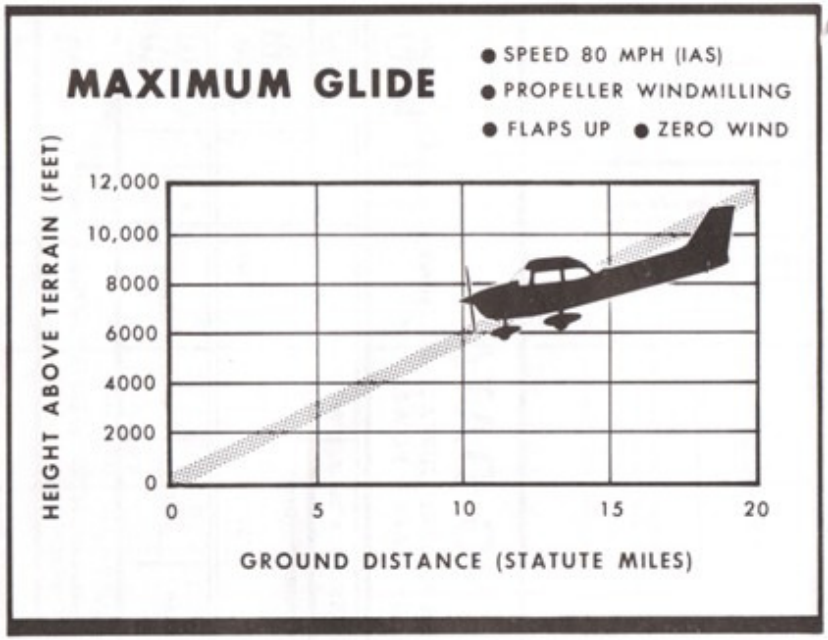

Figure 6-6.

Section VII

OPTIONAL SYSTEMS

This section contains a description, operating procedures, and performance data (when applicable) for some of the optional equipment which may be installed in your Cessna. Owner's Manual Supplements are provided to cover operation of other optional equipment systems when installed in your airplane. Contact your Cessna Dealer for a complete list of available optional equipment.

LONG RANGE FUEL TANKS

Special wings with long range fuel tanks are available to replace the standard wings and fuel tanks for greater endurance and range. When these tanks are installed, the total usable fuel for all flight conditions is 48 gallons.

COLD WEATHER EQUIPMENT

WINTERIZATION KIT.

For continuous operation in temperatures consistently below 20°F, the Cessna winterization kit, available from your Cessna Dealer, should be installed to improve engine operation. The kit consists of two baffles which attach to the engine air intakes in the cowling, and insulation for the crankcase breather line. Once installed, the crankcase breather insulation is approved for permanent use in both cold and hot weather.

GROUND SERVICE PLUG RECEPTACLE.

A ground service plug receptacle may be installed to permit use of an external power source for cold weather starting and during lengthy maintenance work on the airplane electrical system (with the exception of electronic equipment).

NOTE

Electrical power for the airplane electrical circuits is provided through a split bus bar having all electronic circuits on one side of the bus and other electrical circuits on the other side of the bus. When an external power source is connected, a contactor automatically opens the circuit to the electronic portion of the split bus bar as a protection against damage to the transistors in the electronic equipment by transient voltages from the power source. Therefore, the external power source can not be used as a source of power when checking electronic components.

Just before connecting an external power source (generator type or battery cart), the master switch should be turned on.

The ground service plug receptacle circuit incorporates a polarity reversal protection. Power from the external power source will flow only if the ground service plug is correctly connected to the airplane. If the plug is accidentally connected backwards, no power will flow to the airplane's electrical system, thereby preventing any damage to electrical equipment.

The battery and external power circuits have been designed to completely eliminate the need to "jumper" across the battery contactor to close it for charging a completely "dead" battery. A special fused circuit in the external power system supplies the needed "jumper" across the contacts so that with a "dead" battery and an external power source applied, turning on the master switch will close the battery contactor.

STATIC PRESSURE ALTERNATE SOURCE VALVE.

