.8	7.0

3.3 Requirements for bolt preload

Preload should be assured when tightening the bolt, in normal maintenance, the preload should be 70% of the yield limit. Please see chart 6 for preload moment or preload.

Chart 6 Bolt preload and preload moment

Bolt strength grade			8.8			10.9			12.9		
Yield limit N/mm ²			M≤16 640 M>16 660			940			1100		
Bolt Stress area Cross area Dia for thread for thread mm ² mm ²			Preload for Fasten moment Torsion assembling slot in theory Nm FM N MA Nm M'=0.9MA			Preload for Fasten moment Torsional moment assembling slot in theory Nm FM N MA Nm M'=0.9MA			Preload for Fasten moment Torsional moment assembling slot in theory Nm FM N MA Nm M'=0.9MA		
M5	14.2	12.7	6400	6.1	5.5	9300	8.9	8.0	10900	10.4	9.3
M6	20.1	17.9	9000	10.4	9.3	13200 13.9		15.5	15400	18	16.2
M8	36.6	32.8	16500	25	22.5	24200	37	33	28500	43	38
M10	58	52.3	26000	51	45	38500	75	67	45000	87	78
M12	84.3	76.2	38500	87	78	56000	120	117	66000	150	135
M14	115	105	53000	140	126	77000	205	184	90000	240	216
M16	157	144	72000	215	193	106000	310	279	124000	370	333
M18	193	175	91000	300	270	129000	430	387	151000	510	459
M20	245	225	117000	430	387	166000	620	558	194000	720	648
M22	303	282	146000	580	522	208000	830	747	243000	970	873
M24	353	353	168000	740	666	239000	1060	954	280000 1116		1240
M27	459	427	221000	1100	990	221000	1550	990	370000 1665		1850
M30	561	519	270000	1500	1350	270000	2100	1350	450000 2250		2500
M33	694	647	335000	Need bolt liquid compact and tense		480000	Need bolt Liquid compact and tense		560000	Need bolt liquid compact and tense	
M36	817	759	395000			560000			660000		
M39	976	913	475000			670000			790000		
M42	1120	1045	542000			7772000			904000		
M45	1300	1224	liquid			905000			1059000		
M48	1470	1377	635000			device			device		
M52	1760	1652	device			1018000			1191000		
M56	2030	1905	714000			1221000			1429000		
M60	2360	2227	857000			1408000			1648000		
			989000			1647000			1927000		
			1156000								

3.4 Bearing Assembly

Before assembling, the fitting surface and holder surface should be cleaned, no oil contamination, burr or any other matter.

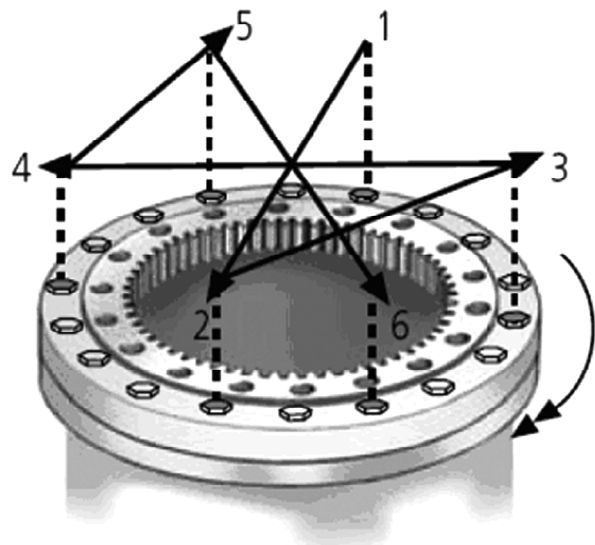
- Bearing fixed position

Slewing bearing rings have quenching soft zone, marked with "S", when assemble, the user should keep the soft zone in none load area or not frequently loaded area.

Coding of Slewing Bearing

• Bolt installation and tightening

Regarding the slewing bearings with gears, the none gear ring should be firstly bolt fastened. Before installing the bolt, put a little lubrication oil in the bolt thread, to make all bolts have equal friction resistance. Fasten the bolts should use "star" program method (see picture 3-2), then we can get equal fasten result in the circle. There're 3 circulates when tightening the bolt, each circulate respectively use 30%, 70% and 100% of the total tightening force. After each circulate, turn the ring several circles, then continue to the next circulate.



Picture 3-2 Bolt tightening method

• Gear vice lateral clearance adjustment

During installation for slewing bearing with gears, it needs moving the pinion to adjust the meshing clearance. There're the 3 points of biggest gear run out on the addendum (3 gears with green paint as mark), meshing clearance δ of this place is 0.03~0.04m (m is module of the gear), see picture 3-3 for inspection method. Turn the bearing more than one circulate, check the meshing clearance of other parts, meshing clearance should not lower than δ .



Picture 3-3 lateral clearance inspection

3.5 Bearing lubrication and maintenance

3.5.1 Bearing re-lubrication

The slewing bearing has been already filled with special lubrication grease according to the working condition when leaving the factory. During rotation, grease should be added, and grease should be full in the raceway each time. When filling the grease, bearing should be turned slowly, in order the grease is filled equally. See chart 7 for lubrication interval.

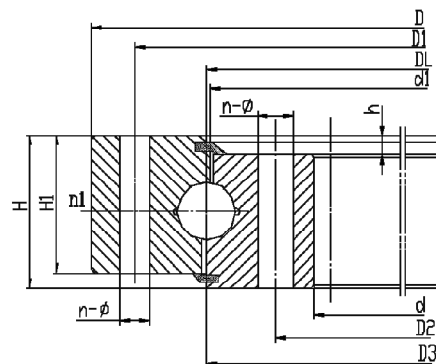
Chart 7 Re-lubrication period

Working condition	Lubrication interval
Running time each week h is less than 5hours	Half year
Running time each week h is more than 100hours	Re-lubricate every 2weeks
Running time each week h is between 5hours and 100hours	$T=-0.25h+27$ T: Re-lubrication interval, week h: Running time each week, hour

3.5.2 Bolt inspection

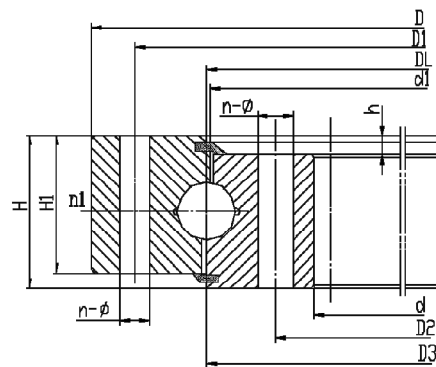
Preload for bolt must be ensured enough when slewing bearing is working. In first 100hours for the first bearing rotation, preload for bolt should be checked, and should be checked every 500hours in following rotation.

Slewing Bearing Type Catalogue



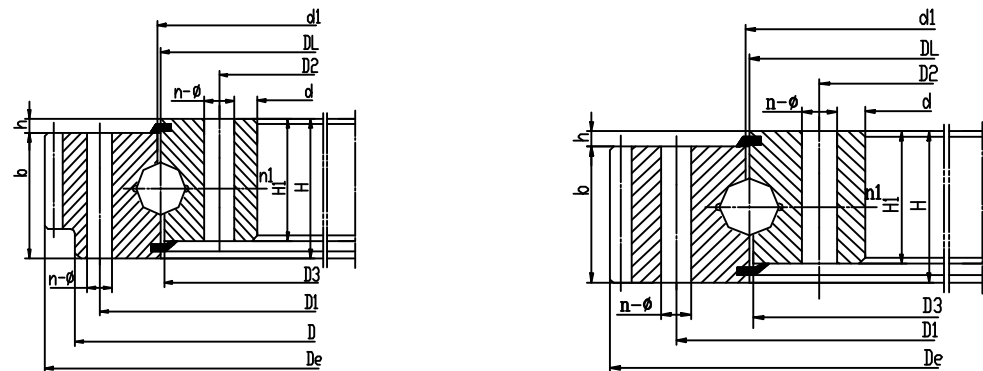
Remarks:
1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.
2. n-φ can be screw hole instead.Screw diameter M, Screw depth 2M.
3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

Designations	Boundary dimensions			Bolt hole diameter					Structure dimensions						Mass kg
	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	
	mm			mm		n	mm		mm				n1	mm	
HSB300	360	240	38	340	260	12	9		298	302	31	7	3	8	12.5
HSB344	420	266	55	390	294	8	18		343	345	45	10	12	16	25.7
HSB345	410	285	40	385	305	12	11		344	346	35	5	1	10	16.8
HSB411	496	338	55	460	364	12	18.5		412	410	45	10	2	16	33.4
HSB413	485.521	342.9	55.88	457.2	368.3	12	14		410.5	457.2	44.45	11.43	0	11	28.9
HSB414	496	338	55	460	364	12	18.5		412	410	45	10	2	16	33.5
HSB441	520.344	355.6	50.8	492.125	387.35	12	14.275		438.65	444	50.8	0	0	13	40.1
HSB445	558	332	72	514	377	20	22		446	444	63	9	3	30	67
HSB489	562	396	60	538	440	24	13.5		487.5	491	50	10	4	12	44.9
HSB500	600	398	80	566	434	20	18		499	501	70	10	4	16	78.2
HSB500X1	600	398	70	566	434	20	18		499	501	70	10	4	16	80.1
HSB530	590	460	40	570	488	12	9		527	533	40	0	0	8	30.4
HSB530A	590	460	40	570	488	12	9		527	533	40	0	0	8	30.8
HSB560	662	458	80	626	494	20	18		561	558	70	10	4	16	87.5
HSB592	670	517	55	640	544	12	18		590	594	46	9	4	16	47
HSB630	732	528	80	696	564	24	18		631	628	70	10	4	16	97.7
HSB710	812	608	80	776	644	24	18		708	711	70	10	4	16	116
HSB710X1	812	608	80	776	644	24	18		720	699	70	10	4	16	119
HSB710XA	812	608	80	776	644	24	18		708	711	70	10	2	16	118
HSB724	819.15	628.65	50	781.05	666.75	18	14.275		722	726	50.8	0	0	13	78
HSB741	857	635	56	820	662	16	18		739	743	45.5	10.5	1	16	86
HSB800	922	678	100	878	722	30	22		801	798	90	10	6	20	200
HSB844	916	775	56	890	789	20	13.5		838	850	46	10	4	12	56.5
HSB844X1	916	772	56	890	798	40	14.7		842	846	44.5	11.5	0	12	58
HSB844K	916	775	56	890	798	20	13		842	846	46	10	4	12	60.8
HSB872.5	1060	670	189	1000	744	20	33		859.5	885.5	154	10	6	30	575
HSB900	1022	778	100	978	822	30	22		901	898	90	10	6	20	225



Remarks:
1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.
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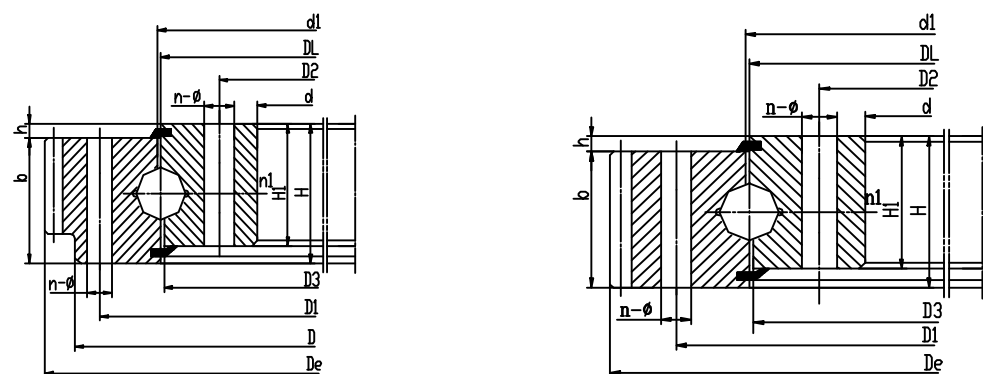
Designations	Boundary dimensions			Bolt hole diameter					Structure dimensions						Mass kg
	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	
	mm			mm		n	mm		mm				n1	mm	
HSB980	1090	870	86	1050	910	44	22		978	982	72	14	4	20	163
HSB1000	1138	878	100	1078	922	36	22		998	1138	90	10	6	20	270
HSB1016	1117.6	914.4	50.8	1079.5	955.675	24	17.457		1014	1018	50.8	0	0	11	116
HSB1078	1244	881	160	1180	945	24	26		1130	1080	105	10	4	24	577
HSB1094	1166	1022	56	1140	1048	48	14		1092.5	1095.5	44.5	11.5	4	12	78.2
HSB1120	1242	998	100	1198	1042	36	22		1121	1118	90	10	6	20	271
HSB1250	1390	1110	110	1337	1163	40	26		1252	1248	100	10	5	24	399
HSB1270	1395.4	1144.45	88.9	1352.55	1187.45	30	17.475		1268	1272	79.25	9.65	0	11	282
HSB1400	1540	1260	110	1487	1313	40	26		1398	1402	100	10	5	24	423
HSB1542	1660	1430	80	1620	1467	24	18		1538	1546	80	0	3	16	311
HSB1600	1740	1460	110	1687	1513	45	26		1602	1598	100	10	5	24	507
HSB1775	1927	1628	130	1875	1680	36	26		1807	1775	115	15	6	24	708
HSB1800	1940	1660	110	1887	1713	45	26		1798	1802	100	10	5	24	514
HSB1800X1	1940	1660	110	1887	1713	40	26		1790	1810	100	10	4	24	547
HSB2000	2178	1825	144	2110	1891	48	33		2040	1958	114	12	8	30	1012
HSB2021	2230	1805	165	2160	1880	36	33		2026	2016	150	15	4	30	1440
HSB2030	2230	1805	165	2160	1880	36	33		2035	2023	150	15	4	30	1440
HSB2135	2310	1905	180	2240	2030	36	23		2141	2131	160	20	4	20	1580
HSB2185	2360	1955	180	2290	2080	36	23		2190	2180	160	20	4	20	1620
HSB2220	2343.15	2095.5	87.725	2289.175	2133.6	52	17.463		2219.2	2218.3	73.152	14.573	0	11	442
HSB2240	2418	2065	144	2350	2131	48	33		2242	2238	132	12	4	30	1130
HSB2500	2678	2325	144	2610	2391	56	33		2498	2502	132	12	8	30	1270
HSB2645	2820	2474	225	2750	2540	60	32		2647	2643	160	65	12	30	1620
HSB2800	2978	2625	144	2910	2691	56	33		2802	2798	132	12	8	30	1484
HSB2944	3136	2751	135	3064	2823	60	33		2942	2946	125	28	6	30	1470
HSB3144	3271.825	3017.2	85.725	3213.1	3067.05	60	17.463		3141.5	3143.25	76.2	15.875	0	11	663
HSB3455	3600	3300	191	3560	3340	40	22		3455	3500	142	19	49	20	1740



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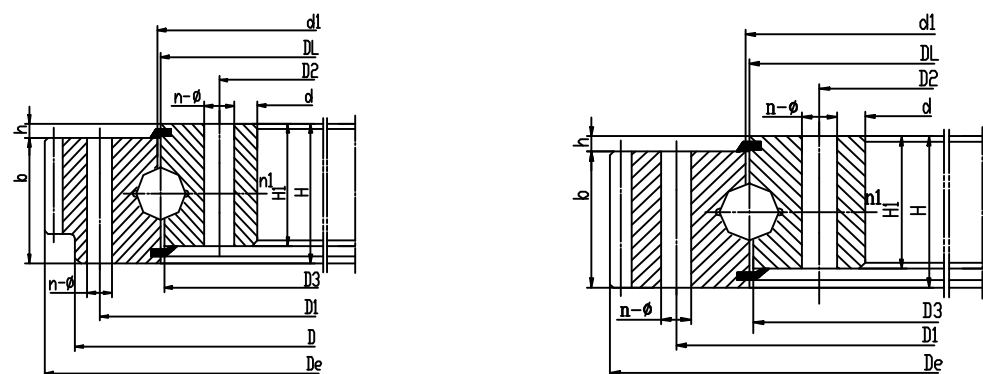
Designations	Boundary dimensions				Bolt hole diameter					Structure dimensions						Gear parameters				Mass
	De	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	m	Z	b	x	
	mm				mm			mm		mm					mm			mm		
HSW186	256	234	135	38	216	154	16	11		185	187	30	8	4	10	4	162	26	0	6.76
HSW400	528	493	307	70	457	343	24	18		396	400	60	10	2	16	6	86	50	0	53.8
HSW450	576	507	357	70	507	393	24	18		450	450	60	10	2	16	6	94	50	0	61.7
HSW500	625	600	398	80	566	434	20	18		499	501	70	10	4	16	5	123	60	0	85.4
HSW500M	628.8	602	398	80	566	434	20	18		501	498	70	10	4	16	6	102	60	+0.5	89
HSW548	679.386	655	425	80	620	475	12	18		548	548	71	9	3	16	4.5	147	56	0	110
HSW560	688.8	662	458	80	626	494	20	18		558.5	561.5	70	10	4	16	6	112	46	+0.5	95.2
HSW630	768	732	528	80	696	564	24	18		630	631	70	10	4	16	6	126	60	0	114
HSW644	744	744	572	56	680	600	24	14		642.5	645.5	44.5	11.5	4	12	6	122	44.5	0	50.1
HSW710	850.8	812	608	80	776	644	24	18		708	711	70	10	4	16	6	139	60	+0.5	69.1
HSW800	924		710	67	845	744	8	11		799	801	58	9	4	10	6	152	58	0	121
HSW800X1	966.4	922	678	100	878	722	30	22		801	798	90	10	6	20	8	118	80	+0.5	215
HSW862	1026.5	975	745	111	940	784	20	23		860	864	90	21	4	20	8	120	80	0	242
HSW900	1062.4	1022	778	100	978	822	30	22		901	898	90	10	6	20	8	130	80	-0.5	239
HSW944	1046.4	1046.4	873.5	56	985	900	44	13.5		941	947	45.5	10.5	4	12	8	129	45.5	0	77
HSW980	1110.4		887	63	1039	922	30	18		981	979	54	9	5	18	8	136	54	+0.5	124
HSW1000	1188	1000	878	100	1078	922	36	22		1000	1000	90	10	6	20	10	116	80	+0.5	288
HSW1000X1	1180	1120	876	90	1074	926	24	17.5		1000	1000	80	10	0	16	10	116	70	0	256
HSW1009	1180	1125	895	100	1085	935	10	22		1004.5	1008.5	85	15	4	20	10	116	75	0	262
HSW1052.5	1192.626	1160	930	80	1125	980	28	18		1052.5	1052.5	70	10	4	16	5	231	55	0	210
HSW1055	1200	1200	905	90	1116	945	30	22		1056.5	1053.5	71	19	6	20	10	118	71	0.0136	227
HSW1055X1	1200	1200	905	90	1116	945	30	22		1056.5	1053.5	71	19	6	20	10	118	71	0	227
HSW1094	1198.1	1198.1	1022	56	1135	1048	48	14		1092.5	1095.5	44.5	11.5	4	12	8	148	44.5	0	91.6
HSW1120	1278		1013	79	1183	1057	30	22		1121	1119	54	9	5	20	10	125	70	+0.5	182
HSW1120R	1300	1240	996	90	1194	1046	28	24		1121	1118	80	10	4	22	10	129	70	-0.5	272
HSW1120RM	1308	1240	996	90	1194	1046	28	24		1121	1118	80	10	4	22	12	108	70	-0.5	272
HSW1148	1314.1	1314.1	1040	80	1220	1080	30	17.5		1139	1157	70	10	0	16	10	125	70	0	225



Remarks:

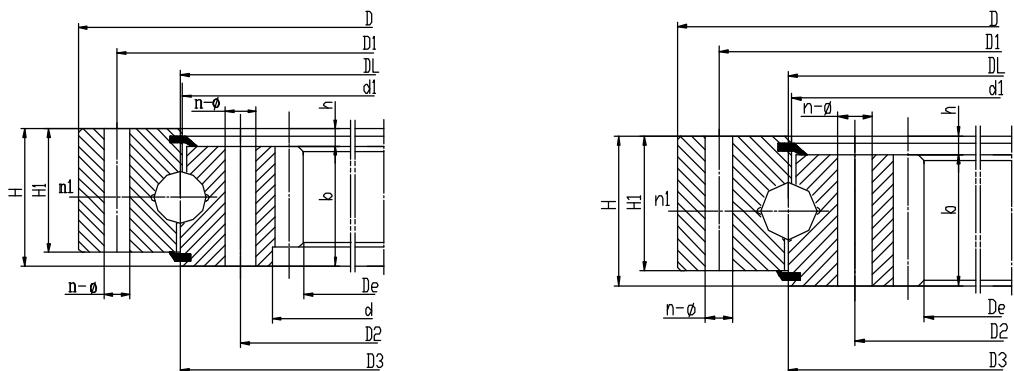
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Designations	Boundary dimensions				Bolt hole diameter					Structure dimensions						Gear parameters				Mass
	De	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	m	Z	b	x	
	mm				mm			mm		mm					mm			mm		mm
HSW1162	1320	1320	1045	93	1236	1084	36	21		1166.5	1158.5	77	16	4	20	10	130	77	0	276
HSW1180	1338	1338	1068	79	1248	1112	36	22		1181	1178	63	9	6	22	10	131	70	+0.5	227
HSW1220	1435.9	1365	1075	120	1310	1130	36	24		1221	1218	105	15	6	22	12	116	90	+1	488
HSW1250	1408		1143	79	1313	1187	36	22		1251	1249	54	9	6	22	10	138	70	+0.5	221
HSW1250R	1430	1370	1126	90	1324	1176	32	24		1251	1248	80	10	4	24	10	142	70	-0.5	302
HSW1250RM	1440	1370	1126	90	1324	1176	32	24		1251	1248	80	10	4	24	12	119	70	-0.5	309
HSW1278	1428.266	1391	1150	80	1356	1200	32	18		1278	1278	70	8	4	16	6	228	55	0	261
HSW1320	1497.6		1208	89	1388	1252	42	22		1321	1318	63	9	6	20	12	122	80	+0.5	298
HSW1358	1510	1510	1215	90	1426	1255	24	22		1354	1362	71	19	6	20	10	149	71	0	256
HSW1400	1584	1520	1276	90	1474	1326	36	24		1401	1398	80	10	6	22	12	131	70	-0.5	337
HSW1400M	1596	1520	1276	90	1474	1326	36	24		1401	1398	80	10	6	22	14	113	70	-0.5	347
HSW1400R	1608	1540	1258	102	1486	1314	36	26		1401	1398	90	12	6	24	12	133	80	-0.5	448
HSW1452	1600	1600	1305	90	1516	1345	48	22		1455	1454	71	19	6	20	10	158	71	0	253
HSW1452X1	1600	1600	1305	90	1516	1345	48	22		1456.5	1453.5	71	19	6	20	10	158	71	0	262
HSW1454	1600	1550	1305	102	1505	1345	24	22		1450	1458	78	17	3	20	10	158	65	0	282
HSW1500	1677.6		1388	89	1568	1432	48	22		1501	1498	63	9	6	20	12	137	80	+0.5	338
HSW1520	1690	1645	1390	91	1600	1440	22	20		1500	1521.5	91	14	4	18	5	336	47	0	347
HSW1540	1791.1	1720	1360	140	1660	1420	42	26		1540	1540	122	18	6	24	14	124	110	+1.15	926
HSW1600X	1803.2		1466	94	1682	1518	40	26		1601	1598	81	9	8	24	14	126	85	+0.5	479
HSW1600	1812	1740	1458	102	1686	1514	40	26		1601	1598	90	12	5	24	12	150	80	-0.5	528
HSW1600M	1820	1740	1458	102	1686	1514	40	26		1601	1598	90	12	5	24	14	129	80	-0.5	534
HSW1600R	1817.2	1740	1460	110	1687	1513	45	26		1602	1598	100	10	5	24	14	127	90	+0.5	584
HSW1618	1845	1845	1506	95	1728	1550	40	22		1617	1620	86	9	10	20	14	129	67	+0.5	425
HSW1800	1934.47	1902	1680	105	1848	1736	24	18		1801	1803	90	15	6	16	6	308	90	0	450
HSW1800M	2032	1940	1658	102	1886	1714	44	26		1802	1798	90	12	4	24	16	126	80	0.5	607
HSW1800R	2013.2	1940	1660	110	1887	1713	45	26		1802	1798	100	10	5	24	14	141	90	+0.5	652
HSW1824	2013.2	2013.2	1705	122	1896	1749	48	22		1824	1821	80	10	24	20	14	141	112	0.5	566



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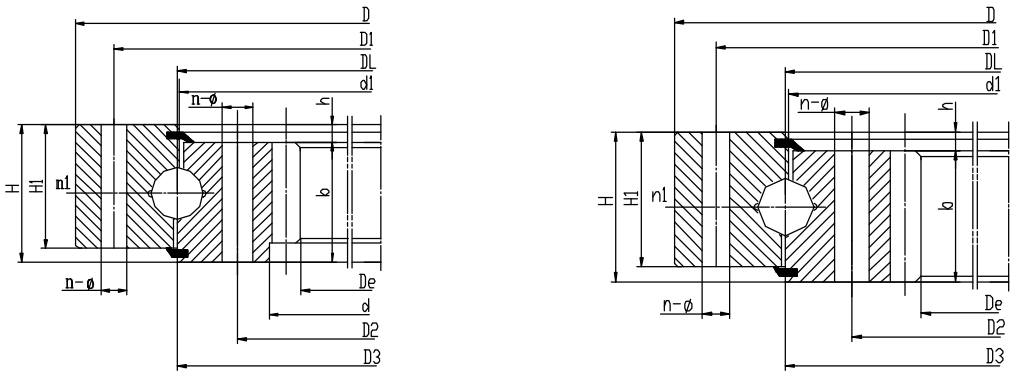
Designations	Boundary dimensions				Bolt hole diameter					Structure dimensions						Gear parameters				Mass
	De	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	m	Z	b	x	
	mm				mm			mm		mm					mm			mm		
HSW1900	2139.2		1729	109	2005	1795	36	33		1902	1898	99	9	9	30	14	150	100	+0.5	820
HSW1958	2152.81	2085	1820	90	2045	1870	36	18		1958	1958	70	20	4	16	8	258	60	0	496
HSW2000	2195.2	2129	1877	111	2068	1927	40	22		2001	2003	74	34	10	20	14	154	102	+0.5	599
HSW2000M	2264.4	2178	1825	144	2110	1891	48	33		2002	1998	132	12	8	30	18	123	120	+0.5	1169
HSW2028	2192.041	2150	1880	105	2110	1945	48	18		2026	2030	90	15	6	16	7.5	270	80	0	635
HSW2100	2263.047	2220	1970	105	2180	2020	36	22		2098	2102	90	15	6	20	8	270	80	0	700
HSW2130	2380.8		1959	109	2235	2025	48	33		2132	2128	99	9	8	30	16	146	100	+0.5	931
HSW2240	2382	2342	2130	80	2306	2174	48	18		2238	2242	70	10	6	16	6	395	30	0	388
HSW2240M	2498.4	2418	2065	144	2350	2131	48	33		2242	2238	132	12	8	30	18	136	120	+0.5	1294
HSW2355	2624.4	2541	2184	130	2460	2250	76	33		2357	2353	121	9	12	30	18	143	120	+0.5	1211
HSW2425	2568	2519	2325	72	2490	2365	40	18		2425	2425	63	9	8	16	10	255	55	0	450
HSW2500	2754	2660	2325	144	2610	2391	36	33		2498	2502	132	12	6	30	18	151	120	0	1462
HSW2500M	2776	2678	2325	144	2610	2391	56	33		2502	2498	132	12	8	30	20	136	120	+0.5	1509
HSW2645	2892.8		2474	109	2750	2540	60	33		2647	2643	99	9	12	30	16	178	100	+0.5	1142
HSW2800	3074.4	2978	2625	144	2910	2691	56	33		2802	2798	132	12	8	30	18	168	120	+0.5	1696
HSW2800M	3076	2978	2625	144	2910	2691	56	33		2802	2798	132	12	8	30	20	151	120	+0.5	1696
HSW3124	3456	3340	2940	183	3254	2994	72	26		3124	3124	133	43	20	24	24	141	110	+0.5	2280
HSW3150	3476	3376	2922	174	3286	3014	56	45		3152	3147	162	12	8	42	20	171	150	+0.5	2873
HSW3150M	3471.6	3376	2922	174	3286	3014	56	45		3152	3147	162	12	8	42	22	155	150	+0.5	2873
HSW3600	3972	3972	3400	220	3740	3460	72	32		3600	3604	205	60	20	30	24	163	160	0.25	3830



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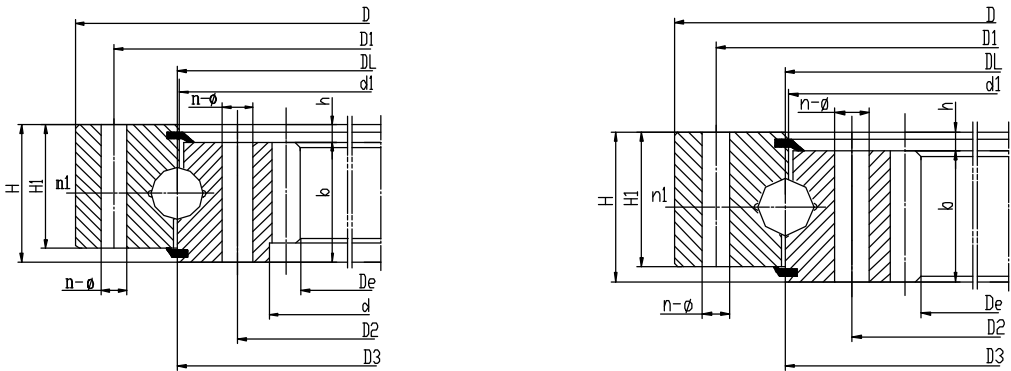
Designations	Boundary dimensions				Bolt hole diameter					Structure dimensions						Gear parameters				Mass
	De	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	m	Z	b	x	
	mm				mm			mm		mm					mm			mm		mm
HSN400	300	475		55	448	352	16	13.5		401	339	46	9	2	14	5	61	46	+0.5	33
HSN450	345	531		55	500	400	16	15.5		451	449	46	9	2	14	5	70	46	+0.5	38
HSN480	380	573	400	55	538	420	16	16		478.5	481.5	45	5	2	14	4	96	45	+0.5	49
HSN489	388	562	408	60	538	440	24	13.5		487.5	490.5	50	10	12	22	4	99	43	0	44.9
HSN500	367	602	398	80	566	434	20	18		501	498	70	10	4	16	5	74	60	+0.5	90
HSN500M	368.4	602	398	80	566	434	20	18		501	498	70	10	4	16	6	62	60	+0.5	90
HSN560	450	641		55	610	510	20	15.5		561	559	46	9	4	14	6	76	46	+0.5	51
HSN560R	427	662	458	80	626	494	20	18		561	558	70	10	4	16	5	86	60	+0.5	102
HSN560RM	428.4	662	458	80	626	494	20	18		561	558	70	10	4	16	6	72	60	+0.5	102
HSN567.5	471.5	640	496	55	615	520	20	13.5		567.5	567.5	45	10	1	12	5	96	44.5	0.15	49.2
HSN630	494.4	732	528	80	696	564	24	18		631	628	70	10	4	16	6	83	60	+0.5	116
HSN630M	491.2	732	528	80	696	564	24	18		631	628	70	10	4	16	8	62	60	+0.5	116
HSN710	594	797		55	762	658	24	18		711	709	46	9	4	16	6	100	46	+0.5	68
HSN710R	572.4	812	608	80	776	644	24	18		711	708	70	10	4	16	6	96	60	+0.5	132
HSN720	582	820	620	80	780	660	18	18		721	719	70	10	12	16	6	99	60	0	125
HSN800	635.2	922	678	100	878	722	30	22		801	798	90	10	6	20	8	80	80	+0.5	224
HSN800M	634	922	678	100	878	722	30	22		801	798	90	10	6	20	10	64	80	+0.5	224
HSN886	752	980		63	944	827	36	18		887	885	54	9	4	16	8	95	54	+0.5	111
HSN900	739.2	1022	778	100	978	822	30	22		901	898	90	10	6	20	8	93	80	+0.5	252
HSN900M	734	1022	778	100	978	822	30	22		901	898	90	10	6	20	10	74	80	+0.5	252
HSN1000	824	1122	878	100	1078	922	36	22		1001	998	90	10	6	20	10	83	80	+0.5	292
HSN1000M	820.8	1122	878	100	1078	922	36	22		1001	998	90	10	6	20	12	69	80	+0.5	292
HSN1077	930	1169		63	1134	1017	36	18		1078	1076	54	9	6	16	10	94	54	+0.5	140
HSN1050	888.6	1170	920	98	1125	975	40	22		1040	1052	80	10	2	20	8	150	60	0	248
HSN1086S	920	1200		90	1158	940	12	20		1086	1090	80	10	4	18	10	94	80	0	320
HSN1094C	984	1166		56	1140	1055	60	13.5		1095.5	1092.5	45	11	4	12	8	125	45	0	90.5
HSN1120	960	1232		79	1188	1052	36	22		1121	1118	63	9	6	20	10	97	70	+0.5	206



Remarks:

1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.
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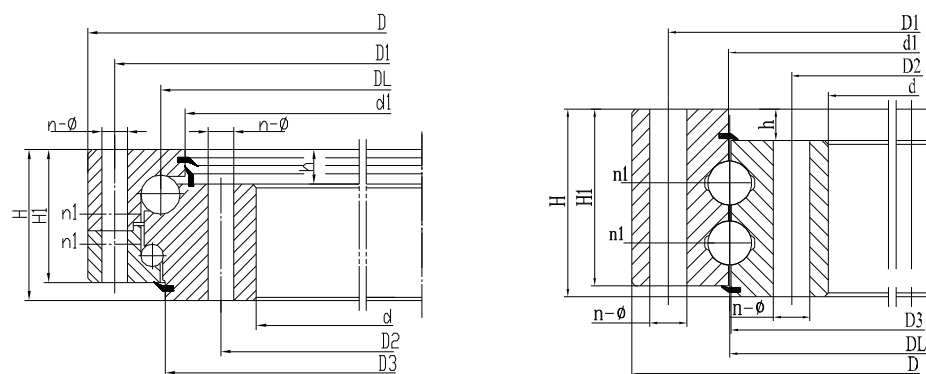
Designations	Boundary dimensions				Bolt hole diameter					Structure dimensions						Gear parameters				Mass
	De	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	m	Z	b	x	
	mm				mm			mm		mm					mm			mm		
HSN1120R	944	1242	998	100	1198	1042	36	22		1121	1118	90	10	6	20	10	95	80	+0.5	333
HSN1120RM	940.8	1242	998	100	1198	1042	36	22		1121	1118	90	10	6	20	12	79	80	+0.5	333
HSN1220	1017.3	1365		120	1310	1130	36	24		1219	1221	105	15	6	22	12	86	105	+0.35	474
HSN1225	1052	1360		98	1303	1147	40	26		1223	1227	80	10	4	24	10	106	88	+0.5	320
HSN1250	1090	1362		79	1318	1182	40	22		1251	1248	63	9	8	20	10	110	70	+0.5	231
HSN1250R	1048.8	1390	1110	110	1337	1163	40	26		1252	1248	100	10	5	24	12	88	90	+0.5	467
HSN1250RM	1041.6	1390	1110	110	1337	1163	40	26		1252	1248	100	10	5	24	14	75	90	+0.5	467
HSN1535	1278	1695		165	1636	1434	40	30		1533	1537	125	25	4	27	18	72	140	+0.5	930
HSN1400	1224	1512		89	1468	1332	44	22		1401	1398	63	9	11	20	12	103	80	+0.5	296
HSN1400R	1192.8	1540	1260	110	1487	1313	40	26		1402	1398	100	10	5	24	12	100	90	+0.5	529
HSN1400RM	1195.6	1540	1260	110	1487	1313	40	26		1402	1398	100	10	5	24	14	86	90	+0.5	529
HSN1405	1235	1526		122	1481	1358	40	26		1403	1407	97	12	3	24	14	90	110	0	434
HSN1500	1308	1634		94	1582	1418	40	26		1501	1498	81	9	8	24	12	110	85	+0.5	410
HSN1600	1428	1712		89	1668	1532	48	22		1601	1598	63	9	8	20	12	120	80	+0.5	334
HSN1600R	1391.6	1740	1460	110	1687	1513	45	26		1602	1598	100	10	5	24	14	100	90	+0.5	607
HSN1600RM	1382.4	1740	1460	110	1687	1513	45	26		1602	1598	100	10	5	24	16	87	90	+0.5	620
HSN1700	1498	1834		94	1782	1618	44	26		1701	1698	81	9	11	24	14	108	85	+0.5	475
HSN1728	1500.8	1905	1580	117	1810	1640	30	22/26				95	9	10	20/24	14	108	98	+0.5	701
HSN1800	1573.6	1940	1660	110	1887	1713	50	26		1798	1802	100	10	5	24	14	113	90	+0.5	649
HSN1895	1830	1960		115	1865	1925	36/34			1990	1825	64	30		24	5	368	39	0	258
HSN2000	1728	2178	1825	144	2110	1891	48	33		1998	2002	132	12	12	30	16	109	120	+0.5	1176
HSN2070	1910.2	2260		140	2180	1995	48			2066	2074	100	40	6	20	10	192	100	+0.5	862
HSN2211	2032	2335		124	2280	2144	64	22		2208	2214	80	20	6	20	14	147	100	0	633
HSN2240	1984	2411		109	2345	2135	48	33		2242	2238	99	9	8	30	16	125	100	+0.5	961
HSN2240R	1990.4	2418	2065	144	2350	2131	48	33		2242	2238	132	12	8	30	16	125	120	+0.5	1393
HSN2240RM	1987.2	2418	2065	144	2350	2131	48	33		2242	2238	132	12	8	30	18	111	120	+0.5	1393
HSN2249	2023.4	2410		132	2358	2140	36	22		2246	2252	122	9	4	20	14	146	123	0.245	1115



