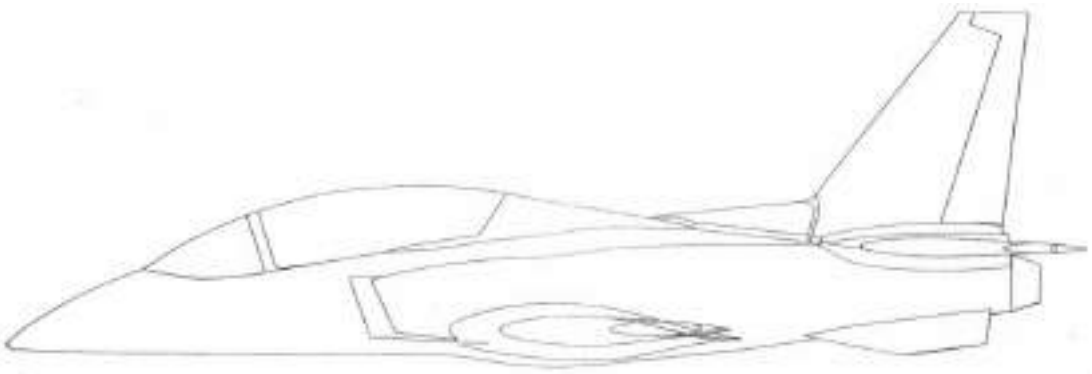

Viperjet MK II

PILOT'S OPERATING HANDBOOK

Viper Aircraft

VIPER AIRCRAFT CORPORATION
VIPERJET MK II
PILOT'S OPERATING HANDBOOK

BUILDER/OWNER: _____

REGISTRATION NUMBER: _____

SERIAL NUMBER: _____

VIPER AIRCRAFT CORPORATION

4020 N STEARMAN AVENUE

PASCO, WA 99301

PHONE 509.543.3570

WWW.VIPER-AIRCRAFT.COM

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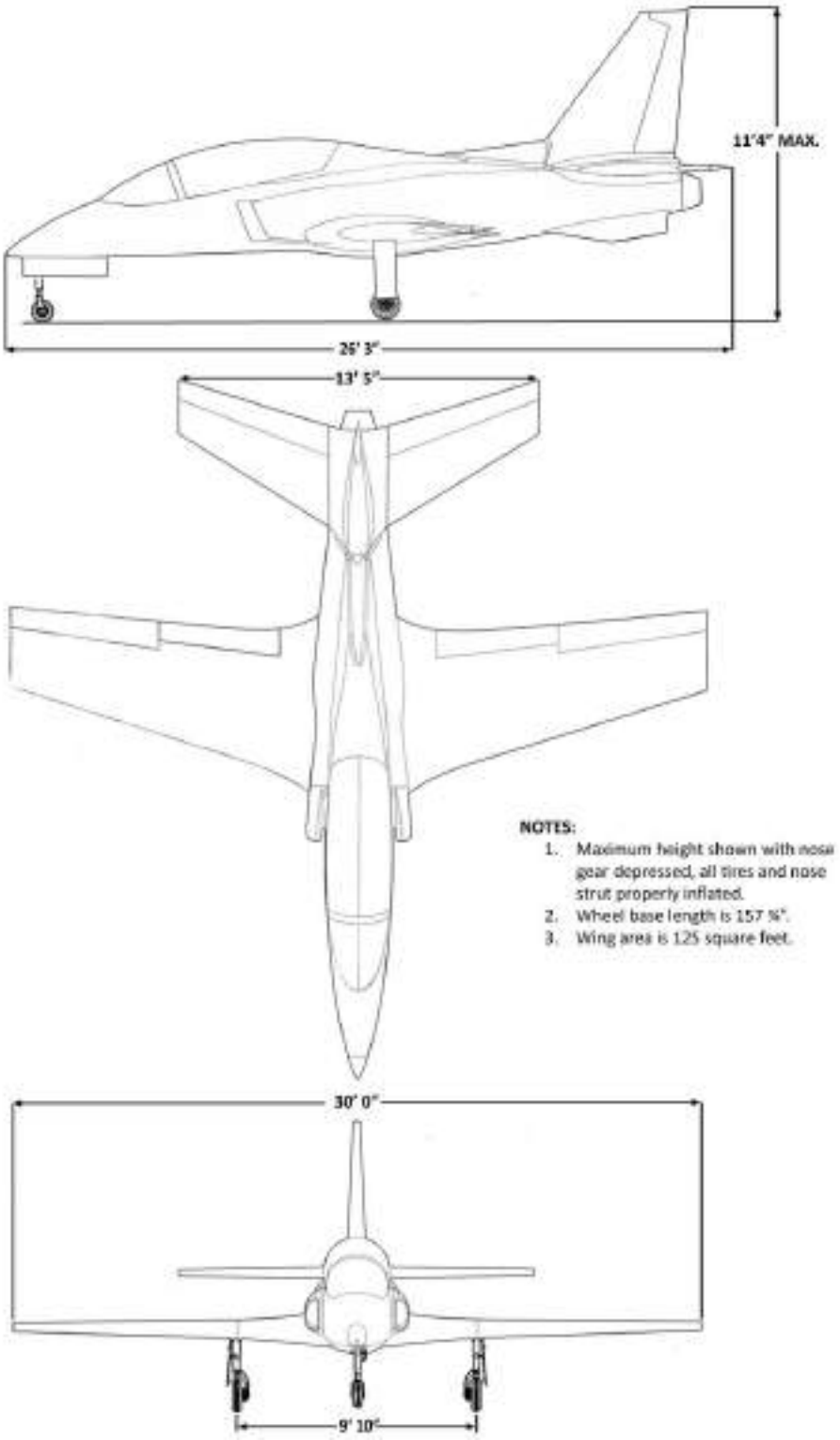

ViperJet MK II Three View

SECTION 1 – GENERAL

INTRODUCTION

Section 1 provides basic data and information of general interest. It also contains definitions of explanations of symbols, abbreviations, and terminology commonly used.

DESCRIPTIVE DATA

ENGINE

Number of Engines: 1
Engine Manufacture: Viper Aircraft Corporation (Experimental)
Engine Model Number: VA J-85-17A
Engine Type: Turbojet

FUEL

Approved Fuel Grades: Jet A, JP-4
Fuel Capacity:

Center fuel tank: _____ gallons
(to be filled in by Builder/Owner)

Left Wing tank: _____ gallons
(to be filled in by Builder/Owner)

Right Wing tank: _____ gallons
(to be filled in by Builder/Owner)

OIL

Oil Grade (Specification): BP 2380 TURBINE OIL (or equivalent)

MAXIMUM CERTIFICATED WEIGHTS

Takeoff: 5500 lbs.
Landing: 5500 lbs.
Weight in Baggage Compartment: 50 lbs.

