铁路桥梁
检定检祘手册

人民铁道出版社

铁路桥梁检定检算手册

《桥梁检定检算手册》编写组

人民铁道出版社

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内 容 简 介

本手册包括两部分内容。一部分是铁路桥梁检算中常用的资料，包括各种机车车辆的弯曲力矩和换算均布活载，各种连续梁影响线的计算数据，河流洪水糙率系数，各种型钢的规格尺寸及其力学数据，桥梁浅基防护办法，通航标准等；一部分是检算算例，包括上下承钢板梁，下承钢桁梁，钢筋混凝土梁，预应力钢筋混凝土梁，连续拱桥，圆形桥墩，T形桥台等八个算例。

本手册可供铁路桥梁检定人员和工程技术人员参考和查阅。

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《铁路桥梁检定检算手册》编写组
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前　言

铁道部以（1977）铁工电字1279号文公布《铁路桥梁检定规范》于1978年6月1日起试行，大大促进了桥梁检定工作的进一步开展。为了便利桥梁检定工作的进行，铁道部工务局组织各局桥梁检定方面有关人员编制了《铁路桥梁检定检算手册》和《铁路桥梁检定结构试验手册》，作为应用规范的补充材料，供铁路桥梁检定人员参考和查用。

本手册为《铁路桥梁检定检算手册》部分，其中所搜集编制的技术资料，只包括未编排在规范附录中而在检算中又较常用的资料，如各种机车和车辆的弯曲力矩和换算均布活载表、型钢表及桥梁孔径检算用的浅基防护办法和河流洪水糙率系数表等。

本手册还编入了几种梁跨和墩台检算算例，是按照规范的规定检算的。拱桥检算及其所采用的检算基本原理也一并编入，俾有助于对规范进一步的了解与掌握。

由于编写人员水平有限，经验不足，资料亦仅偏重于检算方面，不够全面，使用本手册者如发现内容有不妥或错误之处希随时指正。

《桥梁检定检算手册》编写小组

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Ⅰ、各种机车及特种车辆弯曲力矩及换算均布活载表

一、弯曲力矩表

车种	型号	说明	表号
(一)蒸汽机车	KD_2 71～80		Ⅰ—1
	KD_2 91～104		Ⅰ—2
	KD_5		Ⅰ—3
	KD_7		Ⅰ—4
	KD_9		Ⅰ—5
	上游(SY)		Ⅰ—6
	建设(JS)5001～5146,5301～5353		Ⅰ—7
	解放(JF)74～500		Ⅰ—8
	解放(JF)575～2121		Ⅰ—9
	解放(JF)2122～2500，4001～		Ⅰ—10
	JF_4		Ⅰ—11
	JF_6 3044～3100，3150～3600		Ⅰ—12
	JF_9		Ⅰ—13
	KF_1		Ⅰ—14
	FD1001～2000，2201～2250		Ⅰ—15
	前进(QJ)0004～0005，1001～1003，1501，2001～2003	煤水车6轴	Ⅰ—16
	前进(QJ)101～595，596～	煤水车4轴	Ⅰ—17
	SL_{12}		Ⅰ—18
	SL_{14}		Ⅰ—19
	胜利(SL)341～370		Ⅰ—20
	胜利(SL)371～572		Ⅰ—21
	胜利(SL)601～		Ⅰ—22
	人民(RM)		Ⅰ—23
(二)内燃机车	东方红$_1$ 4275～		Ⅰ—24
	东风$_3$、东风		Ⅰ—25
	东风$_2$		Ⅰ—26
	东风$_4$		Ⅰ—27
	ND_1		Ⅰ—28
	NY_5		Ⅰ—29
	NY_6		Ⅰ—30
(三)电力机车	韶山$_3$		Ⅰ—31
	$6G_1$		Ⅰ—32
	$6Y_1$		Ⅰ—33
	$6Y_2$		Ⅰ—34

表Ⅰ－1

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱		
轴距D(米)	1.710	2.700	2.000	1.550	2.450	3.350	1.750	3.050	1.750	2.660	2.700	2.900	1.550	2.450	3.350	1.750	3.050	1.750	0.950	x
轴重P（吨）	13.000	17.000	17.000	17.000	17.000	15.000	15.000	15.000	15.000	13.000	17.000	17.000	17.000	17.000	15.000	15.000	15.000	15.000	8吨/米	
ΣD（米）	0	2.700	4.700	6.250	8.700	12.050	13.800	16.850	18.600	21.260	23.960	25.960	27.510	29.960	33.310	35.060	38.110	39.860	40.810	40.810＋x
ΣP（吨）	13.000	30.000	47.000	64.000	81.000	96.000	111.000	126.000	141.000	154.000	171.000	188.000	205.000	222.000	237.000	252.000	267.000	282.000	282.000	282.000＋8x
ΣM（吨-米）	0	35.100	95.100	167.950	324.750	596.100	764.100	1102.650	1323.150	1698.210	2114.010	2456.010	2747.410	3249.660	3993.360	4408.110	5176.710	5643.960	5911.860	※
	ΣD	0	2.000	3.550	6.000	9.350	11.100	14.150	15.900	18.560	21.260	23.260	24.810	27.260	30.610	32.360	35.410	37.160	38.110	※5911.860＋282.000x＋4x²
	ΣP	17.000	34.000	51.000	68.000	83.000	98.000	113.000	128.000	141.000	158.000	175.000	192.000	209.000	224.000	239.000	254.000	269.000	269.000	
	ΣM	0	34.000	86.700	211.650	439.450	584.700	883.600	1081.350	1421.830	1802.530	2118.530	2389.780	2860.180	3560.330	3952.330	4681.280	5125.780	5381.330	
		ΣD	0	1.550	4.000	7.350	9.100	12.150	13.900	16.560	19.260	21.260	22.810	25.260	28.610	30.360	33.410	35.160	36.110	
		ΣP	17.000	34.000	51.000	66.000	81.000	96.000	111.000	124.000	141.000	158.000	175.000	192.000	207.000	222.000	237.000	252.000	252.000	
		ΣM	0	26.350	109.650	280.500	396.000	643.050	811.050	1106.310	1441.110	1723.110	1968.010	2396.760	3039.960	3402.210	4079.310	4494.060	4733.460	
			ΣD	0	2.450	5.800	7.550	10.600	12.350	15.010	17.710	19.710	21.260	23.710	27.060	28.810	31.860	33.610	34.560	
			ΣP	17.000	34.000	49.000	64.000	79.000	94.000	107.000	124.000	141.000	158.000	175.000	190.000	205.000	220.000	235.000	235.000	
			ΣM	0	41.650	155.550	241.300	436.500	574.750	824.790	1113.690	1361.690	1580.240	1967.340	2553.590	2886.090	3511.340	3896.340	4119.590	
				ΣD	0	3.350	5.100	8.150	9.900	12.560	15.260	17.260	18.810	21.260	24.610	26.360	29.410	31.160	32.110	
				ΣP	17.000	32.000	47.000	62.000	77.000	90.000	107.000	124.000	141.000	158.000	173.000	188.000	203.000	218.000	218.000	
				ΣM	0	56.950	112.950	256.300	364.800	569.620	812.620	1026.620	1218.820	1564.270	2093.570	2396.320	2969.720	3324.970	3532.070	
					ΣD	0	1.750	4.800	6.550	9.210	11.910	13.910	15.460	17.910	21.260	23.010	26.060	27.810	28.760	
					ΣP	15.000	30.000	45.000	60.000	73.000	90.000	107.000	124.000	141.000	156.000	171.000	186.000	201.000	201.000	
					ΣM	0	26.250	117.750	196.500	356.100	553.200	733.200	899.050	1202.850	1675.200	1948.200	2469.750	2795.250	2986.200	
						ΣD	0	3.050	4.800	7.460	10.160	12.160	13.710	16.160	19.510	21.260	24.310	26.060	27.010	
						ΣP	15.000	30.000	45.000	58.000	75.000	92.000	109.000	126.000	141.000	156.000	171.000	186.000	186.000	
						ΣM	0	45.750	98.250	217.950	374.550	524.550	667.150	934.200	1356.300	1603.050	2078.850	2378.100	2554.800	
							ΣD	0	1.750	4.410	7.110	9.110	10.660	13.110	16.460	18.210	21.260	23.010	23.960	
							ΣP	15.000	30.000	43.000	60.000	77.000	94.000	111.000	126.000	141.000	156.000	171.000	171.000	
							ΣM	0	26.250	106.050	222.150	342.150	461.500	691.800	1063.650	1284.150	1714.200	1987.200	2149.650	
								ΣD	0	2.660	5.360	7.360	8.910	11.360	14.710	16.460	19.510	21.260	22.210	
								ΣP	15.000	28.000	45.000	62.000	79.000	96.000	111.000	126.000	141.000	156.000	156.000	
								ΣM	0	39.900	115.500	205.500	301.600	495.150	816.750	1011.000	1395.300	1642.050	1790.250	
									ΣD	0	2.700	4.700	6.250	8.700	12.050	13.800	16.850	18.600	19.550	
									ΣP	13.000	30.000	47.000	64.000	81.000	96.000	111.000	126.000	141.000	141.000	
									ΣM	0	35.100	95.100	167.950	324.750	596.100	764.100	1102.650	1323.150	1457.100	

