

SECTION II

TABLE OF SPECIFICATIONS

TABLE I. FEATURES COMMON TO ALL MODELS

Type of Engine:	Horizontally Opposed
Operating Cycle:	Otto (4 stroke)
Number of Cylinders:	4
Type of Cooling System:	Air Cooled
Overall Width of Engine:	31-1/2 inches
Number of Mounting Bolts:	4
Diameter of Mounting Bolts:	3/8 inch
Cylinder Bore:	4-1/16 inches
Direction of Crankshaft Rotation:	Clockwise

TABLE II. TYPE CERTIFICATE NUMBERS

Model	C75	C85	C90	O-200
Type Certificate Number	233	233	252	252

TABLE III. FEATURES PECULIAR TO EACH MODEL GROUP

Model	C75	C85	C90	O-200
Piston Stroke (inches)	3-5/8	3-5/8	3-7/8	3-7/8
Total Piston Displacement (cubic in.)	188	188	201	201
Compression Ratio	6.3:1	6.3:1	7.0:1	7.0:1

TABLE IV. DIMENSIONS PECULIAR TO EACH MODEL OR MODEL DASH NUMBER

Model or Model Dash Number (C75, C85, C90)	-8	-8F	-12	-12F	-14F	-16F	O-200
Overall Height	27-55/64"	27-55/64"	28-3/4"	28-3/4"	28-3/4"	28-3/4"	28-3/4"
Overall Length	30-1/2"	29-13/32"	32-23/64"	31-11/32"	31-11/32"	31-11/32"	*27-17/32"
Center of Gravity Location ahead of Crankcase							
Rear Surface	6-1/4"	6-1/4"	4-19/32"	4-19/32"	4-19/32"	4-19/32"	4-19/32"
Below Crankshaft Centerline	1-1/2"	1-1/2"	1-11/32"	1-11/32"	1-11/32"	1-11/32"	1-11/32"

TABLE IX GENERAL IGNITION SYSTEM SPECIFICATIONS

Model or Model Dash Number (C75, C85, C90)	-8	-12	-14	-16	O-200
*Unfinished Eisemann Magneto Model	AM-4				
*Radio Shielded Eisemann Magneto Model		LA-4			
Radio Shielded Bendix Magneto Model	S4RN-21	S4LN-21	S4LN-21	S4LN-21	S4LN-21
**Slick Magneto	447/4000	447/4000	447/4000	447/4000	447/4000
Number of Magnetos	2	2	2	2	2
Number of Spark Plugs	8	8	8	8	8
Firing Order C75, C85, C90, O-200	1,3,2,4	1,3,2,4	1,3,2,4	1,3,2,4	1,3,2,4

*Approved for C75 and C85 only

**Approved for C90 and O-200 only

TABLE X IGNITION TIMING

Model	C75	C85	C90	O-200
Right Magneto Fires Upper Plugs (°B.T.C.)	28	28	26	24
Left Magneto Fires Lower Plugs (°B.T.C.)	30	30	28	24

TABLE XI VALVE MECHANISM SPECIFICATIONS

Model	C75	C85	C90	O-200
Type of Valve Mechanism	Overhead	Overhead	Overhead	Overhead
Hydraulic Valve Lifters Installed	X	X	X	X
Valve To Rocker Clearance (Operating)	0	0	0	0
Valve To Rocker Clearance (Lifters Deflated) (inches)	.030-.110	.030-.110	.030-.110	.030-.110
Valve Lift (inches)	0.382	0.382	0.410	0.410
Intake Valve Opens (°B.T.C.)	8	8	9	21
Intake Valve Closes (°A.B.C.)	57	57	56	58
Exhaust Valve Opens (°B.B.C.)	49	49	50	65
Exhaust Valve Closes (°A.T.C.)	16	16	15	14

