PREPARED	PIPER AIRCRAFT CORP.	
CHECKED	DEVELOPMENT CENTER, VERO BEACH, FLA.	
APPROVED		PAGE _____

AIRPLANE FLIGHT MANUAL

MODEL PA-28-140

FAA APPROVED: H E Waterman

H. E. Waterman
Supervisor, EMDO 42
FAA Southern Region
Atlanta, Georgia

DATE: February 14, 1964

Log of Revisions

REVISION NO.	PAGE	DESCRIPTION	APPROVED	DATE
1	1	Deleted Propeller - And Static RPM - Information	for J. A. Pagan H.E. Waterman Supervisor SO-EMDO-42	3/24/64
2	1	Added Static R.P.M. Information	for J. A. Pagan H. E. Waterman Supervisor SO-EMDO-42	5/25/64
3	3	Placards Section: Added Placard No. 4	H. E. Waterman H. E. Waterman Supervisor SO-EMDO-42	7/8/64
4	2	Maneuvers Section: Deleted Stalls in Utility Category	H. C. Faller H. C. Faller Supervisor SO-EMDO-43	8/31/64
5c	2,3	Increased Gross Weight to 2150 and Baggage Capacity to 200 Lbs.	H. C. Faller H. C. Faller Supervisor SO-EMDO-43	5/21/65
6	1	Limitations Section: Revised Oil Temperature and Fuel Pressure Range	Robert F. Lesher for H. C. Faller Supervisor, SO-EMDO-43	6/23/65
7	1	Static RPM Corrected	Robert F. Lesher for H. C. Faller Supervisor SO-EMDO-43	8/12/65
8	1	Revised Static RPM, Oil Temperature and Fuel Pressure Limitations	H. T. Herold for H. C. Faller Supervisor SO-EMDO-43	12/13/65
	2	Added Note to Maximum Weight Callout		
	3	Revised Placard No. 4		

FAA APPROVED 2/14/64

Log of Revisions

REVISION NO.	PAGE	DESCRIPTION	APPROVED	DATE
9	3	Procedure Section. Added Item No. 4 "Electric Pitch Trim Procedures"		
	4	Added Page 4	H. C. Faller Supervisor SO-EMDO-43	3/16/66
10	4	Add Procedures Section And Item 5		
	3	Added Placard No. 5	H. C. Faller Supervisor SO-EMDO-43	5/20/66

FAA APPROVED 2/14/64

Piper Model PA 28-140
Normal and Utility Categories

FAA Identification No. N8399R

Serial No. 28-22276

AIRPLANE FLIGHT MANUAL

1. Limitations Section. The following limitations must be observed in the operation on this airplane:

Engine	Lycoming 0-320-E2A
Engine Limits	For all operations 2700 rpm, 150 Hp.
Fuel	80/87 Octane Aviation Fuel
Propeller	Sensenich M74DM, Maximum diameter 74 inches. Minimum diameter 72 1/2 inches. Static RPM at Maximum permissible throttle setting: 2150 - 2425 for Maximum allowable weight of 1950 lbs. 2275 - 2425 for Maximum allowable weight of 2150 lbs. No additional tolerance permitted.
Power Instruments	Oil temperature: GREEN arc (normal operating range) 120° F. to 245° F.; YELLOW arc (caution range) 60° F. to 120° F.; RED line (maximum) 245° F. (S/N 20,000 to 20,550). Oil temperature: GREEN arc (normal operating range) 75° F. to 245° F.; RED line (maximum) 245° F. (S/N 20,551 and Up). Oil pressure: GREEN arc (normal operating range) 60 psi to 85 psi; YELLOW arc (caution range) 25 psi to 60 psi; RED line (minimum) 60 psi; RED line (maximum) 85 psi. Fuel Pressure: GREEN arc (normal operating range) .5 psi to 5 psi; RED line (minimum) .5 psi; RED line (maximum) 5 psi (S/N 20,000 to 20,550). Fuel Pressure: GREEN arc (normal operating range) .5 psi to 8 psi; RED line (minimum) .5 psi; RED line (maximum) 8 psi (S/N 20,551 and Up). Tachometer: GREEN arc (normal operating range) 500 to 2700 rpm; RED line (maximum continuous power) 2700 rpm.

Airspeed Limits (Calibrated Airspeed) (Miles per Hour)	Never Exceed	171
	Maximum structural cruise	140
	Maneuvering	129
	Flaps extended	115
	Maximum positive load factor	3.8 Normal Category
	Maximum positive load factor	4.4 Utility Category
	Maximum negative load factor	No inverted maneuvers approved.

Maximum Weight — 2150 Lbs. (See Limitations Section for Static RPM limits.)

Baggage Capacity — 200 Lbs.

C. G. Range — The datum used is 78.4 inches ahead of the wing leading edge at the intersection of the straight and tapered section.

1. Normal Category

Weight (Pounds)	Forward Limit (In. aft of datum)	Rearward Limit (In. aft of datum)
2150	90.1	94.0
1950	86.5	94.0
1850	85.1	94.0
1650	84.0	94.0

2. Utility Category

Weight (Pounds)	Forward Limit (In. aft of datum)	Rearward Limit (In. aft of datum)
1950	86.5	86.5
1850	85.1	86.5
1650	84.0	86.5

Straight line variation between given points.

Note: It is the responsibility of the airplane owner and/or the pilot to insure that the airplane is properly loaded. See weight and balance section for loading information.

Maneuvers

1. Normal Category - All acrobatic maneuvers including spins prohibited.
2. Utility Category - Approved maneuvers for Utility Category only.

	Entry Speed
Spins (Flaps Up)	Stall
Steep Turns	129
Lazy Eights	129
Chandelles	129

Placards

1. On the instrument panel in full view of the pilot: "THIS AIRPLANE MUST BE OPERATED AS A NORMAL OR UTILITY CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS AND MANUALS.

   ALL MARKINGS AND PLACARDS ON THIS AIRPLANE APPLY TO ITS OPERATION AS A UTILITY CATEGORY AIRPLANE. FOR NORMAL AND UTILITY CATEGORY OPERATIONS, REFER TO THE AIRPLANE FLIGHT MANUAL.

