

BRITISH RAILWAYS



DRIVER'S MANUAL

**GENERAL DATA AND
PRINCIPAL DIMENSIONS**

**CLASS : 20, 24, 25, 26, 27,
31, 33, 37, 40, 45,
46, 47 and 50
LOCOMOTIVES**

B.R. 33056/10

LOCOMOTIVE CLASS

	20	24	25	26	27	31	33
Weight	72 tons	Varies between 71 and 80 tons	Varies between 70 and 74 tons	77 tons 10 cwt.	73 tons 10 cwt.	108 tons 14 cwt.	*73 tons 8 cw †74 tons 4 cwt.
Overall length	46' 9½"	50' 6"	50' 6"	50' 9"	50' 9"	56' 9"	50' 9"
Overall height	12' 7¾"	12' 8"	12' 8"	12' 8"	12' 8"	12' 7½"	12' 8"
Overall width	8' 9"	9' 1¾"	8' 11¾"	8' 10"	8' 9"	8' 9"	*9' 3" + 8' 8"
Wheelbase	32' 6"	36' 6"	36' 6"	39' 0"	39' 0"	42' 10"	39' 0"
Bogie centres	24' 0"	28' 0"	28' 0"	29' 0"	29' 0"	28' 10"	29' 0"
Bogie wheelbase	8' 6"	8' 6"	8' 6"	10' 0"	10' 0"	14' 0"	10' 0"
Wheel arrangement	B-B	B-B	B-B	B-B	B-B	A1A-A1A	B-B
Minimum curve	3½ chains	4½ chains	4½ chains	4½ chains	4½ chains	4½ chains	4 chains
Route availability	RA5	RA6	RA5	RA6	RA5	RA5	RA6
Wheel diameter	3' 7"	3' 9"	3' 9"	3' 7"	3' 7"	3' 7" (outer) 3' 3½" (mid.)	3' 7"
Gear ratio	63:17	81:16	*79:18 †67:18	63:16	60:17	*64:17 †60:19	62:17
Maximum speed	75 m.p.h.	75 m.p.h.	90 m.p.h.	80 m.p.h.	90 m.p.h.	*80 m.p.h. †90 m.p.h.	85 m.p.h.
Maximum tractive effort	42,000 lb.	40,000 lb.	*39,000 lb. †45,000 lb.	42,000 lb.	40,000 lb.	42,000 lb.	45,000 lb.
Continuous tractive effort	19,500 lb.	21,300 lb.	20,800 lb.	30,000 lb.	25,000 lb.	18,800 lb.	26,000 lb.
Maximum current	1800 amps.	2320 amps.	*2530 amps. †2340 amps.	2240 amps.	2800 amps.	2000 amps.	2620 amps.
Fuel capacity	400 galls.	630 galls.	560 galls.	500 galls.	500 galls.	550 galls.	800 galls.
Boiler fuel capacity	—	—	—	—	100 galls.	145 galls.	—
Boiler water capacity	—	450 galls.	580 galls.	550 galls.	450 galls.	745 galls.	—
Coolant capacity	130 galls.	190 galls.	187 galls.	190 galls.	187 galls.	156 galls.	230 galls.
Lub. oil capacity	100 galls.	100 galls.	100 galls.	100 galls.	100 galls.	110 galls.	108 galls.
Brake equipment	D. & M.	Westinghouse	D. & M.	D. & M.	Westinghouse	Westinghouse	D. & M.
Max. brake cylinder pressure	57 p.s.i.	70 p.s.i.	70 p.s.i.	57 p.s.i.	57 p.s.i.	60 p.s.i.	70 p.s.i.
			*5151-5175 †5176-5299 7500-7677			*Locos up to 5534 †Locos 5535 onwards	*6500-6585 excepting push-pull locos which are 77 tons 6 cwt. †6586-6597

