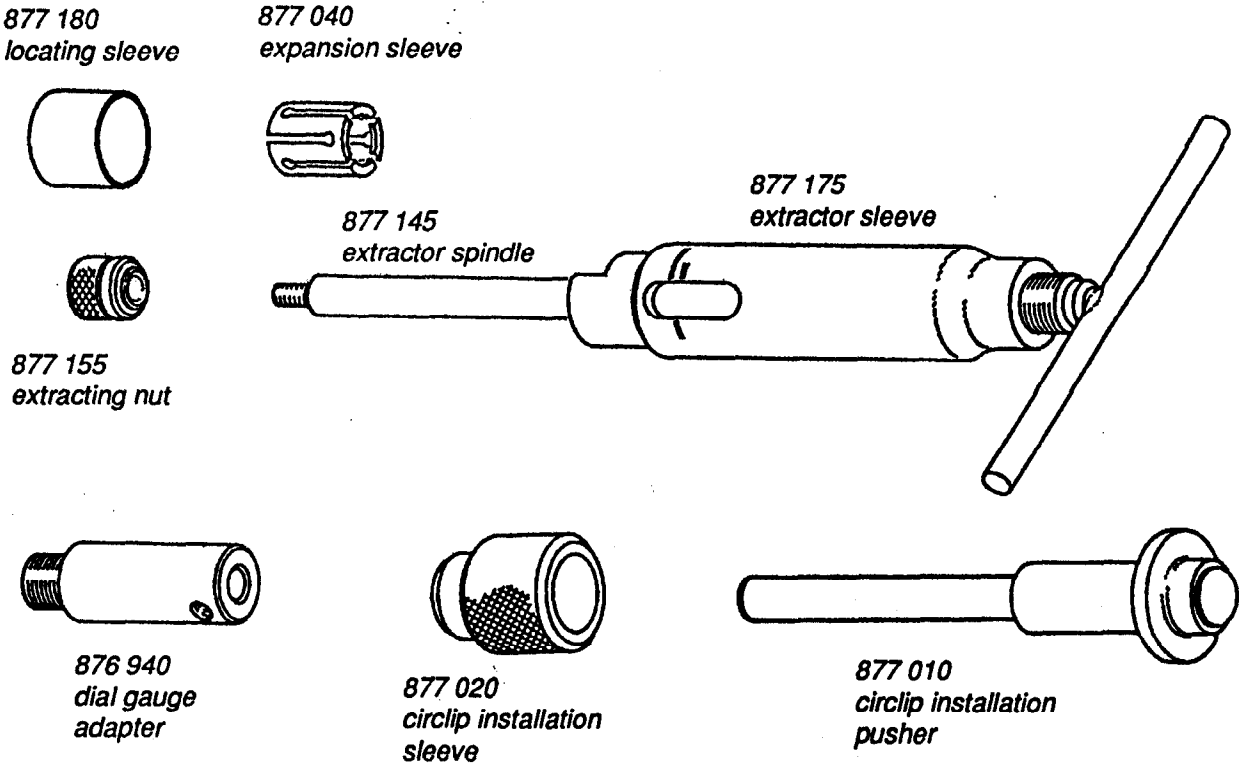
USE OF TOOL FOR CAGELESS PISTON PIN NEEDLE BEARING

1) INTRODUCTION:

On ROTAX engines type 447, 462, 503, 532 and 587 cageless piston pin bearings were introduced. This modification means increased lifetime, however it requires most careful handling at fitting and disassembly (see also our Service Information SI 3 UL 88/E).

A sensible facility is the newly developed piston pin extractor assy. (part no. 877 090), especially designed for cageless needle bearings, which is to be applied as follows:

2) THE TOOL CONSISTS OF THE FOLLOWING COMPONENTS:



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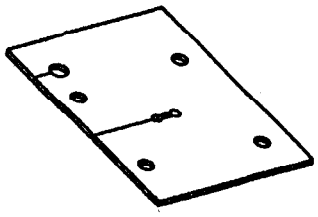
3) FITTING PROCEDURE

3.1. DISMANTLING OF PISTON

a) Remove the cylinder.

