

TECHNICAL DATA

SI* METRIC INFORMATION GUIDE

BASE UNITS			
DESCRIPTION		UNIT	SYMBOL
length		meter	m
mass		kilogram	kg
force		newton	N
liquid		liter	l
temperature		Celsius	°C
pressure		kilopascal	kPa
torque		newton•meter	N•m
speed		kilometer per hour	km/h
PREFIXES			
PREFIX	SYMBOL	MEANING	VALUE
kilo	k	one thousand	1 000
centi	c	one hundredth	0.01
milli	m	one thousandth	0.001
micro	μ	one millionth	0.000001
CONVERSION FACTORS			
TO CONVERT		TO †	MULTIPLY BY
in		mm	25.4
in		cm	2.54
in ²		cm ²	6.45
in ³		cm ³	16.39
ft		m	0.3
oz		g	28.35
lb		kg	0.45
lbf		N	4.4
lbf•in		N•m	0.11
lbf•ft		N•m	1.36
lbf•ft		lbf•in	12
PSI (lbf/in ²)		kPa	6.89
imp. oz		U.S. oz	0.96
imp. oz		ml	28.41
imp. gal		U.S. gal	1.2
imp. gal		l	4.55
U.S. oz		ml	29.57
U.S. gal		l	3.79
MPH		km/h	1.61
Fahrenheit		Celsius	(°F - 32) ÷ 1.8
Celsius		Fahrenheit	(°C x 1.8) + 32

* The international system of units abbreviates SI in all languages.

† To obtain the inverse sequence, divide by the given factor. To convert "mm" to "in", divide by 25.4.

NOTE: Conversion factors are rounded off to 2 decimals for easier use.

ENGINE AND VEHICLE

VEHICLE MODEL				RALLY™ 200		
ENGINE	Engine type			BOMBARDIER-ROTAX, 4 stroke, Over Head Camshaft (OHC), liquid cooled		
	Starting system			Electric		
	Number of cylinder(s)			1		
	Number of valves			4 valves with mechanical adjustment		
	Bore	Standard	mm (in)	62 (2.4)		
	Stroke		mm (in)	58.4 (2.3)		
	Displacement		cm³ (in³)	176.3 (10.8)		
	Compression ratio		± 0.4	11.3:1		
	Maximum HP RPM			10500		
	Lubrication			Wet sump with replaceable oil filter, without oil filter bypass		
	Oil filter			BOMBARDIER-ROTAX — CHAMPION		
	Air filter type			2 stage foam filter		
	Exhaust system	Type		Single output		
		Spark arrester		USDA approved		
	Intake valve opening			13.00° BTDC		
	Intake valve closing			43.00° ABDC		
	Exhaust valve opening			48.00° BBDC		
	Exhaust valve closing			8.00° ATDC		
	Valve/valve stem diameter clearance	Intake	New minimum	mm (in)	0.022 (.0009)	
			New maximum	mm (in)	0.045 (.0018)	
			Wear limit	mm (in)	0.120 (.0047)	
		Exhaust	New minimum	mm (in)	0.032 (.0013)	
			New maximum	mm (in)	0.055 (.0022)	
			Wear limit	mm (in)	0.120 (.0047)	
	Valve guide diameter		Wear limit	mm (in)	4.06 (.16)	
	Valve spring free length		New nominal	mm (in)	33.6 (1.323)	
			Service limit	mm (in)	33.4 (1.315)	
	Valve seat contact width	Intake	New	mm (in)	1.05 to 1.35 (.041 to .053)	
			Wear limit	mm (in)	1.6 (.063)	
		Exhaust	New	mm (in)	1.25 to 1.55 (.049 to .061)	
			Wear limit	mm (in)	1.8 (.070)	
	Piston measurement		New nominal	mm (in)	61.942 to 61.958 (2.4386 to 2.4393)	
			Wear limit	mm (in)	61.930 (2.4382)	
	Piston/cylinder clearance		New nominal	mm (in)	0.042 to 0.072 (.0016 to .0028)	
			Wear limit	mm (in)	0.100 (.0039)	
	Piston ring type			1 st	Rectangular	
2 nd				Taper-face		
3 rd				Oil scraper ring		
Piston ring end gap	Rectangular	New minimum	mm (in)	0.15 (.006)		
	Taper-face		mm (in)	0.15 (.006)		
	Oil scraper ring		mm (in)	0.15 (.006)		
	Rectangular	New maximum	mm (in)	0.35 (.014)		
	Taper-face		mm (in)	0.35 (.014)		
	Oil scraper ring		mm (in)	0.30 (.012)		
	All	Wear limit	mm (in)	1.5 (.06)		
Piston/ring groove clearance	Rectangular	New minimum	mm (in)	0.025 (.001)		
	Taper-face		mm (in)	0.015 (.0006)		
	Oil scraper ring		mm (in)	0.020 (.0008)		
	Rectangular	New maximum	mm (in)	0.070 (.0028)		
	Taper-face		mm (in)	0.060 (.0024)		
	Oil scraper ring		mm (in)	0.055 (.0021)		
	All	Wear limit	mm (in)	0.15 (.0059)		

