

<b>DEPARTMENT OF TRANSPORTATION</b> <b>FEDERAL AVIATION ADMINISTRATION</b> <b>TYPE CERTIFICATE DATA SHEET</b> <b>NO. E4CE</b>	Rolls-Royce Corporation		E4CE
	Revision 42		29 June 2010
	250-C10 (T63-A-5)	250-C20	250-C20R
	250-C10B (T63-A-5A)	250-C20B	250-C20R/1
	250-C10D (T63-A-700)	250-C20C (T63-A-720)	250-C20R/2
	250-C18	250-C20F	250-C20R/4
	250-C18A	250-C20J	250-C20W
	250-C18B	250-C20S	250-C300/A1
	250-C18C	225-C10	250-C300/B1
	250-C19	225-C10A	

Engines of models described herein conforming with this data sheet (which is part of Type Certificate No. E4CE) and other approved data on file with the Federal Aviation Administration meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Federal Aviation Regulations provided they are installed, operated and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

Type certificate holder: Rolls-Royce Corporation  
P.O. Box 420  
Indianapolis, Indiana 46206-0420

Type certificate holder record: E4CE originally issued to Allison Division, General Motors Corporation on 19 Dec 62  
E4CE reissued to Detroit Diesel Allison, General Motors Corporation on 1 Sep 70  
E4CE reissued to Allison Gas Turbine Division, General Motors Corporation on 1 May 83  
E4CE reissued to Allison Engine Company on 1 Dec 93  
E4CE reissued to Rolls-Royce Corporation on 1 Sep 2000

Model	250-C10	250-C10B 250-C10D 250-C18 250-C18A 250-C19	250-C18B 250-C18C	250-C20	250-C20B
Type	Free turbine turboshaft with axial centrifugal compressor, 2-stage gas producer turbine, 2-stage power turbine and single combustion chamber.				
Shaft ratio	5.83:1	--	--	5.53:1	--
Ratings (see Note 3) Max continuous:					
SHP at sea level	212	270	--	385	420
Gas producer rpm	47350	49760	--	51490	53000
Output shaft rpm	6000	--	--	6016	--
Measured gas temp	1165°F (630°C)	1280°F (693°C)	--	1430°F (777°C)	1490°F (810°C)
Takeoff, 5 min:					
SHP at sea level	250	317	--	400	420
Gas producer rpm	48950	51600	--	52000	53000
Output shaft rpm	6000	--	--	6016	--
Measured gas temp	1240°F (671°C)	1380°F (749°C)	--	1460°F (793°C)	1490°F (810°C)
Takeoff, 5 min augmented					
SHP at sea level, 95°F ambient temp	—	—	310	—	420
Output shaft rpm	—	—	6000	—	6016
Measured gas temp (see Note 14)	—	—	1380°F (749°C)	—	1490°F (810°C)
30 minute OEI:					
SHP at sea level	250	317	--	400	420
Gas producer rpm	48950	51600	--	52000	53000
Output shaft rpm	6000	--	--	6016	--
Measured gas temp	1240°F (671°C)	1380°F (749°C)	--	1460°F (793°C)	1490°F (810°C)
Output shaft	Internal spline	--	--	--	--

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Model	250-C10	250-C10B 250-C10D 250-C18 250-C18A 250-C19	250-C18B 250-C18C	250-C20	250-C20B
Fuel	Fuels allowed for use are provided in the Operations and Maintenance Manual for each model. See NOTE 22 for applicable Operations and Maintenance Manual publication.				
Lubricating oil	Oils allowed for use are provided in the Operations and Maintenance Manual for each model. See NOTE 22 for applicable Operations and Maintenance Manual publication.				
Principal dimensions:	Refer to specific IDM for dimensions & center of gravity locations ( See NOTE 22 for applicable IDM publications)				
Weight (dry), lbs. Includes basic engine, fuel pump and filter, ignition and fuel control system.	136	138.7 139 141 141 144	141.2	158	--
Weight with first stage turbine wheel internal energy absorbing ring.	—	—	—	—	161

