Bell 412EP

On a Mission.

Bell Helicopter®
A Textron Company

Table of Contents

Publisher's Notice....1

Bell 412EP....3

Specification Summary (U.S. Units)....4

Specification Summary (Metric Units)....5

BLR Strake and FastFin®....6

External Dimensions....8

Bell 412EP Seating and Interior Trim Choices....10

Basic Aircraft Configuration....12

Standard Configuration....14

Optional Accessories....16

Helicopter Performance Charts....21

Hover Performance Charts....22

Category A Performance....30

Fuel Flow vs. Airspeed....37

Cost of Operations....51

Limited Life Components....54

Paint Schemes....56

Training....57

Publisher's Notice

The data presented in this document are general in nature, and have been compiled from Bell Helicopter Textron Inc. (BHTI) source materials including but not limited to: *The Approved Rotorcraft Flight Manual*, *Maintenance Manual*, *Illustrated Parts Catalog*, and other engineering design specifications.

This document is intended for the use of BHTI employees, and BHTI independent representatives (international dealers), and for prospective customers as an aid in determining estimated weight and performance of the helicopter when configured with equipment for specific missions.

Disclosure, reproduction, or use of any material in this document by persons other than BHTI employees, and BHTI independent representatives, and prospective customers are forbidden without written permission from Bell Helicopter Textron Inc.

The listings of Optional Equipment ("Kits") are subject to revision and change, and also may be different for specific serial number helicopters or special custom configurations. Please consult the "Notes" column found in the optional equipment list tables for equipment compatibility. The continuing product improvement process of BHTI may cause some components, equipment, and compatibility to be changed or replaced.

The specifications, weights, dimensions, and performance data shown in this document are subject to change without notice.

Specifications subject to change without notice.

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Bell 412EP

RELIABLE, RUGGED AND READY

The Bell 412EP is the workhorse of the helicopter industry with a reputation of getting up and going to work every day in even the most extreme environments. Renowned for its reliability, availability and maintainability, the Bell 412EP combines its proven, multi-mission platform with Bell Helicopter's #1 rated Customer Support Services to provide operators with a high value-to-cost aircraft.

World-wide Bell 412 Fleet Totals

- Over 4.6 million flight hours with one High Time Aircraft of over 26,200 hours
- Nearly 1,000 Bell 412 FAA certified aircraft delivered

Reduced Maintenance Equals Higher Availability

- Proven Pratt & Whitney PT6T-3D Twin Pac engines
  - More than 25 million flight hours in more than 2,000 aircraft worldwide
  - 25,000 hours between premature engine removals
- High retirement and overhaul intervals
  - 5,000-hour drive system TBO
  - 4,000-hour engine overhaul interval (TBO), expandable to more than 7,000 hours with Pratt & Whitney TBO Extension Program
  - On-condition all composite main rotor blades
  - 4,000-hour combining gearbox TBO
  - 5,000-hour main transmission TBO

Built for Safety

- Excellent Category A/JAR OPS 3 capability
- Rugged fuselage with rollover bulkhead protection
- Rupture resistant fuel cells
- Energy-attenuating crew seats
- Largest door opening in its class
  - Exceptional ingress/egress
  - Enhanced safety for hoisting, allowing operations to be conducted from inside the aircraft

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Specification Summary (U.S. Units)

Weight	lb	Weight	lb
Empty Weight (Base Aircraft) [1]	6,800	Maximum Gross Weight (Internal)	11,900
Useful Load (Internal, Base Aircraft)	5,100	Maximum Gross Weight (External)	11,900
		Maximum External Load	4,500

Performance Summary					
Takeoff, Gross Weight		**lb**	**9,500**	**10,500**	**11,900**
IGE Hovering Ceiling	ISA	ft	17,400	14,300	10,200
	ISA + 20 °C	ft	14,400	10,900	6,200
OGE Hovering Ceiling	ISA	ft	13,800	10,400	5,200
	ISA + 20 °C	ft	10,300	6,050	(11,890 lb @ SL)
FAA Take Off and Landing Limit, WAT [2]	ISA	ft	14,000	11,270	7,270
	ISA + 20 °C	ft	12,120	9,000	4,990
Service Ceiling (AEO)	ISA	ft	20,000	18,760	16,290
(continuous OEI)	ISA	ft	11,450	8,850	5,400
(30 minute OEI) [3]	ISA	ft	12,850	10,500	7,600
Maximum Continuous Cruise (true airspeed)	4,000 ft, ISA	kts	132	130	125
Cruise at Long Range Cruise (LRC) Speed					
Range [4]	SL, ISA	nmi	365	363	358
LRC Speed (average true airspeed)		ktas	127	126	124
Range [4]	4,000 ft, ISA	nmi	414	408	398
LRC Speed (average true airspeed)		ktas	131	131	129
Category A Takeoff and Landing Ceiling [3] Elevated Helipad	ISA	ft	6,000	3,460	(11,580 lb @ SL)
	ISA + 20 °C	ft	3,730	1,210	(10,800 lb @ SL)
Endurance at Loiter Speed [4]	SL, ISA	hr	4.0	3.9	3.8
	4,000 ft, ISA	hr	4.5	4.4	4.2

Engine Ratings: (100% RPM)		Uninstalled Thermodynamic Power	Engine Rated Power
Standard: Pratt & Whitney PT6T-3D Twin Pac			
Takeoff (5 minutes)	SHP	2 x 950	2 x 900
Max Continuous Power	SHP	2 x 950	2 x 800
OEI (2-1/2 minutes)	SHP	1 x 1,140	1 x 1,133
OEI (continuous)	SHP	1 x 970	1 x 1,024
Optional: Pratt & Whitney PT6T-3DF Twin Pac			
OEI (30 minutes)	SHP	1 x 1,066	1 x 1,079
OEI (continuous)	SHP	1 x 950	N/A

Transmission Ratings (100% RPM, at mast)	
Takeoff (5-minute)	1,370 SHP
Max Continuous Power	1,110 SHP
Single Engine	Limited by Power Available
Fuel (usable)	
Type	Aviation Turbine
Capacity	330.5 US Gallons

Notes: [1] Base Aircraft includes all items listed in the Base Aircraft Configuration table of this document as well as twenty-five pounds (eleven kilograms) of engine oil. Ballast is not included in the standard configuration (ballast is a function of installed equipment).

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Specification Summary (Metric Units)

Weight	kg	Weight	kg
Empty Weight (Base Aircraft) [1]	3,084	Maximum Gross Weight (Internal)	5,398
Useful Load (Internal, Base Aircraft)	2,313	Maximum Gross Weight (External)	5,398
		Maximum External Load	2,041

Performance Summary					
Takeoff, Gross Weight		**kg**	**4,309**	**4,763**	**5,398**
IGE Hovering Ceiling	ISA	m	5,304	4,359	3,109
	ISA + 20 °C	m	4,389	3,322	1,890
OGE Hovering Ceiling	ISA	m	4,206	3,170	1,585
	ISA + 20 °C	m	3,139	1,844	(5,393 kg @ SL)
FAA Take Off and Landing Limit, WAT [2]	ISA	m	4,267	3,435	2,216
	ISA + 20 °C	m	3,694	2,743	1,521
Service Ceiling (AEO)	ISA	m	6,096	5,718	4,965
(continuous OEI)	ISA	m	3,490	2,697	1,646
(30 minute OEI) [3]	ISA	m	3,917	3,200	2,316
Maximum Continuous Cruise (true airspeed)	1,219 m, ISA	km/h	244	241	232
Cruise at Long Range Cruise (LRC) Speed					
Range [4]	SL, ISA	km	676	672	663
LRC Speed (average true airspeed)		km/h	235	233	230
Range [4]	1,219 m, ISA	km	767	756	737
LRC Speed (average true airspeed)		km/h	243	243	239
Category A Takeoff and Landing Ceiling [3] Elevated Helipad	ISA	m	1,829	1,055	(5,253 kg @ SL)
	ISA + 20 °C	m	1,137	366	(4,899 kg @ SL)
Endurance at Loiter Speed [4]	SL, ISA	hr	4.0	3.9	3.8
	1,219 m, ISA	hr	4.5	4.4	4.2

Engine Ratings: (100% RPM)		Uninstalled Thermodynamic Power	Engine Rated Power
Standard: Pratt & Whitney PT6T-3D Twin Pac			
Takeoff (5 minutes)	kW	2 x 708	2 x 671
Max Continuous Power	kW	2 x 708	2 x 597
OEI (2-1/2 minutes)	kW	1 x 850	1 x 845
OEI (continuous)	kW	1 x 723	1 x 764
Optional: Pratt & Whitney PT6T-3DF Twin Pac			
OEI (30 minutes)	kW	1 x 795	1 x 805
OEI (continuous)	kW	1 x 708	N/A

Transmission Ratings (100% RPM, at mast)	
Takeoff (5-minute)	1,022 kW
Max Continuous Power	828 kW
Single Engine	Limited by Power Available
Fuel (usable)	
Type	Aviation Turbine
Capacity	1,251 liters

Notes: [2] With BLR FastFin® System. Does not apply for Catagory B, 9-passenger seat configuration.
[3] Increased capability available with optional Pratt & Whitney PT6T-3DF (30 minute OEI Power Kit).
[4] Standard fuel, no reserve, average gross weight.

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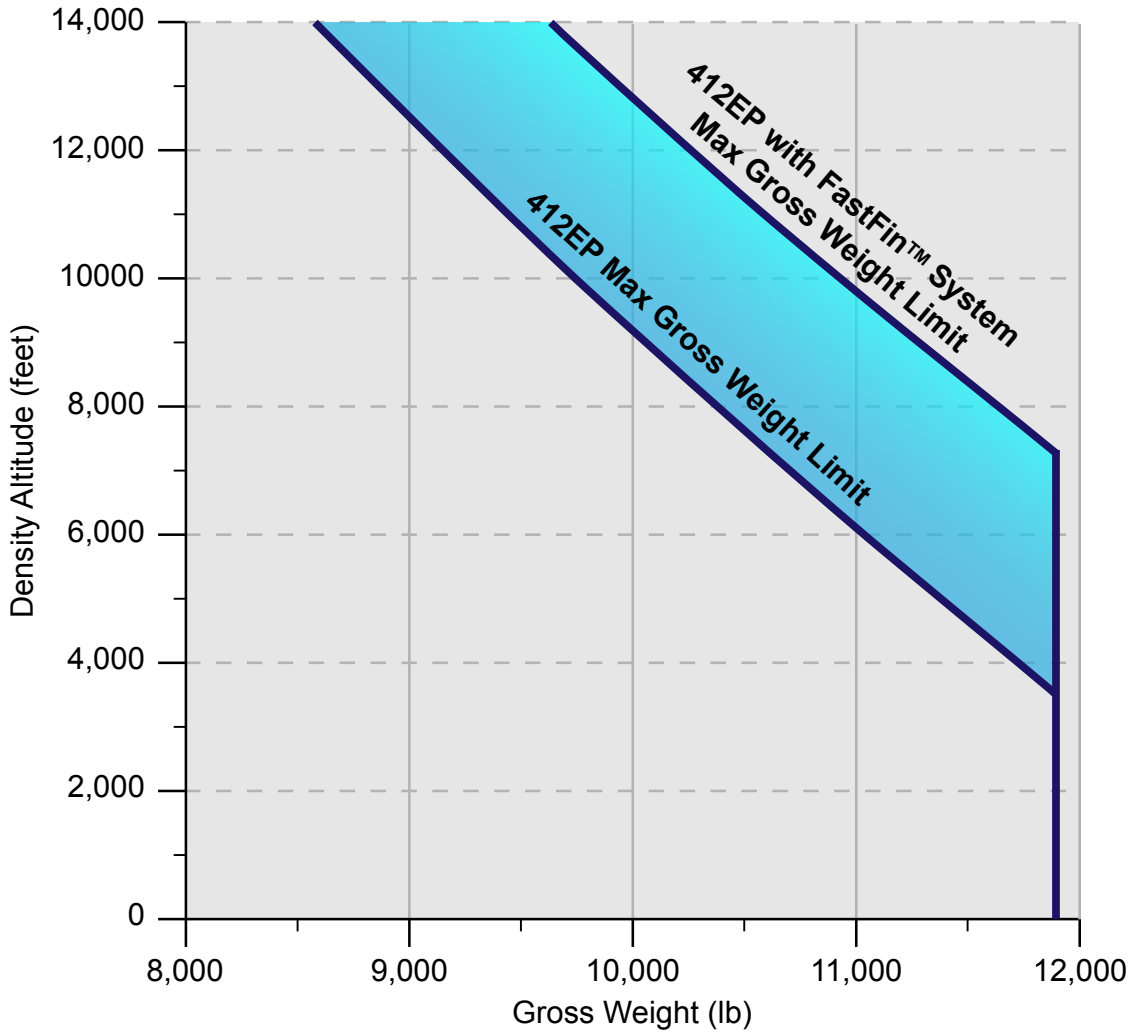
BLR Strake and FastFin®

Bell Helicopter has partnered with BLR Aerospace to provide its performance, safety and efficiency-enhancing FastFin® system as a standard feature on new Bell 412EP aircraft orders. The system incorporates two parallel stall strips along the tail boom and a reshaped vertical fin. These modifications combine to optimize airflow around the tail boom, improving the handling, stability and lifting capacity of the Bell 412EP in all environments, especially high and hot conditions.

The FastFin® system is a combination of two separate modifications, one to the vertical fin and the other to the tailboom. For clarity, the term FastFin® refers to the BLR modification that changes the shape and contour of the vertical fin. The term FastFin® System refers to the combined FastFin® and Dual Tail Boom Strake installation.

The performance benefits of this system include increased tail rotor effectiveness and higher crosswind speed tolerance at hover in certain conditions. In conditions where the aircraft is currently tail rotor limited the FastFin® System results in increased Weight-Altitude-Temperature (WAT) capability for takeoff, landing and in-ground-effect maneuvers, providing substantial improvement in useful load for hot/high operation (See performance chart below).



Bell 412EP WAT Improvement with FastFin® System, IGE Hover

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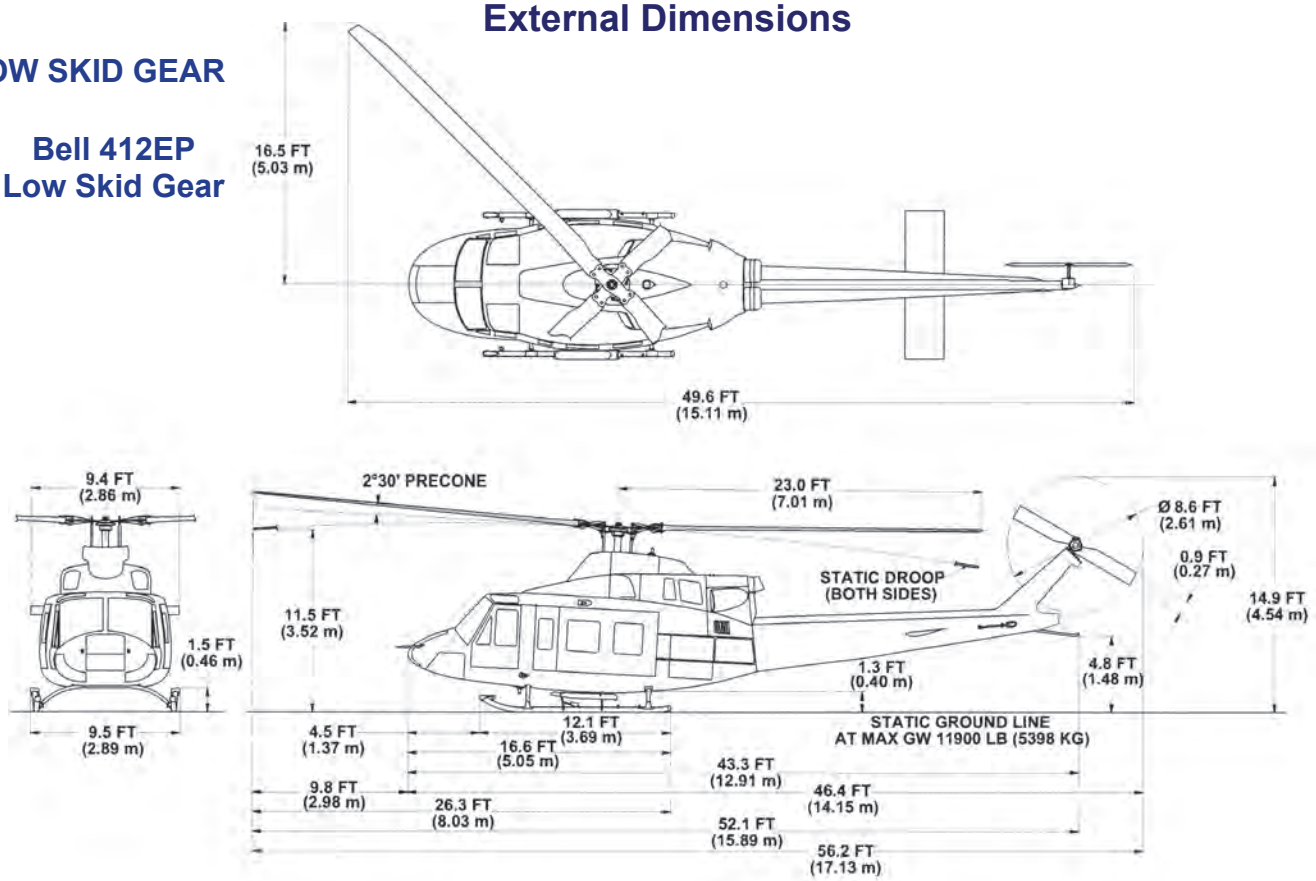
External Dimensions