Placards (Cont'd)

FOR SPIN RECOVERY, USE FULL RUDDER AGAINST SPIN, FOLLOWED IMMEDIATELY BY FORWARD WHEEL.

NO ACROBATIC MANEUVERS (INCLUDING SPINS) ARE APPROVED FOR NORMAL CATEGORY OPERATIONS."

2. Adjacent to upper door latch: "ENGAGE LATCH BEFORE FLIGHT."

3. On aft side of baggage compartment: "UTILITY CATEGORY OPERATION - NO BAGGAGE OR AFT PASSENGERS ALLOWED NORMAL CATEGORY OPERATION - SEE AIRPLANE FLIGHT MANUAL WEIGHT AND BALANCE SECTION FOR BAGGAGE AND AFT PASSENGER LIMITATIONS."

4. On the instrument panel in full view of the pilot when the oil cooler winterization kit is installed: "OIL COOLER WINTERIZATION PLATE TO BE REMOVED WHEN AMBIENT TEMPERATURE EXCEEDS 50° F.

5. On the instrument panel in full view of the pilot when the autoflite is installed:
"FOR HEADING CHANGES: PRESS DISENGAGE SWITCH ON CONTROL WHEEL. CHANGE HEADING. RELEASE DISENGAGE SWITCH."

Airspeed Instrument Markings	RED radial line	Never Exceed	171 mph (148 knots)
	YELLOW arc	Caution Range (Smooth Air Only)	140 to 171 mph (121 to 148 knots)
	GREEN arc	Normal Operating Range	64 to 140 mph (56 to 121 knots)
	WHITE arc	Flaps Down Range	55 to 115 mph (48 to 100 knots)

2. Procedures Section

1. The stall warning system is inoperative with the master switch off.
2. The electric fuel pump must be on for both takeoff and landing.
3. Except as noted above, all operating procedures for this airplane are normal.
4. (Electric Pitch Trim Installation Only)
   The following emergency information applies in case of electric pitch trim malfunction:
   a. In case of malfunction, disengage electric pitch trim by pulling out circuit breaker on instrument panel.
   b. In emergency, electric pitch trim may be overpowered using manual pitch trim.
   c. In cruise configuration, malfunction results in 10° pitch change and 30 Ft. altitude variation.
5. (Autoflite Installation Only)
   The following emergency information applies in case of autoflite malfunction:
   a. In case of malfunction PRESS disconnect switch on pilot's control wheel.
   b. Rocker switch on instrument panel - OFF.
   c. Unit may be overpowered manually.
   d. In cruise configuration malfunction, 3 seconds delay results in 60° bank, and 100' altitude loss.
   e. In approach configuration malfunction, 1 second delay results in 10° bank and 0' altitude loss.

3. Performance Section

All performance is given for a weight of 2150 pounds.

Loss of altitude during stalls can be as great as 200 feet, depending on configuration and power.

Stalling speeds, in MPH, power off, versus angle of bank (Calibrated Airspeed):

Angle of Bank	0	20	40	50	60
Flaps Up	64	66	73	80	91
Flaps Down	55	--	--	--	--

PREPARED	PIPER AIRCRAFT CORP.	Weight and Balance Data
CHECKED	DEVELOPMENT CENTER, VERO BEACH, FLA.	Model PA 28-140
APPROVED		PAGE 1 Section 1