Model	C20C	250-C20F	250-C20J	250-C20S	250-C20R 250-C20R/1 250-C20R/2 250-C20R/4
Type	Free turbine turboshaft with axial centrifugal compressor, 2-stage gas producer turbine, 2-stage power turbine and single combustion chamber.				
Shaft ratio	5.53:1	--	--	--	--
Ratings (see Note 3) Max continuous:					
SHP at sea level	370	420	--	--	450
Gas producer rpm	51200	51790	53000	--	50537
Output shaft rpm	6016	--	--	--	--
Measured gas temp	1360°F (738°C)	1490°F (810°C)	--	--	1423°F (773°C)
Takeoff, 5 min:					
SHP at sea level	420	--	--	--	450
Gas producer rpm	53000	51790	53000	--	50537
Output shaft rpm	6016	--	--	--	--
Measured gas temp	1490°F (810°C)	--	--	--	1423°F (773°C)
Takeoff, 5 min augmented					
SHP at sea level, 95°F ambient temp	—	420	--	--	—
Output shaft rpm	—	6016	--	--	—
Measured gas temp (see Note 14)	—	1490°F (810°C)	--	--	—
30 minute OEI:					
SHP at sea level	—	420	--	—	450
Gas producer rpm	—	51790	53000	—	50537
Output shaft rpm	—	6016	--	—	6016
Measured gas temp	—	1490°F (810°C)	--	—	1423°F (773°C)

Model	C20C	250-C20F	250-C20J	250-C20S	250-C20R 250-C20R/1 250-C20R/2 250-C20R/4
Output shaft	Internal spline	--	--	--	--
Fuel	Fuels allowed for use are provided in the Operations and Maintenance Manual for each model. See NOTE 22 for applicable Operations and Maintenance Manual publication.				
Lubricating oil	Oils allowed for use are provided in the Operations and Maintenance Manual for each model. See NOTE 22 for applicable Operations and Maintenance Manual publication.				
Principal dimensions:	Refer to specific IDM for dimensions & center of gravity locations ( See NOTE 22 for applicable IDM publications)				
Weight (dry), lbs. Includes basic engine, fuel pump and filter, ignition and fuel control system.	158	--	--	159	—
Weight with first stage turbine wheel internal energy absorbing ring.	161	--	--	162	173 173 169 169

Model	225-C10 225-C10A	250-C20W	250-C300/A1	250-C300/B1	
Type	Free turbine turboshaft with axial centrifugal compressor, 2-stage gas producer turbine, 2-stage power turbine and single combustion chamber.		Free turbine turboshaft with single stage centrifugal flow compressor, 2-stage gas producer turbine, 2-stage power turbine and single combustion chamber.		
Shaft ratio	5.53:1	--	--	--	
Ratings	See NOTE 3				
Max continuous:					
SHP at sea level	350	420	240	--	
Gas producer rpm	49985	51790	50097	--	
Output shaft rpm	6016	--	--	--	
Measured gas temp	1324°F (718°C)	1490°F (810°C)	1185°F (641°C)	--	
Takeoff, 5 min:					
SHP at sea level	350	420	300	--	
Gas producer rpm	49985	51790	51869	--	
Output shaft rpm	6016	--	--	--	
Measured gas temp	1324°F (718°C)	1490°F (810°C)	1277°F (692°C)	--	
30 minute OEI:					
SHP at sea level	350	420	—	—	
Gas producer rpm	49985	51790	—	—	
Output shaft rpm	6016	--	—	—	
Measured gas temp	1324°F (718°C)	1490°F (810°C)	—	—	
Output shaft	Internal spline	--	--	--	

<b>Model</b>	225-C10 225-C10A	250-C20W	250-C300/A1	250-C300/B1	
Fuel	Fuels allowed for use are provided in the Operations and Maintenance Manual for each model. See NOTE 22 for applicable Operations and Maintenance Manual publication.				
Lubricating oil	Oils allowed for use are provided in the Operations and Maintenance Manual for each model. See NOTE 22 for applicable Operations and Maintenance Manual publication.				
Principal dimensions:	Refer to specific IDM for dimensions & center of gravity locations ( See NOTE 22 for applicable IDM publications)				
Weight (dry), lb. Incl engine, fuel pump & filter, ignition sys, fuel control sys and 1st stage turbine wheel energy absorbing ring	161	162	201 – includes starter/generator, GCU and EMU	202 – includes starter/generator, GCU and EMU	