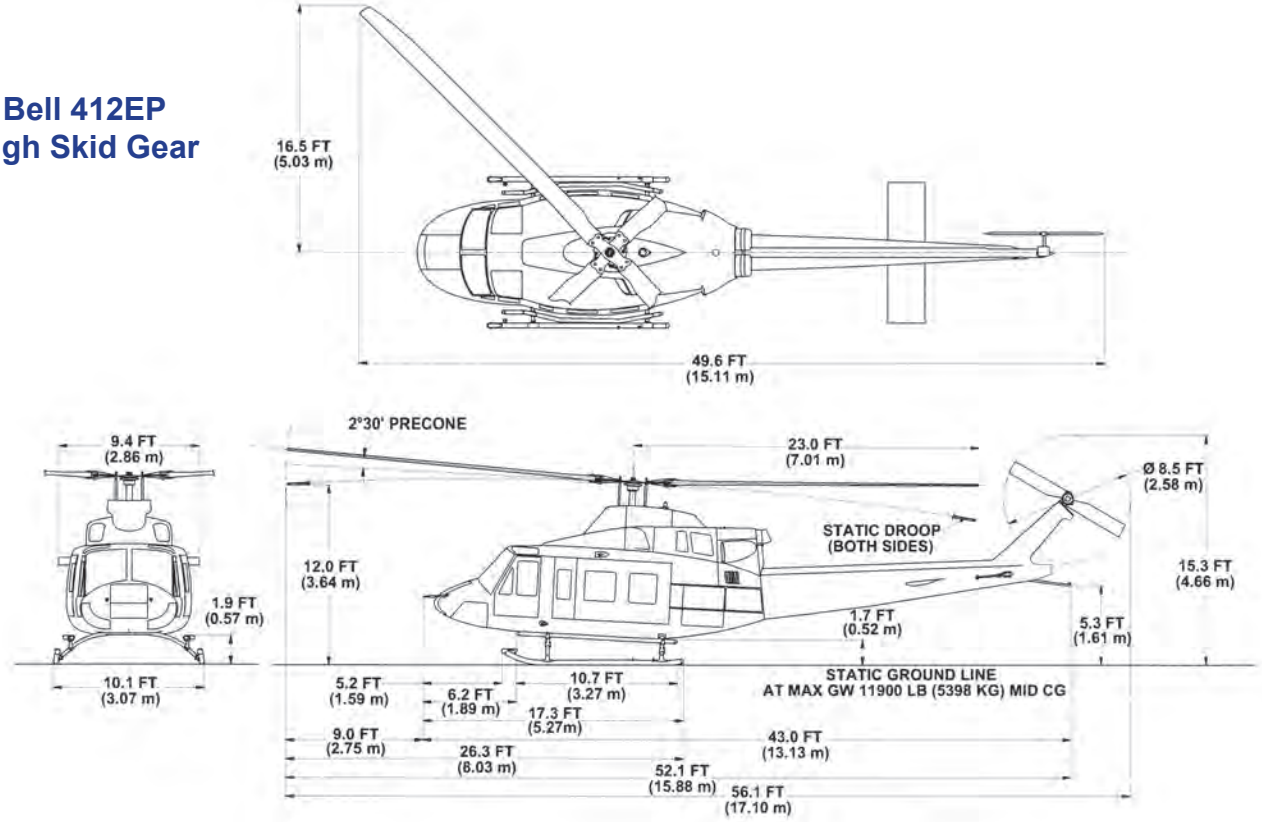
LOW SKID GEAR

Bell 412EP Low Skid Gear



OPTIONAL HIGH SKID GEAR WITH AA FLITESTEP®

Bell 412EP High Skid Gear



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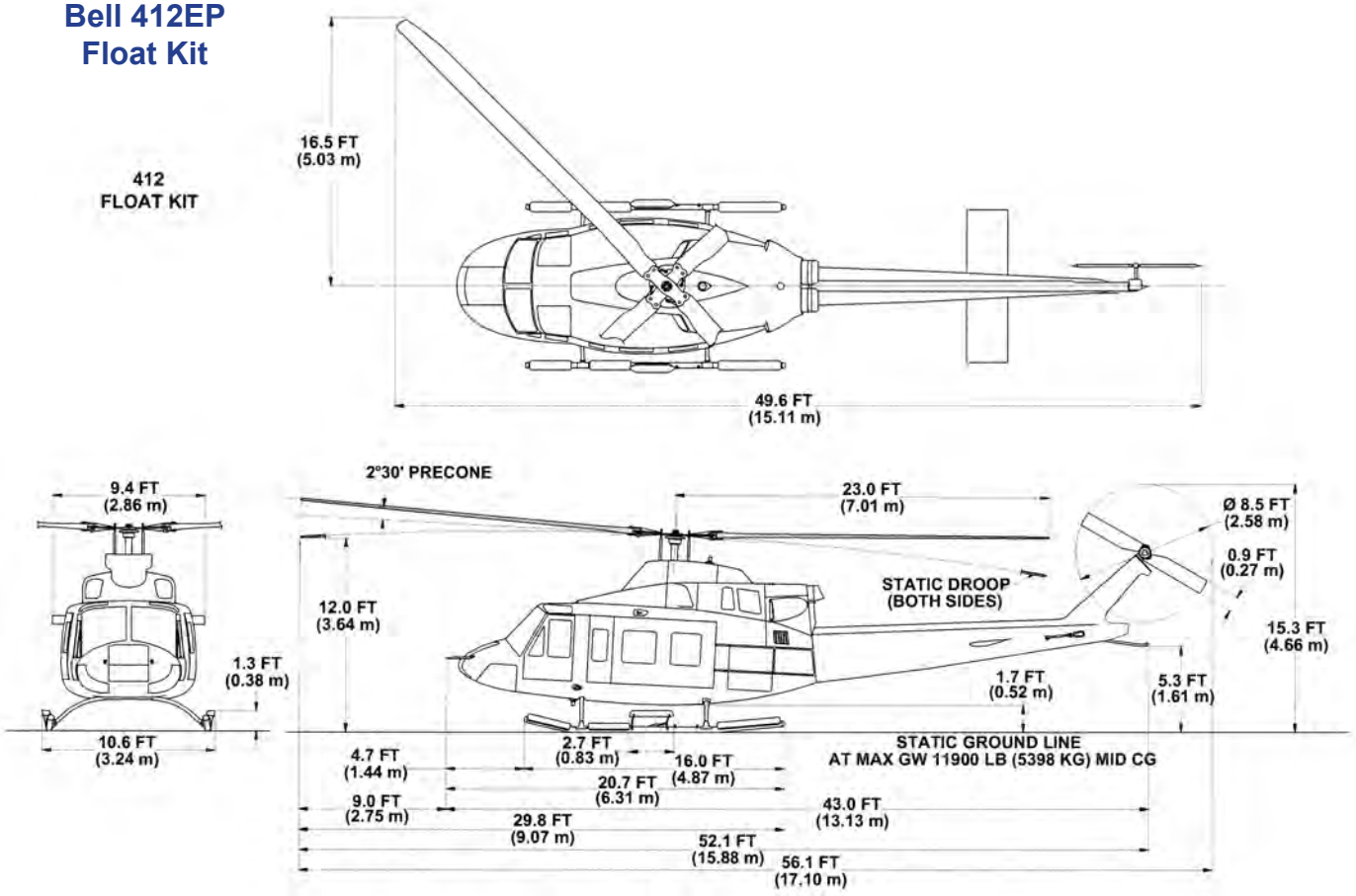
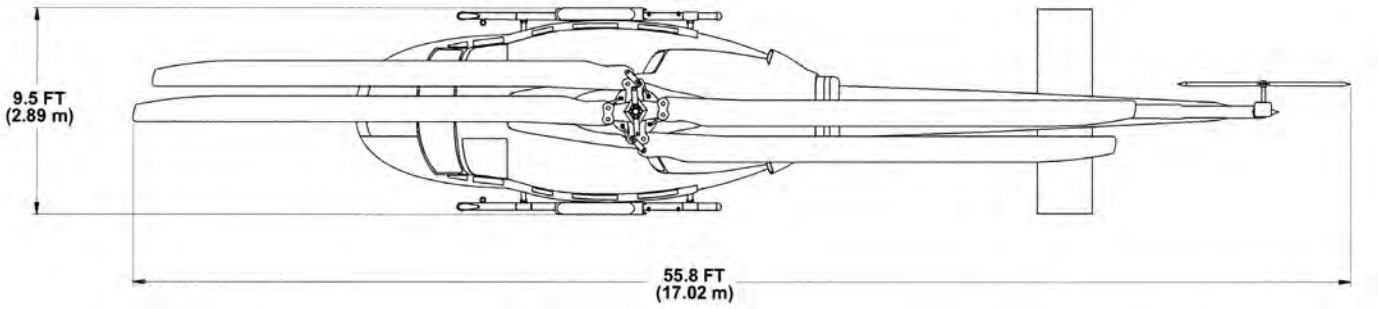
External Dimensions

OPTIONAL EMERGENCY FLOAT GEAR WITH AA FLOATSTEP™

Bell 412EP Float Kit



OPTIONAL BLADE FOLDING KIT DIMENSIONS



Minimum Hanger Size *
Rotor Not Folded
33.0 ft x 49.6 ft
(10.1 m x 15.2 m)

Minimum Hanger Size *
Rotor Folded
9.5 ft x 55.8 ft
(2.9 m x 17.1 m)

* Allowance should be made for high skid gear, ground wheels, empty fuel condition and door lip when considering hangar door width and height

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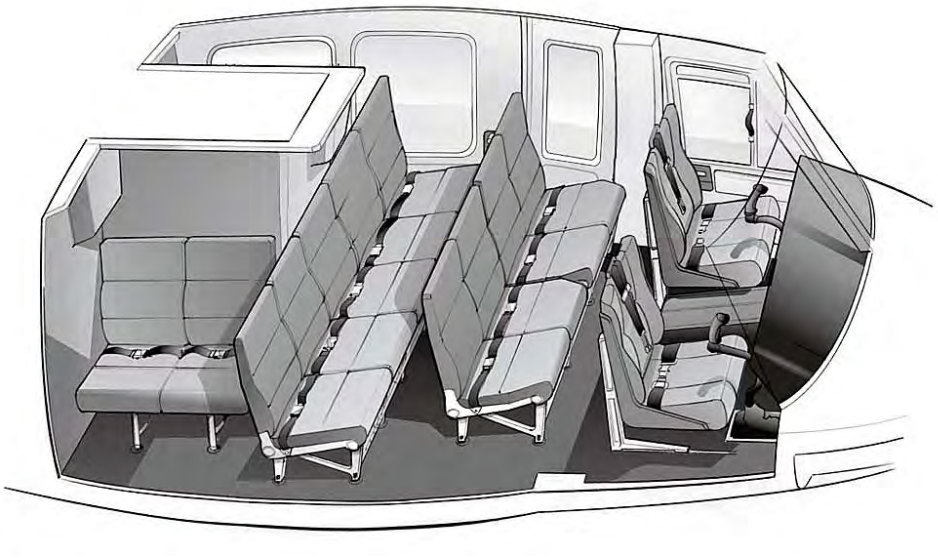
Bell 412EP Seating and Interior Trim Choices

Crew Seats - Two individual energy attenuating seats, fore/aft and up/down adjustable, each equipped with seat belt, double strap shoulder harness and inertia reel. Available with Grey, Blue, Red, or Tan upholstery which will match that selected for the cabin.

Passenger Seats - 13 seats offered in three options. (NOTE: Seating option 1 meets the criteria required by FAA regulations for installation in U.S. registered helicopters. Seating Options 2 and 3 require the addition of the STC Alpine 412 Passenger Shoulder Harness Kit for installation in U.S. registered helicopters.)

1. **Standard Seating** - Fabric covered high-backed folding seats with individual seat belts and single strap shoulder harness and inertia reel, arranged with one row of four (two 2-place benches) forward facing seats, and one row of five forward facing seats, and two outward facing two place benches (one on either side of the transmission). Available with Grey, Blue, Red, or Tan upholstery with Black seat belts. Seats are also available in all vinyl at additional cost. (214.5 lb [97.3 kg] included in the standard configuration weight.)

STANDARD SEATING



(Shown with standard interior trim and floor covering)
Seating options 2 and 3 not illustrated.

2. **Utility Seating** - Available for U. S. registered helicopters ONLY with addition of STC Alpine 412 Passenger Shoulder Harness Kit. Nylon covered bench type seating arranged with one row of four rearward facing seats (behind the crew seats), one row of five forward facing seats (in front of the transmission), and two outward facing two place benches (one on either side of the transmission). Each seat has an individual seat belt. Available in Tan or Black. The Utility Seating decreases the standard configuration weight (-95.7 lb [-43.4 kg], with Alpine Shoulder Harness -61.4 lb [-27.9 kg]).

3. **Cushioned Utility Seating** - Available for U. S. registered helicopters ONLY with addition of STC Alpine 412 Passenger Shoulder Harness Kit. As in 2) above with the addition of fabric covered cushions, available in the same colors as the Standard Seating. The Cushioned Utility Seating decreases the standard configuration weight (-53.0 lb [-24.9 kg], with Alpine Shoulder Harness -18.7 lb [-8.5 kg]).

Bell 412EP Seating and Interior Trim Choices

INTERIOR TRIM CHOICES

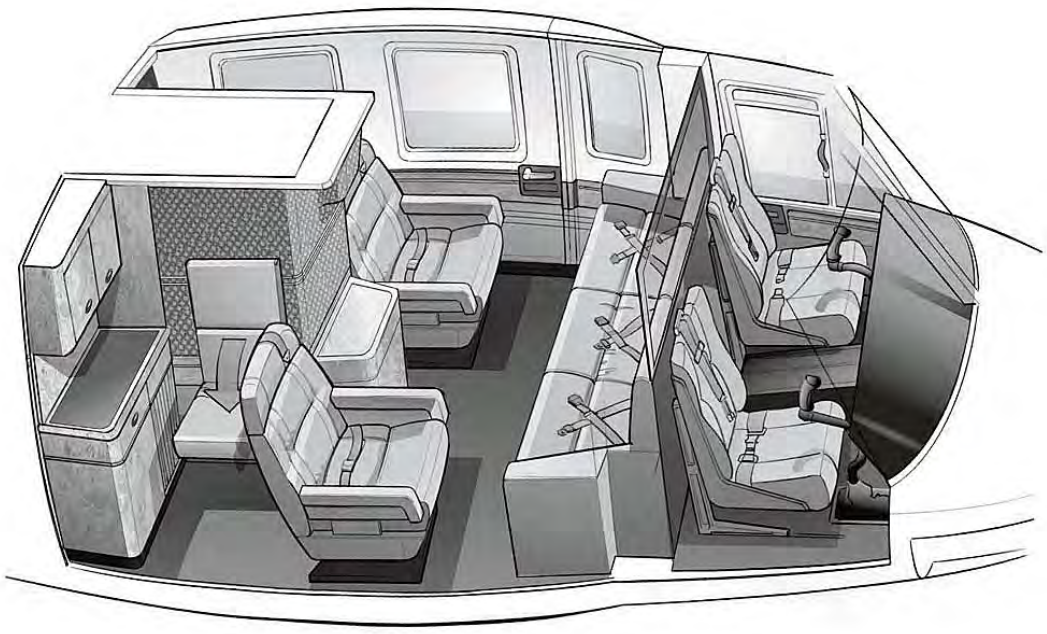
1. **Standard Interior Trim** - The Standard Interior Trim is provided as a NO COST OPTION, but is not included in the Standard Configuration Empty Weight. Included are: Plastic closeouts on upper sidewalls, window reveals, and cabin headliner; Padded vinyl covering the floor and lower door panels; Lower aft bulkhead covered with padded vinyl blankets. The hard plastic headliner and closeouts are off-white in color, and the padded bulkhead blankets and floor covering are color coordinated to match the seat color selection. The Standard Interior Trim increases the standard configuration empty weight (165.7 lb [75.2 kg]).

2. **Utility Interior Trim** - The Utility Interior Trim consists of: Light beige vinyl covered headliner and bulkhead blankets; Doors painted light beige; Floor painted brown. The Utility Interior Trim is included in the standard configuration empty weight (33.3 lb [15.1 kg]).

CUSTOMIZED SEATING

(Example)

Customized Seating - Custom designed interiors are available from aircraft completion centers to meet the needs of Corporate or Emergency Medical Service customers.



Basic Aircraft Configuration

(Items Included In List Price)

AIRFRAME
Aluminum alloy fuselage loading space
Glass windshields
Tinted overhead windows
Dual windshield wipers
Fresh air ventilators with adjustable outlets (8 cockpit and 12 aft cabin)
Bleed air heater and defroster with air noise suppression
Cargo tie-down fittings (51 aft cabin floor)
Map and data case
Cabin fire extinguisher (2)
Swing-out jettisonable doors (2 for forward cabin)
Sliding doors (2 for aft cabin access with 2 emergency exit panels on each door)
Swing-out panels for extended access to aft cabin (2)
Fixed step on skids for entry to forward cabin (2)
Retractable steps for aft cabin access (2)
Baggage compartment in tail boom
Skid-type landing gear with replaceable wear shoes
Mooring and jacking fittings (4)
External attachment fittings (16)
Semi-monocoque tailboom
Elevator (airspeed / spring-cartridge controlled)
Tail skid
ROTORS and CONTROLS
Soft-in-plane flex beam hub with four fiberglass blades
Main rotor droop restraint
Pendulum vibration absorbers
Semi-rigid, two bladed all-metal tail rotor
All controls hydraulically boosted (dual systems for main rotor)
Force trim system and artificial feel (electrically set)
Cyclic stick centering
RPM governor selector control
Manual engine torque matching and trim
Dual Digital Three axis AFCS (2 flight control computers)

TRANSMISSION / DRIVE SYSTEM
Main rotor transmission with 4 chip detectors/2 debris collectors
Vibration isolation / suspension mounts (4)
Main Lift link (single point suspension)
42º gearbox (sight gage and magnetic drain plug/chip detector)
90º gearbox (sight gage and magnetic drain plug/chip detector)
Hydraulic pumps for controls (2 independent systems)
Transmission oil cooler
POWER PLANT
Pratt and Whitney of Canada PT6T-3D “Twin Pac”
Automatic governors (2)
Magnetic chip detectors
Torque limiter
Fuel System (rupture resistant cells and breakaway vent fitting)
Pumps on engines and submerged in fuel tanks
Fuel filter assembly
Oil coolers (2)
Fire detection system (2)
Fire extinguisher system (2)
RPM warning system
Hinged cowling
Starter-generators (2)
Power turbine RPM control actuators
Combining gearbox with chip detector
Separate firewall protection for each engine
Overriding clutches (2)
Extended Engine Exhaust Deflectors
COMMUNICATIONS and NAVIGATION
720 Channel VHF rec/trans transceiver (KTR-908)
VHF antenna
2 Headsets (pilot and copilot)
2 Intercomunication Panels (ICS) (pilot and copilot)
Emergency Transmit Switch

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Basic Aircraft Configuration

COMMUNICATIONS and NAVIGATION (continued)	
Horizontal Situation Indicator	
Attitude Director Indicator	
Attitude and Heading Reference Systems (2)	
Cockpit voice recorder provisions	
FLIGHT and ENGINE INSTRUMENTS	
Free air temperature indicator	
AL-300 Data Display	
Pitot static system with electric pitot heat	
Altimeter (barometric)	
Clock, digital quartz chronometer	
Hourmeter	
Magnetic compass, pilot's standby	
Airspeed indicator	
Rate of climb indicator	
Turn and slip indicator	
Triple tachometer (rotor and engines)	
Dual hydraulic press/temp indicator (2)	
Gas producer tach indicator (2)	
Triple torque indicator (Eng 1, Eng 2, mast)	
Engine oil-temp/press indicator (2)	
Turbine inlet temperature indicator (2)	
Fuel pressure indicator	
Transmission oil-temp/press indicator	
Dual DC and AC voltmeters	
Dual DC loadmeter	
Fire detection warning (3)	
Combining gearbox oil-temp/press indicator	
Flight data recorder provisions	
Caution and Warning System - Master caution light on panel draws attention to the pedestal mounted annunciator panel when worded segments illuminate:	
Engine oil press (2)	DC generator (2)
Trans oil press	Gen overheat (2)
Trans oil temp	AC inverter (2)
Comb box oil press	External power
Comb box oil temp	Battery switch
Chip detectors (5)	Battery temp
Fuel boost (2)	Hydraulic

FLIGHT and ENGINE INSTRUMENTS (continued)	
Fuel filter (2)	Door locks
Fuel valve (2)	Heater
Fuel low (2)	Part sep off (2)
Fuel X feed	Rotor brake (2)
Emerg gov manual (2)	Caution panel
Master warning lights on the instrument panel draw attention to:	
RPM	Eng 1 Fire
Eng 1 Out	Eng 2 Fire
Eng 2 Out	Baggage Fire
Cyclic centering	Over torque (mast
ELECTRICAL	
Generator (2) (30 volt, 200 ampere DC startergenerator derated to 150 amperes)	
Inverters (2), (450 volt ampere single phase, solid state)	
Nickel cadmium battery (40 ampere hours)	
Battery over-temp warning	
Generator voltage regulators	
Navigation lights	
Landing light-retractable	
Anticollision light (2)	
Tritium lighted emergency exit signs	
Cockpit lights (2)	
Dome lights (3)	
External power receptacle	
Twin ignition and starting systems	
Seat belt sign	
Passenger step lights	
Baggage compartment light and fire sensor	
Utility cabin lights (removable)	
MISCELLANEOUS	
Covers, tail pipe, turbine air inlet, and pitot tube	
Flight bag	
Ground handling wheels, hydraulically activated	
Manuals: Aircraft log, Engine log, Engine operations, Flight, Maintenance and Overhaul Manual, Illustrated Parts Catalog	
Tie-down assemblies, main rotor and tail rotor	

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Base Aircraft Configuration

INTERIOR TRIM
Choice of Standard or Utility Interior Trim
Standard: Rigid three-piece headliner in cabin, padded fiberglass floor covering, bulkheads, trimmed with cream-colored plastic and color-coordinated vinyl coated fiberglass, cabin doors trimmed with plastic, special soundproofing, seat upholstered with foam and fabric. Selection of fabric colors. Not included in base aircraft empty weight, increases empty weight 165.6 pounds (75.1 kilograms) when installed.
Utility: Beige soundproofing blankets on bulkheads and overhead; doors painted beige, floor painted brown. Included in base aircraft empty weight (approximately 32.6 pounds, 914.8 kilograms)

Standard Configuration

Additional kits included in Standard Configuration	
BLR Strake and FastFin®	Copilot Instruments (FAA)
Dual Controls	Standby Attitude Indicator
Copilot Clock Kit	Intercom System with Interface
Distance Measuring Equipment, DME KDM-706)	Flight Director Nav Coupler (3-Axis)
IFR FAA Kit	Rotor Brake
Automatic Direction Finder, ADF (KDF-806)	Radar Altimeter #1
Nav. Receiver #1 VOR/LOC with MB/HSI (KNR 634)	Avionics Tubing
Nav. Receiver #2 VOR/LOC with HSI (KNR 634)	Artex C406-1HM ELT Provisions
VHF-AM Comm #2 Radio (KTR-908)	Cargo Hook Provisions
Transponder (MST67)	Markings for High Visibility Main Rotor Blades [1]

Standard Configuration Empty Weight (Items included in Price List)	Wt (lb)	Wt (kg)
	6,971	3,162

Note: [1] Standard or High Visibility Main Rotor Blade Paint to be specified by Sales Order.

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Optional Accessories

Kits listed below are compatible with the FAA IFR 3-axis / non-EFIS configuration except as individually noted.
Additional kits and STC items may be available for factory installation.
Please consult sales or contract personnel regarding special needs prior to selection of final configuration.