Section 11 TECHNICAL DATA

Subsection 02 (ENGINE AND VEHICLE)

VEHICLE MODEL			RALLY™ 200			
ENGINE	Rocker arm bore diameter		New minimum	mm (in)	10.036 (.3951)	
			New maximum	mm (in)	10.050 (.3957)	
			Wear limit	mm (in)	10.060 (.3961)	
	Rocker arm shaft diameter		New minimum	mm (in)	10.006 (.3939)	
			New maximum	mm (in)	10.015 (.3943)	
			Wear limit	mm (in)	9.950 (.3917)	
	Cylinder bore		New	mm (in)	62.000 to 62.014 (2.4409 to 2.4415)	
			Wear limit	mm (in)	62.030 (2.4417)	
	Cylinder taper		New maximum	mm (in)	0.052 (.002)	
			Wear limit	mm (in)	0.090 (.004)	
	Cylinder out of round		New maximum	mm (in)	0.015 (.0006)	
			Wear limit	mm (in)	0.02 (.0008)	
	Camshaft bearing journal		PTO side	New minimum	mm (in)	19.959 (.7857)
				New maximum	mm (in)	19.980 (.7866)
				Wear limit	mm (in)	19.940 (.7850)
			Magneto side	New minimum	mm (in)	31.950 (1.2578)
				New maximum	mm (in)	31.975 (1.2588)
				Wear limit	mm (in)	31.930 (1.2571)
	Camshaft bore		PTO side	New minimum	mm (in)	20.000 (.7874)
				New maximum	mm (in)	20.021 (.7882)
				Wear limit	mm (in)	20.035 (.7888)
			Magneto side	New minimum	mm (in)	32.000 (1.2598)
				New maximum	mm (in)	32.025 (1.2608)
				Wear limit	mm (in)	32.040 (1.2614)
	Cam lobe		Intake	New minimum	mm (in)	30.887 (1.216)
				New maximum	mm (in)	31.087 (1.224)
				Wear limit	mm (in)	30.800 (1.252)
			Exhaust	New minimum	mm (in)	30.887 (1.216)
				New maximum	mm (in)	31.087 (1.224)
				Wear limit	mm (in)	30.800 (1.252)
	Crankshaft axial clearance		New minimum	mm (in)	0.2 (.0078)	
			New maximum	mm (in)	0.4 (.0157)	
	Crankshaft deflection		MAG side	New nominal	mm (in)	0.04 (.0024)
			PTO side	New nominal	mm (in)	0.04 (.0024)
	Crankshaft pin diameter		New minimum	mm (in)	26.037 (1.0250)	
			New maximum	mm (in)	26.040 (1.0252)	
			Wear limit	mm (in)	26.020 (1.0244)	
	Crankshaft journal diameter		MAG side	New minimum	mm (in)	32.010 (1.2602)
				New maximum	mm (in)	32.025 (1.2608)
				Wear limit	mm (in)	32.000 (1.2598)
			PTO side	New minimum	mm (in)	32.010 (1.2602)
				New maximum	mm (in)	32.025 (1.2608)
				Wear limit	mm (in)	32.000 (1.2598)
	Crankshaft radial clearance		MAG side	Service limit	mm (in)	0.07 (.0028)
			PTO side			
	Connecting rod big end diameter		New minimum	mm (in)	26.050 (1.0256)	
			New maximum	mm (in)	26.078 (1.0267)	
			Service limit		26.090 (1.0272)	
	Connecting rod big end clearance		Service limit		0.07 (.0028)	
	Connecting rod big end axial play		New minimum	mm (in)	0.3 (.012)	
			New maximum	mm (in)	0.627 (.025)	
			Wear limit	mm (in)	0.8 (.03)	
	Connecting rod small end diameter		New minimum	mm (in)	15.005 (.5908)	
			New maximum	mm (in)	15.015 (.5911)	
			Wear limit	mm (in)	15.060 (.5929)	
	Piston pin diameter		New minimum	mm (in)	14.997 (.5904)	
			New maximum	mm (in)	15.000 (.5906)	
			Wear limit	mm (in)	14.990 (.5902)	
	Piston pin bore clearance		Wear limit	mm (in)	0.03 (.0012)	