Certification basis Part 13 of the Civil Air Regulations effective June 15, 1956, as amended by 13-1, 13-2 and 13-3, and Exemption No. 219B from CAR 13.211, Regulatory Docket 1337 issued August 6, 1962, and amended May 12, 1980 and December 10, 1991. Application for Type Certificate dated September 15, 1961. Type Certificate No. E4CE issued December 19, 1962, for Model 250-C10; Models 250-C10B, 250-C18 and 250-C18A added September 9, 1965; Models 250-C18B and 250-C18C added September 25, 1967; Model 250-C19 added April 29, 1968; Model 250-C10D added November 15, 1968; Model 250-C20 added April 22, 1970; Model 250-C20B added February 28, 1974; Model 250-C20C added June 9, 1976; Model 250-C20F added March 2, 1979; Model 250-C20J added September 15, 1981; Model 250-C20S added December 30, 1983; Model 250-C20R/1 added September 12, 1986; Model 250-C20R/2 added March 5, 1987; Models 225-C10 and 225-C10A added March 20, 1987; Model 250-C20R added September 29, 1989; Model 250-C20R/4 added December 5, 1989; Model 250-C20W added April 20, 1990; Model 250-C300/A1 added 21 December 2007. Model 250-C300/B1 added 22 June 2009.

Certification basis for the 250-C300/A1 and –C300/B1 only: Title 14 Code of Federal Regulation (CFR) Part 33 effective February 1, 1965, as amended by Amendments 33-1 through 33-4; plus Amendment 9 Section 33.4 (Instructions for Continued Airworthiness), and Exemption No. 219B from Part 33.69. Fuel Venting and Exhaust Emissions Standards 14 CFR Part 34, effective September 10, 1990, including Amendments 34-1 through 34-3.

Production basis Production Certificate No. 310

**NOTE 1.** Maximum allowable temperatures

	Measured gas temperature – °F (°C)				Oil inlet temp – °F (°C)	
	Takeoff and 30-min (OEI) power	Max continuous	Max transient	Starting <sup>(5)</sup>	MIL-L-7808F	MIL-L-23699 or AS 5780 HPC
250-C10	1360 (738)	1280 (693)	1360 (738) to 1550 (843) <sup>(1)</sup>	1360 (738) to 1700 (927) <sup>(3)</sup>	–65 (–54) to 200 (93)	–40 (–40) to 225 (107)
250-C10B, -C10D, -C18, -C18A, -C18B, -C18C, -C19	1380 (749)	1280 (693)	1380 (749) to 1550 (843) <sup>(1)</sup>	1380 (749) to 1700 (927) <sup>(4)</sup>	–65 (–54) to 225 (107)	–40 (–40) to 225 (107)
250-C20	1460 (793)	1430 (777)	1460 (793) to 1550 (843) <sup>(1)</sup>	1460 (793) to 1700 (927) <sup>(4)</sup>	–65 (–54) to 225 (107)	–40 (–40) to 225 (107)
250-C20B, -C20F, -C20J, -C20W	1490 (810)	1490 (810)	1490 (810) to 1550 (843) <sup>(1)</sup> 1490 (810) to 1650 (899) <sup>(2)</sup>	1490 (810) to 1700 (927) <sup>(4)</sup>	–65 (–54) to 225 (107)	–40 (–40) to 225 (107)
250-C20C	1490 (810)	1360 (738)	1460 (793) to 1550 (843) <sup>(1)</sup>	1490 (810) to 1700 (927) <sup>(4)</sup>	–65 (–54) to 225 (107)	–40 (–40) to 225 (107)
250-C20S	1490 (810)	1490 (810)	1490 (810) to 1550 (843) <sup>(1)</sup>	1490 (810) to 1700 (927) <sup>(4)</sup>	–65 (–54) to 225 (107)	–40 (–40) to 225 (107)
250-C20R, -C20R/1, -C20R/2, -C20R/4	1490 (810)	1490 (810)	1490 (810) to 1650 (899) <sup>(1)(2)</sup>	1490 (810) to 1700 (927) <sup>(4)</sup>	–65 (–54) to 225 (107)	–40 (–40) to 225 (107)
225-C10, -C10A	1400 (760)	1400 (760)	1400 (760) to 1550 (843) <sup>(1)</sup>	1400 (760) to 1700 (927) <sup>(4)</sup>	–65 (–54) to 225 (107)	–40 (–40) to 225 (107)
250-C300/A1, 250-C300/B1	1439 (782)	1303 (706)	1439 (782) to 1550 (843) <sup>(1)</sup>	1439 (782) to 1700 (927) <sup>(4)</sup>	—	–40 (–40) to 225 (107)