STANDARD AIRPLANE WEIGHTS

Standard Empty Weight: _____ lbs.
(To be filled in by Builder/Owner)
Maximum Useful Load: _____ lbs.
(To be filled in by Builder/Owner)

SYMBOLS, ABBREVIATIONS AND TERMINOLOGY

GENERAL AIRSPEED TERMINOLOGY AND SYMBOLS

KCAS	**Knots Calibrated Airspeed** is indicated airspeed corrected for position and instrument error and expressed in knots. Knots calibrated airspeed is equal to KTAS in standard atmosphere at sea level.
KIAS	**Knots Indicated Airspeed** is the speed shown on the airspeed indicator and expressed in knots.
KTAS	**Knots True Airspeed** is the airspeed expressed in knots relative to undisturbed air which is KCAS corrected for altitude and temperature.
V_A	**Maneuvering Speed** is the maximum speed at which you may use abrupt control inputs.
V_{FE}	**Maximum Flap Extended Speed** is the highest speed permissible with wing flaps in a prescribed extended position.
V_{LE}	**Maximum Landing Gear Extended Speed** is the highest speed permissible with the landing gear extended.
V_{MO}	**Maximum Operating Speed** is the speed that may not be exceeded in any regime of flight (climb, cruise, descent).
V_S	**Stalling Speed or the minimum steady flight speed** at which the aircraft is controllable.
V_{SO}	**Stalling Speed or the minimum steady flight speed** at which the aircraft is controllable in the landing configuration at the most forward center of gravity.

V_X	**Best Angle-of-Climb Speed** is the speed which results in the greatest gain of altitude in a given horizontal distance.
V_Y	**Best Rate-of-Climb Speed** is the speed which results in the greatest altitude gain in a given time.

METEOROLOGICAL TERMINOLOGY

OAT	**Outside Air Temperature** is the free air static temperature. It is expressed in either degrees Celsius or degrees Fahrenheit.
Standard Temperature	**Standard Temperature** is 15°C (59° F) at sea level pressure altitude and decreases by 2°C for each 1000 feet of altitude.
Pressure Altitude	**Pressure Altitude** is the altitude read from an altimeter when the altimeter's barometric scale has been set to 29.92 inches of mercury (1013 mb).

ENGINE POWER TERMINOLOGY

EGT	**Exhaust Gas Temperature** is the temperature of exhaust gases exiting the combustion chamber
N_1	Revolutions per Minute (RPM) of the Turbine Fan expressed as a % of maximum.
% Power	Percent of total thrust. NO COCKPIT INDICATION FOR THIS

WEIGHT AND BALANCE TERMINOLOGY

Reference Datum	**Reference Datum** is an imaginary vertical plane from which all horizontal distances are measured for balance purposes.
Station	**Station** is a location along the aircraft fuselage given in terms of the distance from the reference datum.
Arm	**Arm** is the horizontal distance from the reference datum to the center of gravity (CG) of an item.
Moment	**Moment** is the product of the weight of an item multiplied by its arm.
Center of Gravity (CG)	**Center of Gravity** is the point at which an aircraft would balance if suspended. Its distance from the reference datum is found by dividing the total moment by the total weight of the aircraft.
CG Arm	**Center of Gravity Arm** is the arm obtained by adding the aircraft's individual moments and dividing the sum by the total weight.

CG Limits	**Center of Gravity Limits** are the extreme center of gravity locations within which the aircraft must be operated at a given weight.
Standard Empty Weight	**Standard Empty Weight** is the weight of a standard aircraft, including unusable fuel, full operating fluids and full engine oil.
Useful Load	**Useful Load** is the difference between maximum takeoff weight and the standard empty weight.
Maximum Takeoff Weight	**Maximum Takeoff Weight** is the maximum weight approved for the start of the takeoff run.
Maximum Landing Weight	**Maximum Landing Weight** is the maximum weight approved for the landing touchdown.

SECTION 2 – LIMITATIONS

INTRODUCTION

Section 2 includes operating limitations, instrument markings and basic placards necessary for the safe operation of the aircraft, its engine, systems and equipment.

OPERATING LIMITATIONS

AIRSPEED LIMITATIONS

Airspeed limitations and their operational significance are shown in figure 2-1.

	SPEED	KIAS	REMARKS
V_{MO}	Maximum Operating Speed SL – 10,000 ft 10 – 15,000 ft 15 – 20,000 ft 20 – 28,000 ft	 375 360 340 325	Do not exceed this speed in any regime of flight.
V_A	Maneuvering Speed	250	Do not make full or abrupt control movements above this speed.
V_{FE}	Maximum Flap Extended Speed: 12° Flaps 20° Flaps 45° Flaps	 175 165 150	Do not exceed this speed with flaps down.
V_{LE}	Maximum Landing Gear Extended Speed	175	Do not exceed this speed with the landing gear down.

Figure 2-1 Airspeed Limitations

POWERPLANT LIMITATIONS

Engine Manufacturer: Viper Aircraft Corporation (Experimental)
Engine Model Number: VA J-85-17A
Engine Operating Limits for Takeoff and Continuous Operations:

Maximum Thrust: 2850 lbs.
Maximum N_1: 101.2% (5 minute limit)
Maximum EGT (START): 780° C (10 second limit)
Maximum EGT (TAKEOFF): 704° C. (5 minute limit)
Normal Oil Temperature Operating Range: 60 – 185° C
Normal Oil Pressure Operating Range: 20 – 55 PSI
Ignition System (time limit 1): 2 minutes ON; 3 minutes OFF; 2 minutes ON; 23 minutes OFF
Ignition System (time limit 2): 5 minutes ON; 25 minutes OFF

WEIGHT LIMITS

Maximum Takeoff and Landing Weight: 5500 lbs.
Maximum Weight in Baggage Compartment: 50 lbs.

CENTER OF GRAVITY LIMITS

Center of Gravity Range:

Forward: Appx. 158.0 inches aft of datum (15% of Mean Aerodynamic Cord)
Aft: Appx. 162.50 inches aft of datum (25% of Mean Aerodynamic Cord)

Reference Datum: Nose of aircraft at base of pitot tube (if bayonet pitot installed).

