

# 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 <sup>2</sup> .....	cm <sup>2</sup> .....	6.45	
in <sup>3</sup> .....	cm <sup>3</sup> .....	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 .....	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 × 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.

**Section 11 TECHNICAL DATA**  
Subsection 02 (ENGINE AND VEHICLE)

## ENGINE AND VEHICLE

VEHICLE MODEL				RALLY™ 200	
<b>ENGINE</b>					
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		cm <sup>3</sup> (in <sup>3</sup> )	176.3 (10.8)		
Compression ratio		± 0.4	11.3:1		
Air filter type				2 stage foam filter	
Exhaust system				Type	
				Spark arrester	Single output
				USDA Forest Service 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 clearance	Intake	mm (in)	0.05 to 0.09 (.0019 to .0035)		
	Exhaust	mm (in)	0.10 to 0.14 (.0040 to .0055)		
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 <sup>st</sup>	Upper compression ring		
		2 <sup>nd</sup>	Lower compression ring		
		3 <sup>rd</sup>	Oil scraper ring		
Piston ring end gap	Upper compression ring	New minimum	mm (in)	0.15 (.006)	
	Lower compression ring		mm (in)	0.15 (.006)	
	Oil scraper ring		mm (in)	0.15 (.006)	
	Upper compression ring	New maximum	mm (in)	0.35 (.014)	
	Lower compression ring		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	Upper compression ring	New minimum	mm (in)	0.025 (.001)	
	Lower compression ring		mm (in)	0.015 (.0006)	
	Oil scraper ring		mm (in)	0.020 (.0008)	
	Upper compression ring	New maximum	mm (in)	0.070 (.0028)	
	Lower compression ring		mm (in)	0.060 (.0024)	
	Oil scraper ring		mm (in)	0.055 (.0021)	
All	Wear limit	mm (in)	0.15 (.0059)		
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)		

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VEHICLE MODEL			RALLY™ 200	
ENGINE				
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			0.04 (.0024)
	PTO side	Wear limit	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			0.07 (.0028)
	PTO side	Wear limit	mm (in)	
Connecting rod big end diameter		New minimum	mm (in)	26.050 (1.0256)
		New maximum	mm (in)	26.078 (1.0267)
		Wear limit		26.090 (1.0272)
Connecting rod big end clearance		Wear 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	
<b>ELECTRICAL</b>			
Magneto/generator		160 W @ 6000 RPM	
Ignition system type		CDI (Capacitor Discharge Ignition)	
Ignition timing		Not adjustable	
Spark plug	Quantity	1	
	Make and type	NGK CR8E	
	Gap mm (in)	0.6 to 0.7 (.024 to .027)	
Trigger coil	Ω	190 – 300	
Battery charging coil	Ω	0.1 to 1.0	
Ignition coil	Primary Ω	1.87 to 2.53 @ 20°C (68°F)	
	Secondary kΩ	10.4 to 15.6 @ 20°C (68°F)	
Engine RPM limiter	Forward	10500	
	Reverse	6000	
Battery	Type	Electrolyte battery type	
	Voltage	12 volts	
	Nominal rating	14 Ah	
	Power starter output	0.6 KW	
Headlamp	2 x 30 W		
Taillight	8/27 W, 1157		
Pilot lamp cluster	LEDS		
Fuses	25 A		
<b>CARBURETION</b>			
Carburetor	Type	Mikuni with manual choke	
	Model	VM-24	
Idle engine speed	RPM	1500 ± 100	
Main jet	105		
Pilot jet	22.5		
Needle jet	0-2M		
Jet needle	5GNY 72		
Clip position	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	
<b>LUBRICATION</b>			
Type	Wet sump with replaceable oil filter, without oil filter bypass		
Oil filter	BOMBARDIER-ROTAX — CHAMPION		
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 (51 PSI)		
<b>CVT</b>			
Belt width	New minimum mm (in)	21.00 (.8267)	
	New maximum mm (in)	22.00 (.8661)	
	Wear limit mm (in)	19.50 (.7677)	
Centrifugal clutch (driven pulley)	Operating RPM	3500 ± 100	
<b>COOLING</b>			
Coolant	Ethyl glycol/water mix (50% coolant, 50% distilled 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)		

## Section 11 TECHNICAL DATA

### Subsection 02 (ENGINE AND VEHICLE)

VEHICLE MODEL		RALLY™ 200	
<b>DRIVE TRAIN</b>			
Transmission	Type	CVT (Continuously Variable Transmission) HI range, neutral and reverse	
Rear axle		Chain driven/solid axle	
Rear axle ratio		2.7:1	
<b>STEERING</b>			
Turning radius		1.85 m (73 in)	
Total toe (vehicle on ground)	mm (in)	0 ± 3 (0 ± .118), each side	
Camber angle		4° (not adjustable)	
Tie-rod total length	mm (in)	320 ± 5 (12.598 ± 0.197)	
Tie-rod maximum length unengaged	mm (in)	23 ± 5 (.906 ± 0.197)	
<b>SUSPENSION</b>			
<b>• FRONT</b>			
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.	
<b>• REAR</b>			
Suspension type		Rigid swing arm	
Suspension travel	mm (in)	163 (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.	
<b>BRAKES</b>			
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)	
<b>TIRES AND WHEELS</b>			
<b>• TIRE</b>			
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	
<b>• WHEELS</b>			
Size	Front	10 x 5.5	
	Rear	10 x 8	