Section 11 TECHNICAL DATA

Subsection 02 (ENGINE AND VEHICLE)

	VEHICLE MODEL			RALLY™ 200		
ELECTRICAL	Magnetos/generator			200 W @ 6000 RPM		
	Ignition system type			IDI (Inductive Discharge Ignition)		
	Ignition timing			Not adjustable		
	Spark plug	Quantity		1		
		Make and type		NGK CR8E		
		Gapmm (in)		0.6 to 0.7 (.024 to .027)		
	Trigger coil (pickup coil)Ω			190 – 300		
	Battery charging coil (lightning coil)Ω			0.6 ± 01		
	Ignition coil	PrimaryΩ		1.87 to 2.53 @ 20°C (68°F)		
		SecondarykΩ		10.4 to 15.6 @ 20°C (68°F)		
	Engine RPM limiter			10500		
	Engine RPM limiter (reverse)			6000		
	Battery	Type		Electrolyte battery type		
		Voltage		12 volts		
		Nominal rating		14 A•h		
		Power starter output		0.6 KW		
	Headlight			2 x 30 W		
Taillight			8/27 W, 1157			
Pilot lamp cluster			LEDS			
Fuses			25 A			
CARBURETION	Carburetor	Type		Mikuni with manual choke		
		Model		VM-24		
	Idle engine speedRPM			1500 ± 100		
	Main jet			105		
	Pilot jet			22.5		
	Needle jet			0-2M		
	Jet needle			5GNY 72-3		
	Choke plunger position			Variable		
	Adjustment	Throttle cable		4 mm (.157 in)		
		Preliminary pilot screw turn		3/4		
		Float level	± 0.5 mm		15	
			± 0.020 in		.591	
	Fuel	Type		Regular unleaded gasoline		
Octane no.		87 (Ron + Mon)/2				
LUBRICATION	Lubricant			SAE 5W30 or 5W40 Bombardier synthetic oil mineral based		
	Oil pressure switch			30 to 60 kPa (4.35 to 8.70 PSI)		
	Oil temperature (max.)			120°C (248°F)		
	Oil pressure (min.)			350 kPa (50.76 PSI)		
CVT	Belt width	New minimummm (in)		21.00 (.8267)		
		New maximummm (in)		22.00 (.8661)		
		Wear limitmm (in)		19.50 (.7677)		
	CVT - temperature (max.)			75°C (167°F)		
	Centrifugal clutch (driven pulley)	Operating RPM		3500 ± 100		
COOLING	Coolant			Ethyl glycol/water mix (50% coolant, 50% water). Use coolant specifically designed for aluminum engines		
	Water temperature switch			115°C (239°F)		
	Water temperature (max.)			100°C (212°F)		
	Engine thermostat	Opening temperature		65°C (149°F)		
	Radiator cap opening pressure			110 kPa (16 PSI)		
DRIVE TRAIN	Transmission	Type		CVT (Continuously Variable Transmission). HI range, neutral and reverse		
	Rear axle			Chain driven/solid axle		
	Rear axle ratio			2.7:1		

Section 11 TECHNICAL DATA

Subsection 02 (ENGINE AND VEHICLE)