MANEUVERS

This aircraft is designed for aerobatics; however, all maneuvers must first be performed in the flight testing period and signed off in the aircraft logbook in accordance with the Operating Limitations that accompany the Airworthiness Certificate. The following are suggested entry speeds and do not constitute an endorsement for any aerobatic maneuvers which are performed. All maneuvers are subject to the Flight Load Factor Limits contained herein.

MANEUVER	RECOMMENDED MINIMUM ENTRY SPEED (95% POWER)
Barrel Roll	200 KIAS
Aileron Roll	200 KIAS
½ Cuban Eight	250 KIAS
Loop	250 KIAS

FLIGHT LOAD FACTOR LIMITS

Flight Load Factors (Maximum Takeoff Weight – 5500 lbs):

*__Flaps Up__ ..... +6.0g, -3.0g

*__Flaps Down__ ..... +3.0g, +0.5g

*The design load factors are 150% of the above and in all cases the structure meets or exceeds design loads.

KINDS OF OPERATION LIMITS

The aircraft is equipped for day VFR and may be equipped for night VFR and/or IFR operations. FAR Part 91 establishes the minimum required instrumentation and equipment for these operations.

FUEL LIMITATIONS

Center Fuel Tank: _____ Gallons total.
(to be filled in by Builder/Owner)

Left Wing Fuel Tank: _____Gallons total
(to be filled in by Builder/Owner)

Right Wing Fuel Tank:_____Gallons total
(to be filled in by Builder/Owner)

Approved Fuel Grades: Jet A, JP4

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SECTION 3 – EMERGENCY PROCEDURES

INTRODUCTION

Section 3 provides checklist and amplified procedures for coping with emergencies that may occur. Emergencies caused by aircraft or engine malfunctions are extremely rare if proper preflight inspections and maintenance are practiced. Enroute weather emergencies can be minimized or eliminated by careful flight planning and good judgment when unexpected weather is encountered. However, should an emergency arise, the basic guidelines described in this section should be considered and applied as necessary to correct the problem(s).

OPERATIONAL CHECKLISTS

GROUND EMERGENCIES

FALSE START/HUNG START

1. THROTTLE.....OFF
2. IGNITION SWITCH .....OFF
3. START SWITCH .....OFF
4. FUEL DRAIN PERIOD.....30 SECONDS
   .....(IF STARTER WAS ON LESS THAN 30 SEC)
5. START SWITCH .....START
6. PURGE PERIOD.....15 SECONDS
7. START SWITCH .....OFF

   AFTER 3 MINUTES
8. START PROCEDURE .....REPEAT

ENGINE FIRE ON START

1. THROTTLE.....OFF
2. IGNITION SWITCH .....OFF
3. START SWITCH ..... ON (WINDMILL ENGINE)
4. BOOST PUMP .....OFF
5. EMERGENCY FUEL .....CUTOFF (RAISE GUARD)

IF FIRE PERSISTS

6. THROTTLE.....OFF
7. START SWITCH .....OFF
8. BATTERY MASTER.....OFF
9. **EXIT AIRCRAFT**

FIRE ON THE GROUND AFTER START

1. THROTTLE.....OFF
2. BOOST PUMP .....OFF
3. EMERGENCY FUEL.....CUTOFF (RAISE GUARD)
4. **EXIT AIRCRAFT**

TAKEOFF EMERGENCIES

ENGINE FAILURE DURING TAKEOFF RUN

1. DRAG BRAKES.....APPLY
2. THROTTLE.....OFF
3. BRAKES.....MAXIMUM
   (IF LESS THAN 3000 FT REMAINING)

ENGINE FAILURE IMMEDIATELY AFTER TAKEOFF

1. AIRSPEED..... MAINTAIN 100 KIAS MINIMUM
2. LANDING AREA..... CHOOSE BEST OPTION WITH MINIMUM HEADING CHANGE
3. LANDING GEAR .....UP IF LANDING WILL BE ON UNPREPARED SURFACE
4. THROTTLE.....OFF
5. EMERGENCY FUEL.....CUTOFF (RAISE GUARD)
6. FLAPS.....AS NECESSARY TO FLARE

IN FLIGHT EMERGENCIES

ENGINE FIRE IN FLIGHT

1. THROTTLE.....OFF
2. AIRSPEED..... MAINTAIN 100 KIAS MINIMUM
3. BOOST PUMP .....OFF
4. L & R TRANSFER PUMP .....OFF
5. EMERGENCY FUEL.....CUTOFF (RAISE GUARD)

IF FIRE PERSISTS

6. BATTERY MASTER.....OFF
7. GENERATOR .....OFF

IF FIRE PERSISTS

8. BAILOUT

IF FIRE EXTINGUISHES OR BAILOUT NOT POSSIBLE

9. AIRSPEED..... MAINTAIN 100 KIAS MINIMUM
10. LANDING AREA.....CHOOSE BEST OPTION
11. LANDING GEAR .....UP IF LANDING WILL BE ON UNPREPARED SURFACE
12. FLAPS.....AS NECESSARY TO FLARE

ELECTRICAL FIRE IN FLIGHT

1. ELECTRICAL EQUIPMENT .....UNNECESSARY EQUIPMENT OFF

IF FIRE PERSISTS

2. GENERATOR .....OFF
3. BATTERY MASTER.....OFF

IF FIRE PERSISTS

4. THROTTLE.....OFF
5. AIRSPEED..... MAINTAIN 100 KIAS MINIMUM

6. BOOST PUMP .....OFF
7. EMERGENCY FUEL.....CUTOFF (RAISE GUARD)

IF FIRE PERSISTS

8. BAILOUT

IF BAILOUT NOT POSSIBLE

9. AIRSPEED..... MAINTAIN 100 KIAS MINIMUM
10. LANDING AREA.....CHOOSE BEST OPTION
11. LANDING GEAR .....UP IF LANDING WILL BE ON UNPREPARED SURFACE
12. FLAPS.....AS NECESSARY TO FLARE

IF FIRE EXTINGUISHES

13. AIRSTART..... ATTEMPT

BAILOUT

1. PRESSURIZATION..... OFF
2. CANOPY SEAL .....OFF
3. HARNESS LATCH.....OPEN
4. HEADSET / MASK.....REMOVE
5. CANOPY LOCKING PIN.....OUT
6. CANOPY.....OPEN
7. EXIT AIRCRAFT

DIVE TOWARD LEFT OR RIGHT AILERON

ENGINE FLAMEOUT

IF ENGINE IS ABOVE 45% N_1

1. THROTTLE.....IDLE
2. IGNITION SWITCH .....ON
3. EGT .....MONITOR

WHEN RELIT (>47% N_1)