KD_2型71～80机车弯曲力矩表

车轮排列	1－4－0	动轮直径	1400毫米
机车整备总重	141.00吨	构造速度	60公里/小时
机车全长	21.260米	煤容量	8吨
机车均匀载重	6.63吨/米	水容量	30（吨）

表Ⅰ—2

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	
轴距D(米)	1.618	2.700	2.000	1.550	2.450	3.351	1.750	3.050	1.750	2.668	2.700	2.000	1.550	2.450	3.351	1.750	3.050	1.750	1.050
轴重P（吨）	11.250	17.500	17.500	17.500	17.500	16.650	16.650	16.650	16.650	11.250	17.500	17.500	17.500	17.500	16.650	16.650	16.650	16.650	x
ΣD（米）	0	2.700	4.700	6.250	8.700	12.051	13.801	16.851	18.601	21.269	23.969	25.969	27.519	29.969	33.320	35.070	38.120	39.870	40.920	8吨/米
ΣP（吨）	11.250	28.750	46.250	63.750	81.250	97.900	114.550	131.200	147.850	159.100	176.600	194.100	211.600	229.100	245.750	262.400	279.050	295.700	295.700	40.920＋x
ΣM（吨-米）	0	30.375	87.875	159.563	315.750	588.019	759.344	1108.721	1338.321	1732.785	2162.355	2515.555	2816.410	3334.830	4102.544	4532.607	5332.927	5821.264	6131.749	295.700＋8x
	ΣD	0	2.000	3.550	6.000	9.351	11.101	14.151	15.901	18.569	21.269	23.269	24.819	27.269	30.620	32.370	35.420	37.170	38.220	※
	ΣP	17.500	35.000	52.500	70.000	86.650	103.300	119.950	136.600	147.850	165.350	182.850	200.350	217.850	234.500	251.150	267.800	284.450	284.450	
	ΣM	0	35.000	89.250	217.875	452.445	604.083	919.148	1129.060	1493.509	1892.704	2223.404	2506.821	2997.679	3727.694	4138.069	4904.077	5372.727	5671.399	
		ΣD	0	1.550	4.000	7.351	9.101	12.151	13.901	16.569	19.269	21.269	22.819	25.269	28.620	30.370	33.420	35.170	36.220	
		ΣP	17.500	35.000	52.500	69.150	85.800	102.450	119.100	130.350	147.850	165.350	182.850	200.350	217.000	233.650	250.300	266.950	266.950	
		ΣM	0	27.125	112.875	288.803	409.815	671.505	850.793	1168.551	1520.496	1816.196	2072.489	2520.471	3191.844	3571.594	4284.227	4722.252	5002.549	
			ΣD	0	2.450	5.801	7.551	10.601	12.351	15.019	17.719	19.719	21.269	23.719	27.070	28.820	31.870	33.620	34.670	
			ΣP	17.500	35.000	51.650	68.300	84.950	101.600	112.850	130.350	147.850	165.350	182.850	199.500	216.150	232.800	249.450	249.450	
			ΣM	0	42.875	160.160	250.548	458.863	607.525	878.594	1183.289	1443.989	1673.156	2078.264	2690.994	3040.119	3699.377	4106.777	4368.699	
				ΣD	0	3.351	5.101	8.151	9.901	12.569	15.269	17.269	18.819	21.269	24.620	26.370	29.420	31.170	32.220	
				ΣP	17.500	34.150	50.800	67.450	84.100	95.350	112.850	130.350	147.850	165.350	182.000	198.650	215.300	231.950	231.950	
				ΣM	0	58.643	118.405	273.345	391.383	615.761	873.206	1098.906	1300.949	1663.181	2217.269	2535.769	3141.652	3518.427	3761.975	※6131.749＋295.700x＋4x²
					ΣD	0	1.750	4.800	6.550	9.218	11.918	13.918	15.468	17.918	21.269	23.019	26.069	27.819	28.869	
					ΣP	16.650	33.300	49.950	66.600	77.850	95.350	112.850	130.350	147.850	164.500	181.150	197.800	214.450	214.450	
					ΣM	0	29.138	130.703	218.115	395.804	605.999	796.699	971.616	1290.974	1786.419	2074.294	2626.802	2972.952	3198.124	
						ΣD	0	3.050	4.800	7.468	10.169	12.169	13.718	16.168	19.519	21.269	24.319	26.069	27.119	
						ΣP	16.650	33.300	49.950	61.200	78.700	96.200	113.700	131.200	147.850	164.500	181.150	197.800	197.800	
						ΣM	0	50.783	109.058	242.324	407.564	564.964	714.074	992.639	1432.290	1691.028	2192.753	2509.765	2717.455	
							ΣD	0	1.750	4.418	7.118	9.118	10.668	13.118	16.469	18.219	21.269	23.019	24.069	
							ΣP	16.650	33.300	44.550	62.050	79.550	97.050	114.550	131.200	147.850	164.500	181.150	181.150	
							ΣM	0	29.138	117.982	238.267	362.367	485.669	723.442	1107.299	1336.899	1787.841	2075.716	2265.924	
								ΣD	0	2.668	5.368	7.368	8.918	11.368	14.719	16.469	19.519	21.269	22.319	
								ΣP	16.650	27.900	45.400	62.900	80.400	97.900	114.550	131.200	147.850	164.500	164.500	
								ΣM	0	44.422	119.752	210.552	308.047	505.027	833.090	1033.553	1433.713	1692.450	1865.175	
									ΣD	0	2.700	4.700	6.250	8.700	12.051	13.801	16.851	18.601	19.651	
									ΣP	11.250	28.750	46.250	63.750	81.250	97.900	114.550	131.200	147.850	147.850	
									ΣM	0	30.375	87.875	159.563	315.750	588.019	759.344	1108.721	1338.321	1493.564	

KD₂型91～104机车弯曲力矩表

车轮排列	1—4—0	动轮直径	1400毫米
机车整备总重	147.85吨	构造速度	60公里/小时
机车全长	21.269米	煤容量	10吨
机车均匀载重	6.95吨/米	水容量	30.6吨