(1) Not to exceed six seconds.

(2) From six seconds not to exceed a maximum of 12 seconds. Maximum of three occurrences per life of each turbine wheel.

(3) Six seconds maximum.

(4) Ten seconds maximum.

(5) For all models, the maximum temperature during start, 1700°F (927°C), is allowed for a period not to exceed one second.

**NOTE 2.** Fuel inlet and oil pressure limits

Fuel inlet pressure limits (applicable to MIL-T-5624 and ASTM D1655 Jet A or A-1 fuels)

	Minimum fuel inlet pressure						Maximum fuel inlet pressure
	Sea level	6000 ft	10000 ft	15000 ft	20000 ft	25000 ft	
250-C10, -C10B, -C10D	Ambient minus 7 in Hg	Ambient minus 5.5 in Hg	—	—	—	—	25 psig
250-C18, -C18A, -C18B, -C18C, -C19, -C20, -C20B, -C20C, -C20F, -C20J, -C20S, -C20R, -C20R/1, -C20R/2, -C20R/4, -C20W, -C300/A1, C300/B1; 225-C10, -C10A	Ambient minus 9 in Hg	Ambient minus 5.5 in Hg	Ambient minus 3.3 in Hg	Ambient minus 0.8 in Hg	Ambient plus 1.5 in Hg	Ambient plus 3.0 in Hg	25 psig

(1) No fuel inlet depression permitted with MIL-G-5572 fuel.

(2) Fuel pressure requirement is different for Model 250-C20R/2, P/N 23053265 engine (P/N 23053267 Installation Assembly). See Installation Design Manual (reference NOTE 22).

**NOTE 2 (cont)** Oil pressure limits

	Operating oil gauge pressure (psig)						Minimum oil pump inlet pressure
	49586 rpm (97.0%) gas producer turbine speed and above	39874 rpm (78.0%) gas producer turbine speed to 49586 rpm (97.0%)	Below 39874 rpm (78.0%) gas producer turbine speed	48014 rpm (94.2%) gas producer turbine speed and above	40011 rpm (78.5%) gas producer turbine speed to 48014 rpm (94.2%)	Below 40011 rpm (78.5%) gas producer turbine speed	
250-C10, -C10B, -C10D, -C18, -C18A, -C18B, -C18C, -C19	110 – 130	90 – 130	50 – 130	—	—	—	—
250-C20, -C20B, -C20C, -C20F, -C20J, -C20S, -C20W, -C300/A1, -C300/B1; 225-C10, -C10A	—	—	—	115 – 130	90 – 130	50 – 130	5 in Hg absolute
250-C20R, -C20R/1, -C20R/2, -C20R/4	—	—	—	120 – 130	90 – 130	50 – 130	5 in Hg absolute

- (1) For 250-C20R, -C20R/1, -C20R/2 and -C20R/4 models, 10% aeration by volume is permitted in oil from a primed pump. Therefore, the lower oil pressure limit may decline at the rate of 2 psig per 1000 feet at altitudes above 5000 feet, to a maximum reduction of 20 psig.

**NOTE 3.** The engine ratings, unless otherwise specified, are based on static sea level standard conditions. Compressor inlet air (dry) 59°F, 29.92 in. Hg. Compressor inlet bell attached to provide suitable air approach conditions. No external accessory load and no air bleed. Measured rated gas temperature as indicated by average of the four gas temperature thermocouples. Certain models are intended for military use only. The power ratings for these models have been re-designated by the military, but are equivalent to the ratings listed herein.