Kit Description	Wt (lb)	Wt (kg)	Notes
AIRFRAME			
Fixed Step Left Hand	11.6	5.3	1, 2
Fixed Step Right Hand	11.6	5.3	1, 2
Heavy Duty High Skid Gear	18.5	8.4	1, 3
Emergency Floats Provisions	51.0	23.2	4
Emergency Floats (Reservoir and Nose)	97.5	44.3	4
Emergency Floats Landing Gear	168.8	76.7	1, 4
Heated Windshield	9.8	4.5	1
Cabin Seat Belt and No-smoking light for Std Interior (JAROPS)	0.3	0.1	
Cabin Seat Belt and No-smoking light for Dlx Interior (JAROPS)	0.3	0.1	
Aux Fuel Provisions	5.4	2.4	5
Aux Fuel Tank Equipment Short Range (16.3 US Gal) L/H	20.1	19.3	5, 14
Aux Fuel Tank Equipment Short Range (16.3 US Gal) R/H	20.1	19.4	5, 14
Aux Fuel Tank Equipment Long Range (81.7 US Gal) L/H	50.4	33.2	5, 14
Aux Fuel Tank Equipment Long Range (81.7 US Gal) R/H	50.7	33.0	5, 14
Aux Fuel Indicator	0	0	5
AVIONICS and FLIGHT INSTRUMENTS			
EFIS Kit	113.4	51.5	1, 6
4-Axis DAFCS with Dual Flight Director	26.4	12.0	7
Weather Radar - Primus 700	49.1	22.3	7
Weather Radar with EFIS - Primus 700	54.6	24.8	7
Encoding Altimeter In./Milibars (3-Axis)	0.1	0.1	1, 7
Radar Altimeter #2	12.2	5.5	7
Cabin PA Non-EFIS (JAROPS)	9.3	4.2	
Cabin PA EFIS (JAROPS)	9.5	4.3	
Overhead Aux Bussing Non-EFIS (JAROPS)	0.1	0.0	
Altitude Voice Warning (JAROPS)	1.4	0.6	
Copilot Instrument Rad Alt Non-EFIS (JAROPS)	3.0	1.4	
Copilot Instrument Rad Alt EFIS (JAROPS)	3.0	1.4	
Air Data Computer	3.2	1.5	
Emergency Locator Transmitter - C406-1HM Provisions (Artex)	1.8	0.8	
ENGINE			
Increased Continuous Power Rating without 30 Min OEI	0	0.0	1
Increased Continuous Power Rating	0	0.0	1
30 Minute OEI (PT6T-3DF Engine)	0	0.0	1
30 Minute OEI (PT6T-3DF Engine) Continuous Power	0	0.0	1

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Optional Accessories

Kit Description	Wt (lb)	Wt (kg)	Notes
ENVIRONMENT			
Heavy Duty Heater	10.3	4.7	1
EQUIPMENT			
Litter Equipment - 6 Place	-152.5	-69.0	1, 9
Cargo Hook Provisions	6.9	3.1	10
Cargo Hook Equipment	33.8	15.4	10
Internal Hoist	172.3	78.2	11
Internal Hoist Sling Only	10.1	4.6	
Gross Weight Towing Puller Equipment	0.0	0.0	
Litter Kit - 3 Place (FAA Aircraft)	-54.8	-29.4	1, 9
Internal Hoist Provisions	8.9	4.0	
Hoist Cable Guard	5.2	2.4	
Increased Generator Capacity	0.7	0.3	1
Transmission Power Take Off	27.9	12.7	
Gross Weight Towing Puller Provisions	2.9	1.3	
Door Mirror - Crew Door	.3	0.1	
53 Amps Battery	15.8	7.2	1, 6, 7
Battery Cable Kit For Weather Radar Prov	1.4	0.6	1, 6, 7
Frahm Damper	18.7	8.5	
CREDITS			
No Ground Handling Wheels	0	0	
No Exterior Paint	-30.9	-14.0	
White Paint Only	0	0	
Passenger Seats - Airline (Installed)	-214.5	-97.3	1, 12
VENDOR - STC			
Wire Strike Protection System	8.6	3.9	13

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Optional Accessories

EXPLANATORY NOTES

All equipment kits require Provision Kits prior to installation

Notes: For commonality, notes shown below are identical in Product Specification and Price List.

1. Price and / or Weight includes credit for basic ship hardware removed.
2. FAA requires either standard electric powered steps or fixed steps to conduct passenger carrying operations. Weight change is for replacement of low skid gear powered steps. Fixed step actual weight 11.7 lb (5.3 kg) each. Fixed steps not compatible with emergency pop out floats or rescue hoist.
3. FAA requires either standard electric powered steps or fixed steps to conduct passenger carrying operations. For powered passenger steps add 21.5 lb (9.8 kg); For fixed steps add 23.4 lb (10.6 kg).
4. For a complete installation of Emergency Floats (412-706-004-153, -163, and -165) are required.
5. Aux Fuel Provision Kit (412-706-112-101) and Aux Fuel Indicator Kit (412-706-112-117) must be installed prior to or concurrently with installation of kits (412-706-112-103, -104, -105, and -106). Aux fuel tank kits can be installed in any combination with maximum of two per aircraft (one per side). Total auxiliary fuel volumes possible are 81.7, 163.4, 98.0, 32.6, and 16.3 gallons.
6. EFIS is compatible with 4-axis level 1 and 2; See Table on AFCS configuration page. EFIS requires installation of 53 AMP Hour Battery. Different Kits are required for Std. Landing Gear(412-706-059-101), Floats (412-706-059-103), and an additional kit is required if Weather Radar(412-706-059-105) is installed.
7. 4-Axis Level 2 AFCS configurations require FAA IFR configuration and installation of additional equipment kits. See the tables on the AFCS configuration pages for items required and installed weight.
8. 3-Axis Level 1 AFCS configurations requires FAA IFR configuration and installation of additional equipment kits. See the tables on the AFCS configuration pages for items required and installed weight.
9. The 412-706-006-105 Litter Kit is FAA certified equipment. The 205-706-047-011 Litter Kit is not FAA certified. Weights are for all standard seats removed and attendant seat(s) installed.
10. Cargo Hook Provisions (212-706-103-103) must be installed prior to Cargo Hook Equipment (212-706-103-119).
11. Internal rescue hoist (214-706-003-107) requires installation of provisions (412-706-011-105), Cable Guard (412-706-017-113), and Two Station Aft Cabin ICS (412-706-012-111).
12. Utility Seating is available on U. S. registered helicopters ONLY with the addition of the STC'd Alpine 412 Passenger Shoulder harness Kit.
13. The Wire Strike Kit is a RECOMMENDED extra cost option. The customer must specify on the Purchase Agreement for the WSPS Kit NOT to be installed.
14. Includes removal of existing outboard-facing airline seats.

P.O.R. - Priced On Request.

STC Kits - Select Supplemental Type Certificated Optional Equipment Kits are available for installation at the Bell Helicopter Textron factory. Please contact your Bell Helicopter Sales Representative for availability and pricing information.

Bell 412EP Standard Dual Digital AFCS Configurations

IFR (FAA) CONFIGURATION

	(lb)	(kg)
Dual Control	25.6	11.6
Copilot Clock Kit	0.2	0.1
DME (KDM-706A)	6.5	2.9
FAA / IFR KIT	3.2	1.5
ADF (KDF-806)	7.1	3.2
NAV 1 VOR/LOC with GS (KNR-634)	10.1	4.6
NAV 2 VOR/LOC with GS (KNR-634)	7.8	3.5
VHF COMM / RADIO #2 (KTR-908)	6.3	2.9
Transponder (KXP-756)	10.5	4.8
Copilot Instruments (FAA) (3-Axis)	17.7	8.0
Standby Attitude Indicator	8.7	4.0
Radar Altimeter #1	6.6	3.0
Installed Weight IFR (FAA) Configuration	**110.3**	**50.1**

DUAL DIGITAL AFCS OPERATING PARAMETERS

Level 1 : Standard Flight Director modes; ALT, IAS, VS, HDG, NAV, ILS, BC, VOR APR, GA.

Level 2 : Same as Level 1 Plus; Simultaneous ALT and IAS, Simultaneous IAS and VS, Altitude Pre-Select (ALTPRE) [barometric level-off], Hover Hold (RAD ALT), ILS decelerate, and YAW Autotrim.

LEVEL 1 3-AXIS DUAL

With Flight Directors, without EFIS

	(lb)	(kg)
3-Axis DDAFCS with DUAL FD	6.5	2.9
Installed Weight Level 1	**116.7**	**53.0**

Note: * Other configuration can be developed to meet specific customer requirements.

Bell 412EP Optional Dual Digital AFCS Configurations

LEVEL 2 4-AXIS DUAL

With Flight Directors, with EFIS

	(lb)	(kg)
See Level 1, 3-Axis Dual, with Flight Directors, without EFIS **	116.7	53.0
EFIS (4-Tubes)	113.4	51.4
Battery, 53 AMP-HR	15.8	7.2
4-AXIS DDAFCS	26.4	12.0
Air Data Computer	3.2	1.5
Installed Weight	**392.3**	**178.0**

Notes: * Other configuration can be developed to meet specific customer requirements.

** The FAA IFR configuration and Level 1 (3-axis dual) is required in addition to the equipment listed above.

- EFIS, Air Data Computer and Radar Alt #1 are required for all 4-axis configurations.

Helicopter Performance Charts

Specifications subject to change without notice.

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Hover Performance Charts

The following Hover Performance Charts are presented in a revised format which should simplify the comparison of Weight Altitude Temperature (WAT) limited Take Off and Landing Capability and the Hover Capability for known favorable wind conditions.

IGE Hover Performance
Combined WAT Limited and Hover Capability

10 or More Passenger Seats, BLR Strake and FastFin®
And 9 or Less Passenger Seats
PT6T-3D Series Engine
Engine Continuous Power
Transmission Takeoff Power
Heater Off, 100% RPM

Example

Wanted

IGE hover weight for the 9 or less passenger seat configuration

Known

Pressure Altitude = 10,000 ft
OAT = 20 °C

Method

Step 1. To determine the IGE hover weight, enter the IGE hover capability chart at a pressure altitude of 10,000 ft. Move horizontally to the right to intersect the 20 °C line. Move vertically down to read a hover capability of 10,500 lb.

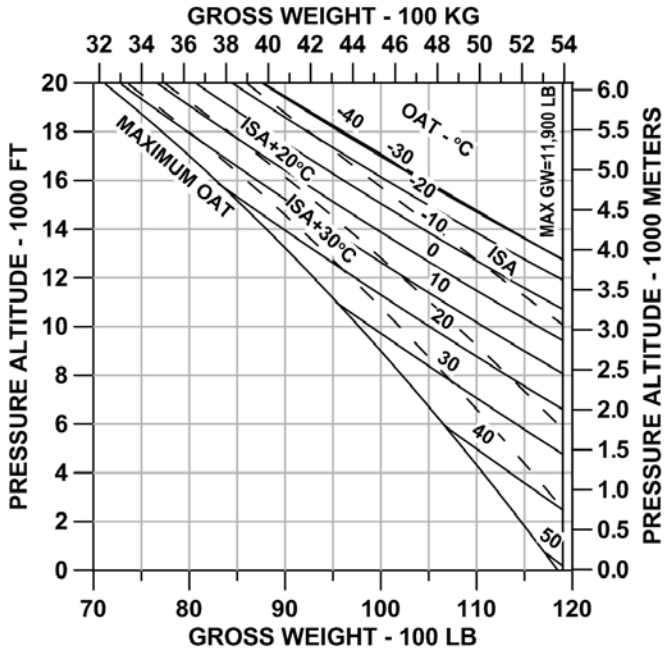
Step 2. To determine the WAT limited gross weight, enter the IGE WAT limitation chart at 20 °C. Drop vertically down to intersect the 10,000 ft pressure altitude line. Move horizontally to the right to intersect the 9 or less passenger seats WAT line. Move vertically up to read 10,140 lb. This is the WAT limited gross weight.

Step 3. The lower of Step 1 and Step 2 will result in a correct IGE hover weight of 10,140 lb.

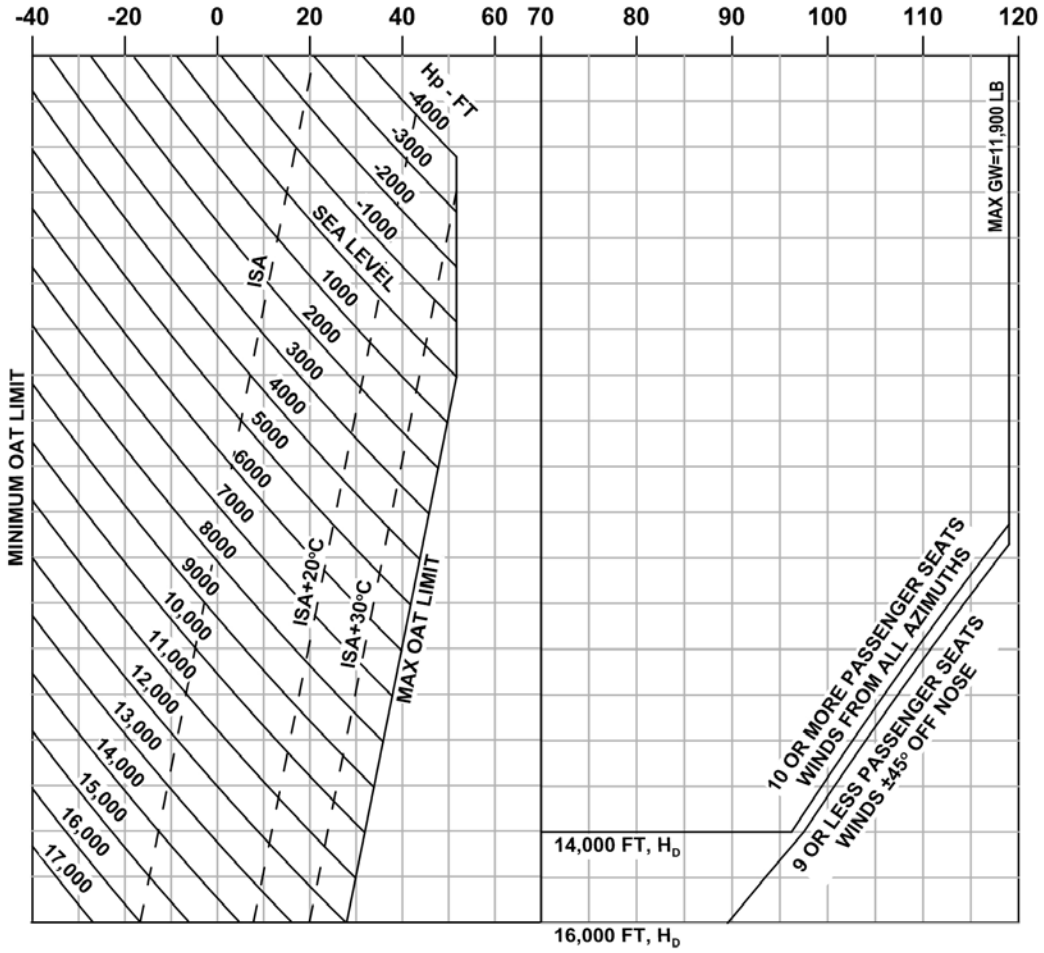
Hover Performance Charts

IGE Hover Capability

Compare hover capability with WAT limitations. The lower of the two gross weights determined is the correct hover performance.



IGE Hover WAT Limitation



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Hover Performance Charts

OGE Hover Performance
Combined WAT Limited and Hover Capability

10 or More Passenger Seats, BLR Strake and FastFin®
And 9 or Less Passenger Seats
PT6T-3D Series Engine
Engine Continuous Power
Transmission Takeoff Power
Heater Off, 100% RPM

Example

Wanted

OGE hover weight for the 9 or less passenger seat configuration

Known

Pressure Altitude = 10,000 ft
OAT = 20 °C

Method

Step 1. To determine the OGE hover weight, enter the OGE hover capability chart at a pressure altitude of 10,000 ft. Move horizontally to the right to intersect the 20 °C line. Move vertically down to read a hover capability of 9,300 lb.

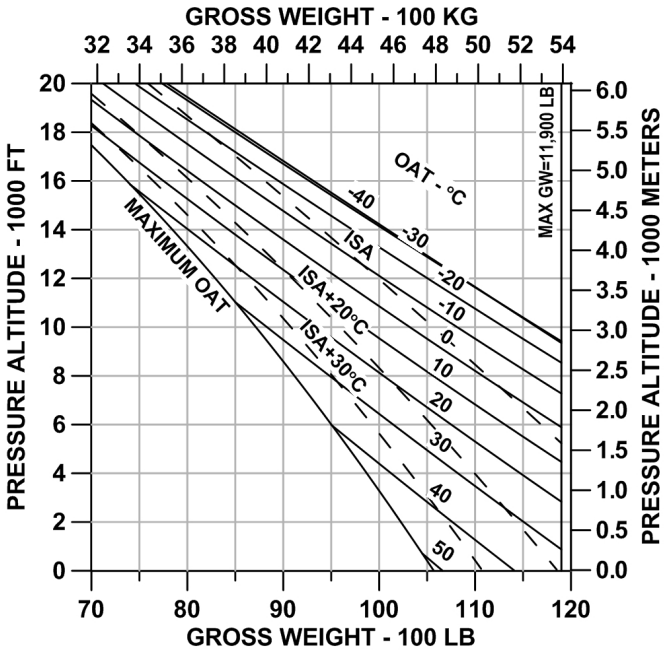
Step 2. To determine the WAT limited gross weight, enter the OGE WAT limitation chart at 20 °C. Drop vertically down to intersect the 10,000 ft pressure altitude line. Move horizontally to the right to intersect the 9 or less passenger seats WAT line. Move vertically up to read 9,550 lb. This is the WAT limited gross weight.

Step 3. The lower of Step 1 and Step 2 will result in a correct OGE hover weight of 9,300 lb.

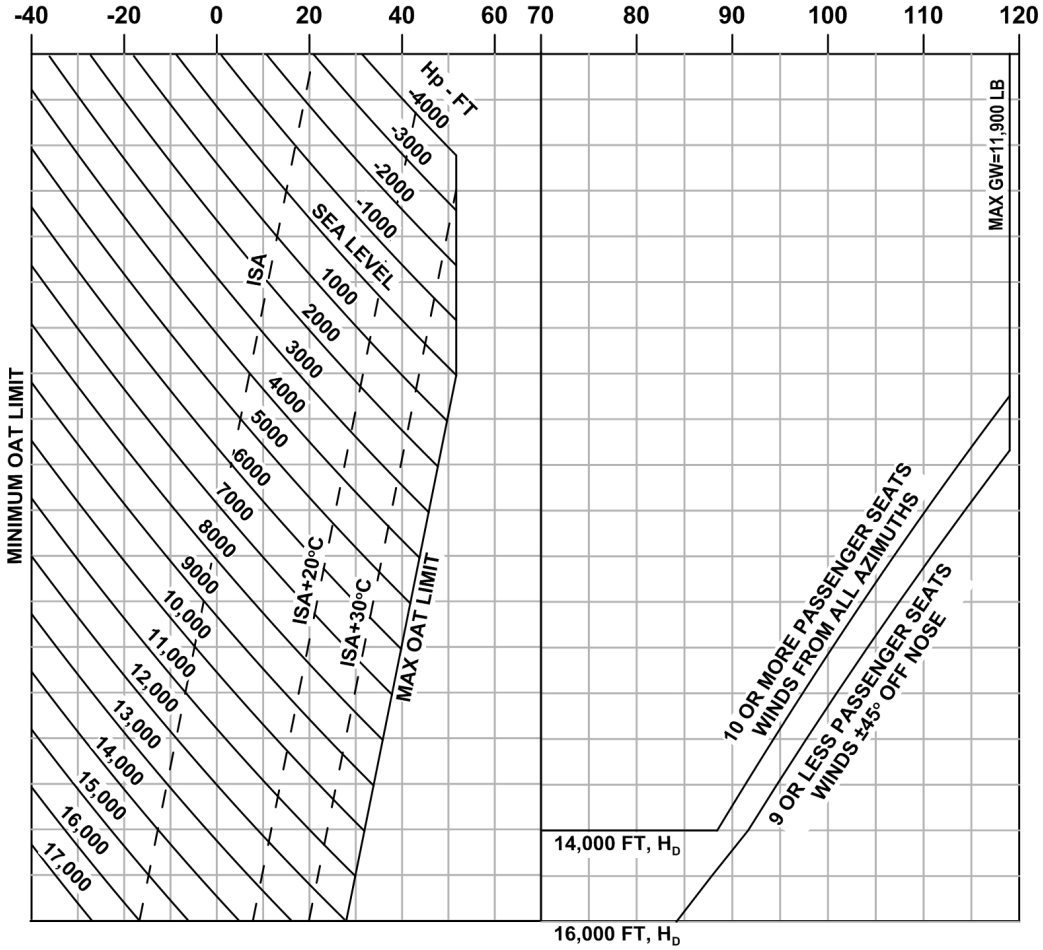
Hover Performance Charts

OGE Hover Capability

Compare hover capability with WAT limitations. The lower of the two gross weights determined is the correct hover performance.