表Ⅰ—3

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯		
轴距D(米)	1.261	2.438	1.524	1.524	1.524	3.491	1.829	1.829	2.404	2.438	1.524	1.524	1.524	3.491	1.829	1.829	1.143	x
轴重P（吨）	8.300	13.070	13.770	13.750	14.850	11.500	11.500	11.500	8.300	13.070	13.770	13.750	14.850	11.500	11.500	11.500	8吨/米	
ΣD（米）	0	2.438	3.962	5.486	7.010	10.501	12.330	14.159	16.563	19.001	20.525	22.049	23.573	27.064	28.893	30.722	31.865	31.865+x
ΣP（吨）	8.300	21.370	35.140	48.890	63.740	75.240	86.740	98.240	106.540	119.610	133.380	147.130	161.980	173.480	184.980	196.480	196.480	196.480+8x
ΣM（吨-米）	0	20.235	52.803	106.357	180.865	403.381	540.995	699.643	935.812	1195.556	1377.842	1581.113	1805.339	2370.811	2688.106	3026.435	3251.011	※
	ΣD	0	1.524	3.048	4.572	8.063	9.892	11.721	14.125	16.563	18.087	19.611	21.135	24.626	26.455	28.284	29.427	※3251.011+196.480x+4x²
	ΣP	13.070	26.840	40.590	55.440	66.940	78.440	89.940	98.240	111.310	125.080	138.830	153.680	165.180	176.680	188.180	188.180	
	ΣM	0	19.919	60.823	122.682	316.223	438.656	582.123	798.339	1037.848	1207.484	1398.106	1609.683	2146.180	2448.294	2771.442	2986.532	
		ΣD	0	1.524	3.048	6.539	8.368	10.197	12.601	15.039	16.563	18.087	19.611	23.102	24.931	26.760	27.903	
		ΣP	13.770	27.520	42.370	53.870	65.370	76.870	85.170	98.240	112.010	125.760	140.610	152.110	163.610	175.110	175.110	
		ΣM	0	20.985	62.926	210.840	309.368	428.930	613.725	821.370	971.087	1141.790	1333.449	1824.318	2102.527	2401.770	2601.921	
			ΣD	0	1.524	5.015	6.844	8.673	11.077	13.515	15.039	16.563	18.087	21.578	23.407	25.236	26.379	
			ΣP	13.750	28.600	40.100	51.600	63.100	71.400	84.470	98.240	111.990	126.840	138.340	149.840	161.340	161.340	
			ΣM	0	20.955	120.798	194.141	288.517	440.209	614.283	743.015	892.733	1063.406	1506.204	1759.228	2033.286	2217.697	
				ΣD	0	3.491	5.320	7.149	9.553	11.991	13.515	15.039	16.563	20.054	21.883	23.712	24.855	
				ΣP	14.850	26.350	37.850	49.350	57.650	70.720	84.490	98.240	113.090	124.590	136.090	147.590	147.590	
				ΣM	0	51.841	100.035	169.263	287.900	428.451	536.228	664.991	814.709	1209.506	1437.381	1686.290	1854.985	
					ΣD	0	1.829	3.658	6.062	8.500	10.024	11.548	13.072	16.563	18.392	20.221	21.364	
					ΣP	11.500	23.000	34.500	42.800	55.870	69.640	83.390	98.240	109.740	121.240	132.740	132.740	
					ΣM	0	21.034	63.100	146.039	250.385	335.531	441.662	568.749	911.704	1112.419	1334.167	1485.889	
						ΣD	0	1.829	4.233	6.671	8.195	9.719	11.243	14.734	16.563	18.392	19.535	
						ΣP	11.500	23.000	31.300	44.370	58.140	71.890	86.740	98.240	109.740	121.240	121.240	
						ΣM	0	21.034	76.326	152.635	220.255	308.860	418.420	721.230	900.911	1101.626	1240.203	
							ΣD	0	2.404	4.842	6.366	7.890	9.414	12.905	14.734	16.563	17.706	
							ΣP	11.500	19.800	32.870	46.640	60.390	75.240	86.740	98.240	109.740	109.740	
							ΣM	0	27.646	75.918	126.012	197.092	289.126	551.789	710.436	890.117	1015.550	
								ΣD	0	2.438	3.962	5.486	7.010	10.501	12.330	14.159	15.302	
								ΣP	8.300	21.370	35.140	48.890	63.740	75.240	86.740	98.240	98.240	
								ΣM	0	20.235	52.803	106.357	180.865	403.381	540.995	699.643	811.931	

KD_5型机车弯曲力矩表

车轮排列	1—4—0	动轮直径	1250毫米
机车整备总重	98.24吨	构造速度	50公里/小时
机车全长	16.563米	煤容量	6吨
机车均匀载重	5.93吨/米	水容量	13吨

表Ⅰ—4

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
轴距D(米)	1.746	2.844	1.626	1.626	2.311	3.464	1.829	1.778	1.829	3.063	2.844	1.626	1.626	2.311	3.464	1.829	1.778	1.829	1.317	x
轴重P（吨）	13.840	19.56	19.56	19.56	19.56	14.95	14.95	14.95	14.95	13.84	19.56	19.56	19.56	19.56	14.95	14.95	14.95	14.95	8吨/米	
ΣD（米）	0	2.844	4.470	6.069	8.407	11.871	13.700	15.478	17.307	20.370	23.214	24.840	26.466	28.777	32.241	34.070	35.848	37.677	38.994	38.994+x
ΣP（吨）	13.840	33.400	52.960	72.52	92.08	107.03	121.98	136.93	151.88	165.72	185.28	204.84	224.40	243.96	258.91	273.86	288.81	303.76	303.76	303.76+8x
ΣM（吨-米）	0	39.361	93.669	179.782	347.376	666.341	862.099	1078.979	1329.424	1794.632	2265.941	2567.206	2900.276	3418.864	4263.941	4737.488	5224.411	5752.644	6152.696	※
	ΣD	0	1.626	3.252	5.563	9.027	10.856	12.634	14.463	17.526	20.370	21.996	23.622	25.933	29.397	31.226	33.004	34.833	36.150	
	ΣP	19.56	39.12	58.68	78.24	93.19	108.14	123.09	138.04	151.88	171.44	191.00	210.56	230.12	245.07	260.02	274.97	289.92	289.92	
	ΣM	0	31.805	95.414	231.023	502.047	672.491	864.764	1089.896	1512.712	1944.659	2223.420	2533.986	3020.591	3817.726	4265.959	4728.275	5231.195	5613.019	
		ΣD	0	1.626	3.937	7.401	9.230	11.008	12.837	15.900	18.744	20.370	21.996	24.307	27.771	29.600	31.378	33.207	34.524	
		ΣP	19.56	39.12	58.68	73.63	88.58	103.53	118.48	132.32	151.88	171.44	191.00	210.56	225.51	240.46	255.41	270.36	270.36	
		ΣM	0	31.805	122.211	325.478	460.148	617.643	806.999	1169.904	1546.222	1793.178	2071.940	2513.341	3242.721	3655.179	4082.716	4549.861	4905.925	
			ΣD	0	2.311	5.775	7.604	9.382	11.211	14.274	17.118	18.744	20.370	22.681	26.145	27.974	29.752	31.581	32.898	
			ΣP	19.56	39.12	54.07	69.02	83.97	98.92	112.760	132.320	151.880	171.440	191.00	205.95	220.90	235.85	250.80	250.80	
			ΣM	0	45.203	180.715	279.609	402.327	555.908	858.900	1179.589	1394.741	1641.698	2037.896	2699.520	3076.203	3468.963	3900.332	4230.636	
				ΣD	0	3.464	5.293	7.071	8.900	11.963	14.807	16.433	18.059	20.370	23.834	25.663	27.441	29.270	30.587	
				ΣP	19.56	34.51	49.46	64.41	79.36	93.20	112.76	132.32	151.88	171.44	186.39	201.34	216.29	231.24	231.24	
				ΣM	0	67.756	130.875	218.814	336.620	579.700	844.761	1028.109	1243.261	1594.256	2188.124	2529.031	2887.014	3282.608	3587.151	
					ΣD	0	1.829	3.607	5.436	8.499	11.343	12.969	14.595	16.906	20.370	22.199	23.977	25.806	27.123	
					ΣP	14.95	29.90	44.85	59.80	73.64	93.20	112.76	132.32	151.88	166.83	181.78	196.73	211.68	211.68	
					ΣM	0	27.344	80.506	162.536	345.703	555.135	706.678	890.026	1195.818	1721.930	2027.062	2350.267	2710.086	2988.869	
						ΣD	0	1.778	3.607	6.670	9.514	11.140	12.766	15.077	18.541	20.370	22.148	23.977	25.294	
						ΣP	14.95	29.90	44.85	58.69	78.25	97.81	117.37	136.93	151.88	166.83	181.78	196.73	196.73	
						ΣM	0	26.581	81.268	218.644	385.558	512.793	671.832	943.074	1417.399	1695.188	1991.812	2324.287	2583.381	
							ΣD	0	1.829	4.892	7.736	9.362	10.988	13.299	16.763	18.592	20.370	22.199	23.516	
							ΣP	14.95	29.90	43.74	63.30	82.86	102.42	121.98	136.93	151.88	166.83	181.78	181.78	
							ΣM	0	27.344	118.927	243.324	346.250	480.980	717.673	1140.211	1390.656	1660.699	1965.831	2205.235	
								ΣD	0	3.063	5.907	7.533	9.159	11.470	14.934	16.763	18.541	20.370	21.687	
								ΣP	14.95	28.79	48.35	67.91	87.47	107.03	121.98	136.93	151.88	166.83	166.83	
								ΣM	0	45.792	127.671	206.288	316.709	518.852	889.604	1112.705	1356.167	1633.956	1853.671	
									ΣD	0	2.844	4.470	6.096	8.407	11.871	13.700	15.478	17.307	18.624	
									ΣP	13.84	33.40	52.96	72.52	92.08	107.03	121.98	136.93	151.88	151.88	
									ΣM	0	39.361	93.669	179.782	347.376	666.341	862.099	1078.979	1329.424	1529.450	

※6152.696+303.760x+4x²

KD₇型机车弯曲力矩表

车轮排列	1—4—0	动轮直径	1520毫米
机车整备总重	151.88吨	构造速度	90公里/小时
机车全长	20.370米	煤容量	10吨
机车均匀载重	7.46吨/米	水容量	23吨

