

Spherical roller bearings

Spherical roller bearings, whose inner rings have two raceways, and outer raceways are spherical. The centers of curvature of outer raceways are also the bearing centers. The bearings possess self-aligning performance, the permissible misalignment angle is $1\sim 2.5^{\circ}$, and can be used in certain permanent deflection application.

These bearings are able to carry high radial loads, as well as axial loads at the same time, but not pure axial loads, the axial carrying bearing will be needed if axial loads were higher. The contact between rollers and raceways are so close, so the friction is higher than cylindrical roller bearings, and their limiting speed is lower.

The basic types of spherical roller bearings are type C and CA, according to different cages and whether inner rings are with ribs. Type C bearing has inner ring without rib, and use steel pressed cage; type CA bearing has inner ring with two ribs, and adopt machined solid cage.

Spherical roller bearings are especially suitable for applications required heavy or shock loads.

Type 20000C bearing has symmetrical spherical rollers and steel pressed cage. Its inner ring is without rib, rollers are long, loading capacity is high and self-aligning performance is good. The rollers are guided by floating guide ring.

Type 20000CC bearing is the modified type based on type 20000C, the friction between rollers and raceway is decreased, the loading capacity is enhanced.

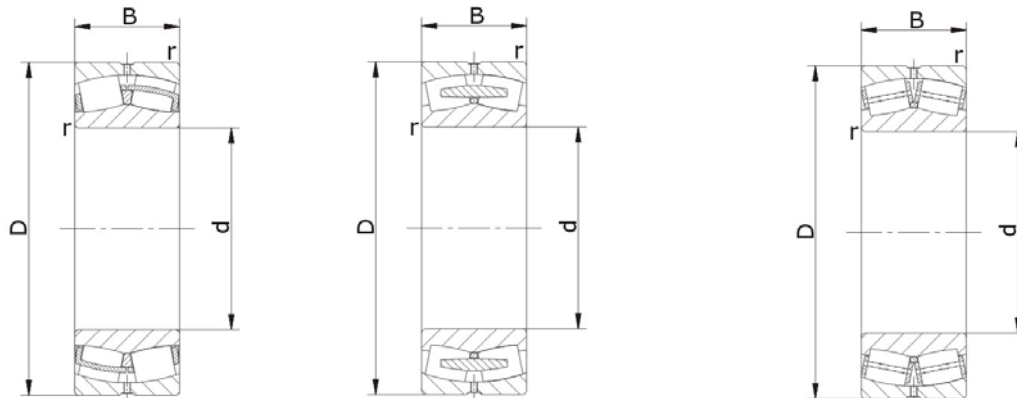
Type 20000CA bearing adopts symmetrical spherical rollers and solid cage, and has inner ring with one rib and floating guide ring. The main parameter, load ratings and limiting speeds of the bearing is the same as type 20000CC bearing which has corresponding type.

Type 20000TN1 bearing uses symmetrical spherical rollers and nylon cage, and has inner ring without rib and floating guide ring. The cage is guided by rollers.

Type 20000CC, 20000CA and 20000TN1 bearings, which should be given priority to use are developed and optimized in recent years.

Spherical roller bearings are primarily used in such applications as rolling mills, paper making machines, power-driven gears, shipping and so on.

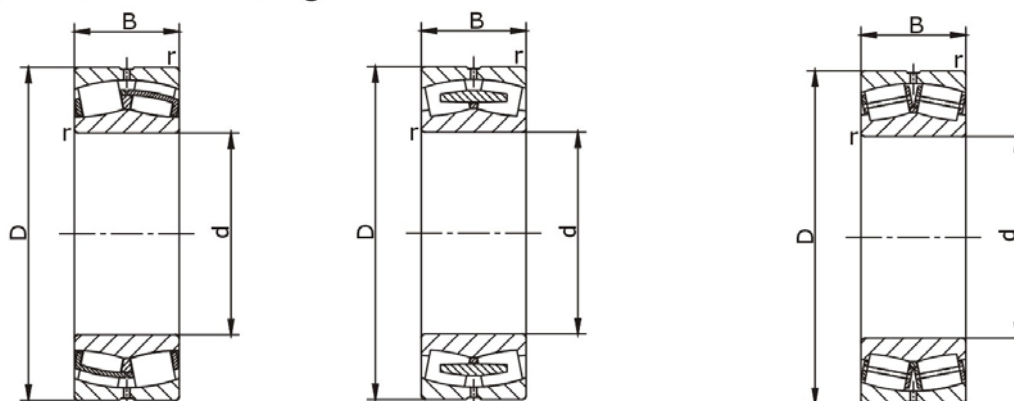
Spherical roller bearings



Type 20000C/W33 Type 20000CA/W33(Structure 1) Type 20000CA/W33(Structure 2)