OGE Hover WAT Limitation



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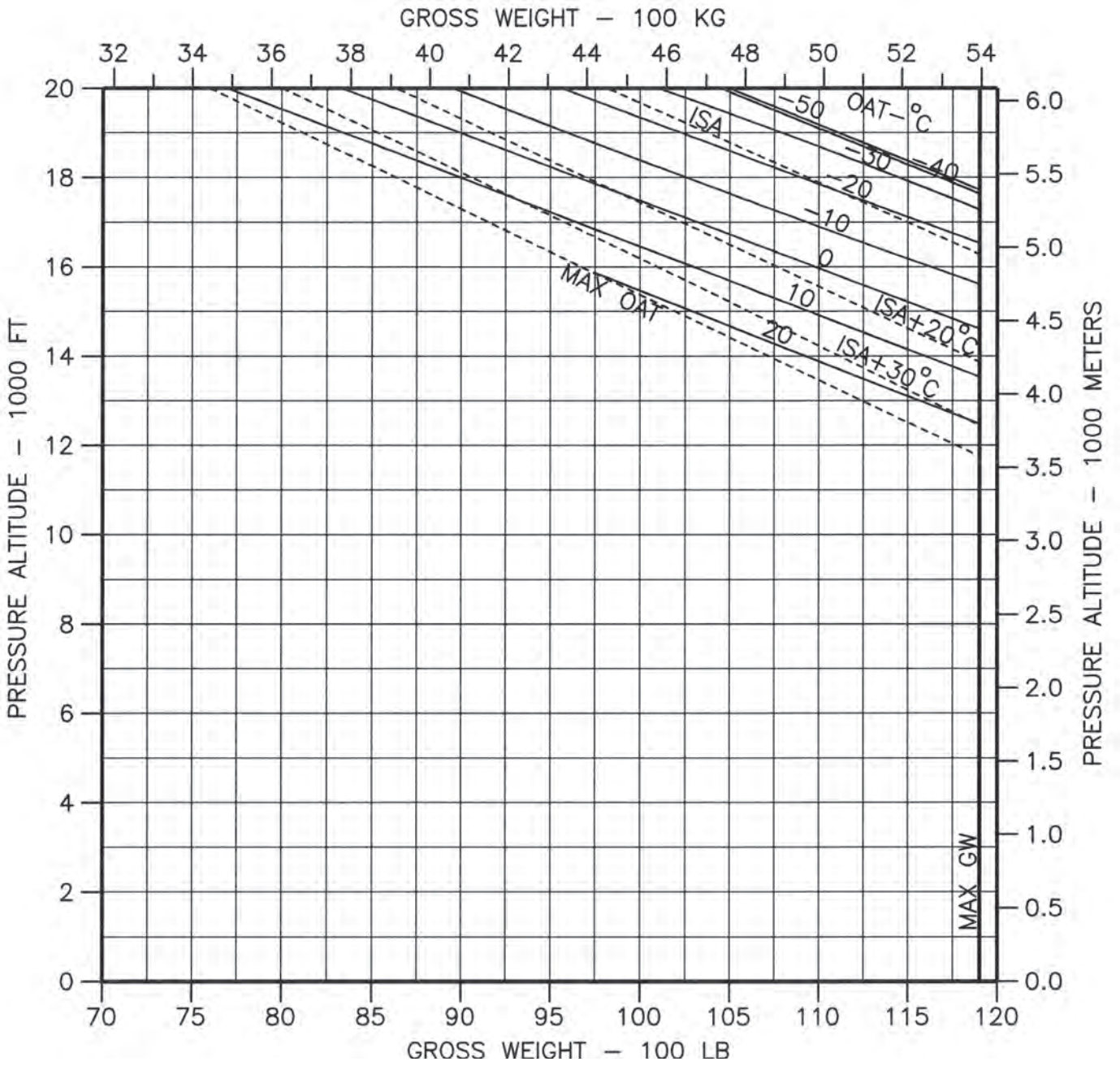
Service Ceiling
Twin Engine Operation at Maximum Continuous Power



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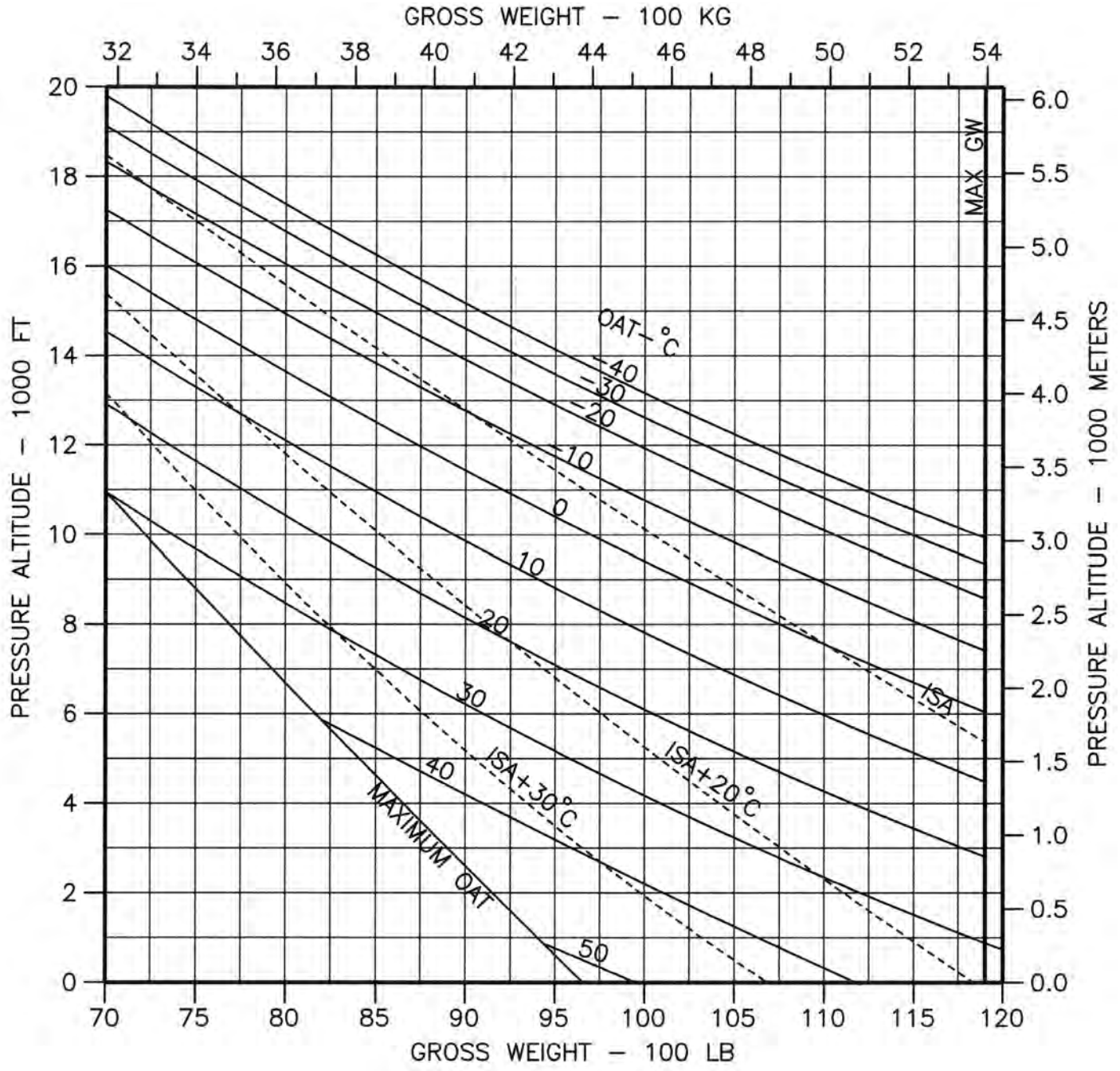
Service Ceiling
OEI @ Continuous Power
Standard PT6T-3D Engine



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Increased OEI Performance Option

KIT # 412-706-050

(PT6T-3DF Engine with OEI 30 Minute Power)

Installation of Kit No. 412-706-050 provides the use of an additional 55 shaft horsepower (engine rated power) under one engine inoperative conditions, for a period of thirty minutes.

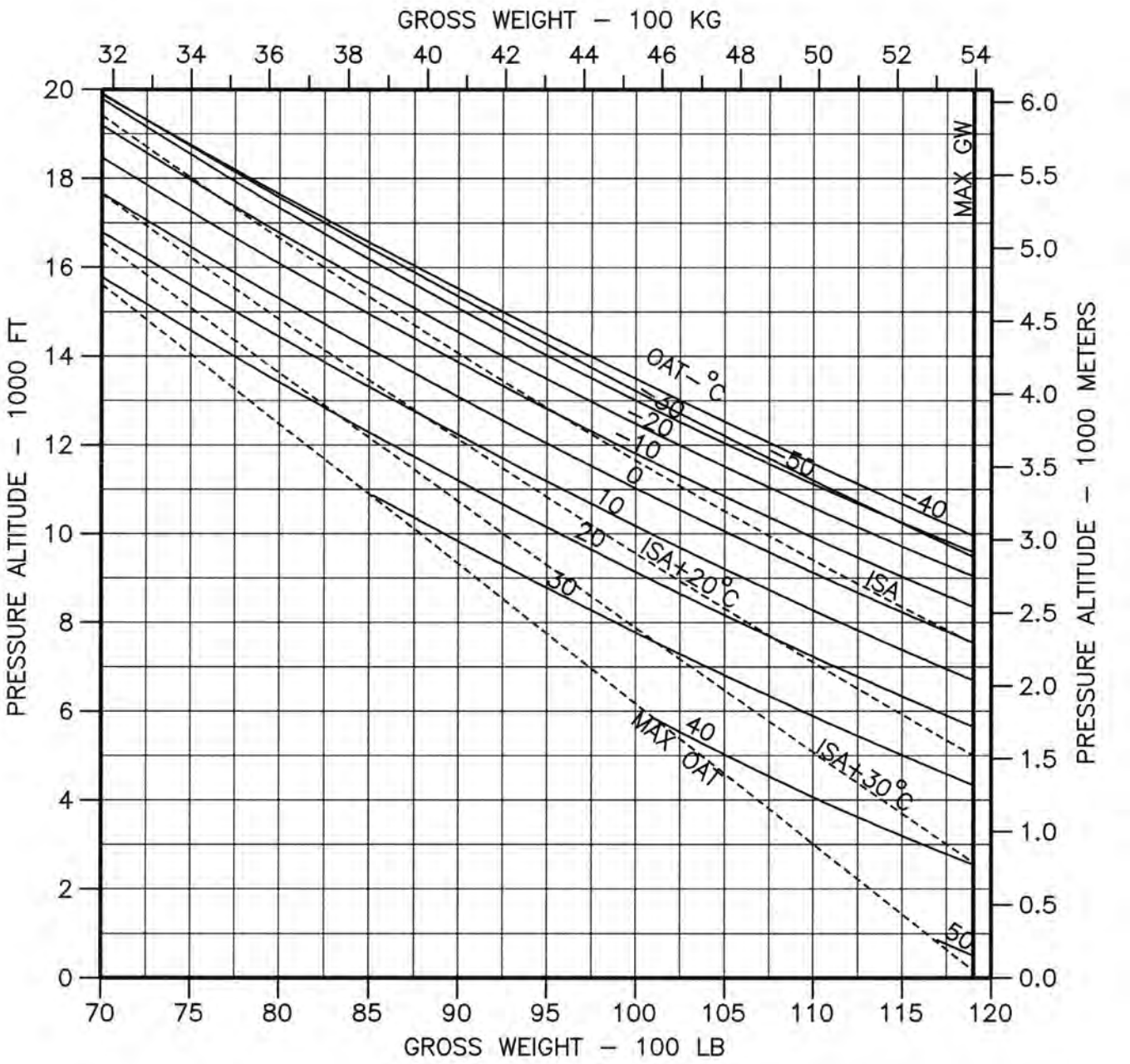
BELL 412EP POWER RATINGS

Engine Ratings (100% RPM)		Uninstalled Thermodynamic Power [1]	Engine Rated Power [2]
Standard: Pratt & Whitney PT6T-3D Twin Pac			
Takeoff (5 minute)	SHP	2 x 950	2 x 900
Max Continuous Power	SHP	2 x 950	2 x 800
OEI (2-1/2 minutes)	SHP	1 x 1,140	1 x 1,133
OEI (continuous)	SHP	1 x 970	1 x 1,024
Optional: Pratt & Whitney PT6T-3DF Twin Pac			
Takeoff (5 minute)	SHP	2 x 950	2 x 900
Max Continuous Power	SHP	2 x 950	2 x 800
OEI (2-1/2 minutes)	SHP	1 x 1,140	1 x 1,133
OEI (30 minutes)	SHP	1 x 1,066	1 x 1,079
OEI (continuous)	SHP	1 x 950	N/A

Notes: [1] Sea Level, ISA Day
[2] Uninstalled mechanical limit

The kit consists of new Gas Producer gauges, ITT gauges, Engine/Transmission Torque gauge, and placards for the instrument panel. There is no increase in empty weight of the aircraft. Performance increase data is presented on the next page.

Service Ceiling
OEI @ 30 Minute Power
* Optional PT6T-3DF Engine Kit *
[Rotorcraft Flight Manual Supplement-56.3 and 56.4]



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Category A Performance

GROUND LEVEL AND ELEVATED HELIPAD (DAY AND NIGHT) PT6T-3DF ENGINE OPTION

Equipment required [installed and functional] to perform Category A operations:

- Dual controls
- Copilot instruments
- Pilot and copilot ICS (elevated helipad only)
- Radar altimeter (visible to both pilots)

Note: Elevated helipad Category A operations require pilot and copilot and can be flown from either seat; Ground level helipad Category A operation may be accomplished by one pilot from the right seat or with pilot and copilot from either seat.

Information on the following pages provides a brief explanation of Category A Operation capability for the Bell 412EP (when equipped with the optional PT6T-3DF Engine) option kit. The WAT charts included may be used to determine takeoff or landing weight capability for ground level and elevated helipad. For simplification, only illustrations describing takeoff are shown. Additional information for other types of Category A operation (reduced drop down height, short and long runway) Is available in the FAA approved rotorcraft flight manual supplement. (412 - FMS - 62.3 and 62.4)

Definitions

Category “A” takeoff: Operation of the helicopter in such a manner that if one Engine fails at any time after the start of the takeoff the Helicopter can:

1. Prior to the TDP (takeoff decision point) return to and safely stop on the takeoff area; or
2. At or after the TDP , climb out from the point of failure and attain single engine forward flight.

Category “A” landing: Operation of the helicopter in such a manner that if one engine fails at any time during the landing approach the Helicopter can:

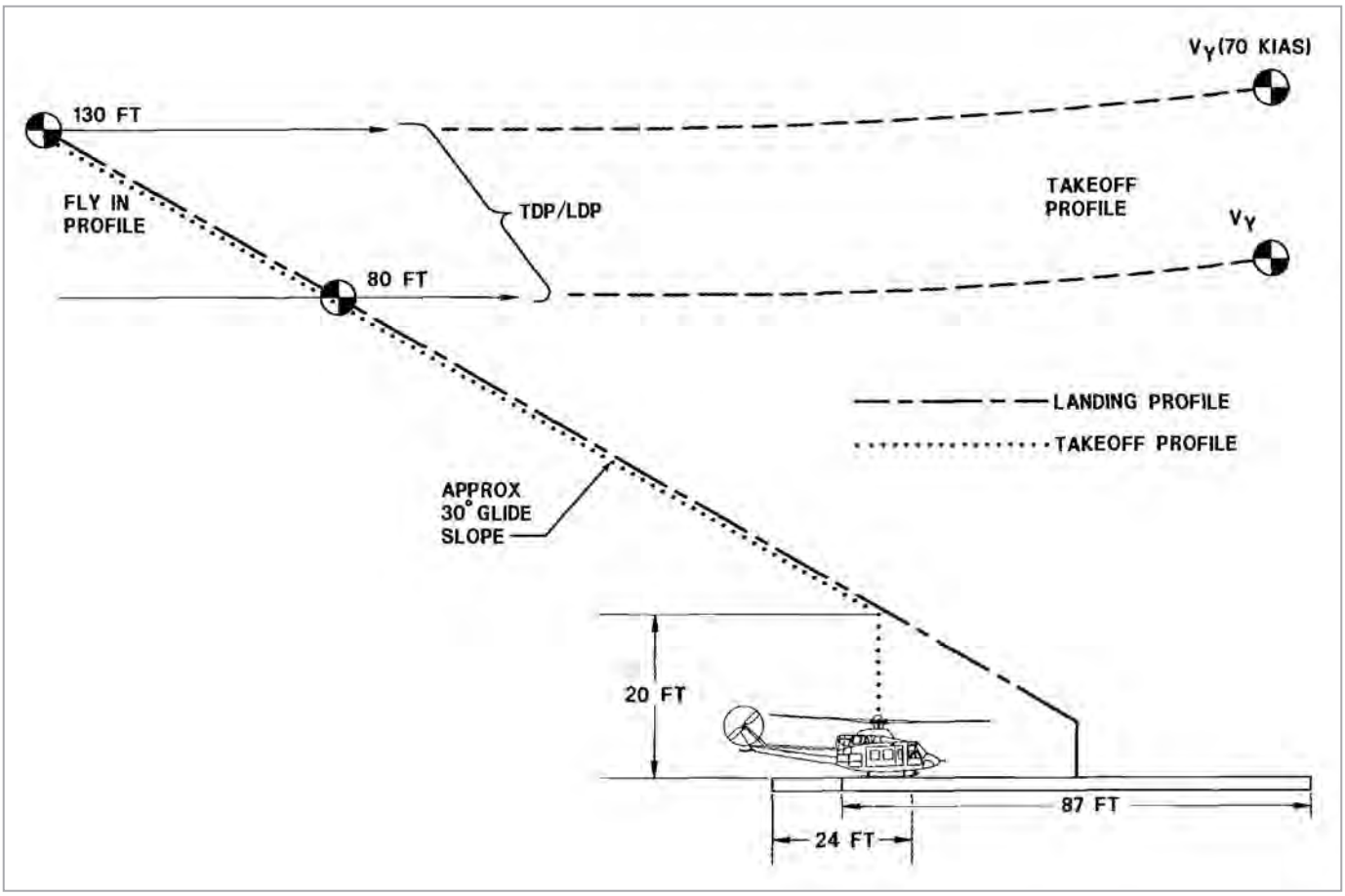
1. At or prior to the LPD (landing decision point) climb out from the point of failure and attain single engine forward flight; or
2. After the LPD , safely stop on the landing area.

Category A Performance

GROUND LEVEL HELIPAD EXPLANATION

Ground level helipad takeoff profile day and night: The ground level takeoff technique consists of a vertical/rearward takeoff to the TDP (80 to 130 ft); then acceleration to V_{TOSS} (40 kias), with subsequent climbout at V_Y (70 kias), to 1,000 ft.

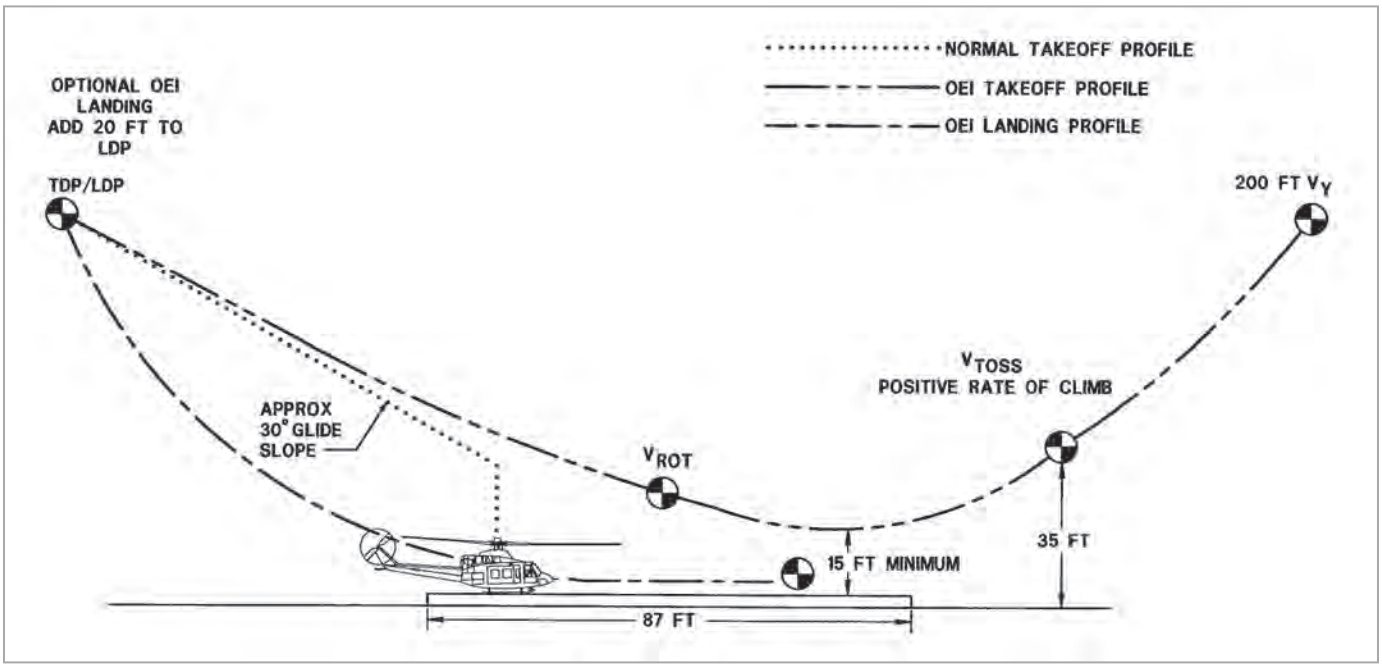
Ground level helipad: For a ground level helipad the associated takeoff and landing limit chart assures 15 feet (4.6 meters) ground level clearance after TDP. The minimum ground level helipad size is 87 by 75 feet (25.9 By 26.5 Meters) with 25 feet (7.6 Meters) clear area around helipad in takeoff / landing direction.