表Ⅰ—5

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱		
轴距D(米)	1.254	2.438	1.575	1.575	1.575	3.638	1.905	1.753	1.905	2.610	2.438	1.575	1.575	1.575	3.638	1.905	1.753	1.905	1.356	x
轴重P（吨）	9.07	15.990	15.990	15.990	15.990	12.852	12.852	12.852	12.852	9.070	15.990	15.990	15.990	15.990	12.852	12.852	12.852	12.852	8吨/米	
ΣD（米）	0	2.438	4.013	5.588	7.163	10.801	12.706	14.459	16.364	18.974	21.412	22.987	24.562	26.137	29.775	31.680	33.433	35.338	36.694	36.694+x
ΣP（吨）	9.07	25.060	41.050	57.040	73.030	85.882	98.734	111.586	124.438	133.508	149.498	165.488	181.478	197.468	210.320	223.172	236.024	248.876	248.876	248.876+8x
ΣM（吨-米）	0	22.113	61.582	126.236	216.074	481.757	645.362	818.443	1031.014	1355.797	1681.290	1916.749	2177.393	2463.221	3181.609	3582.269	3973.489	4423.115	4760.591	※
	ΣD	0	1.575	3.150	4.725	8.363	10.268	12.021	13.926	16.536	18.974	20.549	22.124	23.699	27.337	29.242	30.995	32.900	34.256	※4760.591+248.816x+4x²
	ΣP	15.990	31.980	47.970	63.960	76.812	89.664	102.516	115.368	124.438	140.428	156.418	172.408	188.398	201.250	214.102	226.954	239.806	239.806	
	ΣM	0	25.184	75.553	151.106	383.792	530.119	687.300	882.593	1183.703	1487.083	1708.257	1954.616	2226.159	2911.551	3294.932	3670.252	4102.599	4427.776	
		ΣD	0	1.575	3.150	6.788	8.693	10.446	12.351	14.961	17.399	18.974	20.549	22.124	25.762	27.667	29.420	31.325	32.681	
		ΣP	15.990	31.980	47.970	60.822	73.674	86.526	99.378	108.448	124.438	140.428	156.418	172.408	185.260	198.112	210.964	223.816	223.816	
		ΣM	0	25.184	75.553	250.068	365.934	495.084	659.916	919.293	1183.689	1379.679	1600.853	1847.212	2474.432	2827.352	3174.642	3576.529	3880.023	
			ΣD	0	1.575	5.213	7.118	8.871	10.776	13.386	15.824	17.399	18.974	20.549	24.187	26.092	27.845	29.750	31.106	
			ΣP	15.990	31.980	44.832	57.684	70.536	83.388	92.458	108.448	124.438	140.428	156.418	169.270	182.122	194.974	207.826	207.826	
			ΣM	0	25.184	141.527	226.932	328.053	462.424	680.066	905.479	1076.284	1272.274	1493.448	2062.497	2384.956	2704.216	3075.642	3357.454	
				ΣD	0	3.638	5.543	7.296	9.201	11.811	14.249	15.824	17.399	18.974	22.612	24.517	26.270	28.175	29.531	
				ΣP	15.990	28.842	41.694	54.546	67.398	76.468	92.458	108.448	124.438	140.428	153.280	166.132	178.984	191.836	191.836	
				ΣM	0	58.172	113.116	186.205	290.115	466.024	652.453	798.074	968.880	1164.870	1675.747	1967.746	2258.975	2599.940	2860.069	
					ΣD	0	1.905	3.658	5.563	8.173	10.611	12.186	13.761	15.336	18.974	20.879	22.632	24.537	25.893	
					ΣP	12.852	25.704	38.556	51.408	60.478	76.468	92.458	108.448	124.438	137.290	150.142	162.994	175.846	175.846	
					ΣM	0	24.483	69.542	142.991	277.166	424.612	545.049	690.670	861.476	1314.181	1575.719	1838.918	2149.421	2387.868	
						ΣD	0	1.753	3.658	6.268	8.706	10.281	11.856	13.431	17.069	18.974	20.727	22.632	23.988	
						ΣP	12.852	25.704	38.556	47.626	63.616	79.606	95.596	111.586	124.438	137.290	150.142	162.994	162.994	
						ΣM	0	22.530	71.496	172.127	288.240	388.434	513.814	664.377	1070.327	1307.382	1548.051	1834.072	2055.091	
							ΣD	0	1.905	4.515	6.953	8.528	10.103	11.678	15.316	17.221	18.974	20.879	22.235	
							ΣP	12.852	25.704	34.774	50.764	66.754	82.744	98.734	111.586	124.438	137.290	150.142	150.142	
							ΣM	0	24.483	91.571	176.350	256.303	361.440	491.762	850.956	1063.528	1281.668	1543.205	1746.798	
								ΣD	0	2.610	5.048	6.623	8.198	9.773	13.411	15.316	17.069	18.974	20.330	
								ΣP	12.852	21.922	37.912	53.902	69.892	85.882	98.734	111.586	124.438	137.290	137.290	
								ΣM	0	33.544	86.990	146.701	231.597	341.677	654.115	842.204	1037.814	1274.868	1461.033	
									ΣD	0	2.438	4.013	5.588	7.163	10.801	12.706	14.459	16.364	17.720	
									ΣP	9.070	25.060	41.050	57.040	73.030	85.882	98.734	111.586	124.438	124.438	
									ΣM	0	22.113	61.582	126.236	216.074	481.757	645.362	818.443	1031.014	1199.752	

KD₉型机车弯曲力矩表

车轮排列	1—4—0	动轮直径	1370毫米
机车整备总重	124.44吨	构造速度	
机车全长	18.874米	煤容量	8吨
机车均匀载重	6.56吨/米	水容量	20吨

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表Ⅰ－6

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩		
轴距D(米)	1.23	2.47	1.47	1.47	1.47	2.65	3.432	1.778	2.336	1.778	2.659	2.47	1.47	1.47	1.47	2.65	3.432	1.778	2.336	1.778	1.429	x
轴重P（吨）	8.40	15.38	15.38	15.38	15.38	15.60	13.63	13.63	13.63	13.63	8.40	15.38	15.38	15.38	15.38	15.60	13.63	13.63	13.63	13.63		8吨/米
ΣD（米）	0	2.47	3.94	5.41	6.88	9.53	12.962	14.740	17.076	18.854	21.513	23.983	25.453	26.923	28.393	31.043	34.475	36.253	38.589	40.367	41.796	41.796＋x
ΣP（吨）	8.40	23.78	39.160	54.54	69.920	85.52	99.150	112.78	126.410	140.040	148.440	163.820	179.200	194.580	209.960	225.56	239.190	252.820	266.450	280.080	280.080	280.080＋8x
ΣM（吨·米）	0	20.748	55.705	113.270	193.444	378.732	672.236	848.525	1111.979	1336.736	1709.102	2075.749	2316.564	2579.988	2866.021	3422.415	4196.537	4621.817	5212.404	5686.152	6086.387	※
	ΣD	0	1.470	2.940	4.410	7.060	10.492	12.270	14.606	16.384	19.043	21.513	22.983	24.453	25.923	28.573	32.005	33.783	36.119	37.897	39.326	※6086.387＋280.080x＋4x²
	ΣP	15.38	30.760	46.140	61.520	77.120	90.750	104.380	118.010	131.640	140.040	155.420	170.800	186.180	201.560	217.160	230.790	244.420	258.050	271.680	271.680	
	ΣM	0	22.609	67.826	135.652	298.680	563.355	724.709	968.541	1178.362	1528.393	1874.292	2102.759	2353.835	2627.520	3161.654	3906.947	4317.291	4888.257	5347.069	5735.300	
		ΣD	0	1.470	2.940	5.590	9.022	10.800	13.136	14.914	17.573	20.043	21.513	22.983	24.453	27.103	30.535	32.313	34.649	36.427	37.856	
		ΣP	15.38	30.760	46.140	61.740	75.370	89.000	102.63	116.260	124.660	140.040	155.420	170.800	186.180	201.780	215.410	229.040	242.670	256.300	256.300	
		ΣM	0	22.609	67.826	190.097	401.988	535.996	743.900	926.376	1235.512	1543.422	1749.281	1977.748	2228.824	2722.201	3414.710	3797.709	4332.746	4764.213	5130.466	
			ΣD	0	1.470	4.120	7.552	9.330	11.666	13.444	16.103	18.573	20.043	21.513	22.983	25.633	29.065	30.843	33.179	34.957	36.386	
			ΣP	15.38	30.760	46.360	59.990	73.620	87.250	100.880	109.280	124.660	140.040	155.420	170.800	186.400	200.030	213.660	227.290	240.920	240.920	
			ΣM	0	22.609	104.123	263.230	369.892	541.869	696.999	965.239	1235.161	1418.411	1624.270	1852.737	2305.357	2945.082	3300.735	3799.845	4203.966	4548.241	
				ΣD	0	2.650	6.082	7.860	10.196	11.974	14.633	17.103	18.573	20.043	21.513	24.163	27.595	29.373	31.709	33.487	34.916	
				ΣP	15.38	30.980	44.610	58.240	71.870	85.500	93.900	109.280	124.660	140.040	155.420	171.020	184.650	198.280	211.910	225.540	225.540	
				ΣM	0	40.757	147.080	226.397	362.445	490.230	717.575	949.508	1110.149	1293.400	1499.258	1911.121	2498.062	2826.369	3289.551	3666.327	3988.624	
					ΣD	0	3.432	5.210	7.546	9.324	11.983	14.453	15.923	17.393	18.863	21.513	24.945	26.723	29.059	30.837	32.266	
					ΣP	15.60	29.230	42.860	56.490	70.120	78.520	93.900	109.280	124.660	140.040	155.640	169.270	182.900	196.530	210.160	210.160	
					ΣM	0	53.539	105.510	205.631	306.070	492.519	686.464	824.497	985.138	1168.388	1539.494	2073.651	2374.613	2801.867	3151.298	3451.616	
						ΣD	0	1.778	4.114	5.892	8.551	11.021	12.491	13.961	15.431	18.081	21.513	23.291	25.627	27.405	28.834	
						ΣP	13.63	27.260	40.890	54.520	62.920	78.300	93.680	109.060	124.440	140.040	153.670	167.300	180.930	194.560	194.560	
						ΣM	0	24.234	87.913	160.616	305.584	460.997	576.098	713.807	874.126	1203.892	1684.509	1957.734	2348.547	2670.240	2948.267	
							ΣD	0	2.336	4.114	6.773	9.243	10.713	12.183	13.653	16.303	19.735	21.513	23.849	25.627	27.056	
							ΣP	13.63	27.260	40.890	49.290	64.670	80.050	95.430	110.810	126.410	140.040	153.670	167.300	180.930	180.930	
							ΣM	0	31.840	80.308	189.034	310.781	405.846	523.519	663.801	957.448	1391.287	1640.278	1999.251	2296.710	2555.259	
								ΣD	0	1.778	4.437	6.907	8.377	9.847	11.317	13.967	17.399	19.177	21.513	23.291	24.720	
								ΣP	13.630	27.260	35.660	51.040	66.420	81.800	97.180	112.780	126.410	140.040	153.670	167.300	167.300	
								ΣM	0	24.234	96.718	184.799	259.827	357.465	477.711	735.238	1122.299	1347.056	1674.189	1947.414	2186.486	
									ΣD	0	2.659	5.129	6.599	8.069	9.539	12.189	15.621	17.399	19.735	21.513	22.942	
									ΣP	13.630	22.030	37.410	52.790	68.170	83.550	99.150	112.780	126.410	140.040	153.670	153.670	
									ΣM	0	36.242	90.656	145.649	223.250	323.460	544.868	885.150	1085.673	1380.967	1629.958	1849.552	