4. IGNITION SWITCH .....OFF
5. THROTTLE.....AS REQUIRED

****LAND AS SOON AS PRACTICAL****

IF ENGINE IS BELOW 45% N_1

1. THROTTLE.....OFF
2. AIRSTART.....PERFORM

AIRSTART

1. AIRSPEED ..... 100 KIAS MINIMUM
2. THROTTLE ..... OFF
3. BOOST PUMP ..... ON
4. IGNITION SWITCH ..... ON

   IF ENGINE IS WINDMILLING < 10% N_1
5. STARTER/GENERATOR ..... START

   AT 10% N_1
6. THROTTLE ..... IDLE
7. EGT ..... MONITOR

   AT 47% N_1
8. IGNITION SWITCH ..... OFF
9. THROTTLE ..... AS REQUIRED

   ****LAND AS SOON AS POSSIBLE****

   IF NO RELIGHT WITHIN 10 SECONDS
10. THROTTLE ..... OFF
11. AIRSTART PROCEDURES ..... REPEAT

LOW OIL PRESSURE

****LAND AS SOON AS POSSIBLE USING MINIMUM POWER SETTINGS****

HIGH OIL PRESSURE

****LAND AS SOON AS POSSIBLE USING MINIMUM POWER SETTINGS****

HIGH OIL TEMPERATURE / HIGH EGT

1. POWER SETTING ..... REDUCE AS NECESSARY

****LAND AS SOON AS PRACTICAL****

EMERGENCY LANDING GEAR EXTENSION

1. AIRSPEED.....< 125 KIAS
2. LANDING GEAR HANDLE .....DOWN
3. LANDING GEAR LIGHTS PTT .....PRESS (VERIFY LIGHTS WORKING)
4. DCS CIRCUIT BREAKER .....PULL
5. EMERGENCY GEAR HANDLE..... ROTATE CLOCKWISE
   ..... until resistance is felt, pause for 2 seconds;
   .....continue to turn clockwise until completely turned.
   IF LANDING GEAR DOES NOT INDICATE DOWN
6. AIRCRAFT..... YAW / PITCH TO ASSIST GEAR

NOTE: IF "GEAR UNSAFE" LIGHT IS LIT CONTINUOUSLY OR REPEATEDLY DURING FLIGHT, THIS INDICATES THAT THE HYDRAULIC PUMP IS RUNNING. TO AVOID OVERHEATING PUMP, PULL DCS CIRCUIT BREAKER UNTIL SUCH TIME AS PUMP IS NEEDED (i.e., lower landing gear, flaps, drag brakes, etc.) SO AS TO AVOID DAMAGE TO THE HYDRAULIC PUMP.

INADVERTENT ICING

1. PITOT HEAT .....ON
2. ALTITUDE.....CHANGE TO TEMP. LESS CONDUCIVE TO ICING
3. DIRECTION.....TURN BACK TO TEMP. LESS CONDUCIVE TO ICING
4. CABIN HEAT.....ON
5. DEFROST.....ON
6. OBSERVE.....SIGNS OF INTAKE ICING
   ****LAND AS SOON AS PRACTICAL****
7. APPROACH .....120 KIAS
8. LAND ..... LEVEL ATTITUDE

STATIC SOURCE BLOCKED

1. ALTERNATE STATIC SOURCE VALVE .....ON
2. AIRSPEED.....CLIMB AND APPROACH 10 KTS FASTER THAN NORMAL
3. ALTITUDE..... CRUISE AND APPROACH 25 – 50 FEET HIGHER THAN NORMAL

SECTION 4 – NORMAL PROCEDURES

INTRODUCTION

Section 4 provides checklist and amplified procedures for the conduct of normal operation.

SPEEDS FOR NORMAL OPERATION

Unless otherwise noted the following speeds are based on a maximum weight of 5500 pounds and may be used for any lesser weight.

Takeoff Flaps Up: ..... 85-90 KIAS
Enroute Climb, Flaps Up
- Normal ..... 200 KIAS
- Best Rate of Climb, Sea Level ..... 200 KIAS
- Best Rate of Climb, 10,000 Feet ..... 190 KIAS
- Best Angle of Climb, Sea Level ..... 175 KIAS
- Best Angle of Climb, 10,000 Feet ..... 160 KIAS

Landing Approach
- Normal Approach, Flaps Up ..... 120 KIAS
- Normal Approach, Flaps Full Down ..... 95 – 100 KIAS

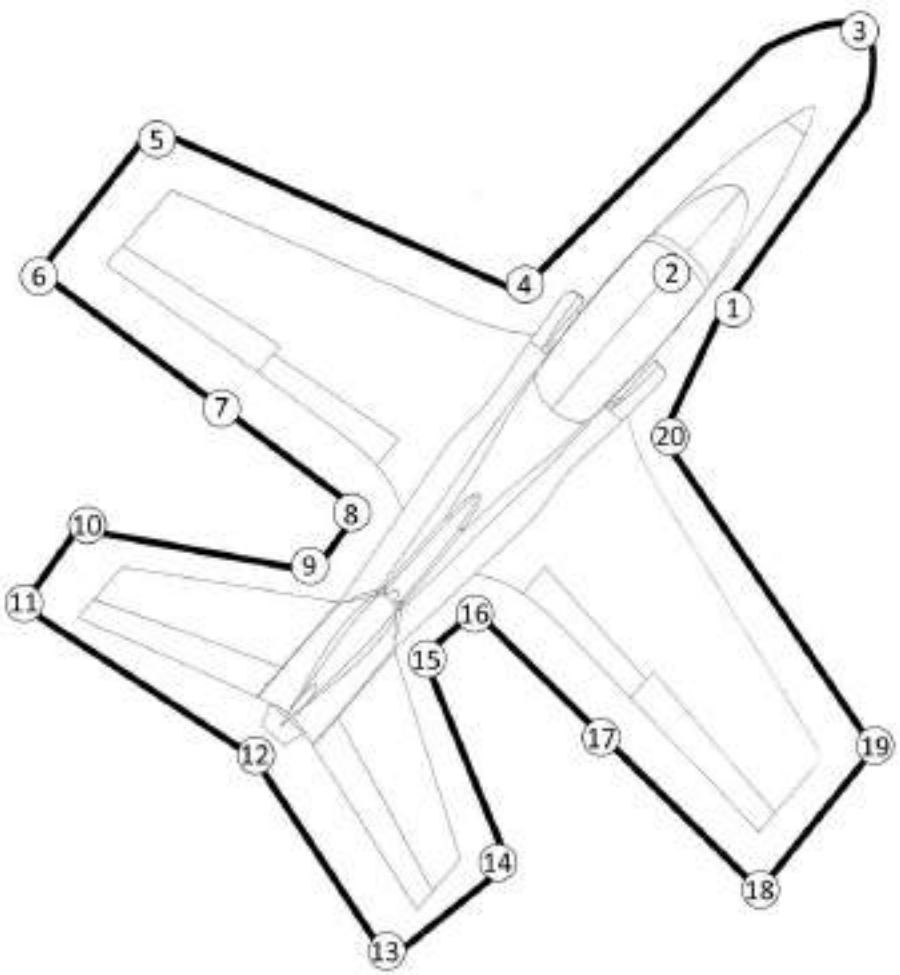

Figure 4-1 Preflight Inspection

NOTE:

Visually check aircraft for general condition during walk-around inspection. In cold weather, remove even small accumulations of frost, ice or snow from wing, tail and control surfaces. Also, make sure that control surfaces contain no internal accumulations of ice or debris. Prior to flight with battery and pitot switches on, be sure pitot heater is warm to touch within 30 seconds. If a night flight is planned, check operation of all lights, and make sure a flashlight is available.

OPERATIONAL CHECKLISTS

PREFLIGHT INSPECTION

1 open canopy

1. LATCHING MECHANISM ..... OBSERVE FOR PROPER OPERATION
2. WINDSCREEN ..... CHECK FOR DAMAGE & CLEANLINESS

2 CABIN

1. **A**IRWORTHINESS CERTIFICATE ..... AVAILABLE IN THE AIRCRAFT
2. **R**EGISTRATION ..... AVAILABLE IN THE AIRCRAFT
3. **O**PERATING LIMITATIONS ..... AVAILABLE IN THE AIRCRAFT
4. **W**EIGHT & BALANCE ..... AVAILABLE IN THE AIRCRAFT
5. POH ..... AVAILABLE IN THE AIRCRAFT
6. STARTER/GENERATOR SWITCH ..... OFF
7. AVIONICS MASTER ..... OFF
8. LANDING GEAR HANDLE ..... DOWN
9. BATTERY MASTER ..... ON
10. FUEL QUANTITY INDICATORS ..... CHECK QUANTITY
11. FLAP SWITCH ..... FULL DOWN
12. TRIM SETTINGS ..... NEUTRAL
13. BATTERY MASTER ..... OFF

3 NOSE

1. PITOT TUBE ..... REMOVE COVER, INSPECT FOR BLOCKAGE/OBSTRUCTION
2. STATIC SOURCE ..... CHECK FOR BLOCKAGE/OBSTRUCTION
3. NOSE WHEEL STRUT & TIRE ..... CHECK FOR PROPER INFLATION
4. NOSE WHEEL WELL ..... INSPECT FOR DEBRIS/DAMAGE

4 LEFT ENGINE INLET

1. INLET .....REMOVE COVER, INSPECT FOR DEBRIS AND/OR DAMAGE
2. BOTTOM OF FUSELAGE..... INSPECT ANTENNAS AND FOR LEAKING FLUIDS
3. FUEL QUANTITY..... CHECK VISUALLY FOR DESIRED LEVEL
4. LEFT WING FUEL CAP ..... SECURE
5. LEFT WING TANK SUMP .....SAMPLE FUEL W/ SAMPLE CUP
6. CENTER FUEL TANK SUMP .....SAMPLE FUEL W/ SAMPLE CUP

5 LEFT WING/WINGTIP/LEFT MAIN LANDING GEAR

1. LEFT MAIN WHEEL STRUT & TIRE ..... CHECK FOR PROPER INFLATION
2. WING TIE-DOWN.....DISCONNECT
3. LEFT WING LEADING EDGE ..... INSPECT FOR DAMAGE
4. LEFT WINGTIP ..... INSPECT LIGHTING LENSES FOR SECURITY

6 LEFT WING TRAILING EDGE

1. TRAILING EDGE .....CHECK FOR DAMAGE

7 LEFT AILERON & FLAP

1. AILERON .....CHECK FOR FREEDOM OF MOVEMENT & SECURITY
2. FLAP..... CHECK FOR SECURITY

8 LEFT FORWARD ENGINE COMPARTMENT COVER

1. ENGINE COVER.....REMOVE
2. HYDRAULIC FLUID RESERVOIR .....CHECK LEVEL
3. ENGINE COVER..... SECURE

9 LEFT REAR ENGINE COMPARTMENT COVER

1. ENGINE COVER..... CHECK FOR SECURITY

⑩ LEFT HORIZONTAL STABILIZER LEADING EDGE

1. LEADING EDGE .....CHECK FOR DAMAGE

⑪ LEFT ELEVATOR TRAILING EDGE

1. TRAILING EDGE .....CHECK FOR DAMAGE
2. ELEVATOR..... CHECK FOR FREEDOM OF MOVEMENT AND SECURITY

⑫ EXHAUST NOZZLE & RUDDER

1. EXHAUST NOZZLE..... REMOVE COVER & CHECK FOR DEBRIS
2. RUDDER.....CHECK FOR FREEDOM OF MOVEMENT & SECURITY
3. TAIL TIE-DOWN .....DISCONNECT

⑬ RIGHT ELEVATOR TRAILING EDGE

1. TRAILING EDGE .....CHECK FOR DAMAGE
2. ELEVATOR..... CHECK FOR FREEDOM OF MOVEMENT AND SECURITY

⑭ RIGHT HORIZONTAL STABILIZER LEADING EDGE

1. LEADING EDGE .....CHECK FOR DAMAGE

⑮ RIGHT REAR ENGINE COMPARTMENT COVER

1. ENGINE COVER..... CHECK FOR SECURITY

⑯ RIGHT FORWARD ENGINE COMPARTMENT COVER

2. ENGINE COVER.....REMOVE
3. ENGINE OIL.....CHECK LEVEL
4. ENGINE COVER..... SECURE

⑰ RIGHT AILERON & FLAP

1. AILERON .....CHECK FOR FREEDOM OF MOVEMENT & SECURITY
2. FLAP..... CHECK FOR SECURITY

⑱ RIGHT WING TRAILING EDGE

1. TRAILING EDGE .....CHECK FOR DAMAGE

⑲ RIGHT WING/WINGTIP/RIGHT MAIN LANDING GEAR

1. RIGHT MAIN WHEEL STRUT & TIRE..... CHECK FOR PROPER INFLATION
2. WING TIE-DOWN.....DISCONNECT
3. RIGHT WING LEADING EDGE..... INSPECT FOR DAMAGE
4. RIGHT WINGTIP..... INSPECT LIGHTING LENSES FOR SECURITY