**NOTE 4.** The following accessory drive or mounting provisions are available:

	Direction of rotation *	Speed ratio to turbine	Maximum torque (in-lb)		Maximum overhang moment (in-lb)
			Continuous	Static	
Driven by gas producer turbine:					
Spare ** (-C10, B, D, -C18, A, B, C, -C19)	C	0.0728	17	75	25
Spare ** (225-C10 & C10A)	C	0.0728	17	75	30
Spare ** (-C20 & -C20C)	C	0.0728	35	75	25
Spare ** (-C20B, F, J & S)	C	0.0728	35	75	30
Tachometer *	CC	0.0824	7	50	4
Starter-generator (-C10)	C	0.2361	***	350	94
Starter-generator (all other models)	C	0.2361	***	550	94
Driven by power turbine:					
Power takeoff, rear (-C10)	C	0.1714	525	8000	100
Power takeoff, rear (-C20)	C	0.1807	4416 ****	8000	100
Power takeoff, rear (-C20B, C, F, J, S, W, -C300/A1 and -C300/B1)	C	0.1807	4608 ****	8000	100
Power takeoff, rear (-C20R, R/1, R/2, R/4)	C	0.1807	4800 ****	8000	100
Power takeoff, rear (225-C10, -C10A)	C	0.1807	3672 ****	8000	100
Power takeoff, rear (all other models)	C	0.1807	3516 ****	8000	100
Tachometer * (-C20 Series)	CC	0.1262	7	50	4
Tachometer * (all other models)	CC	0.1197	7	50	4

C = Clockwise viewing drive pad, CC = Counterclockwise

\* Both GP and power turbine tachometer accessory drives are omitted on the 250-C300/A1 and -C300/B1.

\*\* Spare drive pad optional on 250-C20B, F, J, 225-C10 & -C10A. No spare drive pad on 250-C20R, R/1, R/2, R/4, -C20W or -C300/A1 and -C300/B1.

\*\*\* The maximum generator pad load is 9.3 hp, from idle to take-off.

\*\*\*\* The sum of the torque extracted in any combination from the front and rear power output drives shall not exceed the torque values specified in Note 7. The values given in the above table represent the 30 minute limited maximum total torque (Maximum Continuous for -C20S).

**NOTE 5.** External air bleed may not exceed 3% total compressor flow (for the 250-C10) and 4.5% (for all other models). 250-C300/A1 and -C300/B1 includes a restrictor that limits external air bleed off-take to 4.5%.

**NOTE 6.** Engine equipment that is aircraft mounted includes:

1. The ambient temperature compensator (250-C10 only);
2. Two water injection nozzles [250-C18B, 250-C18C, 250-C20B (optional), 250-C20F (optional), 250-C20J (optional), 250-C20S (optional) only];
3. The electronic power turbine overspeed (N2) protection system (250-C20R and -C20R/1 only).
4. Oil temperature sensor, generator control unit and engine monitoring unit (250-C300/A1 and -C300/B1 only)

**NOTE 7.** The maximum allowable torque as measured by the torquemeter for below standard inlet air temperature and/or ram conditions are as follows:

	Maximum torque (lb-ft)					
	For 3 sec	For 10 sec	For 16 sec	At takeoff power	At 30-min (OEI) power	At max continuous power
250-C10, -C10B, -C10D	300	250	—	240	240	204
250-C18, -C18A, -C18B, -C18C, -C19	—	320	—	293	293	249
250-C20	—	393	—	367	367	336
250-C20B, -C20C, -C20F, -C20J, -C20W	—	—	430	384	384	384
250-C20S	—	393	430	384	384	384
250-C20R, -C20R/1, -C20R/2, -C20R/4	—	—	490	400	400	400
225-C10, -C10A	—	323	—	306	306	306
250-C300/A1, C300/B1	—	—	430	288	—	244