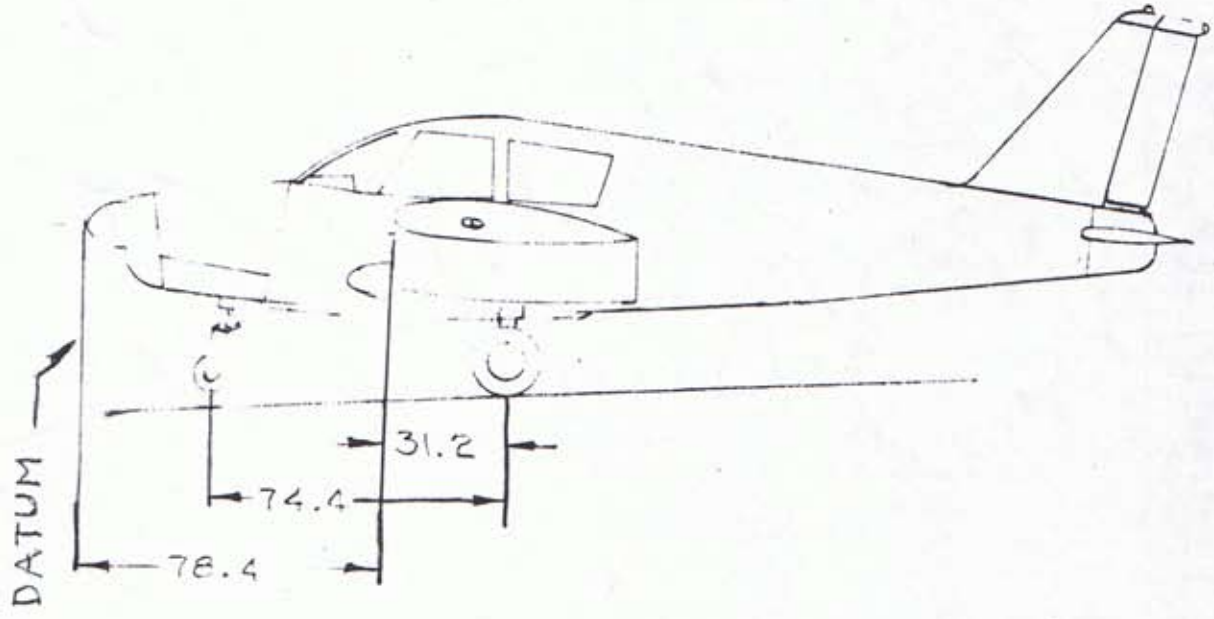
COMPUTED
~~XXXXXXXX~~WEIGHT AND BALANCE

MODEL PA 28-140

SERIAL NUMBER 28- 22276

CERTIFICATE NUMBER N8399R

DATE 11-7-66



Richard B. Somers
Inspection Representative

WEIGHT AND BALANCE
STANDARD EQUIPMENT LIST
MODEL PA 28-140

Check if Installed	ITEM	WEIGHT (LBS.)	ARM AFT DATUM	MOMENT
	Engine Accessories			
X	Engine - Lycoming Model 0-320-E2A	~~272.0~~ 262.4	26.1	~~7099~~ 6849
X	Fuel Pump, Electric Auxiliary, Bendix Model 478360	1.8	41.8	75
X	Fuel Pump, Engine Driven, Lycoming Dwg. No. 73297, 74082, 75148 or 75246	1.6	41.3	66
X	Oil Cooler, Piper Dwg. Harrison #C-8526250	2.6	18.1	47
X	Filter, Fram Model CA-161PL or AC No. A48C or Purolator AFP-2	.9	20.1	18
	Starter - Lycoming #69952 (Delco Remy #1109657)	*16.5	19.5	322
X	Starter - Lycoming #76210 (Prestolite MZ 4204)	*16.5	19.5	322
X	Alternator, 35 Amp., Chrysler No. 2098615	12.5	19.0	238
	Propeller and Propeller Accessories			
X	Propeller, Sensenich M74DM58	30.0	10.1	303
X	Spinner and Attachment Plates	2.0	8.0	16
	Landing Gear and Brakes			
X	Two Main Wheel Assemblies 6.00-6 (a) Cleveland Aircraft Products (2) Wheel Assembly No. 40-86 (2) Brake Assembly No. 30-55 (b) Two Main 4-Ply Rating Tires 6.00-6 with Regular Tubes	32.0	109.6	3507
X	One Nose Wheel 6.00-6 (a) Cleveland Aircraft Products Wheel Assembly No. 38501 (less brake drum) (b) One Nose Wheel 4-Ply Rating Tire 6.00-6 with Regular Tubes	14.0	34.3	480

*Included in Engine Weight

Check if Installed	ITEM	WEIGHT (LBS.)	ARM AFT DATUM	MOMENT
	Electrical Equipment			
X	Stall Warning Device, Safe Flight Inst. Corp. No. C52207-4	.2	80.2	16
X	Voltage Regulator, Chrysler No. 2098613	.5	57.8	29
X	Battery 12V., 25 A.H., Rebat Model S-25	21.5	114.9	2470
	Instruments			
X	Compass - Airpath No. C2350-L41	.9	66.6	60
	Airspeed Indicator, PAC 63205	.6	67.7	41
X	Tachometer, AC 1548302	.8	67.7	54
	Tachometer, Stewart Warner PAC 62177	.7	67.7	47
	Altimeter, Aero Marine No. 522	1.4	66.8	94
X	Engine Cluster - Piper Dwg. 63922	.8	68.8	55
	Engine Cluster - Piper Dwg. 63922-2	.8	68.8	55
	Miscellaneous			
X	Fwd. Seat Belts	1.0	86.9	87
X	Flight Manual	-----		-----

TOTAL

AIRCRAFT AVERAGE EMPTY WEIGHT COMPUTED AS CALCULATED (INCLUDES ITEMS CHECK ON STANDARD EQUIPMENT LIST) (This weight includes the unusable fuel and undrainable oil)	1217.0	84.8	103173

OPTIONAL EQUIPMENT LIST
MODEL PA 28-140

Check if Installed	ITEM	WEIGHT (LBS.)	ARM AFT DATUM	MOMENT
	Engine Accessories			
X	Vacuum Pump, Airborne Mechanisms Model No. 10-113A1 or 113A5 or 200 cc	3.6	36.3	131
	Starter - Lycoming 74092 (Delco Remy 1109511)	18.0	19.5	351
	Starter - Lycoming 76211 (Prestolite MZ 4206)	18.0	19.5	351
X	Oil Filter - Lycoming #74911 (AC 81-A #6437032)	2.0	36.3	73
	Electrical Equipment			
	Rotating Beacon, Grimes Model D7080	2.0	263.4	527
X	Landing Light, G. E. Model 4509	.5	18.1	9
X	Navigation Lights (2) Grimes Model A1285 Red and Green	.4	106.6	43
X	Navigation Light (Rear) (1) Grimes Model 2064 (White)	.1	280.9	28
	Battery 12V., 35 A.H. Reading R-35	27.0	114.9	3102
	Roll Servo Mitchell 1X221E-CH-1	2.8	60.6	170
	Console Amplifier and Cables Mitchell 1X214E	1.8	66.6	120
X	Cabin Light and Speaker	1.1	99.4	~~105~~ 109
X	Rotating Beacon, Whelan Model WRM L-12	1.6	263.4	421
X	Auxiliary Power Receptacle 65529	2.6	126.0	328
X	External Power Cable 62355-7	4.6	129.0	593
	Piper AutoControl - Mitchell #AKO85	4.5	60.0	270
	Piper Pitch Trim	3.0	158.0	474

Check if Installed	ITEM	WEIGHT (LBS.)	ARM AFT DATUM	MOMENT
	Instruments			
X	Turn and Bank, ~~Pioneer A-5~~ Bendix	1.5	66.4	100
	Suction Gauge, AN5771-11	.4	68.1	27
	Suction Gauge, U. S. Gauge AW1821AFO3	.4	68.1	27
X	Suction Gauge, Airborne Mech. ~~163-4~~ 1G3-4	.4	68.1	27
X	Altimeter, AN5760-2 (C-12 or C-13)	Same as Standard Equipment Weight		
	Rate of Climb, Pioneer C-7	1.4	66.8	94
X	Rate of Climb, ~~AN5825~~ Karnish AC-135-3	1.4	66.8	94
X	Directional Gyro, AN5735-1A	2.5	66.6	167
X	Artificial Horizon, AN5736-1A	2.7	66.1	179
X	Air Temperature Gauge, Rochester Manufacturing Co., No. 1592-C2	.2	82.6	17
X	Clock, 8 Day - MIL-C-7939	.4	68.3	27
	Directional Gyro, Mitchell #52B15E (Auto Pilot)	4.3	66.6	286
	Artificial Horizon, Mitchell #52B9 (Auto Pilot)	4.5	66.1	298
	Piper Course Selector PAC 31058	3.0	66.6	200
X	Tru-Speed Indicator, PAC 62143	Same as Standard Equipment Weight		