A static pressure alternate source valve may be installed in the static system for use when the external static source is malfunctioning.

If erroneous instrument readings are suspected due to water or ice in the static pressure lines, the static pressure alternate source valve

control knob located below the wing flap switch should be opened, thereby supplying static pressure from the cabin. Cabin pressures will vary, however, with open cabin ventilators or windows. The most adverse combinations will result in airspeed and altimeter variations of no more than 2 MPH and 15 feet, respectively.

RADIO SELECTOR SWITCHES

RADIO SELECTOR SWITCH OPERATION.

Operation of the radio equipment is normal as covered in the respective radio manuals. When more than one radio is installed, an audio switching system is necessary. The operation of this switching system is described below.

TRANSMITTER SELECTOR SWITCH.

The transmitter selector switch, labeled TRANS, has two positions. When two transmitters are installed, it is necessary to switch the micro-

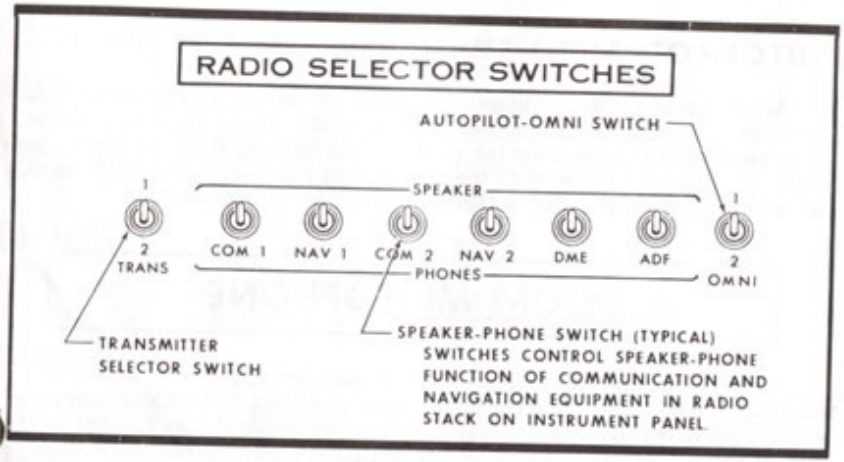

Figure 7-1.

phone to the radio unit the pilot desires to use for transmission. This is accomplished by placing the transmitter selector switch in the position corresponding to the radio unit which is to be used. The up position selects the upper transmitter and the down position selects the lower transmitter.

The installation of Cessna radio equipment provides certain audio back-up capabilities and transmitter selector switch functions that the pilot should be familiar with. When the transmitter selector switch is placed in position 1 or 2, the audio amplifier of the corresponding transceiver is utilized to provide the speaker audio for all radios. If the audio amplifier in the selected transceiver fails, as evidenced by loss of speaker audio for all radios, place the transmitter selector switch in the other transceiver position. Since an audio amplifier is not utilized for headphones, a malfunctioning amplifier will not affect headphone operation.

SPEAKER PHONE SWITCHES.

The speaker-phone switches determine whether the output of the receiver in use is fed to the headphones or through the audio amplifier to the speaker. Place the switch for the desired receiving system either in the up position for speaker operation or in the down position for headphones.

AUTOPILOT-OMNI SWITCH.

When a Nav-O-Matic autopilot is installed with two compatible omni receivers, an autopilot-omni switch is utilized. This switch selects the omni receiver to be used for the omni course sensing function of the autopilot. The up position selects the upper omni receiver in the radio panel stack and the down position selects the lower omni receiver.

BOOM MICROPHONE

A boom microphone may be mounted near the upper left corner of the windshield. Use of the boom microphone allows radio communication without the necessity of releasing any controls to handle the normal hand microphone. The microphone keying switch is a push button located on the left side of the pilot's control wheel.

