PART 2 - ENGINE DATA

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INTRODUCTION

The aircraft is equipped with two turboprop engines Pratt & Whitney PW127G. Each engine drives a six-bladed propeller with automatic feathering system, Hamilton Standard E568F-5.

The engine operation data is given in this part. The basic data is presented in torque and fuel flow graphs/tables for normal operating conditions, with engine anti-ice off. This data is based on engine and propeller data, supplied by the manufacturer, and includes the power extraction and bleed effects due to operation of the air conditioning, when applicable.

POWER SETTINGS

The engine ratting presented in this Manual correspond to the following power settings:

- Takeoff.
- Maximum continuous.
- Maximum cruise.
- Maximum climb.

Maximum power data at sea level are shown in the following table:

POWER SETTINGS	PROPELLER (RPM)	USABLE POWER (SHP)	BLEED	Up to this temperature
Normal takeoff Maximum takeoff Maximum continuous	100% 100% 100%	2645 2920 2920	OFF	33°C (static) 33°C (static) 35°C (160 KTAS)
Normal takeoff Maximum continuous	100% 100%	2645 2920	ON	22°C (static) 28°C (160 KTAS)
Maximum climb Maximum cruise 1 Maximum cruise 2	95% 90% 80%	2240 2132 2132	ON	24°C (200 KTAS) 20°C (200 KTAS) 20°C (200 KTAS)

Operation in EEC automatic mode. The various maximum power settings for the engine are set using the PRS selector switch and by moving the power levers to the Max Auto position. The EEC unit is responsible for applying the power required by the current flight conditions (pressure altitude, ambient temperature and speed).

TAKEOFF POWER

Normal takeoff power is the power selected by the crew for a normal takeoff. This power setting is selected in EEC mode by moving the PRS selector to the TOGA position and the power levers to the Max Auto position with the engine bleed off (ECS OFF).

In EEC mode the maximum takeoff power (APR) is obtained automatically from one engine if the other fails during take off. Maximum takeoff power is 10.37% greater than normal takeoff power.

MAXIMUM CONTINUOUS POWER

The maximum continuous power is the maximum power that can be used without any time limit. However, its use must be limited in emergency conditions at the pilot's discretion. This power setting is selected in EEC mode by moving the PRS selector to the MCT position and power levers to the Max Auto position.

The maximum continuous power with the engine bleed off (ECS OFF) provides the same shaft power as maximum takeoff power (APR) and is used in the final segment of a continued takeoff with engine failure. In accordance with the procedures in the Flight Manual, during a continued takeoff with engine failure, the ECS is connected ten minutes after the brake release point.

MAXIMUM CLIMB POWER

The maximum climb power is the maximum power used during a climb with all engines operative. This power setting is selected in EEC mode by moving the PRS selector to the CLB position and the power levers to the Max Auto position.

MAXIMUM CRUISE POWER 1

The maximum cruise power with 90% of N_P is the maximum power used while cruising at 90% of N_P with all engines operative. This power setting is selected in EEC mode by moving the PRS selector to the CRZ1 position and the power levers to the Max Auto position.

MAXIMUM CRUISE POWER 2

The maximum cruise power with 80% of N_P is the maximum power used while cruising at 80% of N_P with all engines operative. This power setting is selected in EEC mode by moving the PRS selector to the CRZ2 position and the power levers to the Max Auto position.

FLIGHT IDLE POWER

Flight idle power has been defined to correspond to the minimum power available with the two following SHP limits:

High flight idle: 185 SHP	Normal operating limit.
Low flight idle: 25 SHP	Only for use during rapid descents at high speed and long way from the ground.

GROUND IDLE POWER

This power is defined for a fixed blade angle of -1º and a propeller speed of 850 RPM in EEC mode and 750 RPM in manual mode.

REVERSE POWER

Reverse power, used during takeoff and landing, is defined for a fixed blade angle of -12.8º.