上游(SY)型机车弯曲力矩表

车轮排列	1－4－1	动轮直径	1370毫米
机车整备总重	140.04吨	构造速度	80公里/小时
机车全长	21.513米	煤容量	9.5吨
机车均匀载重	6.51吨/米	水容量	25吨

表Ⅰ—7

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	x
轴距D(米)	1.476	2.743	1.473	1.473	1.473	3.030	3.495	1.850	3.100	1.850	2.902	2.743	1.473	1.473	1.473	3.030	3.495	1.850	3.100	1.850	1.426	
轴重P（吨）	8.74	19.97	20.32	19.53	19.96	15.63	20.00	20.00	21.00	21.00	8.74	19.97	20.32	19.53	19.96	15.63	20.00	20.00	21.00	21.00	8.0吨/米
ΣD（米）	0	2.743	4.216	5.689	7.162	10.192	13.687	15.537	18.637	20.487	23.389	26.132	27.605	29.078	30.551	33.581	37.076	38.926	42.026	43.876	45.302	45.302+x
ΣP（吨）	8.74	28.71	49.03	68.56	88.52	104.15	124.15	144.15	165.15	186.15	194.89	214.86	235.18	254.71	274.67	290.30	310.30	330.30	351.30	372.30	372.30	372.30+8x
ΣM（吨-米）	0	23.974	66.264	138.485	239.474	507.690	871.694	1101.372	1548.237	1853.764	2393.971	2928.555	3245.043	3591.463	3966.651	4798.901	5813.500	6387.555	7411.485	8061.390	8592.290	※
	ΣD	0	1.473	2.946	4.419	7.449	10.944	12.794	15.894	17.744	20.646	23.389	24.862	26.335	27.808	30.838	34.333	36.183	39.283	41.133	42.559	※8592.290+372.30x+4x²
	ΣP	19.97	40.29	59.82	79.78	95.41	115.41	135.41	156.41	177.41	186.15	206.12	226.44	245.97	265.93	281.56	301.56	321.56	342.56	363.56	363.56	
	ΣM	0	29.416	88.763	176.878	418.611	752.069	965.578	1385.349	1674.708	2189.552	2700.161	3003.776	3337.322	3699.636	4505.404	5489.456	6047.342	7044.178	7677.914	8196.351	
		ΣD	0	1.473	2.946	5.976	9.471	11.321	14.421	16.271	19.173	21.916	23.389	24.862	26.335	29.365	32.860	34.710	37.810	39.660	41.086	
		ΣP	20.32	39.85	59.81	75.44	95.44	115.44	136.44	157.44	166.18	186.15	206.47	226.00	245.96	261.59	281.59	301.59	322.59	343.59	343.59	
		ΣM	0	29.931	88.630	269.854	533.517	710.081	1067.945	1320.359	1777.250	2233.082	2507.281	2811.411	3144.310	3889.569	4803.826	5324.768	6259.697	6856.489	7346.448	
			ΣD	0	1.473	4.503	7.998	9.848	12.948	14.798	17.700	20.443	21.916	23.389	24.862	27.892	31.387	33.237	36.337	38.187	39.613	
			ΣP	19.53	39.49	55.12	75.12	95.12	116.12	137.12	145.86	165.83	186.15	205.68	225.64	241.27	261.27	281.27	302.27	323.27	323.27	
			ΣM	0	28.768	148.423	341.067	480.039	774.911	989.733	1387.655	1787.749	2032.017	2306.216	2609.183	3292.872	4136.111	4619.461	5491.398	6050.598	6511.581	
				ΣD	0	3.030	6.525	8.375	11.475	13.325	16.227	18.970	20.443	21.916	23.389	26.419	29.914	31.764	34.864	36.714	38.140	
				ΣP	19.96	35.59	55.59	75.59	96.59	117.59	126.33	146.30	166.62	186.15	206.11	221.74	241.74	261.74	282.74	303.74	303.74	
				ΣM	0	60.479	184.866	287.708	522.037	760.729	1041.975	1388.498	1603.998	1849.429	2123.628	2748.141	3523.122	3970.342	4781.736	5304.805	5737.938	
					ΣD	0	3.495	5.345	8.445	10.295	13.197	15.940	17.413	18.886	20.359	23.389	26.884	28.734	31.834	33.684	35.110	
					ΣP	15.63	35.63	55.63	76.63	97.63	106.37	126.34	146.66	166.19	186.15	201.78	221.78	241.78	262.78	283.78	283.78	
					ΣM	0	54.627	120.543	292.996	434.762	718.084	1009.857	1195.956	1411.986	1656.784	2220.818	2926.039	3336.332	4085.850	4571.993	4976.663	
						ΣD	0	1.850	4.950	6.800	9.702	12.445	13.918	15.391	16.864	19.894	23.389	25.239	28.339	30.189	31.615	
						ΣP	20.00	40.00	61.00	82.00	90.74	110.71	131.03	150.56	170.52	186.15	206.15	226.15	247.15	268.15	268.15	
						ΣM	0	37.00	161.00	273.85	511.814	760.714	923.790	1116.797	1338.572	1855.248	2505.842	2887.220	3588.285	4045.512	4427.894	
							ΣD	0	3.100	4.950	7.852	10.595	12.068	13.541	15.014	18.044	21.539	23.389	26.489	28.339	29.765	
							ΣP	20.00	41.00	62.00	70.74	90.71	111.03	130.56	150.52	166.15	186.15	206.15	227.15	248.15	248.15	
							ΣM	0	62.00	137.850	317.774	511.814	645.430	808.977	1001.292	1457.369	2038.062	2382.439	3021.504	3441.732	3795.594	
								ΣD	0	1.850	4.752	7.495	8.968	10.441	11.914	14.944	18.439	20.289	23.389	25.239	26.665	
								ΣP	21.00	42.00	50.71	70.71	91.00	110.56	130.52	146.15	166.15	186.15	207.15	228.15	228.15	
								ΣM	0	38.850	160.734	299.914	404.070	538.157	701.012	1096.488	1607.282	1914.660	2491.725	2874.952	3200.294	
									ΣD	0	2.902	5.645	7.118	8.591	10.064	13.094	16.589	18.439	21.539	23.389	24.815	
									ΣP	21.00	29.74	49.71	70.03	89.56	109.52	125.15	145.15	165.15	186.15	207.15	207.15	
									ΣM	0	60.942	142.519	215.742	318.896	450.818	782.664	1220.063	1488.591	2000.556	2344.933	2640.329	