Check if Installed	ITEM	WEIGHT (LBS.)	ARM AFT DATUM (INCHES)	MOMENT (POUND-INCHES)
	Instruments			
_____	AutoControl II			
_____	Roll Servo, Mitchell #1X221E-CH-1	2.8	60.6	170
_____	Console, Mitchell #1X224E-3	1.3	66.6	87
_____	Directional Gyro, Mitchell #52B15E	4.3	66.6	286
	or			
_____	Directional Gyro, Course Selector PAC Dwg. 31058-2	3.0	66.6	200
_____	Artificial Horizon, Mitchell #52B9	4.5	66.1	298

Check if Installed	ITEM	WEIGHT (LBS.)	ARM AFT DATUM	MOMENT
	Radio			
	Piper Radio Compass PRC-3	4.5	64.4	290
	Piper VHF Transceiver PTR-1	5.0	64.8	324
	Piper Omni Convertor O-1	2.5	65.3	163
X	King KX150A	9.1	62.8	572
X	Omni Receiving Antenna, Narco VTP-37	1.2	203.0	243
X	VHF Transmitting Antenna, Narco VTP-17	.7	131.0	92
X	VHF TRANSMITTING ANTENNA, NARCO VTP-17	.7	155.0	109
	Low Frequency Antenna	.5	167.0	84
	Loop Antenna (PRC-3)	.3	54.5	16
X	Narco Mark 12A VHF Transceiver	9.0	59.4	535
	Narco VOA-6 Omni Convertor	1.8	65.3	118
	Narco VOA-5 Omni Convertor	2.9	65.3	189
X	Narco VOA-4 Omni Convertor	2.9	65.3	189
	Narco Omnigator VTR-2A Installation (Less Ant.)	14.0	58.0	812
	Marker Antenna	1.2	64.8	78
X	Narco Mark III	7.5	63.5	476
	Piper Radio Compass PRC-4	4.9	64.4	316
	Loop Antenna (PRC-4)	.4	112.6	45
	Piper Omni Convertor OL-1	2.8	65.3	183

PREPARED	PIPER AIRCRAFT CORP.	Weight and Balance Data
CHECKED	DEVELOPMENT CENTER, VERO BEACH, FLA.	Model PA 28-140
APPROVED		PAGE 7 Section 1

Check if Installed	ITEM	WEIGHT (LBS.)	ARM AFT DATUM	MOMENT
	Radio (Cont'd.)			
	Narco ADF-31 (Panel Unit)	4.8	64.4	309
	Loop Antenna (ADF-31)	2.5	114.9	287
	Loop Cable (ADF-31)	2.3	89.0	205
	Miscellaneous			
	Fire Extinguisher - Stop Fire #A-20	7.5	93.0	698
	Nose Wheel Fairing	3.3	34.3	113
	Main Wheel Fairing	7.4	109.6	811
	Toe Brakes (Dual)	10.5	54.6	574
X	Toe Brakes (Single)	5.0	54.6	273
X	Assist Step	1.8	156.0	281
X	Jump Seat (2)	16.5	118.0	1947
	Inertia Safety Belt PAC 65766	2.5	111.6	279
X	AFT SEAT BELTS	.8	123.0	98
	TOTAL	68.9 ~~59.1~~		~~5756~~ 6437

AIRCRAFT EMPTY WEIGHT	1217.0	103173
OPTIONAL EQUIPMENT	~~59~~ 68.9	~~5756~~ 6437
LICENSED EMPTY WEIGHT TOTAL	~~1276.0~~ 1285.9	~~108929~~ 109610
EMPTY C. G. AFT DATUM IS ~~85.4~~ 85.3		

Heart of Maine Aviation, Inc.

THE NEW
SANDERSON
GROUND SCHOOL
STUDENT INSTRUCTION

Waterville Robert LaFleur Municipal Airport, Box 476, Waterville, Maine 04901
Telephone 872-2013
"SAFETY IN AVIATION"

AIR TAXI
SIGHT SEEING
NEW & USED AIRCRAFT
AERIAL PHOTOS
MAJOR REPAIRS
AMBULANCE SERVICE

Weight and Balance change information for Piper PA-28-140, N20PG as per work accomplished on FAA 337 dated 7 November 1974.

ITEM	WEIGHT	ARM	MOMENT
Old aircraft empty weight	1285.9	85.3	109610.0
Removed NARCO MK III NAV/COM	-7.5	+63.5	-476.0
Added NARCO MK 12 NAV/COM	5.7	63.5	362.0
Added NARCO ADF 31A ADF	5.0	64.4	322.0
Added NARCO T12MP12 pwr supply	3.9	54.5	212.6
Added IFD Century Transponder	3.5	65.5	229.3
Added AIRMARC 288 Audio Panel	1.0	66.6	66.6
Added ADC AD-8 mkr antenna	.7	112.5	78.8
Added Narco ADF11loop antenna	2.5	114.9	287.0
	1304.3 *	85.86 *	110692.3

New aircraft empty weight 1304.3
New aircraft empty weight C.G. 85.86
Until superceded these figures shall be used for weight and balance computations.

END

BANGOR AVIONICS

bangor international airport
bangor, maine 04401

28 Mar 78

Weight and Balance change for Piper PA-28-140 N20PG

Item	Weight	Arm	Moment
Remove IFD Transponder	-3.5	65.5	-229.3
Install Genave AL200A	5.3	63.5	336.6

PIPER AIRCRAFT CORPORATION
DEVELOPMENT CENTER, VERO BEACH, FLA
WEIGHT AND BALANCE EQUIPMENT LIST
MODEL PA 28-140
(March 16, 2000)