LOCOMOTIVE CLASS

	37	40	45	46	47	47	50
Weight	108 tons	133 tons	136 tons 17 cwt.	138 tons 13 cwt.	Series parallel 117 tons	All parallel 117 tons	115 tons 1 cwt.
Overall length	61' 6"	69' 6"	67' 11"	63' 6"	63' 6"	63' 6"	68' 6"
Overall height	12' 10½"	12' 10"	12' 10½"	12' 10½"	12' 9¾"	12' 9¾"	12' 9¾"
Overall width	8' 8½"	9' 0"	9' 1¼"	9' 11¼"	9' 9½"	8' 9½"	9' 1½"
Wheelbase	50' 8"	61' 3"	59' 8"	59' 8"	51' 6"	51' 6"	56' 2"
Bogie centres	37' 2"	34' 4"	32' 8"	32' 8"	37' 0"	37' 0"	42' 8"
Bogie wheelbase	13' 6"	21' 6"	21' 6"	21' 6"	14' 6"	14' 6"	13' 6"
Wheel arrangement	C-C	1C-C1	1C-C1	1C-C1	C-C	C-C	C-C
Minimum curve	4 chains	4½ chains	5 chains	5 chains	4 chains	4 chains	4 chains
Route availability	RA5	RA6	RA7	RA7	RA6	RA6	RA6
Wheel diameter	3' 7"	3' 9" (3' 0" pony)	3' 9" (3' 0" pony)	3' 9" (3' 0" pony)	3' 9"	3' 9"	3' 7"
Gear ratio	53:18	61:19	62:17	62:19	66:17	66:17	53:18
Maximum speed	90 m.p.h.	90 m.p.h.	90 m.p.h.	90 m.p.h.	95 m.p.h.	95 m.p.h.	100 m.p.h.
Maximum tractive effort	55,000 lb.	52,000 lb.	55,000 lb.	55,000 lb.	62,000 lb.	62,000 lb.	48,500 lb.
Continuous tractive effort	35,000 lb.	30,900 lb.	30,000 lb.	31,500 lb.	30,000 lb.	30,000 lb.	33,000 lb.
Maximum current	2600 amps.	2700 amps.	4200 amps.	3300 amps.	3750 amps.	7500 amps.	2400 amps.
Fuel capacity	920 galls.	730 galls.	840 galls.	840 galls.	850 galls.	850 galls.	1000 galls.
Boiler fuel capacity	120 galls.	200 galls.	—	—	—	—	—
Boiler water capacity	800 galls.	800 galls.	1040 galls.	1040 galls.	1250 galls.	1250 galls.	—
Coolant capacity	160 galls.	200 galls.	346 galls.	346 galls.	300 galls.	300 galls.	280 galls.
Lub. oil capacity	120 galls.	140 galls.	190 galls.	190 galls.	190 galls.	190 galls.	130 galls.
Brake equipment	Westinghouse	Westinghouse	D. & M.	D. & M.	D. & M. and Westinghouse	D. & M.	Westinghouse
Max. brake cylinder pressure	75 p.s.i.	57 p.s.i.	70 p.s.i.	70 p.s.i.	70 p.s.i.	70 p.s.i.	85 p.s.i.

LOCOMOTIVE CLASS

	20	24	25	26	27	31	33
Brake force	35 tons	38 tons	38 tons	35 tons	35 tons	49 tons	35 tons
Diesel engine type	E.E. 8SVT	Sulzer 6LDA28A	Sulzer 6LDA28B	Sulzer 6LDA28A	Sulzer 6LDA28B	E.E. 12SVT	Sulzer 8LDA28A
Diesel engine H.P.	1000	1160	1250	1160	1250	1470	1550
Diesel engine R.P.M. (Max.)	850	750	750	750	750	850	750
Diesel engine cylinders	8	6	6	6	6	12	8
Turbo-chargers	2	1	1	1	1	2	1
Electrical equipment	E.E. Co.	A.E.I.	A.E.I.	C.P./Allen West	G.E.C.	Brush	C.P./Allen West
Main generator	E.E. 819/3C	RTB 15656	RTB 16556	CG 391A1	WT 981	TG 160-48	CG 391 B1
Continuous output	644 kW	720 kW	735 kW	760 kW	805 kW	900 kW	1012 kW
Continuous rating	1200 amps.	1400 amps.	*1500 amps. †1300 amps.	1720 amps.	1940 amps.	1200 amps.	1760 amps.
Auxiliary generator	E.E. 991/2B	RTB 7440	RTB 7440	CAG 193A1	WT 782	TG 69-42	CAG 193 A1
Continuous output	48 kW	50 kW	50 kW	57k W	57 kW	30 kW	57 kW
Voltage	110	110	110	110	110	110	110
Traction motors	(4) E.E. 526/5D	(4) 137BY	(4) *137BX †253AY	(4) *C171 A1 †C171 D3	(4) WT459	(4) TM73-68	C171 C2
Continuous rating	600 amps.	350 amps.	*350 amps. †650 amps.	430 amps.	485 amps.	600 amps.	440 amps.
One hour rating	650 amps.	375 amps.	*375 amps. †680 amps.	470 amps.	510 amps.	630 amps.	485 amps.
Rail H.P. at cont. rating	770	843	949	900	933	1170	1215
Full power available between	5 & 75 m.p.h.	7.7 & 69 m.p.h.	9.3 & 77.6 m.p.h.	7 & 75 m.p.h.	7.5 & 80 m.p.h.	9 & 82 m.p.h.	10 & 80 m.p.h.
Min. speed at cont. rating	11.0 m.p.h.	14.8 m.p.h.	17.1 m.p.h.	11.25 m.p.h.	14 m.p.h.	19.7 m.p.h.	17.5 m.p.h.
Exhauster(s)	2	2	2	2	2	2	2
*Compressor(s)	2	1	2	2	2	2	2
Fuel transfer pump	1	---	---	---	---	1	---
Lub. oil priming pump	1	---	---	---	---	1	---
Combined pump	---	1	1	1	1	---	1
Motor blowers	2	2	2	2	2	2	2
*Only one compressor is used on locomotives which are not fitted with dual brakes			*5151-5175 †5176-5299 ‡5307-5346 7500-7677	*5300-5306 †5307-5346			