	VEHICLE MODEL			RALLY™ 200	
STEERING/ CONTROL	Turning radius			1.85 m (73 in)	
	Total toe (vehicle on ground)			mm (in)	0 ± 3 (0 ± .118), each side
	Camber angle			4°	
	Tie-rod total length			mm (in)	320 ± 5 (12.598 ± 0.197)
	Tie-rod maximum length unengaged			mm (in)	23 ± 5 (.906 ± 0.197)
SUSPENSION	FRONT				
	Suspension type			Independent suspension — single A-arm	
	Suspension travel			mm (in)	137 (5.39)
	Shock absorber	Qty		2	
		Type		Oil	
	Spring free length			mm (in)	261 (10.27)
	Spring color code			Silver	
	Front preload adjustment			N.A.	
	REAR				
	Suspension type			Rigid swing arm	
	Suspension travel			mm (in)	163.0 (6.42)
	Shock absorber	Qty		1	
		Type		Oil	
	Spring free length			mm (in)	294 (11.57)
	Spring color code			Silver	
	Rear preload adjustment			N.A.	
BRAKES	Front brake	Qty		2, discs	
		Type		Hydraulic	
	Rear brake	Qty		1, disc	
		Type		Mechanical cable	
	Parking brake			Brake lever lock on LH brake lever	
	Caliper			Floating	
	Lining material			Organic	
	Minimum pad thickness			mm (in)	1 (.04)
Minimum brake disk thickness			mm (in)	3.5 (.14)	
Maximum brake disk warpage			mm (in)	0.25 (.01)	
TIRES AND WHEELS	TIRE				
	Pressure	Front	Recommended	24 kPa (3.5 PSI)	
			Minimum	21 kPa (3 PSI)	
		Rear	Recommended	24 kPa (3.5 PSI)	
			Minimum	21 kPa (3 PSI)	
	Minimum tire thread depth			mm (in)	4 (0.16)
	Size	Front		22 x 10 x 7	
		Rear		22 x 10 x 10	
	WHEELS				
	Size	Front		10 x 5.5	
		Rear		10 x 8	
	Overall length			mm (in)	2026 (79.8)
Overall width			mm (in)	1054 (41.5)	
Overall height			mm (in)	1070 (42)	
DIMENSION	Dry weight			kg (lb)	176 (388)
	Wheel base			mm (in)	1181 (46.5)
	Wheel track	Front		mm (in)	880 (34.6)
		Rear		mm (in)	811 (31.9)
	Front and under engine ground clearance			mm (in)	229 (9)
	Rear rigid axle ground clearance			mm (in)	160 (6.3)

Section 11 TECHNICAL DATA

Subsection 02 (ENGINE AND VEHICLE)

	VEHICLE MODEL		RALLY™ 200
CAPACITIES	<i>LIQUID</i>		
	Fuel tank		16.5 l (4.4 U.S. gal)
	Fuel tank reserve		5 l (1.2 U.S. gal)
	Engine	Capacity ± 100	1.35 l (1.43 quarts)
		Recommended	SAE 5W30, 4 stroke mineral based oil SG, SH or SJ or 5W40 Bombardier synthetic oil. Refer to the oil viscosity chart in the MAINTENANCE AND LUBRICATION subsection
	Gearbox	Capacity	200 ml (6.76 U.S. oz)
		Recommended	Castrol HYPOX C 175 W or ISO V G 100 (BP GR-XP 100)
	Hydraulics brakes	Capacity	202 ml (6.83 U.S. oz)
		Recommended	Brake fluid DOT 4, ONLY
	Cooling system		2.5 l (2.65 quarts)
	<i>BODY AND FRAME</i>		
	Weight distribution	Front/rear %	52/48
	Rack	Front	16 kg (35 lb)
		Rear (including tongue weight)	30 kg (65 lb)
	Total vehicle load allowed (including driver, all other loads and added accessories)		175 kg (386 lb)
	Gross vehicle weight rating		369 kg (813 lb)
MATERIAL	Towing		227 kg (500 lb)
	Tongue (included with rear rack weight)		14 kg (30 lb)
	Frame	Material	Steel
		Color	Black
	Wheel	Material	Steel
		Color	Silver
	Front/rear rack	Material	High density polyethylene
		Color	Earthen grey
	Front bumper	Material	Steel
		Color	Silver
	Front/rear fender	Material	High density polyethylene
		Color	Red, Green or Yellow
	Steering cover	Material	High density polyethylene
		Color	Red or Green or Yellow
	Front facia	Material	High density polyethylene
		Color	Red, Green or Yellow
	Engine side panel	Material	HMWPE
		Color	Black
	Air box	Material	High density polyethylene
		Color	Black
	Seat base	Material	High density polyethylene
		Color	Black
	Seat cover	Material	Thermoformed vinyl
		Color	Black

Section 11 TECHNICAL DATA

Subsection 02 (ENGINE AND VEHICLE)