WING LEVELER

A wing leveler may be installed to augment the lateral stability of the airplane. The system uses the Turn Coordinator for roll and yaw sensing. Vacuum pressure, from the engine-driven vacuum pump, is routed from the Turn Coordinator to cylinder-piston servo units attached to the aileron control system. As the aircraft deviates from a wing level attitude, vacuum pressure in the servo units is increased or relieved as needed to actuate the ailerons to oppose the deviations.

A separately mounted push-pull control knob, labeled WING LVLR, is provided on the left side of the instrument panel to turn the system on and off. A ROLL TRIM control knob on the Turn Coordinator is used for manual roll trim control to compensate for asymmetrical loading of fuel and passengers, and to optimize system performance in climb, cruise and let-down.

OPERATING CHECK LIST

TAKE-OFF.

(1) WING LVLR Control Knob -- Check in off position (full in).

CLIMB.

(1) Adjust elevator trim for climb.
(2) WING LVLR Control Knob -- Pull control knob ON.
(3) ROLL TRIM Control Knob -- Adjust for wings level attitude.

CRUISE.

(1) Adjust power and elevator trim for level flight.
(2) ROLL TRIM Control Knob -- Adjust as desired.

DESCENT.

(1) Adjust power and elevator trim for desired speed and rate of descent.
(2) ROLL TRIM Control Knob -- Adjust as desired.

LANDING.

(1) Before landing, push WING LVLR control knob full in to the off position.

EMERGENCY PROCEDURES

If a malfunction should occur, the system is easily overpowered with pressure on the control wheel. The system should then be turned off. In the event of partial or complete vacuum failure, the wing leveler will automatically become inoperative. However, the Turn Coordinator used with the wing leveler system will not be affected by loss of vacuum since it is designed with a "back-up" system enabling it to operate from either vacuum or electrical power in the event of failure of one of these sources.

OPERATING NOTES

(1) The wing leveler system may be overpowered at any time without damage or wear. However, for extended periods of maneuvering it may be desirable to turn the system off.

(2) It is recommended that the system not be engaged during take-off and landing. Although the system can be easily overpowered, servo forces could significantly alter the manual "feel" of the aileron control, especially should a malfunction occur.

TRUE AIRSPEED INDICATOR

A true airspeed indicator is available to replace the standard airspeed indicator in your airplane. The true airspeed indicator has a calibrated rotatable ring which works in conjunction with the airspeed indicator dial in a manner similar to the operation of a flight computer.

TO OBTAIN TRUE AIRSPEED, rotate ring until pressure altitude is aligned with outside air temperature in degrees Fahrenheit. Then read true airspeed on rotatable ring opposite airspeed needle.

NOTE

Pressure altitude should not be confused with indicated altitude. To obtain pressure altitude, set barometric scale on altimeter to "29.92" and read pressure altitude on altimeter. Be sure to return altimeter barometric scale to original barometric setting after pressure altitude has been obtained.

FUEL TANK QUICK-DRAIN VALVE KIT

Two fuel tank quick-drain valves and a fuel sampler cup are available as a kit to facilitate daily draining and inspection of fuel in the main tanks for the presence of water and sediment. The valves replace existing fuel tank drain plugs located at the lower inboard area of the wing. The fuel sampler cup, which may be stowed in the map compartment, is used to drain the valves. The sampler cup has a probe in the center of the cup. When the probe is inserted into the hole in the bottom of the drain valve and pushed upward, fuel flows into the cup to facilitate visual inspection of the fuel. As the cup is removed, the drain valve seats, stopping the flow of fuel.

OIL QUICK-DRAIN VALVE

An oil quick-drain valve is optionally offered to replace the drain plug in the oil sump drain port. The valve provides a quicker and cleaner method of draining engine oil. To drain the oil with this valve installed, slip a hose over the end of the valve, route the hose to a suitable container, then push upward on the end of the valve until it snaps into the open position. Spring clips will hold the valve open. After draining, use a screwdriver or suitable tool to snap the valve into the extended (closed) position and remove the drain hose.