Boundary dimensions				Basic load ratings		Designations		Mass	Limiting speeds	
mm				kN					r/min	
d	D	B	r _{min}	Cr	Cor	Current	Original	kg	Grease	Oil
150	225	56	2.1	338	768	23030	3003130	8.91	1700	2200
	225	56	2.1	338	768	23030/W33	3003130Y	8.85	1700	2200
	225	75	2.1	564	1040	24030CC/W33	—	10.5	1300	1700
	250	100	2.1	890	1600	24130C	4053730	20.4	1000	1400
	250	100	2.1	890	1600	24130C/W33	4053730Y	20	1000	1400
	270	73	3	738	1100	22230C	53530	18.9	1600	2000
	270	96	3	935	1520	23230C/W33	3053230Y	24.3	1100	1500
	320	108	4	1270	1850	22330CA/W33	53630HY	41.7	1000	1400
160	240	60	2.1	376	825	23032	3003132	13.5	1700	2200
	240	60	2.1	376	825	23032/W33	3003132Y	13.4	1700	2200
	240	80	2.1	652	1230	24032C	4053132	12.9	1100	1500
	240	80	2.1	652	1230	24032C/W33	4053132Y	12.8	1100	1500
	270	109	2.1	1040	1880	24132C	4053732	25.4	950	1300
	270	109	2.1	1040	1880	24132C/W33	4053732Y	25	950	1300
	290	80	3	658	1140	22232	3532	22.2	1500	1900
	290	80	3	658	1140	22232/W33	3532Y	22.1	1500	1900
	340	114	4	1170	1730	22332/W33	3632Y	49.9	950	1300
170	260	67	2.1	450	1010	23034	3003134	14.7	1600	2000
	260	67	2.1	450	1010	23034/W33	3003134Y	14.6	1600	2000
	280	109	2.1	1070	1860	24134/W33	—	27	900	1200
	310	86	4	730	1300	22234	3534	27.6	1300	1700
	310	86	4	730	1300	22234/W33	3534Y	27.2	1300	1700
	310	110	4	1160	1835	23234CA	3053234H	37.1	950	1300
	360	120	4	1200	2060	22334	3634	59.8	950	1300
	360	120	4	1200	2060	22334/W33	3634Y	59.3	950	1300
180	280	100	2.1	930	1820	24036	4003136	22.5	950	1300
	280	100	2.1	930	1820	24036/W33	4003136Y	22.3	950	1300
	300	96	3	695	1480	23136	3003736	27.1	1100	1500
	300	96	3	695	1480	23136/W33	3003736Y	26.8	1100	1500
	300	96	3	695	1480	23136/C9	3003736U	27.1	1100	1500
	300	96	3	695	1480	23136/W33YA2	3003736KY	26.8	1100	1500
	300	96	3	695	1480	23136N	3203736	26.4	1100	1500
	320	86	4	750	1370	22236	3536	28.6	1300	1700
	320	86	4	750	1370	22236/W33	3536Y	28.3	1300	1700
	320	112	4	1280	2170	23236CA	3053236H	39.6	900	1200
	320	112	4	1280	2170	23236CA/W33	3053236HY	39.5	900	1200
	320	112	4	1280	2170	23236CA/W33YA2	3053236HKY	39.4	900	1200
	380	126	4	1430	2210	22336	3636	80.7	900	1200
	380	126	4	1430	2210	22336/W33	3636Y	79.9	900	1200