Remarks:

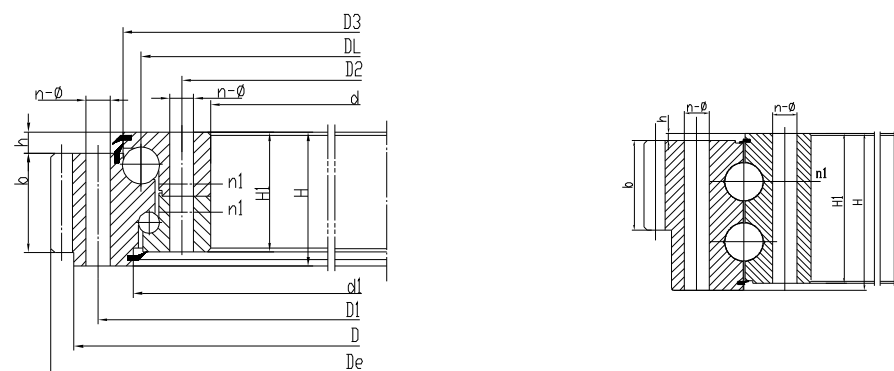
1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.
2. n-φ can be screw hole instead.Screw diameter M, Screw depth 2M.
3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

Designations	Boundary dimensions				Bolt hole diameter					Structure dimensions						Gear parameters				Mass
	De	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	m	Z	b	x	
	mm				mm			mm		mm					mm			mm		
HSN2335	2230	2404	2256	120	2270	2410	42/40			2470	2231.4	74	18		20	5	448	45	0	516
HSN2490	2240	2661		109	2595	2385	54	33		2492	2488	99	9	9	30	16	141	100	+0.5	1053
HSN2500	2239.2	2678	2325	144	2610	2391	56	33		2502	2498	132	12	8	30	18	125	120	+0.5	1580
HSN2500M	2228	2678	2325	144	2610	2391	56	33		2502	2498	132	12	8	30	20	112	120	+0.5	1580
HSN2660	2323	2880		178	2810	2510	60	39		2664	2656	161	17	4	36	18	131	161	0	2373
HSN2675	2590	2750	2616	119	2634	2744	48/38			2784	2600	72	26	3	20	5	520	45	0	431
HSN2786	2544.38	2942	2622	155	2890	2683	48	26		2784	2789	125	30	24	24	16	160	115	+0.5	1410
HSN2796	2515.2	3000	2590	152	2922	2670	72	39		2794	2798	134	20	12	36	16	158	131	+0.5	2033
HSN2800	2502	2978	2625	144	2910	2691	60			2809	2791	132	12	8	30	18	141	117	0	1776
HSN2840	2622.4	2990	2735	160	2945	2770	48	23		2835	2820	135	5	8	20	22	121	144	0	1442
HSN3150	2828	3376	2922	174	3286	3014	56	45		3152	3147	162	12	8	42	20	142	150	+0.5	2840
HSN3150M	2824.8	3376	2922	174	3286	3014	56	45		3152	3147	162	12	8	42	22	129	150	+0.5	2840
HSN3803	3564	3939	3651	105	3895	3711	60	22		3807	3799	82	10	15	20	18	199	90	+0.5	1430



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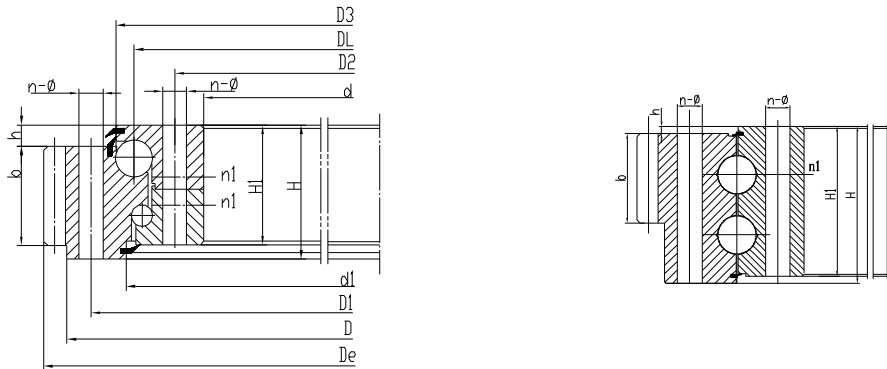
Designations	Boundary dimensions			Bolt hole diameter					Structure dimensions						Mass kg
	D	d	H	D1	D2	n	ϕ		D3	d1	H1	h	n1	M	
	mm			mm			mm		mm					mm	
HSB500D	616	384	106	580	420	20	18		482	477	96	26	4	16	121
HSB560D	676	444	106	640	480	20	18		543	537	96	26	4	16	136
HSB630D	746	514	106	710	550	24	18		613	607	96	26	4	16	152
HSB710D	826	594	106	790	630	24	18		692	687	96	26	4	16	172
HSB800D	942	658	124	898	702	30	22		777	771	114	29	6	20	284
HSB900D	1042	758	124	998	802	30	22		877	871	114	29	6	20	316
HSB1000D	1142	858	124	1098	902	36	22		977	971	114	29	6	20	349
HSB1120D	1262	978	124	1218	1022	36	22		1097	1091	114	29	6	20	394
HSB1250D	1426	1074	160	1374	1126	40	26		1215	1214	150	39	5	24	709
HSB1400D	1576	1224	160	1524	1272	40	26		1365	1364	150	39	5	24	787
HSB1600D	1776	1424	160	1724	1476	45	26		1565	1564	150	39	5	24	899
HSB1783D	1959	1606	166	1893	1672	60	33		1781	1785	158	26	10	30	974
HSB1800D	1976	1624	160	1924	1676	45	26		1765	1764	150	39	5	24	1018
HSB2000D	2215	1785	190	2149	1851	48	33		1965	1962	178	47	8	30	1586
HSB2240D	2455	2025	190	2389	2091	48	33		2206	2202	178	47	8	30	1789
HSB2500D	2715	2285	190	2649	2351	56	33		2465	2462	178	47	8	30	1990
HSB2800D	3015	2585	190	2949	2651	56	33		2765	2762	178	47	8	30	2243
HSB3150D	3428	2872	226	3338	2962	56	45		3104	3102	214	56	8	42	3762
HSB3550D	3828	3272	226	3738	3362	56	45		3504	3502	214	56	8	42	4272
HSB4000D	4278	3722	226	4188	3812	60	45		3954	3952	214	56	10	42	4828
HSB4500D	4778	4222	226	4688	4312	60	45		4454	4452	214	56	10	42	5465



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Designations	Boundary dimensions				Bolt hole diameter					Structure dimensions						Gear parameters				Mass
	De	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	m	Z	b	x	
	mm				mm			mm		mm					mm			mm		
HSW500D	644	616	384	106	580	420	20	18		523	518	96	26	4	16	5	126	60	+0.5	130
HSW500DM	646.8	616	384	106	580	420	20	18		523	518	96	26	4	16	6	105	60	+0.5	130
HSW560D	704	676	444	106	640	480	20	18		583	578	96	26	4	16	5	138	60	+0.5	146
HSW560DM	706.8	676	444	106	640	480	20	18		583	578	96	26	4	16	6	115	60	+0.5	147
HSW630D	790.8	746	514	106	710	550	24	18		653	648	96	26	4	16	6	129	60	+0.5	173
HSW630DM	790.4	746	514	106	710	550	24	18		653	648	96	26	4	16	8	96	60	+0.5	170
HSW710D	862.8	826	594	106	790	630	24	18		733	728	96	26	4	16	6	141	60	+0.5	190
HSW710DM	862.4	826	594	106	790	630	24	18		733	728	96	26	4	16	8	105	60	+0.5	187
HSW800D	982.4	942	658	124	898	702	30	22		829	823	114	29	6	20	8	120	80	+0.5	305
HSW800DM	988	942	658	124	898	702	30	22		829	823	114	29	6	20	10	96	80	+0.5	307
HSW900D	1086.4	1042	758	124	998	802	30	22		929	923	114	29	6	20	8	133	80	+0.5	349
HSW900DM	1088	1042	758	124	998	802	30	22		929	923	114	29	6	20	10	106	80	+0.5	348
HSW1000D	1198	1142	858	124	1098	902	36	22		1029	1023	114	29	6	20	10	117	80	+0.5	396
HSW1000DM	1197.6	1142	858	124	1098	902	36	22		1029	1023	114	29	6	20	12	97	80	+0.5	391
HSW1120D	1318	1262	978	124	1218	1022	36	22		1148	1143	114	29	6	20	10	129	80	+0.5	445
HSW1120DM	1317.6	1262	978	124	1218	1022	36	22		1148	1143	114	29	6	20	12	107	80	+0.5	439
HSW1250D	1497.6	1426	1074	160	1374	1126	40	26		1286	1282	150	39	5	24	12	122	90	+0.5	740
HSW1250DM	1495.2	1426	1074	160	1374	1126	40	26		1286	1282	150	39	5	24	14	104	90	+0.5	774
HSW1400D	1641.6	1576	1224	160	1524	1272	40	26		1440	1423	150	39	5	24	12	134	90	+0.5	803
HSW1400DM	1649.2	1576	1224	160	1524	1272	40	26		1436	1432	150	39	5	24	14	115	90	+0.5	878
HSW1600D	1845.2	1776	1424	160	1724	1476	45	26		1636	1635	150	39	5	24	14	129	90	+0.5	995
HSW1600DM	1852.8	1776	1424	160	1724	1476	45	26		1636	1635	150	39	5	24	16	113	90	+0.5	1003
HSW1800D	2060.8	1976	1624	160	1924	1676	45	26		1840	1823	150	39	5	24	16	126	90	+0.5	1208
HSW1800DM	2060.8	1976	1624	160	1924	1676	45	26		1836	1835	150	39	5	24	16	126	90	+0.5	1151
HSW2000D	2300.8	2215	1785	190	2149	1851	48	33		2038	2035	178	47	8	30	16	141	120	+0.5	1794
HSW2000DM	2300.4	2215	1785	190	2149	1851	48	33		2038	2035	178	47	8	30	18	125	120	+0.5	1780
HSW2240D	2540.8	2455	2025	190	2389	2091	48	33		2278	2275	178	47	8	30	16	156	120	+0.5	2017

Outer-tooth Four Point Contact Ball Slewing Bearings



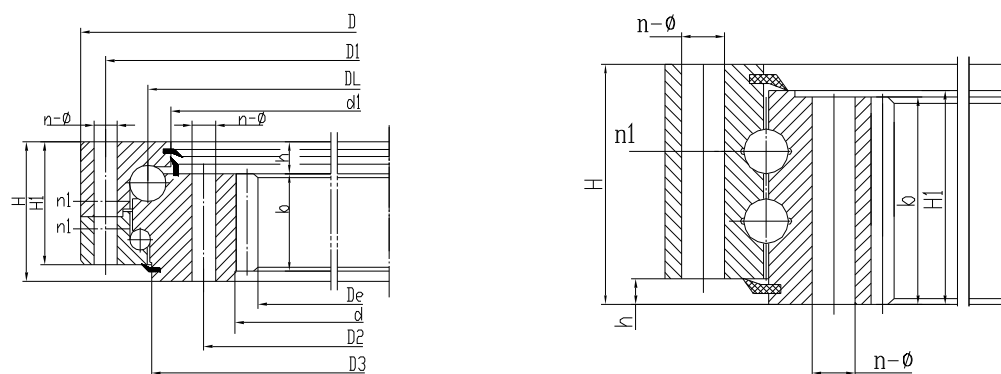
Remarks:

1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.

2. n- ϕ can be screw hole instead. Screw diameter M, Screw depth 2M.

3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

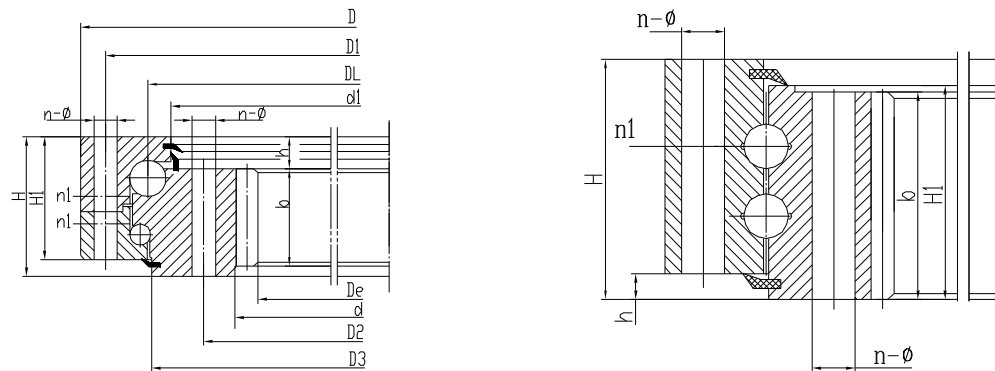
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Remarks:
1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.
2. n-φ can be screw hole instead.Screw diameter M, Screw depth 2M.
3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

Designations	Boundary dimensions				Bolt hole diameter					Structure dimensions						Gear parameters				Mass
	De	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	m	Z	b	x	
	mm				mm			mm		mm					mm			mm		
HSN500D	257	616	384	106	580	420	20	18		482	477	96	26	4	16	5	72	60	+0.5	126
HSN500DM	350.4	616	384	106	580	420	20	18		482	477	96	26	4	16	6	59	60	+0.5	128
HSN560D	417	676	444	106	640	480	20	18		542	537	96	26	4	16	5	84	60	+0.5	143
HSN560DM	410.4	676	444	106	640	480	20	18		542	537	96	26	4	16	6	69	60	+0.5	144
HSN630D	482.4	746	514	106	710	550	24	18		612	607	96	26	4	16	6	81	60	+0.5	160
HSN630DM	475.2	746	514	106	710	550	24	18		612	607	96	26	4	16	8	60	60	+0.5	162
HSN710D	560.4	826	594	106	790	630	24	18		692	687	96	26	4	16	6	94	60	+0.5	183
HSN710DM	555.2	826	594	106	790	630	24	18		692	687	96	26	4	16	8	70	60	+0.5	184
HSN762D	640	850	640	93	820	705	36	17.5		760	764	83	10	4	16	8	81	83	0.5	140
HSN800D	619.2	942	658	124	898	702	30	22		777	771	114	29	6	20	8	78	80	+0.5	300
HSN800DM	614	942	658	124	898	702	30	22		777	771	114	29	6	20	10	62	80	+0.5	301
HSN900D	715.2	1042	758	124	998	802	30	22		877	871	114	29	6	20	8	90	80	+0.5	337
HSN900DM	714	1042	758	124	998	802	30	22		877	871	114	29	6	20	10	72	80	+0.5	335
HSN1000D	814	1142	858	124	1098	902	36	22		977	971	114	29	6	20	10	82	80	+0.5	371
HSN1000DM	796.8	1142	858	124	1098	902	36	22		977	971	114	29	6	20	12	67	80	+0.5	383
HSN1120D	924	1262	978	124	1218	1022	36	22		1097	1091	114	29	6	20	10	93	80	+0.5	429
HSN1120DM	916.8	1262	978	124	1218	1022	36	22		1097	1091	114	29	6	20	12	77	80	+0.5	432
HSN1250D	1012.8	1426	1074	160	1374	1126	40	26		1215	1214	150	39	5	24	12	85	90	+0.5	746
HSN1250DM	1013.6	1426	1074	160	1374	1126	40	26		1215	1214	150	39	5	24	14	73	90	+0.5	741
HSN1400D	1156.8	1576	1224	160	1524	1272	40	26		1365	1364	150	39	5	24	12	97	90	+0.5	850
HSN1400DM	1153.6	1576	1224	160	1524	1272	40	26		1365	1364	150	39	5	24	14	83	90	+0.5	850
HSN1600D	1349.6	1776	1424	160	1724	1476	45	26		1565	1564	150	39	5	24	14	97	90	+0.5	979
HSN1600DM	1350.4	1776	1424	160	1724	1476	45	26		1565	1564	150	39	5	24	16	85	90	+0.5	972
HSN1800D	1545.6	1976	1624	160	1924	1676	45	26		1765	1764	150	39	5	24	14	111	90	+0.5	1117
HSN1800DM	1542.4	1976	1624	160	1924	1676	45	26		1765	1764	150	39	5	24	16	97	90	+0.5	1116
HSN2000D	1702.4	2215	1785	190	2149	1851	48	33		1965	1962	178	47	8	30	16	107	120	+0.5	1733
HSN2000DM	1699.2	2215	1785	190	2149	1851	48	33		1965	1962	178	47	8	30	18	95	120	+0.5	1732

Inner-tooth Double-row Angular Contact Ball Slewing Bearings



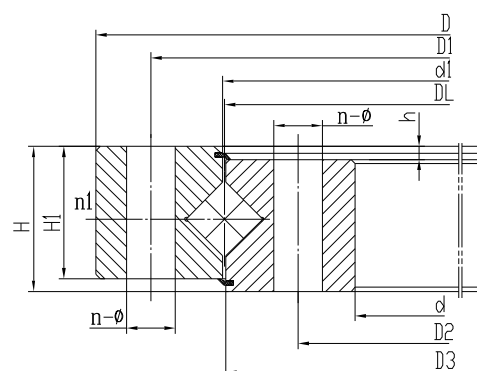
Remarks:

1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.

2. $n-\phi$ can be screw hole instead. Screw diameter M, Screw depth 2M.

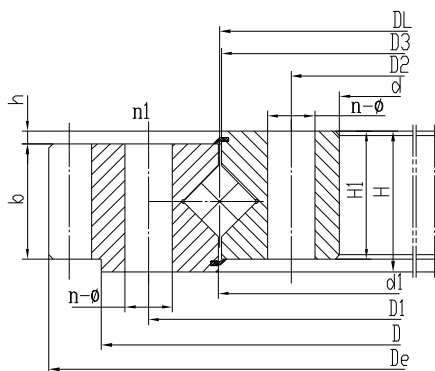
3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

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Remarks:
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2. n-φ can be screw hole instead.Screw diameter M, Screw depth 2M.
3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

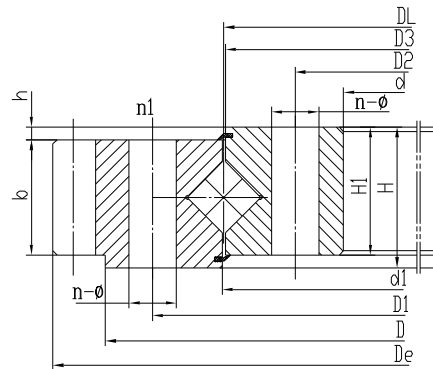
Designations	Boundary dimensions			Bolt hole diameter					Structure dimensions						Mass kg
	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	
	mm			mm			mm		mm					mm	
HJB430	480	380	26	462	398	20			429.4	430.6	26	0	2	8/10	12.2
HJB440.3	480	400	35		439	12	4.5		439	441.5	35	0	4	3	14.7
HJB500	602	398	75	566	434	20	18		498	502	65	10	4	16	77
HJB550/P4 - NTW	600	500	40		516.5	12	4.3		548	552	40	0	4	6	26.1
HJB560	662	458	75	626	494	20	18		558	562	65	10	4	16	87
HJB630	732	528	75	696	564	24	18		628	632	65	10	4	16	95
HJB640	700	600	40	683		10			639	641	40	10	2	3	26.6
HJB675	816	573	90	753	604	18	22		673	677	73	20	4	8	142
HJB675X1	816	571	90	753	604	36	22		675	675	73	23	4	20	126
HJB675X2	816	573	90	753	604	18	22		673	677	73	20	4	20	142
HJB710	812	608	75	776	644	24	18		708	712	65	10	4	16	111
HJB780 - NTW	880	680	80	846	714	4	16		778	782	80	0	4	14	149
HJB800	922	678	82	878	722	30	22		798	802	72	10	6	20	152
HJB900	1022	778	82	978	822	30	22		898	902	72	10	6	20	186
HJB1000	1122	878	82	1078	922	36	22		998	1002	72	10	6	20	204
HJB1114	1250	1000	110	1200		12			1112	1116	110	0	4	10	355
HJB1120	1242	998	82	1198	1042	36	22		1118	1122	72	10	6	20	233
HJB1135	1270	1000	100	1220	1050	36	19		1132	1138	85	15	2	16	296
HJB1250	1400	1060	120			12					120	0		24	599
HJB1400	1540	1260	91	1487	1313	40	26		1398	1402	81	10	5	24	369
HJB1520	1720	1320	134		1390	12	26		1516	1524	134	0	8	24	967
HJB1520K	1720	1320	134		1390	12	26		1516	1524	134	0	4	24	967
HJB1600	1740	1460	91	1687	1513	45	26		1598	1602	81	10	5	24	425
HJB1635	1770	1500	120						1625	1645	120	0	6		618
HJB1800	1940	1660	91	1887	1713	45	26		1798	1802	81	10	5	24	456
HJB2000	2178	1825	112	2110	1891	48	33		1997	2003	100	12	8	30	815
HJB2240	2418	2065	112	2350	2131	48	33		2237	2243	100	12	8	30	944
HJB2500	2678	2325	112	2610	2391	56	33		2497	2503	100	12	8	30	1026
HJB2745	2980	2500	180	2910	2590	48	33		2743	2747	170	10	6	30	2880
HJB2800K	2978	2625	112	2910	2691	16	33		2799	2801	100	12	4	30	1170
HJB3150	3376	2922	134	3286	3014	56	45		3147	3153	122	12	8	42	2097



Remarks:
1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.
2. n-φ can be screw hole instead.Screw diameter M, Screw depth 2M.
3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

Designations	Boundary dimensions				Bolt hole diameter					Structure dimensions						Gear parameters				Mass
	De	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	m	Z	b	x	
	mm				mm			mm		mm					mm			mm		
HJW500	629	602	398	75	566	434	20	18		498	502	65	10	4	16	5	123	60	+0.5	84
HJW500M	628.8	602	398	75	566	434	20	18		498	502	65	10	4	16	6	102	60	+0.5	84
HJW560	689	662	458	75	626	494	20	18		558	562	65	10	4	16	5	135	60	+0.5	92
HJW560M	688.8	662	458	75	626	494	20	18		558	562	65	10	4	16	6	112	60	+0.5	92
HJW630	772.8	732	528	75	696	564	24	18		628	632	65	10	4	16	6	126	60	+0.5	111
HJW630M	774.4	732	528	75	696	564	24	18		628	632	65	10	4	16	8	94	60	+0.5	111
HJW710	852	812	610	74	776	644	24	13.5		708	712	36.5	10	4	10	6	140	54	0	125
HJW710M	854.4	812	608	75	776	644	24	18		708	712	65	10	4	16	8	104	60	+0.5	125
HJW800	966.4	922	678	82	878	722	30	22		798	802	72	10	6	20	8	118	65	+0.5	179
HJW800M	968	922	678	82	878	722	30	22		798	802	72	10	6	20	10	94	65	+0.5	179
HJW823	979	853	715	100	893	753	28	22		821	825	84	21	4	20	10	94	63	1.1	193
HJW900	1062.4	1022	778	82	978	822	30	22		898	902	72	10	6	20	8	130	65	+0.5	189
HJW900M	1068	1022	778	82	978	822	30	22		898	902	72	10	6	20	10	104	65	+0.5	200
HJW1000	1188	1122	878	82	1078	922	36	22		998	1002	72	10	6	20	10	116	65	+0.5	242
HJW1000M	1185.6	1122	878	82	1078	922	36	22		998	1002	72	10	6	20	12	96	65	+0.5	242
HJW1025	1180	1150	885	115	1115	935	16	18		1021	1029	100	15	4	16	5	234	80	0	333
HJW1120	1272	1242	998	82	1198	1042	8	20		1118	1122	66	16	4	20	6	210	65	0	249
HJW1120M	1305.6	1242	998	82	1198	1042	36	22		1118	1122	72	10	6	20	12	106	65	+0.5	261
HJW1250	1449.6	1390	1110	91	1337	1163	40	26		1248	1252	81	10	5	24	12	118	75	+0.5	362
HJW1250M	1453.2	1390	1110	91	1337	1163	40	26		1248	1252	81	10	5	24	14	101	75	+0.5	362
HJW1262	1477	1400	1100	140	1352	1160	26	22		1260	1264	126	21	4	20	14	104	90	-0.24	607
HJW1400	1605.6	1540	1260	91	1487	1313	40	26		1398	1402	81	10	5	24	12	131	75	+0.5	417
HJW1400M	1607.2	1540	1260	91	1487	1313	40	26		1398	1402	81	10	5	24	14	112	75	+0.5	411
HJW1600	1817.2	1740	1460	91	1687	1513	45	26		1598	1602	81	10	5	24	14	127	75	+0.5	488
HJW1600M	1820.8	1740	1460	91	1687	1513	45	26		1598	1602	81	10	5	24	16	111	75	+0.5	484
HJW1800	2013.2	1940	1660	91	1887	1713	45	26		1798	1802	81	10	5	24	14	141	75	+0.5	530
HJW1800M	2012.8	1940	1660	91	1887	1713	45	26		1798	1802	81	10	5	24	16	123	75	+0.5	530

Outer-tooth Four Point Contact Ball Slewing Bearings



Remarks:

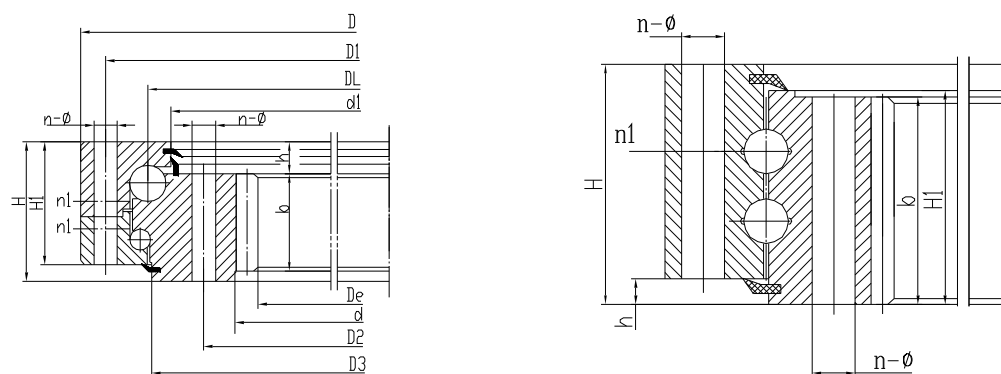
1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.

2. $n-\phi$ can be screw hole instead. Screw diameter M , Screw depth $2M$.

3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

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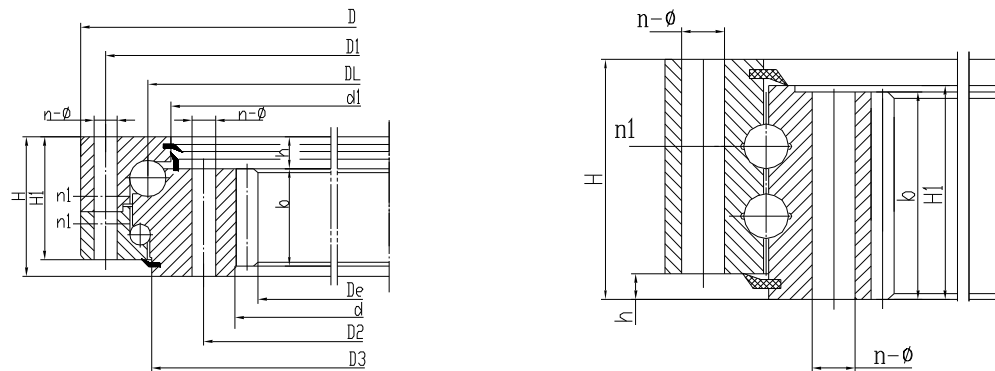
Inner-tooth Single-row Cross Roller Slewing Bearings



Remarks:
1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.
2. n-φ can be screw hole instead.Screw diameter M, Screw depth 2M.
3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

Designations	Boundary dimensions				Bolt hole diameter					Structure dimensions						Gear parameters				Mass
	De	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	m	Z	b	x	
	mm				mm			mm		mm					mm			mm		
HJN500	367	602	398	75	566	434	20	18		498	502	65	10	4	16	5	74	60	+0.5	85
HJN500M	368.4	602	398	75	566	434	20	18		498	502	65	10	4	16	6	62	60	+0.5	85
HJN560	427	662	458	75	626	494	20	18		558	562	65	10	4	16	5	86	60	+0.5	96
HJN560M	428.4	662	458	75	626	494	20	18		558	562	65	10	4	16	6	72	60	+0.5	96
HJN630	494.4	732	528	75	696	564	24	18		628	632	65	10	4	16	6	83	60	+0.5	110
HJN630M	491.2	732	528	75	696	564	24	18		628	632	65	10	4	16	8	62	60	+0.5	110
HJN710	572.4	812	608	82	776	644	24	18		708	712	65	10	4	16	6	96	60	+0.5	126
HJN710M	571.2	812	608	82	776	644	24	18		708	712	65	10	4	16	8	72	60	+0.5	122
HJN800	635.2	922	678	82	878	722	30	22		798	802	72	10	6	20	8	80	65	+0.5	186
HJN800M	634	922	678	82	878	722	30	22		798	802	72	10	6	20	10	64	65	+0.5	186
HJN817	685	920	712	70	880	751	30	22		815	819	60	10	5	20	5	139	53	0	115
HJN900	739.2	1022	778	82	978	822	30	22		898	902	72	10	6	20	8	93	65	+0.5	208
HJN900M	734	1022	778	82	978	822	30	22		898	902	72	10	6	20	10	74	65	+0.5	208
HJN1000	824	1122	878	82	1078	922	36	22		998	1002	72	10	6	20	10	83	65	+0.5	220
HJN1000M	820.8	1122	878	82	1078	922	36	22		998	1002	72	10	6	20	12	69	65	+0.5	220
HJN1094S	920	1216	920	100	1172	1013	12	22		1092	1096	90	10	4	20	10	94	90	0	393
HJN1120	944	1242	998	82	1198	1042	36	22		1118	1122	72	10	6	20	10	95	65	+0.5	273
HJN1120M	940.8	1242	998	82	1198	1042	36	22		1118	1122	72	10	6	20	12	79	65	+0.5	273
HJN1250	1048.8	1390	1110	91	1337	1163	40	26		1248	1252	81	10	5	24	12	88	75	+0.5	386
HJN1250M	1041.6	1390	1110	91	1337	1163	40	26		1248	1252	81	10	5	24	14	75	75	+0.5	390
HJN1400	1192.8	1540	1260	91	1487	1313	40	26		1398	1402	81	10	5	24	12	100	75	+0.5	441
HJN1400M	1195.6	1540	1260	91	1487	1313	40	26		1398	1402	81	10	5	24	14	86	75	+0.5	441
HJN1600	1391.6	1740	1460	91	1687	1513	45	26		1598	1602	81	10	5	24	14	100	75	+0.5	502
HJN1600M	1382.4	1740	1460	91	1687	1513	45	26		1598	1602	81	10	5	24	16	87	75	+0.5	517
HJN1800	1573.6	1940	1660	91	1887	1713	45	26		1798	1802	81	10	5	24	14	113	75	+0.5	605
HJN1800M	1574.4	1940	1660	91	1887	1713	45	26		1798	1802	81	10	5	24	16	99	75	+0.5	605
HJN2000	1734.4	2178	1825	112	2110	1891	48	33		1998	2002	100	12	8	30	16	109	90	+0.5	893

Inner-tooth Single-row Cross Roller Slewing Bearings



Remarks:

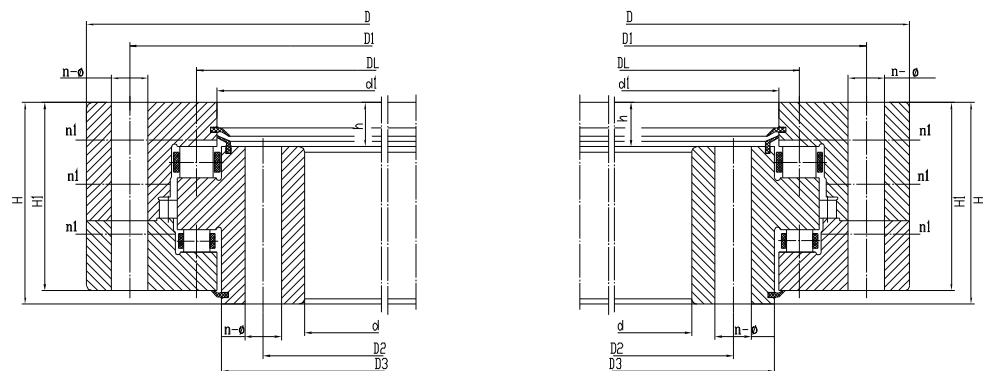
1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.

2. $n-\phi$ can be screw hole instead. Screw diameter M , Screw depth $2M$.