建设(JS)型机车弯曲力矩表 5001～5146，5301～5353			
车轮排列	1—4—1	动轮直径	1370毫米
机车整备总重	186.15吨	构造速度	85公里/小时
机车全长	23.389米	煤容量	15吨
机车均匀载重	7.96吨/米	水容量	35吨

表Ⅰ—8

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲	⑳		
轴距D(米)	1.255	2.743	1.473	1.473	1.473	3.030	3.153	1.778	3.878	1.778	2.971	2.743	1.473	1.473	1.473	3.030	3.153	1.778	3.878	1.778	1.716	x
轴重P(吨)	7.92	19.87	19.84	20.31	19.86	15.21	20.53	20.53	20.53	20.53	7.92	19.87	19.84	20.31	19.86	15.21	20.53	20.53	20.53	20.53	8吨/米	
ΣD(米)	0	2.743	4.216	5.689	7.162	10.192	13.345	15.123	19.001	20.779	23.750	26.493	27.966	29.439	30.912	33.942	37.095	38.873	42.751	44.529	46.245	46.245+x
ΣP(吨)	7.92	27.79	47.63	67.94	87.80	103.01	123.54	144.07	164.60	185.13	193.05	212.92	232.76	253.07	272.93	288.14	308.67	329.20	349.73	370.26	370.26	370.26+8x
ΣM(吨-米)	0	21.725	62.659	132.818	232.894	498.928	823.718	1043.372	1602.076	1894.734	2444.756	2974.292	3287.923	3630.778	4003.550	4830.528	5739.034	6287.849	7564.486	8186.306	8821.672	※
	ΣD	0	1.473	2.946	4.419	7.449	10.602	12.380	16.258	18.036	21.007	23.750	25.223	26.696	28.169	31.199	34.352	36.130	40.008	41.786	43.502	※8821.672+370.26x+4x²
	ΣP	19.87	39.71	60.02	79.88	95.09	115.62	136.15	156.68	177.21	185.13	205.00	224.84	245.15	265.01	280.22	300.75	321.28	341.81	362.34	362.34	
	ΣM	0	29.269	87.761	176.171	418.207	718.026	923.598	1451.588	1730.165	2256.656	2764.467	3066.432	3397.622	3758.727	4561.708	5445.241	5979.975	7225.899	7833.637	8455.412	
		ΣD	0	1.473	2.946	5.976	9.129	10.907	14.785	16.563	19.534	22.277	23.750	25.223	26.696	29.726	32.879	34.657	38.535	40.313	42.029	
		ΣP	19.84	40.15	60.01	75.22	95.75	116.28	136.81	157.34	165.26	185.13	204.97	225.28	245.14	260.35	280.88	301.41	321.94	342.47	342.47	
		ΣM	0	29.224	88.365	270.196	507.364	677.608	1128.541	1371.790	1839.247	2292.555	2565.251	2867.172	3199.009	3941.784	4762.667	5262.072	6430.940	7003.349	7591.027	
			ΣD	0	1.473	4.503	7.656	9.434	13.312	15.090	18.061	20.804	22.277	23.750	25.223	28.253	31.406	33.184	37.062	38.840	40.556	
			ΣP	20.31	40.17	55.38	75.91	96.44	116.97	137.50	145.42	165.29	185.13	205.44	225.30	240.51	261.04	281.57	302.10	322.63	322.63	
			ΣM	0	29.917	151.632	326.245	461.213	835.207	1043.180	1451.692	1850.579	2094.051	2366.748	2669.361	3352.020	4110.348	4574.477	5666.405	6203.539	6757.172	
				ΣD	0	3.030	6.183	7.961	11.839	13.617	16.588	19.331	20.804	22.277	23.750	26.780	29.933	31.711	35.589	37.367	39.083	
				ΣP	19.86	35.07	55.60	76.13	96.66	117.19	125.11	144.98	164.82	185.13	204.99	220.20	240.73	261.26	281.79	302.32	302.32	
				ΣM	0	60.176	170.752	269.608	564.840	736.702	1084.873	1428.050	1641.605	1884.385	2157.082	2778.201	3472.492	3900.510	4913.676	5414.699	5933.480	
					ΣD	0	3.153	4.931	8.809	10.587	13.558	16.301	17.774	19.247	20.720	23.750	26.903	28.681	32.559	34.337	36.053	
					ΣP	15.21	35.74	56.27	76.80	97.33	105.25	125.12	144.96	165.27	185.13	200.34	220.87	241.40	261.93	282.46	282.46	
					ΣM	0	47.957	111.503	329.718	466.268	755.436	1044.136	1228.438	1441.964	1685.407	2246.351	2878.023	3270.729	4206.879	4672.590	5157.291	
						ΣD	0	1.778	5.656	7.434	10.405	13.148	14.621	16.094	17.567	20.597	23.750	25.528	29.406	31.184	32.900	
						ΣP	20.53	41.06	61.59	82.12	90.04	109.91	129.75	150.06	169.92	185.13	205.66	226.19	246.72	267.25	267.25	
						ΣM	0	36.502	195.733	305.240	549.218	796.198	958.096	1149.217	1370.256	1885.113	2468.828	2834.491	3711.656	4150.324	4608.925	
							ΣD	0	3.878	5.656	8.627	11.370	12.843	14.316	15.789	18.819	21.972	23.750	27.628	29.406	31.122	
							ΣP	20.53	41.06	61.59	69.51	89.38	109.22	129.53	149.39	164.60	185.13	205.66	226.19	246.72	246.72	
							ΣM	0	79.615	152.620	335.604	526.270	657.926	818.807	1009.605	1462.257	1981.240	2310.402	3107.951	3510.117	3933.488	
								ΣD	0	1.778	4.749	7.492	8.965	10.438	11.911	14.941	18.094	19.872	23.750	25.528	27.244	
								ΣP	20.53	41.06	48.98	68.85	88.69	109.00	128.86	144.07	164.60	185.13	205.66	226.19	226.19	
								ΣM	0	36.502	158.492	292.844	394.260	524.900	685.457	1075.903	1530.155	1822.814	2540.748	2906.412	3294.554	
									ΣD	0	2.971	5.714	7.187	8.660	10.133	13.163	16.316	18.094	21.972	23.750	25.466	
									ΣP	20.53	28.45	48.32	68.16	88.47	108.33	123.54	144.07	164.60	185.13	205.66	205.66	
									ΣM	0	60.995	139.033	210.208	310.608	440.924	769.164	1158.686	1414.842	2053.161	2382.322	2735.234	

解放(JF)型机车(74～500)弯曲力矩表

车轮排列	1—4—1	动轮直径	1370毫米
机车整备重量	185.13吨	构造速度	80公里/小时
机车全长	23.75米	煤容量	15吨
机车均匀载重	7.80吨/米	水容量	35吨