Normal takeoff (AEO) from ground level helipad with all engines operating

V_{ROT} = Rotate speed (velocity where airspeed indicator has perceptible motion).

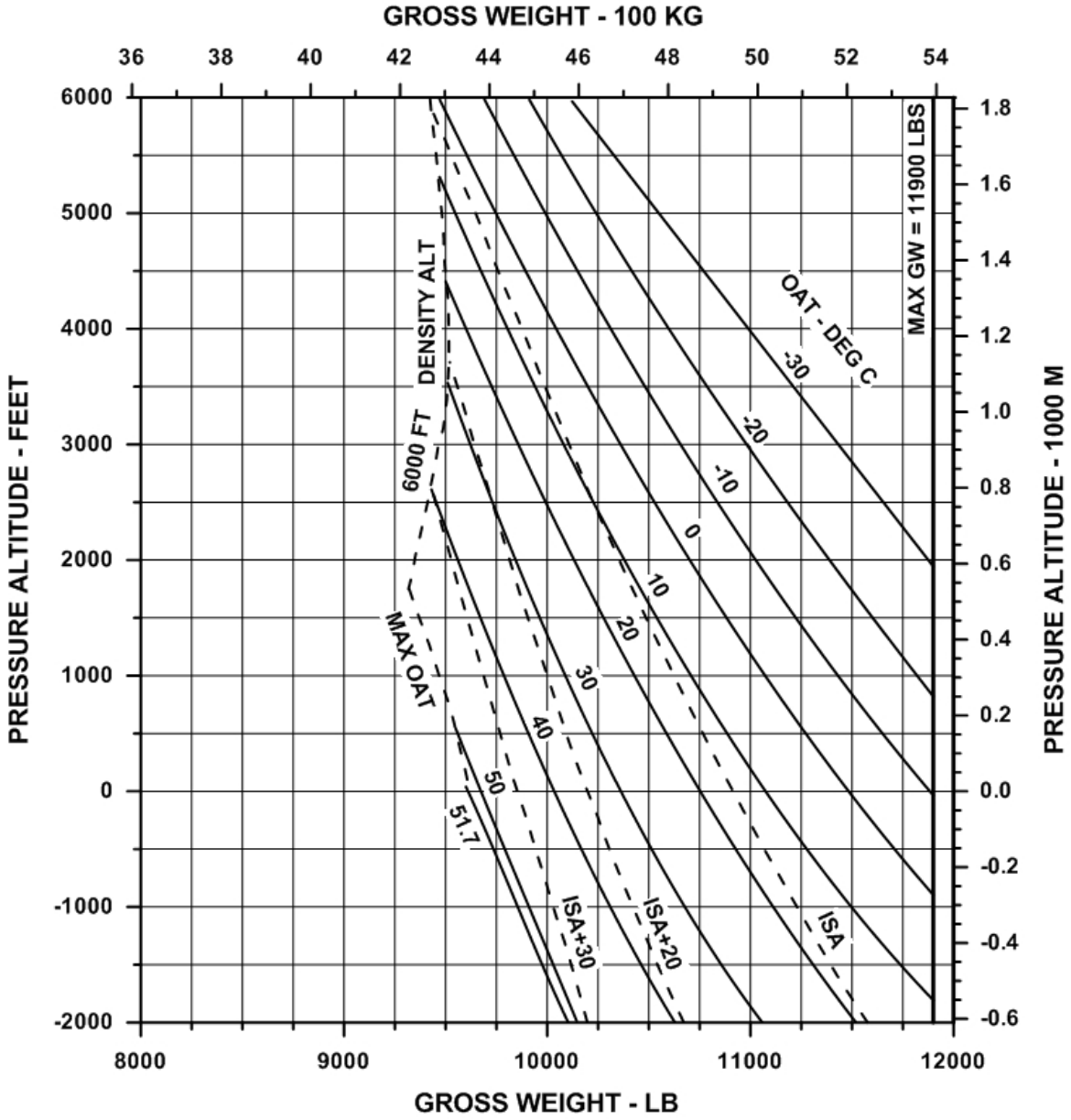
Category A Performance



Emergency takeoff or landing (OEI) one engine inoperative

V_{ROT} = Rotate speed (velocity where airspeed indicator has perceptible motion).

Category A Takeoff and Landing Limit
Ground Level Helipad (Day and Night)
PT6T-3DF Engine Option
2.5 Min OEI Power, 103% Rotor RPM (AEO)



Using the chart:

1. Enter the chart at the pressure altitude of the takeoff / landing helipad
2. Follow the graph line horizontally to the appropriate OAT (outside air temperature) trend line.
3. Follow the graph line vertically to the appropriate gross weight.
4. The indicated gross weight is takeoff / landing capability with zero headwind.

Note: Category A takeoff and landing has not been demonstrated and is not approved above 6,000 feet / 1,829 meters density altitude.

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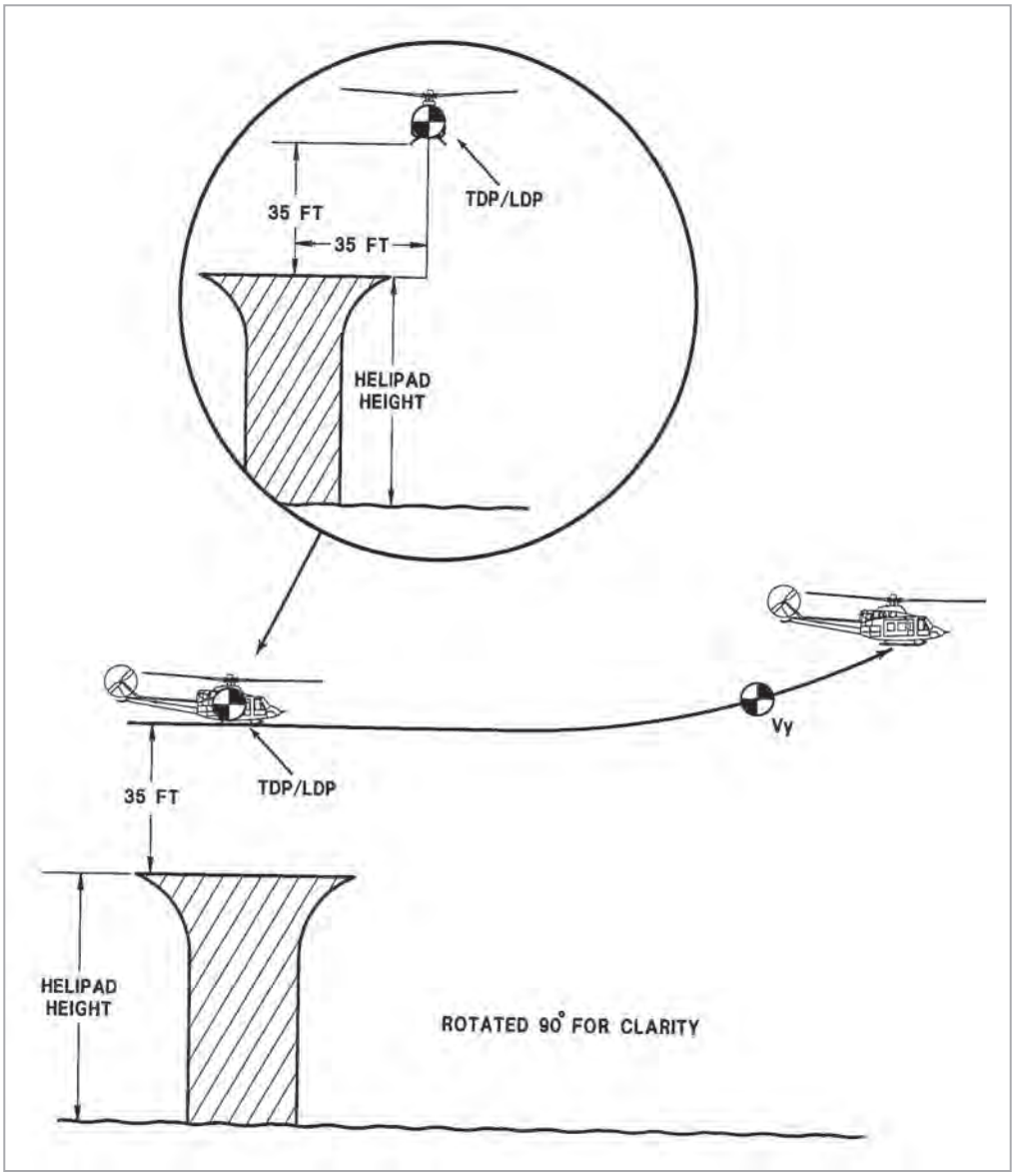
Category A Performance

ELEVATED HELIPAD EXPLANATION

Elevated helipad takeoff profile day or night: The takeoff technique consists of a vertical takeoff to 35 ft, and lateral movement 35 ft from the center of the helipad to the TDP; then acceleration to V_{TOSS} (40 kias), with subsequent climbout at V_Y (70 kias), to 1,000 ft.

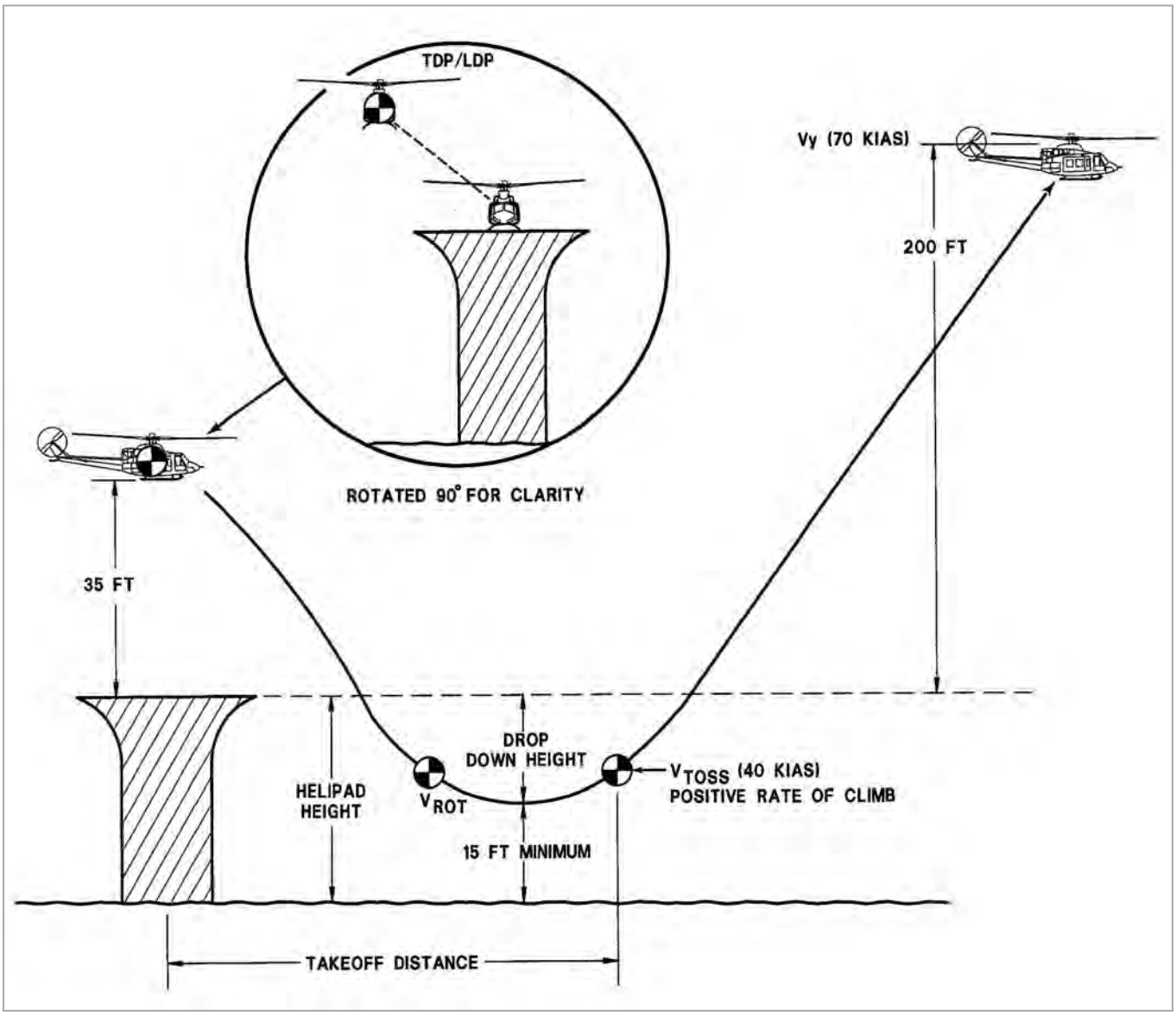
Elevated helipad: For a helipad 90 feet (27.4 Meters) high or greater, the associated takeoff and landing limit chart assures 15 feet (4.6 Meters) vertical obstacle clearance after TDP. Additional charts are available in the rotorcraft flight manual supplement for reduced drop down height. The minimum elevated helipad dimensions are 60 x 60 feet (18.3 x 18.3 Meters) and must be positioned so that one edge is within 30 ft (9.1 m) of a vertical drop.



Normal takeoff (AEO) from elevated platform with all engines operating

V_{ROT} = Rotate speed (velocity where airspeed indicator has perceptible motion).

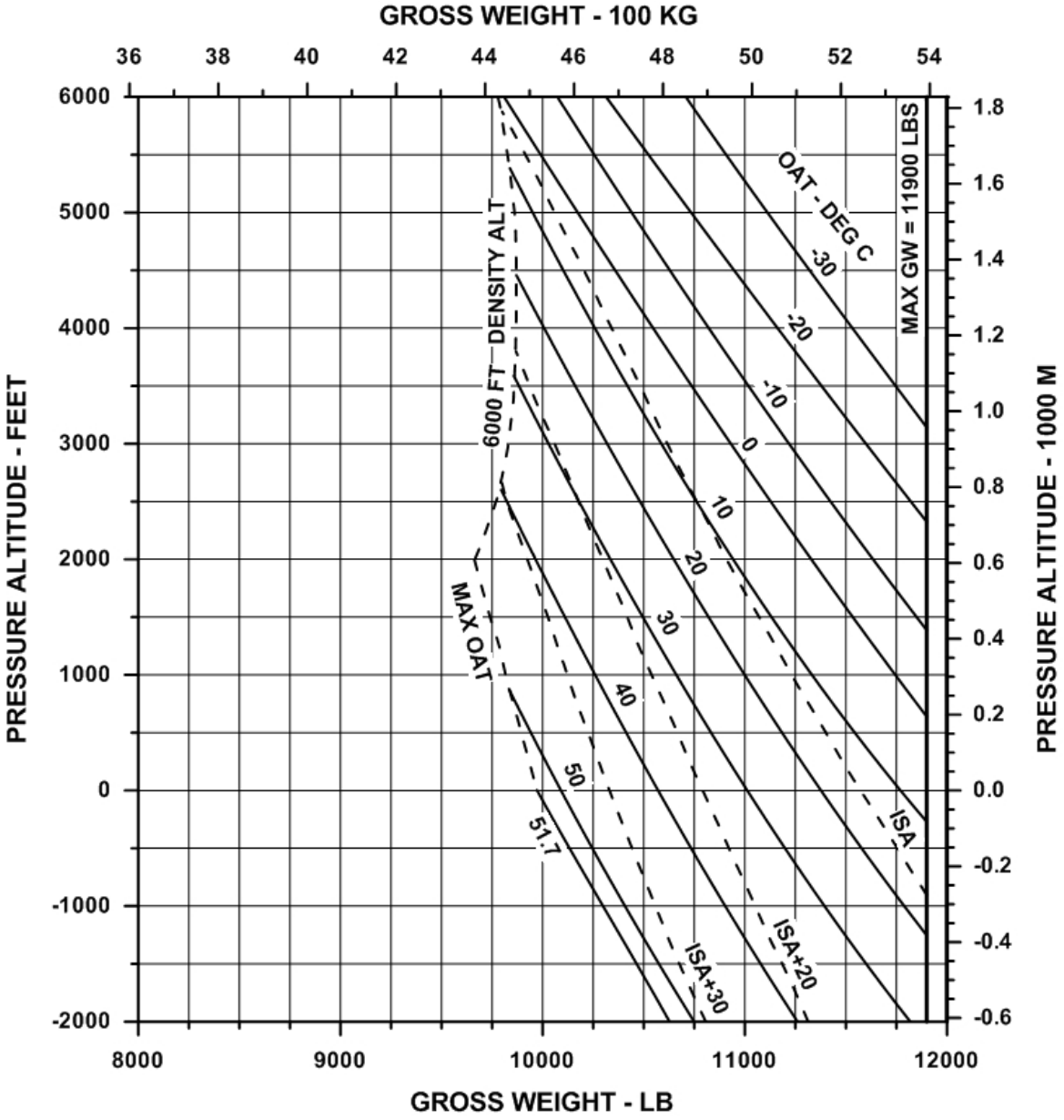
Category A Performance



Emergency takeoff or landing (OEI) from elevated platform with one engine inoperative

V_{ROT} = Rotate speed (velocity where airspeed indicator has perceptible motion).

Category A Takeoff and Landing Limit
Elevated Helipad (Day and Night)
PT6T-3DF Engine Option
2.5 Min OEI Power, 103% Rotor RPM (AEO)



Using the chart:

1. Enter the chart at the pressure altitude of the takeoff / landing helipad
2. Follow the graph line horizontally to the appropriate OAT (outside air temperature) trend line.
3. Follow the graph line vertically to the appropriate gross weight.
4. The indicated gross weight is takeoff / landing capability with zero headwind.

Note: Category A takeoff and landing has not been demonstrated and is not approved above 6,000 feet / 1829 meters density altitude.

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Fuel Flow vs. Airspeed

ISA & ISA + 20 °C
PRATT & WHITNEY CANADA
PT6T-3D SERIES ENGINE

NOTE: The best allowable cruise speed is either long range cruise speed (LRC, or when speed is limited by Maximum Continuous Cruise Power (MCP) or V_{NE}, the maximum speed permitted .

