

P27/P29 II CHAIN SAW

REVISED AND REDESIGNED

APRIL 1984

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P27/P29 CHAIN SAW
REVISED AND REDESIGNED - APRIL 1984

GENERAL INFORMATION

The "new" P27/P29 represents an all-new chain saw construction which highly optimizes the parameters of unit cost, weight and performance.

The design is based on two main sources:

- (i) Technology from the Partner 400 Project;
- (ii) Horizontal cylinder and reed valve arrangement from successful Pioneer practice.

The final design has been the result of intensive study and close collaboration between Emab Advanced Engineering and the Pioneer Design & Development Department.

DESIGN LAYOUT

A horizontal cylinder (actually the cylinder is inclined downwards by 10 degrees) design with crankcase reed valve induction is used to achieve optimum space utilization.

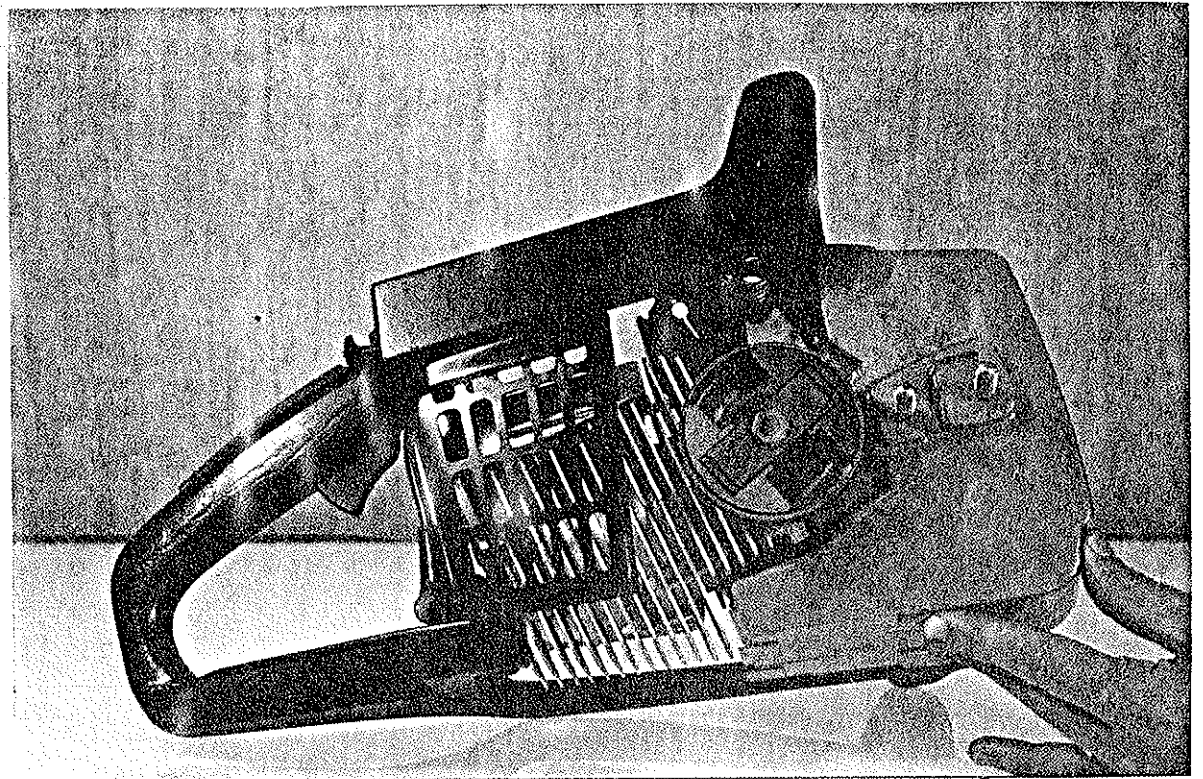
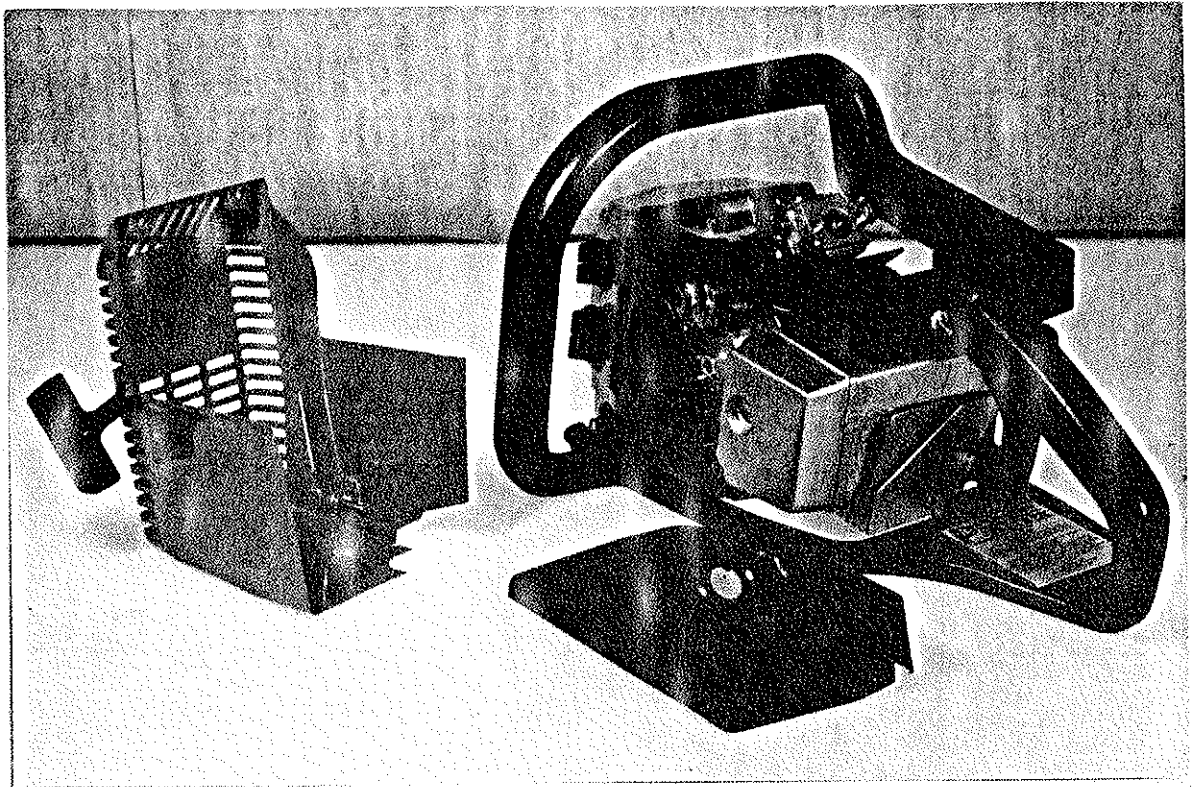
The Crankcase/Fuel & Oil Tank Assembly will consist of 3 detail parts: Two friction welded Tank Housings, the Drive Side of which contains a molded-in magnesium die casting. This die casting forms the structural "backbone" by providing a rigid one-piece connection between the crankshaft and cylinder mounting surfaces, the guide bar pad, and the ignition module mounting area. This is an improvement over the Partner 400 arrangement in which the light metal insert is only positioned in the crankshaft and cylinder mounting area. Another improvement over the "400" arrangement is that the P27/P29 will have a machined, metal-to-metal surface at the cylinder to crankcase junction.