⑳ RIGHT ENGINE INLET

1. INLET .....REMOVE COVER, INSPECT FOR DEBRIS AND/OR DAMAGE
2. BOTTOM OF FUSELAGE..... INSPECT FOR LEAKAGE AND ANTENNAS
3. FUEL QUANTITY..... CHECK VISUALLY FOR DESIRED LEVEL
4. RIGHT WING FUEL CAP ..... SECURE
5. RIGHT WING TANK SUMP .....SAMPLE FUEL W/ SAMPLE CUP

BEFORE ENGINE START

1. EXTERNAL STEP ..... REMOVE & STOW
2. CIRCUIT BREAKERS ..... CHECK
3. ICING PROTECTION *(if installed)* .....OFF
4. EMERGENCY FUEL..... RUN (GUARDED)
5. AVIONICS MASTER .....OFF
6. LANDING GEAR HANDLE .....DOWN
7. BATTERY MASTER.....ON
8. LANDING GEAR .....3 GREEN
9. EXT POWER LIGHT..... ON (IF EXT PWR START)
10. EXT POWER MASTER..... ON (IF EXT PWR START
11. ANNUNCIATOR PTT..... PUSH

12. L & R TRANSFER PUMPS..... OFF (YELLOW LIGHTS)
13. L & R TIP PUMP .....OFF

ENGINE START

1. THROTTLE.....CLOSED (CUT-OFF)
2. EMERGENCY FUEL CUTOFF .....OPEN
3. BOOST PUMP .....ON
4. IGNITION .....ON
5. STARTER/GENERATOR .....START

AT 10% N_1

6. THROTTLE..... IDLE POSITION
7. LIGHT OFF..... 10 SEC MAX

   IF FUEL FLOW EXCEEDS 50 GPH < 30%, HOT START POSSIBLE

8. EGT .....800° C (3 SEC. MAX)

   IF EGT APPROACHING 780° C

   THROTTLE ..... CLOSED (CUT-OFF)

   IGNITION ..... OFF

AT 37% N_1

9. STARTER/GENERATOR .....OFF
10. IDLE .....47% - 49% (WITHIN 40 SEC MAX)
11. EGT .....635° C MAX
12. OIL PRESSURE..... 5 – 25 PSI
13. IGNITION .....OFF
14. BOOST PUMP .....OFF
15. EXT POWER MASTER..... OFF (IF EXT PWR START)
16. EXT POWER CABLE ..... DISCONNECT (IF EXT PWR START)
17. STARTER/GENERATOR .....GEN
18. AVIONICS MASTER .....ON
19. IDLE ENGINE (48% TO 55% N_1) .....3 MINUTES

BEFORE TAKEOFF

1. CONTROLS ..... FREE AND CORRECT
2. CANOPY ..... LATCHED & LOCKED
3. PRESSURIZATION ..... ON
4. CANOPY SEAL ..... ON
5. RADIO ..... SET
6. TRANSPONDER ..... SET
7. DRAG BRAKES ..... RETRACTED
8. FLAPS ..... TAKE OFF
9. TRIM ..... SET
10. L & R TRANSFER PUMPS ..... OFF (YELLOW LIGHTS)
11. L & R TIP PUMP ..... OFF
12. BOOST PUMP ..... ON
13. ANNUNCIATOR LIGHTS ..... CHECK
14. EXTERIOR LIGHTS ..... AS DESIRED

TAKE OFF

1. N_1 ..... 101.2% (MAX)
2. EGT ..... 704° C (5 MINUTE LIMIT)
3. ROTATE ..... 85 – 90 KIAS
4. GEAR UP ..... < 150 KIAS
5. FLAPS UP ..... < 150 KIAS

CLIMB / CRUISE

1. N_1 ..... 100%
2. EGT ..... 677° C (MAX)
3. OIL PRESSURE ..... 20 – 60 PSI
4. OIL TEMPERATURE ..... 65° – 185° C
5. BOOST PUMP ..... OFF
6. L & R TRANSFER PUMP ..... AS DESIRED
7. L & R TIP PUMP ..... AS DESIRED

RECOMMENDED MAXIMUM SPEED PROFILE

ALTITUDE	KIAS	MACH
SL – 10,000 FT	375	.67
10,000 – 15,000 FT	360	.71
15,000 – 20,000 FT	340	.73
20,000 – 25,000 ~~28,000~~ FT	325	.77
25,000 – 28,000 FT	300	.76

(*RECOMMENDED MAX ALTITUDE OF 25,000 FEET MSL*)

Table 4-1. Max Speed Profile

LANDING

1. L & R TRANSFER PUMPS..... OFF (YELLOW LIGHTS)
2. L & R TIP PUMP .....OFF
3. BOOST PUMP .....ON
4. DRAG BRAKES..... AS DESIRED
5. FLAPS.....140 KIAS
6. LANDING GEAR .....140 KIAS
7. PATTERN / FINAL.....120 KIAS / 95-100 KIAS

ENGINE SHUTDOWN

1. IDLE ENGINE (48% TO 55% N_1) .....3 MINUTES
2. AVIONICS.....OFF
3. BOOST PUMP .....OFF
4. STARTER/GENERATOR .....OFF
5. THROTTLE..... CLOSED (CUT OFF)
   AT 10% N_1
6. LIGHTS .....OFF
7. BATTERY MASTER.....OFF

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SECTION 5 – PERFORMANCE

INTRODUCTION

Performance data charts on the following pages are presented so you may know what to expect from the aircraft under various conditions and facilitate detailed flight planning with reasonable accuracy. The data in the charts is computed from actual flight tests with the aircraft and engine in good condition using average piloting techniques.

Please note the performance information presented in the range and endurance profile charts allows for 45 minutes reserve fuel base on low (≈ 80% power) power settings. Some indeterminate variables such as fuel metering characteristics, engine condition and air turbulence may account for variations of 10% or more in range and endurance. Keep in mind winds aloft will increase or decrease range and endurance accordingly. Therefore, it is important to utilize all available information to estimate the fuel required for the particular flight.