3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

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Toothless Three-row Cylindrical RollerSlewing Bearings

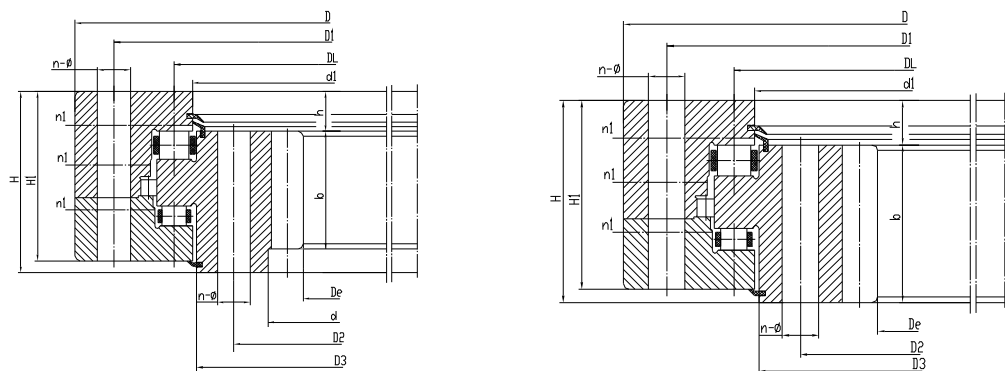


Remarks:

1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.
2. n-φ can be screw hole instead.Screw diameter M, Screw depth 2M.
3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

Designations	Boundary dimensions			Bolt hole diameter					Structure dimensions						Mass kg
	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	
	mm			mm		n	mm		mm				n1	mm	
HYB500	634	366	148	598	402	24	18		474	463	138	32	4	16	191
HYB560	694	426	148	658	462	24	18		534	523	138	32	4	16	214
HYB630	764	496	148	728	532	28	18		604	593	138	32	4	16	240
HYB710	844	576	148	808	612	28	18		684	673	138	32	4	16	272
HYB800	964	636	182	920	680	36	22		770	759	172	40	4	20	459
HYB900	1064	736	182	1020	780	36	22		870	859	172	40	4	20	519
HYB1000	1164	836	182	1120	880	40	22		970	959	172	40	5	20	577
HYB1120	1284	956	182	1240	1000	40	22		1090	1079	172	40	5	20	650
HYB1150	1310	1000	140	1250	1055	36	26		1120	1310	130	0	4	24	531
HYB1250	1445	1055	220	1393	1107	45	26		1210	1200	210	50	5	24	1030
HYB1400	1595	1205	220	1543	1257	45	26		1363	1350	210	50	5	24	1170
HYB1600	1795	1405	220	1743	1457	48	26		1563	1550	210	50	6	24	1341
HYB1705	1910	1500	182	1844	1566	48	33		1749	1755	162	10	24	30	1226
HYB1800	1995	1605	220	1943	1657	48	26		1763	1750	210	50	6	24	1510
HYB1825	2020	1655	136	1950	1725	36/40	33		1880	1865	123	13	5	30	870
HYB1835	2020	1655	156	1950	1725	36/40	33		1882	1877	123	19	6	30	955
HYB2000	2221	1779	231	2155	1845	60	33		1967	1945	219	54	6	30	1949
HYB2240	2461	2019	231	3395	2085	60	33		2207	2185	219	54	6	30	2197
HYB2400	2650	2190	154	2560	2280	60	39		2446	2442	121	14	6	36	1580
HYB2500	2721	2279	231	2655	2345	72	33		2555	2533	219	12	8	30	2391
HYB2500C	2721	2279	231	2655	2345	72	33		2555	2533	177	12	8	30	2391
HYB2800	3021	2579	231	2955	2645	72	33		2867	2833	219	54	8	30	2924
HYB3150	3432	2868	270	3342	2958	72	45		3104	3090	258	65	8	42	4551
HYB3175	3395	2965	184	3328	3038	64	33		3221	3206	154	10.5	8	30	2523
HYB3550	3832	3268	270	3742	3358	72	45		3504	3490	258	65	8	42	5178
HYB4000	4243	3762	270	4165	3840	72	39		4050	4037	217	55	9	36	4580
HYB4500	4850	4235	268	4700	4325	68	45		4560	4546	203	10	11	42	7150
HYB5000	5290	4735	268	5200	4825	78	39		5064	5048	203	10	12	36	7280
HYB5055	5335	4785	275	5245	4875	90	45		5101	5130	210	17	15	42	7376

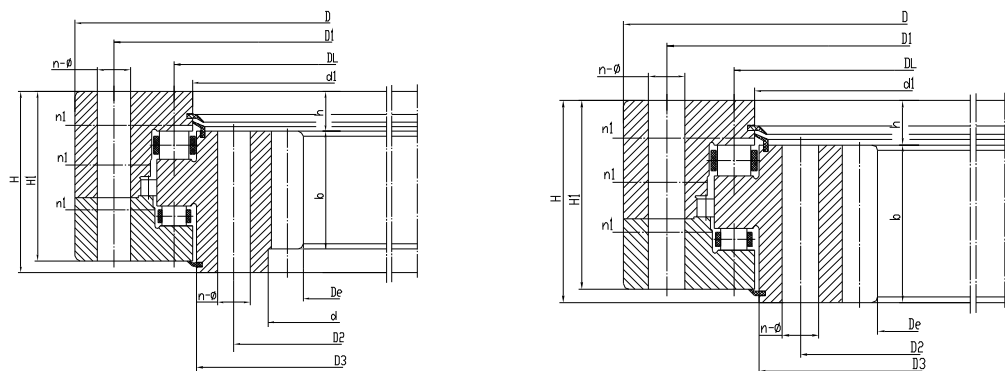
Inner-tooth Three-row Cylindrical Roller Slewing Bearings



Remarks:
1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.
2. n-φ can be screw hole instead.Screw diameter M, Screw depth 2M.
3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

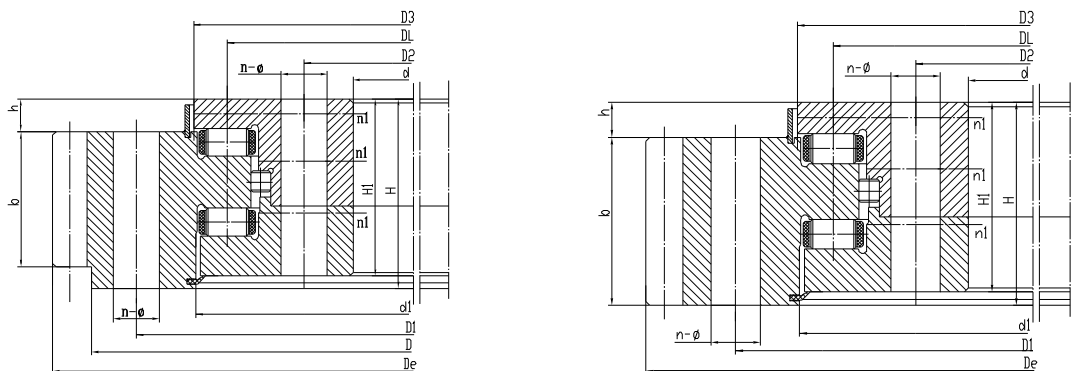
Designations	Boundary dimensions				Bolt hole diameter					Structure dimensions						Gear parameters				Mass
	De	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	m	Z	b	x	
	mm				mm			mm		mm					mm			mm		
HYN500	337	634	366	148	598	402	24	18		474	463	138	32	4	16	5	68	80	+0.5	198
HYN500M	338.4	634	366	148	598	402	24	18		474	463	138	32	4	16	6	57	80	+0.5	198
HYN560	397	694	426	148	658	462	24	18		534	523	138	32	4	16	5	80	80	+0.5	222
HYN560M	398.4	694	426	148	658	462	24	18		534	523	138	32	4	16	6	67	80	+0.5	220
HYN630	458.4	764	496	148	728	532	28	18		604	593	138	32	4	16	6	77	80	+0.5	253
HYN630M	459.2	764	496	148	728	532	28	18		604	593	138	32	4	16	8	58	80	+0.5	251
HYN710	536.4	844	567	148	808	612	28	18		684	673	138	32	4	16	6	90	80	+0.5	288
HYN710M	539.2	844	567	148	808	612	28	18		684	673	138	32	4	16	8	68	80	+0.5	284
HYN800	595.2	964	636	182	920	680	36	22		770	759	172	40	4	20	8	75	120	+0.5	483
HYN800M	594	964	636	182	920	680	36	22		770	759	172	40	4	20	10	60	120	+0.5	481
HYN900	691.2	1064	736	182	1020	780	36	22		870	859	172	40	4	20	8	87	120	+0.5	551
HYN900M	694	1064	736	182	1020	780	36	22		870	859	172	40	4	20	10	70	120	+0.5	545
HYN1000	784	1164	836	182	1120	880	40	22		970	959	172	40	5	20	10	79	120	+0.5	618
HYN1000M	784.8	1164	836	182	1120	880	40	22		970	959	172	40	5	20	12	66	120	+0.5	613
HYN1120	904	1284	956	182	1240	100	40	22		1090	1079	172	40	5	20	10	91	120	+0.5	698
HYN1120M	904.8	1284	956	182	1240	1000	40	22		1090	1079	172	40	5	20	12	76	120	+0.5	691
HYN1250	988.8	1445	1055	220	1393	1107	45	26		1213	1200	210	50	5	24	12	83	150	+0.5	1123
HYN1250M	985.6	1445	1055	220	1393	1107	45	26		1213	1200	210	50	5	24	14	71	150	+0.5	1122
HYN1400	1144.8	1595	1205	220	1543	1257	45	26		1363	1350	210	50	5	24	12	96	150	+0.5	1254
HYN1400M	1139.6	1595	1205	220	1543	1257	45	26		1363	1350	210	50	5	24	14	82	150	+0.5	1258
HYN1600	1335.6	1795	1405	220	1743	1457	48	26		1563	1500	210	50	6	24	14	96	150	+0.5	1454
HYN1600M	1334.4	1795	1405	220	1743	1457	48	26		1563	1500	210	50	6	24	16	84	150	+0.5	1448
HYN1800	1531.6	1995	1605	220	1943	1657	48	26		1763	1750	210	50	6	24	14	110	150	+0.5	1658
HYN1800M	1526.4	1995	1605	220	1943	1657	48	26		1763	1750	210	50	6	24	16	96	150	+0.5	1663
HYN1992	1740	2180		153	2115	1870	66	33		1966	1948	141	33	8	30	12	146	120	0.5	1280
HYN2000	1760	2147		132	2095	1895	54	26		1968	1969	123	26	5	24	16	111	106	+0.5	902
HYN2000R	1728	2181		147	2115	1875	44	33		1974	1963	138	30	7	30	16	109	117	+0.5	1202
HYN2000R1	1702.4	2221	1779	231	2155	1845	60	33		1967	1945	219	54	6	30	16	107	160	+0.5	2114
HYN2000R1M	1699.2	2221	1779	231	2155	1845	60	33		1967	1945	219	54	6	30	18	95	160	+0.5	2112
HYN2138	1820	2320	1910	160	2255	1990	30/40	37.5		2144	2105	140	20	4	36	14	132	110	0	1500

Inner-tooth Three-row Cylindrical Roller Slewing Bearings



Remarks:
1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.
2. n-φ can be screw hole instead.Screw diameter M, Screw depth 2M.
3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

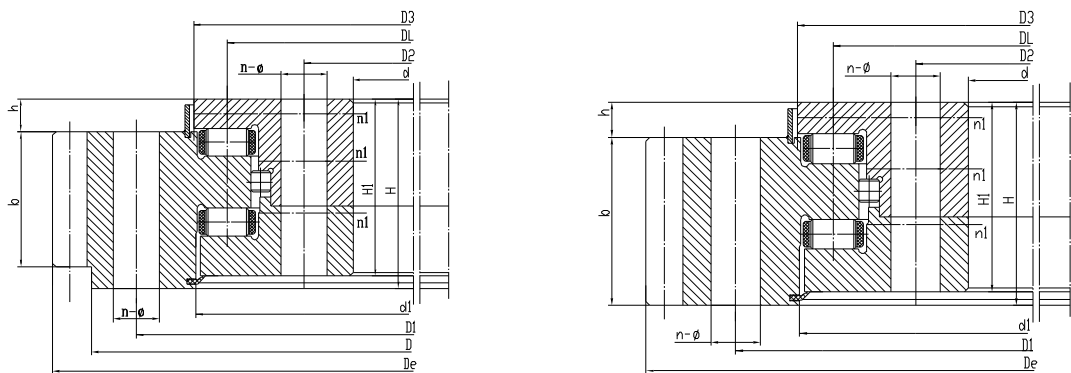
Designations	Boundary dimensions				Bolt hole diameter					Structure dimensions						Gear parameters				Mass
	De	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	m	Z	b	x	
	mm				mm			mm		mm					mm			mm		
HYN2230	1862	2540	1945	265	2436	2020	72/68	45		2166	2150	253	60	9	42	16	117	165	+0.5	3530
HYN2240	1944	2421		147	2355	2115	48	33		2214	2203	138	30	8	30	18	109	117	+0.5	1406
HYN2240R	1908	2458		181	2380	2085	40	39		2210	2199	172	42	8	36	18	107	139	+0.5	2010
HYN2240R1	1924.4	2461	2019	231	2395	2085	60	33		2207	2185	219	54	6	30	16	121	160	+0.5	2447
HYN2240R1M	1933.2	2461	2019	231	2395	2085	60	33		2207	2185	219	54	6	30	18	108	160	+0.5	2407
HYN2500	2185.2	2721		241	2655	2341	24/72	39		2460	2443	229	54	4	36	18	122	170	+0.5	2817
HYN2500R	2178	2718		181	2640	2345	44	39		2470	2459	172	42	7	36	18	122	139	+0.5	2210
HYN2500R1	2185.2	2721	2279	231	2655	2345	72	33		2467	2445	219	54	8	30	18	122	160	+0.5	2862
HYN2500R1M	2188	2721	2279	231	2655	2345	72	33		2467	2445	219	54	8	30	20	110	160	+0.5	2834
HYN2800	2500	2981		147	2915	2675	60	33		2774	2763	138	30	10	30	20	126	117	+0.5	1767
HYN2800R	2460	3018		181	2940	2645	48	39		2770	2759	172	42	8	36	20	124	139	+0.5	2542
HYN2800R1	2460	3038		220	2960	2635	48	39		2763	2750	210	50	8	36	20	124	170	+0.5	3213
HYN2800R2	2491.2	3021	2579	231	2955	2645	72	33		2767	2745	219	54	8	30	18	139	160	+0.5	3211
HYN2800R2M	2488	3021	2579	231	2955	2645	72	33		2767	2745	219	54	8	30	20	125	160	+0.5	3209
HYN3150	2820	3368		181	3290	2995	56	39		3120	3109	172	42	7	36	20	142	139	+0.5	2807
HYN3150R	2794	3368		220	3310	2985	56	39		3113	3100	210	50	7	36	22	128	170	+0.5	3683
HYN3150R1	2768	3432	2868	270	3342	2958	72	45		3104	3090	258	65	8	42	20	139	180	+0.5	4954
HYN3150R1M	2758.8	3432	2868	270	3342	2958	72	45		3104	3090	258	65	8	42	22	126	180	+0.5	4988
HYN3474	3140	3240	3240	173	3600	3310	100	33		3447	3434	152	30	10	30	20	158	140	+0.5	2640
HYN3550	3190	3768		181	3690	3395	66	39		3520	3509	172	42	8	36	22	146	139	+0.5	3302
HYN3550R	3190	3788		220	3710	3385	66	39		3513	3500	210	50	8	36	22	146	170	+0.5	4171
HYN3550R1	3168	3832	3268	270	3742	3358	72	45		3504	3490	258	65	8	42	20	159	180	+0.5	5638
HYN3550R1M	3154.8	3832	3268	270	3742	3358	72	45		3504	3490	258	65	8	42	22	144	180	+0.5	5706
HYN4000	3652	4218		181	4140	3845	72	39		3970	3959	172	42	9	36	22	167	139	+0.5	3664
HYN4000R	3624	4238		220	4160	3835	72	39		3963	3950	210	50	9	36	24	152	170	+0.5	4810
HYN4000R1	3616.8	4282	3718	270	4192	3808	80	45		3954	3940	258	65	8	42	22	165	180	+0.5	6257
HYN4000R1M	3610	4282	3718	270	4192	3808	80	45		3954	3940	258	65	8	42	25	145	180	+0.5	6268
HYN4500	4092	4765		281	4675	4300	72	45		4454	4440	258	65	12	42	22	187	170	+0.5	7740
HYN4500R	4122.8	4782	4218	270	4692	4308	80	45		4454	4440	258	65	8	42	22	188	180	+0.5	7040
HYN4500RM	4110	4782	4218	270	4692	4308	80	45		4454	4440	258	65	8	42	25	165	180	+0.5	7108



Remarks:

1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.
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3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

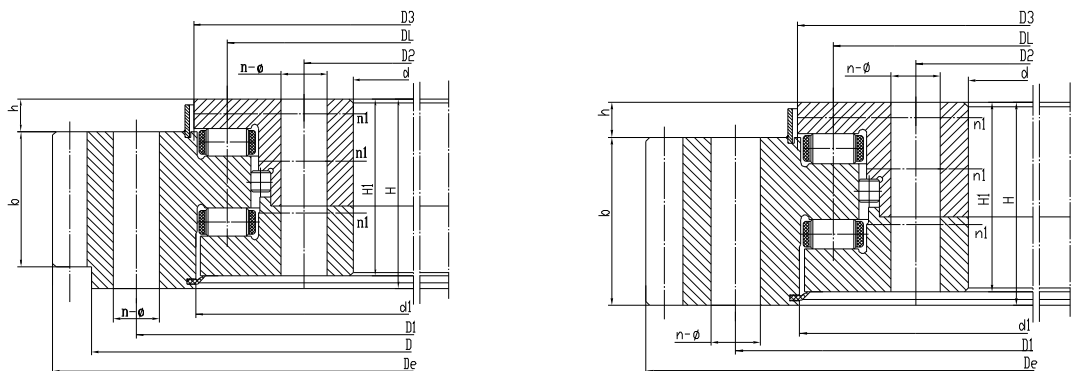
Designations	Boundary dimensions				Bolt hole diameter					Structure dimensions						Gear parameters				Mass kg
	De	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	m	Z	b	x	
	mm				mm		n	mm		mm				n1	mm	m	Z	mm	x	
HYW500	664	634	366	148	598	402	24	18		537	526	138	32	4	16	5	130	80	+0.5	200
HYW500M	664.8	634	366	148	598	402	24	18		537	526	138	32	4	16	6	108	80	+0.5	200
HYW560	724	694	426	148	658	462	24	18		597	586	138	32	4	16	5	142	80	+0.5	224
HYW560M	724.8	694	426	148	658	462	24	18		597	586	138	32	4	16	6	118	80	+0.5	224
HYW630	808.8	764	496	148	728	532	28	18		667	656	138	32	4	16	6	132	80	+0.5	262
HYW630M	806.4	764	496	148	728	532	28	18		667	656	138	32	4	16	8	98	80	+0.5	257
HYW710	886.8	844	567	148	808	612	28	18		747	736	138	32	4	16	6	145	80	+0.5	295
HYW710M	886.4	844	567	148	808	612	28	18		747	736	138	32	4	16	8	108	80	+0.5	291
HYW800	1006.4	964	636	182	920	680	36	22		841	830	172	40	4	20	8	123	120	+0.5	490
HYW800M	1008	964	636	182	920	680	36	22		841	830	172	40	4	20	10	98	120	+0.5	487
HYW900	1102.4	1064	736	182	1020	780	36	22		941	930	172	40	4	20	8	135	120	+0.5	549
HYW900M	1108	1064	736	182	1020	780	36	22		941	930	172	40	4	20	10	108	120	+0.5	562
HYW1000	1218	1164	836	182	1120	880	40	22		1041	1030	172	40	5	20	10	119	120	+0.5	631
HYW1000M	1221.6	1164	836	182	1120	880	40	22		1041	1030	172	40	5	20	12	99	120	+0.5	631
HYW1120	1338	1284	956	182	1240	1000	40	22		1161	1150	172	40	5	20	10	131	120	+0.5	710
HYW1120M	1341.6	1284	956	182	1240	1000	40	22		1161	1150	172	40	5	20	12	109	120	+0.5	710
HYW1250	1509.6	1445	1055	220	1393	1107	45	26		1300	1287	210	50	5	24	12	123	150	+0.5	1137
HYW1250M	1509.2	1445	1055	220	1393	1107	45	26		1300	1287	210	50	5	24	14	105	150	+0.5	1126
HSW1358	1510	1470	1215	90	1426	1255	24	22		1362	1354	71	19	6	20	10	149	71	0	256
HYW1400	1665.6	1595	1205	220	1543	1257	45	26		1450	1437	210	50	5	24	12	136	150	+0.5	1299
HYW1400M	1663.2	1595	1205	220	1543	1257	45	26		1450	1437	210	50	5	24	14	116	150	+0.5	1281
HYW1600	1873.2	1795	1405	220	1743	1457	48	26		1650	1637	210	50	6	24	14	131	150	+0.5	1501
HYW1600M	1868.8	1795	1405	220	1743	1457	48	26		1650	1637	210	50	6	24	16	114	150	+0.5	1471
HYW1800	2069.2	1995	1605	220	1943	1657	48	26		1850	1837	210	50	6	24	14	145	150	+0.5	1682
HYW1800M	2076.8	1995	1605	220	1943	1657	48	26		1850	1837	210	50	6	24	16	127	150	+0.5	1697
HYW1898	2169.6	2113	1690	181	2049	1762	54	36		1941	1930	172	32	6	34	12	178	100	+0.5	1470
HYW2000	2236.8		1853	132	2105	1905	54	26		2030	2032	123	26	5	24	16	137	106	+0.5	912



Remarks:

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Designations	Boundary dimensions				Bolt hole diameter					Structure dimensions						Gear parameters				Mass kg
	De	D	d	H	D1	D2	n	ϕ		D3	d1	H1	h	n1	M	m	Z	b	x	
	mm				mm		n	mm		mm				n1	mm	m	Z	mm	x	
HYW2000R	2268.8		1819	147	2125	1885	44	33		2036	2026	138	30	7	30	16	139	117	+0.5	1216
HYW2000R1	2300.8	2221	1779	231	2155	1845	60	33		2055	2033	219	54	6	30	16	141	160	+0.5	2147
HYW2000R1M	2300.4	2221	1779	231	2366	1845	60	33		2055	2033	219	54	6	30	18	125	160	+0.5	2129
HYW2240	2556.8	2461	2019	231	2395	2085	60	33		2298	2276	219	54	9	30	16	157	160	+0.5	2478
HYW2240R	2552.4		2022	181	2395	2100	40	39		2281	2270	172	42	8	36	18	139	139	+0.5	1975
HYW2240R1	2556.8	2461	2019	231	2395	2085	60	33		2295	2273	219	54	6	30	16	157	160	+0.5	2501
HYW2240R1M	2552.4	2461	2019	231	2625	2085	60	33		2295	2273	219	54	6	30	18	139	160	+0.5	2461
HYW2250	2481.6	2425	2071	155	2376	2137	72	33		2287	2276	146	28	6	30	12	204	127	+0.5	1240
HYW2250X1	2534	2492	2050	159	2394	2128	70	39		2291	2279	149	33	7	36	14	178	100	+0.5	1500
HYW2500	2822.4	2721	2279	231	2655	2345	72	33		2555	2533	219	54	8	30	18	154	177	+0.5	2410
HYW2500R	2822.4		2282	181	2655	2360	44	39		2541	2530	172	42	7	36	18	154	139	+0.5	2260
HYW2500R1	2822.4	2721	2279	231	2655	2345	72	33		2555	2533	219	54	8	30	18	154	160	+0.5	2786
HYW2500M	2816	2721	2279	231	2925	2345	72	33		2555	2533	219	54	8	30	20	138	160	+0.5	2731
HYW2555	2996	2905	2236	315	2802	2348	64	56		2643	2606	305	50	8	52	20	147	200	+0.5	5515
HYW2555X1	2998.7	2905	2236	270	2802	2348	80	45		2639	2596	260	50	8	42	20	147	180	+0.5	4758
HYW2800	3110.4	3021	2579	231	2955	2645	72	33		2855	2833	219	54	8	30	18	170	160	+0.5	2914
HYW2800R	3136		2582	181	2965	2660	48	39		2841	2830	172	42	8	36	20	154	139	+0.5	2576
HYW2800R1	3136		2562	220	2965	2640	48	39		2850	2837	210	50	8	36	20	154	170	+0.5	3267
HYW2800R2	3110.4	3021	2579	231	2955	2645	72	33		2855	2833	219	54	8	30	18	170	160	+0.5	3067
HYW2800M	3116	3021	2579	231	2955	2645	72	33		2855	2833	219	54	8	30	20	153	160	+0.5	3079
HYW2800X1	3148.8	3065	2546	223	2975	2636	60	45		2860	2839	210	53	10	42	16	194	140	+0.5	3400
HYW2825	3168		2575	240	3005	2655	48	36		2875	2865	210	50	8	30	18	174	190	0	3657
HYW2960	3375.2	3285	2632	320	3189	2738	72	56		3044	3012	311	65	9	54	20	166	200	+0.5	6280
HYW3150	3476		2932	181	3305	3010	56	39		3191	3180	172	42	7	36	20	171	139	+0.5	2828
HYW3150R	3515.6		2912	220	3315	2990	56	39		3200	3187	210	50	7	36	22	157	170	+0.5	3812
HYW3150R1	3536	3432	2868	270	3342	2958	72	45		3213	3916	258	65	8	42	20	174	180	+0.5	5025
HYW3150M	3537.6	3432	2868	270	3342	2958	72	45		3213	3916	258	65	8	42	22	158	180	+0.5	5009

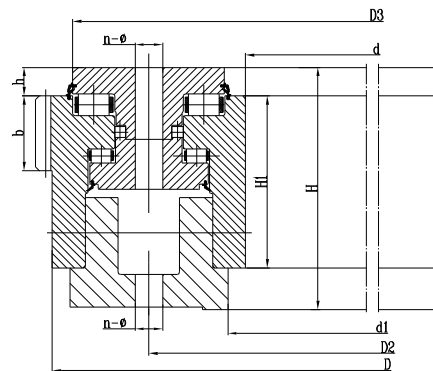


Remarks:

1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.
2. n-φ can be screw hole instead.Screw diameter M, Screw depth 2M.
3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

Designations	Boundary dimensions				Bolt hole diameter					Structure dimensions						Gear parameters				Mass kg
	De	D	d	H	D1	D2	n	φ		D3	d1	H1	h	n1	M	m	Z	b	x	
	mm				mm		n	mm		mm				n1	mm	m	Z	mm	x	
HYW3550	3970	3820	3268	270	3742	3358	72	45		3613	3596	258	65	8	42	25	156	200	+0.5	5894
HYW3550R	3911.6		3312	220	3715	3390	66	39		3600	3587	210	50	8	36	22	175	170	+0.5	4255
HYW3550R1	3936	3832	3268	270	3742	3358	72	45		3613	3596	258	65	8	42	20	194	180	+0.5	5713
HYW3550M	3911.6	3811	3312	220	3715	3390	66	39		3600	3587	210	50	8	36	22	176	180	+0.5	5661
HYW3580	3931.2		3340	212	3735	3441	108	33		3642	3608	180	42	10	30	24	161	170	+0.5	3850
HYW3580K	3931.2		3340	212	3735	3441	120/108	33		3642	3608	180	42	10	30	24	161	170	+0.5	3840
HYW3580X1	3931.2		3340	211	3735	3441	108	39		3642	3608	180	41	10	30	24	161	170	+0.5	3860
HYW3586	3931.2		3340	222	3735	3441	144/120	33		3650	3619	210	52	10	30	24	161	170	+0.5	4686
HYW3590	3902.6		3370	192	3754	3448	96	39		3655	3619	180	44	12	36	16	240	148	+1.0	3460
HYW3698	4076	3982	3415	270	3892	3508	80	45		3766	3746	258	65	8	42	20	201	180	+0.5	5770
HYW3905	4266	4173	3650	222	4085	3740	90	45		3974	3943	210	50	8	42	20	210	172	+0.75	5475
HYW3905X1	4266	4173	3650	222	4085	3740	90	45		3974	3943	210	50	8	42	20	210	172	+0.7496	4780
HYW3925	4370		3663	280	4148	3748	80	45		3995	3972	270	58	10	42	25	172	220	+0.5	7150
HYW4000	4395.6	4282	3718	270	4192	3808	80	45		4062	4046	258	65	8	42	22	197	180	+0.5	6396
HYW4000R	4363.2		3762	220	4165	3840	72	39		4050	4037	210	50	9	36	24	179	170	+0.5	4805
HYW4000R1	4395.6	4282	3718	270	4192	3808	80	45		4063	4046	258	65	8	42	22	197	180	+0.5	6508
HYW4000M	4400	4282	3718	270	4192	3808	80	45		4062	4046	258	65	8	42	25	173	180	+0.5	6486
HYW4150	4527.6	4423	3870	240	4340	3960	80	45		4224	4175	230	55	8	42	22	203	180	+0.5	5910
HYW4170	4579.2		3905	265	4345	4000	144/120	39		4245	4236	252	75	8	36	24	188	190	+0.5	6292
HYW4500	4867.2		4262	220	4665	4340	84	39		4550	4537	210	50	14	36	24	200	170	+0.5	5410
HYW4500R	4880	4782	4218	270	4692	4308	80	45		4565	4553	258	60	16	42	20	242	185	+0.5	7240
HYW4500RX1	4901.6	4782	4218	270	4692	4308	80	45		4563	4553	258	60	16	42	22	220	180	+0.5	7440
HYW4500M	4895	4782	4218	270	4692	4308	80	45		4565	4553	258	65	16	42	25	193	185	+0.5	7239
HYW4630	5160	5060	4375	275	4820	4455	88	45		4710	4678	258	70	11	42	20	256	177	0	8640
HYW5137	5491.2		4914	261	5295	4980	72	33		5237.6	5178	210	50	12	30	24	226	211	+0.4	6430

Outer-Tooth Six-row Cylindrical Roller Slewing Bearings



Remarks:

1. n1 is the number of lubricant hole. Customers can designate and designate the position of oil hole according to service condition.

2. $n-\phi$ can be screw hole instead. Screw diameter M , Screw depth $2M$.

3. The items in this Catalogue are standard products. Please contact ZWZ if you have other special demands.

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Appendix A Slewing bearing load Curve