TABLE XII LUBRICATION SYSTEM SPECIFICATIONS

Model	C75	C85	C90	O-200
Pressure Oil Pump Installed	X	X	X	X
Oil Sump Capacity (U.S. Quarts)	4	4-1/2	4.8	6
Average Oil Consumption (Pints/Hour)	1/5	1/4	1/3	1/3

TABLE XVI WEIGHTS OF STANDARD ENGINE EQUIPMENT

Description	Weight (in lbs.)
Basic Engine (Model C85-8)	157.8
Basic Engine (Models C85-8F, C90-8F)	158.84
Basic Engine (Models C75-12, C85-12)	167.56
Basic Engine (Models C75-12F, C85-12F, C90-12F, C90-14F)	168.6
Basic Engine (Model C90-16F, O-200)	170.18
Stromberg Carburetor, Type NA-S3A1 (C75-8-12)	2.56
Marvel-Schebler Carburetor, Type MA-3SPA (C85, C90-8-12-14-16F & O-200)	2.62
Two Magnetos (Bendix S4RN-21 or S4LN-21)	12.12
Eight Shielded Spark Plugs	1.75
Unshielded Ignition Cable Assembly	1.82
Shielded Ignition Harness Assembly (Model O-200)	3.81
Delco-Remy Starter (-12,-14,-16 and O-200)	15.50
Delco-Remy Generator (-12,-14,-16 and O-200) (12 Volt, 20 Amp)	10.12
Propeller Hub Assembly (-8 and -12)	4.39
Carburetor Air Intake and Filter Assembly (used with Stromberg Carburetors)	2.38
Carburetor Air Intake and Filter Assembly (used with Marvel-Schebler Carburetors)	3.12
Propeller Attaching Parts (-8F, -12F, -14F, -16F & O-200)	1.7
Eight Rubber Mount Bushings, Four Steel Washers	0.55
Domestic Shipping Crate	70
Export Shipping Crate	142

TABLE XVII ADDITIONAL WEIGHTS OF OPTIONAL EQUIPMENT

Description	*Weight (in lbs.)
Radio Shielded Ignition Cable Assembly	1.06
Eight Shielded Spark Plugs	1.75
Harrison Oil Cooler Equipment (complete)	4.25
AC Fuel Pump	1.71

NOTE: (*) Add stated weights of corresponding standard equipment (if any) to obtain weight of optional equipment.

TABLE V. SPEED AND POWER RATINGS

Model	C75	C85	C90	O-200
Normal Rated RPM	2275	2575	2475	2750
Take-off RPM (Max. 5 minutes)	2275	2575	2625	2750
Normal Rated Brake Horsepower	75	85	90	100
Take-off Brake Horsepower	75	85	95	100

TABLE VI. OPERATING TEMPERATURE LIMITS

Model	C75	C85	C90	O-200
Maximum Cylinder Head Temperature (°F)	550	540	525	525
Maximum Cylinder Base Temperature (°F)	300	300	275	290
Maximum Magneto Temperature (°F)	160	160	170	170
Maximum Oil Temperature at Screen (°F)	225	225	225	225
Minimum Oil Temperature at Take-off (°F)	75	75	75	75

* To front of crankshaft flange.

TABLE VII. OPERATING PRESSURE LIMITS

Model	C75	C85	C90	O-200
Oil Pressure for Cruising (psi)	30-60	30-60	30-60	30-60
Min. Oil Press. at Idling Speed (psi)	10	10	10	10 +
*Static Gravity Fuel Press. at Carb. (psi)	1/2	1/2	**6 Max.	**6 Max.
*Pump Feed Fuel Press. at Carb. (psi)	2-4	2-4	**3.5-4.75	**3.5-4.75
Min. Carb. Air Entrance Press. (in. HO)	6	6		
Max. Carb. Air Entrance Press. (in. HO)	12	12		

* For setting float level.

** For Marvel carburetors.

+ With Hot Oil.