表Ⅰ—9

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲	⑳		
轴距D(米)	1.255	2.743	1.473	1.473	1.473	3.030	3.125	1.778	2.336	1.778	2.697	2.743	1.473	1.473	1.473	3.030	3.125	1.778	2.336	1.778	1.442	x
轴重P(吨)	8.03	19.68	19.99	20.26	20.01	15.88	14.55	14.55	14.55	14.55	8.03	19.68	19.99	20.26	20.01	15.88	14.55	14.55	14.55	14.55	8吨/米	
ΣD(米)	0	2.743	4.216	5.689	7.162	10.192	13.317	15.095	17.431	19.209	21.906	24.649	26.122	27.595	29.068	32.098	35.223	37.001	39.337	41.115	42.557	42.557+x
ΣP(吨)	8.03	27.71	47.70	67.96	87.97	103.85	118.40	132.95	147.50	162.05	170.08	189.76	209.75	230.01	250.02	265.90	280.45	295.00	309.55	324.10	324.10	324.10+8x
ΣM(吨-米)	0	22.026	62.843	133.105	233.210	499.759	824.920	1034.806	1345.377	1607.632	2044.681	2511.210	2790.726	3099.688	3438.493	4196.053	5026.991	5525.631	6214.751	6765.131	7232.483	※
	ΣD	0	1.473	2.946	4.419	7.449	10.574	12.352	14.688	16.466	19.163	21.906	23.379	24.852	26.325	29.355	32.480	34.258	36.594	38.372	39.814	※7232.483+324.10x+4x²
	ΣP	19.68	39.67	59.93	79.94	95.82	110.37	124.92	139.47	154.02	162.05	181.73	201.72	221.98	241.99	257.87	272.42	286.97	301.52	316.07	316.07	
	ΣM	0	28.989	87.423	175.699	417.918	717.355	913.593	1205.406	1453.384	1868.775	2313.279	2580.967	2878.100	3205.077	3938.306	4744.150	5228.513	5898.875	6434.978	6890.751	
		ΣD	0	1.473	2.946	5.976	9.101	10.879	13.215	14.993	17.690	20.433	21.906	23.379	24.852	27.882	31.007	32.785	35.121	36.899	38.341	
		ΣP	19.99	40.25	60.26	76.14	90.69	105.24	119.79	134.34	142.37	162.05	182.04	202.30	222.31	238.19	252.74	267.29	281.84	296.39	296.39	
		ΣM	0	29.445	88.733	271.321	509.259	670.506	916.346	1129.333	1491.648	1882.169	2120.868	2389.013	2687.001	3360.600	4104.944	4554.316	5178.705	5679.817	6107.211	
			ΣD	0	1.473	4.503	7.628	9.406	11.742	13.520	16.217	18.960	20.433	21.906	23.379	26.409	29.534	31.312	33.648	35.426	36.868	
			ΣP	20.26	40.27	56.15	70.70	85.25	99.80	114.35	122.38	142.06	162.05	182.31	202.32	218.20	232.75	247.30	261.85	276.40	276.40	
			ΣM	0	29.843	151.861	327.330	453.034	652.178	829.623	1138.025	1473.713	1682.967	1921.667	2190.209	2803.239	3485.114	3898.944	4476.636	4942.206	5340.775	
				ΣD	0	3.030	6.155	7.933	10.269	12.047	14.744	17.487	18.960	20.433	21.906	24.936	28.061	29.839	32.175	33.953	35.395	
				ΣP	20.01	35.89	50.44	64.99	79.54	94.09	102.12	121.80	141.79	162.05	182.06	197.94	212.49	227.04	241.59	256.14	256.14	
				ΣM	0	60.630	172.787	262.469	414.285	555.708	809.468	1089.583	1268.995	1477.851	1716.551	2268.193	2886.755	3264.562	3794.928	4224.475	4593.829	
					ΣD	0	3.125	4.903	7.239	9.017	11.714	14.457	15.930	17.403	18.876	21.906	25.031	26.809	29.145	30.923	32.365	
					ΣP	15.88	30.43	44.98	59.53	74.08	82.11	101.79	121.78	142.04	162.05	177.93	192.48	207.03	221.58	236.13	236.13	
					ΣM	0	49.625	103.730	208.803	314.647	514.441	739.668	889.605	1068.987	1278.212	1769.223	2325.255	2667.484	3151.106	3545.075	3885.575	
						ΣD	0	1.778	4.114	5.892	8.589	11.332	12.805	14.278	15.751	18.781	21.906	23.684	26.020	27.798	29.240	
						ΣP	14.55	29.10	43.65	58.20	66.23	85.91	105.90	126.16	146.17	162.05	176.60	191.15	205.70	220.25	220.25	
						ΣM	0	25.870	93.848	171.457	328.423	510.091	636.637	792.628	978.461	1421.356	1927.762	2241.757	2688.284	3054.018	3371.619	
							ΣD	0	2.336	4.114	6.811	9.554	11.027	12.500	13.973	17.003	20.128	21.906	24.242	26.020	27.462	
							ΣP	14.55	29.10	43.65	51.68	71.36	91.35	111.61	131.62	147.50	162.05	176.60	191.15	205.70	205.70	
							ΣM	0	33.989	85.729	203.453	345.211	450.324	584.883	749.284	1148.093	1609.030	1897.155	2309.693	2649.557	2946.177	
								ΣD	0	1.778	4.475	7.218	8.691	10.164	11.637	14.667	17.792	19.570	21.906	23.684	25.126	
								ΣP	14.55	29.10	37.13	56.81	76.80	97.06	117.07	132.95	147.50	162.05	176.60	191.15	191.15	
								ΣM	0	25.870	104.353	206.200	289.881	403.008	545.977	900.699	1316.168	1578.423	1956.972	2270.966	2546.605	
									ΣD	0	2.697	5.440	6.913	8.386	9.859	12.889	16.014	17.792	20.128	21.906	23.348	
									ΣP	14.55	22.58	42.26	62.25	82.51	102.52	118.40	132.95	147.50	162.05	176.60	176.60	
									ΣM	0	39.241	101.178	163.427	255.121	376.659	687.294	1057.294	1293.679	1638.239	1926.364	2181.021	

解放(JF)型机车(575～2121)弯曲力矩表

车轮排列	1—4—1	动轮直径	1370毫米
机车整备总重	162.05吨	构造速度	80公里/小时
机车全长	21.906米	煤容量	9.6吨
机车均匀载重	7.398吨/米	水容量	24吨

表Ⅰ—10

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲	⑳		
轴距D(米)	1.255	2.743	1.473	1.473	1.473	3.030	3.212	1.778	2.820	1.778	2.854	2.743	1.473	1.473	1.473	3.030	3.212	1.778	2.820	1.778	1.599	x
轴重P（吨）	8.03	19.98	19.98	19.98	19.98	15.88	17.75	17.75	17.75	17.75	8.03	19.98	19.98	19.98	19.98	15.88	17.75	17.75	17.75	17.75	8吨/米	
ΣD（米）	0	2.743	4.216	5.689	7.162	10.192	13.404	15.182	18.002	19.780	22.634	25.377	26.850	28.323	29.796	32.826	36.038	37.816	40.636	42.414	44.013	44.013+x
ΣP（吨）	8.03	28.01	47.99	67.97	87.95	103.83	121.58	139.33	157.08	174.83	182.86	202.84	222.82	242.80	262.78	278.66	296.41	314.16	331.91	349.66	349.66	349.66+8x
ΣM（吨-米）	0	22.026	63.285	133.974	234.094	500.583	834.085	1050.254	1443.165	1722.453	2221.418	2723.003	3021.786	3350.000	3707.644	4503.867	5398.923	5925.946	6811.871	7402.007	7961.113	※
	ΣD	0	1.473	2.946	4.419	7.449	10.661	12.439	15.259	17.037	19.891	22.634	24.107	25.580	27.053	30.083	33.295	35.073	37.893	39.671	41.270	
	ΣP	19.98	39.96	59.94	79.92	95.80	113.55	131.30	149.05	166.80	174.83	194.81	214.79	234.77	254.75	270.63	288.38	306.13	323.88	341.63	341.63	
	ΣM	0	29.431	88.292	176.583	418.741	726.451	928.343	1298.609	1563.620	2039.667	2519.226	2806.181	3122.567	3468.383	4240.276	5109.540	5622.280	6485.567	7061.426	7607.692	
		ΣD	0	1.473	2.946	5.976	9.188	10.966	13.786	15.564	18.418	21.161	22.634	24.107	25.580	28.610	31.822	33.600	36.420	38.198	39.797	
		ΣP	19.98	39.96	59.94	75.82	93.57	111.32	129.07	146.82	154.85	174.83	194.81	214.79	234.77	250.65	268.40	286.15	303.90	321.65	321.65	
		ΣM	0	29.431	88.292	269.910	513.444	679.811	993.733	1223.219	1642.244	2066.998	2324.523	2611.478	2927.864	3639.217	4444.305	4921.520	5728.463	6268.797	6783.115	
			ΣD	0	1.473	4.503	7.715	9.493	12.313	14.091	16.945	19.688	21.161	22.634	24.107	27.137	30.349	32.127	34.947	36.725	38.324	
			ΣP	19.98	39.96	55.84	73.59	91.34	109.09	126.84	134.87	154.85	174.83	194.81	214.79	230.67	248.42	266.17	283.92	301.67	301.67	
			ΣM	0	29.431	150.509	329.867	460.710	718.289	912.251	1274.252	1644.200	1872.294	2129.819	2416.774	3067.588	3808.500	4250.191	5000.790	5505.600	5987.970	
				ΣD	0	3.030	6.242	8.020	10.840	12.618	15.472	18.215	19.688	21.161	22.634	25.664	28.876	30.654	33.474	35.252	36.851	
				ΣP	19.98	35.86	53.61	71.36	89.11	106.86	114.89	134.87	154.85	174.83	194.81	210.69	228.44	246.19	263.94	281.69	281.69	
				ΣM	0	60.539	175.721	271.040	472.275	630.713	935.691	1250.834	1449.498	1677.592	1935.117	2525.391	3202.127	3608.293	4302.549	4771.834	5222.256	
					ΣD	0	3.212	4.990	7.810	9.588	12.442	15.185	16.658	18.131	19.604	22.634	25.846	27.624	30.444	32.222	33.821	
					ΣP	15.88	33.63	51.38	69.13	86.88	94.91	114.89	134.87	154.85	174.83	190.71	208.46	226.21	243.96	261.71	261.71	
					ΣM	0	51.007	110.801	255.693	378.606	626.562	886.900	1056.133	1254.797	1482.891	2012.626	2625.187	2995.829	3633.741	4067.502	4485.976	
						ΣD	0	1.778	4.598	6.376	9.230	11.973	13.446	14.919	16.392	19.422	22.634	24.412	27.232	29.010	30.609	
						ΣP	17.75	35.50	53.25	71.00	79.03	99.01	118.99	138.97	158.95	174.83	192.58	210.33	228.08	245.83	245.83	
						ΣM	0	31.560	131.67	226.349	428.983	645.762	791.604	966.876	171.579	1653.198	2214.752	2557.159	3150.290	3555.816	3948.898	
							ΣD	0	2.820	4.598	7.452	10.195	11.668	13.141	14.614	17.644	20.856	22.634	25.454	27.232	28.831	
							ΣP	17.75	35.50	53.25	61.28	81.26	101.24	121.22	141.20	157.08	174.83	192.58	210.33	228.08	228.08	
							ΣM	0	50.055	113.174	265.150	433.241	552.937	702.064	380.621	1308.457	1812.998	2123.846	2666.922	3040.889	3405.589	
								ΣD	0	1.778	4.632	7.375	8.848	10.321	11.794	14.824	18.036	19.814	22.634	24.412	26.011	
								ΣP	17.75	35.50	43.53	63.51	83.49	103.47	123.45	139.33	157.08	174.83	192.58	210.33	210.33	
								ΣM	0	31.560	132.877	252.280	345.830	468.811	621.222	995.276	1442.804	1722.092	2215.113	2557.520	2893.838	
									ΣD	0	2.854	5.597	7.070	8.543	10.016	13.046	16.258	18. 36	20.856	22.634	24.233	
									ΣP	17.75	25.78	45.76	65.74	85.72	105.70	121.58	139.33	157.08	174.83	192.58	192.58	
									ΣM	0	50.659	121.373	188.777	285.612	411.878	732.149	1122.664	1370.393	1813.359	2124.207	2432.142	