TAKEOFF TORQUE AND FUEL CONSUMPTION

Figure 2-1 shows the maximum engine torque available for static takeoff power (ECS OFF) for 100% Np depending on the temperature and airfield pressure altitude. The effect of speed on the static values is given in the following table:

Speed - KCAS	Increase in % TQ
50	0.5
100	2.0
150	5.0

Figure 2-2 shows the fuel consumption values (lb/h) per engine for takeoff power (ECS OFF) depending on the temperature and pressure altitude of the airport. The effect on either the engine torque or fuel consumption of the anti-icing system's being switched on is considered negligible.

MAXIMUM POWER IN FLIGHT

Figures 2-3 (Sheets 1, 2, 3 and 4) show the maximum engine torque available during flight for maximum continuous power (ECS ON) for 100% Np and various flight speeds (120, 160, 200 and 240 KCAS) depending on ambient temperature and pressure altitude. The effect of the ECS OFF option on the maximum available in-flight engine torque is shown in the table below:

Pressure Altitude - ft	**Increase in % T_P**
Up to 10000 ft	7
15000 ft	5
20000 ft	4
25000 ft	2.5
30000 ft	2

Example

1. Airfield pressure altitude: 6000 ft.
2. Airfield ambient temperature: 10ºC.
3. Takeoff power.

Obtain the engine torque and fuel consumption during takeoff.

1	Takeoff engine torque (Figure 2-1)	92.5%
2	Fuel consumption per engine at takeoff power (Figure 2-2)	1160 lb/h

MAXIMUM TORQUE FOR NORMAL TAKEOFF (STATIC)