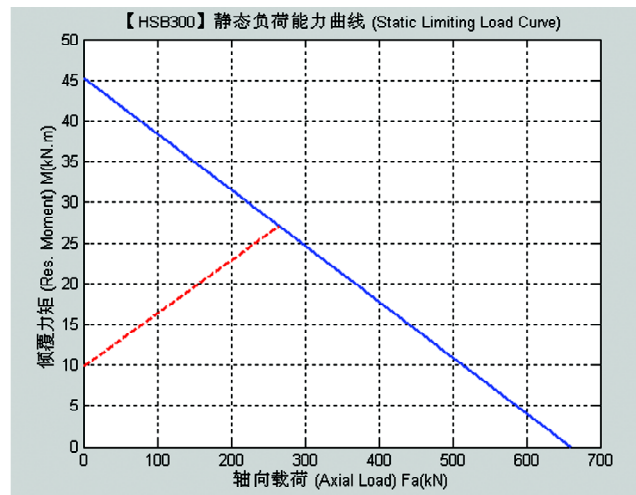


Figure A-1

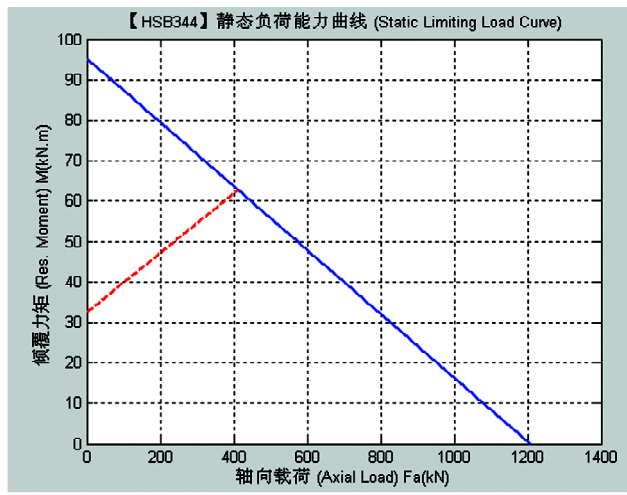


Figure A-2

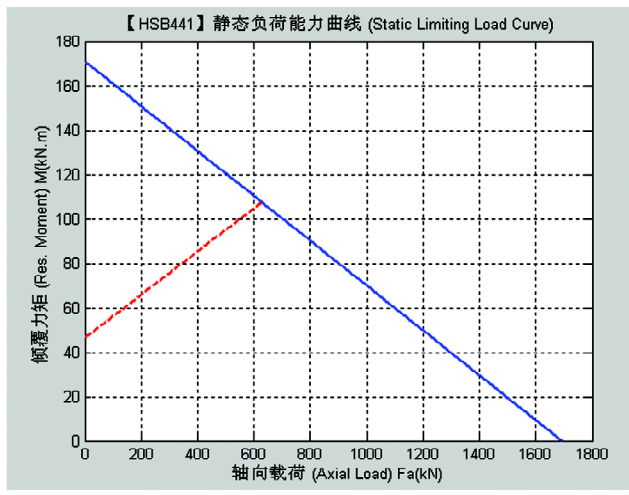


Figure A-7

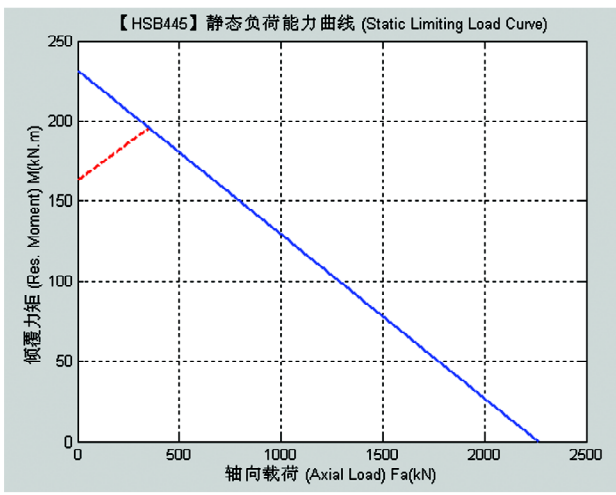


Figure A-8

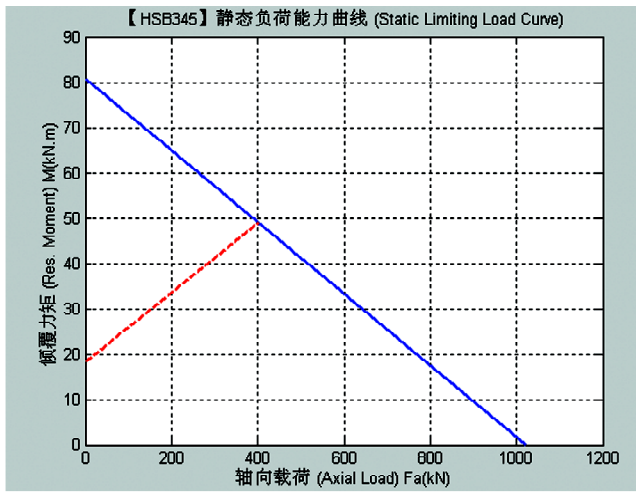


Figure A-3

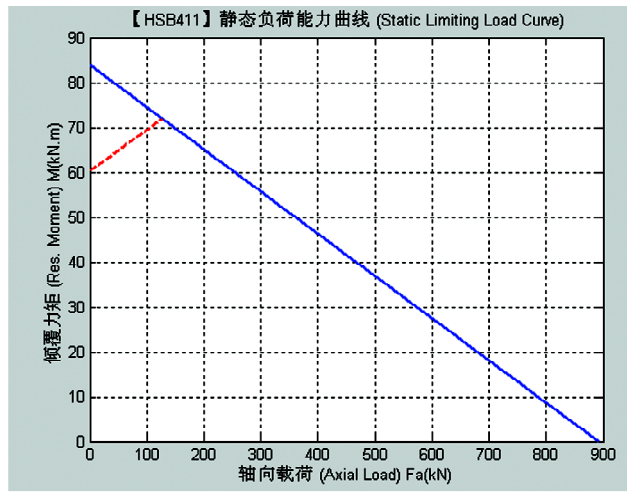


Figure A-4

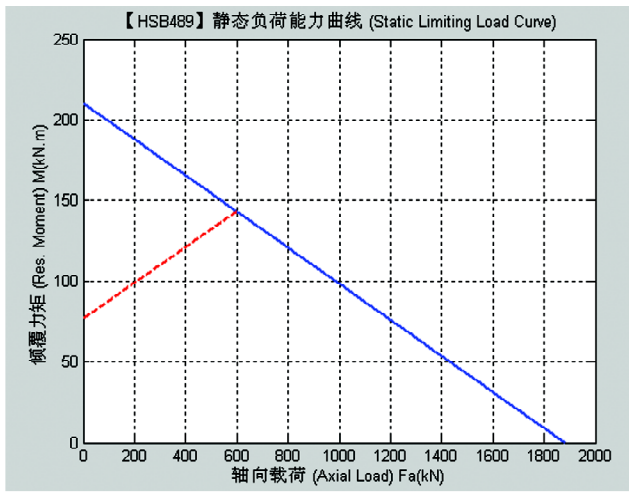


Figure A-9

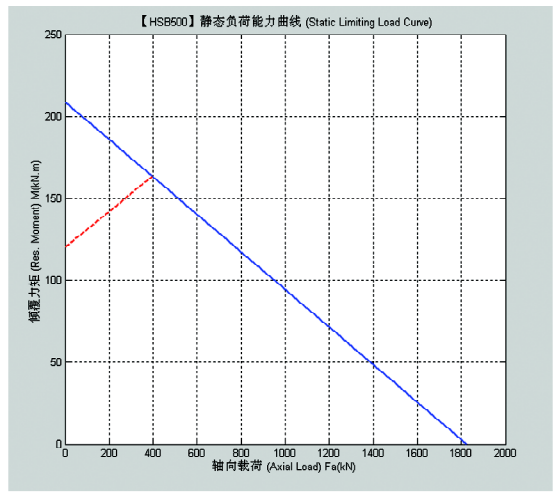


Figure A-10

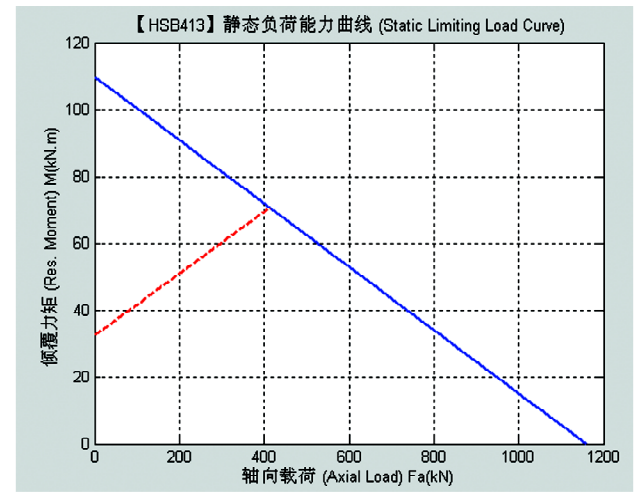


Figure A-5

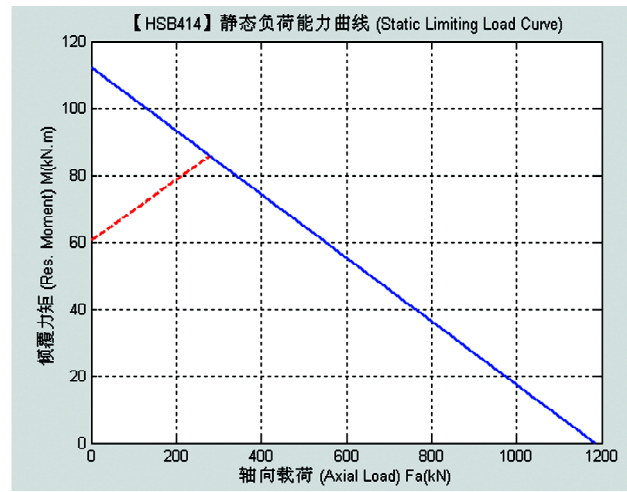


Figure A-6

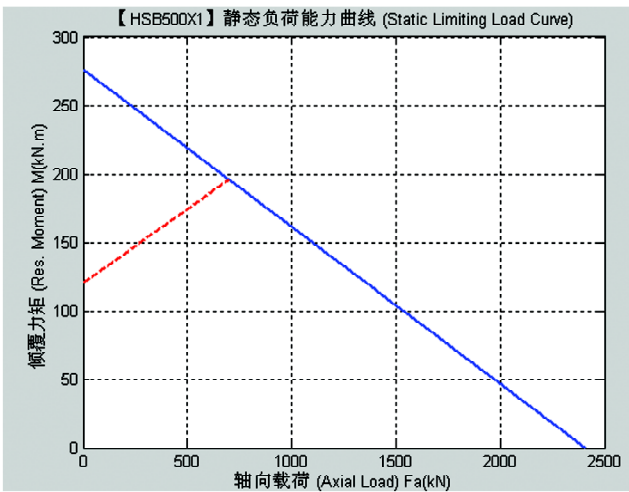


Figure A-11

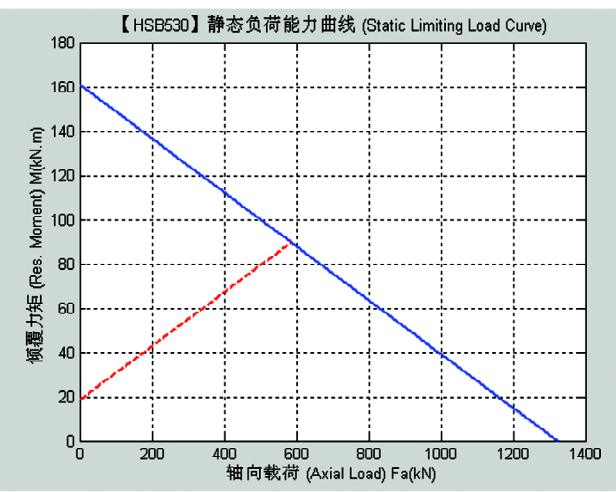


Figure A-12

Appendix A Slewing bearing load Curve

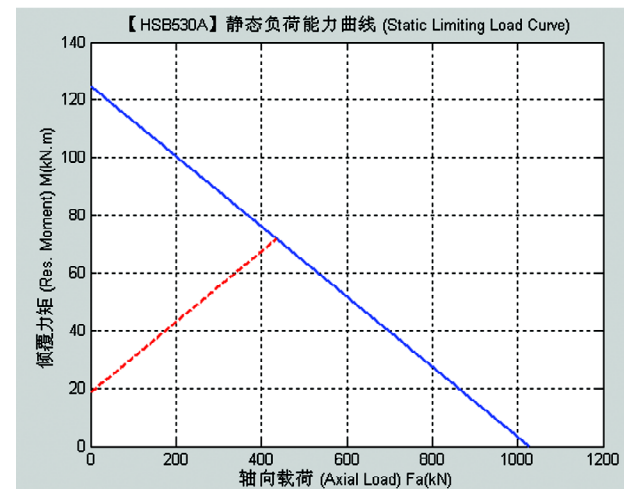


Figure A-13

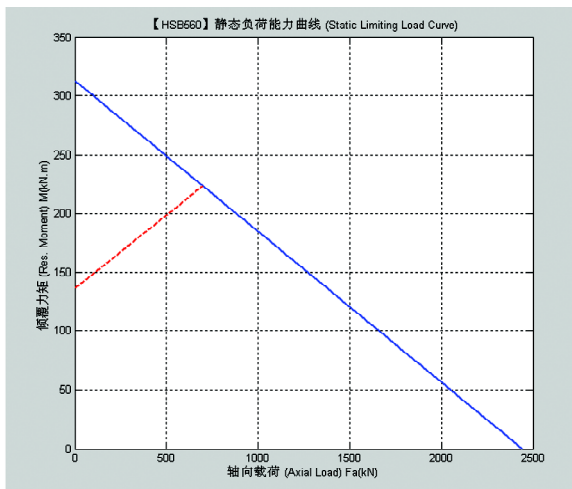


Figure A-14

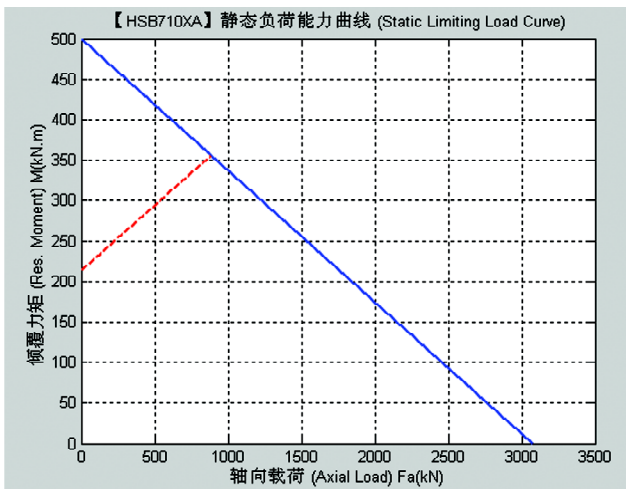


Figure A-19

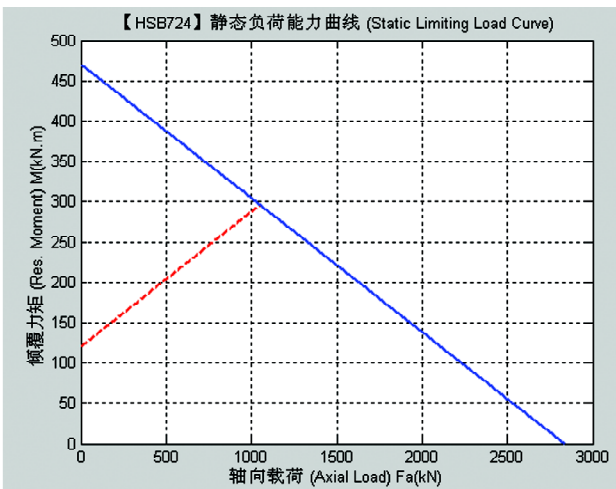


Figure A-20

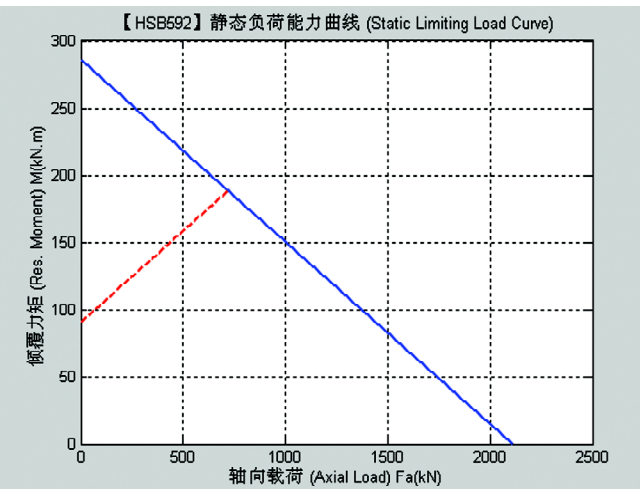


Figure A-15

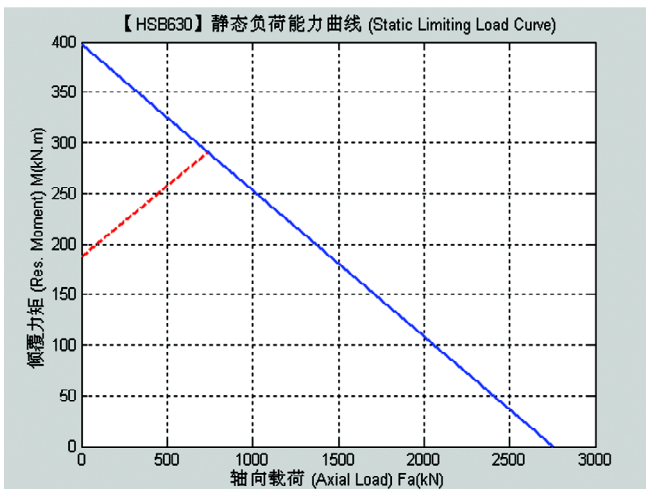


Figure A-16

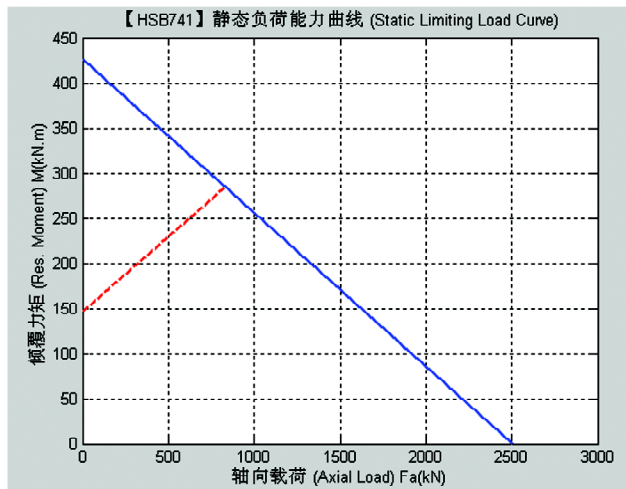


Figure A-21

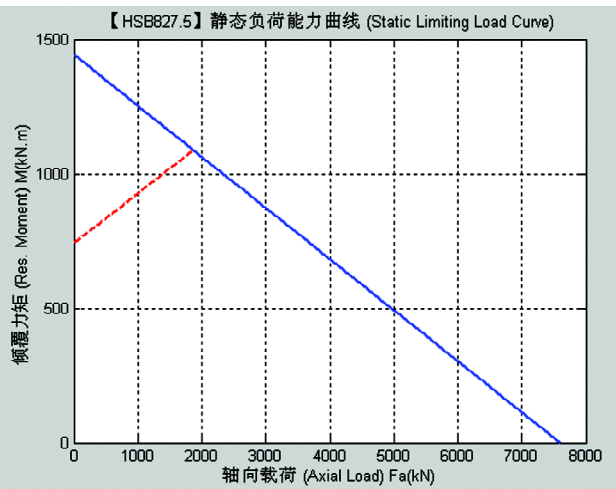


Figure A-22

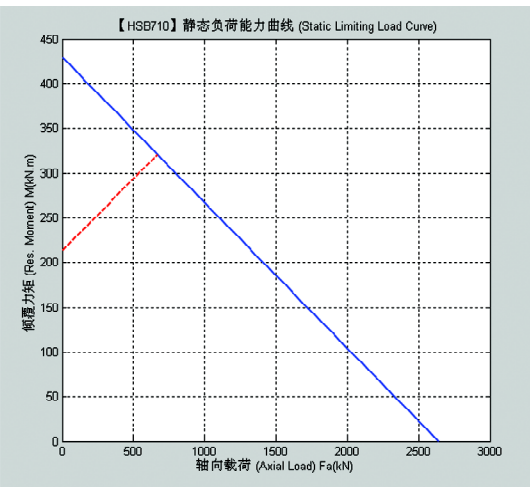


Figure A-17

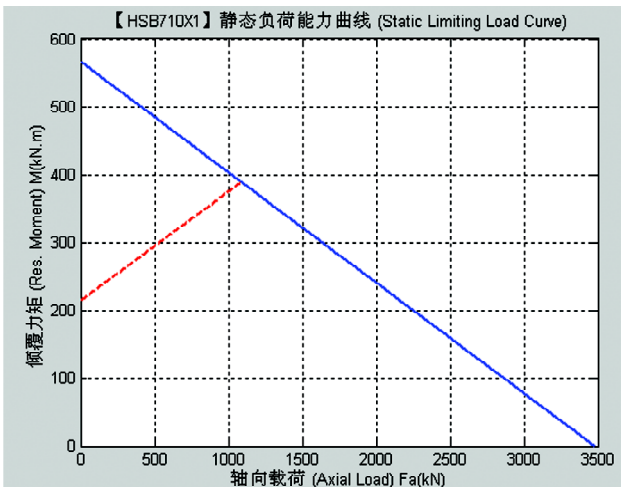


Figure A-18

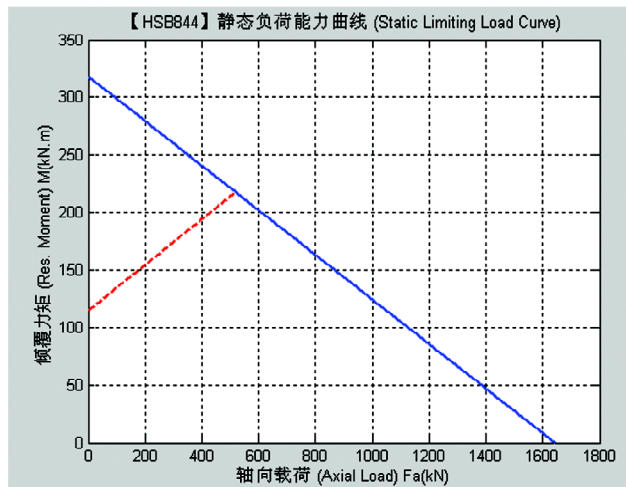


Figure A-23

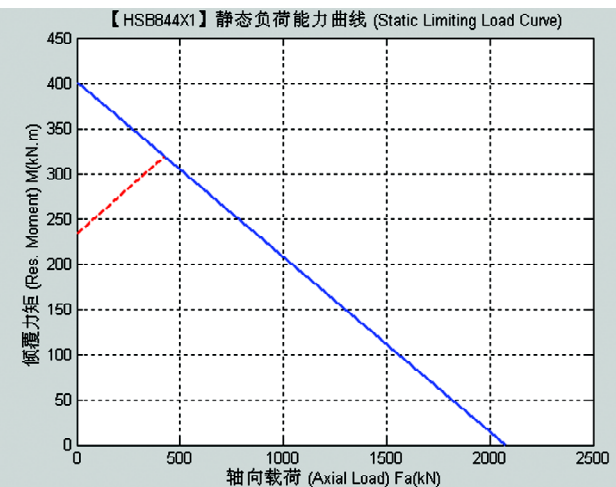


Figure A-24

Appendix A Slewing bearing load Curve

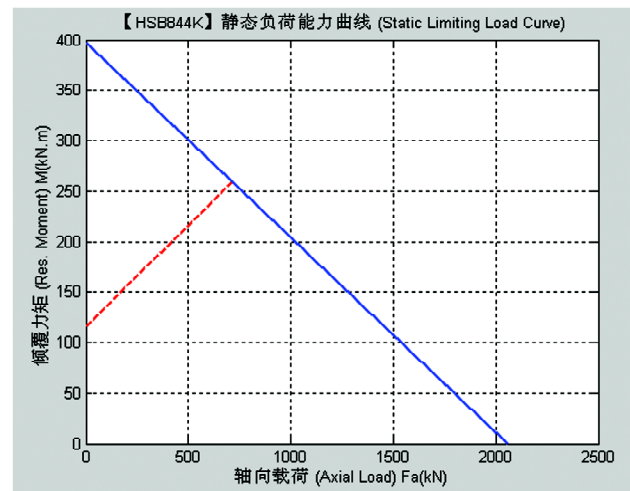


Figure A-25

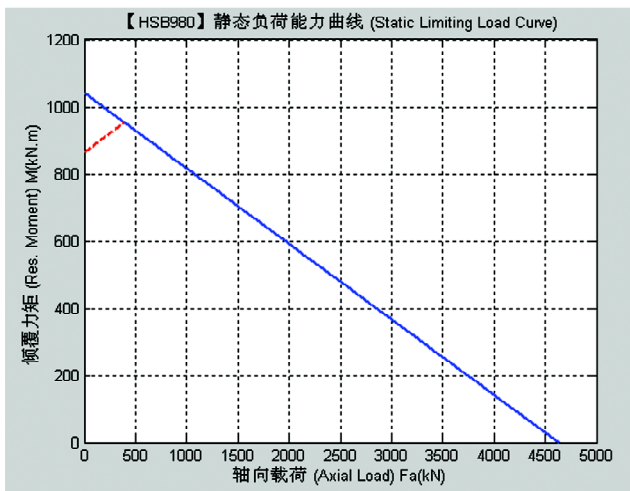


Figure A-26

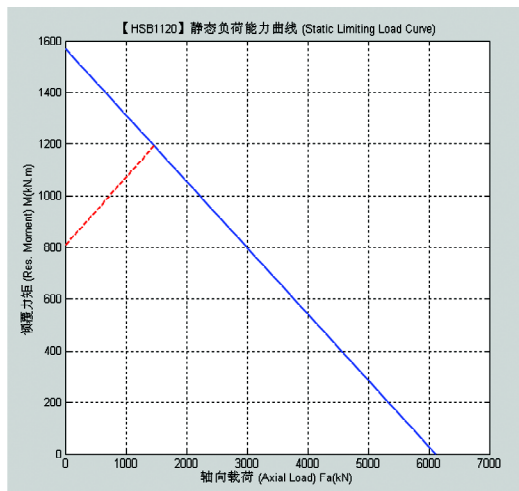


Figure A-31

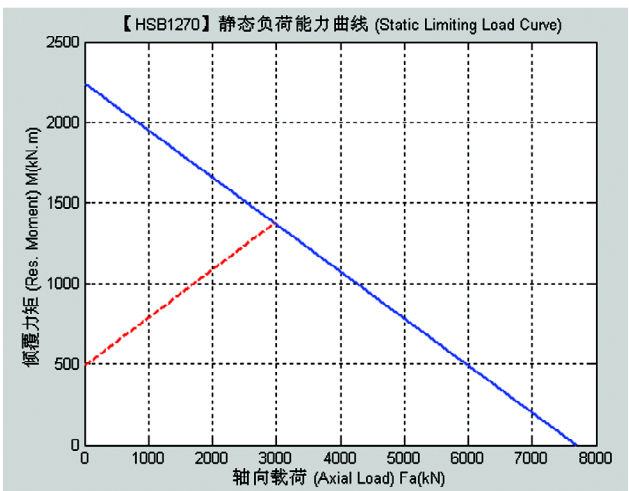


Figure A-32

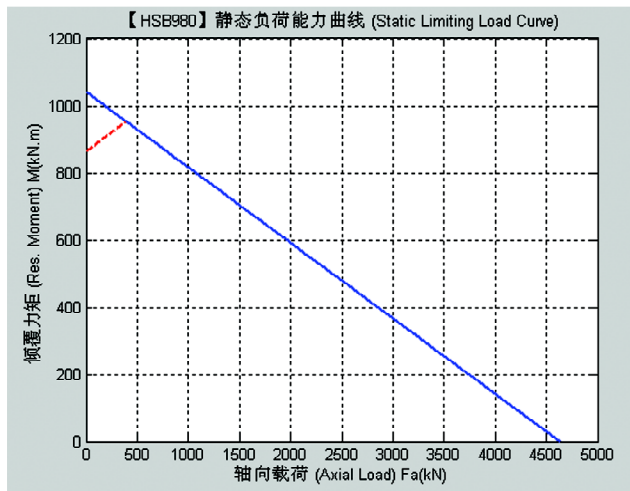


Figure A-27

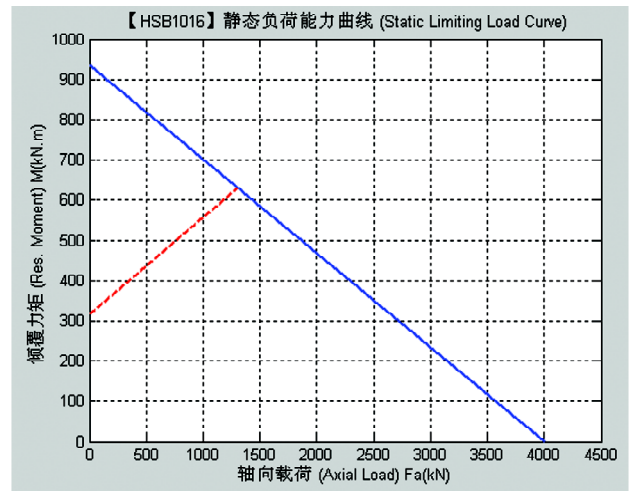


Figure A-28

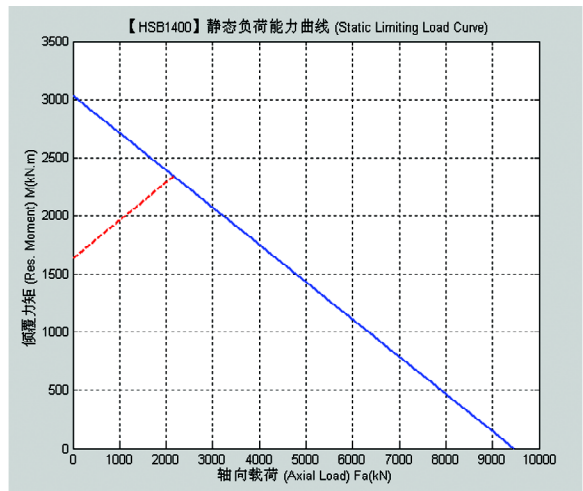


Figure A-33

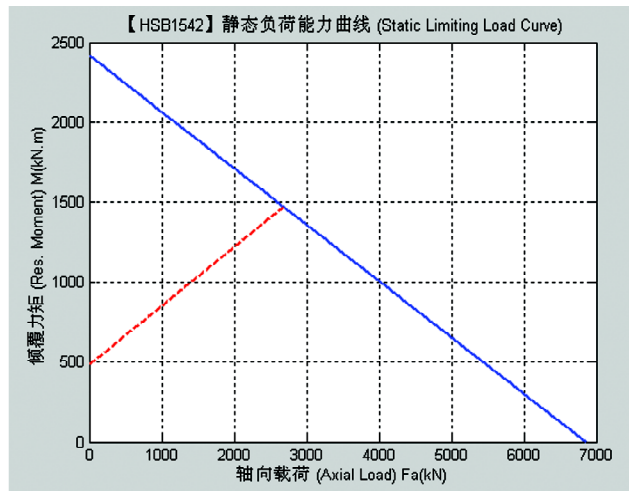


Figure A-34

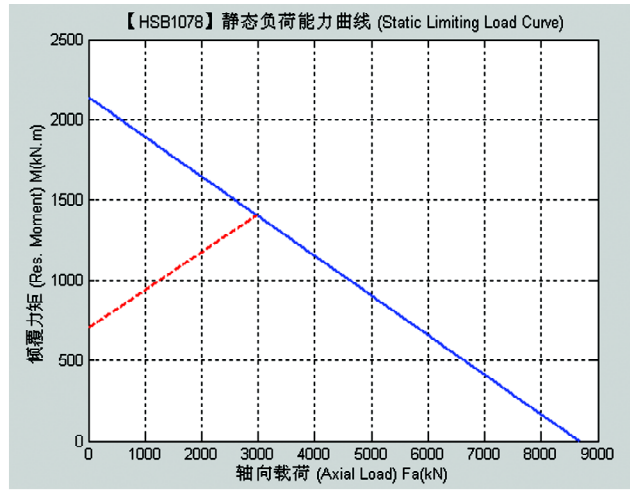


Figure A-29

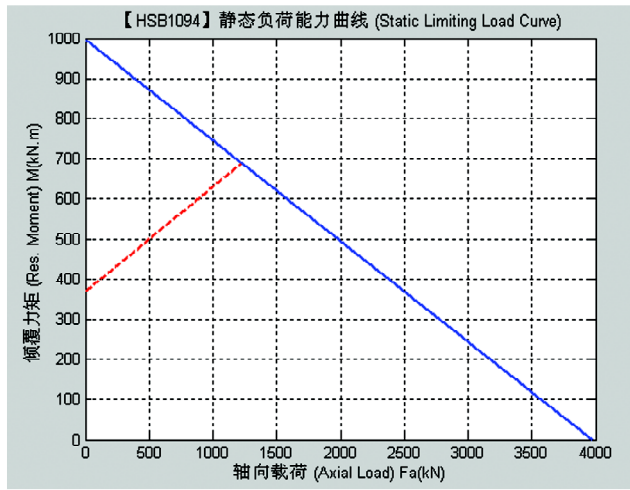


Figure A-30

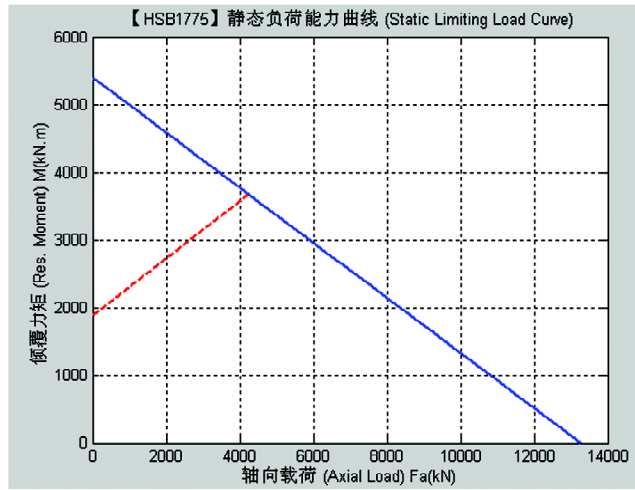


Figure A-35

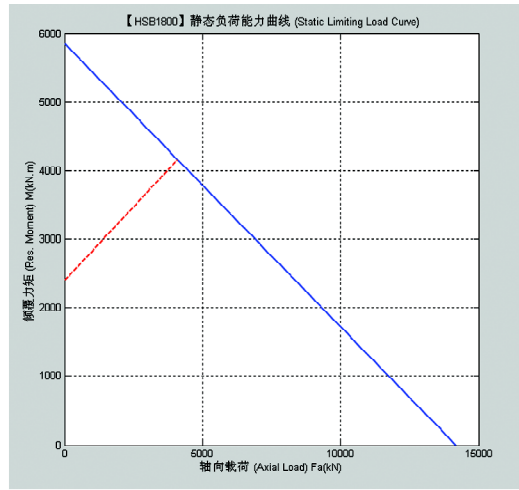


Figure A-36

Appendix A Slewing bearing load Curve

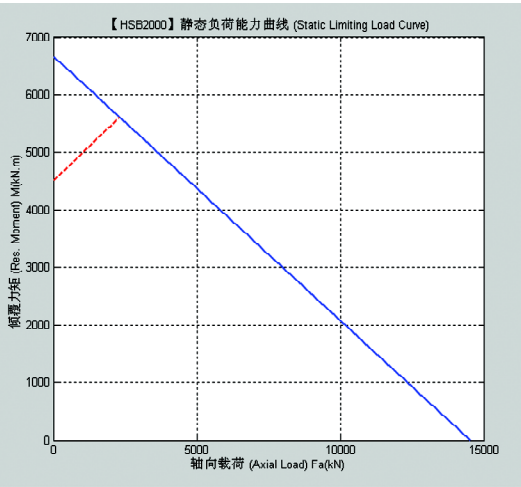


Figure A-38

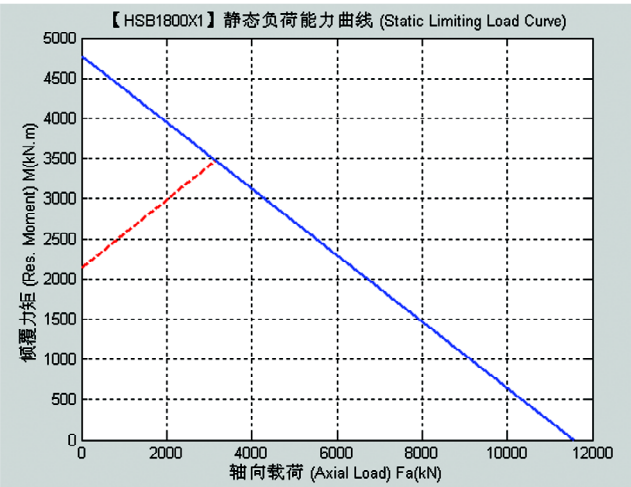


Figure A-37

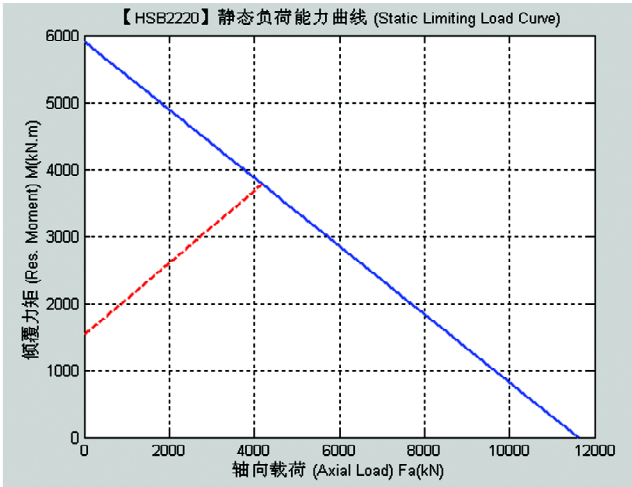


Figure A-43

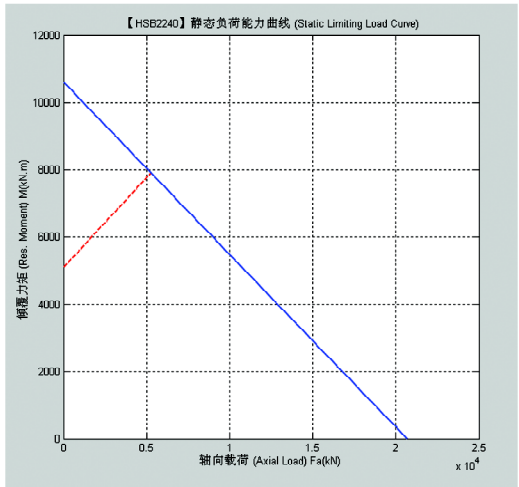


Figure A-44

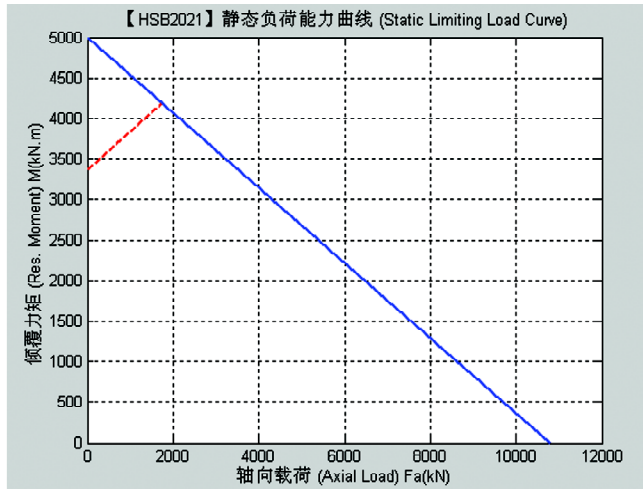


Figure A-39