We believe the small increase in cost is well justified to overcome the potential problems of creep, loss of clamping pressure and air leaks that may otherwise occur with a larger, more powerful engine than the "400".

The exhaust port is directed towards the Blower side of the saw. A large "L" shaped muffler is located on the blower and top sides of the cylinder and consists of an aluminum die casting and two inexpensive metal stampings. This design provides both a slim drive side profile as well as low exhaust gas and external surface temperatures.

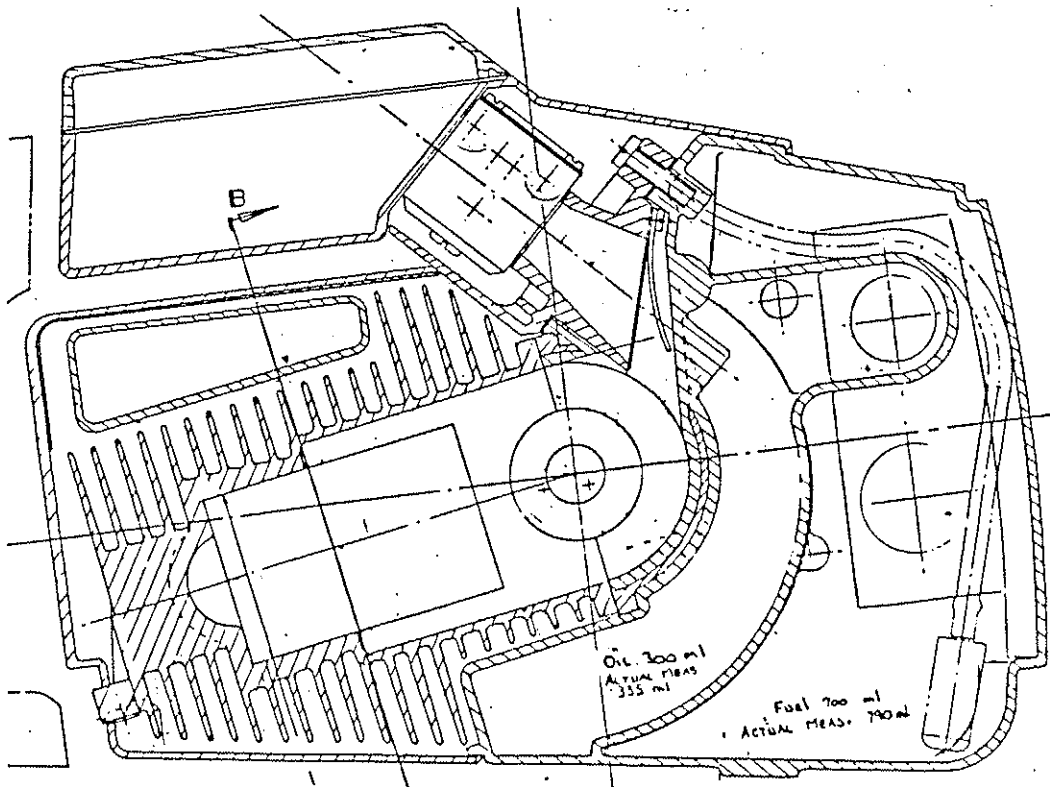
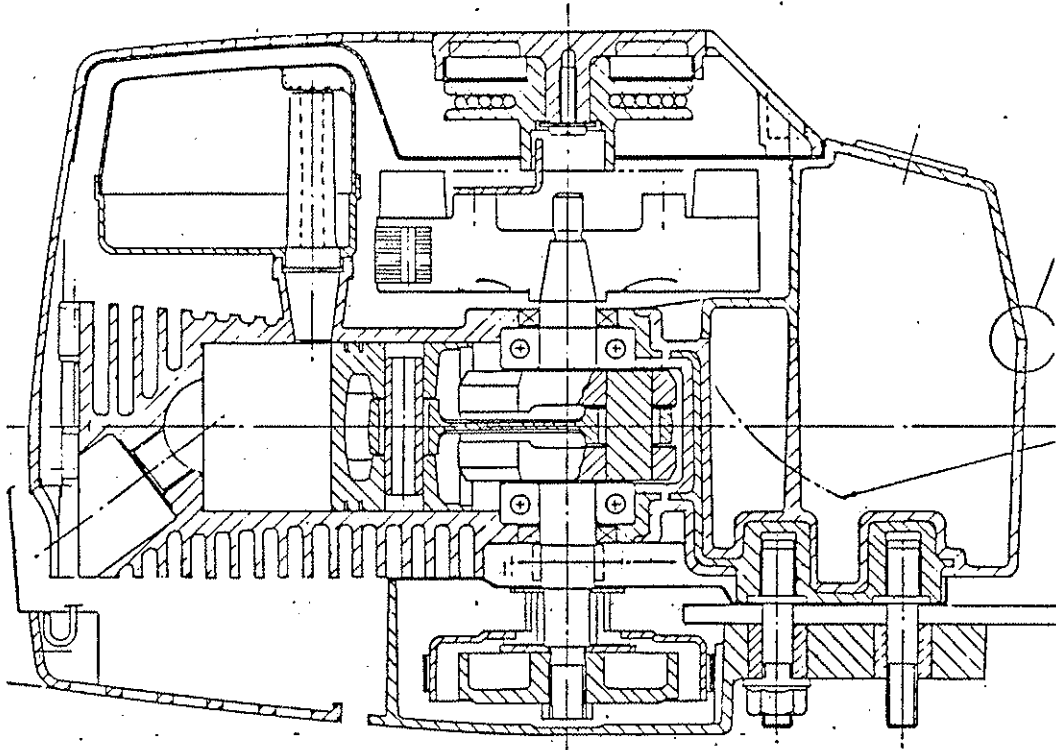
The antivibration handle system is similar to that used on the Partner 5000; a rigid "closed" system using three or possibly four spring elements.