STANDARD EQUIPMENT LIST				
CATEGORY	ITEM	WEIGHT (LBS)	ARM AFT DATUM	MOMENT
Engine Accessories	Engine - Lycoming Model 0-320-E2A	262.4	26.1	6849
	Fuel Pump, Electric Auxiliary, Bendix Model 478360	1.8	41.8	75
	Fuel Pump, Engine Driven, Lycoming DWG#73279,74082,75148 or 75246	1.6	41.3	66
	Oil Cooler, Piper Dwg. Harrison #C-8526250	2.6	18.1	47
	Filter, Fram Model CA-161PL or AC No. A48C or Purolator AFP-2	0.9	20.1	18
	Starter - Lycoming #76210 (Prestolite MZ 4204) [Incl. in Engine Weight]			
	Alternator, 35 Amp., Chrysler No. 2098615	12.5	19.0	238
Propeller	Propeller, Sensenich M74DM58	30.0	10.1	303
	Spinner and Attachment Plates	2.0	8.0	16
Landing Gear/Brakes	Two Main Wheel Assemblies 6.00-6	32.0	109.6	3507
	(a) Cleveland Aircraft Products			
	(2) Wheel Assembly No. 40-86 (2) Brake Assembly No. 30-55			
	(b) Two Main 4-ply Rating Tires 6.00-6 with Regular Tubes			
	One Nose Wheel 6.00-6	14.0	34.3	480
	(a) Cleveland Aircraft Products Wheel Assembly No. 38501 (less brake drum)			
	(b) One Nose Wheel 4-ply Rating Tire 6.00-6 with Regular Tubes			
Electrical	Stall Warning Device, Safe Flight Inst. Corp. No. C52207-4	0.2	80.2	16
	Voltage Regulator, Chrysler No. 2098613	0.5	57.8	29
	Battery 12V., 25 A.H., Rebat Model S-25	21.5	114.9	2470
Instruments	Compass - Airpath No. C2350-L41	0.9	66.6	60
	Tachometer, AC 1548302	0.8	67.7	54
	Engine Cluster - Piper Dwg. 63922	0.8	68.8	55

PIPER AIRCRAFT CORPORATION
DEVELOPMENT CENTER, VERO BEACH, FLA
WEIGHT AND BALANCE EQUIPMENT LIST
MODEL PA 28-140
(March 16, 2000)

Miscellaneous	Fwd. Seat Belts	1.0	86.9	87
	Flight Manual	---	---	---
	AVERAGE AIRCRAFT EMPTY WEIGHT	1217.0	84.8	103173
OPTIONAL EQUIPMENT LIST				
Engine Accessories	Vacuum Pump, Airborne Mechanisms Model No. 10-113A1 or 113A5 or 200 cc	3.6	36.3	131
	Oil Filter - Lycoming #74911 (AC 81-A #6437032)	2.0	36.3	73
Electrical Equipment	Landing Light, G.E. Model 4509	0.5	263.4	527
	Navigation Lights (2) Grimes Model A1285 (Red and Green)	0.4	106.6	43
	Navigation Light (Rear) (1) Grimes Model 2064 (White)	0.1	280.9	28
	Cabin Light and Speaker	1.1	99.4	109
	Rotating Beacon, Whelan Model WRM L-12	1.6	263.4	421
	Auxiliary Power Receptacle 65529	2.6	126.0	328
	External Power Cable 62355-7	4.6	129.0	593
Instruments	Turn and Bank	1.5	66.4	100
	Suction Gauge, Airborne Mech. 1G3-4	0.4	68.1	27
	Altimeter, AN5760-2 (C-12 or C-13)	1.4	66.8	94
	Rate of Climb, Karnish AC-135-3	1.4	66.8	94
	Directional Gyro, AN5735-1A	2.5	66.6	167
	Artificial Horizon, AN5736-1A	2.7	66.1	179
	Air Temperature Gauge, Rochester Manufacturing Co., No. 1592-C2	0.2	82.6	17
	Clock, 8 Day - MIL-C-7939	0.4	68.3	27
	Tru-Speed Indicator, PAC 62143	0.6	67.7	41
Radio / Audio	PS Engineering PMA6000MS	0.8	65.4	52
	King KX125 Nav/Com	3.9	63.7	248
	Garmin GNC 250XL GPS	3.2	65.9	211
	Omni Receiving Antenna, Narco VTP-37	1.2	203.0	243

PIPER AIRCRAFT CORPORATION
DEVELOPMENT CENTER, VERO BEACH, FLA
WEIGHT AND BALANCE EQUIPMENT LIST
MODEL PA 28-140
(March 16, 2000)

	VHF Transmitting Antenna, Narco VTP-17	0.7	131.0	92
	VHF Transmitting Antenna, Narco VTP-17	0.7	155.0	109
	Genave AL200A Transponder	5.3	63.5	336.6
	ADC AD-8 Mrk Antenna	0.7	112.5	78.8
	Narco ADF Loop Antenna	2.5	114.9	287
Miscellaneous	Toe Brakes (Single)	5.0	54.6	273
	Assist Step	1.8	156.0	281
	Jump Seat (2)	16.5	118.0	1947
	AFT Seat Belts	0.8	123.0	98
	[redacted]			
	INSTRUMENT PANEL = 68.8 IN AFT OF DATUM			

Miller Aviation, Inc.

7501 Pembroke Rd.
Pembroke Pines, FL. 33023
954.964.3684
FAX:964.6184

AIRCRAFT MODEL: **PA28-140**	**SERIAL NO:** **28-22276**	**REGISTRATION NO:** **N20PG**

REGISTERED OWNER: Greg Stiener	**DATE WEIGHED: 03/21/00**
ADDRESS: 3605 SW 22nd St Ft Lauderdale, FL 33312	**PLACE WEIGHED: Miller Aviation, Inc.**
TACH: 3075.7	**HOUR METER:**

WEIGHING POINT	SCALE READING	TARE	NET WEIGHT	ARM	MOMENT
LEFT MAIN WHEEL	571.0		571.0	109.6	62581.6
RIGHT MAIN WHEEL	563.0		563.0	109.6	61704.8
NOSE/TAIL WHEEL	455.0		455.0	34.3	15606.5
TOTAL AS WEIGHED			1589		139892.9
LESS USUABLE FUEL	(47.8 GALS) L&R wing tanks		-286.8	95.0	-27246
LESS USUABLE FUEL	(GAL)				
NEW AIRCRAFT BASIC WEIGHT			1302.2	86.50	112646.9

SUPERSEDED 10-24-03

NOTES

Aircraft weighed in level flight attitude inside hanger.
Aircraft weighed with full fuel, oil and two front & rear seats total installed

SCALES MODEL: **INTERCOMP AC II**	SERIAL NO: **014493**	DATE CALIBRATED: **09/28/99**

NEW AIRCRAFT BASIC WEIGHT: **1302.2 Lbs.**	NEW BASIC C.G: **86.50**
AIRCRAFT GROSS WEIGHT: **2150 Lbs.**	NEW USEFUL LOAD: **847.8 Lbs.**

This Form supercedes last W&B dated, 03/28/78
Aircraft Weighed by:

R.W. Miller
A&P4546908

Miller Aviation, Inc.