POWER SETTING: NORMAL TAKEOFF
ENGINE AND AIR INLET ANTI-ICING: OFF
AIR CONDITIONING PACKS: OFF

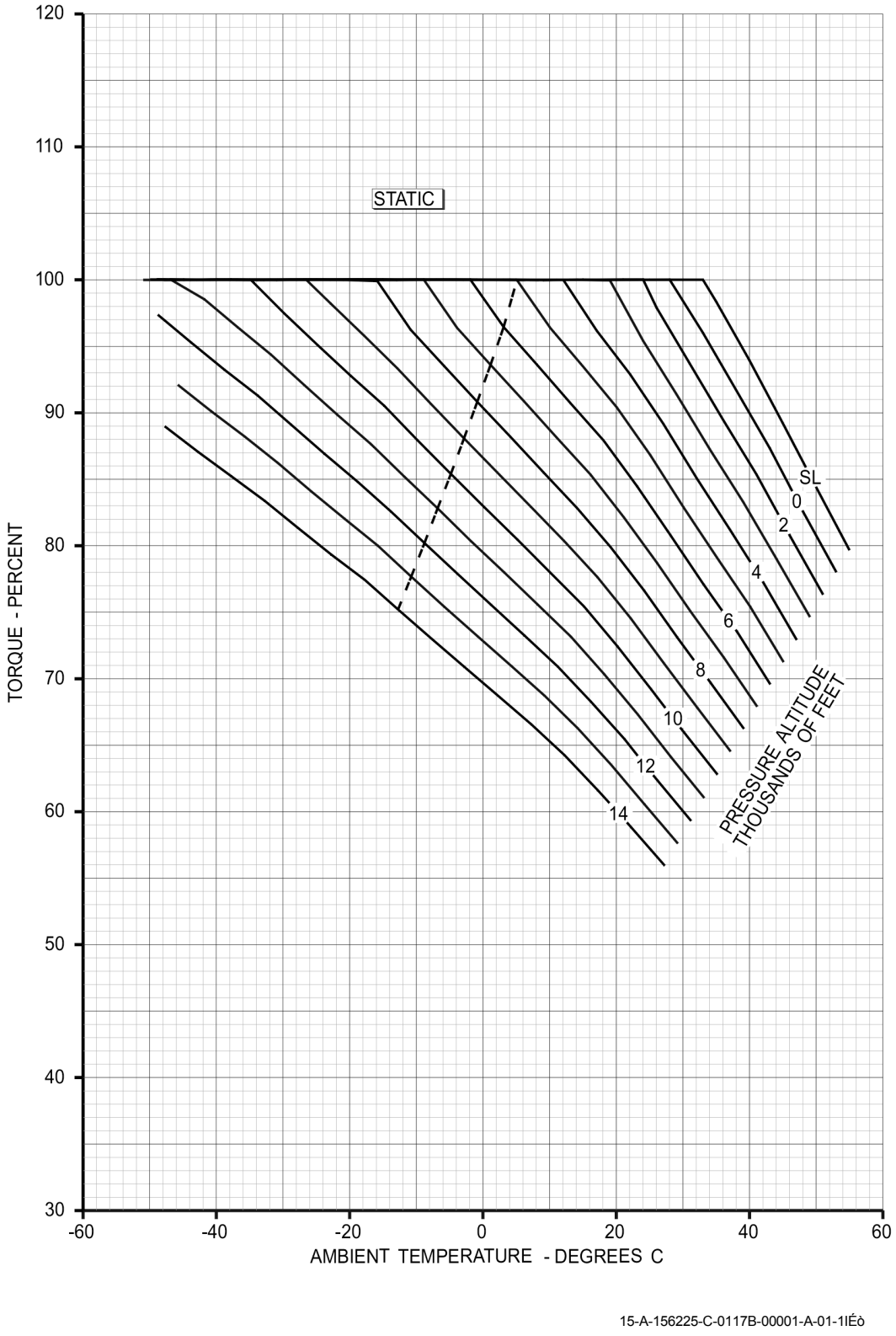

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Figure 2-1 Maximum Torque for Normal Takeoff (Static)

FUEL FLOW FOR NORMAL TAKEOFF (STATIC)