**NOTE 8.** Maximum turbine rotor speeds

	Output shaft speed		Gas producer speed	
	Max transient (up to 15 sec)	Maximum sustained	Max transient (up to 15 sec)	Maximum sustained
250-C10: 100% output shaft speed = 6000 rpm 100% gas producer speed = 51120 rpm	Varies linearly from 110% at idle to 105% at takeoff	Varies linearly from 108% at idle to 103% at takeoff	103%	102%
250-C10B, -C18, -C18A, -C18B, -C18C, -C19: 100% output shaft speed = 6000 rpm 100% gas producer speed = 51120 rpm	Varies linearly from 110% at idle to 105% at takeoff	Varies linearly from 108% at idle to 103% at takeoff	105%	104%
250-C10D: 100% output shaft speed = 6000 rpm 100% gas producer speed = 51120 rpm	Varies linearly from 114% at idle to 105% at takeoff	Varies linearly from 108% at idle to 103% at takeoff	105%	104%
* 250-C20, -C20B, -C20C, -C20F, - C20J, -C20R, -C20R/1, -C20R/2, -C20R/4, -C20W, 225-C10, -C10A:: 100% output shaft speed = 6016 rpm 100% gas producer speed = 50970 rpm	Varies linearly from 113% at idle to 105% at takeoff	Varies linearly from 108% at idle to 103% at takeoff	106%	105%
250-C20S, -C300/A1 and -C300/B1: 100% output shaft speed = 6016 rpm 100% gas producer speed = 50970 rpm	110%	105%	106%	105%

\* Refer to applicable OMM (See NOTE 22) and published Commercial Engine Bulletins for details on the Power Turbine speed avoidance ranges.

**NOTE 9.** Approved emergency fuels for each of the 250 engine models are provided in the Operation and Maintenance Manuals (See NOTE 22).

Emergency use of aviation gasoline is permitted in all engine models (**except** for the 250-C300/A1 and -C300/B1) for a maximum of 6 hours during any overhaul period provided aircraft boost pumps are available and turned on.

Fuels containing Tri-Cresyl-Phosphate additives shall not be used. The approved anti-icing additives are provided in the Operations and Maintenance Manual for each engine model (See NOTE 22). It is not necessary to purge the unused fuel from the system before refueling with different type fuels.

**NOTE 10.** For engines with Honeywell control systems, an engine-supplied pneumatic accumulator(s) must be mounted on the engine fire shield to ensure compatibility of the helicopter rotor system with the engine control system. For the 250-C20R, the required pneumatic accumulators are supplied and installed for compatibility of the Tridair 206L series conversions (twin) rotor system with the Honeywell control system. For the 250-C20R/2, the required pneumatic accumulators are supplied and installed for compatibility of the MDHC 500 Series helicopter rotor system with the Honeywell control system. For the Model 250-C300/A1, the required pneumatic accumulators are installed for compatibility between the Robinson R66 helicopter rotor system and the Honeywell engine control system.

**NOTE 11.** Model 250-C10B is adapted for use in the Hughes Tool Company Model 369 (OH-6A) Helicopter. Model 250-C10D is similar to the 250-C10B and is adapted for use in the Bell Helicopter Company Model 206A-1 (OH-58A) helicopter.

Model 250-C18 is similar to the 250-C10B and is adapted for use in Fairchild Hiller Model 1100 Helicopter and Bell Helicopter Company Models 206A and 206A-1 Helicopters.

Model 250-C18A is similar to the 250-C18 and is adapted for use in the Hughes Tool Company Model 369H Helicopter.

Models 250-C18B and 250-C18C are similar to Models 250-C18 and 250-C18A respectively, with provisions added for water-alcohol injection.

Model 250-C19 is similar to Model 250-C18 except the exhaust is directed down.

**NOTE 11 (cont)** Model 250-C20 is similar to Model 250-C18 except the first stage compressor and turbine wheels are larger in diameter.

Model 250-C18B and 250-C18C can be installed in lieu of Models 250-C18 and 250-C18A, respectively, and operated dry.

Model 250-C20B is similar to Model 250-C20 except for increased performance. Provisions for water-alcohol injection are optional with the Model 250-C20B.

Model 250-C20C is similar to Model 250-C20B but has not been certificated for water-alcohol injection and is adapted for military uses in the Bell Helicopter Company OH-58C Helicopter.

Model 250-C20F is similar to Model 250-C20B except the gearbox housing incorporates a front mounting pad and is adapted for use in the Aerospatiale AS 355 Helicopter.