CARBURETOR AIR TEMPERATURE GAGE

A carburetor air temperature gage may be installed in the aircraft to help detect carburetor icing conditions. The gage is marked with a yellow arc between -15° and +5°C. The yellow arc indicates the carburetor temperature range where carburetor icing can occur; a placard on the gage reads KEEP NEEDLE OUT OF YELLOW ARC DURING POSSIBLE ICING CONDITIONS.

Visible moisture or high humidity can cause carburetor ice formation, especially in idle or low power conditions. Under cruising conditions, the formation of ice is usually slow, providing time to detect the loss of RPM caused by the ice. Carburetor icing during take-off is rare since the full-open throttle condition is less susceptible to ice obstruction.

If the carburetor air temperature gage needle moves into the yellow arc during potential carburetor icing conditions, or there is an unexplained drop in RPM, apply full carburetor heat. Upon regaining the original RPM (with heat off), determine by trial and error the minimum amount of carburetor heat required for ice-free operation.

NOTE

Carburetor heat should not be applied during take-off unless absolutely necessary to obtain smooth engine acceleration (usually in sub-zero temperatures).

SERVICING REQUIREMENTS

FUEL:

AVIATION GRADE -- 80/87 Minimum Grade
CAPACITY EACH STANDARD TANK -- 21 Gallons
CAPACITY EACH LONG RANGE TANK -- 26 Gallons
(To ensure maximum fuel capacity when refueling, place the fuel selector valve in either LEFT or RIGHT position to prevent cross-feeding).

ENGINE OIL:

AVIATION GRADE -- SAE 50 Above 60°F
SAE 10W30 or SAE 30 Between 0° and 70°F
SAE 10W30 or SAE 20 Below 10°F
(Multi-viscosity oil with a range of SAE 10W30 is recommended for improved starting and lubrication during warm-up in cold weather. Detergent or dispersant oil, conforming to specification No. MIL-L-22851, MUST BE USED.)
CAPACITY OF ENGINE SUMP -- 8 Quarts
(Do not operate on less than 6 quarts. To minimize loss of oil through breather, fill to 7 quart level for normal flights of less than 3 hours. For extended flight, fill to 8 quarts. If optional oil filter is installed, one additional quart is required when the filter element is changed.)

HYDRAULIC FLUID:

MIL-H-5606 Hydraulic Fluid

TIRE PRESSURES:

NOSE WHEEL ---- 31 PSI on 5.00 - 5, 4 Ply Rated Tire
26 PSI on 6.00 - 6, 4 Ply Rated Tire
MAIN WHEELS -- 29 PSI on 6.00 - 6, 4 Ply Rated Tires

NOSE GEAR SHOCK STRUT:

Keep filled with hydraulic fluid and inflated with air to 45 PSI.

RAM
AIRCRAFT CORPORATION

AIRPLANE SUPPLEMENTAL FLIGHT MANUAL

FOR

LANDPLANE OR FLOATPLANE

CESSNA MODELS 172I, 172K, 172L, AND 172M

WITH

LYCOMING O-320-D2J OR O-320-E2D (AS MODIFIED PER STC SE3692SW)

MODEL NUMBER _____

REGISTRATION NUMBER _____

SERIAL NUMBER _____

This Supplemental Flight Manual is F. A. A. approved material and must be in the airplane for all operations when Lycoming O-320-D2J or O-320-E2D (as modified per STC SE3692SW) engine is installed in accordance with STC SA2375SW. The information contained herein supplements or supersedes the information in the form of placards, markings, and manual material. For limitations, procedures and performance information not contained in this Supplemental Flight Manual consult the basic airplane placards, markings and manual material.