POWER SETTING: NORMAL TAKEOFF
ENGINE AND AIR INLET ANTI-ICING: OFF
AIR CONDITIONING PACKS: OFF

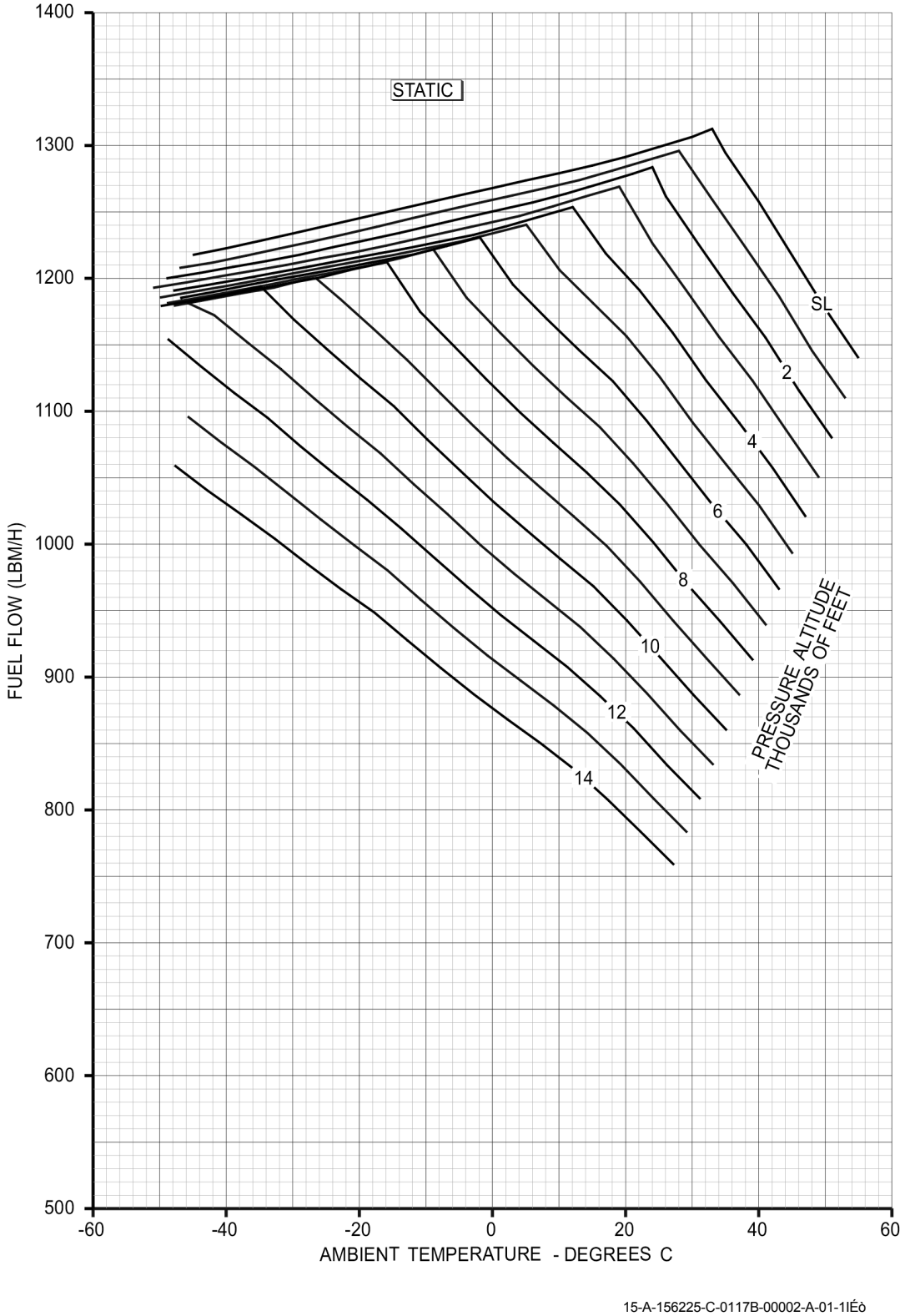

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Figure 2-2 Fuel Flow for Normal Takeoff (Static)

MAXIMUM TORQUE
FOR MAXIMUM CONTINUOUS POWER (120KCAS)