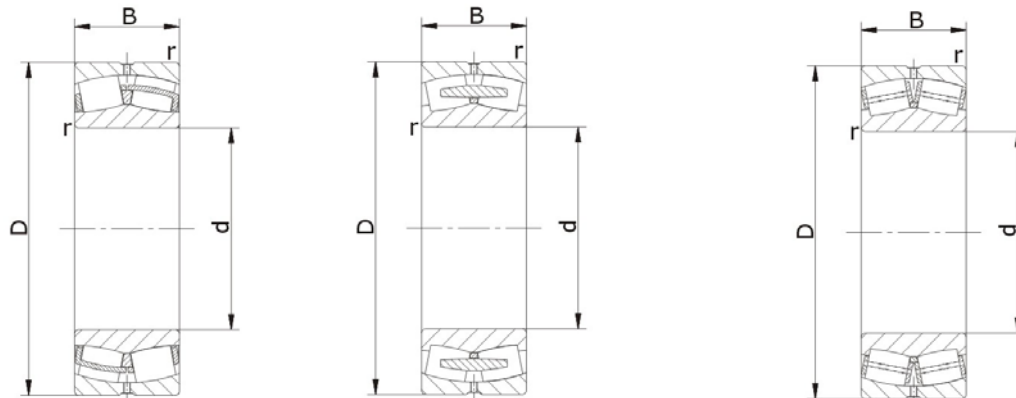
Spherical roller bearings



Type 20000C/W33 Type 20000CA/W33(Structure 1) Type 20000CA/W33(Structure 2)

Boundary dimensions				Basic load ratings		Designations		Mass	Limiting speeds	
mm				kN					r/min	
d	D	B	r _{min}	Cr	Cor	Current	Original	kg	Grease	Oil
190	280	67	2.5	542	978	2638	3738	13.7	1000	1400
	290	75	2.1	626	1230	23038	3003138	20.5	1300	1700
	290	75	2.1	626	1230	23038/W33	3003138Y	20.3	1300	1700
	320	128	3	1200	2100	24138CA/W33	—	42	850	1100
	340	92	4	1070	1650	22238CA	53538H	36	1200	1600
	340	120	4	1410	2490	23238CA	3053238H	51	850	1100
	400	132	5	1400	2530	22338	3638	80.6	850	1100
	400	132	5	1400	2530	22338/W33	3638Y	79.7	850	1100
200	310	82	2.1	655	1310	23040	3003140	26.2	1200	1600
	310	82	2.1	655	1310	23040/W33	3003140Y	26	1200	1600
	310	109	2.1	1130	2120	24040CA/W33	—	30.5	900	1200
	340	112	3	930	2010	23140	3003740	50.9	950	1300
	340	112	3	930	2010	23140/W33	3003740Y	50.5	950	1300
	340	140	3	1530	2950	24140C	4053740	52	800	1000
	340	140	3	1530	2950	24140C/W33	4053740Y	51.9	800	1000
	360	98	4	940	1740	22240	3540	44.7	1100	1500
	360	98	4	940	1740	22240/W33	3540Y	44.2	1100	1500
	360	128	4	1610	2700	23240/W33	3003240Y	56.5	850	1100
	420	138	5	1530	2720	22340	3640	95.3	850	1100
	420	138	5	1530	2720	22340/W33	3640Y	95	850	1100
220	320	76	3	758	1280	2644	3844	21.6	1000	1400
	370	120	4	1050	2350	23144	3003744	54	900	1200
	370	120	4	1050	2350	23144/W33	3003744Y	53.5	900	1200
	400	108	4	1200	2220	22244	3544	57.6	950	1300
	400	108	4	1200	2220	22244/W33	3544Y	57.1	950	1300
	400	144	4	2070	3620	23244	3003244	94.6	750	950
	400	144	4	2070	3620	23244/W33	3003244Y	94.2	750	950
	460	145	5	1700	3200	22344	3644	130	750	950
460	145	5	1700	3200	22344/W33	3644Y	129	750	950	
230	420	114	4	1600	2600	22246	3546	69.5	750	950
240	360	92	3	820	2060	23048	3003148	37.6	1000	1400
	360	92	3	820	2060	23048/W33	3003148Y	37.4	1000	1400
	360	118	3	1380	2700	24048CA/W33	—	41.7	800	1000
	400	128	4	1200	2850	23148	3003748	77.2	850	1100
	400	128	4	1200	2850	23148/W33	3003748Y	75.2	850	1100
	400	160	4	2100	3980	24148/W33	4003748Y	81.6	670	850
	440	120	4	1870	2890	22248	3548	85	900	1200
	440	160	4	2490	4490	23248	3003248	128	670	850
	440	160	4	2490	4490	23248/W33	3003248Y	127	670	850
	500	155	5	1780	3250	22348	3648	154	670	850
500	155	5	1780	3250	22348/W33	3648Y	153	670	850	