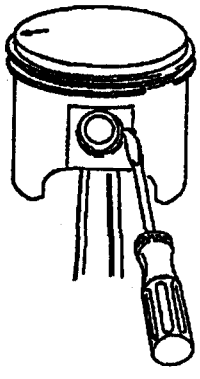
b) Carefully cover the crankcase aperture (e.g. with a carton or sheet metal shaped as shown on pages 8, 9, 10, 11).

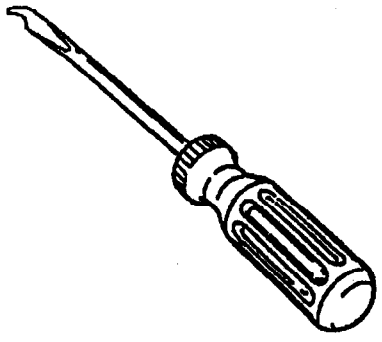
For engine types 532 and 587 you can use the rubber sheets available under part no. 877 030.



ATTENTION:
In case of engine types 532 and 587, secure the cover sheets to the crankcase with the cylinder bolts.

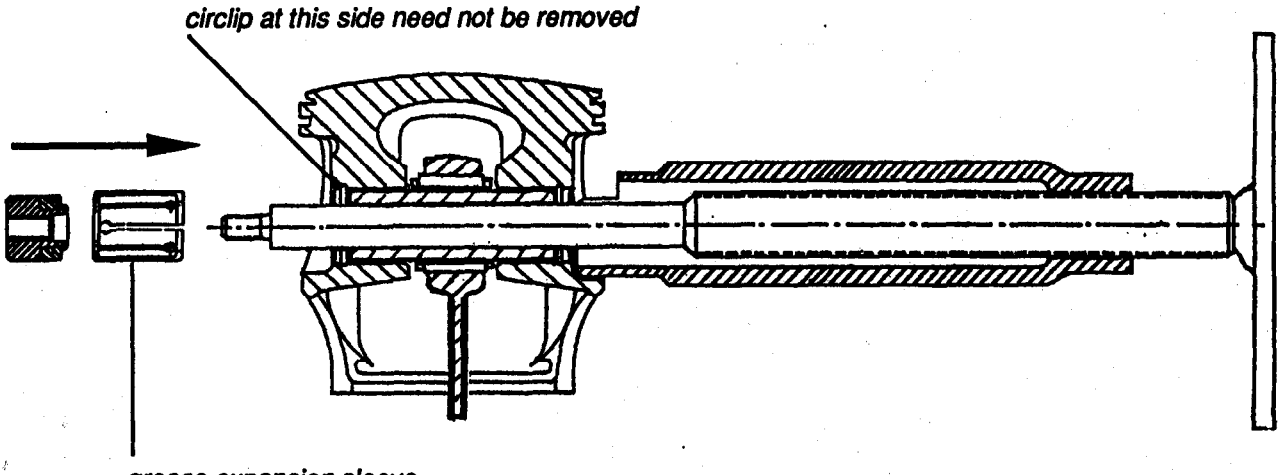
c) Remove the piston pin circlip at the accessible side of the piston (e.g. with a screwdriver shaped as shown on the following illustration).