※7961.113+349.66x+4x²

解放（JF）型机车（2122～2500，4001～）弯曲力矩表

车轮排列	1—4—1	动轮直径	1370毫米
机车整备总重	174.83吨	构造速度	80公里/小时
机车全长	22.634米	煤容量	14吨
机车均匀载重	7.725吨/米	水容量	30吨

表Ⅰ—11

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲	⑳		
轴距D(米)	1.260	2.860	1.600	1.600	1.600	3.050	3.383	1.778	2.882	1.778	2.611	2.860	1.600	1.600	1.600	3.050	3.383	1.778	2.882	1.778	1.351	x
轴重P（吨）	10.02	23.10	22.90	23.02	22.70	22.90	18.94	18.94	18.94	18.94	10.02	23.10	22.90	23.02	22.70	22.90	18.94	18.94	18.94	18.94	8吨/米	
ΣD（米）	0	2.860	4.460	6.060	7.660	10.710	14.093	15.871	18.753	20.531	23.142	26.002	27.602	29.202	30.802	33.852	37.235	39.013	41.895	43.673	45.024	45.024+x
ΣP（吨）	10.02	33.12	56.02	79.04	101.74	124.64	143.58	162.52	181.46	200.40	210.42	233.52	256.42	279.44	302.14	325.04	343.98	362.92	381.86	400.80	400.80	400.80+8x
ΣM（吨-米）	0	28.675	81.649	171.281	297.745	608.052	1029.709	1284.995	1753.377	2076.013	2599.257	3201.059	3574.691	3984.963	4432.067	5353.594	6453.204	7054.800	8110.736	8789.683	9331.163	※
	ΣD	0	1.600	3.200	4.800	7.850	11.233	13.011	15.893	17.671	20.282	23.142	24.742	26.342	27.942	30.992	34.375	36.153	39.035	40.813	42.164	※9331.163+400.80x+4x²
	ΣP	23.10	46.00	69.02	91.72	114.62	133.56	152.50	171.44	190.38	200.40	223.50	246.40	269.42	292.12	315.02	333.96	352.90	371.84	390.78	390.78	
	ΣM	0	36.96	110.56	220.992	500.738	888.497	1125.967	1565.472	1870.292	2367.374	2940.518	3298.118	3692.358	4123.430	5014.396	6080.109	6673.890	7690.948	8352.080	8880.024	
		ΣD	0	1.600	3.200	6.250	9.633	11.411	14.293	16.071	18.682	21.542	23.142	24.742	26.342	29.392	32.775	34.553	37.435	39.213	40.564	
		ΣP	22.90	45.92	68.62	91.52	110.46	129.40	148.34	167.28	177.30	200.40	223.30	246.32	269.02	291.92	310.86	329.80	348.74	367.68	367.68	
		ΣM	0	36.64	110.112	319.403	629.015	825.413	1198.344	1462.092	1898.861	2405.938	2726.578	3083.858	3477.970	4298.481	5286.047	5838.756	6789.239	7409.299	7906.034	
			ΣD	0	1.600	4.650	8.033	9.811	12.693	14.471	17.082	19.942	21.542	23.142	24.742	27.792	31.175	32.953	35.835	37.613	38.964	
			ΣP	23.02	45.72	68.62	87.56	106.50	125.44	144.38	154.40	177.50	200.40	223.42	246.12	269.02	287.96	306.90	325.84	344.78	344.78	
			ΣM	0	36.832	176.278	408.419	564.101	871.034	1094.066	1471.042	1912.626	2196.626	2517.266	2874.738	3625.404	4535.499	5047.492	5931.978	6511.321	6977.119	
				ΣD	0	3.050	6.433	8.211	11.093	12.871	15.482	18.342	19.942	21.542	23.142	26.192	29.575	31.353	34.235	36.013	37.364	
				ΣP	22.70	45.60	64.54	83.48	102.42	121.36	131.38	154.48	177.38	200.40	223.10	246.00	264.94	283.88	302.82	321.76	321.76	
				ΣM	0	69.235	223.500	338.252	578.841	760.944	1077.815	1453.562	1700.730	1984.538	2305.178	2985.633	3817.851	4288.914	5107.056	5645.470	6080.168	
					ΣD	0	3.383	5.161	8.043	9.821	12.432	15.292	16.892	18.492	20.092	23.142	26.525	28.303	31.185	32.963	34.314	
					ΣP	22.90	41.84	60.78	79.72	98.66	108.68	131.78	154.68	177.70	200.40	223.30	242.24	261.18	280.12	299.06	299.06	
					ΣM	0	77.471	151.862	327.030	468.772	726.373	1037.198	1248.046	1495.534	1779.854	2391.074	3146.498	3577.201	4329.922	4827.975	5232.005	
						ΣD	0	1.778	4.660	6.438	9.049	11.909	13.509	15.109	16.709	19.759	23.142	24.920	27.802	29.580	30.931	
						ΣP	18.94	37.88	56.82	75.76	85.78	108.88	131.78	154.80	177.50	200.40	219.34	238.28	257.22	276.16	276.16	
						ΣM	0	33.675	142.845	243.871	441.681	687.011	861.219	1072.067	1319.747	1861.122	2539.076	2929.062	3615.785	4073.122	4446.214	
							ΣD	0	2.882	4.660	7.271	10.131	11.731	13.331	14.931	17.981	21.364	23.142	26.024	27.802	29.153	
							ΣP	18.94	37.88	56.82	66.84	89.94	112.84	135.86	158.56	181.46	200.40	219.34	238.28	257.22	257.22	
							ΣM	0	54.585	121.936	270.293	461.455	605.359	785.903	1003.279	1486.887	2100.766	2457.077	3089.215	3512.877	3860.381	
								ΣD	0	1.778	4.389	7.249	8.849	10.449	12.049	15.099	18.482	20.260	23.142	24.920	26.271	
								ΣP	18.94	37.88	47.90	71.00	93.90	116.92	139.62	162.52	181.46	200.40	219.34	238.28	238.28	
								ΣM	0	33.675	132.580	269.574	383.174	533.414	720.486	1146.327	1696.132	2018.768	2596.321	2986.307	3308.223	
									ΣD	0	2.611	5.471	7.071	8.671	10.271	13.321	16.704	18.482	21.364	23.142	24.493	
									ΣP	18.94	28.96	52.06	74.96	97.98	120.68	143.58	162.52	181.46	200.40	219.34	219.34	
									ΣM	0	49.452	132.278	215.574	335.510	492.278	860.352	1346.083	1635.044	2158.011	2514.322	2810.651	

JF₄型蒸汽机车弯曲力矩表

车轮排列	1—4—1	动轮直径	1500毫米
机车整备总重	200.4吨	构造速度	85公里/小时
机车全长	23.142米	煤容量	13.00吨
机车均匀载重	8.66吨/米	水容量	30.00吨

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