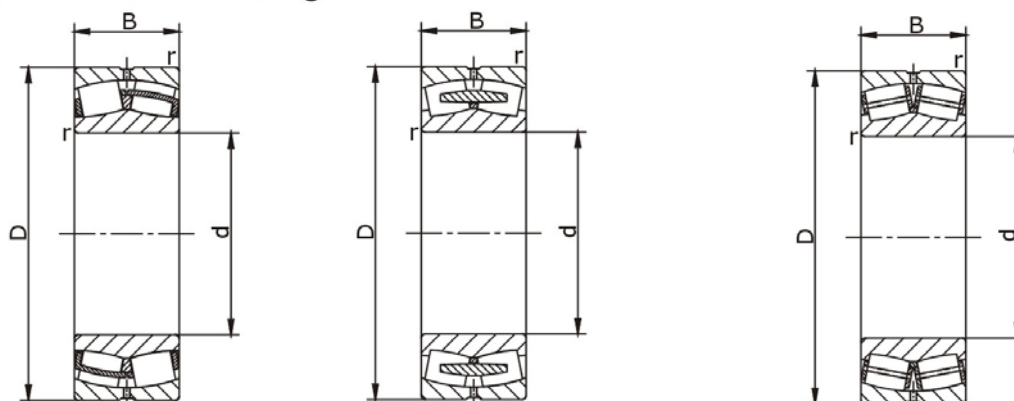
Spherical roller bearings



Type 20000C/W33 Type 20000CA/W33(Structure 1) Type 20000CA/W33(Structure 2)

Boundary dimensions				Basic load ratings		Designations		Mass	Limiting speeds	
mm				kN					r/min	
d	D	B	r _{min}	Cr	Cor	Current	Original	kg	Grease	Oil
250	365	87	3	950	1650	2650	3750	32.2	880	1100
260	360	75	2.1	886	1700	23952CA/W33	—	22.5	1100	1500
	400	104	4	1000	2450	23052	3003152	51.5	900	1200
	400	104	4	1000	2450	23052/W33	3003152Y	51.2	900	1200
	400	140	4	1690	3260	24052CA/W33	—	64.4	700	900
	440	144	4	1450	3320	23152	3003752	96	800	1000
	440	180	4	2660	5180	24152C/W33	4053752Y	113	600	750
	480	130	5	2160	3400	22252CA	53552H	105	850	1100
	480	174	5	2800	4550	23252C/W33	3053252Y	140	630	800
	480	174	5	2800	4550	23252CA	3053252H	151	630	800
	480	174	5	2800	4550	23252CA/W33	3053252HY	151	630	800
	490	153	4	2070	3650	2652	3752	140	760	1050
	540	165	6	2250	4190	22352	3652	193	630	800
	540	165	6	2250	4190	22352/W33	3652Y	192	630	800
280	380	75	2.1	800	1500	23956CA/W33	3113956Y	24.5	900	1200
	420	106	4	1100	2680	23056	3003156	62	850	1100
	420	106	4	1100	2680	23056/W33	3003156Y	61.5	850	1100
	420	140	4	1200	2800	24056CA/W33	—	67.2	800	1000
	460	146	5	1590	3630	23156	3003756	95.5	750	950
	460	180	5	2000	4100	24156CA/W33	—	119	750	950
	500	130	5	1690	3380	22256	3556	126	800	1000
	500	130	5	1690	3380	22256/W33	3556Y	124	800	1000
	500	176	5	2880	4900	23256	3003256	153	600	750
	500	176	5	2880	4900	23256/W33	3003256Y	152	600	750
	580	175	6	3500	5150	22356	3656	238	600	750
580	175	6	3500	5150	22356/W33	3656Y	238	600	750	
300	460	118	4	1260	3070	23060	3003160	75.2	800	1000
	460	118	4	1260	3070	23060/W33	3003160Y	74.6	800	1000
	460	160	4	2360	5010	24060C/W33	4053160Y	101	600	750
	500	160	5	2670	4800	23160	3003760	134	670	850
	500	160	5	2670	4800	23160/W33	3003760Y	133	670	850
	500	200	5	3100	5800	24160C	4053760	160	530	670
	500	200	5	3100	580	24160C/W33	4053760Y	159	530	670
	540	140	5	2610	4250	22260	3560	143	750	950
320	440	90	3	1060	2390	23964K	3113964	45.1	900	1200
	480	121	4	1380	3260	23064	3003164	81.5	800	1000
	480	121	4	1380	3260	23064/W33	3003164Y	80.9	800	1000
	480	160	4	2440	5050	24064	4003164	103	560	700
	540	218	5	3550	6650	24164	4003764	252	480	600
	540	218	5	3550	6650	24164/W33	4003764Y	251	480	600