7501 Pembroke Rd.
Pembroke Pines, FL 33023
(954) (64-3684

Supplemental Equipment list
and
Weight & Balance Change

Model # Piper Pa28-140 Reg. #N20PG S/N 28-22276

Date: 10/23/03

Last date of Weight & Balance:

ITEM		CHECK ONE		WEIGHT	ARM	MOMENT
		IN	OUT			
1	Basic Weight			1302.2	86.50	112646.9
2	Artifical Horizonn		X	2.7	66.1	-178.47
3	Starter, Delco-Remy		X	17.0	19.5	-331.5
4	Attitude Gyro 5000B10	X		.89	66.1	+58.83
5	Starter Sky-Tec 122-12PM	X		7.8	19.5	+152.1
6						
7						
8						
9						
10						
11						
12						
13						
14						
TOTALS				1291.19	87.01	112347.86

New Empty Weight: 1291.19
New Empty Weight C.G.: 87.01
New Useful Load: 858.81
This form supersedes last W&B dated 03/21/00

R.W. Miller

R.W. Miller
A&P 4546908

Miller Aviation, Inc.

605 SW 77th Way Hanger #1
Pembroke Pines, FL. 33023
954.964.3684
FAX:964.6184

AIRCRAFT MODEL: **PA28-140**	**SERIAL NO:** **28-22276**	**REGISTRATION NO:** **N20PG**

REGISTERED OWNER: Greg Steiner	**DATE WEIGHED: 01/22/05**
ADDRESS: 3605 SW 22nd St Ft Lauderdale, FL 33312	**PLACE WEIGHED: Miller Aviation, Inc.**
TACH: 3229.73	**HOUR METER:**

WEIGHING POINT	SCALE READING	TARE	NET WEIGHT	ARM	MOMENT
LEFT MAIN WHEEL	463.0 Lbs	0	463.0 Lbs	109.6	50744.8
RIGHT MAIN WHEEL	478.0 Lbs	0	478.0 Lbs	109.6	52388.8
NOSE/TAIL WHEEL	408.0 Lbs	0	408.0 Lbs	34.3	13994.4
TOTAL AS WEIGHED			1349.0 Lbs	86.82	117128.0
LESS USUABLE FUEL					
NEW AIRCRAFT BASIC WEIGHT			1348.0 Lbs	86.82	117128.0

NOTES

Aircraft weighed in level flight attitude inside hanger.
Aircraft weighed with empty fuel tanks, full oil and two front & rear seats installed.

SCALES MODEL: **INTERCOMP AC II**	SERIAL NO: **014493**	DATE CALIBRATED: **09/28/99**
NEW AIRCRAFT BASIC WEIGHT: **1348.0 Lbs.**		NEW BASIC C.G: **86.82**
AIRCRAFT GROSS WEIGHT: **2150 Lbs.**		NEW USEFUL LOAD: **802.0 Lbs.**

This Form supercedes last W&B dated, 10/23/03
Aircraft Weighed by:

R.W. Miller
A&P4546908

IT IS THE RESPONSIBILITY OF THE PILOT AND AIRCRAFT OWNER TO INSURE THAT THE AIRPLANE IS LOADED PROPERLY. THE EMPTY WEIGHT C. G. IS FOR THE AIRPLANE AS DELIVERED FROM THE FACTORY. REFER TO FORM FAA-337 WHEN ALTERATIONS HAVE BEEN MADE.

C. G. RANGE AND WEIGHT INSTRUCTIONS

1. Add the weight of all items to be loaded to the licensed empty weight.
2. Use the loading graph to determine the moment of all items to be carried in the airplane.
3. Add the moment of all items to be loaded to the licensed empty weight moment.
4. Divide the total weight moment by the total weight to determine the C. G. location.
5. By using the figures of item 1 and item 4, locate a point on the C.G. range and weight graph. If the point falls within the C.G. envelope, the loading meets all weight and balance requirements.

Note: With Optional Jump Seats installed, aft passenger weight is restricted only by Airplane Weight and Balance limitations (See page 10 of this Section). Baggage capacity is limited to 200 pounds by tiedown requirements.

SAMPLE LOADING PROBLEM (NORMAL CATEGORY)