VEHICLE MODEL		RALLY™ 200	SERVICE PRODUCT
TORQUE	ENGINE		
	Oil filter screw	9 N•m (80 lbf•in)	None
	Dipstick tube screw		
	Magneto cover bolts		
	Starter bolts		
	Engine sprocket nut	95 N•m (70 lbf•ft)	
	Starter RED (+) cable	6 N•m (53 lbf•in)	Dielectric grease
	Rotor bolt	35 N•m (26 lbf•ft)	Loctite 243
	Stator bolt	9 N•m (80 lbf•in)	None
	Trigger coil bolt		
	COOLING		
	Block heater lock	3 N•m (27 lbf•in)	None
	Thermostat housing	5 N•m (44 lbf•in)	
	Thermostat bleeding screw	4 N•m (35 lbf•in)	
	Temperature sensor	17 N•m (151 lbf•in)	
	Water pump housing	9 N•m (80 lbf•in)	
	Fan mount screw/nut	4.5 N•m (40 lbf•in)	Loctite 243
	Temperature sender on radiator	11 N•m (97 lbf•in)	None
	EXHAUST		
	Exhaust nut	11 N•m (97 lbf•in)	None
	Exhaust clamp	15 N•m (133 lbf•in)	
	LUBRICATION		
	Engine drain plug	20 N•m (15 lbf•ft)	None
	Engine oil strainer	30 N•m (22 lbf•ft)	
	Oil pump housing	6 N•m (53 lbf•in)	Loctite 243
	Oil pressure switch	12 N•m (106 lbf•in)	
	CYLINDER AND HEAD		
	Valve cover	9 N•m (80 lbf•in)	None
	Cylinder head screw	10 N•m (89 lbf•in)	
	Cylinder head nut	25 N•m (18 lbf•ft)	
	Camshaft timing gear	30 N•m (22 lbf•ft)	Loctite 243
	Chain tensioner plug	35 N•m (26 lbf•ft)	None
	CRANKSHAFT		
	Crankcase housing screw	9 N•m (80 lbf•in)	None
	Crankshaft locking access screw	15 N•m (133 lbf•in)	
	GEARBOX		
	Gearbox cover	25 N•m (18 lbf•ft)	Loctite 648
	Shifting indicator switch	4 N•m (35 lbf•in)	Loctite 243
	CVT		
	CVT cover	9 N•m (80 lbf•in)	None
	Centrifugal clutch nut	55 N•m (41 lbf•ft)	
	Drive pulley	60 N•m (44 lbf•ft)	
	Driven pulley		
	FUEL		
	Carburetor mounting clamp	0.6 N•m (5.4 lbf•in)	None
	Air intake silencer screw	5 N•m (44 lbf•in)	
	Fuel tank screw		
	Fuel valve	9 N•m (80 lbf•in)	

Section 11 TECHNICAL DATA

Subsection 02 (ENGINE AND VEHICLE)

VEHICLE MODEL		RALLY™ 200	SERVICE PRODUCT
TORQUE	DRIVE TRAIN		
	Front wheel hub nut	135 N•m (100 lbf•ft)	None
	Rear wheel hub nut		
	Chain tensioner lock bolt	42 N•m (31 lbf•ft)	Loctite 277
	Rear axle nut	140 N•m (103 lbf•ft)	
	WHEEL		
	Wheel nuts	70 N•m (52 lbf•ft)	Anti-seize
	STEERING/CONTROL		
	Throttle handle housing	5 N•m (44 lbf•in)	None
	Tie rod ends	42 N•m (31 lbf•ft)	
	Steering column nut	58 N•m (43 lbf•ft)	
	Handle grip screw	1 N•m (9 lbf•in)	
	SUSPENSION		
	Swing arm nut	100 N•m (74 lbf•ft)	None
	BRAKE		
	Caliper brake screws	24 N•m (17 lbf•ft)	None
	Brake pedal	50 N•m (37 lbf•ft)	
	Front master cylinder cover screws	1.5 N•m (13 lbf•in)	
	Front master cylinder BANJO bolt	24 N•m (17 lbf•ft)	
	Caliper BANJO bolt		
	Caliper bleeder valve	5 N•m (44 lbf•in)	
	Rear cable adjusting nut	10 N•m (89 lbf•in)	
	BODY/FRAME		
	Front bumper	24 N•m (17 lbf•ft)	None
	Front fascia	2.5 N•m (22 lbf•in)	
	Luggage rack hook		
	Front/rear luggage rack	5 N•m (44 lbf•in)	
	Seat screw	9 N•m (80 lbf•in)	
Footpeg			
Headlight housing	0.6 N•m (5.4 lbf•in)		