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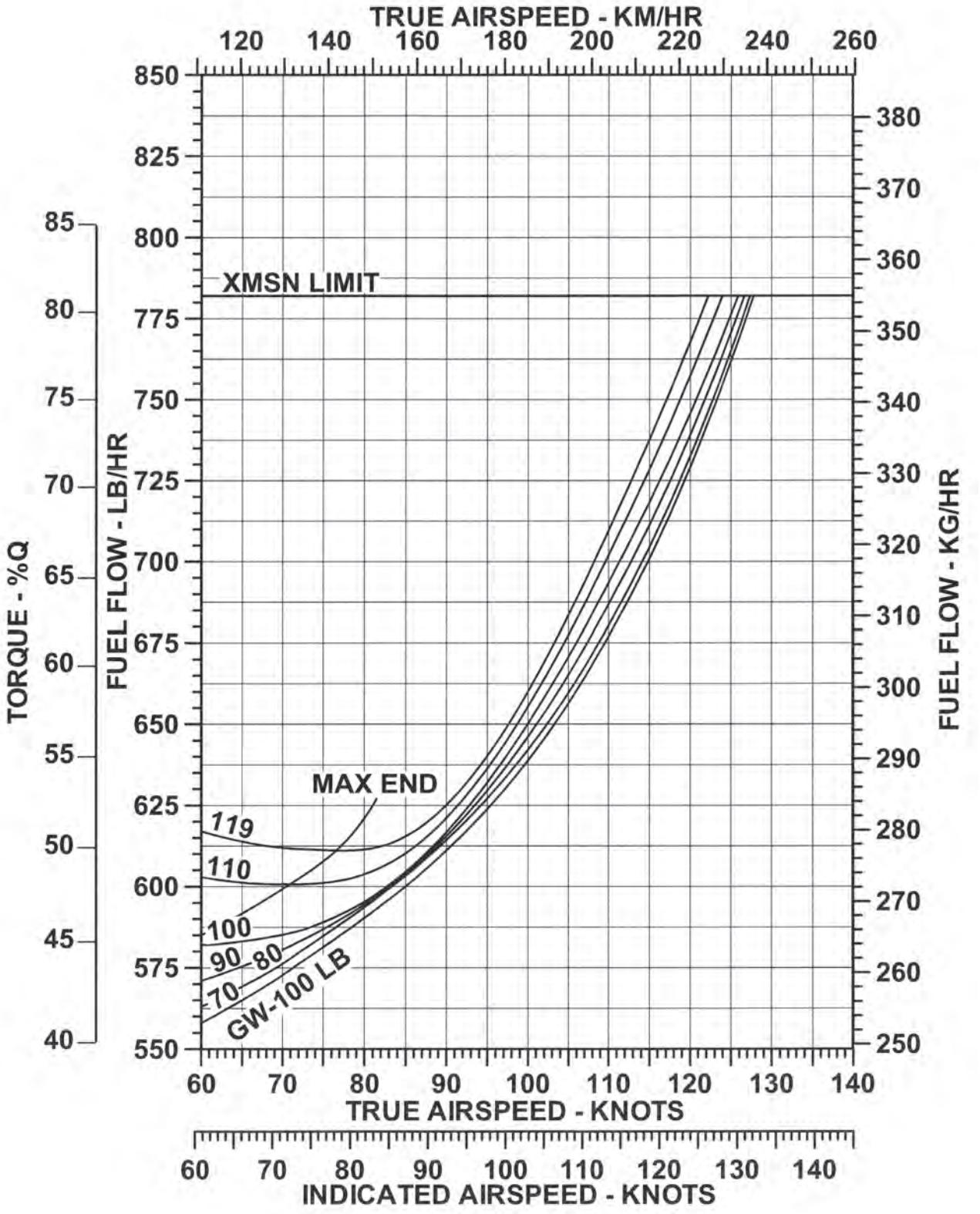
Fuel Flow
Twin Engine Operations (97% RPM) Zero Wind
Sea Level Pressure Altitude
OAT = 15 °C (ISA)



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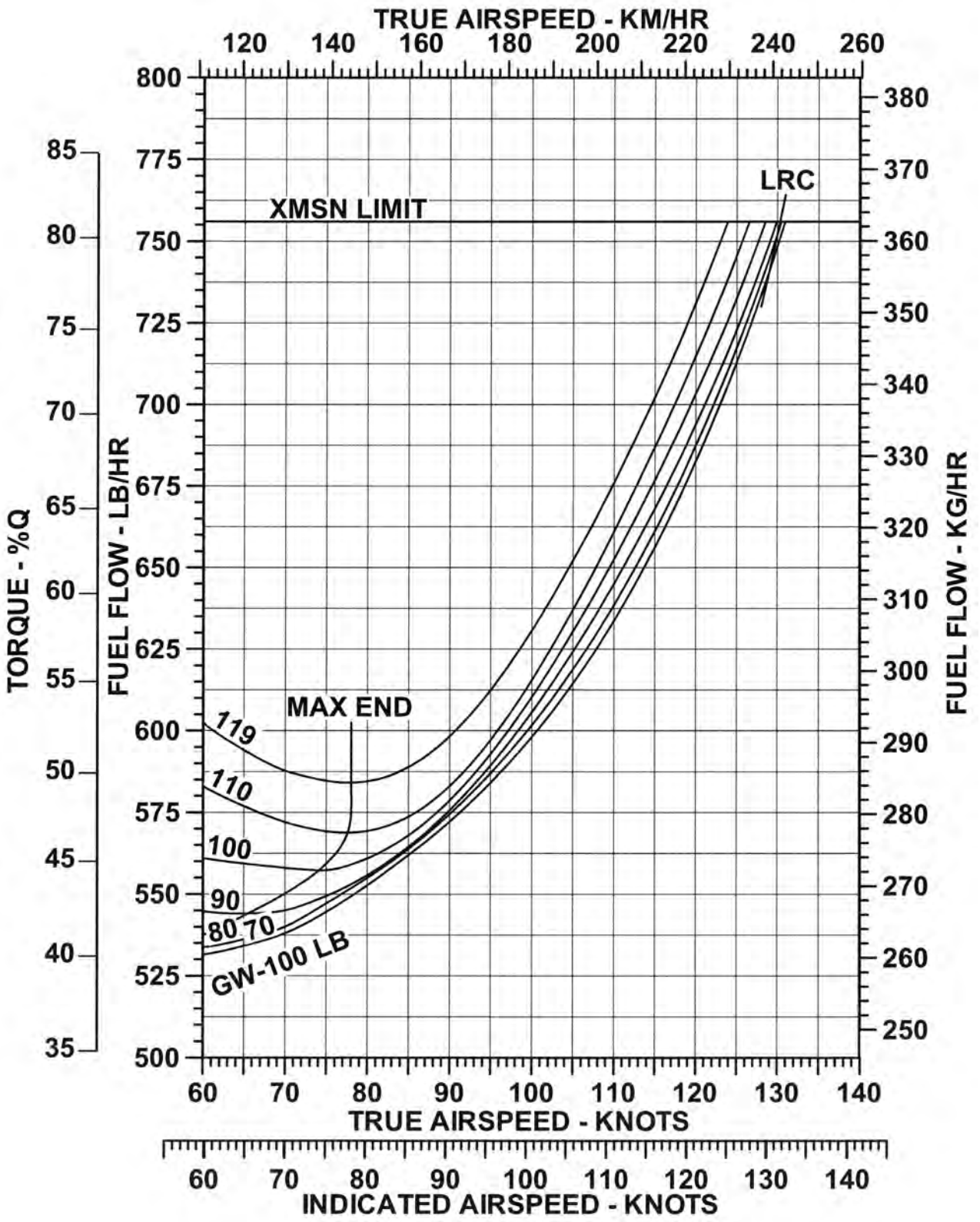
Fuel Flow
Twin Engine Operations (97% RPM) Zero Wind
2,000 Feet Pressure Altitude
OAT = 11 °C (ISA)



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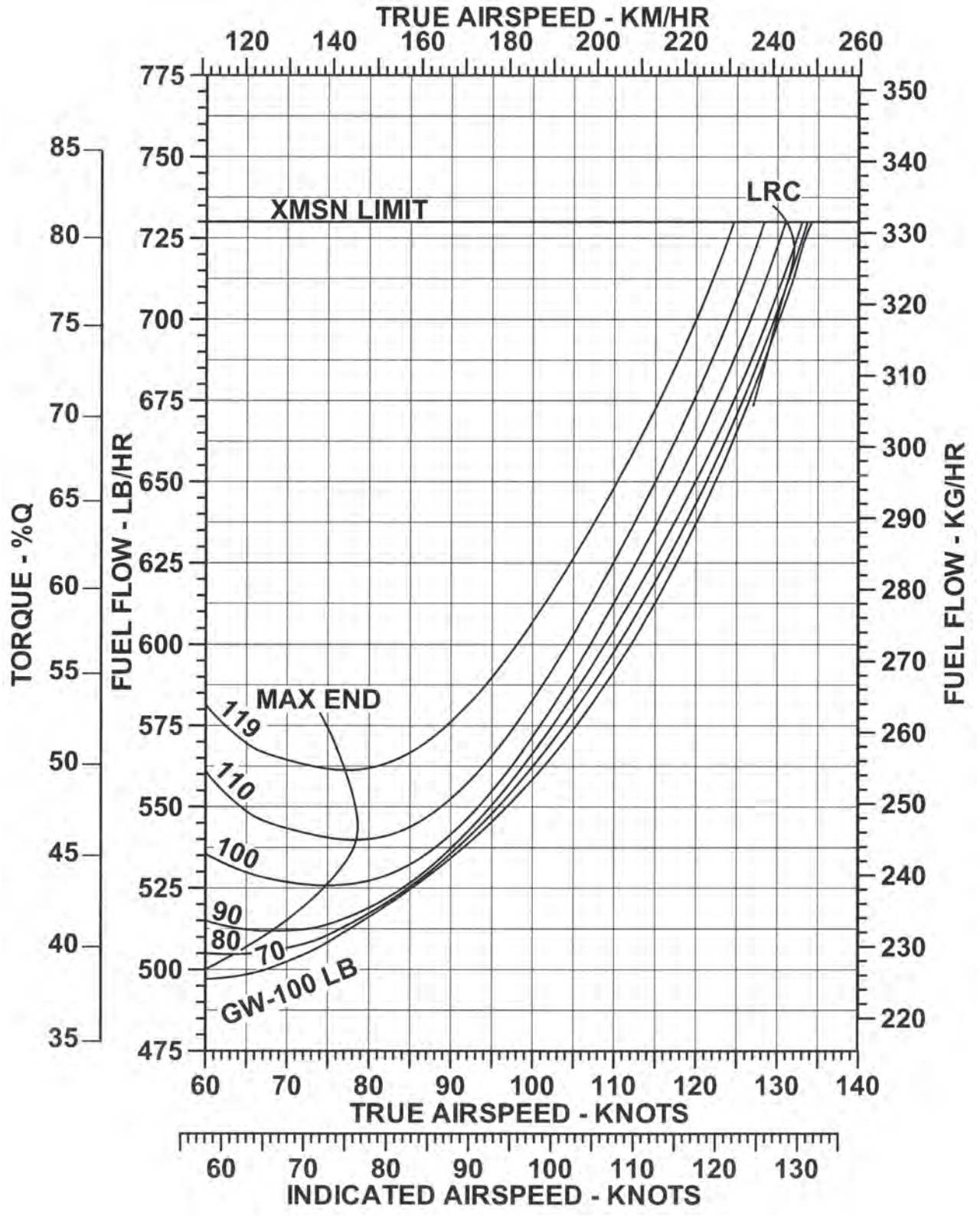
Fuel Flow
Twin Engine Operations (97% RPM) Zero Wind
4,000 Feet Pressure Altitude
OAT = 7 °C (ISA)



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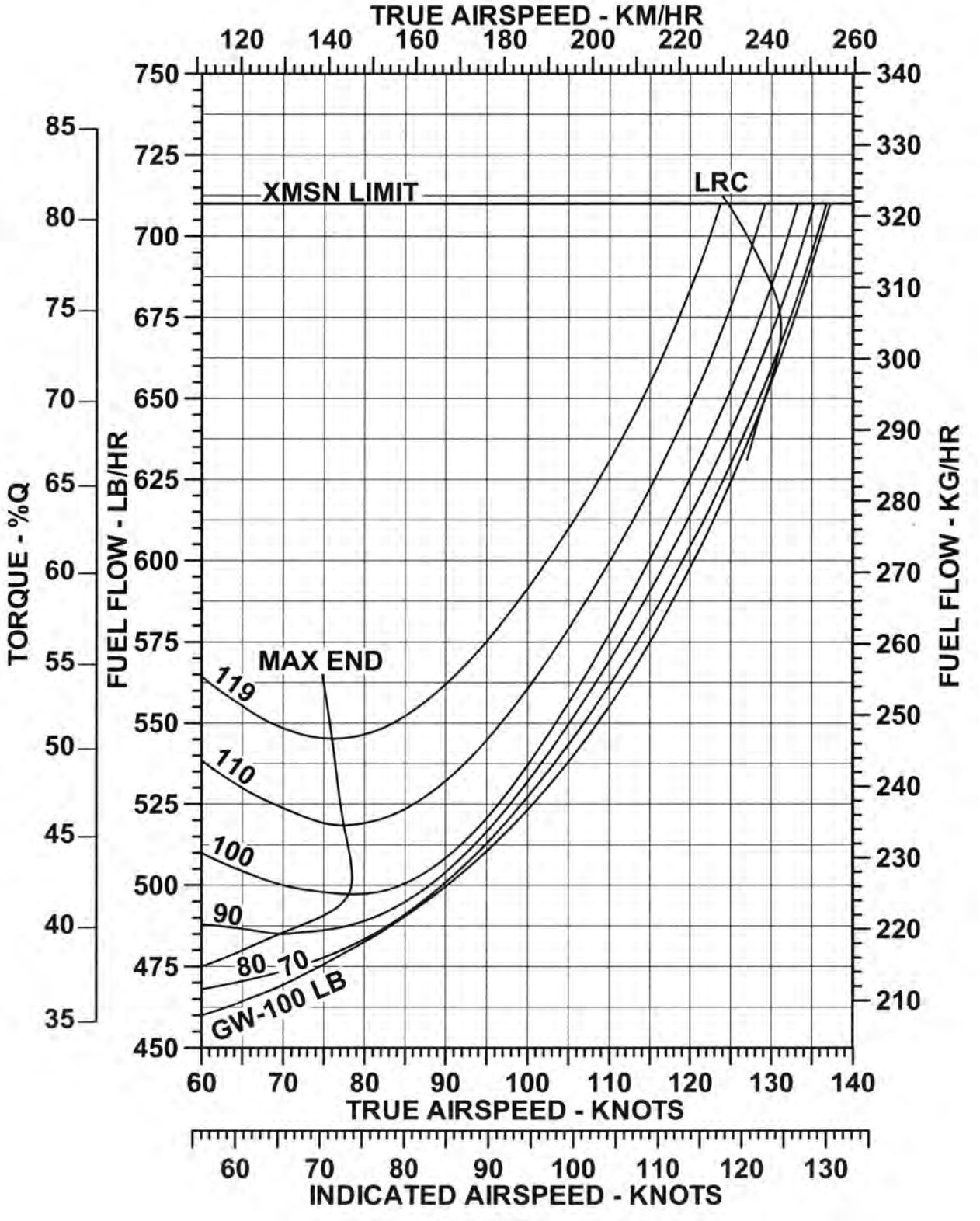
Fuel Flow
Twin Engine Operations (97% RPM) Zero Wind
6,000 Feet Pressure Altitude
OAT = 3 °C (ISA)



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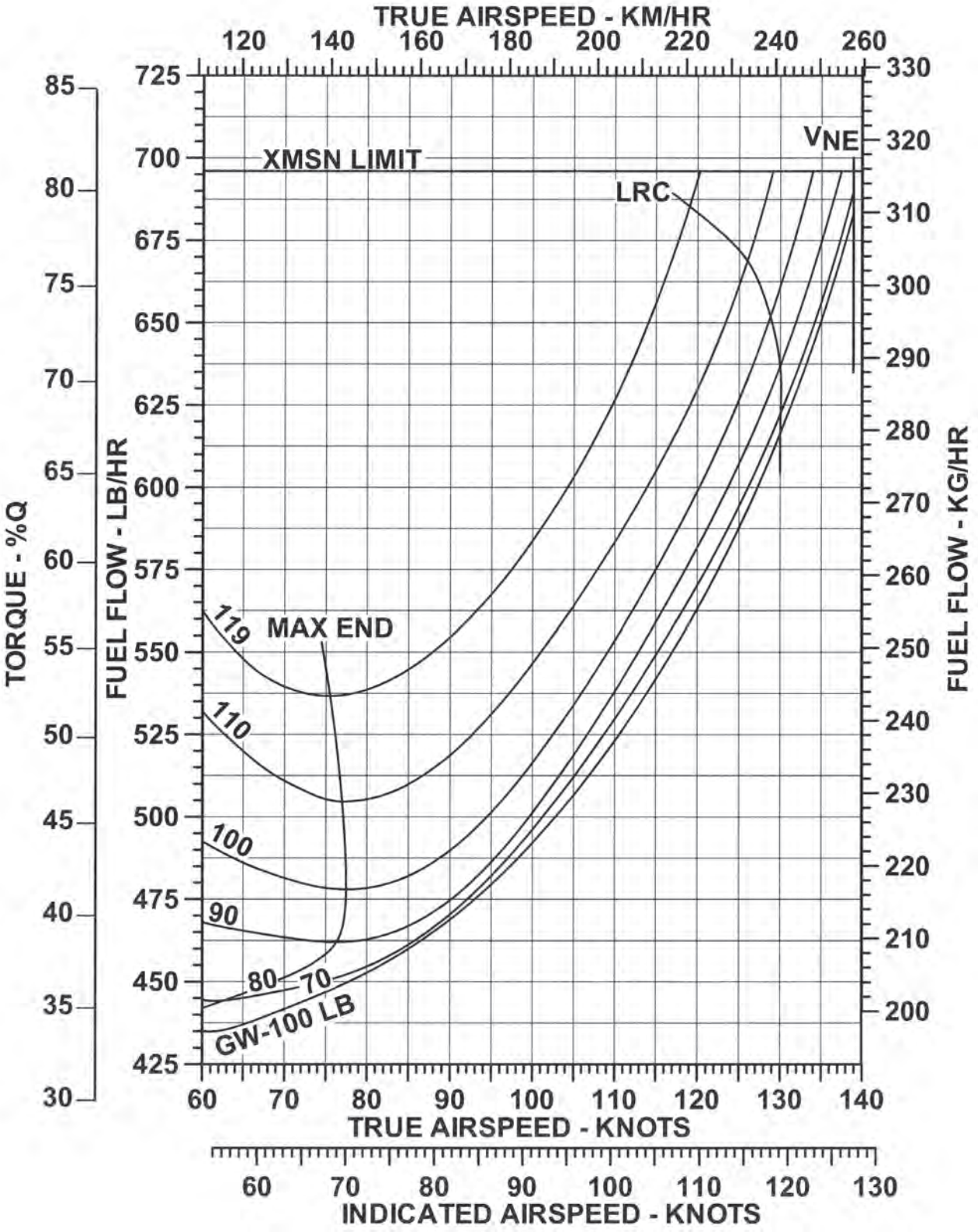
Fuel Flow
Twin Engine Operations (97% RPM) Zero Wind
8,000 Feet Pressure Altitude
OAT = -1 °C (ISA)



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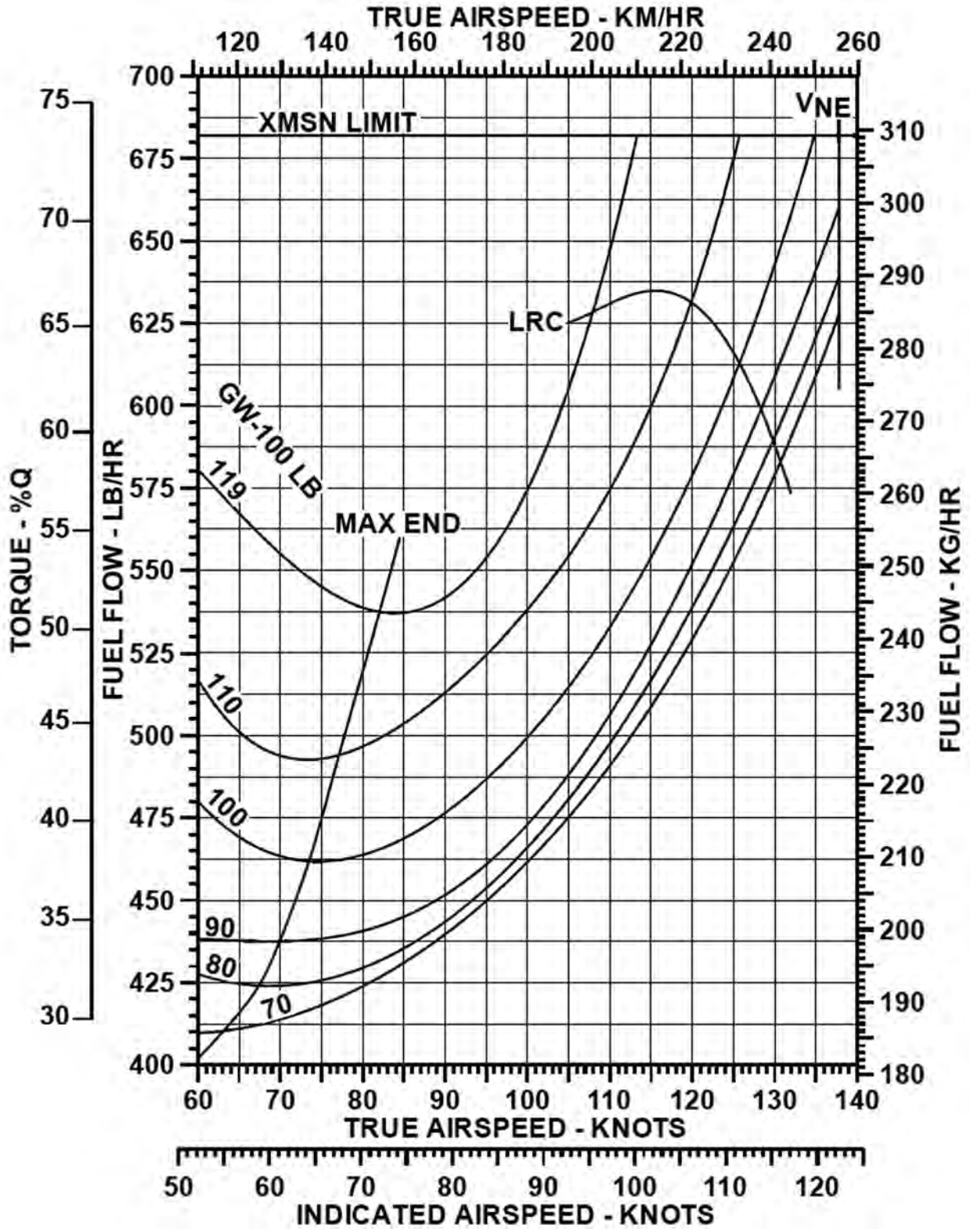
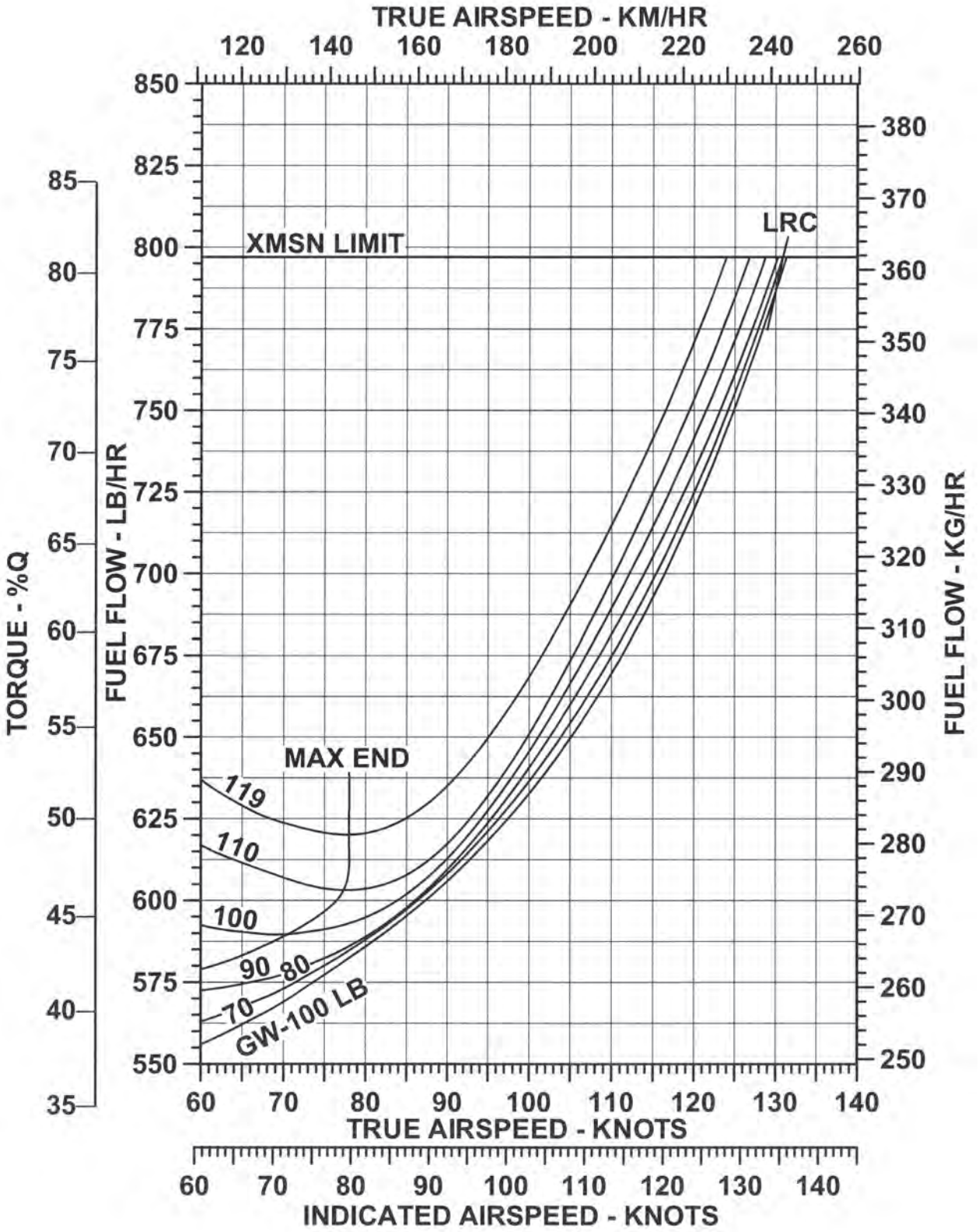
Fuel Flow
Twin Engine Operations (97% RPM) Zero Wind
10,000 Feet Pressure Altitude
OAT = -5 °C (ISA)