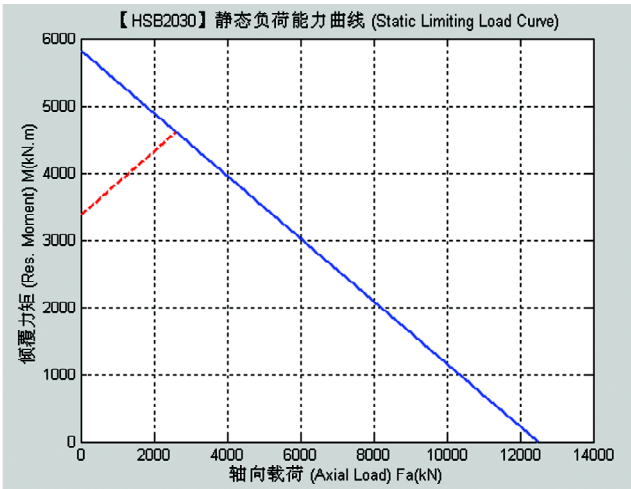


Figure A-40

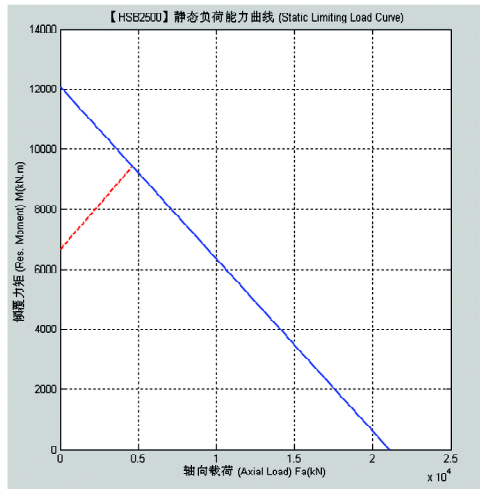


Figure A-45

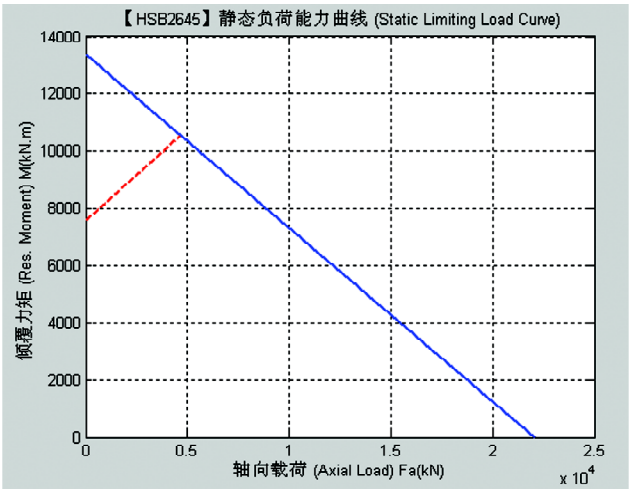


Figure A-46

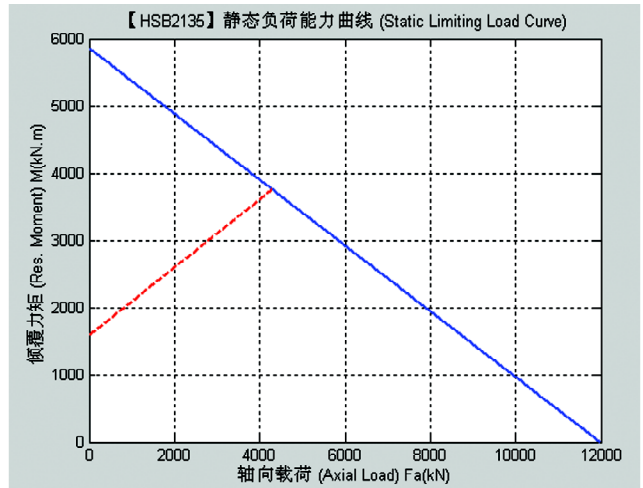


Figure A-41

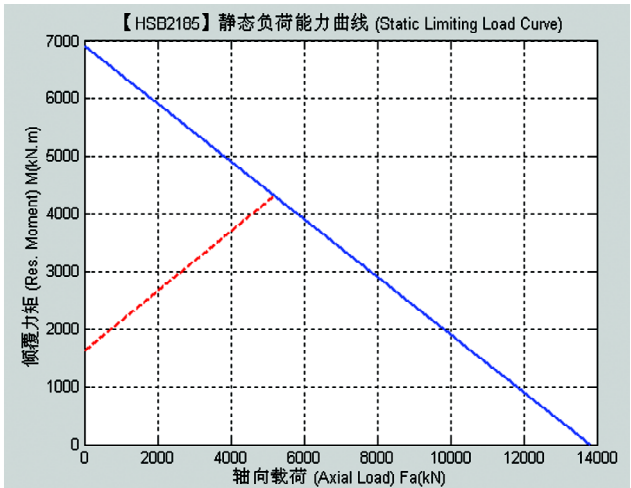


Figure A-42

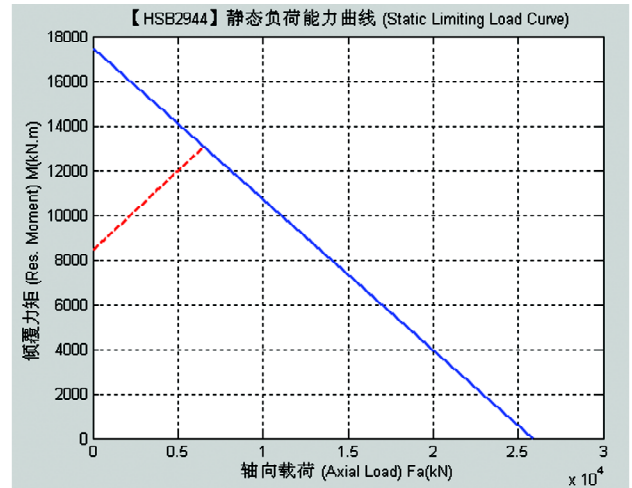


Figure A-47

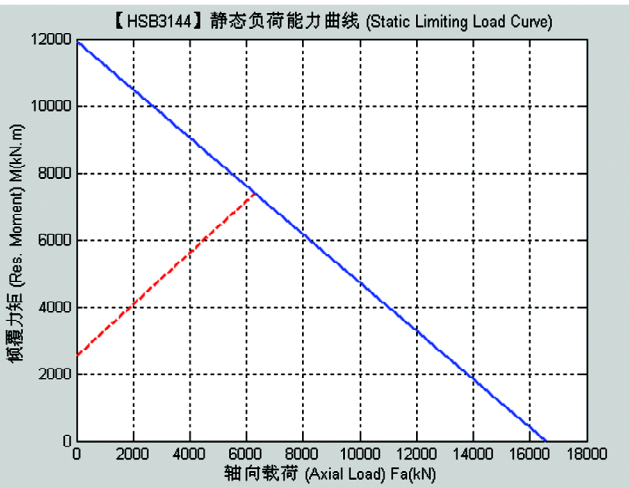


Figure A-48

Appendix A Slewing bearing load Curve

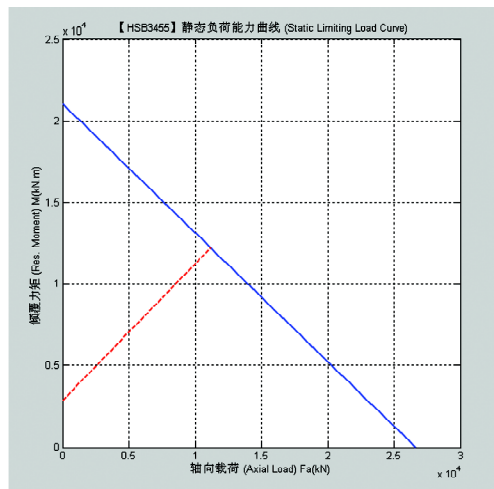


Figure A-49

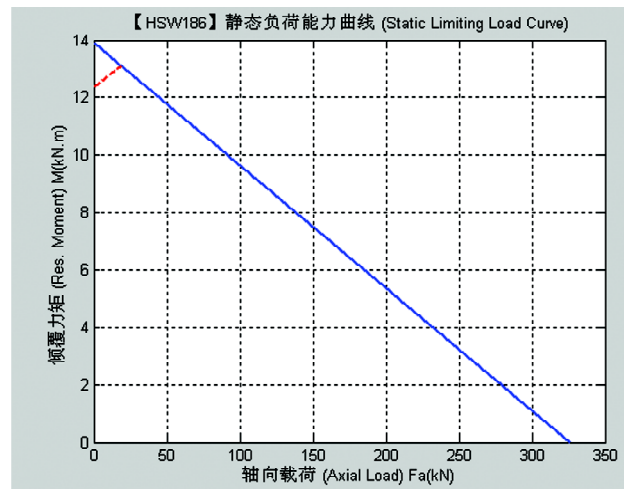


Figure A-50

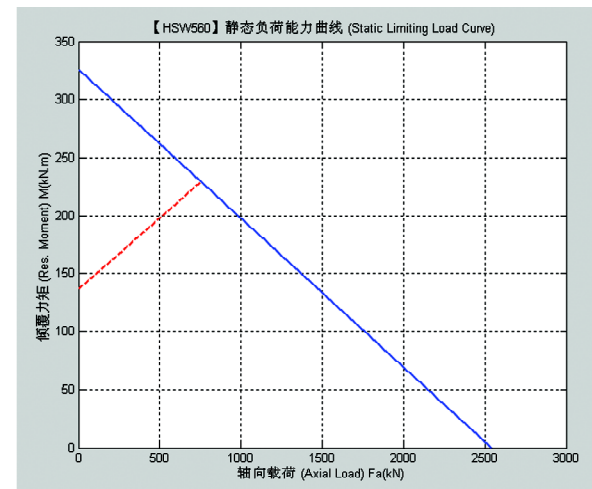


Figure A-55

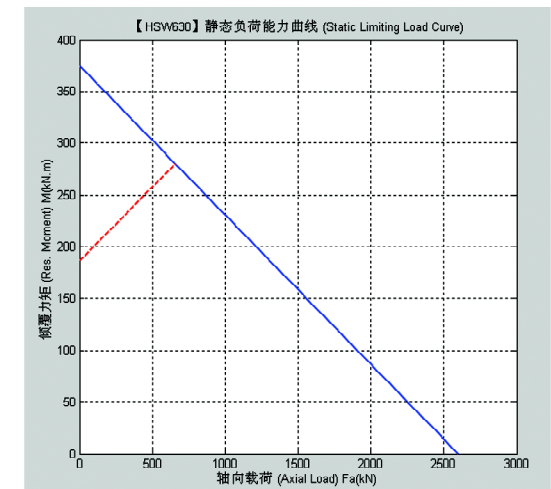


Figure A-56

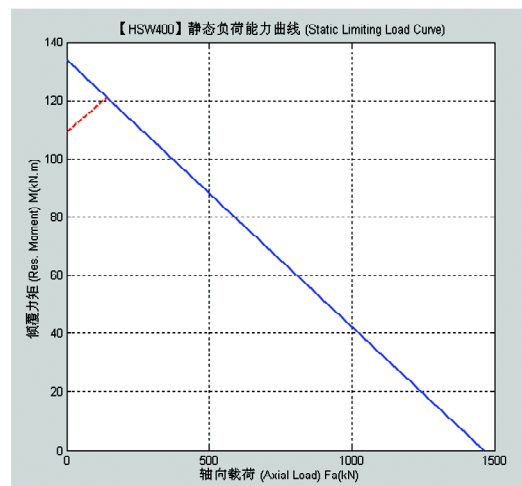


Figure A-51

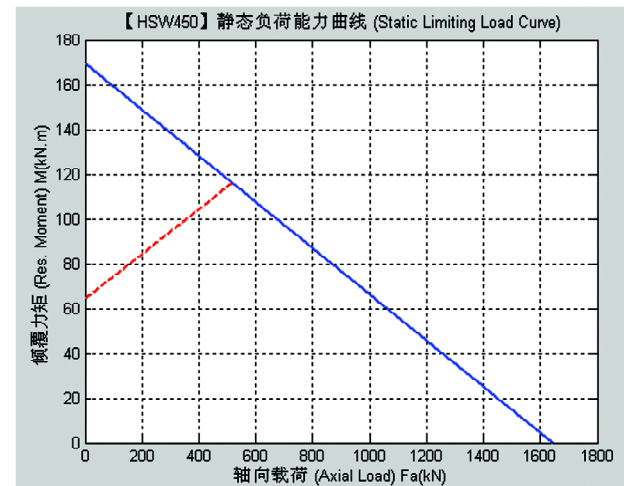


Figure A-52

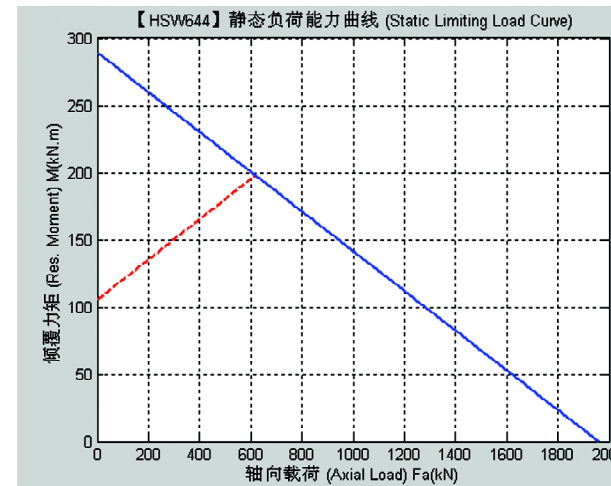


Figure A-57

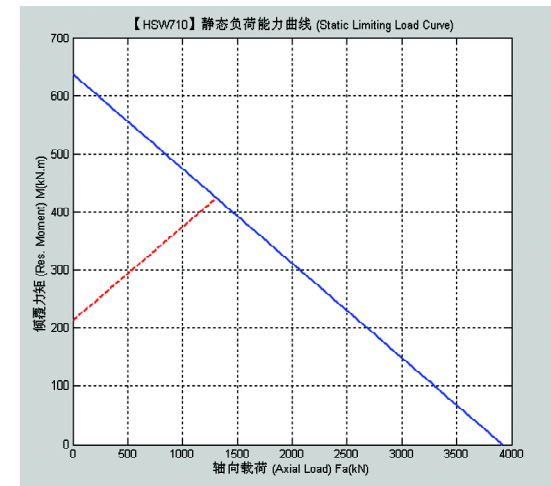


Figure A-58

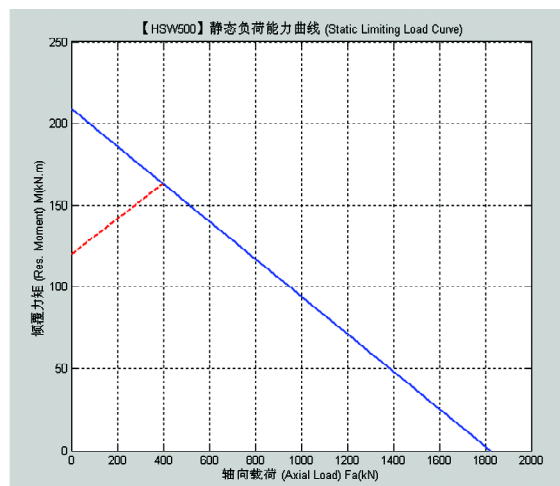


Figure A-53

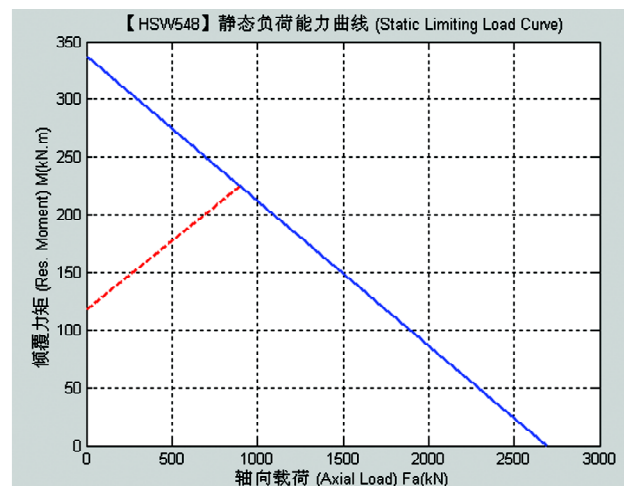


Figure A-54

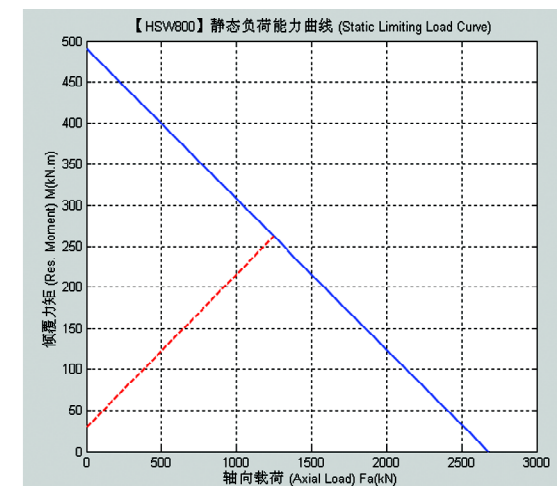


Figure A-59

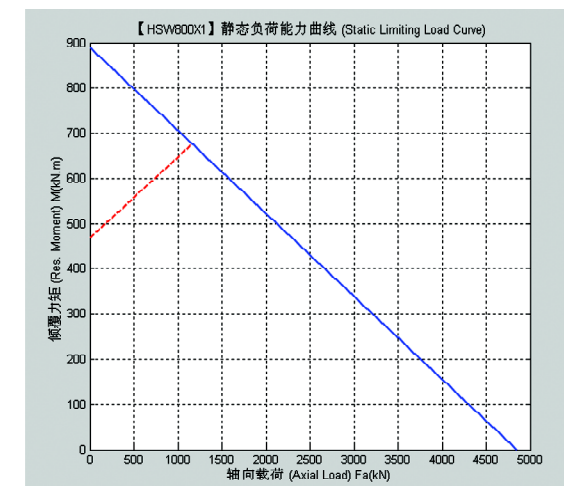


Figure A-60

Appendix A Slewing bearing load Curve

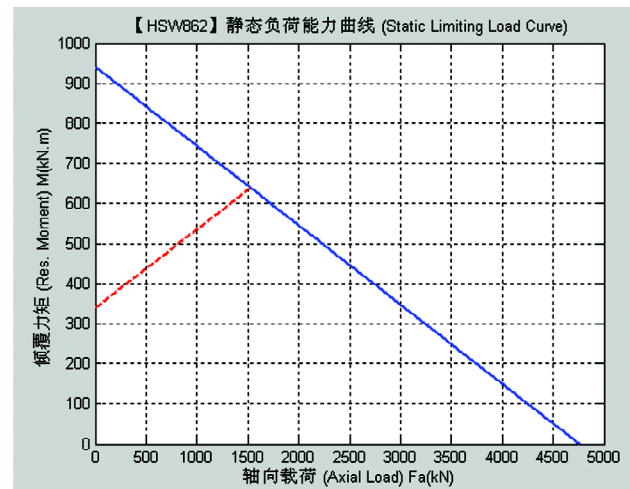


Figure A-61

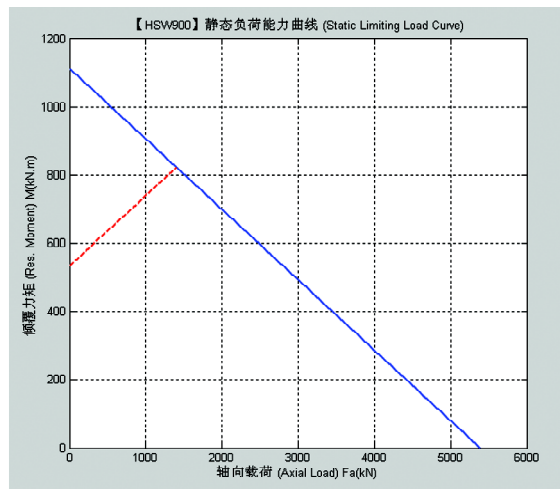


Figure A-62

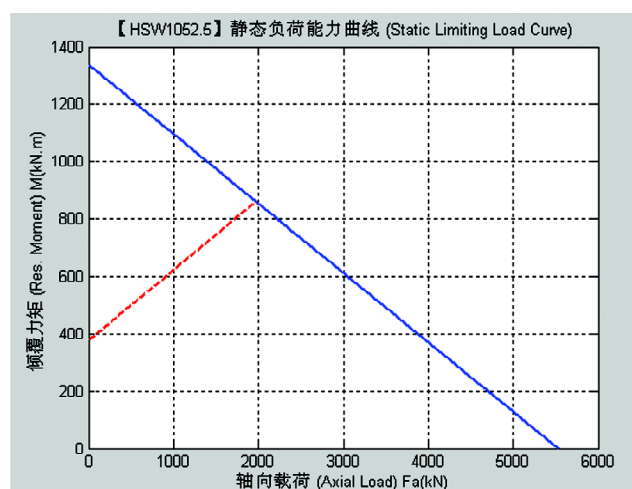


Figure A-67

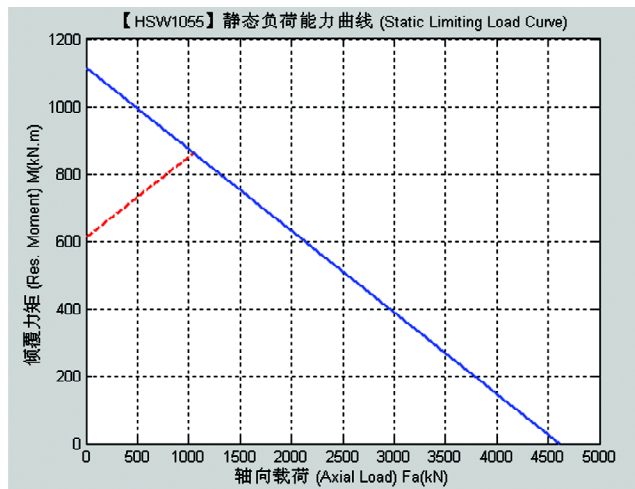


Figure A-68

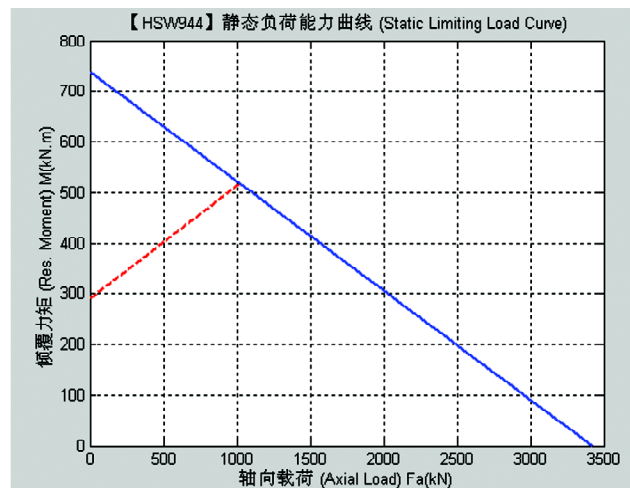


Figure A-63

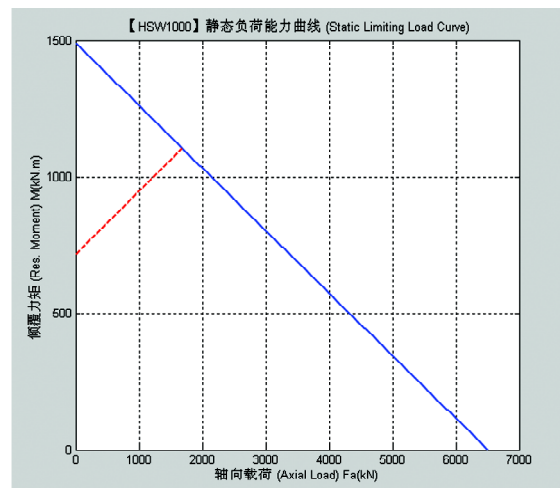


Figure A-64

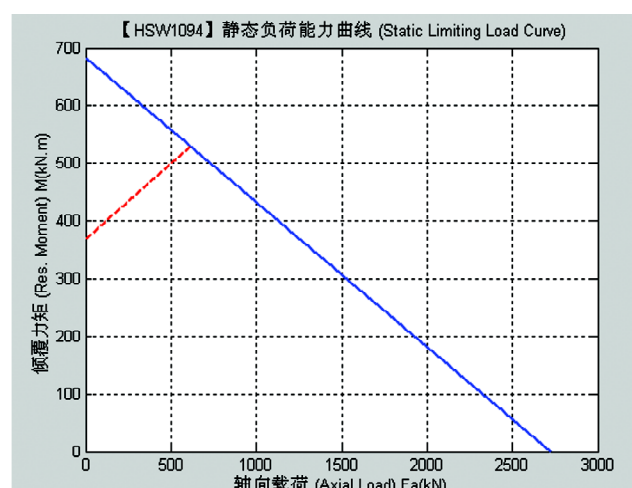


Figure A-69

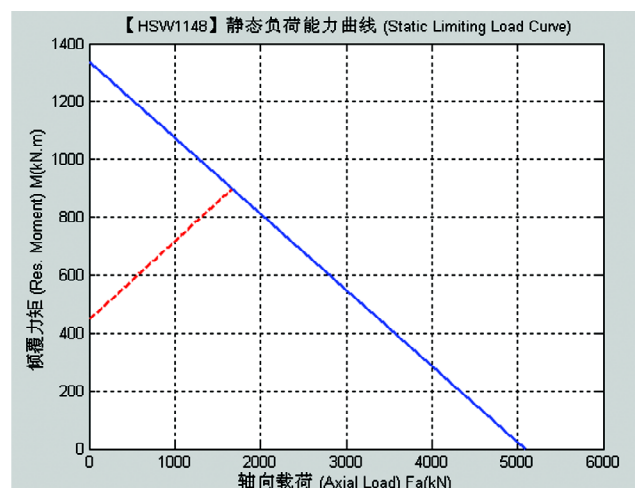


Figure A-70

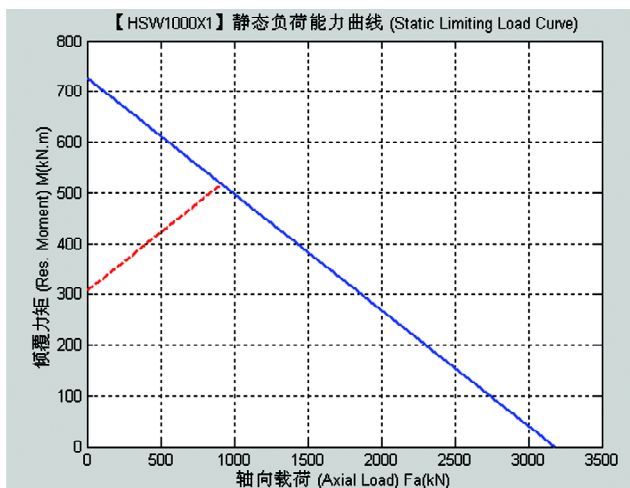


Figure A-65

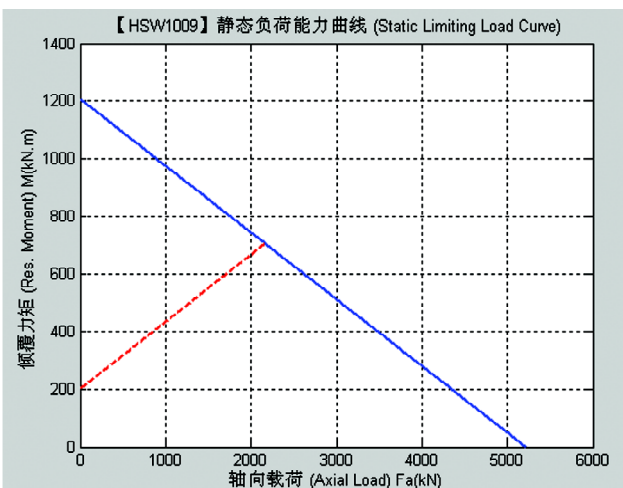


Figure A-66

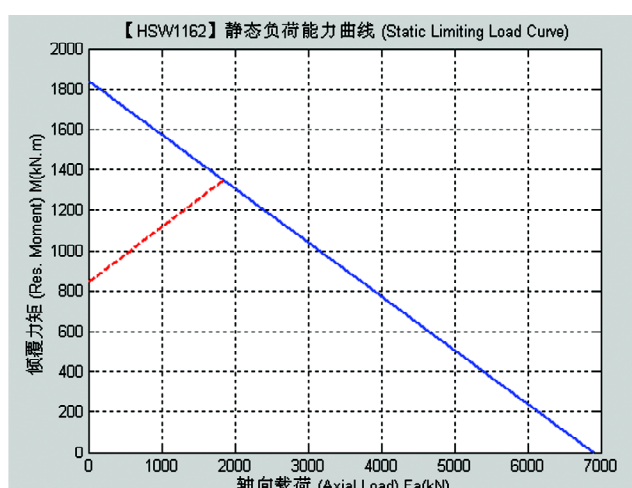


Figure A-71

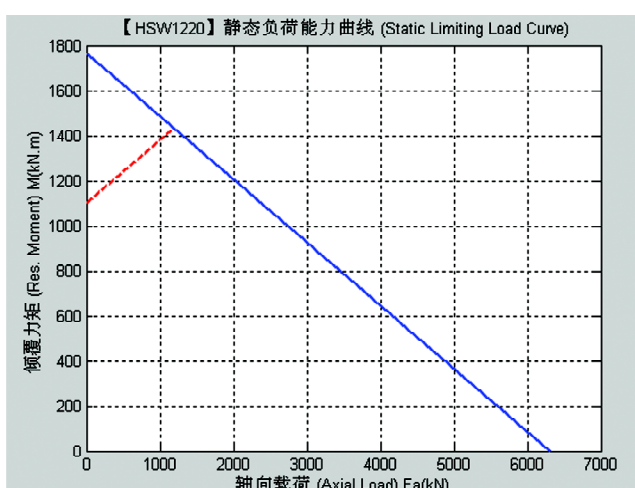


Figure A-72

Appendix A Slewing bearing load Curve

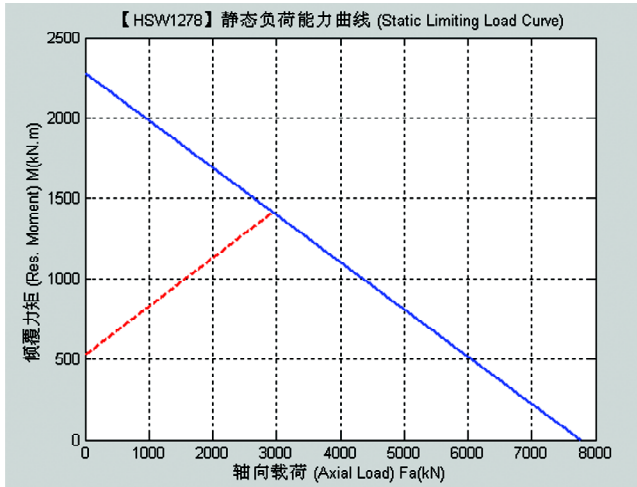


Figure A-73

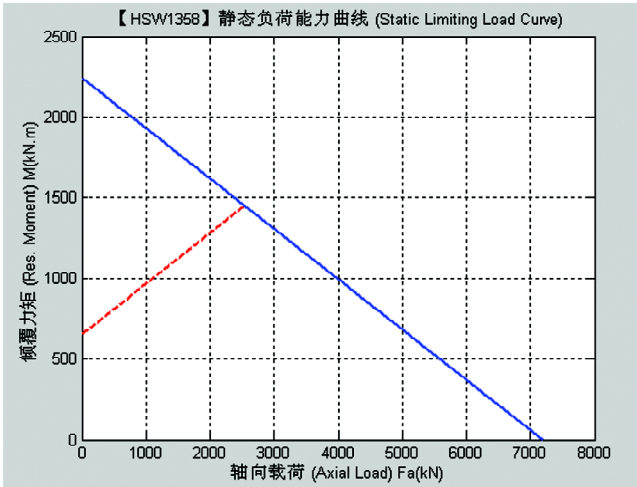


Figure A-74

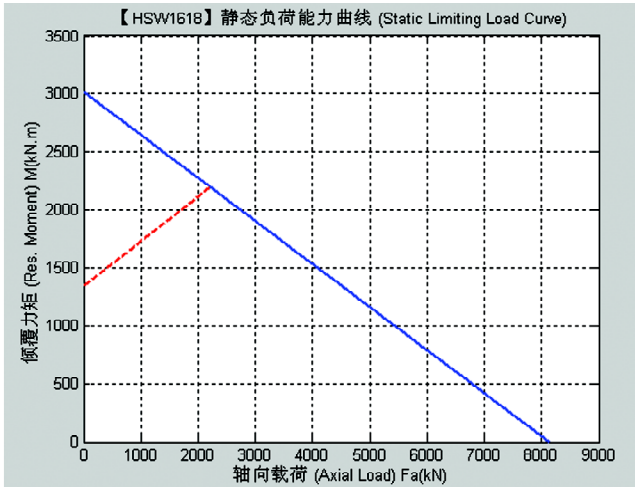


Figure A-79

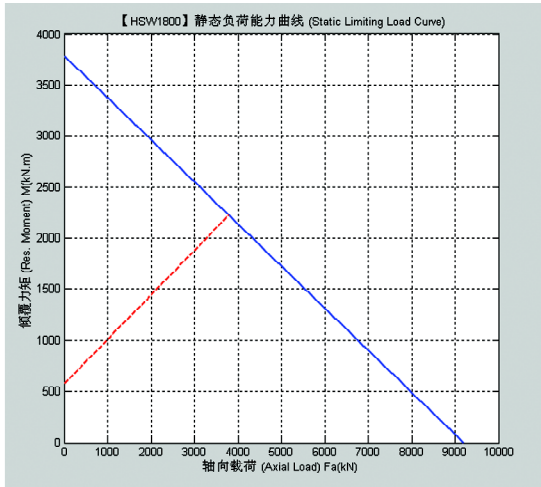


Figure A-80

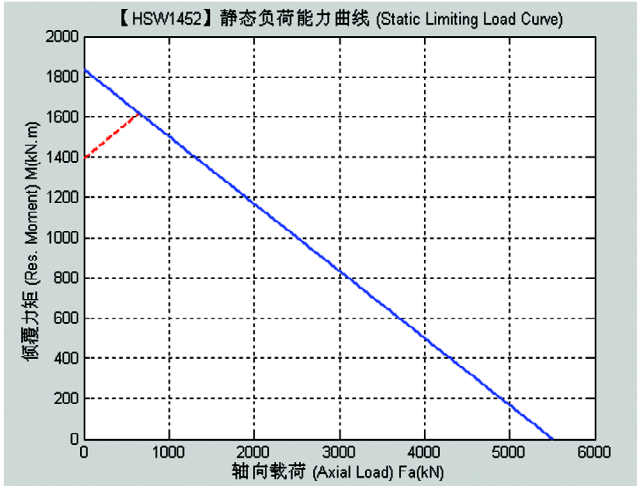


Figure A-75

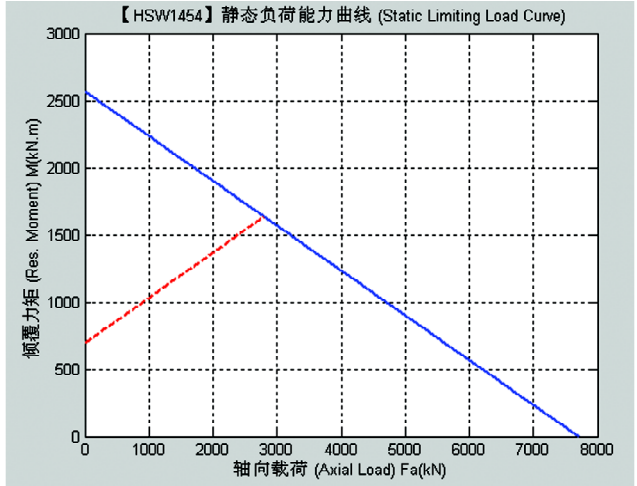


Figure A-76

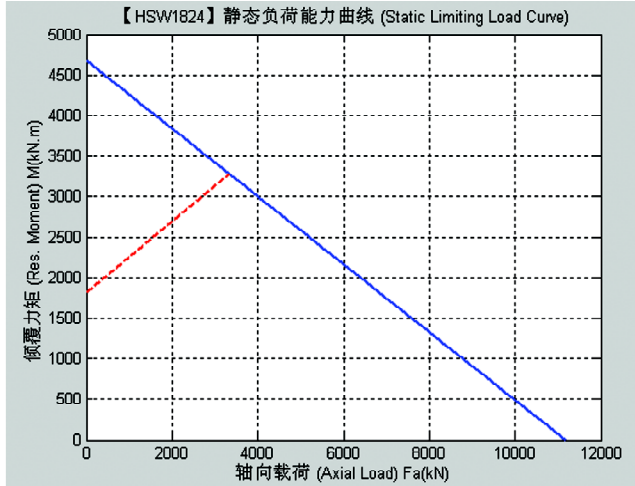


Figure A-81

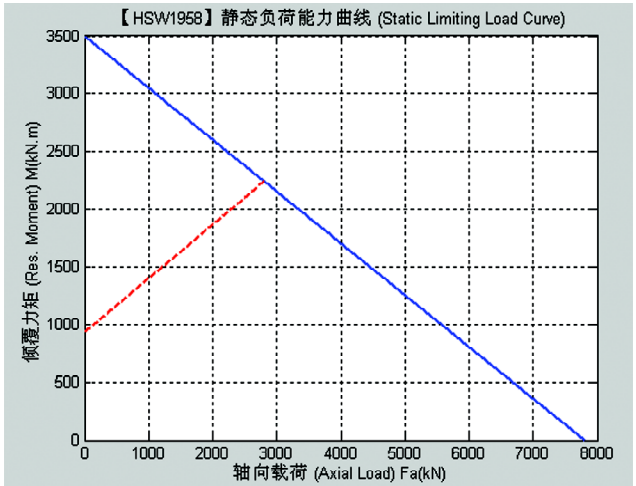


Figure A-82

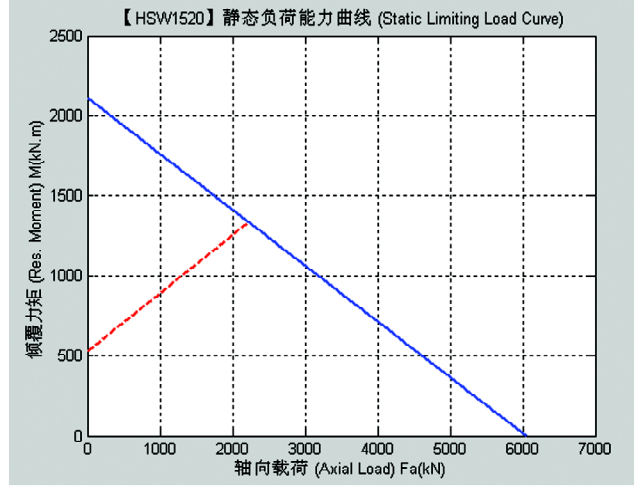


Figure A-77

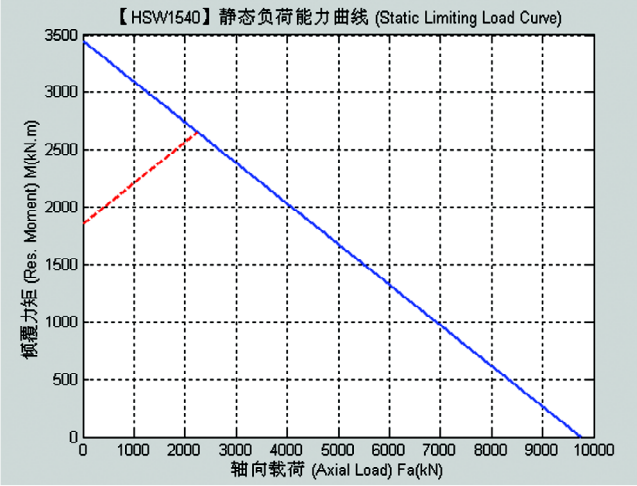


Figure A-78