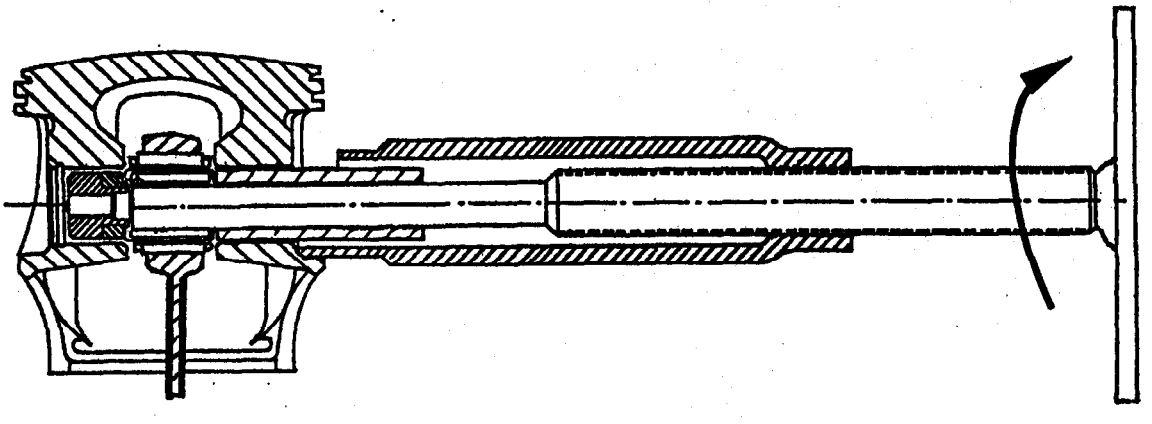
can be reworked from srewdriver 876 200

d) Insert the extractor sleeve with piston pin extractor into the piston pin, put the expansion sleeve onto the opposite side and screw the extractor nut - with the movable extracting ring showing towards spindle - onto the spindle threads.

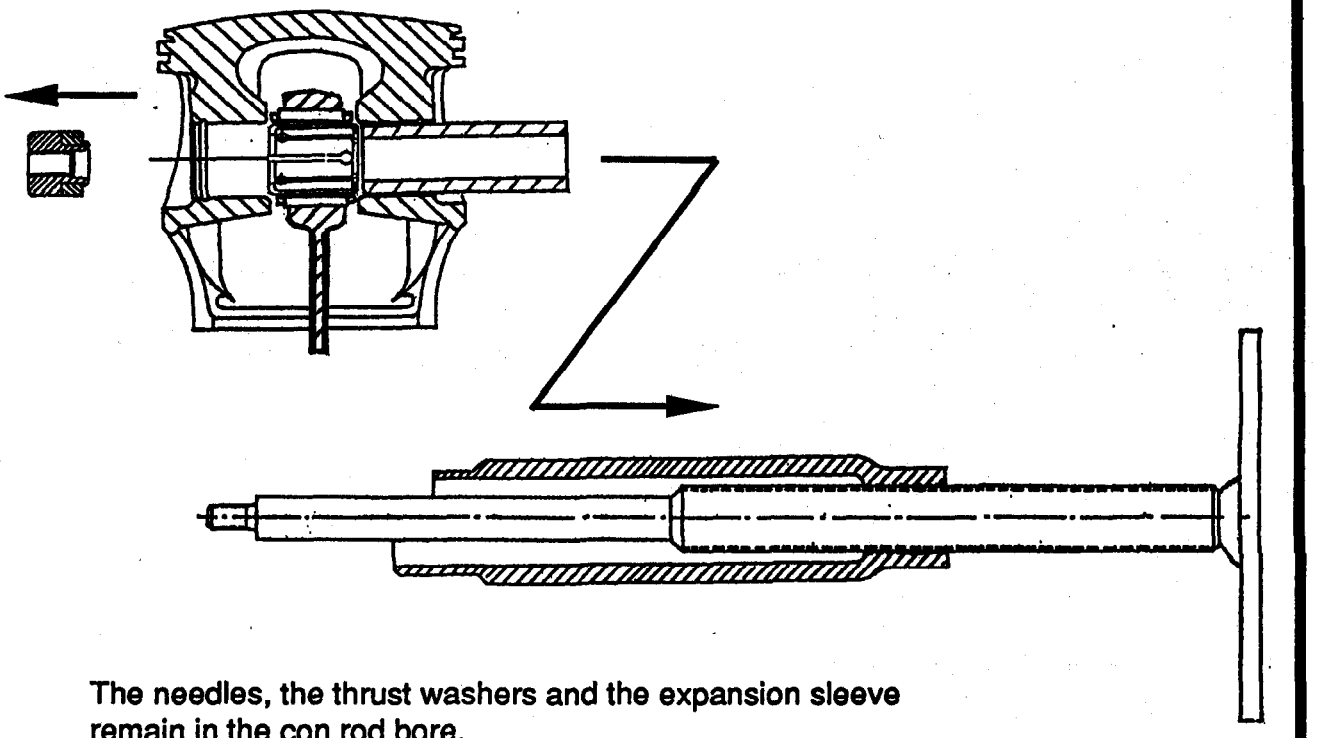


e) By turning the spindle, pull out piston pin until it aligns with one of the reference marks for the different engine types on the extractor sleeve.