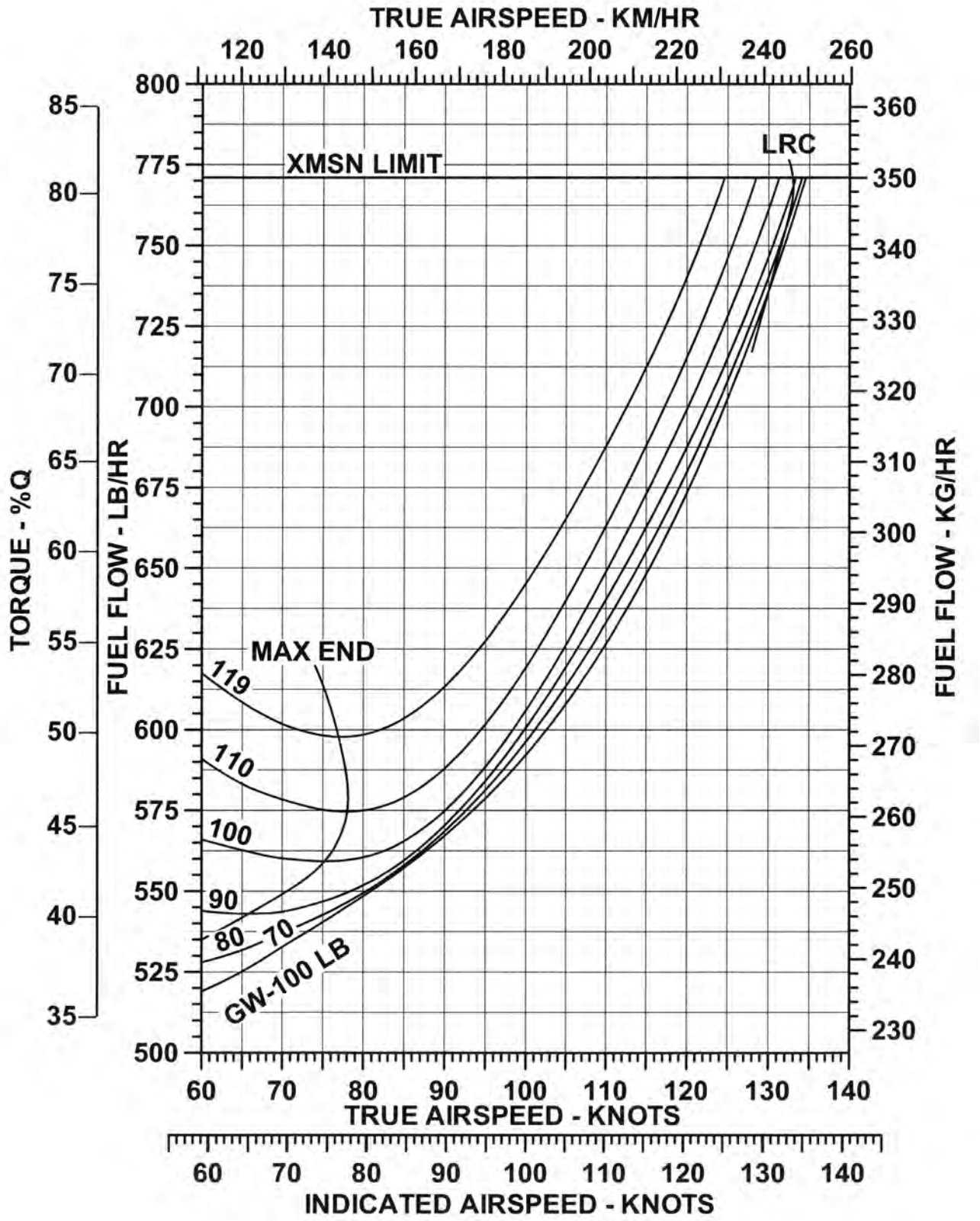
The data set forth in this document are general in nature and may vary with conditions.
For performance data and operating limitations for any specific flight mission, reference must be made to the approved Flight Manual.

Fuel Flow
Twin Engine Operations (97% RPM) Zero Wind
Sea Level Pressure Altitude
OAT = 35 °C (ISA + 20)



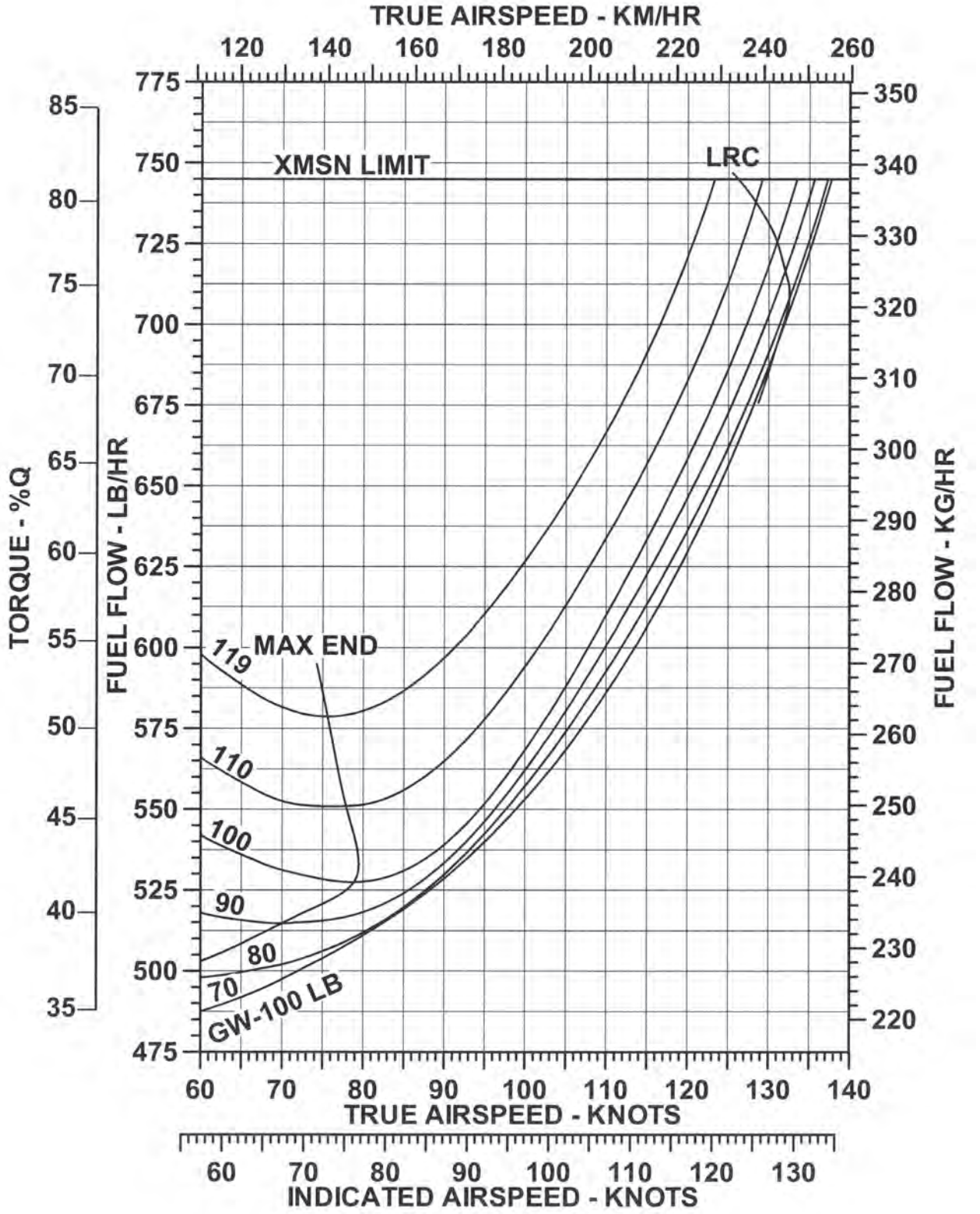
The data set forth in this document are general in nature and may vary with conditions.
For performance data and operating limitations for any specific flight mission, reference must be made to the approved Flight Manual.

Fuel Flow
Twin Engine Operations (97% RPM) Zero Wind
2,000 Feet Pressure Altitude
OAT = 31 °C (ISA + 20)



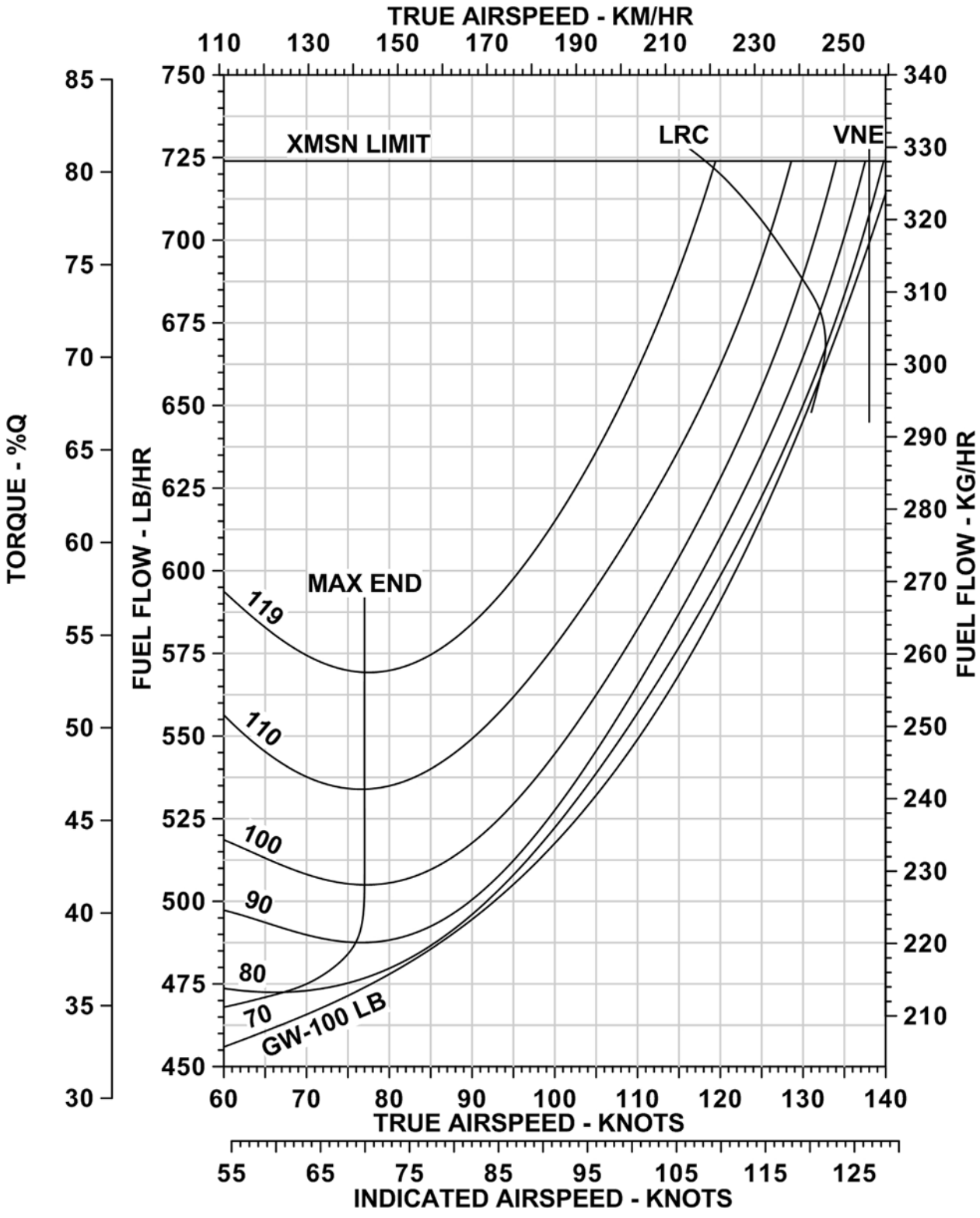
The data set forth in this document are general in nature and may vary with conditions.
For performance data and operating limitations for any specific flight mission, reference must be made to the approved Flight Manual.

Fuel Flow
Twin Engine Operations (97% RPM) Zero Wind
4,000 Feet Pressure Altitude
OAT = 27 °C (ISA + 20)



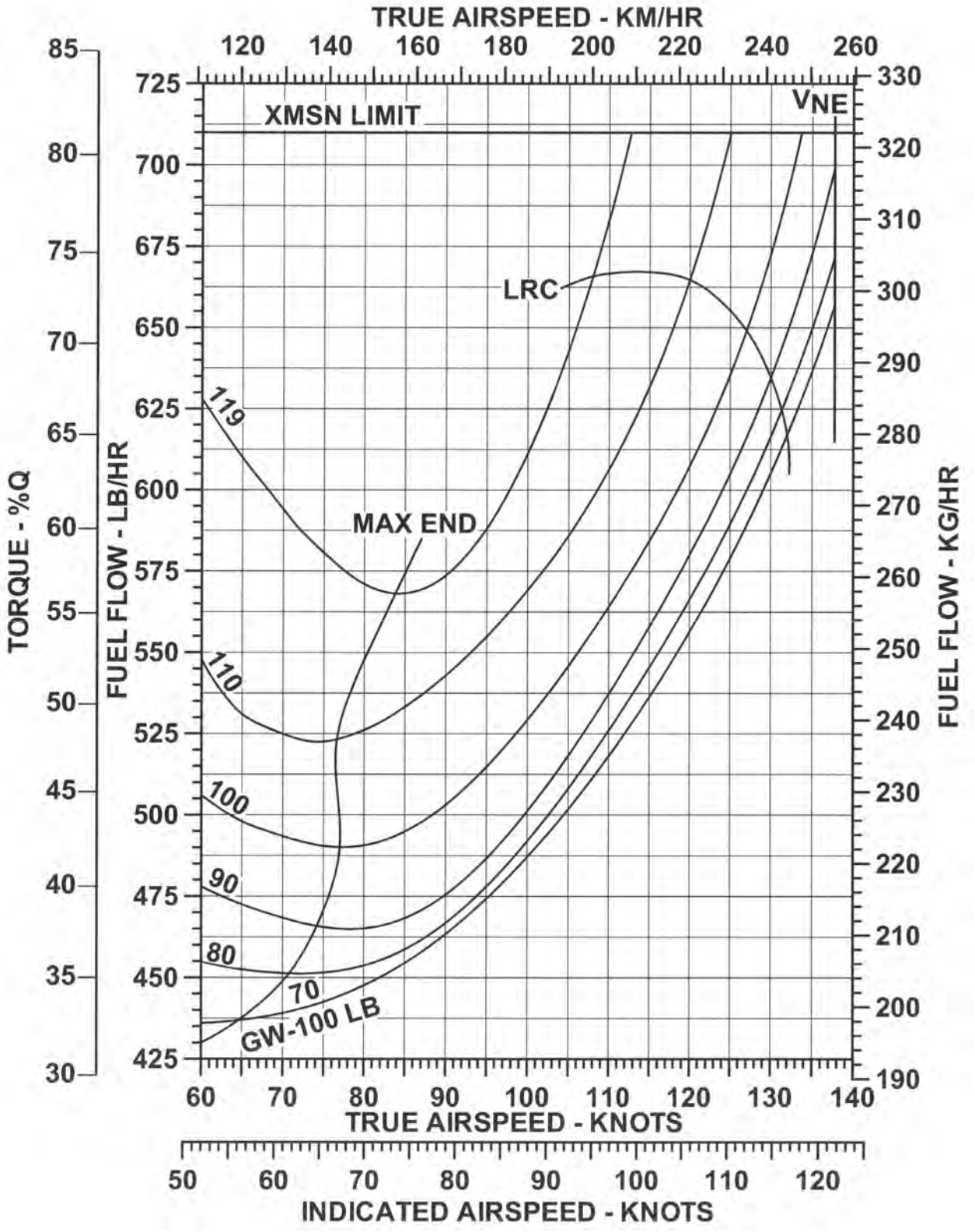
The data set forth in this document are general in nature and may vary with conditions.
For performance data and operating limitations for any specific flight mission, reference must be made to the approved Flight Manual.