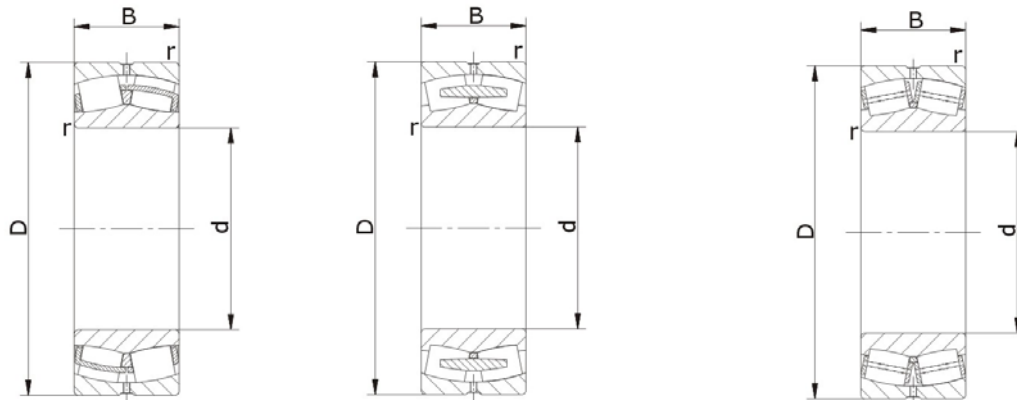
Spherical roller bearings



Type 20000C/W33 Type 20000CA/W33 (Structure 1) Type 20000CA/W33 (Structure 2)

Boundary dimensions				Basic load ratings		Designations		Mass	Limiting speeds	
mm				kN					r/min	
d	D	B	r _{min}	Cr	Cor	Current	Original	kg	Grease	Oil
320	580	208	5	3900	6900	23264	3003264	260	500	630
	580	208	5	3900	6900	23264/W33	3003264Y	259	500	630
340	460	90	3	1330	2840	23968	3003968	50.5	900	1200
	520	133	5	1580	3810	23068	3003168	109	700	900
	520	133	5	1580	3810	23068/W33	3003168Y	109	700	900
	520	180	5	2920	6050	24068/W33	4003168Y	160	530	670
	580	190	5	3470	6240	23168/W33	3003768Y	207	500	630
360	480	90	3	1130	2710	23972	3003972	49.1	850	1100
	540	134	5	1750	4180	23072	3003172	114	670	850
	540	134	5	1750	4180	23072/W33	3003172Y	114	670	850
	540	180	5	2930	6100	24072C	4053172	149	500	630
	540	180	5	2930	6100	24072C/W33	4053172Y	148	500	630
	600	192	5	3800	7100	23172	3003772	222	560	700
	600	192	5	3800	7100	23172/W33	3003772Y	221	560	700
	600	243	5	4300	8000	24172	4003772	333	430	530
	600	243	5	4300	8000	24172CA/W33	4003772HY	338	430	530
	750	224	7.5	4180	7500	22372	3672	494	280	360
380	520	106	4	1870	4100	23976	3003976	73.5	800	1000
	560	135	5	2500	5100	23076	3003176	122	630	800
	620	194	5	2680	6240	23176	3003776	244	400	500
	620	194	5	2680	6240	23176/W33	3003776Y	243	400	500
400	590	142	6	2290	4420	2680	3880	145	340	530
	600	148	5	2970	5900	23080	3003180	165	600	750
	600	148	5	2970	5900	23080/W33	3003180Y	165	600	750
	650	200	6	4150	7900	23180	3003780	239	380	480
	650	200	6	4150	7900	23180/W33	3003780Y	238	380	480
	650	250	6	4700	9310	24180	—	326	320	400
	720	256	6	5800	10400	23280	3003280	530	340	430
	720	256	6	5800	10400	23280/W33	3003280Y	530	340	430
420	520	75	2.1	1000	2500	23884/W33	—	34.5	630	800
	560	106	4	1810	3750	23984/W33	3003984Y	70.6	700	900
	620	150	5	2740	5580	23084	3003184	159	450	560
	620	150	5	2740	5580	23084/W33	3003184Y	158	450	560
	700	224	6	5000	9400	23184/W33	3003784Y	402	360	450
	760	272	7.5	6450	11700	23284CA	3053284H	659	320	400
440	600	118	4	2150	4650	23988CA/W33	—	90.5	670	850
	650	157	6	2710	5600	23088	3003188	192	430	530
	650	157	6	2710	5600	23088/W33	3003188Y	191	430	530
	720	226	6	5300	10300	23188	3003788	420	340	430
	720	226	6	5300	10300	23188/W33	3003788Y	419	340	430