Mark no. 1: for engine type 447
Mark no. 2: for engine type 587
Mark no. 3: for engine types 462, 503, 532



f) Screw spindle further in until extracting nut can be removed. Then extract spindle and extractor sleeve from the piston pin. Carefully remove the piston.



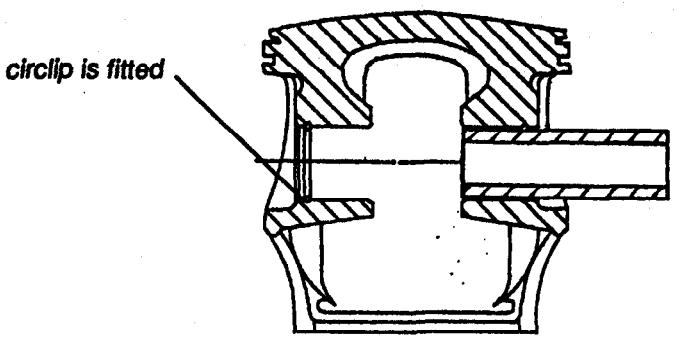
The needles, the thrust washers and the expansion sleeve remain in the con rod bore.

3.2. FITTING OF PISTON

CASE NO. 1

The needle bearing remains in the con rod bore and will be used again, the piston will be changed:

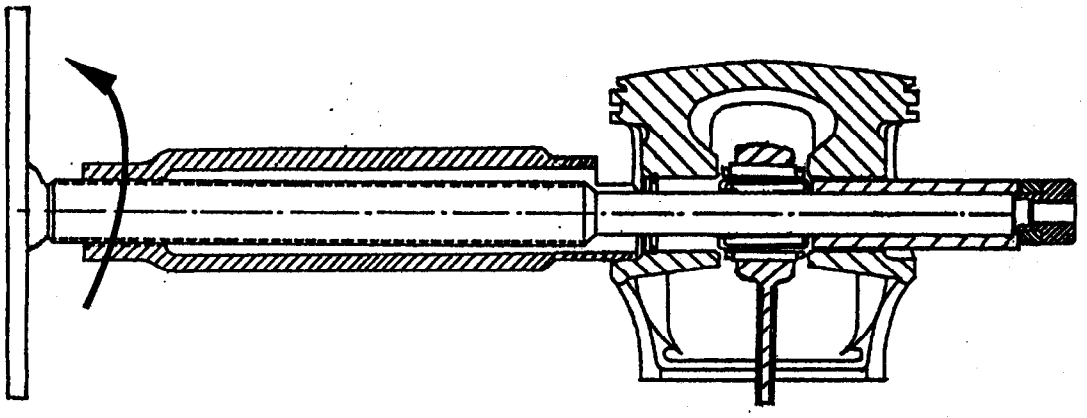
a) Push piston pin into the piston bore until its end is level with the inner side of piston hub:



When disassembling as per paragraph 3.1.a) to f) and re-using the old piston, paragraph 3.2.a) can be neglected.

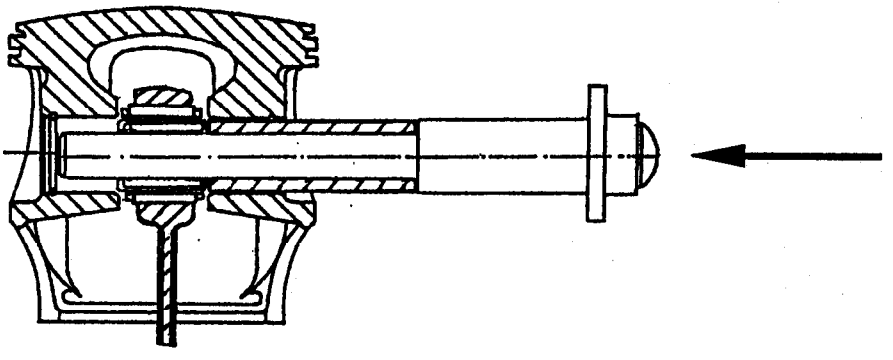
b) Warm piston to approx. 50 - 60°C and put it over con rod, with needle bearing fitted.