POWER SETTING: MAXIMUM CONTINUOUS
ENGINE AND AIR INLET ANTI-ICING: OFF
AIR CONDITIONING PACKS: ON

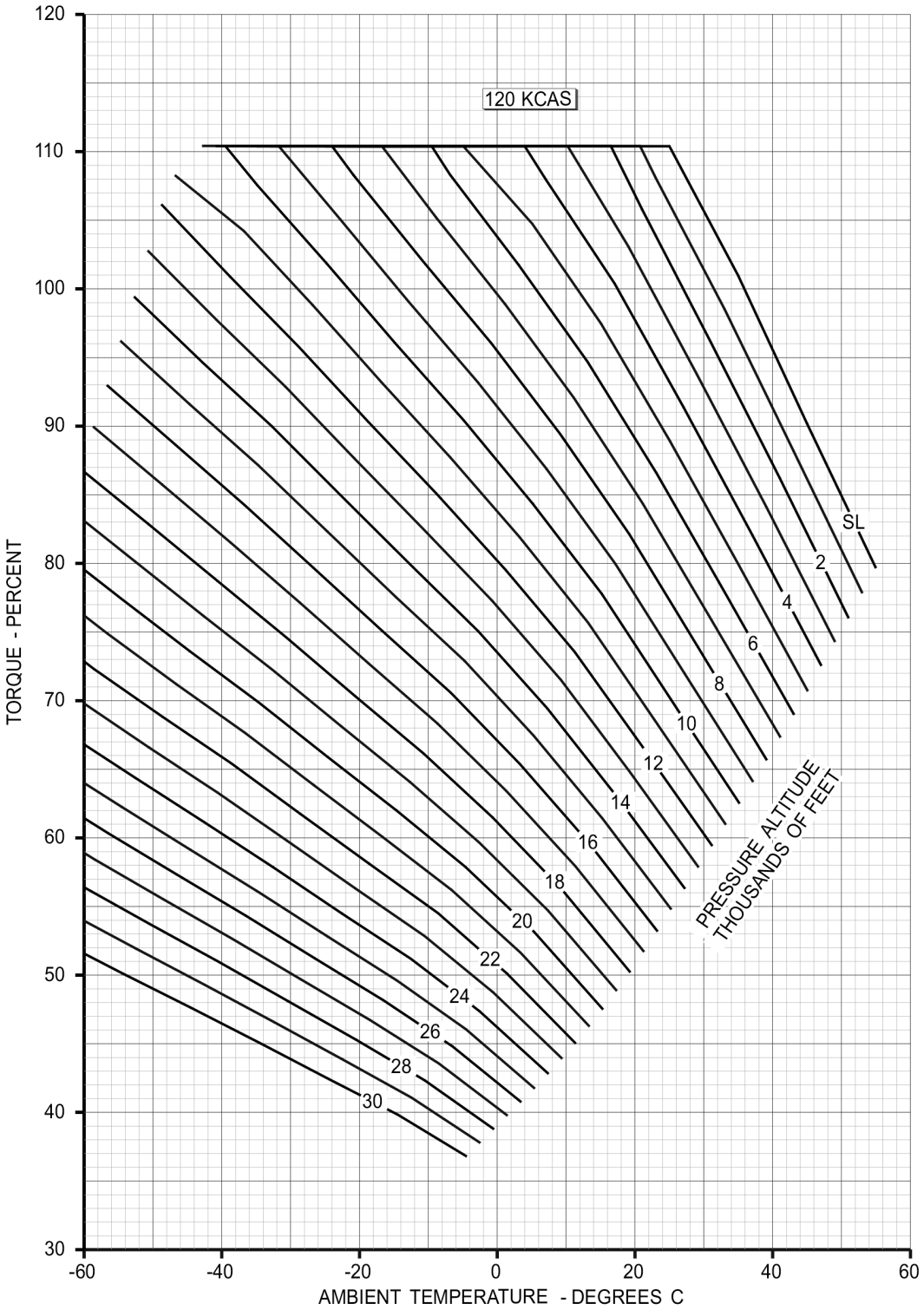

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Figure 2-3 (Sheet 1 of 4) Maximum Torque for Maximum Continuous Power

MAXIMUM TORQUE
FOR MAXIMUM CONTINUOUS POWER (160KCAS)