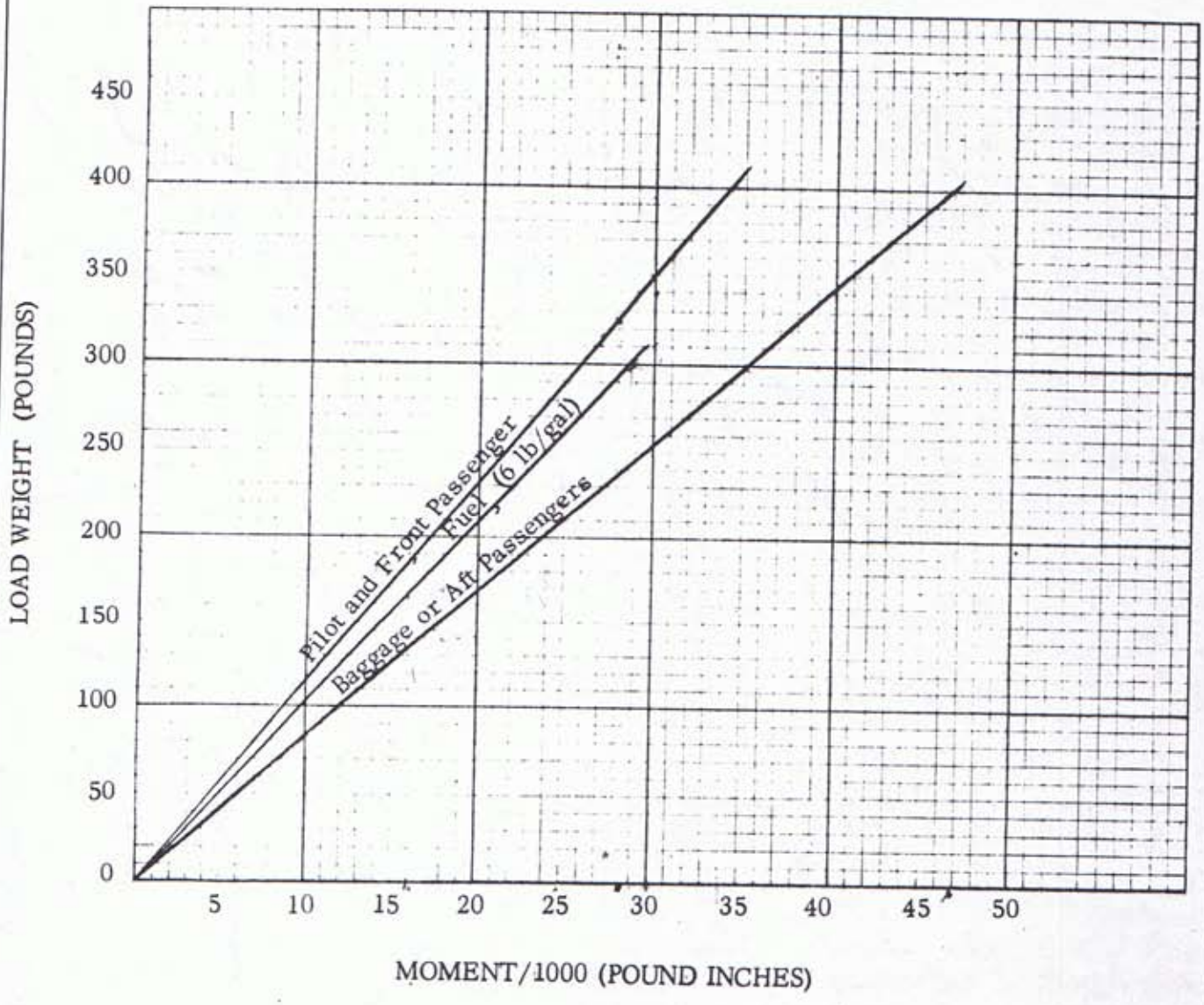
	WEIGHT (LBS.)	ARM AFT DATUM (INCHES)	MOMENT (POUND-INCHES)
LICENSED EMPTY WEIGHT	1348	86.8	117128
OIL (2 GAL.)	15	32.5	488
PILOT & PASSENGER	340	85.5	29070
PASSENGERS (AFT) *	340	117.0	39780
FUEL 28.2 gal.	169.2	95.0	16074
BAGGAGE *		117.0	
TOTAL LOADED AIRPLANE	2150		195022

$$\frac{195022}{2150} = 90.6$$ INCES (ARM AFT DATUM)

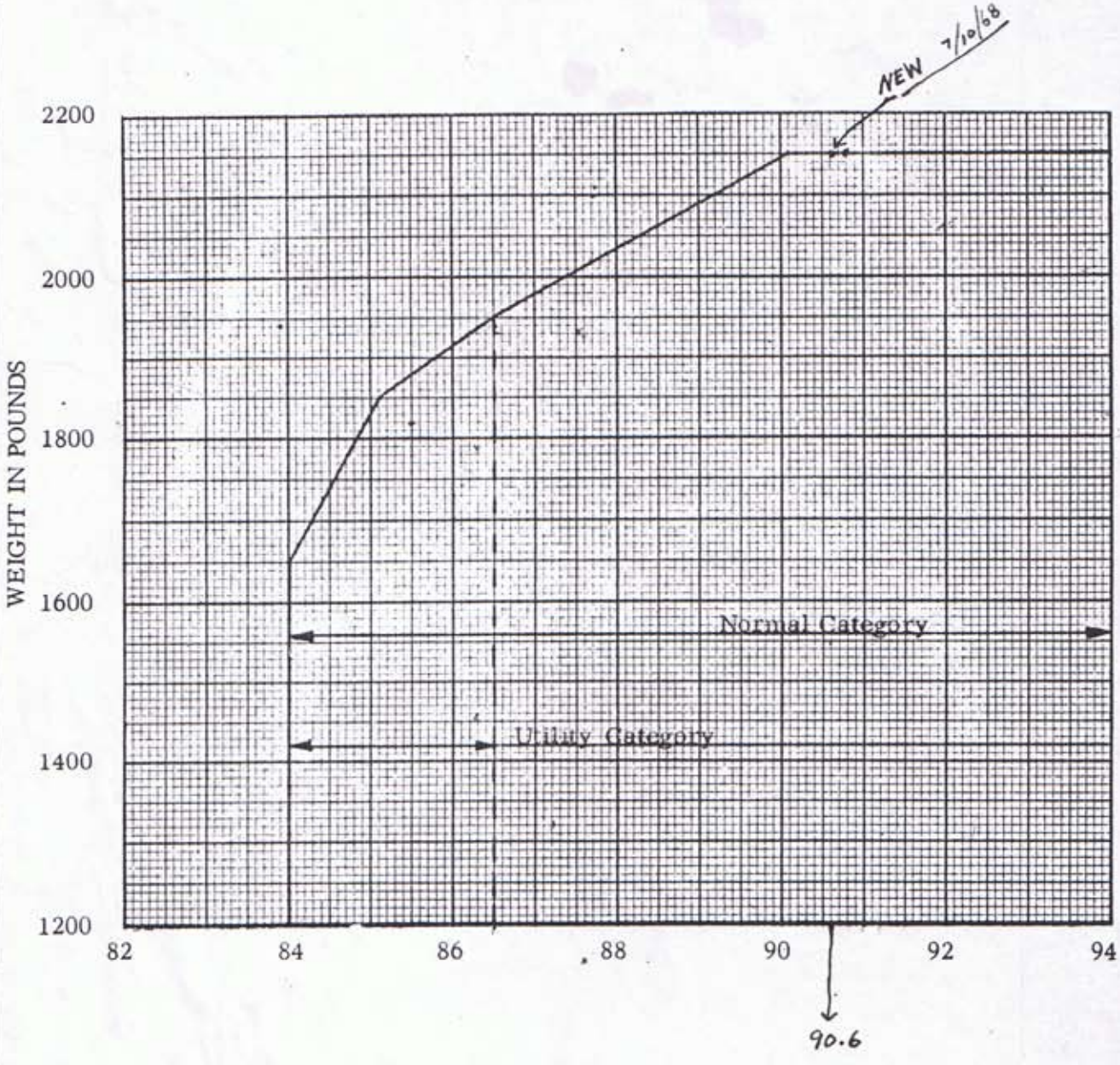
LOCATE THIS POINT (90.6) ON THE C. G. RANGE AND WEIGHT GRAPH. SINCE THIS POINT FALLS WITHIN THE C. G. ENVELOPE THE LOADING MEETS ALL WEIGHT AND BALANCE REQUIREMENTS.