Insert extractor with spindle into the piston pin, screw on extracting nut, and by turning of extractor spindle, pull the piston pin carefully into the piston.

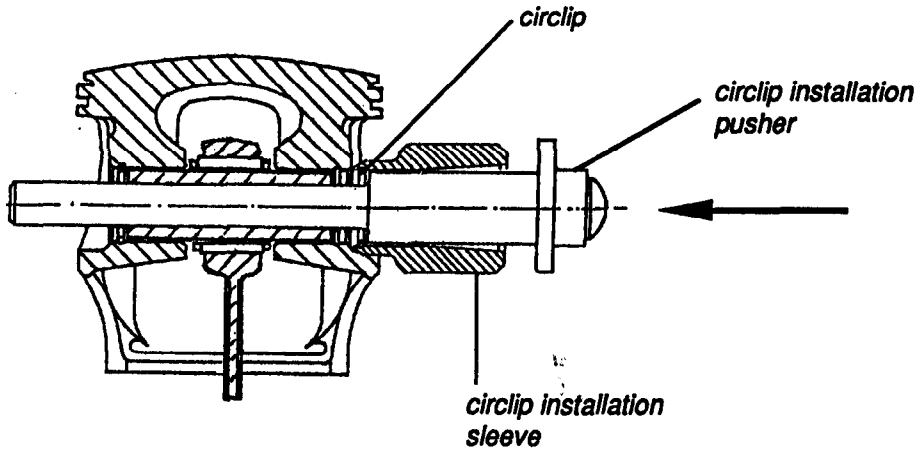


If procedure as per para. b) is not possible for space reasons, the following alternative procedure can be applied:

c) Fit the piston pin circlip at the less accessible side. Place piston over con rod with needle bearing fitted, push the piston pin by means of circlip installation pusher 877 010 into the pre-heated piston (approx. 50 - 60°C).



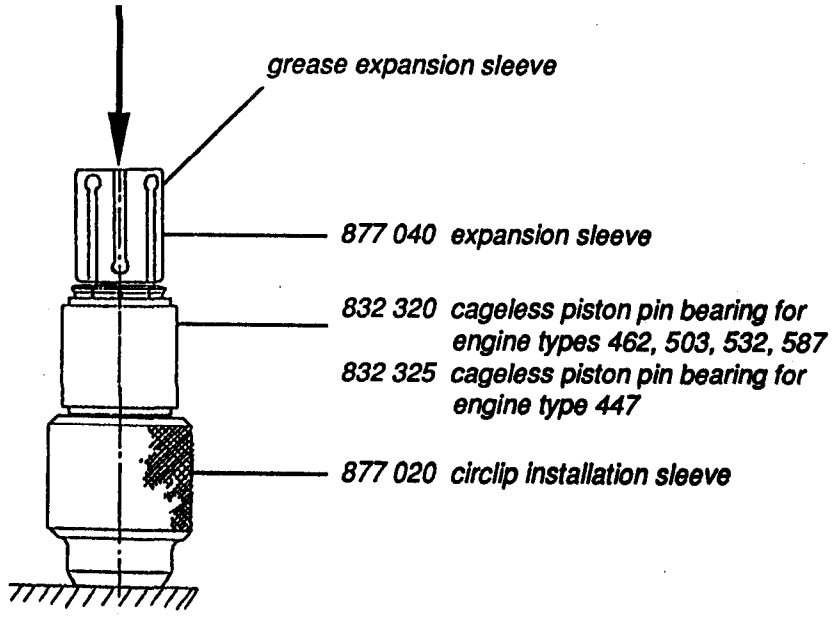
d) Fit piston pin circlips.
ATTENTION: The circlip opening must by all means point downwards!