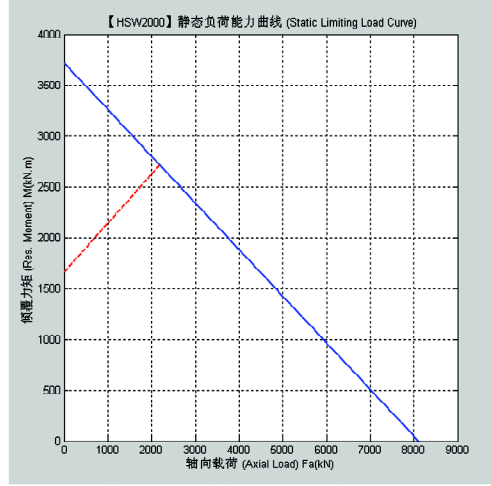


Figure A-83

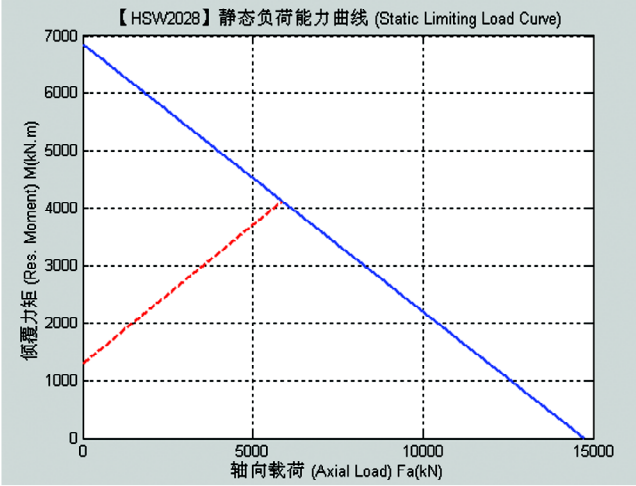


Figure A-84

Appendix A Slewing bearing load Curve

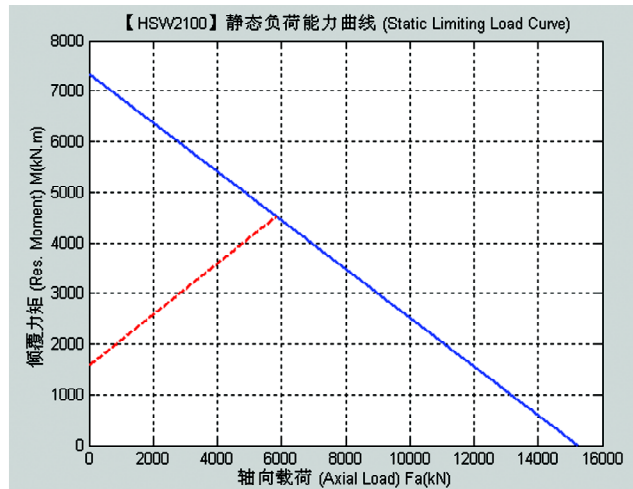


Figure A-85

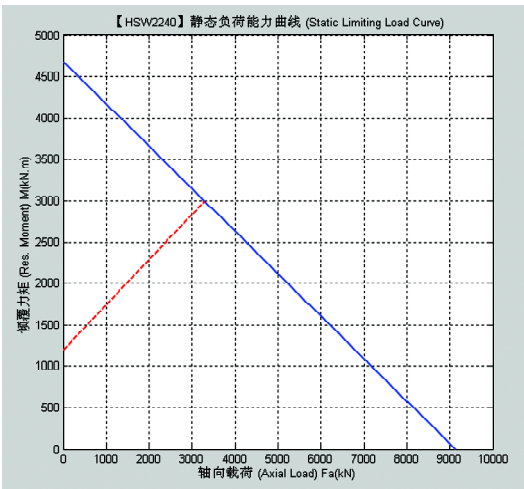


Figure A-86

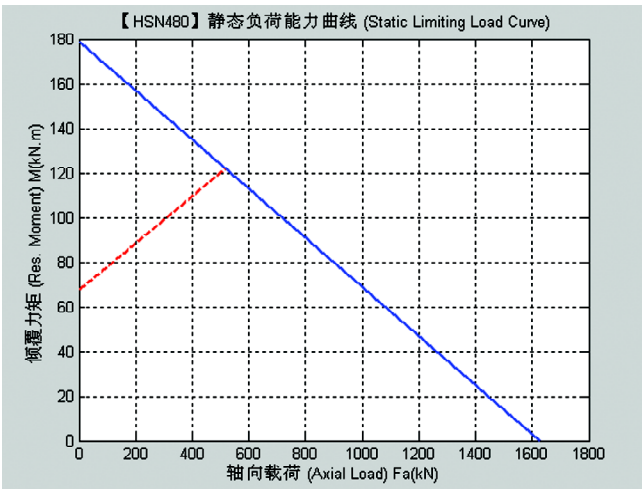


Figure A-91

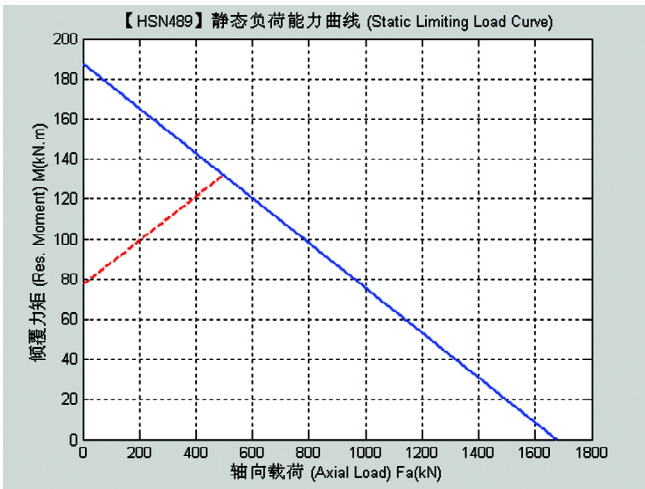


Figure A-92

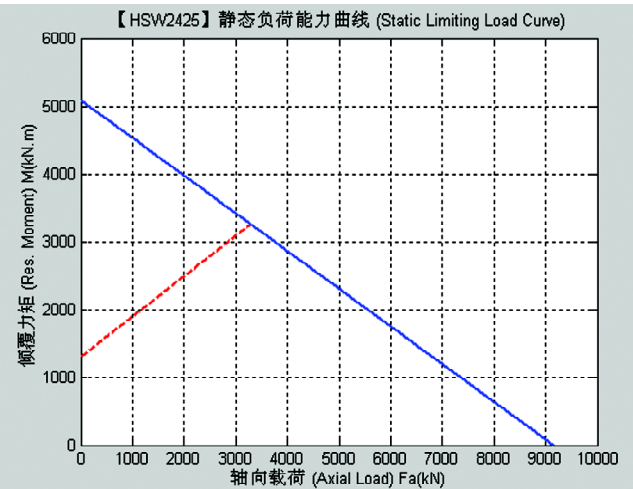


Figure A-87

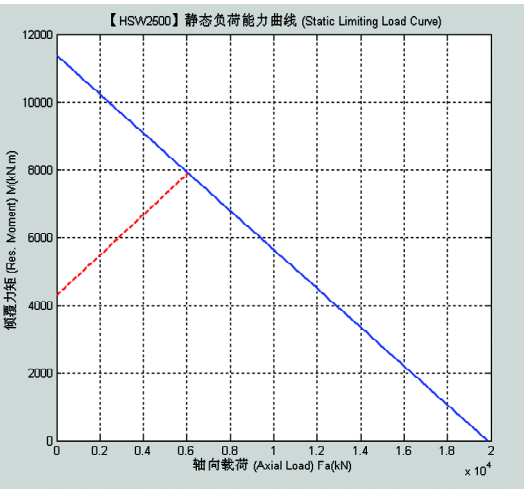


Figure A-88

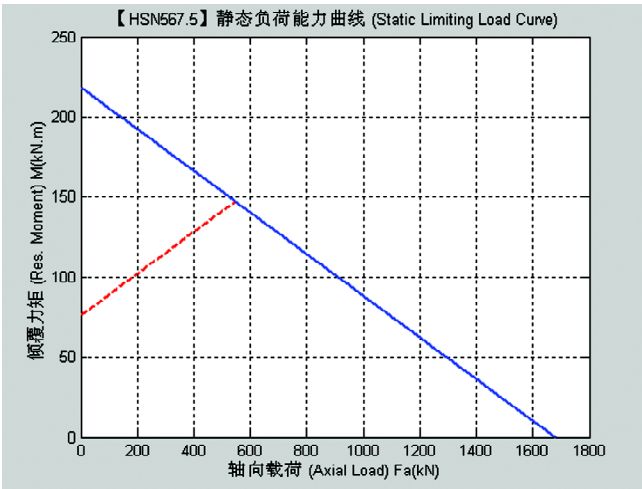


Figure A-93

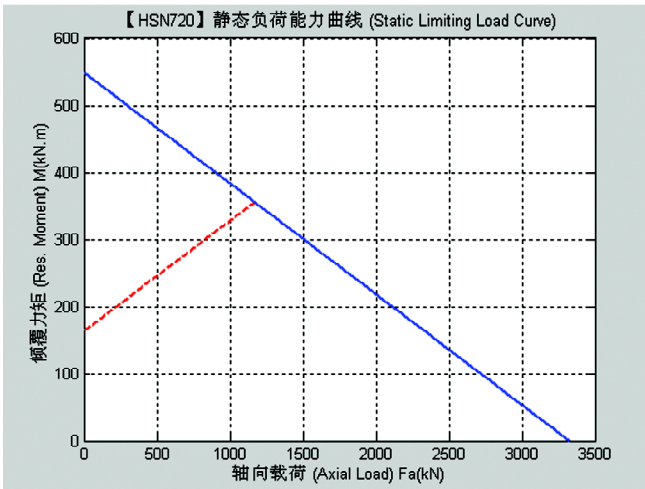


Figure A-94

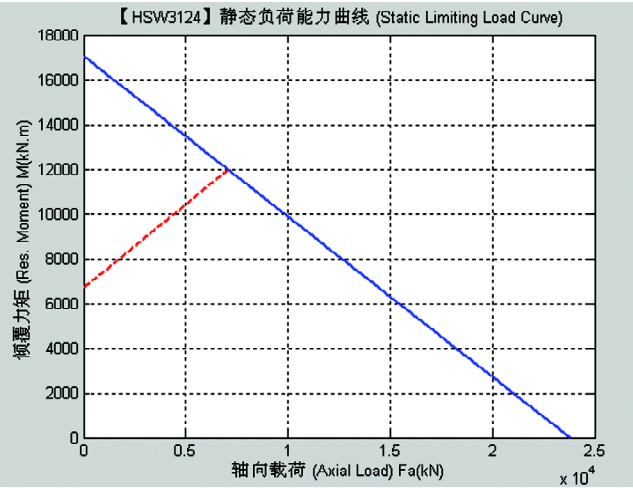


Figure A-89

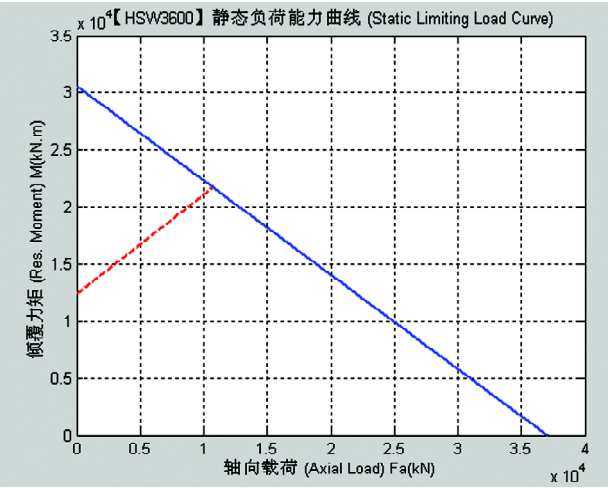


Figure A-90

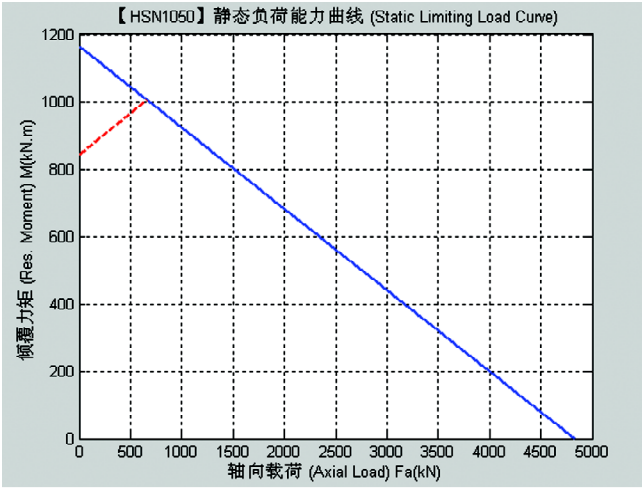


Figure A-95

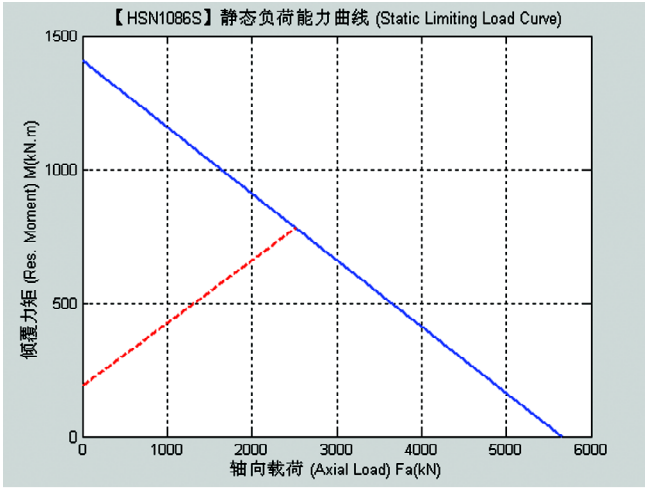


Figure A-96

Appendix A Slewing bearing load Curve

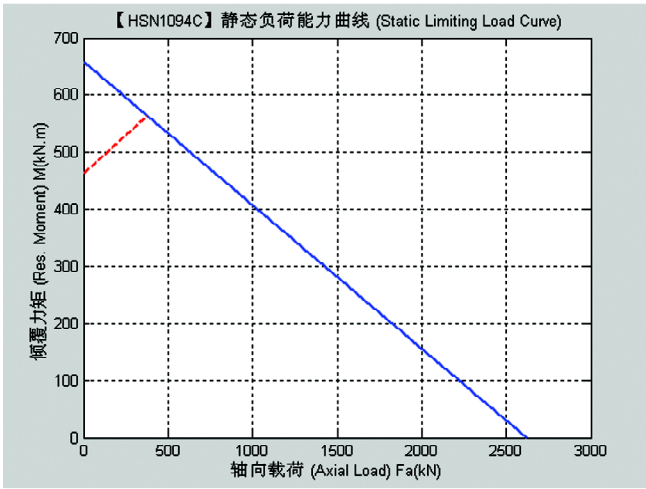


Figure A-97

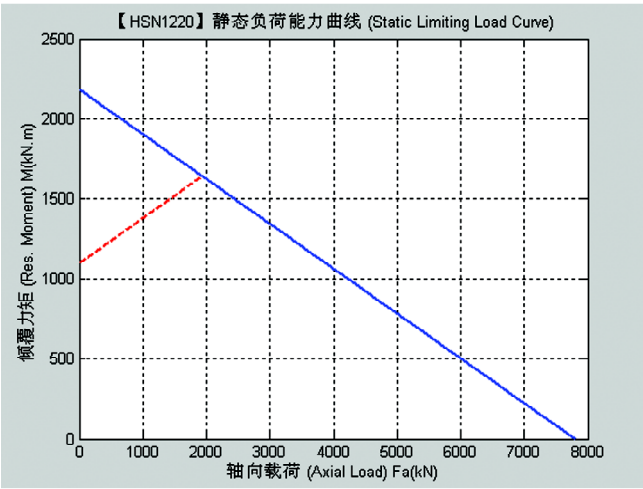


Figure A-98

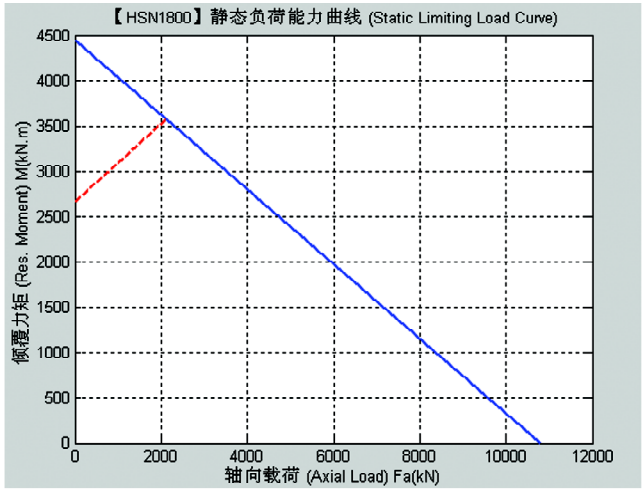


Figure A-103

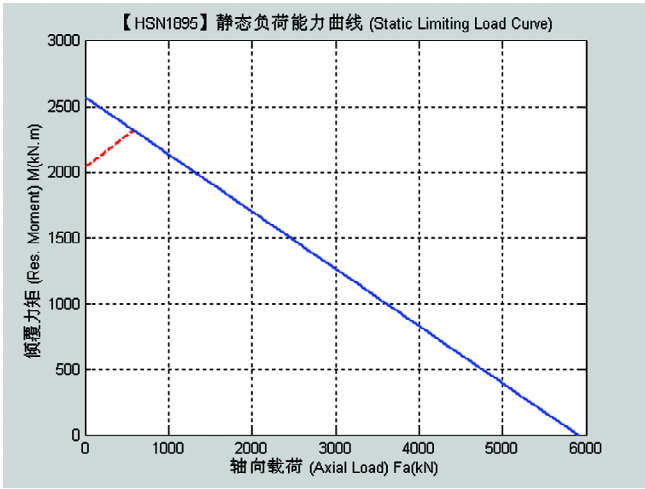


Figure A-104

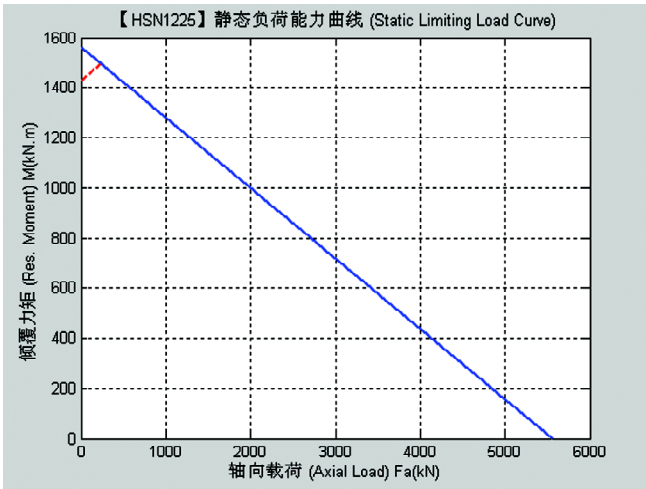


Figure A-99

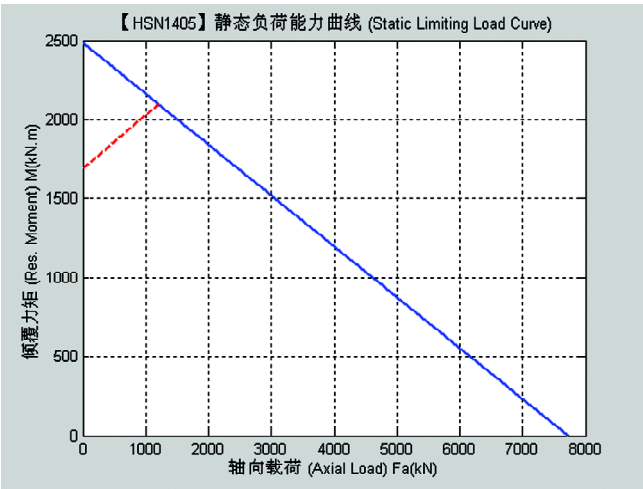


Figure A-100

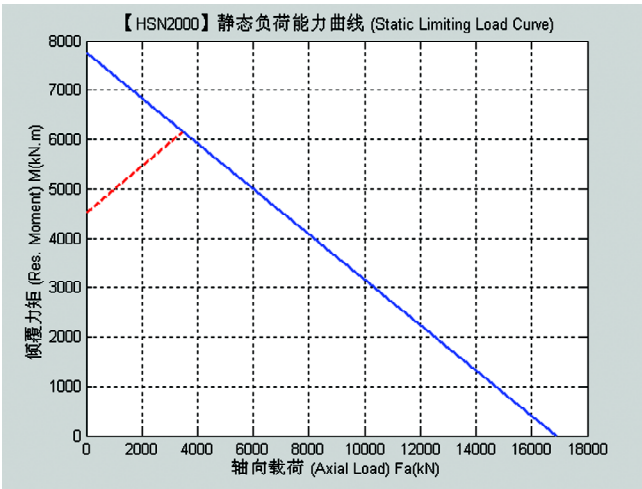


Figure A-105

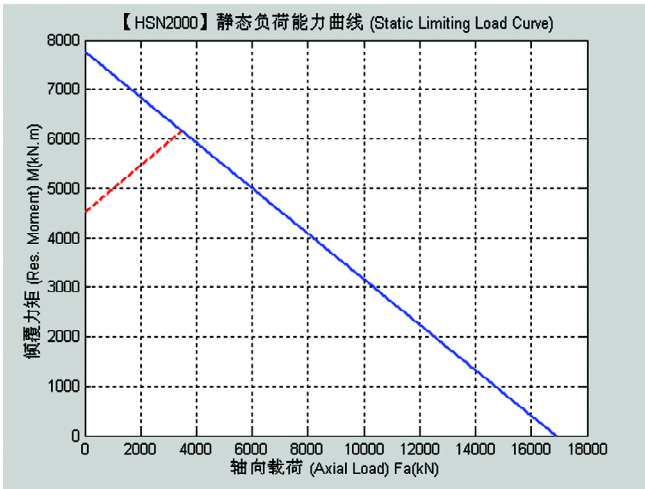


Figure A-106

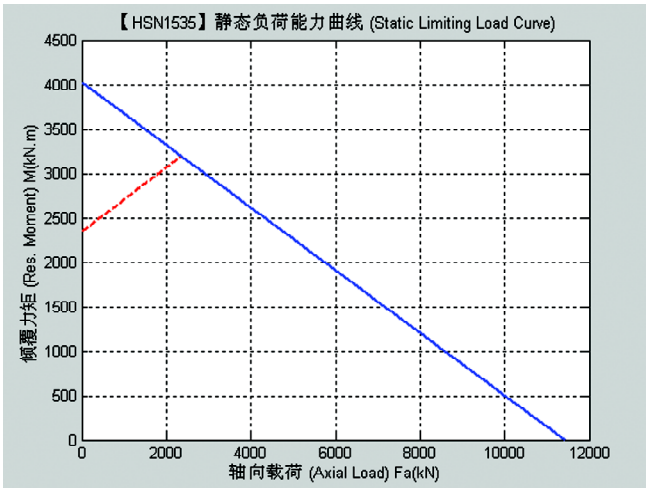


Figure A-101

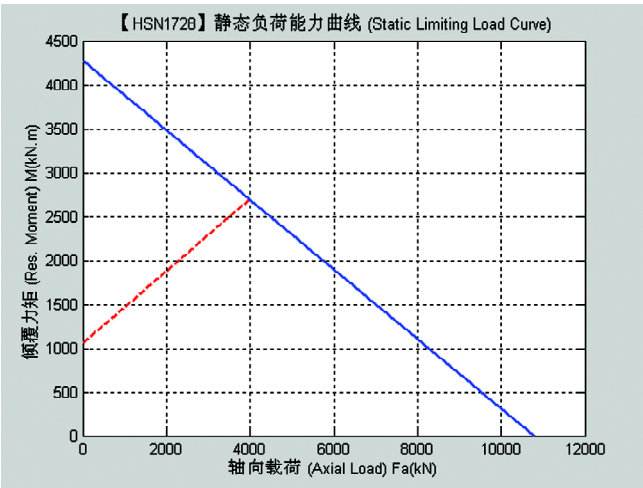


Figure A-102

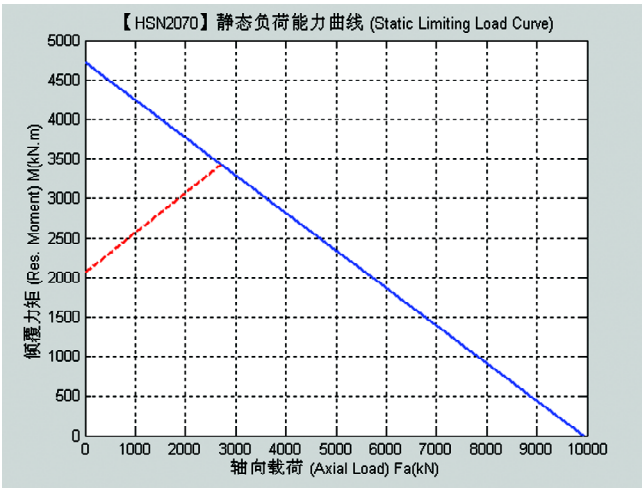


Figure A-107

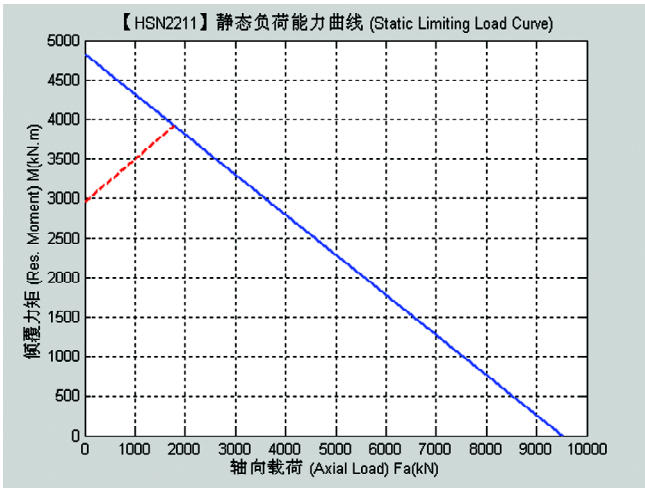


Figure A-108

Appendix A Slewing bearing load Curve

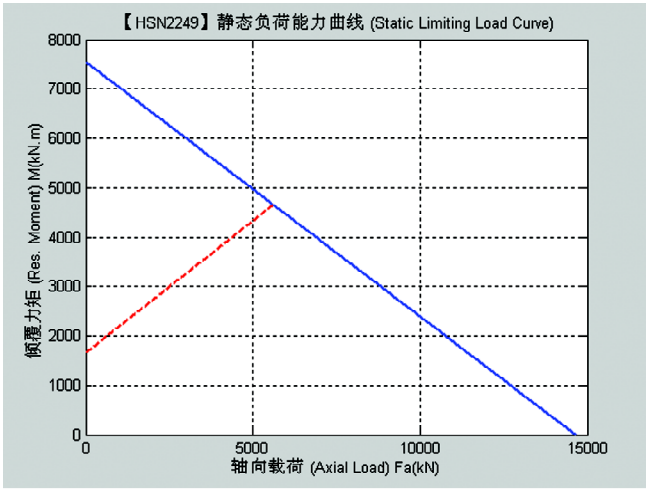


Figure A-109

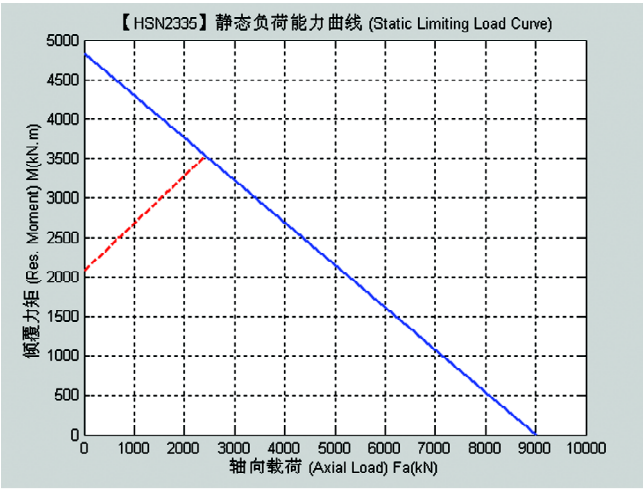


Figure A-110

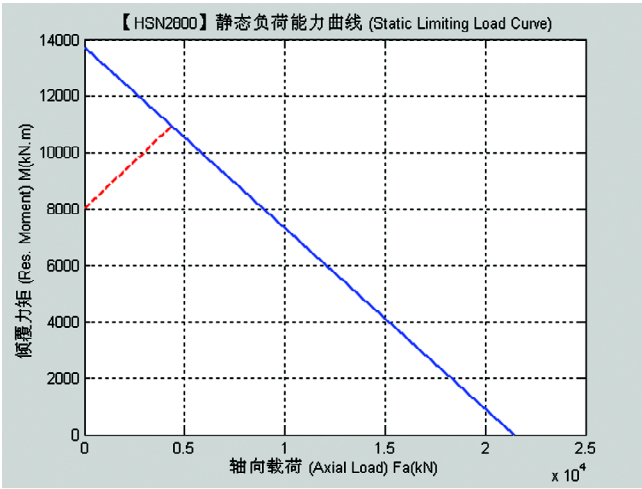


Figure A-115

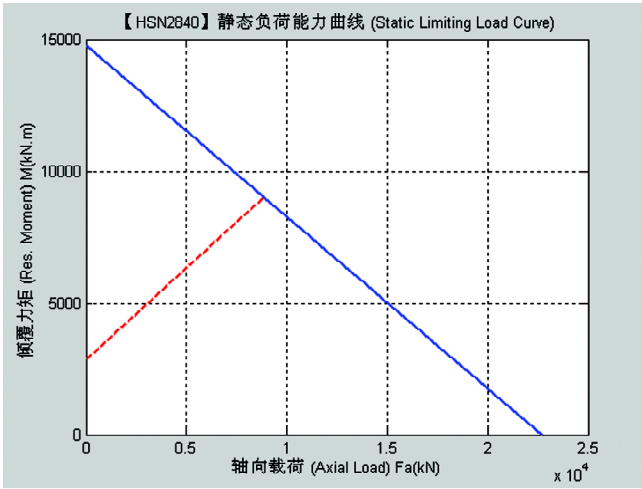


Figure A-116

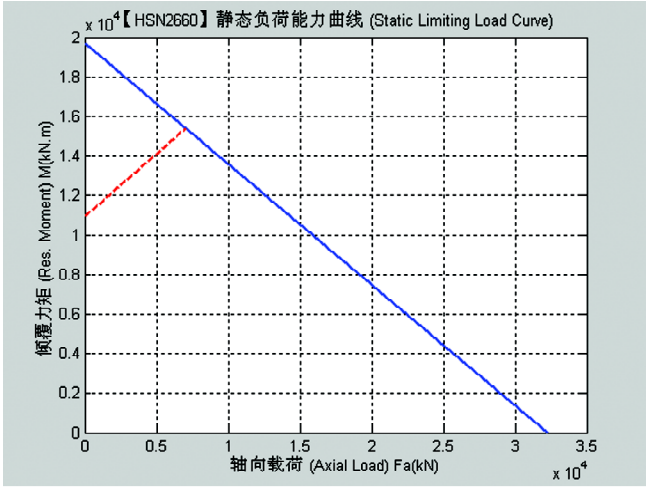


Figure A-111

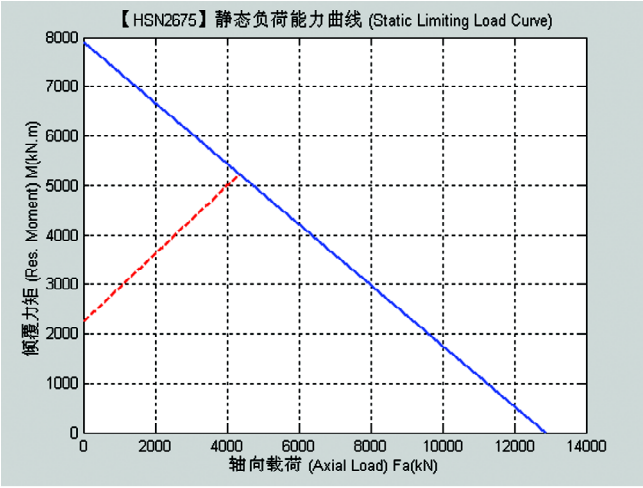


Figure A-112

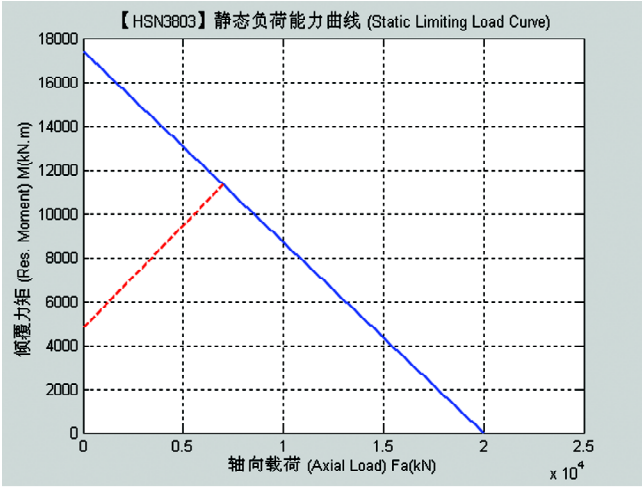


Figure A-117

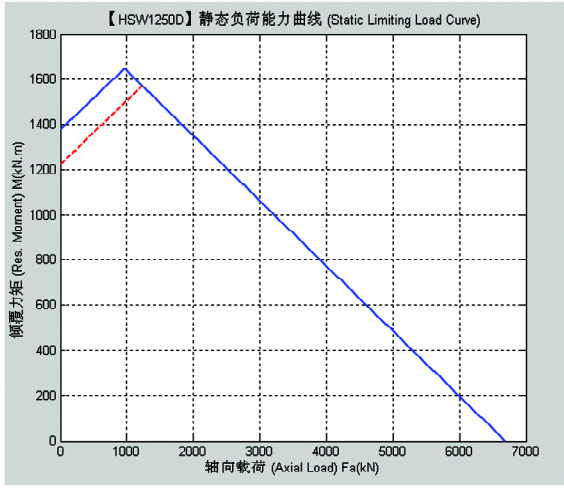


Figure A-118

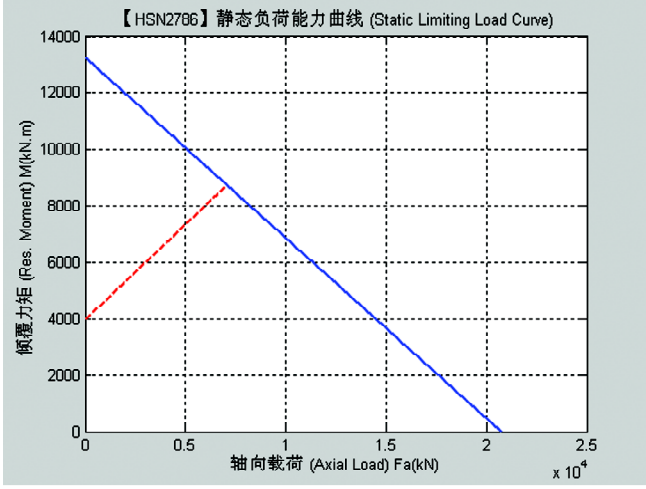


Figure A-113

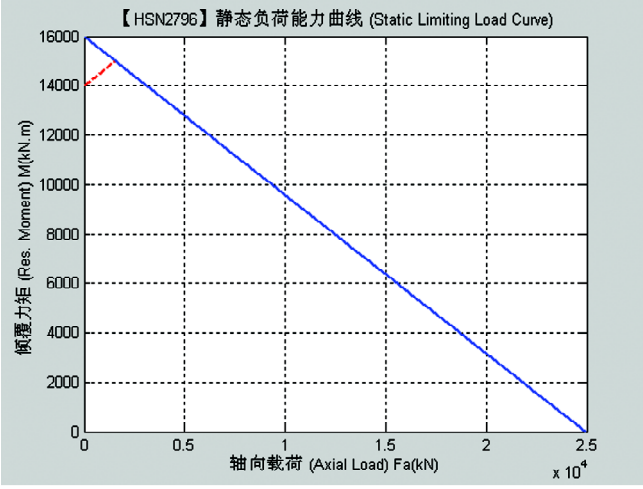


Figure A-114

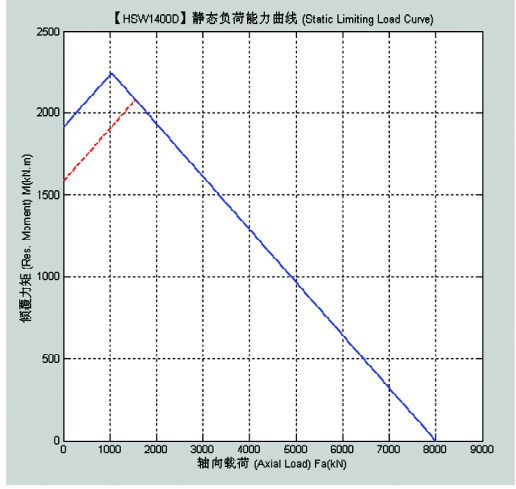


Figure A-119

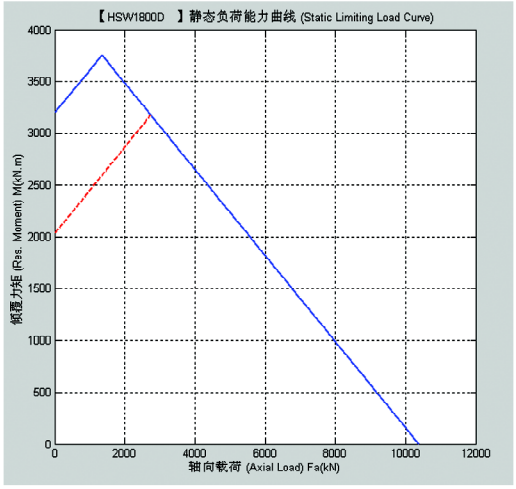


Figure A-120

Appendix A Slewing bearing load Curve

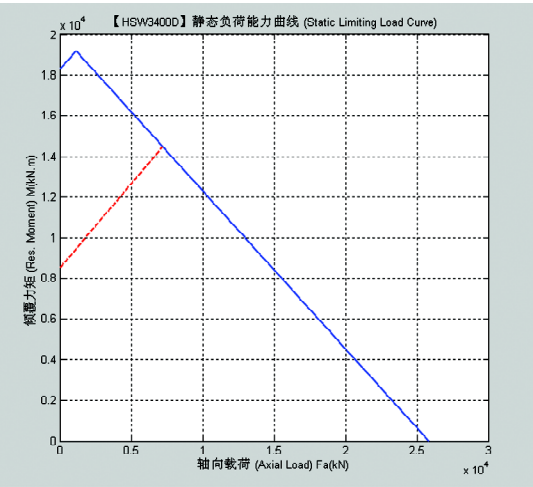


Figure A-121

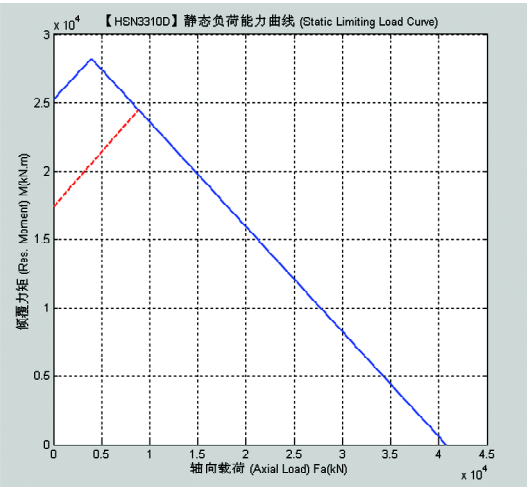