POWER SETTING: MAXIMUM CONTINUOUS
ENGINE AND AIR INLET ANTI-ICING: OFF
AIR CONDITIONING PACKS: ON

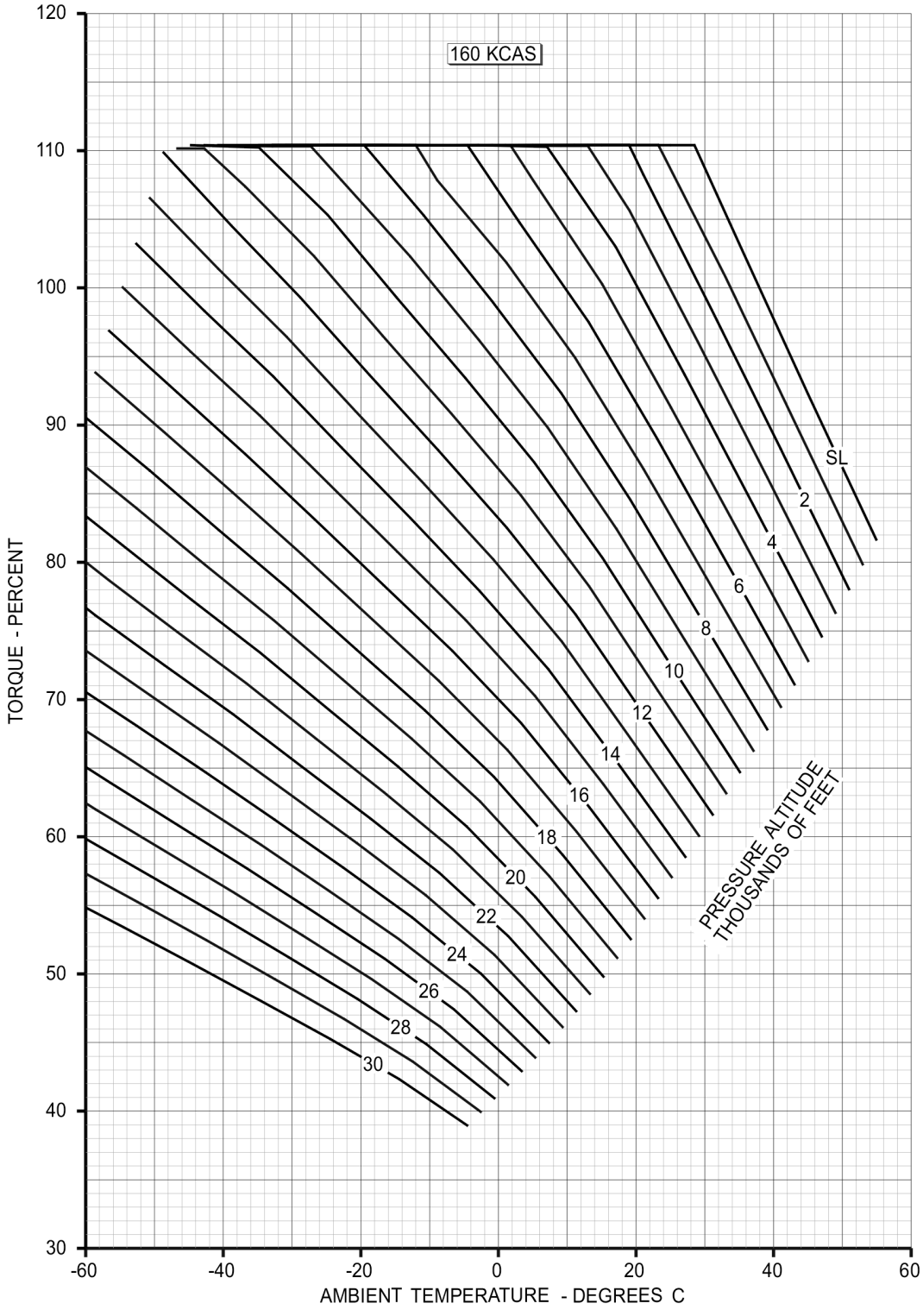

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Figure 2-3 (Sheet 2 of 4) Maximum Torque for Maximum Continuous Power

MAXIMUM TORQUE
FOR MAXIMUM CONTINUOUS POWER (200KCAS)