The design takes full advantage of many existing Emab components, such as Crankshaft and Rotating System, Ignition Complete, Oil Pump, Starter, Clutch, and other parts.



REVISED P27/P29 CHAIN SAW

APRIL 1984 SPECIFICATIONS



UNIT COST

The "new" P27/P29 design has been costed c/o Emab Advanced Engineering (Reference letter Rangert to Kauffmann dated 1984-02-16). The P27/P29 costs do include the extra 6:-SKR for crankcase insert machining.

STK2-1984

	PARTNER 400		PARTNER 500		PIONEER 1074		PIONEER P27/P29	
DIRECT MATERIAL	SKR 480	\$CAN 73.84	SKR	\$CAN	SKR 564	\$CAN 86.77	SKR 518	\$CAN 79.64
DIRECT LABOUR	69	10.61			69	10.61	69	10.61
	549	84.45	657	101.07	633	97.38	587	90.25

TOOLING COST (SUMMARY)

(1) Molds, Dies, Fixtures and Guages required by outside suppliers	\$375,000
(2) Machining - Crankcase & Cylinder	\$ 50,000
(3) Assembly & Test Fixtures	\$ 50,000
TOTAL:	<u>\$475,000</u>

STANDARD EMAB COMPONENTS

EMAB PARTS REQUIRED FOR P27/P29 CHAIN SAWS

<u>EMAB PART NO.</u>	<u>QTY.</u>	<u>DESCRIPTION</u>
505 300810	1	Crankshaft Assembly
505 275719	2	Seal
505 317217	1	Oil Pump Gear
501 4516	1	Wrist Pin Bearing
505 303652	1	Clutch Drum
505 303277	1	Clutch Driver
505 325629	1	Flywheel Assembly
505 303735	1	Starter Pulley
501 763101	1	Starter Unit
506 0100	1	"Rifa" Module
505 279217	1	Oil Pump Housing
505 317216	1	Oil Pump Shaft Assembly
505 310745	1	Oil Pump Seal
506 0146	3	Vibration Isolator
505 303668	1	Sprocket .325 P X 7 T
505 230902	1	Screw, Chain Tensioner
735 310920	1	"E" Ring, Chain Tensioner
503 230103		
503 230105		Washers, Clutch Drum
505 302355	1	Bearing, Clutch
505 317255	1	Oil Pump Barrel
501 8740 REF	1	Chain Brake Components

PROJECT STATUS

A complete Design layout has been made.

A full scale model has been built which shows all the components as well as the overall styling theme.

A full cost analysis has been completed (by Emab, using the Design Layout).

A prototype has been built and tested which has proven the viability of the exhaust system and A.V. design.

No detail drawings or prototypes of the actual plastic construction have been made.

PROJECT SCHEDULE

June 1984	Achieve approval to proceed.
June - July 1984	Complete design details and update prototype.
August - November 1984	Prepare detail drawings and send for quotations; Test fiberglass prototype.
December 1984	Release major items for tooling; Continue testing and development.
May 1985	Receive first samples off Production Tooling.
June - July 1985	Build pre-pilot saws for testing.
August - September 1985	Make necessary corrections and improvements - order 100 sets of parts.
November 1985	Build Pilot Run of 100 units; For testing and promotion.
January 1986	Make further corrections and improvements; Order 2000 sets of parts for first production.
April 1986	Make first production build of 2000 units