* UTILITY CATEGORY OPERATION - NO BAGGAGE OR AFT PASSENGERS ALLOWED.

LOADING GRAPH



C. G. RANGE AND WEIGHT



INITIAL

Weather & Den. Alt.
Weight & Balance
Performance Req.
Flight Plan - File
Papers - A.R.O.W.
Control Lock
Flaps - Extend
Master - On
Pitot Heat - Test
Stall Indicator - Test
Lights - Int. / Ext.
Fuel Gauges - True
Master - Off

EXTERIOR

Fuel Quantity
Fuel Quality
Caps/Drains/Vents
Engine / Oil / Belt
Prop / Air Intake
Exhaust System
Surfaces & Controls
Pitot & Static Ports
Gear / Tires/Brakes
Antennas
Ties / Chocks
Final Walk Around

INTERIOR

Hobbs / Tach Time
Fuel - Proper Tank
Circuit Breakers
Alternate Static
ELT - Armed
Brakes - Pedal Test
Passenger Brief

START

Seat Track / Locked
Avionics - Off
Autopilot - Off
Carb Heat - Off
Becon - On
Prime
Mixture - Full Rich
Throttle - Slight
Brakes
Master - On
Fuel Pump - On
Prop - Clear
Mags - Start
Oil Pressure
Fuel Pump - Off
Fuel Pressure
Flaps - Up
Avionics - On
Nav Lts./Becon
Frequencies
ATIS / AWOS
Altimeter

TAXI

Seat Belt / Harness
Doors / Indows
Heat/Vent/Defrost
Transpond - STBY
Taxi Light - As Req.
Radio - Test
Brakes - Test
Attitude Indic.-Test
Turn Coord.-Test
H.I./Compass-Test

RUN-UP

Brakes - Set
Fuel - Proper Tank
Trim - TAkeoff
Flight Controls
Annunciator Lights
Instruments
Mixture - Set
Primer - In & Lock

2000 RPM
Mags (R&L) - Test
Carb Heat - Test
Vacuum
Amps / Volts
Fuel Pressure
Oil Pressure
Oil Temperature
Idle - Check Closed
Friction Lock

PRE-TAKEOFF

Flaps - 0°-25°
Mixture - Set
Fuel Pump - On
Carb Heat - As Req.
Pitot Heat - As Req.
H.I. To Compass
Doors / Windows
Strobes - As Req.
Landing Light - On
Transp - Alt & Sqwk
Time
Brakes - Release

Abort Plan Ready!

TAKEOFF

Full Throttle
2275 RPM (Min)
Oil Pressure
Rotate ***48** (55)
Vy - **75** (86)
Flaps - Up

CLIMB

75-87 (86-100)
Power
Mixture
Fuel Pump - Off
Instruments
Taxi/Land Light Off
Flight Plan - Open

CRUISE

Power
Mixture
Instruments
H.I. To Compass
Fuel - Proper Tank
(Fuel Pump On If Switch)

DESCENT

Mixture - Richen
Carb Heat - As Req.
Fuel - Proper Tank
Altimeter
Instruments
H.I. To Compass

PRE-LANDING

Landing Light - On
Seat Belt / Harness
Mixture - Best Pwr
Carb Heat - As Req.
Fuel Pump - On
Fuel - Proper Tank
Flaps - As Req.

LANDING

Flaps - As Req.
Speed ***59** (68)

G.U.M.P.F.S.

If GO AROUND:

Power - Full
Carb Heat - Off
Positive Climb
Flaps - Retract

CLEAR ACTIVE

Flaps - Up
Carb Heat - Off
Fuel Pump - Off
Strobes - Off
Landing Light - Off
Taxi Light - As Req.
Pitot Heat - Off
Trim - Takeoff
Transpond - STBY

SECURING

Avionics - Off
Mixture - Full Lean
Mags - Off
Master - Off
Lights - Off
Hobbs / Tach Time
Control Lock
Chocks
Tie Downs
Pitot Cover
Cabin Door

CLOSE FLIGHT PLAN

*** Adjust Speed As Needed For Conditions**

Vr	**• Rotation Speed -**	**48**	**(55)**
Vx	**• Best Angle of Climb -**	**66**	**(76)**
Vy	**• Best Rate of Climb -**	**75**	**(86)**
Vs0	**• Stall with flaps -**	**41**	**(47)**
Vs1	**• Stall w/o flaps -**	**50**	**(58)**
Va	**• Max Abrupt Ctrl (1650) -**	**100**	**(115)**
Va	**• Max Abrupt (Full Gross) -**	**114**	**(131)**
Vno	**• Max Structural Cruise -**	**124**	**(143)**
Vne	**• Never Exceed -**	**155**	**(178)**
Vfe	**• Flaps Extended -**	**101**	**(116)**
Best Glide (1650 lbs) -		**60**	**(69)**
Best Glide (Full Gross) -		**69**	**(79)**
X Wind	**• Max Demo'd -**	**17**	**(20)**