POWER SETTING: MAXIMUM CONTINUOUS
ENGINE AND AIR INLET ANTI-ICING: OFF
AIR CONDITIONING PACKS: ON

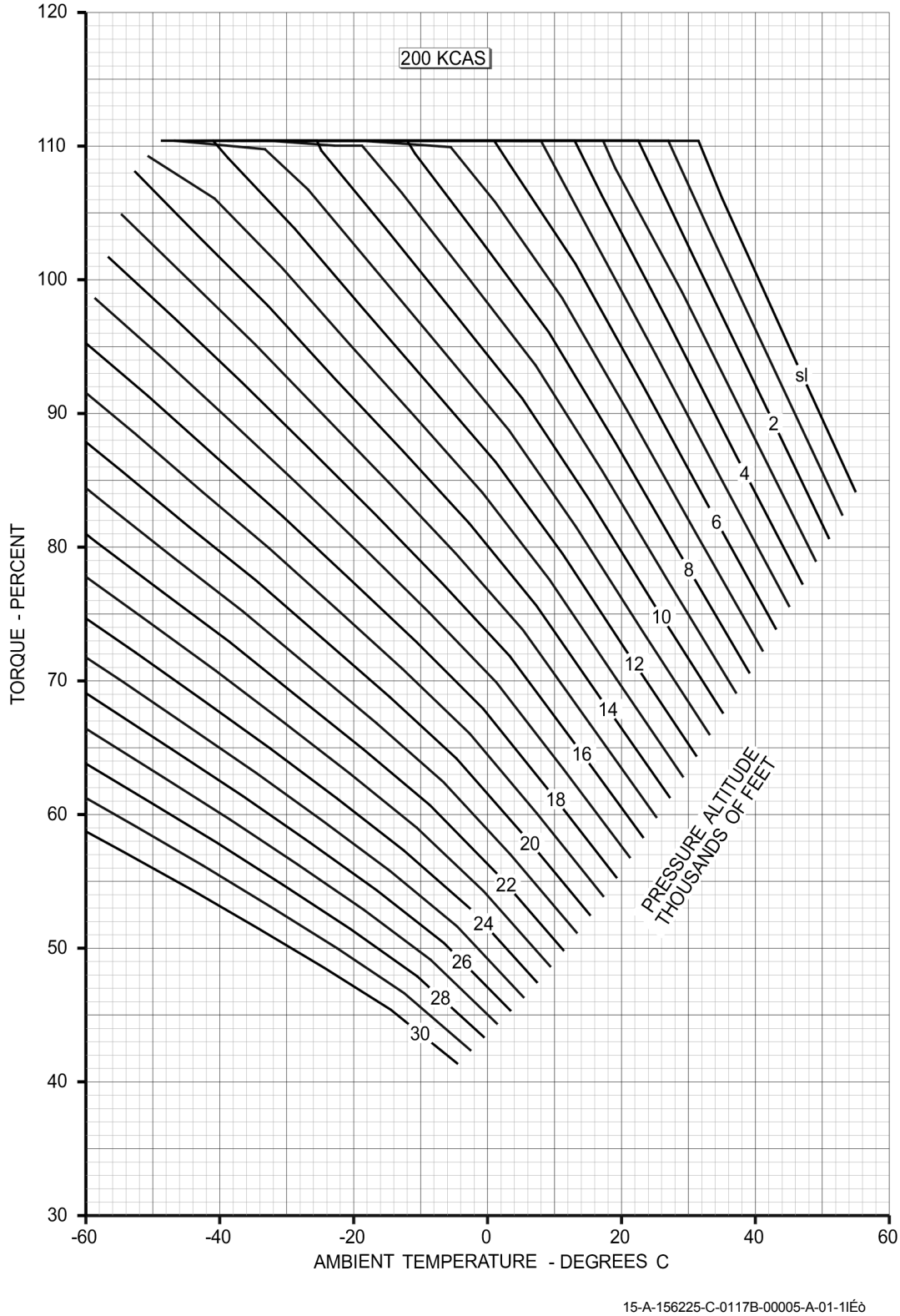

Figure 2-3 (Sheet 3 of 4) Maximum Torque for Maximum Continuous Power

MAXIMUM TORQUE
FOR MAXIMUM CONTINUOUS POWER (240KCAS)