TABLE VIII MODEL OR MODEL DASH NUMBER EQUIPMENT

Model or Dash Number (C75, C85, C90)	-8	-8F	-12	-12F	-14F	-16F	O-200
S.A.E. No. 0 Taper Crankshaft	X		X				
S.A.E. Type 1 Flange Crankshaft		X		X	X	X	X
Stromberg NA-S3A1 Carburetor	X	X	X	X	X		
*Marvel-Schebler MA-3SPA Carb.	Opt.	Opt.	Opt.	Opt.	Opt.	X	X
Lord Mount Bushings					X	X	X
Delco-Remy Electric Starter			X	X	X	X	X
Delco-Remy Electric Generator			X	X	X	X	X
Vacuum Pump Adapter						X	X

TABLE XIII FUEL METERING SYSTEM SPECIFICATIONS

Model	C75	C85	C90	O-200
Stromberg Carburetor Model	NA-S3A1	NA-S3A1	NA-S3A1	NA-S3A1
Marvel-Schebler Carburetor Model	—	—	MA-3SPA	MA-3SPA
*Parts List Number (Stromberg)	380162	380167	380231	—
Part Number (Marvel-Schebler)	—	—	627367	627143
Mixture Control	Manual	Manual	Manual	Manual
*Venturi Diameter (inches)	1-5/16	1-3/8	—	1-1/2
*Main Metering Jet (drill size No.)	46	45	—	—
*Main Air Bleed (drill size No.)	60	60	—	—
**Minimum Octane Rating of Fuel	80/87	80/87	80/87	80/87

* For specifications of other carburetors furnished as optional equipment, refer to Service Bulletin on this subject.
 ** 100LL Optional

TABLE XIV ACCESSORY DRIVE SPEED RATIOS AND ROTATION

Name	C'Shaft: Drive Speed Ratio	Direction of Drive Rotation
Tachometer Drive (-12 and O-200 Models)	1:0.5	Clockwise*
Tachometer Drive (-8 Models)	1:0.5	Counterclockwise*
Magneto Drive (-12 and O-200 Models)	1:1	Clockwise*
Magneto Drive (-8 Models)	1:1	Counterclockwise*
Oil Pump Driving Impeller	1:0.5	Counterclockwise*
Starter Armature (-12 and O-200 Models)	1:35.7	Clockwise*
Generator Armature (-12 and O-200 Models)	1:2.035	Counterclockwise*
Fuel Pump Lever	1:0.5	Reciprocating
Vacuum Pump Drive O-200	1:1	Counterclockwise†

* Rotation as viewed from rear of engine.

† Rotation when facing driving pad.

TABLE XV LINE AND INSTRUMENT CONNECTIONS

Connection	Location	Size
Primer Jet Hole	Int. Man. & Cyl. Hd.	1/8 in. N.P.T.
Fuel Inlet	Stromberg Carb.	1/4 in. N.P.T.
Fuel Inlet	Marvel-Schebler Carburetor	1/4-18 N.P.S.F.
Mixture Control Lever Hole	Carburetor	1/4 in. Dia.
Throttle Lever Cable Hole	Carb. Man.	3/16 in. Dia.
Carb. Heat Control Lever Hole	Carb. Air Scoop	3/16 in. Dia.
Carb. Heat Control Lever Hole	Carb. Air Scoop	13/64 in. Dia.
Hot Air Inlet	Carb. Air Scoop	2 in. Dia.
Fuel Inlet and Outlet	Fuel Pump	1/8-27 N.P.S.F.
Oil Pressure Gauge Line	Crankcase (right)	1/8 in. N.P.T.
Oil Temperature Capillary	Oil Screen Cap	5/8-18 N.F.
Tachometer Drive Cable	Tach. Drive Shaft	AS-54, Type 1
Starter Lever Cable Hole	Starter Lever	13/64 in. Dia.
Generator Blast Tube	Gen. Brush Cover	7/8 in. Dia.
Breather Tube	Breather Elbow	5/8 I.D. Hose