Fuel Flow
Twin Engine Operations (97% RPM) Zero Wind
6,000 Feet Pressure Altitude
OAT = 23 °C (ISA + 20)



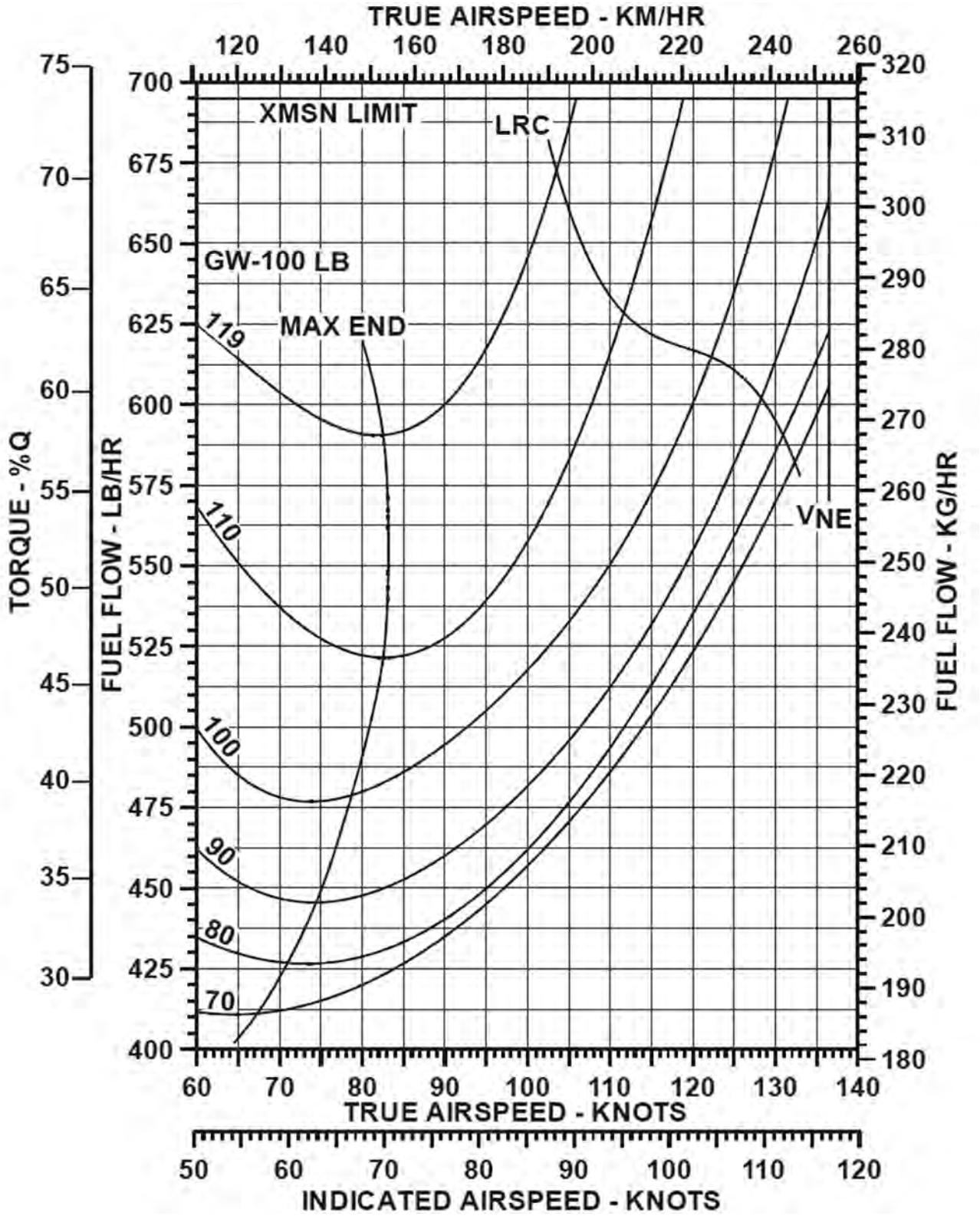
The data set forth in this document are general in nature and may vary with conditions.
For performance data and operating limitations for any specific flight mission, reference must be made to the approved Flight Manual.

Fuel Flow
Twin Engine Operations (97% RPM) Zero Wind
8,000 Feet Pressure Altitude
OAT = 19 °C (ISA + 20)



The data set forth in this document are general in nature and may vary with conditions.
For performance data and operating limitations for any specific flight mission, reference must be made to the approved Flight Manual.

Fuel Flow
Twin Engine Operations (97% RPM) Zero Wind
10,000 Feet Pressure Altitude
OAT = 15 °C (ISA + 20)



The data set forth in this document are general in nature and may vary with conditions.
For performance data and operating limitations for any specific flight mission, reference must be made to the approved Flight Manual.

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Cost of Operations

INTRODUCTION

Bell Helicopter Textron Inc.'s cost of operations data for current production helicopters is based on information from Bell Helicopter operators and service facilities. BHTI's Product Support organization accumulates cost data from a diverse group of operators - large, small; sub-polar, subtropical; inland, coastal; corporate, charter. This information is analyzed to generate sample data for each production model which are averages of the field experience. BHTI intends to continue monitoring actual costs to enable annual updates of the data to maintain its currency.

The following discussion is provided to review the variables involved in the helicopter's direct and indirect cost of operations as well as its cost of ownership.

The total cost of helicopter ownership and operation involves both direct and indirect costs. The direct costs are those which are incurred essentially by the flight hour and include:

- Fuel, Lubricants
- Basic Airframe Maintenance
- Powerplant Maintenance

The indirect costs are not directly dependent upon the number of hours flown and include:

- Insurance
- Facilities (hangar, workshop, etc.)
- Crew Compensation
- Financial Factors (depreciation, investment tax credit, financing costs, etc.)

Sample direct operating cost data is available for each current production model. Detailed estimates for total costs relating to specific operations are available through the BHT regional marketing manager or corporate office using input data supplied by customer/prospect.

DIRECT COSTS

Fuel, Lubricants

A typical average value of fuel and lubricant costs is included in the sample data provided for each model. Fuel consumption depends upon speed, temperature, externally-mounted accessories, sling loads, etc. A band of approximately 10% more or less than sample value will cover these factors for normal operations. Fuel pricing varies considerably based on where the fuel is purchased geographically and whether it is purchased retail or in bulk. The sample cases use average retail purchase price prevalent at the time of the sample data are prepared.

Basic Airframe Maintenance

Airframe maintenance is divided into four categories:

- Periodic Inspections
- Overhauls
- Replacement of Retirement Parts
- Unscheduled

Periodic inspections include those inspection tasks, with their part requirements, listed in the Maintenance Manual for each model. Man hours for periodic inspections can vary from the sample value provided because of differences in personal experience, tool and parts availability, facilities, environmental effects such as extremes in working temperatures. Man hour costs/hour are also variable among the Authorized Service Centers as a result of differences in local costs, overhead expenses and volume of work. The sample value is an average of costs per hour at Authorized Service Centers at the time of publication.

Overhauls include removal, disassembly, inspection, parts replacement, reassembly and reinstallation of certain components/assemblies at the periods stated in the BHTI Maintenance Manual. Overhaul man hour and parts requirements are subject to considerable variation depending upon the helicopter's operations and environments. The sample data reflect average values.

Cost of Operations

Retirement parts are those which are subject to disposal after an operating time stated in the Maintenance Manual. These are normally components of the rotors/control systems which are subject to oscillatory loads and are designed and tested for use over a finite number of flight hours rather than on their condition. The replacement at the required intervals requires some labor which is included in the man hour data in the sample.

Unscheduled maintenance encompasses labor and parts replacement for major maintenance not covered under the formal Maintenance Manual requirements for inspections and overhauls. It also includes those additional maintenance requirements imposed by the manufacturer through issue of Service Bulletins.

The sample data for periodic inspections provide for some minor unscheduled maintenance tasks resulting from the inspection.

Powerplant Maintenance

The powerplant (engine) requires periodic inspection and overhauls. The overhaul periods are based on the number of operating hours or on the number of cycles, whichever is the first limit to be attained. Start cycles are a factor because thermal cycles are important in the design of the turbine engine's rotating components. Overhauls are performed by the engine manufacturer and/or at authorized facilities. Powerplant overhaul can be performed for the engine as a unit, or in some cases for individual modules. (Modules can be gearbox, compressor, turbine, for example.) Each module can have its own overhaul period. Modular overhaul can be cost-effective for some operations and its use should be evaluated. Engine or module exchanges can be made in lieu of overhaul. For details, contact the engine manufacturer or his authorized distributors/service centers. The sample costs are based on an average exchange. The powerplant may also require unscheduled maintenance (unscheduled removals for repair, parts replacement).

INDIRECT COSTS

Insurance:	Insurance rates are based on a number of factors including claim experience, type of operations, and crew qualifications. Rates can be obtained from insurance agent/broker.
Facilities:	Facilities can include hangar, workshop, parts storage area, tools, ground support equipment and administrative area as appropriate to the specific operation.
Crew Compensation:	The number of aircrew personnel depends on the individual operation; i.e., whether the normal crew consists of one or two pilots, hours per day flown, backup requirements for illness, vacation, etc. Bell Helicopter regional marketing managers can advise typical local costs for estimation purposes.
Financial Factors:	Funding a helicopter purchase can be accomplished in a variety of ways, including cash, short term note, long term note, partnership, etc. For investment accounting, several depreciation methods also exist; straight line, double declining, sum of the years digits, etc. Value of resale is a significant factor.
Miscellaneous Factors:	Staff expenses (other than aircrew and direct maintenance personnel), utilities, office expenses, etc.

OWNERSHIP ANALYSIS PROGRAM

Bell Helicopter Textron uses the most recently published edition of the Life Cycle Cost computer program provided by Conklin & de Decker Associates, Inc. to determine ownership costs for an operators planned period of utilization for the aircraft. Conklin's Rotorcraft Analysis Office may be contacted at: Phone; (817) 277-6403 or Fax; (817) 277-6402.

Bell Helicopter's regional marketing managers or corporate office personnel will be able to assist in preparing an ownership analysis which is customized for our customers specific individual conditions and needs.

Sample - Direct Cost of Operations - US Dollars Per Flight Hour

	Operator Overhaul
Fuel, Lubricants	
Fuel: (Note 1)	$452.00
Lubricants:	$4.52
Airframe Direct Maintenance	
Labor: (Note 2)	
Scheduled Inspections (Note 3)	$38.08
Scheduled Retirements (Note 4)	0.32
Scheduled Overhauls (Note 5)	7.28
Provision for Unscheduled Maintenance and Service Bulletins	1.11
On-Condition Maintenance	32.26
Parts:	
Scheduled Inspections (Note 3)	12.94
Scheduled Retirements (Note 4)	122.74
Scheduled Overhauls (Note 5)	52.26
Provision for Unscheduled Maintenance and Service Bulletins	25.26
On-Condition Maintenance	176.45
Powerplant Direct Maintenance	
Pratt & Whitney Model PT6T3D - Quantity 2 Mfr. Estimate of Engine Cost Per Hour (Note 6)	308.42
BHT Est of Miscellaneous Line Maintenance (Labor - Note 3)	29.27
Total Average Cost Per Hour	**$1,267.90**

Notes:
(1) Calculated at 113 GPH at $4.00 per gallon.
(2) Labor rate assumed at $80.00 per hour.
(3) Based on 600 FLT HRS/YR
(4) Based on 100% Life
(5) Based on 100% TBO
(6) Engine estimate assumes utility application, 2 engine cycles per hour, benign environment (no allowance for severe operation, environment, or conditional repairs).

Other assumptions: Basic VFR helicopter with no optional equipment installed mature helicopter; no warranty considerations

Component Overhaul Intervals (Hours)					
Swashplate & Support	2,500	Rotor Brake Quill	3,000	T/R Gearbox	5,000
Hub & Sleeve Assy	2,500	Transmission	6,000	T/R Driveshaft Hangar	3,000
T/R Hub Assembly	2,500	Intermediate Gearbox	5,000	Driveshaft Couplings	5,000
Mast Assembly	5,000	Starter Generator (2)	1,000		

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Limited Life Components

Part Number	Component	Life in Flight Hours	Life in RIN	Qty per Aircraft
MAIN ROTOR COMPONENT				
412-010-101-129	Yoke Assembly	5,000		2
412-010-190-105	Spindle	10,000		4
412-010-149-111	Pitch Horn	10,000		4
412-010-124-109	Retention Bolt	5,000		4
412-010-137-103	Retention Bolt	5,000		4
412-010-185-109	Damper Bridge	15,000		4
412-010-111-103	Fitting	5,000		4
412-010-170-105	Damper Bridge	10,000		4
MAIN ROTOR CONTROLS				
412-010-425-113	Pitch Link Tube	5,000		2
412-010-425-129	Pitch Link Tube	5,000		2
412-010-182-101	P/L Rod End Brg Upper	5,000		4
412-310-400-101	P/L Rod End Brg Lower	5,000		4
412-010-406-115	Swashplate Link Assy	5,000		2
412-010-445-105	Drive Hub Assy	10,000		1
412-010-403-113	Rephasing Lever Assy	5,000		2
412-010-403-117	Rephasing Lever Assy	5,000		2
412-010-405-111	Drive Link Assy	5,000		2
412-010-407-117	Swashplate Outer Ring	10,000		1
412-010-453-105	Swashplate Support Assy	5,000		1
204-010-404-001	Gimbal Ring Assy	9,000		1
204-011-408-107	Collective Sleeve	9,000		1
412-010-408-101	Collective Lever Assy	10,000		1
412-704-112-105	Control System Bolt	2,500		1
PROPULSION and DRIVE SYSTEM				
412-040-101-129A	Main Rotor Mast	10,000	60,000	1
412-010-160-105	Cap Assy	10,000		1
412-010-165-101	Cone	10,000		1
412-010-166-101	Drive Pin	10,000		8
412-010-186-103	Upper Cone Seat	10,000		1
412-010-177-117	Splined Plate Assy	10,000	60,000	1
412-018-056-105	Lower Cone Seat	10,000		1
412-010-179-105	Cone	10,000		1

Mast and spline plate has a retirement life of 10,000 hours or 60,000 RIN, whichever occurs first. Assuming 10 torque events per hour, an operator would retire the mast and spline plate due to the RIN limitation. The cost per hour therefore, is based on RIN not flight hours.

Limited Life Components

Part Number	Component	Life in Flight Hours	Life in RIN	Qty per Aircraft
TAIL ROTOR CONTROLS				
212-011-702-001	Tail Rotor Yoke	5,000		1
212-010-750-133	Tail Rotor Blade	5,000		2
OTHER				
412-704-116-101	Pendulum Damper Kit:			
412-010-264-101	Bracket Assy	10,000		4
412-010-264-105	Bracket Assy	10,000		4
412-010-263-101	Arm Assy	5,000		8
EWB0420D-7-36	Bracket Bolt	5,000		16
NAS6604H34	Weight Bolt	5,000		16
NAS6606H46	Weight Bolt	5,000		8
NAS6608D50	Arm Bolt	5,000		8

Paint Schemes

Sample Illustrations of the Standard Paint Schemes are available from your Bell Helicopter Sales Representative

Paint Selection Notes:

1. Color renderings (original) must be provided for any deviation to the standard schemes (all models).
2. Custom paint schemes to customer specification are available, and a price quote will be provided on request. Please provide as much detail as possible when describing special instructions and custom paint schemes.
3. The danger arrow is always applied on the tail boom between the horizontal stabilizer and the tail rotor, not withstanding any other illustrations.
4. Unless clearly specified (location, dimension, color), registration markings will be applied per FAA regulations (all models).
5. Metallic paint can not be applied over RADOME areas when a radar is installed.
6. Placement of Bell Helicopter model logos is effected by individual paint schemes, and will be applied at the discretion of Bell Helicopter unless otherwise specified by the customer.

Training

THE BELL HELICOPTER TRAINING ACADEMY

The Bell Helicopter Training Academy (BTA) is recognized throughout the world for providing quality military and commercial training. The BTA has trained more than 120,000 customers and has a current annual throughput of approximately 1,900 pilots and 1,800 maintenance technicians. Over seventy highly trained professionals in courseware development and classroom instruction are part of the Bell Helicopter team. Many have military backgrounds of twelve (12) or more years. BTA Instructor Pilots have an average experience level of 11,000 flight hours.

The Bell Helicopter Training Academy offers World Class Training Solutions

- FAA Certified and offers the most complete training and customer service available
- Flight Training Device (FTD) enhances pilot training
- Long standing training programs with multiple state, country and municipality agencies including pilot transition, refresher and advanced courses

The Bell Helicopter Training Academy is located at the Alliance Airport in Fort Worth, Texas. The academy features eighteen (18) multimedia classrooms, three overhaul labs fitted for the newest learning technology tools, a 40,000+ square foot training hanger space for crucial hands-on maintenance training, one Cockpit Procedure Trainer (CPT), and five (5) advanced Flight Training Devices (FTD) designed to train on seven different Bell Helicopter model aircraft.

Bell Helicopter Training Academy.
Located at Alliance Airport in Ft. Worth, TX has trained over 120,000 pilots and maintenance technicians.

Training

Flight Practice Area

Our flight training practice area (PA), is a short flight away from the academy and is just northwest of the Texas Motor Speedway. To ensure the safest possible training environment, the PA is supported by a full time Crash and Rescue crew. Our dedicated staff combines these features with the latest innovations in training technology to generate optimum training results.

The 120-acre practice area has three runways; a 2,000-foot lighted north / south runway, an 850-foot north / south runway, and a 1,650-foot east / west runway. There are four (4) separate concrete landing pads. A 30-foot elevated helipad is used for pinnacle, oil platform, and rooftop approach and landing training. This entire site is dedicated solely for the use of Bell Helicopter Training Academy's flight training.

Flight Practice Area.
120-acre practice area dedicated solely for Bell flight instruction.

GENERAL INFORMATION

Pilot Operator Training

The operator and maintenance training provided by BTA establishes a foundation that supports mission tasks with aircraft pilot qualification. Our pilot training program includes basic academics, simulator, and initial flight training. In addition, all flight training is conducted by certified Bell Helicopter instructor pilots in dedicated Bell Helicopter owned aircraft.

Maintenance Technician Training

Experience is important, however, instruction received in the classroom and training lab is an undeniable enhancement and cannot be over-emphasized. Academic training includes both state-of-the-art instructor-led computer presentations and hands-on maintenance training. Mechanical, electrical, and avionics training takes place in a temperature controlled shop and will include use of composite maintenance trainers. The BTA also has operational cutaway mock-ups, a composite repair room, an electrical/avionics lab, and a Non-Destructive Inspection (NDI) room. Over half of the maintenance training is hands-on, skill enhancing, and performance focused instruction. Training is determined complete, as defined by Bell Helicopter Textron Inc., after each student demonstrates an ability to perform to the course standards for actual maintenance and operation of the equipment referencing technical manuals

BTA Maintenance Technician Training.
We offer students hands-on training.

Specifications subject to change without notice.

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Training

Training Aircraft

The Bell Helicopter Training Academy uses Bell Helicopter-owned dedicated helicopters for all phases of flight training for those models.

Training Materials and Language

Bell Helicopter will provide each maintenance and pilot training candidate with a hard-copy course notebook in the English language for each course conducted by BTA instructor personnel. The training materials will be sufficient to train maintenance technicians and pilots who meet the course prerequisites in the maintenance and operation of the applicable model helicopters. Course instructional electronic media, syllabi, course outlines, and company intellectual property are considered non-deliverables.

Student Registration

The customer is responsible for submitting an enrollment request for each training candidate via Bell Helicopter's on-line registration process at http://www.bellhelicopter.com/en_US/Training/Training.html It is encouraged that all training be scheduled at least thirty (60) days prior to the start of each established course date to ensure space and instructor availability.

Student Visas

Applying for and receiving a VISA permit for students in a timely manner is the responsibility of the customer. To ensure timely approvals, students must register early.

Trainee Expenses

Arrangements and expenses associated with air travel, ground transportation (car rental/taxi), meals, and lodging for each designated trainee will be the responsibility of the customer.

Certificate of Qualification

Trainees will receive a graduation certificate for each pilot or maintenance course successfully completed within this training program.

Training

BELL 412EP TRAINING COURSE SUMMARY

The following table summarizes the complimentary training provided with each purchased Bell 412EP.

Course Description	Complimentary	Course Length per Trainee
Pilot Training		
412EP Initial Ground and Transition Flight Course	2	1 week
Maintenance Training		
412EP Field Maintenance Course	1	3 weeks
412EP Electrical Maintenance Course	1	1 week
412EP AFCS Course	1	1 week

COURSE DESCRIPTIONS

Bell 412 Pilot Ground, Simulator and Transition Flight Procedures

Ground Training: Completion of the ground training course provides pilots with a comprehensive knowledge of the aircraft systems and components and a thorough understanding of the operational characteristics and flight limitations.

Flight: To ensure complete knowledge of the current Bell 429 flight manual, to demonstrate and practice flight maneuvers to establish proficiency and safety in every phase of flight. Use of customer's aircraft is required for flight portion of training.

Bell 412 Field Maintenance Course

Upon successful completion, the maintenance technician will be familiar with troubleshooting, inspection, and performance of the maintenance of the Bell 412EP helicopter to Intermediate level maintenance requirements. Major repair or overhaul of the helicopter and its components are not included. Acceptable airworthiness techniques, procedures and practices that are recommended by Bell Helicopter Textron Inc. shall be used as satisfactory performance levels.

Bell 412 Electrical Maintenance Course

Following successful completion of the course, the attendee will be able to perform all routine electrical maintenance and utilize any special tools, materials or equipment required in the maintenance or repair of the electrical system of the applicable model. Successful completion will also enable the attendee to perform inspections, service, troubleshoot and repair the electrical system to a field maintenance level in accordance with the techniques, procedures and practices established by the governing aviation authorities and Bell Helicopter Textron Inc.

Training

Bell 412 Automatic Flight Control Systems (AFCS) Maintenance Course

Having successfully completed this course, the student shall be familiar with the performance of all routine electrical maintenance, utilization of special tools, equipment, materials, and manuals required in the maintenance or repair of the Bell 412EP helicopter flight control/NAV coupler system. The student will be familiar with the inspection, servicing, troubleshooting, and repair of these systems to a line maintenance level in accordance with the procedures and practices recommended by Bell Helicopter Textron Inc.

Additional Courses

Additional courses offered at the Bell Helicopter Training Academy include, but are not limited to:

Course	Duration
Pilot Refresher	3 days
Night Vision Goggles	1 week
Operational Check Flight	2 days
Law Enforcement/Public Service Training	1 week
Component Overhaul	3 weeks
Cable and Connector	1 week
Non-Destructive Inspection	1 week
Avionics	1 week
Bell Helicopter Vibration Monitor System	2 days
Composite Repair	1 week
Composite Blade Repair	1 week

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