GENERAL SPECIFICATIONS

SPEED: Maximum at Sea Level	375 KIAS
SPEED: Maximum Cruising at 28,000 feet *(RECOMMENDED MAX ALTITUDE OF 25,000')*	446 KTAS
RATE OF CLIMB AT SEA LEVEL (4800 LB GROSS WEIGHT)	10,000 FPM
SERVICE CEILING (RVSM LIMITED)	28,000 FT
TAKEOFF PERFORMANCE: Ground roll	1200 FT
TAKEOFF PERFORMANCE: Total Distance Over 50-ft Obstacle	1600 FT
LANDING PERFORMANCE: Ground roll	2800 FT
LANDING PERFORMANCE: Total Distance Over 50-ft Obstacle	3500 FT
STALL SPEED—CLEAN (KIAS)	88 KNOTS
STALL SPEED—LANDING CONFIGURATION (KIAS)	77 KNOTS
MAXIMUM WEIGHT: Takeoff or Landing	5500 LBS
EMPTY WEIGHT	_____LBS
USEFUL LOAD	_____LBS
OIL CAPACITY	4 QUARTS

NOTE: ALL PERFORMANCE NUMBERS ARE BASED IN ISO STANDARD TEMPERATURES (59°F).

CRUISE

The cruising altitude should be selected based on trip length, winds aloft and the aircraft's performance. Power setting for cruise must be based on several considerations which include the cruise performance characteristics presented in Figure 5-1 and the relationship between power and range. Considerable fuel savings and longer range result when lower power settings and higher cruise altitudes are used.

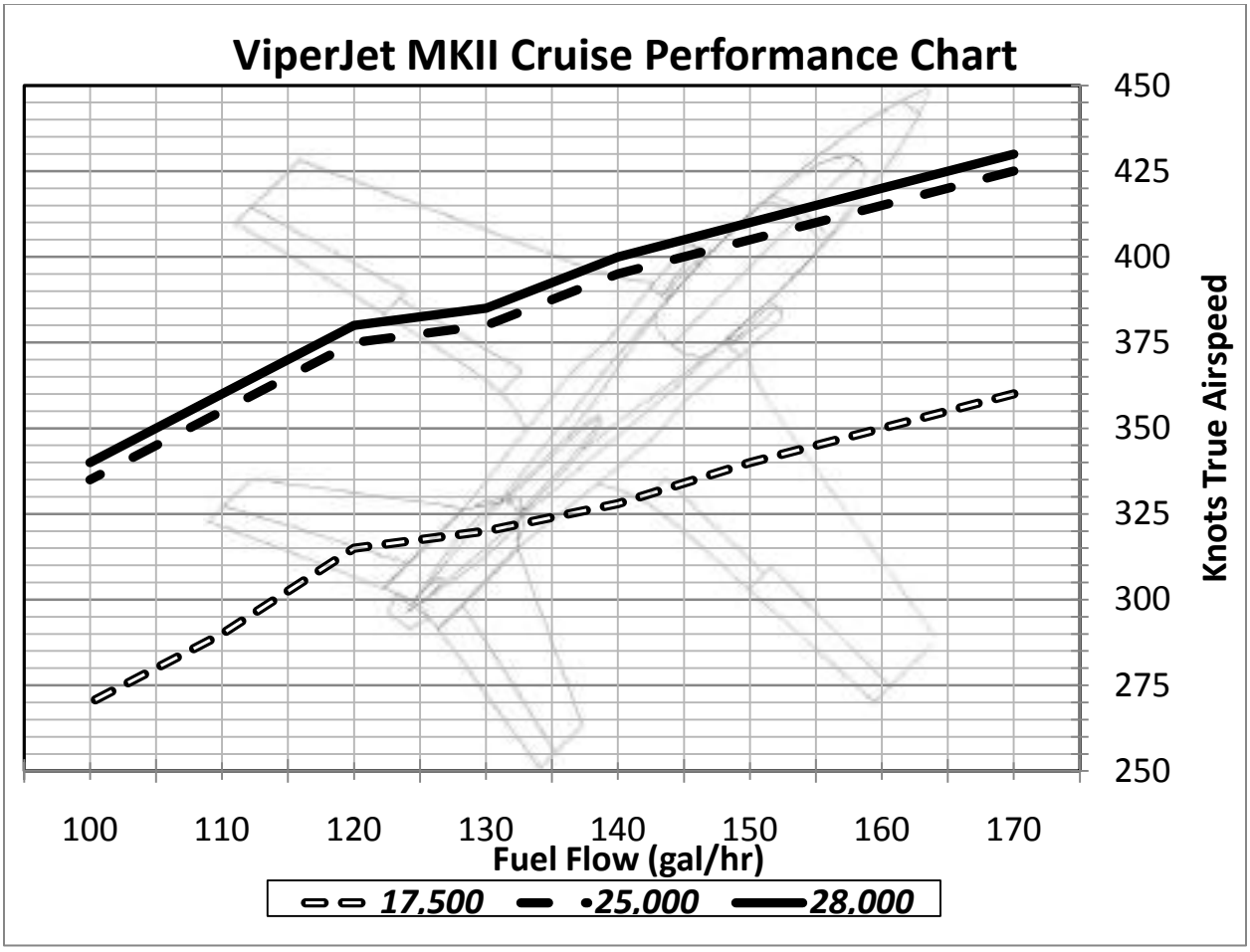

Figure 5-1. Cruise Performance

STALL SPEEDS

STALL SPEED CLEAN (4600 LBS.) ..... 88 KIAS
STALL SPEED LANDING CONFIGURATION (4600 LBS.) 77KIAS

WEIGHT LBS	G LOADING				
	1G	2G	3G	4G	5G
4600	88 KIAS	120 KIAS	154 KIAS	178 KIAS	210 KIAS
Aircraft is configured with landing gear and flaps up.					

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SECTION 6 – WEIGHT AND BALANCE

INTRODUCTION

Section 6 describes recommended for establishing the basic empty weight and moment of the aircraft. Sample forms are provided for reference along with procedures for calculating the weight and moment for various operations.

Please note specific information regarding the weight, arm, moment and installed equipment list for your aircraft can only be found in the appropriate weight and balance records carried in the aircraft.

It is the responsibility of the pilot to ensure that the aircraft is loaded properly.