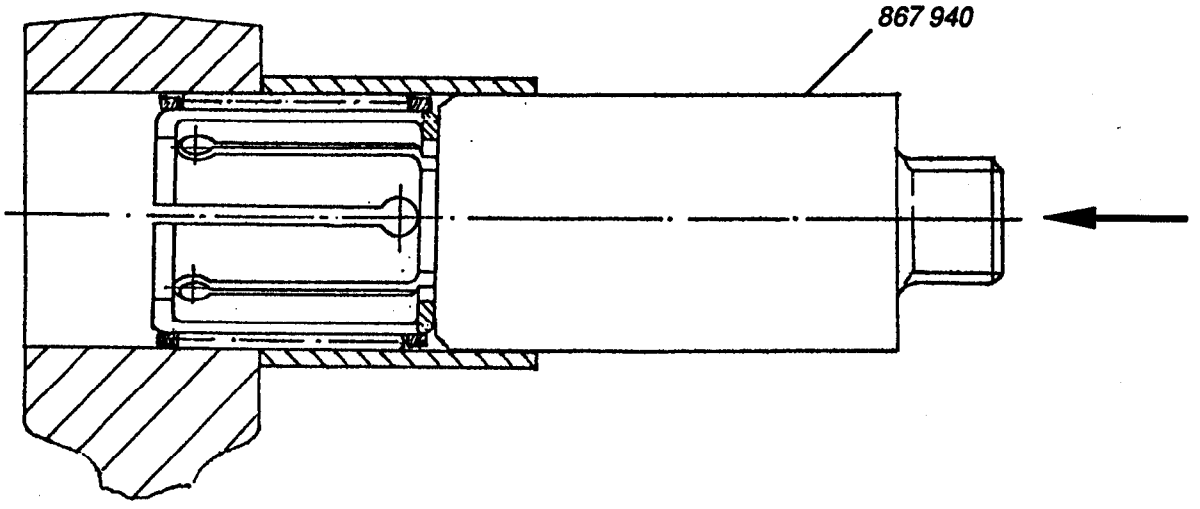
CASE NO. 2:

The needle bearing in the con rod bore has to be exchanged:

a) The new needle bearing is held in shape by a black fixation sleeve outside and 2 plastic cage halves inside.Push the inner halves out of the bearing as per following illustration.



b) Push the needle bearing together with expansion sleeve out of the fixation sleeve into the con rod bore.
For a tool you can use the dial gauge adapter 876 940 or any suitable pusher (21 mm dia.).



c) Further procedure as described in case no. 1.

CASE NO. 3:

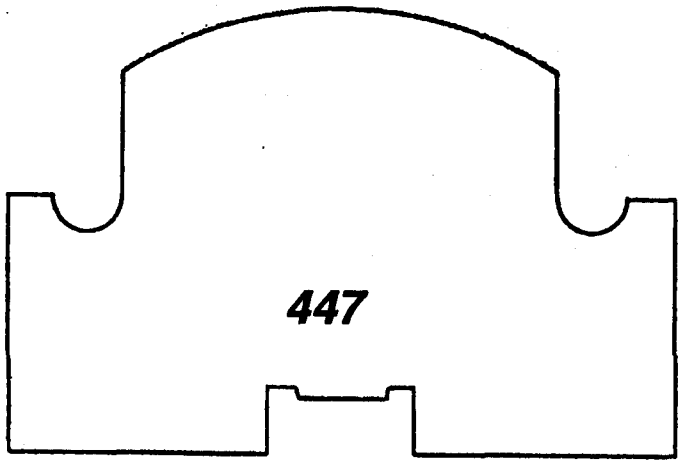
Removal of needle bearing for further use:

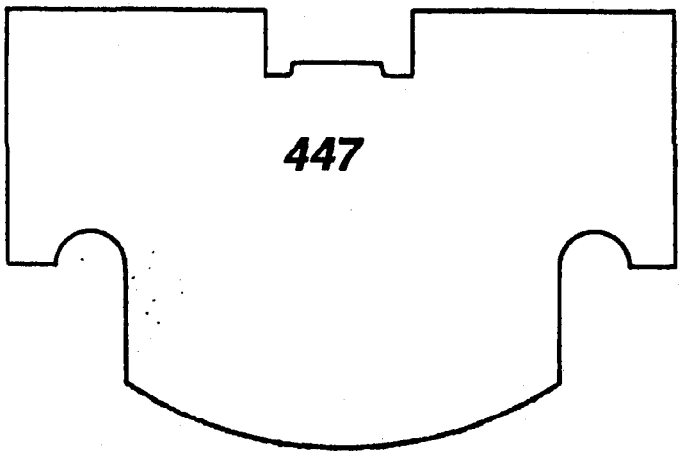
To remove the needles with the 2 thrust washers from the small con rod bore, push them together with the greased expansion sleeve (inside) into the fixation sleeve using the dial gauge adapter (or similar pusher) in the reverse sequence as described in case no. 2).