LOCOMOTIVE CLASS

	37	40	45	46	47	47	50
Brake force	50 tons	51 tons	63 tons	63 tons	Series parallel 60 tons	All parallel 60 tons	59 tons
Diesel engine type	E.E. 12CSVT	E 16 SVT	Sulzer 12LDA28B	Sulzer 12LDA28B	Sulzer 12LDA28C	Sulzer 12LDA28C	E.E. 16CSVT
Diesel engine H.P.	1750	2000	2500	2000	2750	2750	2700
Diesel engine R.P.M. (Max.)	850	850	750	750	800	800	850
Diesel engine cylinders	12	16	12	12	12	12	16
Turbo-chargers	2	4	1	1	1	1	2
Electrical equipment	E.E. Co.	E.E. Co.	C.P./Allen West	Brush	Brush	Brush	E.E. Co.
Main generator	E.E. 822/10G	E.E. 822	CG 426 A1	TG 160-60	T 160-60	TG 172-50	E.E. 840/4B
Continuous output	1107 kW	1370 kW	1530 kW	1650 kW	1798 kW	1798 kW	1746 kW
Continuous rating	1800 amps.	1800 amps.	2640 amps.	2100 amps.	2130 amps.	4260 amps.	1800 amps.
Auxiliary generator	E.E. 911/5C	E.E. 911	CAG 252A1	TG69-28	TG 69-28	TG 69-20	E.E. 911/5C
Continuous output	66 kW	48 kW	75 kW	47.5 kW	55 kW	50 kW	66 kW
Voltage	110	110	220	110	110	110	110
Traction motors	(6) E.E. 538/A	(6) E.E. 526/5D	(6) C 172A1	(6) TM 73-68	(6) TM 64-68	(6) TM 64-68	E.E. 538/5A
Continuous rating	600 amps.	600 amps.	445 amps.	700 amps.	710 amps.	710 amps.	600 amps.
One hour rating	630 amps.	650 amps.	485 amps.	770 amps.	762 amps.	762 amps.	630 amps.
Rail H.P. at cont. rating	1250	1550	2000	1962	2160	2160	2070h
Full power available between	10 & 79 m.p.h.	10 & 79 m.p.h.	12 & 82 m.p.h.	11.2 & 85 m.p.h.	10.5 & 85 m.p.h.	10.5 & 85 m.p.h.	15 & 87 m.p.h.
Min. speed at cont. rating	13.6 m.p.h.	18.8 m.p.h.	25 m.p.h.	23.3 m.p.h.	27 m.p.h.	27 m.p.h.	23.5 m.p.h.
Exhauster(s)	2	2	1	1	2	2	2
Compressor(s)	2	2	2	2	2	2	2
Fuel transfer pump	1	1	—	—	—	—	1
Lub. oil priming pump	1	1	—	—	—	—	—
Combined pump	—	—	1	1	1	1	—
Motor blowers	2	2	2	2	2	2	2