Model 250-C20J is similar to Model 250-C20B except the gear-meshing frequency between the torque-meter gear and the power takeoff gear is changed from 5000 Hertz to 6000 Hertz with no change in output speed.

Model 250-C20S is similar to the 250-C20B and is adapted for exhaust down turboprop application where the airframe installation provides the propeller reduction gearbox and propeller-power turbine governor. The engine power turbine governor acts as an overspeed governor along with the installation furnished propeller governing system. The gearbox is oriented so that the output centerline is above the engine centerline. The gearbox housing incorporates a front mounting pad.

Model 250-C20R/1 is similar to the 250-C20B except for increased performance, a new compressor, addition of an electronic power turbine (N2) overspeed protection system and an on-speed 1<sup>st</sup> stage turbine wheel internal energy absorbing ring.

Model 250-C20R is similar to the 250-C20R/1 except the gearbox housing incorporates a front mounting pad and is adopted for use in the Aerospatiale AS 355 Helicopter.

Model 250-C20R/2 is similar to the 250-C20R/1 except the electronic power turbine (N2) overspeed protection system is not included.

Model 250-C20R/4 is similar to the 250-C20R/2 except the gear meshing frequency between the torque-meter gear and the power takeoff gear is changed from 5000 Hz to 6000 Hz with no change in output speed.

Model 250-C20W is similar to the 225-C10A with the exception that the accessory gearbox spare accessory pad drive has been deleted. The 250-C20W performance rating is the same as the 250-C20F.

Model 225-C10 is similar to the Model 250-C20B with reduced MGT and Power, and incorporates an on-speed #1 turbine wheel internal energy absorbing ring.

Model 225-C10A is similar to the Model 225-C10 with the exhaust directed down. The gearbox output centerline is above the engine centerline.

Model 250-C300/A1 is similar to the 250-C20B except for the following configuration differences: New centrifugal compressor with no axial compressor stages, speed sensors (no tachometers), new exhaust collector, new torque-meter and main oil pressure transducers, engine-supplied starter-generator/GCU and engine monitoring unit.

Model 250-C300/B1 is similar to the Model 250-C300/A1 except for a single lever fuel control (similar to -C20B), the addition of a rear turbine mount (similar to -C20R) and relocation of the burner drain valve from aft to forward position.

There may be a number of variants of a given engine Model (distinguished by different part numbers) which incorporate minor modifications to tailor the engine for particular airframe applications.

**NOTE 12.** All engines produced under this type certificate have single ignition systems. Exemption No. 219B applicable to requirements in CAR 13.211 (as well as 14 CFR Part 33.69 requirements for the 250-C300/A1 and -C300/B1), dated December 10, 1991 permits the type certification of all engines on this type certificate data sheet with single ignition for use in all rotorcraft, regardless of whether the rotorcraft is certificated under Part 6 or Part 7 of the CAR, or 14 CFR Part 27 or Part 29, and regardless of whether the rotorcraft is designated as Category A or Category B.