Spherical roller bearings



Type 20000C/W33 Type 20000CA/W33(Structure 1) Type 20000CA/W33(Structure 2)

Boundary dimensions				Basic load ratings		Designations		Mass	Limiting speeds	
mm				kN					r/min	
d	D	B	r _{min}	Cr	Cor	Current	Original	kg	Grease	Oil
460	680	163	6	2460	6670	23092	3003192	223	400	500
	680	163	6	2460	6670	23092/W33	3003192Y	220	400	500
480	650	128	5	2060	5000	23996	3003996	162	400	500
	650	128	5	2060	5000	23996/W33	3003996Y	161	400	500
	700	165	6	2500	6440	23096	3003196	231	380	480
	790	248	7.5	5200	10700	23196/W33	3003796Y	486	300	380
	870	310	7.5	7850	14400	23296	3003296	837	260	340
500	670	128	5	2100	5250	239/500	30039/500	135	400	500
	720	167	6	2700	7180	230/500	30031/500	238	380	480
	720	167	6	2700	7180	230/500/W33	30031/500Y	238	380	480
	920	336	7.5	8430	15800	232/500/W33	30032/500Y	1020	240	320
530	780	185	6	3180	8310	230/530	30031/530	313	340	430
	780	185	6	3180	8310	230/530/W33	30031/530Y	312	340	430
560	820	195	6	3490	9950	230/560	30031/560	367	320	400
	820	195	6	3490	9950	230/560/W33	30031/560Y	365	320	400
	920	280	7.5	7100	14800	231/560/W33	30037/560Y	757	240	320
600	870	200	6	3760	10400	230/600	30031/600	417	300	380
	980	375	7.5	10200	21600	241/600	40037/600	1079	180	240
630	920	212	7.5	4170	11500	230/630	30031/630	511	260	340
	920	212	7.5	4170	11500	230/630/W33	30031/630Y	509	260	340
	1030	400	7.5	11600	24100	241/630/W33	—	1320	170	220
670	900	170	6	3700	9600	239/670/W33	30039/670Y	317	260	340
	980	230	7.5	6850	15000	230/670	30031/670	657	240	320
	980	230	7.5	6850	15000	230/670/W33	30031/670Y	655	240	320
710	950	180	6	3950	10500	239/710	30039/710	389	240	320
	950	180	6	3950	10500	239/710/W33	30039/710Y	387	240	320
	1030	236	7.5	6250	14900	230/710/W33	30031/710Y	742	220	300
	1150	438	9.5	13900	30500	241/710/W33	40037/710Y	1802	150	190
800	1060	258	6	6240	15200	249/800/W33	40039/800Y	638	180	240
	1150	258	7.5	8350	19100	230/800/W33	30031/800Y	986	190	260
	1150	345	7.5	10900	26300	240/800	40031/800	1246	170	220
850	1220	365	7.5	11600	28300	240/850	40031/850	1398	160	200
	1220	365	7.5	11600	28300	240/850/W33	40031/850Y	1395	160	200
	1220	365	7.5	11600	28300	240/850/YA1	40031/850Y1	1396	160	200
900	1280	375	7.5	12800	31500	240/900/W33	40031/900Y	1783	150	190
1000	1420	412	7.5	15300	38500	240/1000/W33	40031/1000	2117	100	140
1060	1400	250	7.5	9300	24400	239/1060CA/W33	—	1020	100	140