F. A. A. APPROVED: _____
for Larry Andriesen, Manager
Aircraft Certification Division
Southwest Region
FEDERAL AVIATION ADMINISTRATION
Southwest Region
Fort Worth, Texas 76101

Date: AUG 27 1987

STC No. SA2375SW

Waco-Madison Cooper Airport • P.O. Box 5219 • [redacted]
Phone 817-752-8381 [redacted]

RAM

AIRCRAFT CORPORATION

CESSNA 172I, 172K, 172L, AND 172M

SUPPLEMENTAL FLIGHT MANUAL

I. GENERAL

1.	ENGINE	Lycoming O-320-D2J Or Lycoming O-320-E2D (As Modified Per STC SE3692SW)
2.	FUEL	100/130 Minimum Octane
3.	PROPELLER	McCauley 1C160/CTM7557 Or McCauley 1C160/DTM7557
	PROPELLER (Seaplane Only)	McCauley 1A175/ETM8042 Or McCauley 1A175/ATM8042

II. LIMITATIONS

1.	ENGINE LIMITS	Maximum Continuous: 150 HP - 2650 RPM Take-Off (5 Minutes): 160 HP - 2700 RPM
2.	PROPELLER LIMITS	Static RPM at maximum throttle setting: Not over 2420, not under 2300 Diameter: Maximum 75.0 inches Minimum 74.0 inches
3.	PROPELLER LIMITS (Seaplane Only)	Static RPM at maximum throttle setting: Not over 2570, not under 2470 Diameter: Maximum 80.0 inches Minimum 78.5 inches
4.	ENGINE INSTRUMENT MARKINGS	Tachometer: Green Arc 2200 - 2650 RPM Yellow Arc 2650 - 2700 RPM Redline 2700 RPM Oil Pressure: Redline 25 PSI Green Arc 60-90 PSI Redline 100 PSI Cylinder Head Temperature (If Installed): Green Arc 225 - 425 F. Redline 500 F.

F. A. A. APPROVED: AUG 27 1987

STC No. SA2375SW

Waco-Madison Cooper Airport • P.O. Box 5219 • Waco
Phone 817.752.8381

RAM
AIRCRAFT CORPORATION

CESSNA 172I, 172K, 172L, AND 172M

SUPPLEMENTAL FLIGHT MANUAL

III. PROCEDURES

No Change

IV. PERFORMANCE

The performance of this airplane equipped with a Lycoming O-320-D2J or O-320-E2D (as modified per STC SE3692SW) engine is equal to or better than the original F. A. A. approved performance

AUG 27 1987

F. A. A. APPROVED: _____ STC No. SA2375SW

Waco-Madison Cooper Airport • P.O. Box 5219
Phone 817-752-8381

N12874
1973 Cessna 172M
S/N: 17262333

August 14, 2008
Tach: 1241.0

Previous Empty Weight	1435.0 lbs.
Previous Arm	38.7 in.
Previous Moment	55504.6 lbs.

Removed Kelly Aerospace Starter	-14 @ -20arm
Installed Skytec Starter	+9.4 @ -20 arm
Total weight change	-4.6 @-20 arm

New Empty Weight	1430.6 lbs.
New Useful Load	869.6 lbs
New E.W.C.G.	38.82 inches

Mechanic: [signature] A+P 2857101 IA
Date: 08/14/08

Weight & Balance Equipment List

F . Number:	N12874	Date:	09-18-2006
.e/Model:	Cessna 172M	Tach:	770.9
ear:	1973	Max Weight:	2300
Serial Number:	17262333	Work Order:	T8323

New A/C Empty Weight:	1435.0	Landing C.G. Range:	
New A/C Empty C.G.:	38.7	Gear Extended C.G. Range:	
New A/C Useful Load:	865.0	Empty Weight C.G. Range:	

Weight & Balance Calculation	Tare	Weight	Arm	Moment
Scale locations				
Right Main	0.0	593.00	58.20	34512.6
Left Main	0.0	604.00	58.20	35152.8
Nose	0.0	466.00	-6.80	-3168.8
Unusable Fuel	0.0	24.00	46.00	1104.0
Minus Fluids				
Forward Tanks	xxxxxxxx	-252.00	48.00	-12096.0
New Aircraft Values		1435.0	38.7	55504.6

-quipment	Serial	Weight	Arm	Moment

Equipment	Serial	Weight	Arm	Moment

Equipment weights above are included in New A/C Empty Weight

Muncie Aviation Company an employee owned company

R Fredericksen, AJVR135C

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