POWER SETTING: MAXIMUM CONTINUOUS
ENGINE AND AIR INLET ANTI-ICING: OFF
AIR CONDITIONING PACKS: ON

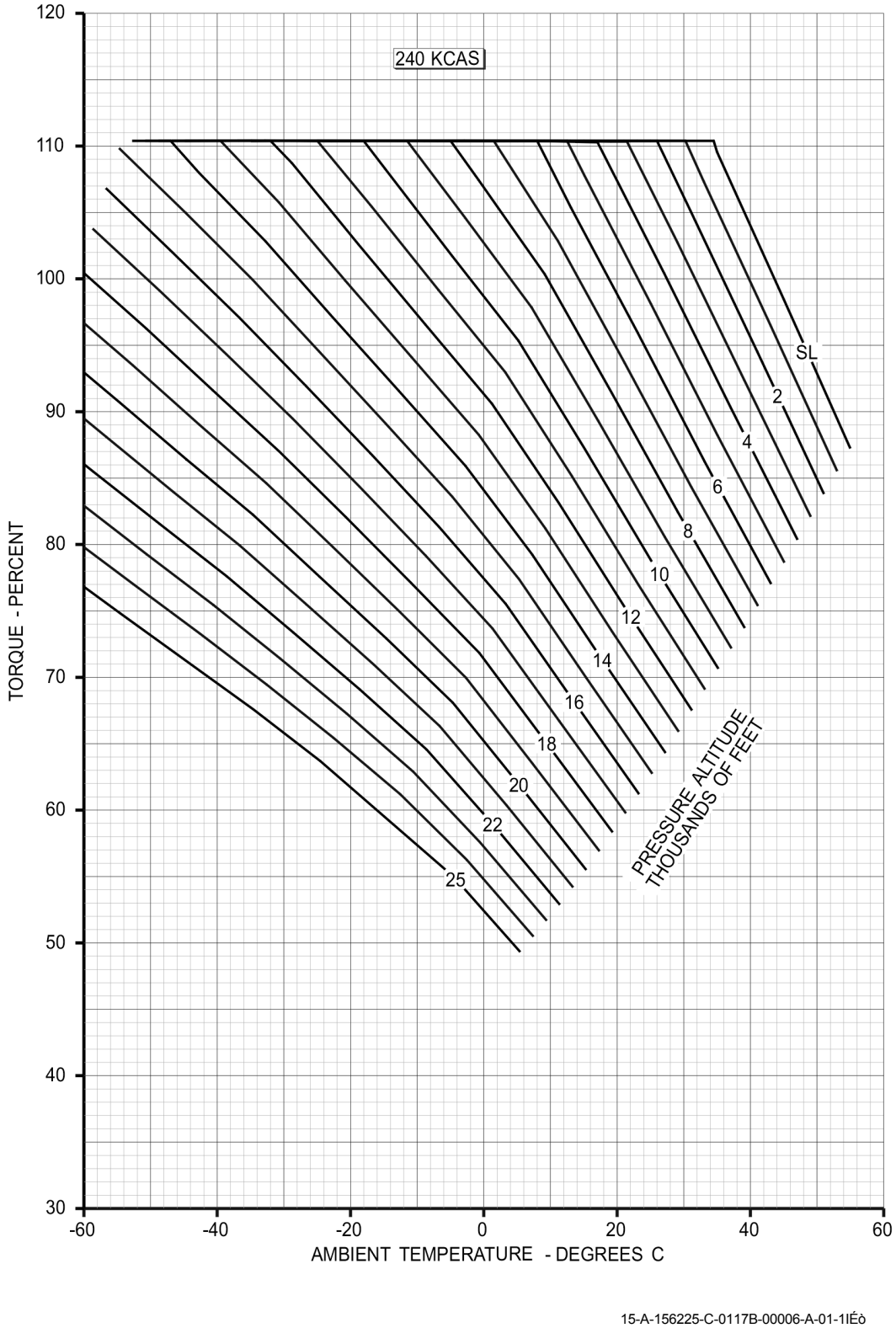

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Figure 2-3 (Sheet 4 of 4) Maximum Torque for Maximum Continuous Power

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