- NOTE 13.** Prior to installation in certificated aircraft, any model 250 engine that has been in military service must be evaluated to ensure that it conforms to the FAA Approved Type Design, was manufactured under an approved production system, is eligible for installation on a U.S. type certificated aircraft, and is in condition for safe operation. Additionally, the following specific changes must be incorporated:
- a. Model 250-C10B engines that have been in military service must have a Rolls-Royce approved equivalent fuel line installed in place of non-fire resistant line.
  - b. Model 250-C10B and 250-C10D engines that have been in military service must have the Honeywell Model DP-D3 gas turbine fuel control checked and adjusted in accordance with Honeywell Service Bulletin GT-44.
- NOTE 14.** Operation with water-alcohol injection is limited to ambient temperatures above 40°F. The augmented takeoff rating is based on a water-alcohol flow rate of 1.25 gpm delivered to the injection nozzles at a pressure differential of 50 psi across each nozzle. The water-alcohol solution, nozzle location and system installation must be in accordance with the FAA approved Installation Design Manual requirements.
- NOTE 15.** The optional Auto Reignition Control Kits are approved for use only with the Simmonds Precision (GLA) P/N 6870885 or 6895573 or Honeywell P/N 6870891 ignition excitors. The P/N 6877740 Kit, which has been discontinued but may still be in service, is adapted for use on the Bell Model 206A-1 helicopter. The P/N 6877138 Kit is adapted for use on the Bell Model 206A helicopter. The P/N 23050521 Kit is adapted for use with engine Models 250-C20, 250-C20B and 250-C20J on the Bell Model 206B helicopter or the Model 206B Jet Ranger III helicopter. The P/N 23050522 Kit is adapted for use with engine Models 250-C20B and 250-C20J on the Bell Model 206L helicopter. The P/N 23052372 Kit is adapted for use with engine Models 250-C20R/2 and 250-C20R/4 on the Bell Model 206B Jet Ranger III helicopter. The P/N 23052373 Kit is adapted for use with engine Model 250-C20R/2 on the Bell Model 206L helicopter
- NOTE 16.** Life limits established for critical rotating components are published in the corresponding Rolls-Royce Corporation Operation and Maintenance Manual. Limits for return to service are published in the corresponding Rolls-Royce Corporation Overhaul Manuals. See NOTE 22
- NOTE 17.** A magnetic oil drain plug (chip detector) indicator lamp is an installation requirement for 250-C20 series, 225-C10 series, 250-C300/A1 and -C300/B1 engines.
- NOTE 18.** Engines produced under this type certificate, except the 250-C20R, -C20R/1, -C20R/2 and -C20R/4 are approved for operation with unprotected inlets having been tested in accordance with Group I and Group II Foreign Object Ingestion Criteria of FAA Advisory Circular AC 33-1B. The 250-C20R, -C20R/1, -C20R/2 and -C20R/4 are approved for operation with unprotected inlets having been tested in accordance with Foreign Object Ingestion Criteria of 14 CFR Part 33-10, Section 33.77 with the exception that Advisory Circular 20-73 criteria of 60-second delay, instead of 2-minutes, was used in actuating the anti-icing system.
- NOTE 19.** A 3 to 25 micron absolute external scavenge oil filter is an installation requirement for the Model 250-C20R, -C20R/1, -C20R/2, -C20R/4, -C20S, -C20W, 225-C10 and -C10A engines.
- NOTE 20.** If not previously incorporated, an on-speed #1 turbine wheel internal energy absorbing ring must be installed on the 250-C20, -C20B, -C20F, -C20J, -C20S and -C20W model engines.
- NOTE 21.** Most 250 series engines delivered to the U.S. military have been identified on the data plate with the corresponding civil model designation in addition to the military model designation. Such engines, even though delivered to the U.S. military, have either 14 CFR or CAR design approval and are included under the applicable type certificate. Nonetheless, the items listed in NOTE 13 of this TCDS must be addressed before these engines could be considered for installation in civil aircraft.

**NOTE 22.** Standard equipment included with each engine model (if applicable), such as the control system, fuel pump & filter, ignition system, compressor bleed valve, electronic sensors, starter/generator, etc., are defined in the approved Parts List.

<b>APPLICABLE DOCUMENTS TABLE</b>			
<b>MODEL 250</b>	<b>PARTS LIST</b>	<b>OMM</b>	<b>IDM</b>
C10	4292	-	-
C10B	4182	-	-
C10D	4216	-	-
C18	4203	5W2	5W5
C18A	4203	5W2	5W5
C18B	4203	5W2	5W5
C18C	4203	5W2	5W5
C19	4200	5W2	5W5
C20	4241	10W2	10W5
C20B	4242	10W2	10W5
C20C	4244	10W2	10W5
C20F	4269	10W2	10W5F
C20J	4274	10W2	10W5J
C20S	4283	10W2	10W5S
C20R	4290	CSP21007	GTP 5232-5
C20R/1	4295	CSP21007	GTP 5232-5
C20R/2	4296	CSP21007	GTP 5232-5
C20R/4	4305	CSP21007	GTP 5232-5
C20W	4304	10W2	10W5W
C300/A1	10011	CSP21009	CSP24013
C300/B1	10041	CSP21009	CSP24024

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