AIRPLANE WEIGHING PROCEDURES

1. Preparation:
    a. Inflate tires to recommended operating pressures.
    b. Remove the fuel tank sumps' quick-drain fittings to drain all fuel.
    c. Move sliding seats to the most forward position.
    d. Raise flaps to the fully retracted position.
    e. Place all control surfaces in neutral position.
2. Leveling:
    a. Place scales under each wheel (minimum scale capacity, 500 pounds nose, 1500 pounds each main).
    b. Deflate the nose tire and/or lower or raise the nose strut to properly center the bubble in the level (see Figure 6-1)
3. Weighing:
    a. With the aircraft level and brakes released, record the weight shown on each scale. Deduct the tare, if any, from each reading.
4. Measuring:
    a. Obtain measurement **A** by measuring horizontally (along the aircraft center line) from a line stretched between the main wheel center to a plumb bob dropped from the nose of the aircraft.

b. Obtain measurement **B** by measuring horizontally and parallel to the aircraft center line, from center of nose wheel axle left side, to a plumb bob dropped from the line between the main wheel centers. Repeat on right side and average the measurements.

5. Using weights from item 3 above and measurement from item 4 above, the aircraft weight and CG can be determined.
6. Basic Empty Weight may be determined by completing Figure 6-2.

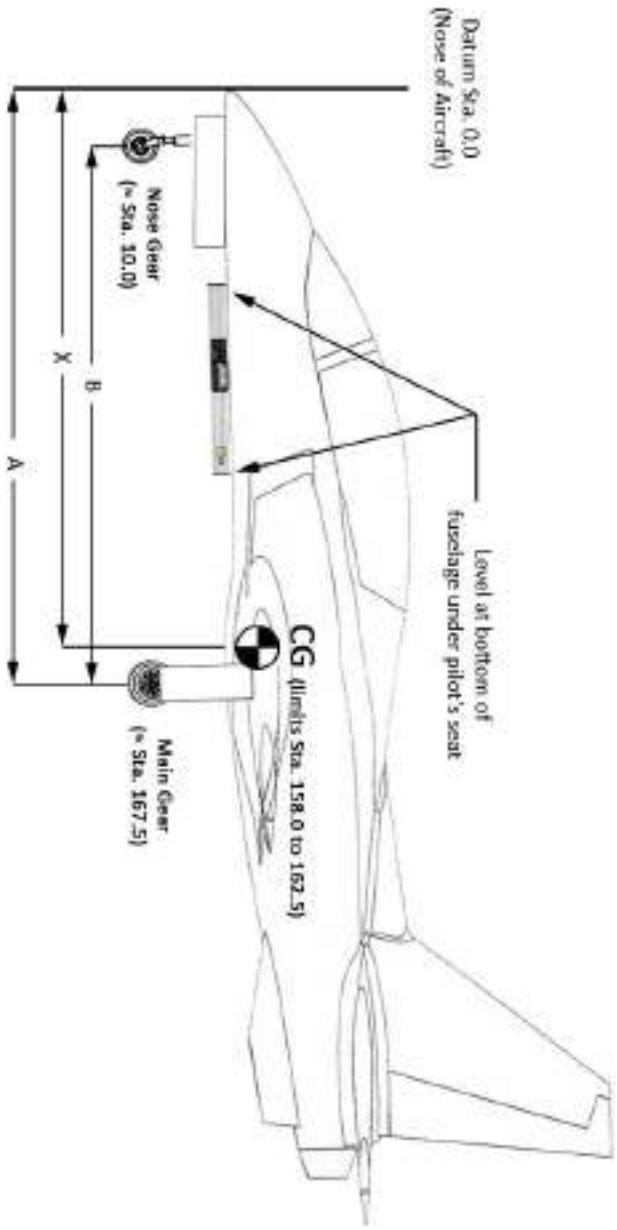

Figure 6-1. Aircraft Leveling & CG

Scale Position	Scale Reading	Tare	Symbol	Net Weight
Left Wheel			**L**	
Right Wheel			**R**	
Nose Wheel			**N**	
Sum of Net Weights (As Weighed)			**W**	

$X = CG\ ARM = (A) - \frac{(N) \times (B)}{W}$; ⇨ $X = (\quad) - \frac{(\quad) \times (\quad)}{(\quad)} = (\quad)$ IN.

ITEM	Weight (Lbs.) X CG Arm (In.) =		Moment/1000 (Lbs.-In.)
Aircraft Weight (From Item 5 Page 6-2)			
Equipment Changes			
Aircraft Basic Empty Weight			

Figure 6-2. Sample Aircraft Weighing

WEIGHT AND BALANCE

The following information will enable you to operate your ViperJet Mk II within the prescribed weight and center of gravity limitations. To figure weight and balance, use the Sample Loading Problem and Center of Gravity Moment Envelope Table as follows:

CG Range: 15% to 25% MAC (Mean Aerodynamic Chord), or Fuselage Station (as measured aft of the Datum) 158.0 inches to 162.5 inches.

Maximum Gross Weight: 5500 Lbs.

Pilot Station: 82.0 In.

Co-Pilot Station: 129.5 In.

Baggage Station: 142.0 In.

Center Fuel Tank: 160.0 In.

Wing Fuel Tank: 164.5 In.

SAMPLE LOADING PROBLEM	VIPERJET MK II PROTOTYPE		YOUR AIRPLANE	
	Weight (lbs.)	Moment (lb. - ins.)	Weight (lbs.)	Moment (lb. - ins.)
1 Basic Empty Weight (Use the data pertaining to your airplane as it is presently equipped. Includes unusable fuel and full oil).....	2877	479146.2		
2 Usable Fuel (at 6.8 Lbs./Gal.)				
Center Tanks (Station 160.0 at 107.5 Gal. Maximum)	731	116960.0		
Wing Tanks (Station 164.6 at 161 Gal. Maximum)	1095	180204.1		
3 Pilot (Station 82.0)	170	13940.0		
4 Co-Pilot (Station 129.5)	170	22015.0		
5 Baggage (Station 142.0 at 50 Lbs. Maximum)	50	7100.0		
6 TAKEOFF WEIGHT AND MOMENT	5093	819365.3		
7 CG Location (Divide Total Moment by Total Weight	160.9			
8 Compare to Fuselage Station CG limits (158.0 to 162.5 In.), since this point falls within the range, the loading is acceptable.				

Figure 6-3. Sample Loading Problem

Viper Aircraft

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THE INFORMATION CONTAINED IN THIS PILOT'S OPERATING HANDBOOK IS BELIEVED TO BE ACCURATE AT THE TIME OF PRINTING, HOWEVER, SPECIFICATIONS CAN AND WILL CHANGE OVER TIME. PLEASE CONTACT VIPER AIRCRAFT FOR ANY REVISIONS TO THIS PILOT'S OPERATING HANDBOOK.