Figure A-122

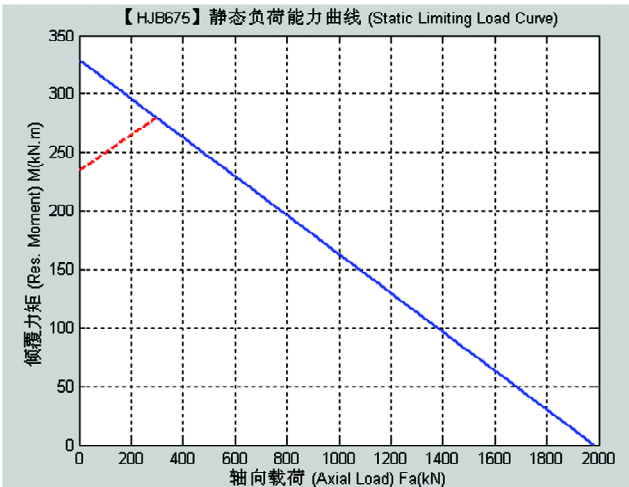


Figure A-127

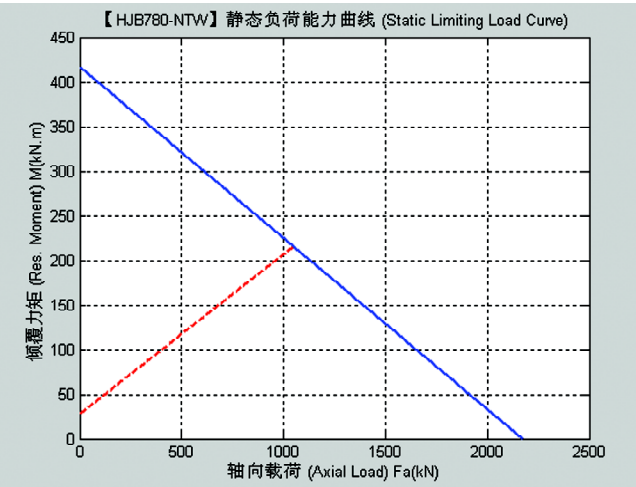


Figure A-128

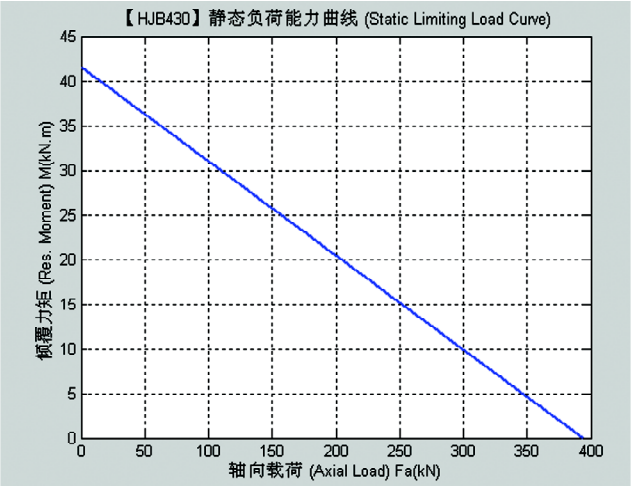


Figure A-123

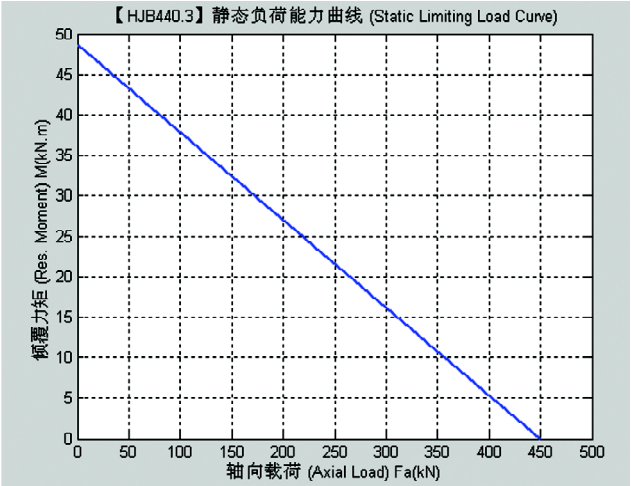


Figure A-124

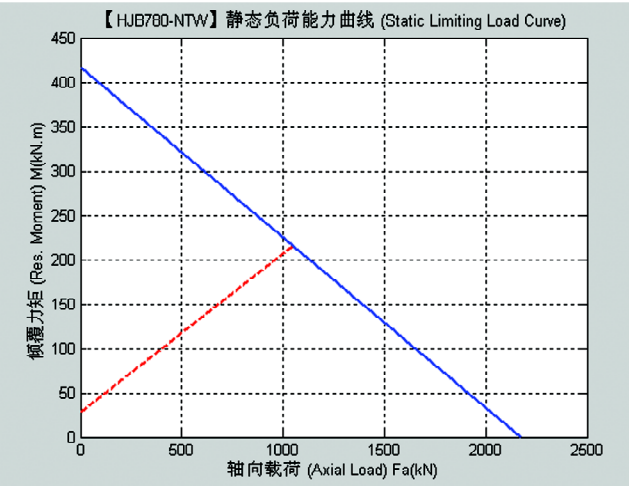


Figure A-129

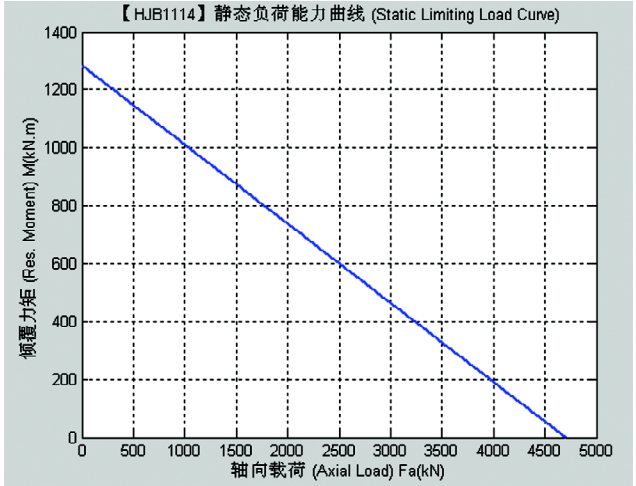


Figure A-130

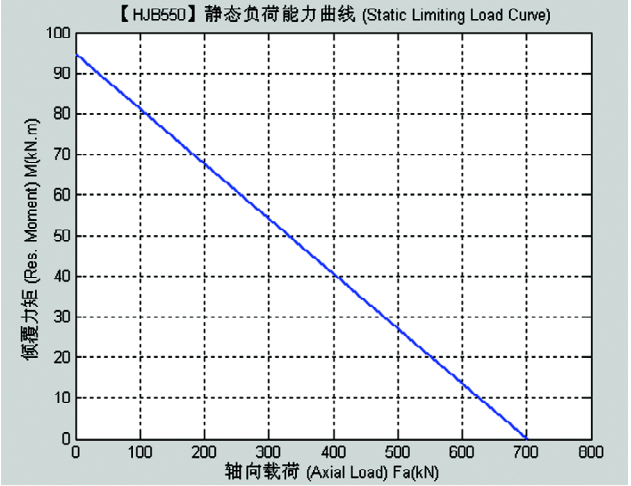


Figure A-125

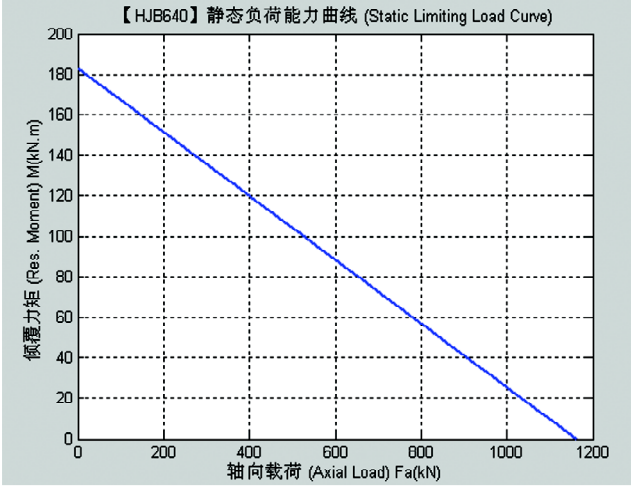


Figure A-126

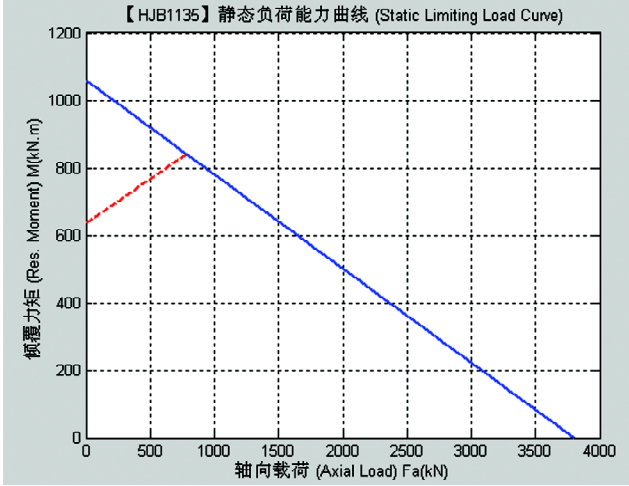


Figure A-131

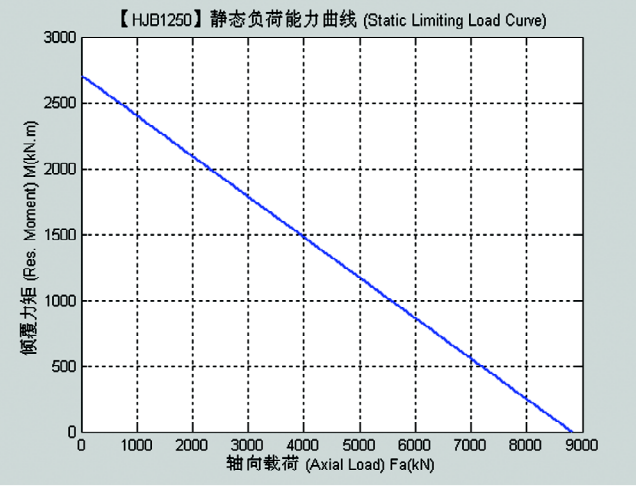


Figure A-132

Appendix A Slewing bearing load Curve

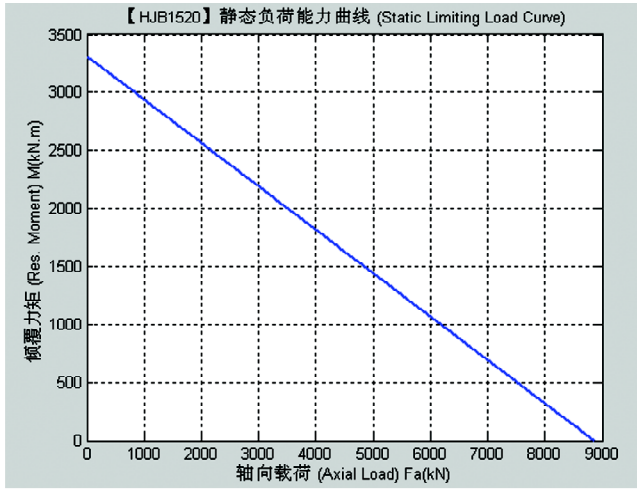


Figure A-133

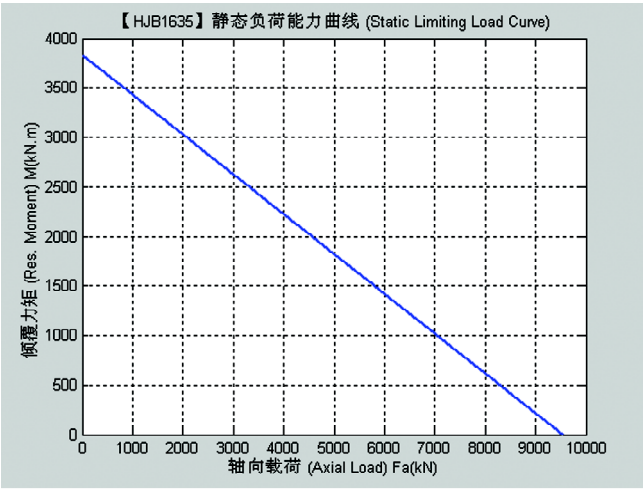


Figure A-134

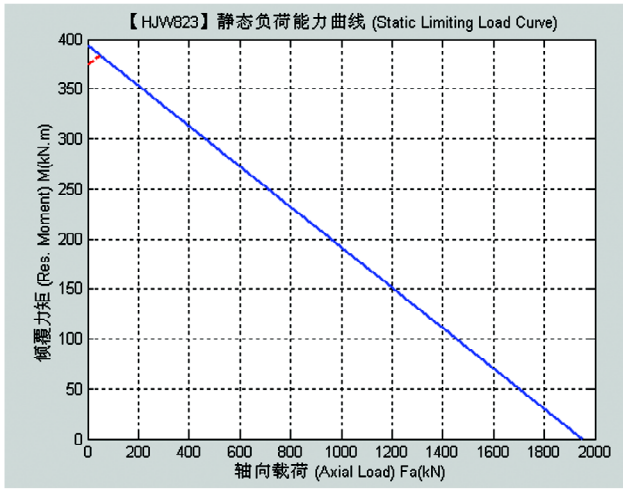


Figure A-139

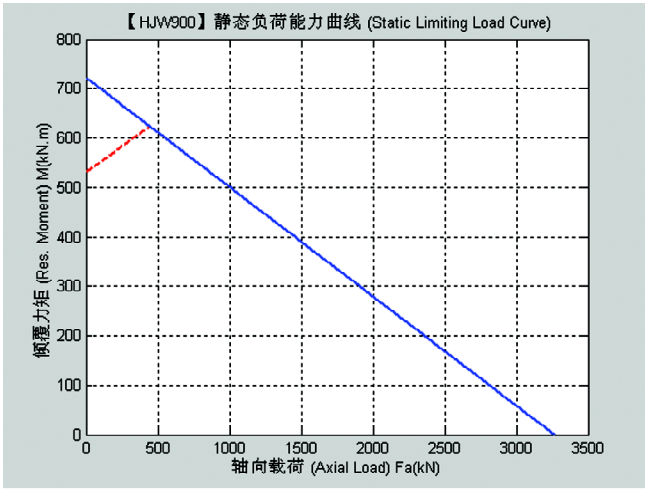


Figure A-140

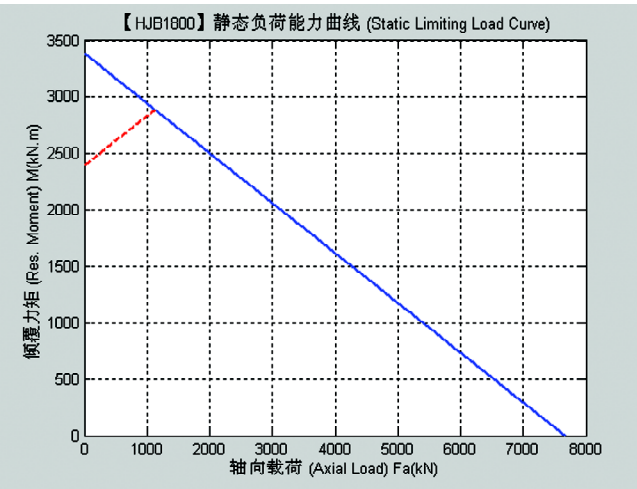


Figure A-135

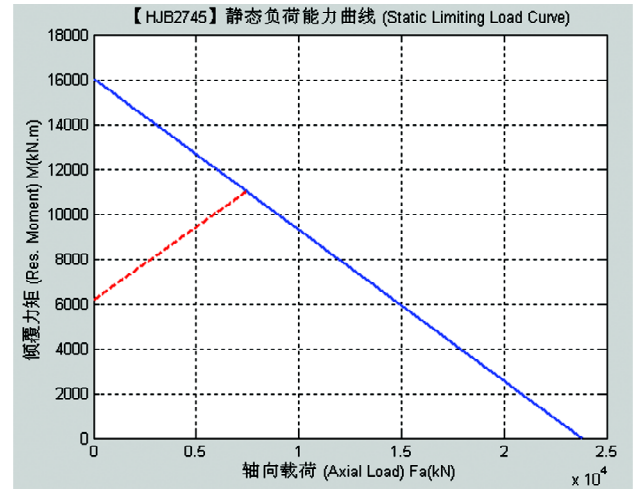


Figure A-136

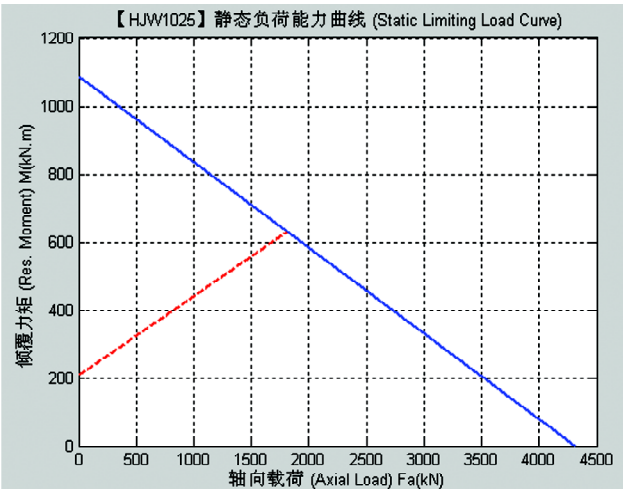


Figure A-141

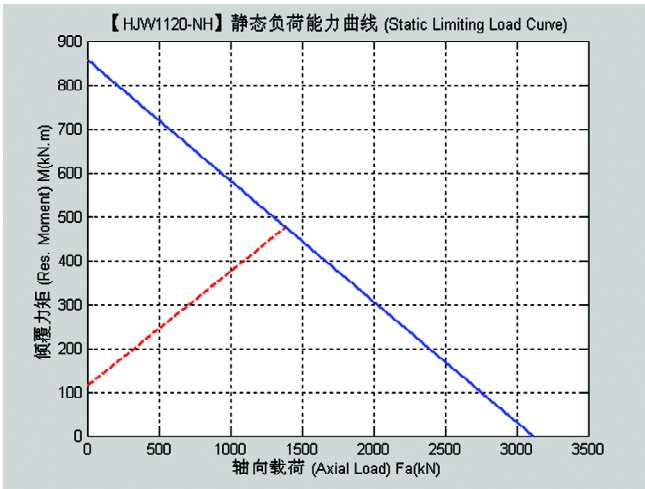


Figure A-142

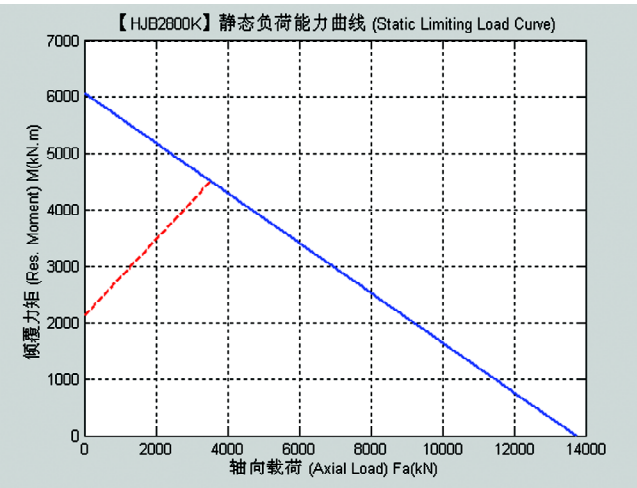


Figure A-137

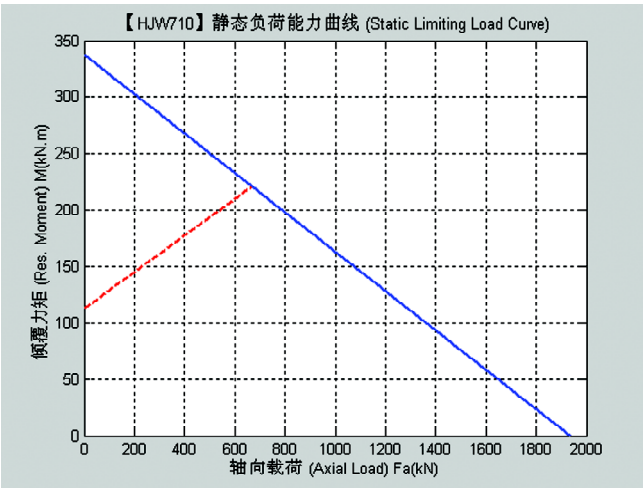


Figure A-138

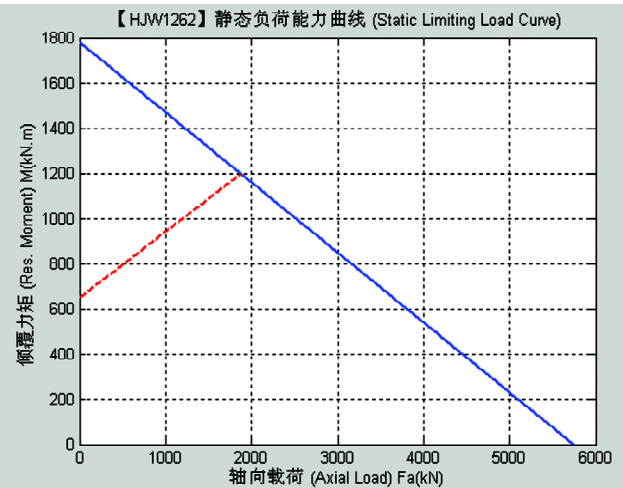


Figure A-143

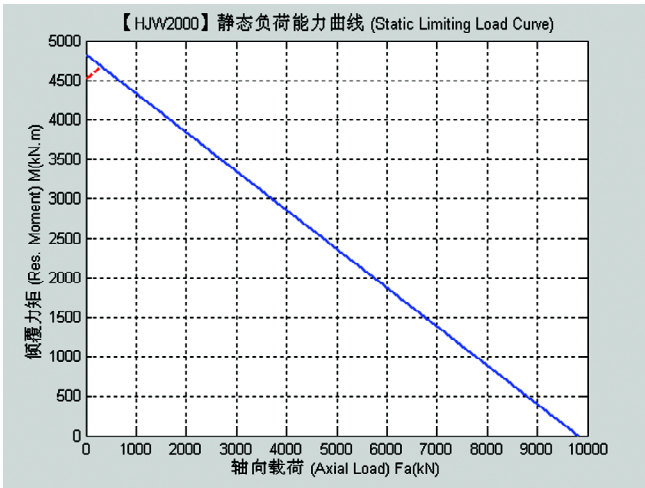


Figure A-144

Appendix A Slewing bearing load Curve

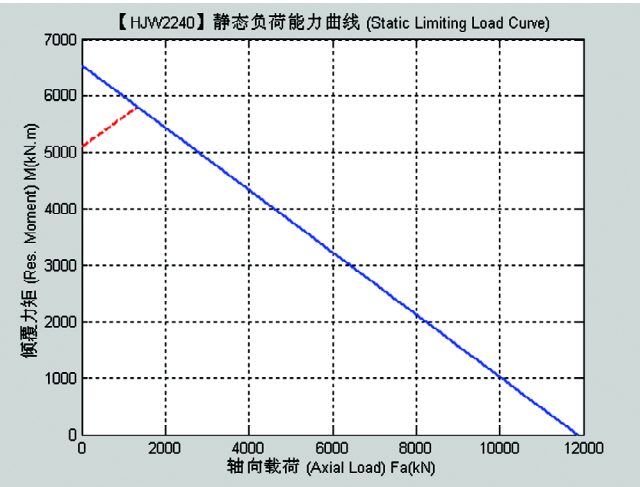


Figure A-145

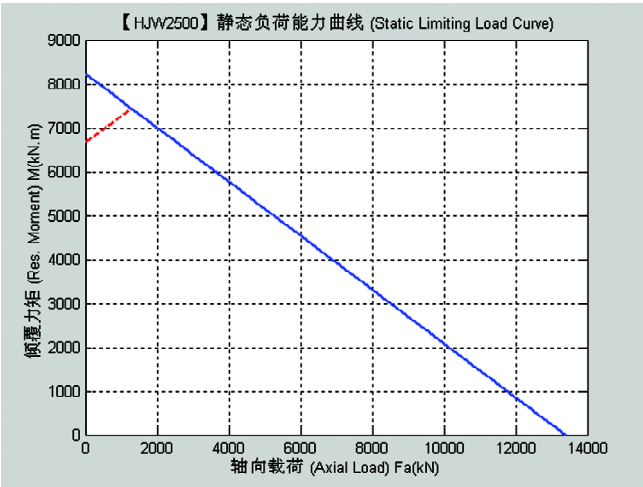


Figure A-146

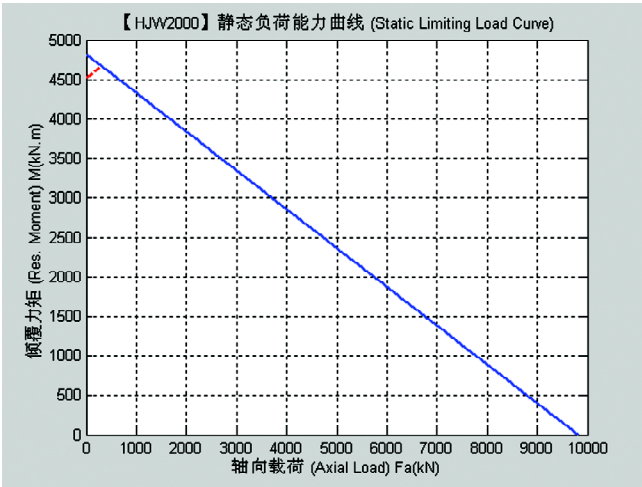


Figure A-151

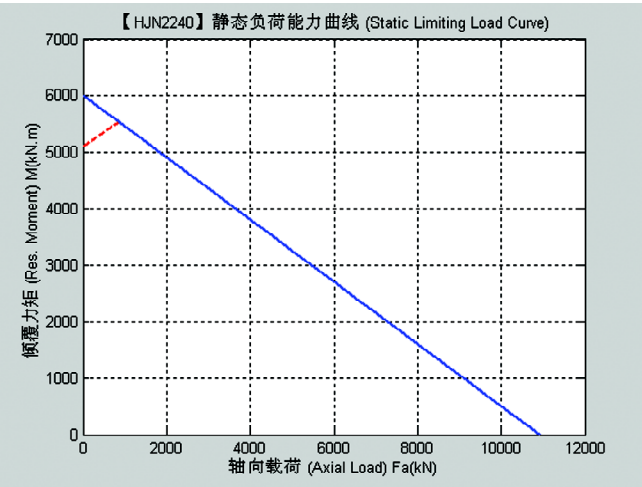


Figure A-152

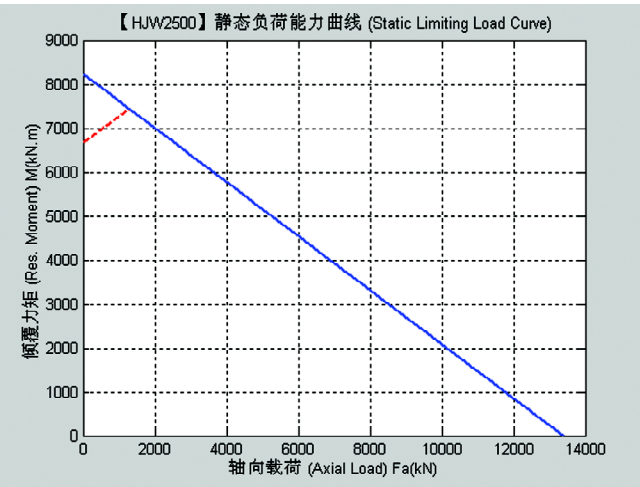


Figure A-147

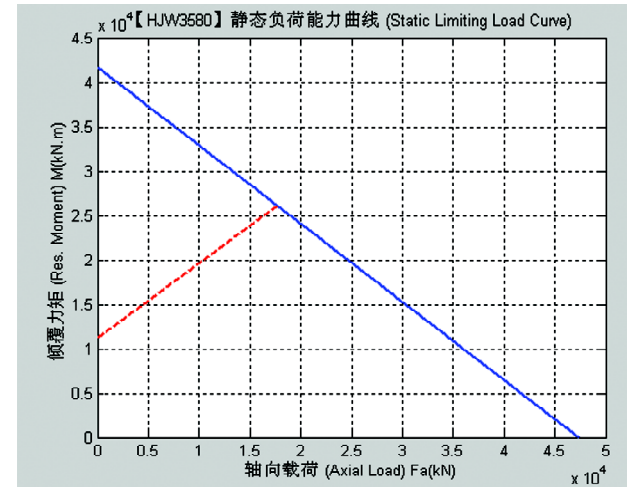


Figure A-148

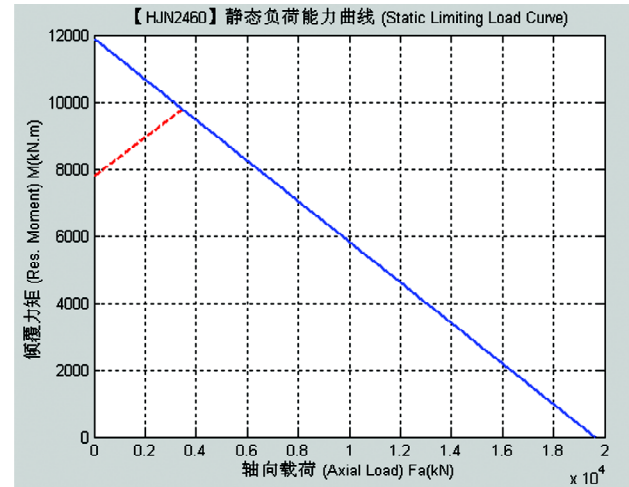


Figure A-153

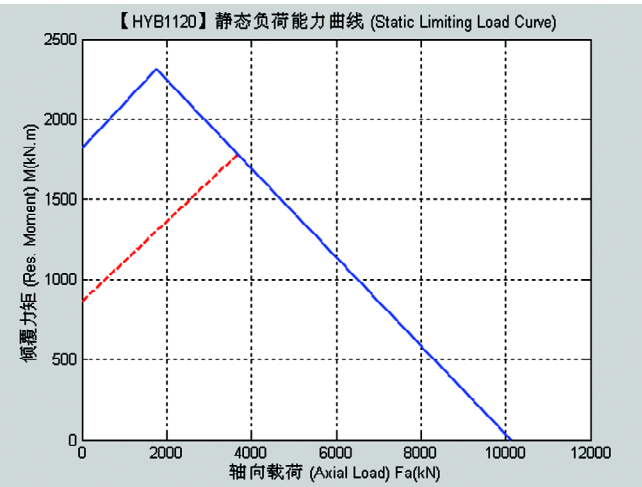


Figure A-154

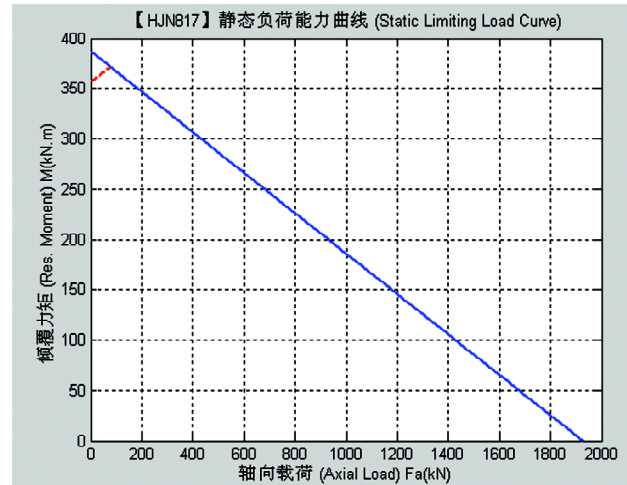


Figure A-149

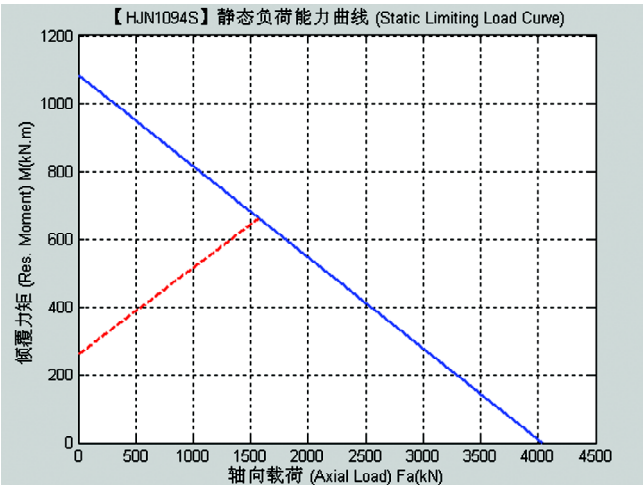


Figure A-150

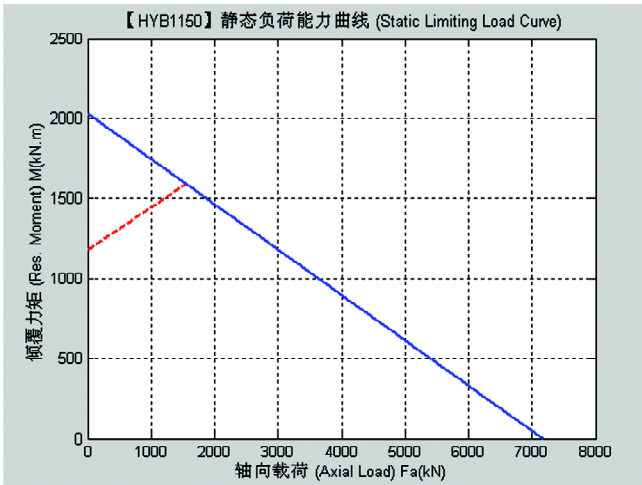


Figure A-155

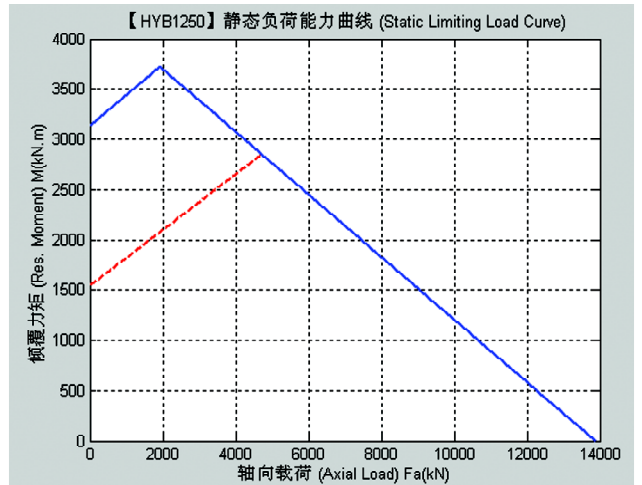


Figure A-156

Appendix A Slewing bearing load Curve

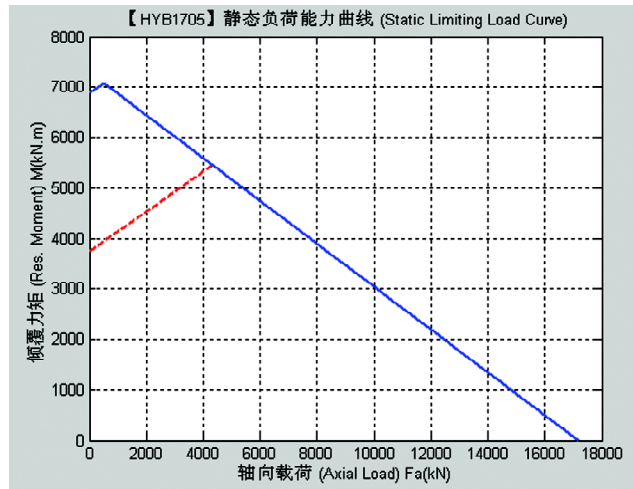


Figure A-157

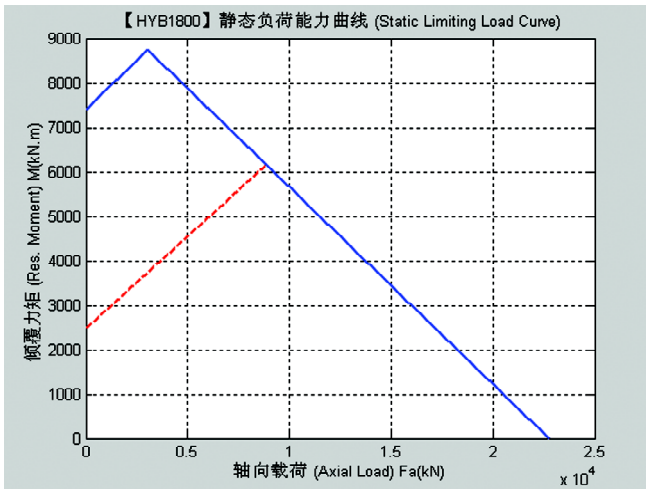


Figure A-158

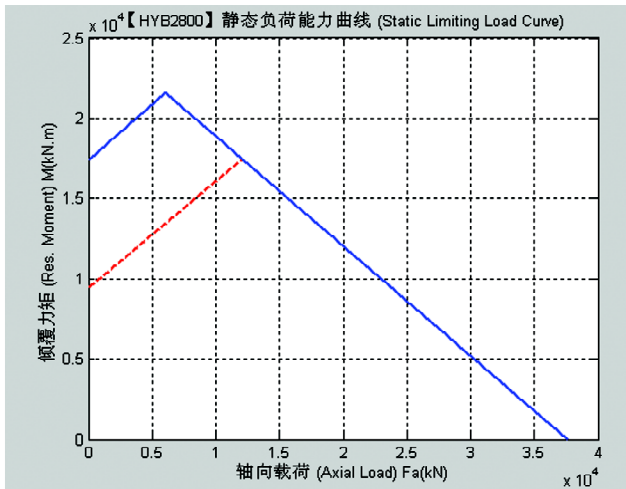


Figure A-163

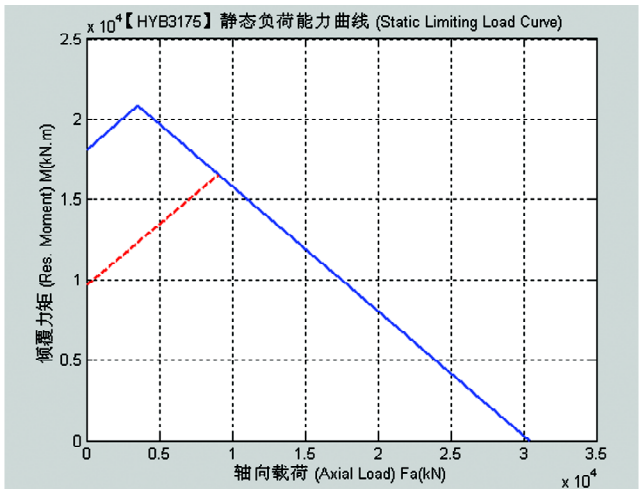


Figure A-164

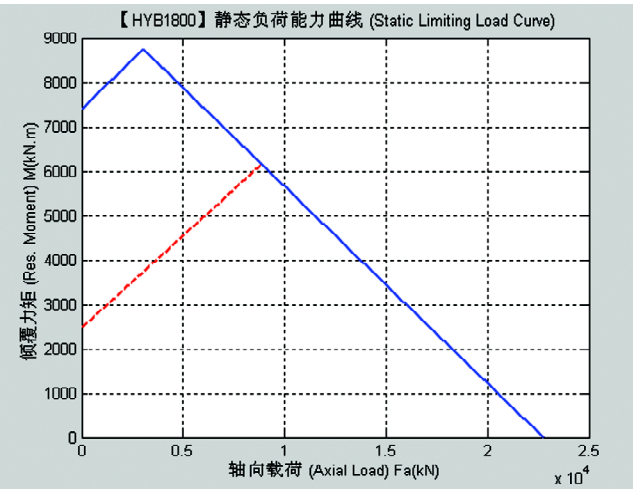


Figure A-159

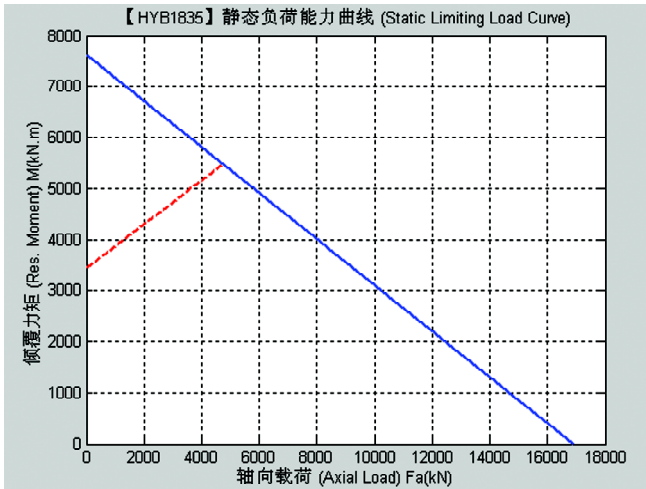