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VEHICLE MODEL		RALLY™ 200	
<b>DIMENSION</b>			
Dry weight	kg (lb)	176 (388)	
Overall length	m (in)	2 (80)	
Overall width	m (in)	1.05 (41.5)	
Overall height	m (in)	1.07 (42)	
Seat height	mm (in)	744 (29)	
Wheel base	m (in)	1.18 (46.5)	
Wheel track	Front	mm (in)	880 (35)
	Rear	mm (in)	811 (32)
Front and under engine ground clearance	mm (in)	229 (9)	
Rear rigid axle ground clearance	mm (in)	160 (6)	
<b>CAPACITIES</b>			
<b>• LIQUID</b>			
Fuel tank		16.5 L (4.4 U.S. gal)	
Fuel tank reserve		5 L (1.2 U.S. gal)	
Engine	Capacity	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, <b>ONLY</b>	
Cooling system		2.5 L (2.65 quarts)	
<b>• BODY AND FRAME</b>			
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)
Towing			227 kg (500 lb)
Tongue (included with rear rack weight)			14 kg (30 lb)
<b>MATERIAL</b>			
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	Laurentian Green or Viper Red or Yellow	
Steering cover	Material	High density polyethylene	
	Color	Laurentian Green or Viper Red or Yellow	
Front facia	Material	High density polyethylene	
	Color	Laurentian Green or Viper Red 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	

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### Subsection 02 (ENGINE AND VEHICLE)

VEHICLE MODEL		RALLY™ 200	SERVICE PRODUCT	
<b>TORQUE</b>				
<b>• ENGINE</b>				
Engine mounting bolts	Front	9 N•m (80 lbf•in)	None	
	Rear	see SWING ARM NUT		
Oil filter screw		9 N•m (80 lbf•in)		
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				
<b>• COOLING</b>				
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)		
<b>• EXHAUST</b>				
Exhaust nut		13 N•m (115 lbf•in)	None	
Exhaust clamp		10 N•m (89 lbf•in)		
<b>• LUBRICATION</b>				
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)		
<b>• CYLINDER AND HEAD</b>				
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	
<b>• CRANKSHAFT</b>				
Crankcase housing screw		9 N•m (80 lbf•in)	None	
Crankshaft locking access screw		15 N•m (133 lbf•in)		
<b>• GEARBOX</b>				
Gearbox cover		25 N•m (18 lbf•ft)	Loctite 648	
Shifting indicator switch		4 N•m (35 lbf•in)	Loctite 243	
<b>• CVT</b>				
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				
<b>• FUEL</b>				
Carburetor mounting clamp		1.5 N•m (13 lbf•in)	None	
Air intake silencer screw		5 N•m (44 lbf•in)		
Fuel tank screw		7 N•m (62 lbf•in)		
Fuel valve		5 N•m (44 lbf•in)		
<b>• DRIVE TRAIN</b>				
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)
Rear axle nut		140 N•m (103 lbf•ft)	Loctite 277	

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VEHICLE MODEL	RALLY™ 200	SERVICE PRODUCT	
<b>TORQUE</b>			
<b>• WHEEL</b>			
Wheel nuts	70 N•m (52 lbf•ft)	Anti-seize	
<b>• STEERING/CONTROL</b>			
Handlebar bolts	24 N•m (18 lbf•ft)	None	
Half housings			
Bearing flange screws			10 N•m (89 lbf•in)
Knuckle pivot bolt			61 N•m (45 lbf•ft)
Throttle handle housing			5 N•m (44 lbf•in)
Tie rod ends			42 N•m (31 lbf•ft)
Steering column nut			72 N•m (53 lbf•ft)
Handle grip screw			4 N•m (3.5 lbf•in)
<b>• SUSPENSION</b>			
Swing arm nut	100 N•m (74 lbf•ft)	None	
Shock absorbers	48 N•m (35 lbf•ft)		
A-arms			
<b>• BRAKE</b>			
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)		
BANJO bolt	24 N•m (17 lbf•ft)		
Caliper bleeder valve	5 N•m (44 lbf•in)		
Rear cable adjusting nut	10 N•m (89 lbf•in)		
Rear cable bracket	24 N•m (18 lbf•ft)		
<b>• BODY/FRAME</b>			
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	5 N•m (44 lbf•in)		
Footpeg	9 N•m (80 lbf•in)		
Headlamp housing	0.6 N•m (5.4 lbf•in)		