Figure A-160

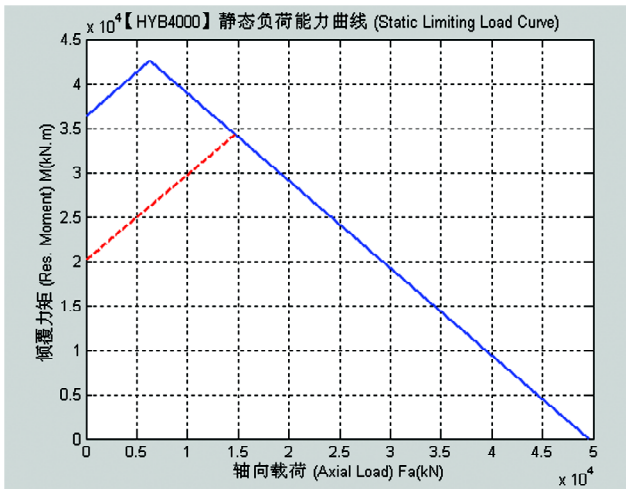


Figure A-165

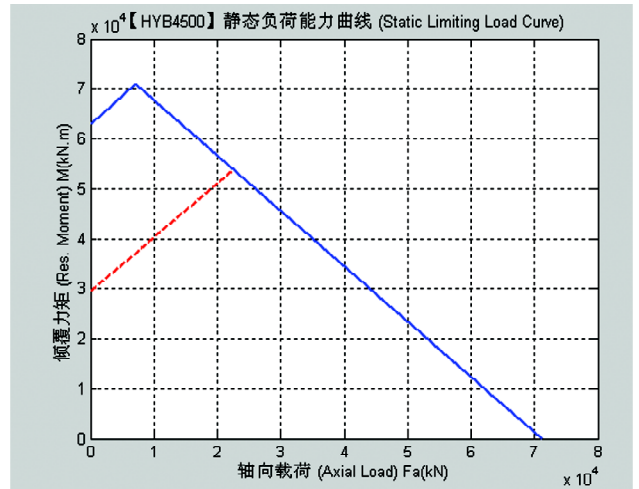


Figure A-166

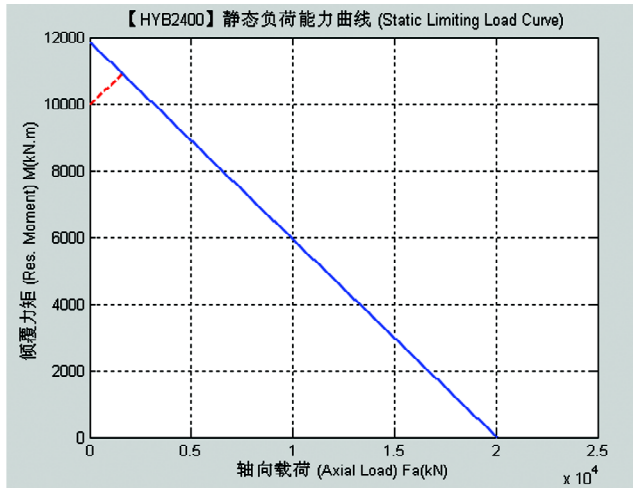


Figure A-161

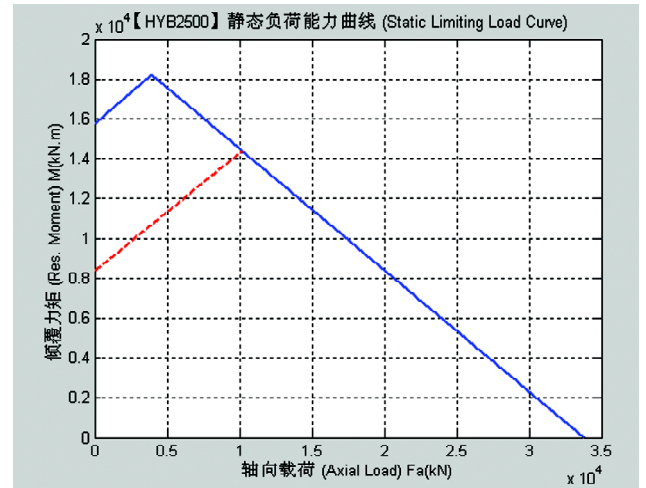


Figure A-162

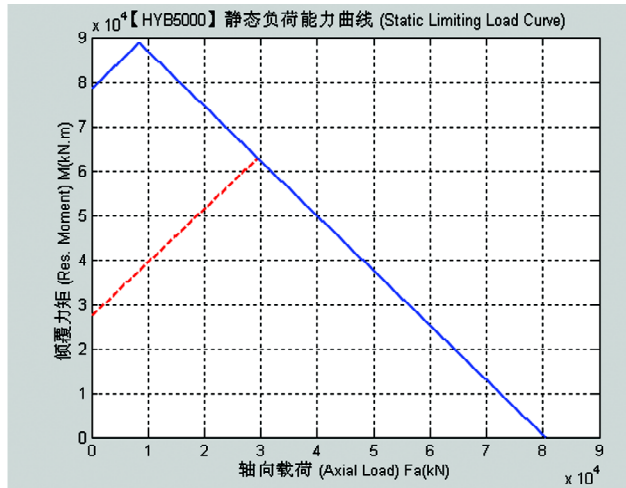


Figure A-167

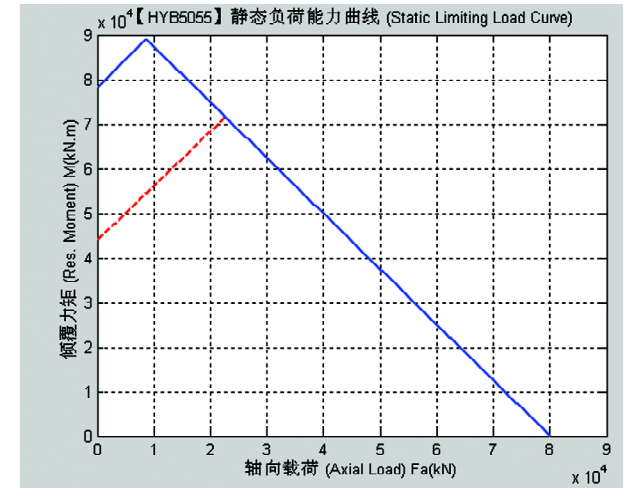


Figure A-168

Appendix A Slewing bearing load Curve

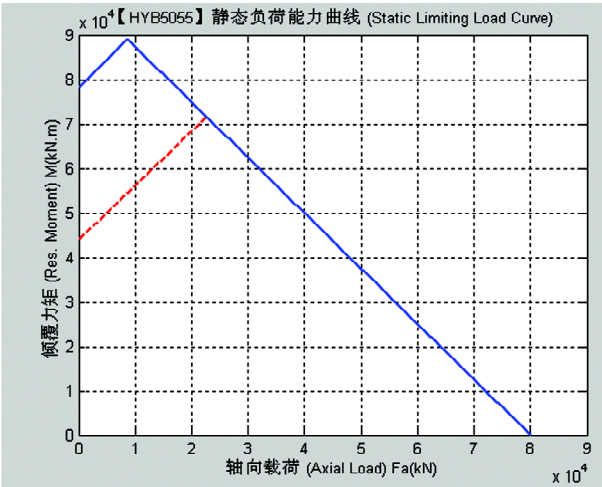


Figure A-169

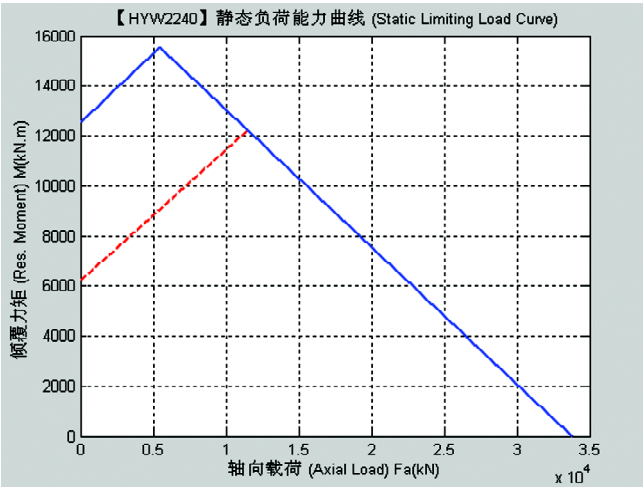


Figure A-170

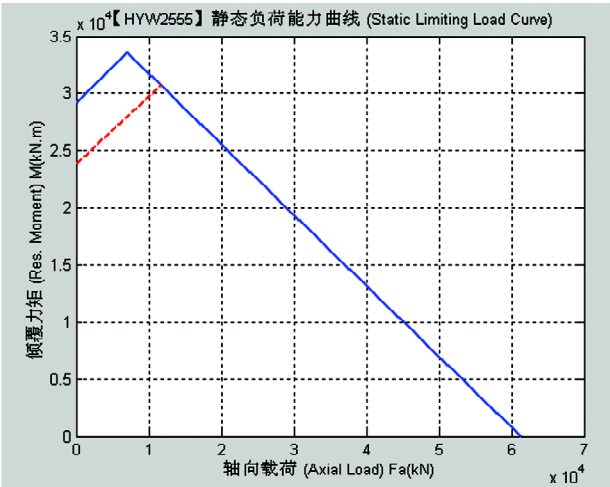


Figure A-175

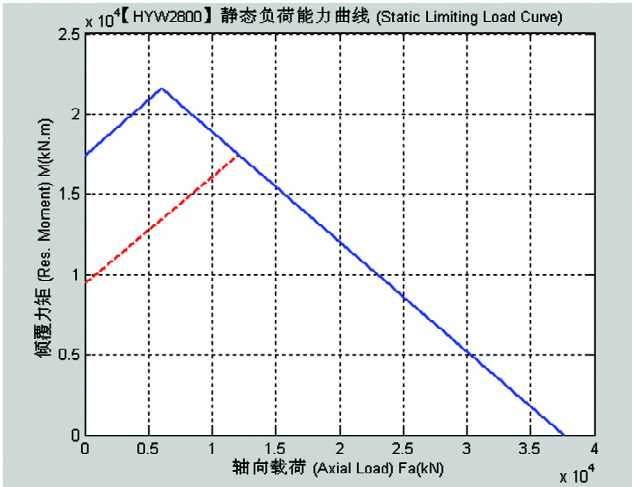


Figure A-176

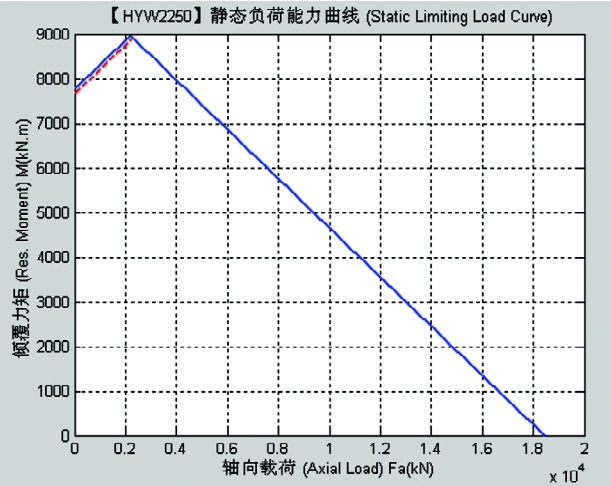


Figure A-171

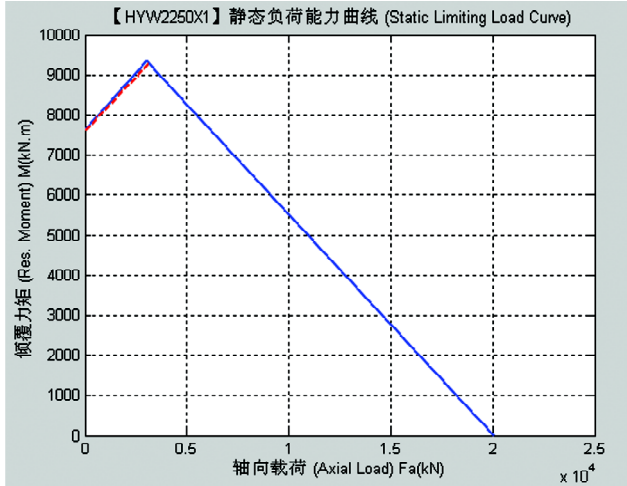


Figure A-172

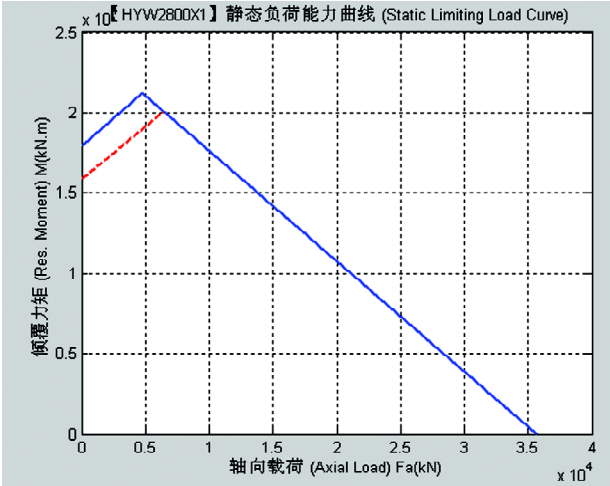


Figure A-177

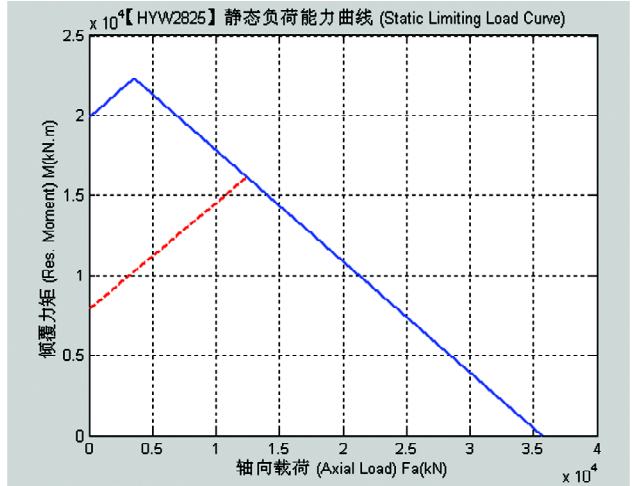


Figure A-178

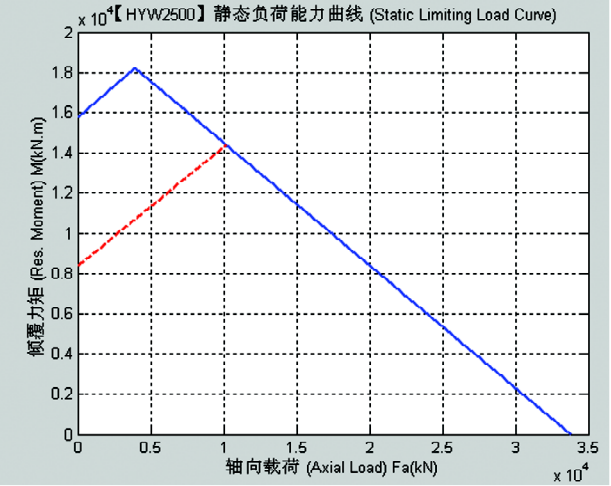


Figure A-173

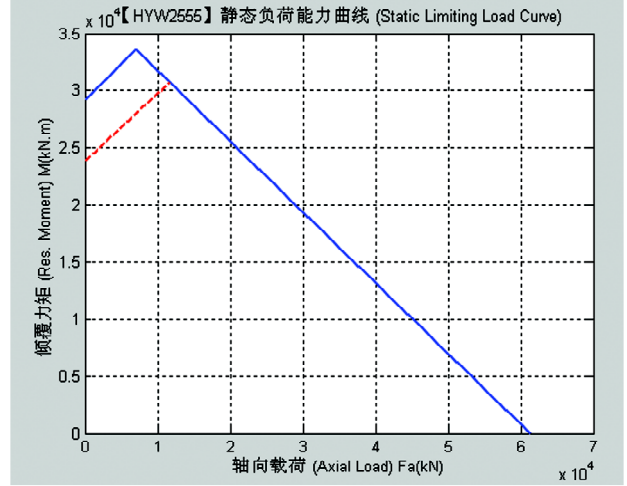


Figure A-174

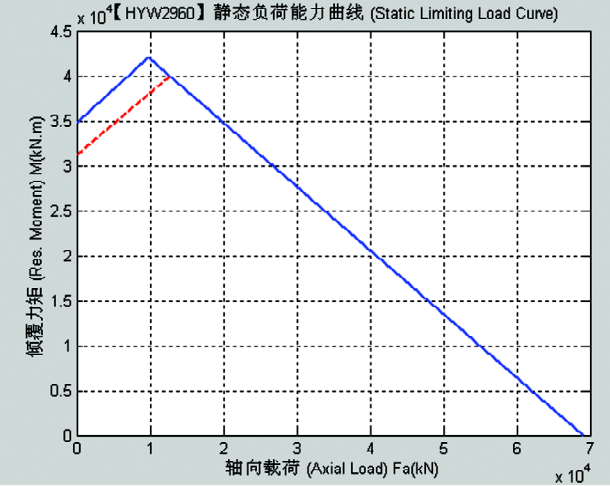


Figure A-179

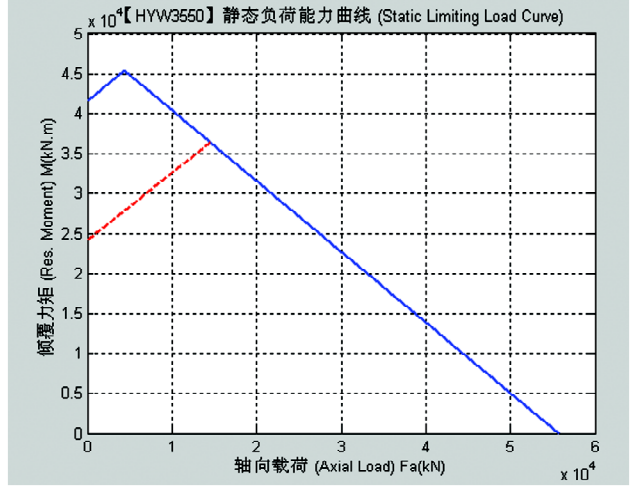


Figure A-180

Appendix A Slewing bearing load Curve

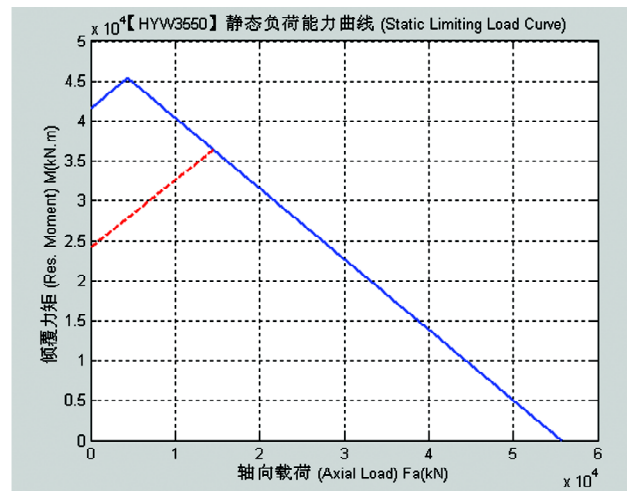


Figure A-181

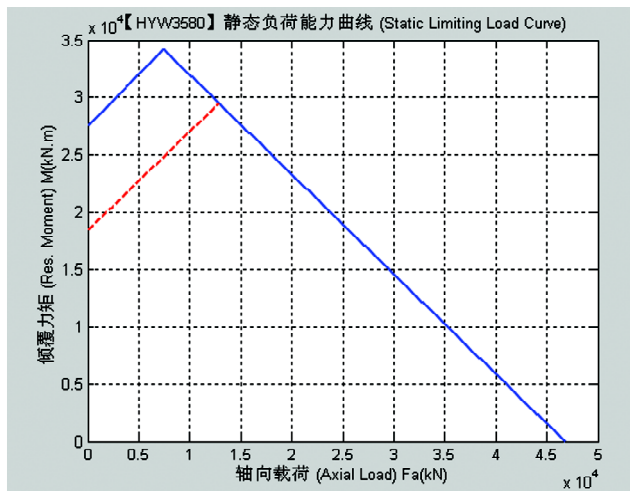


Figure A-182

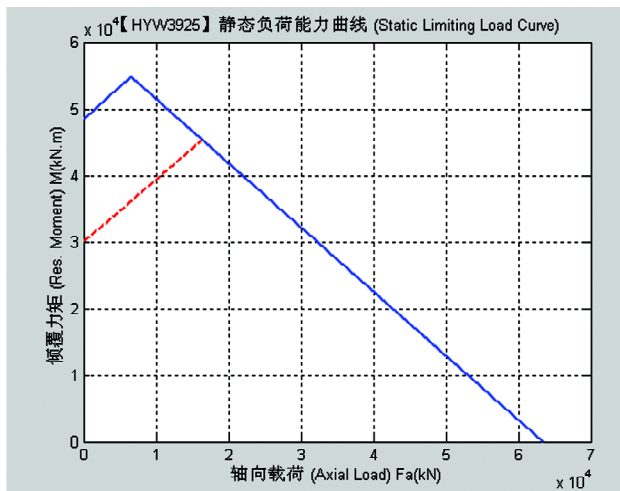


Figure A-187

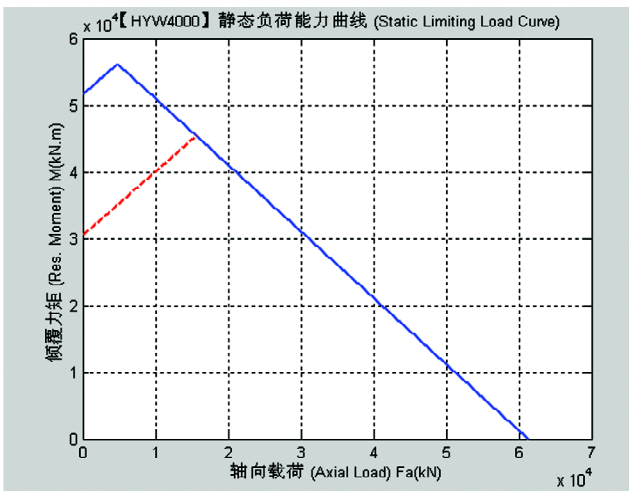


Figure A-188

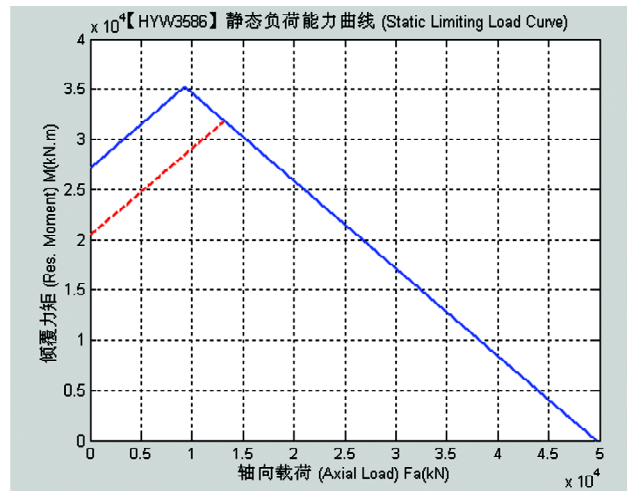


Figure A-183

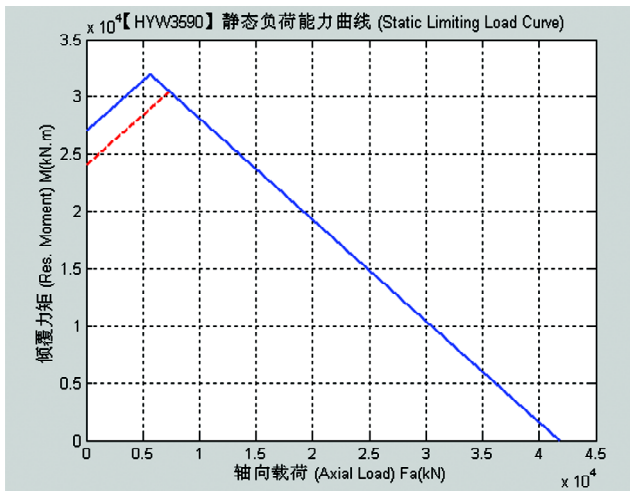


Figure A-184

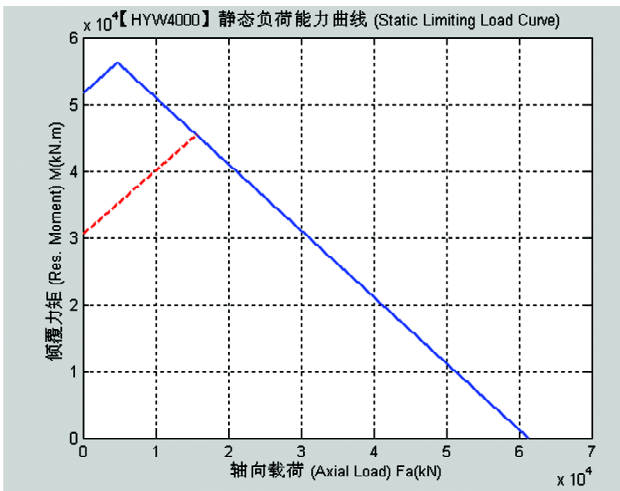


Figure A-189

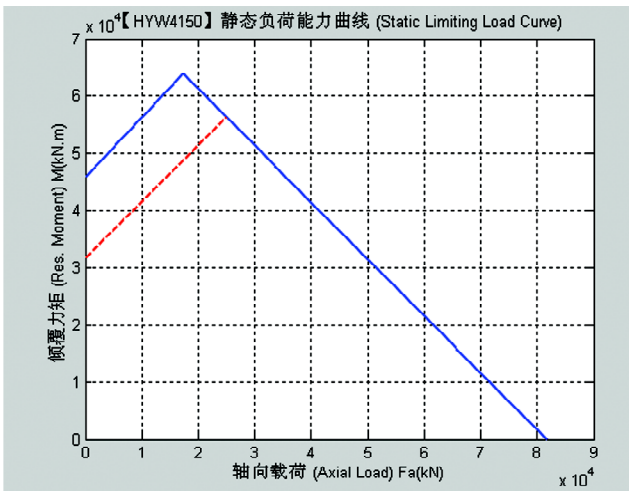


Figure A-190

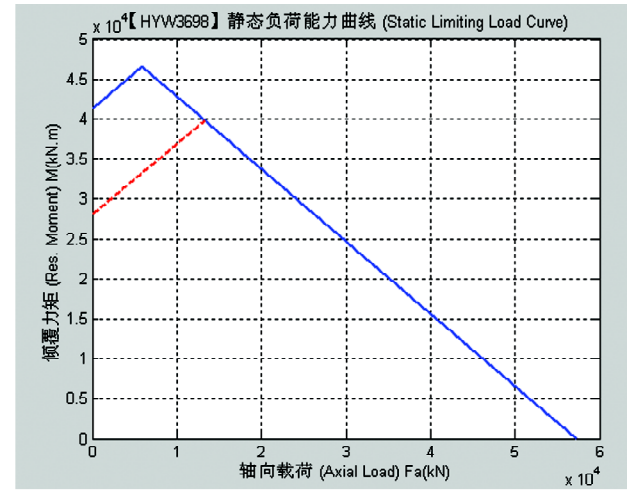


Figure A-185

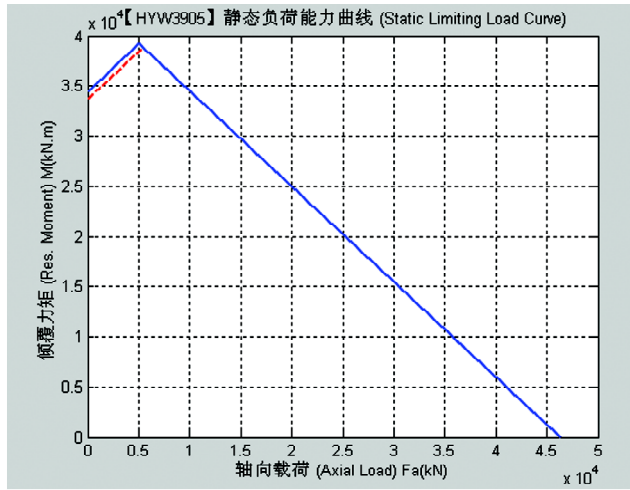


Figure A-186

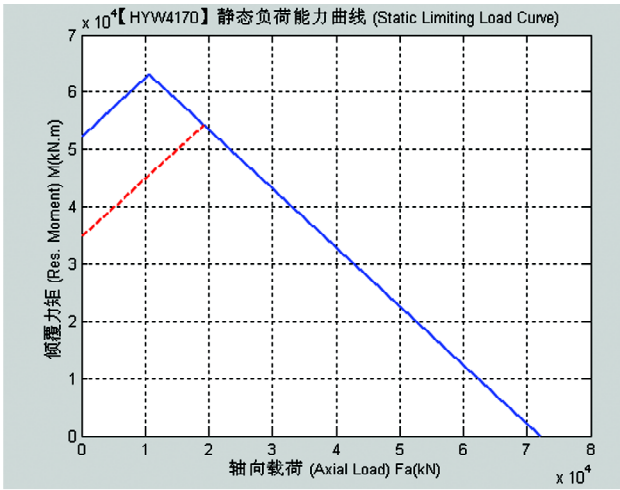


Figure A-191

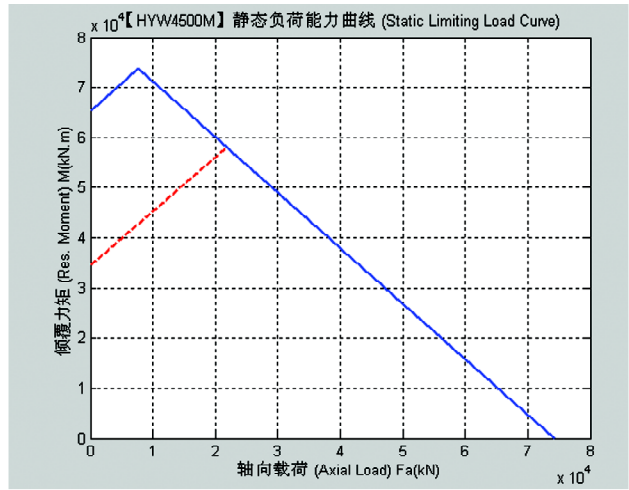


Figure A-192

Appendix A Slewing bearing load Curve

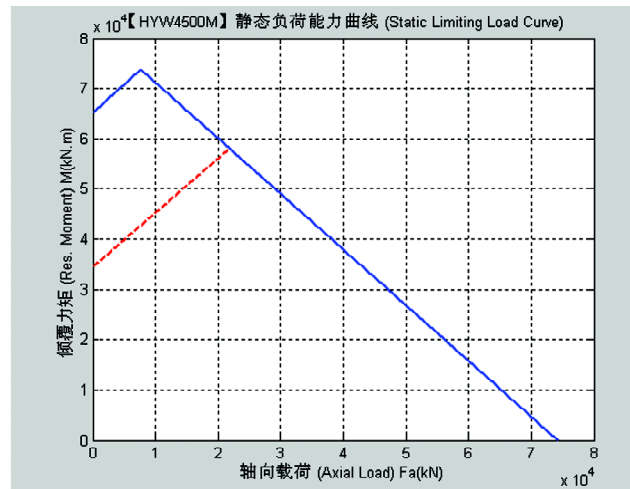


Figure A-193

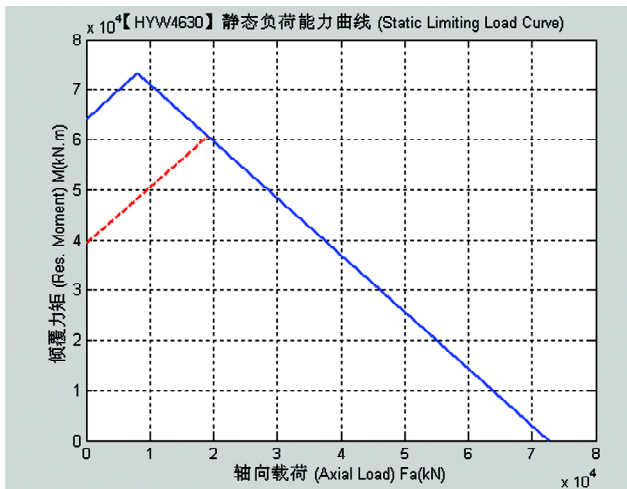


Figure A-194

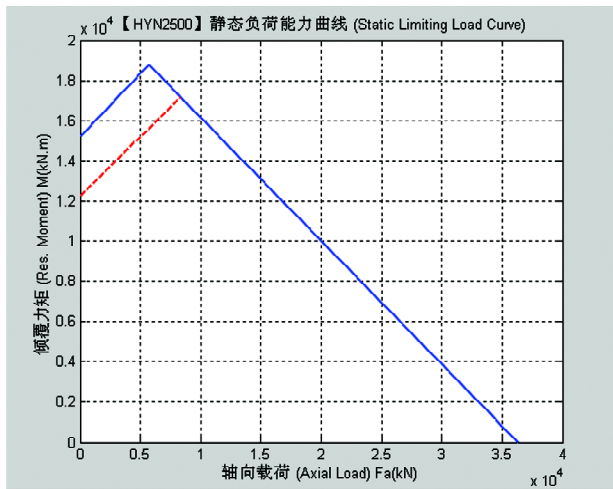


Figure A-199

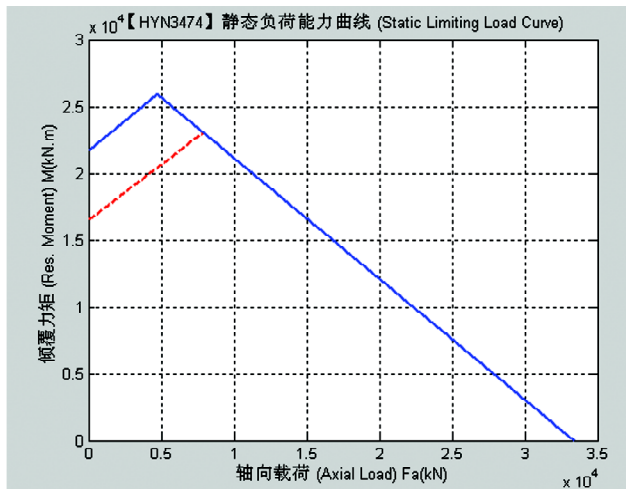


Figure A-200

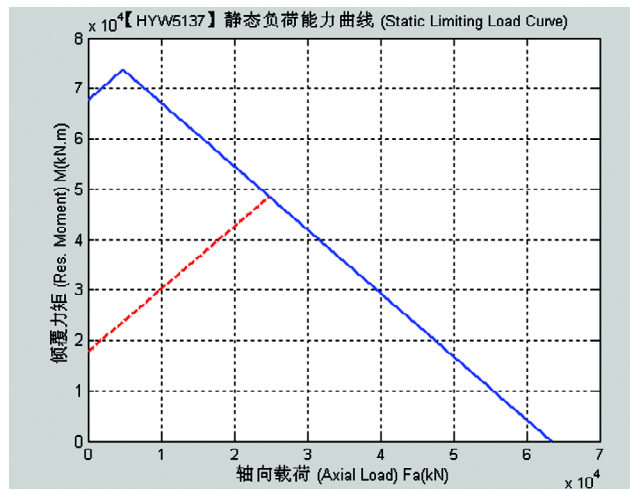


Figure A-195

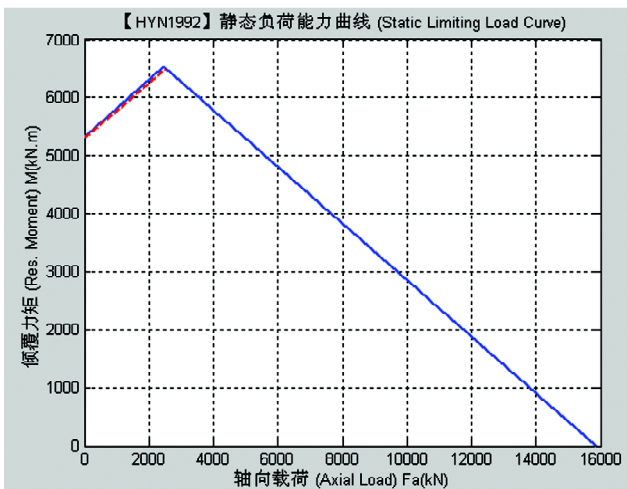


Figure A-196

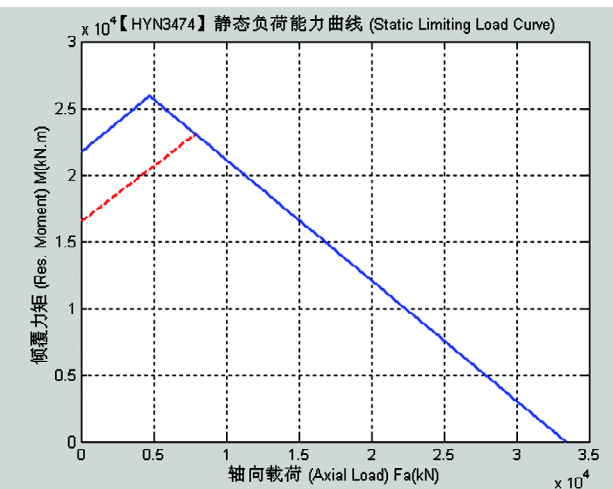


Figure A-201

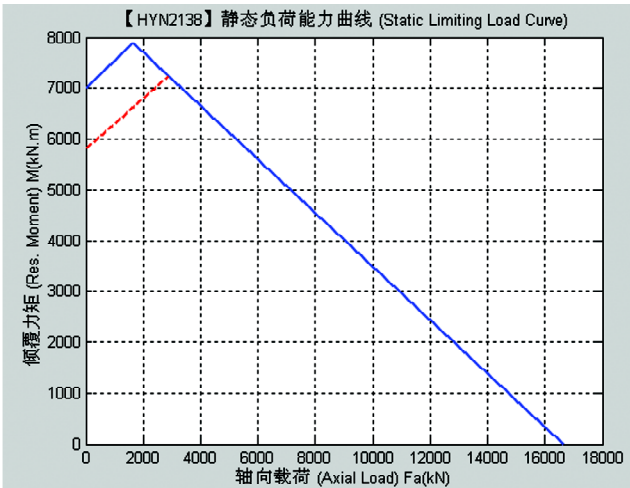


Figure A-197

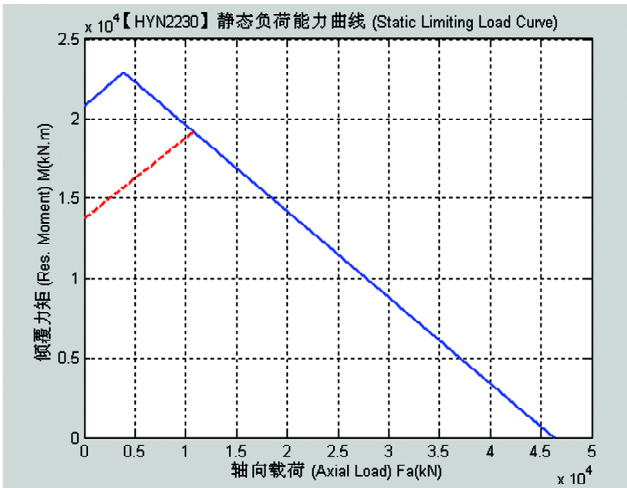


Figure A-198



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