In this configuration the bearing can be used again.

ENGINE TYPE 447

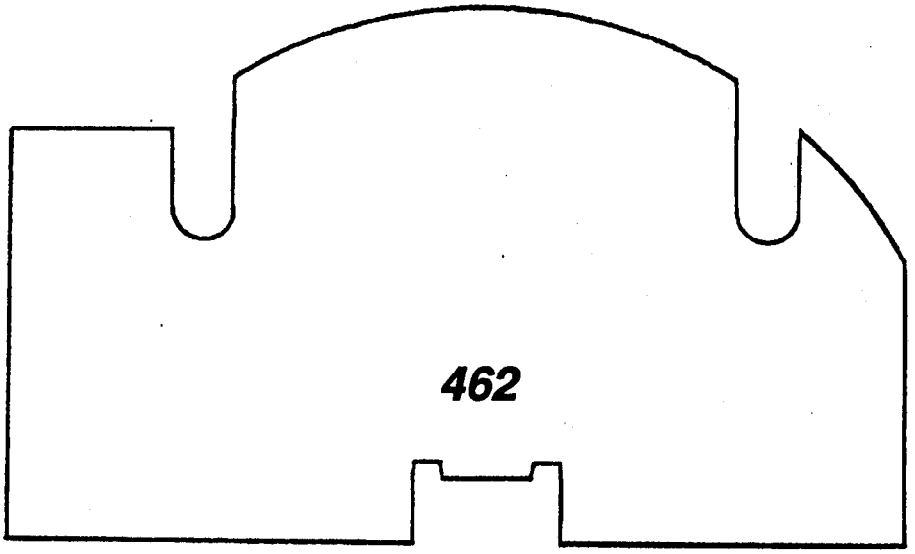
Paper pattern for crankcase covering made of carton or sheet metal

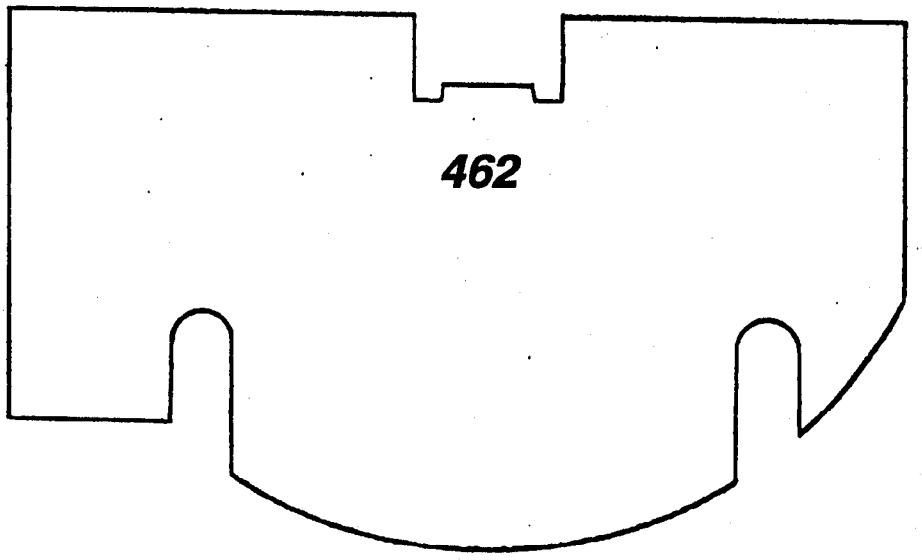




ENGINE TYPE 462

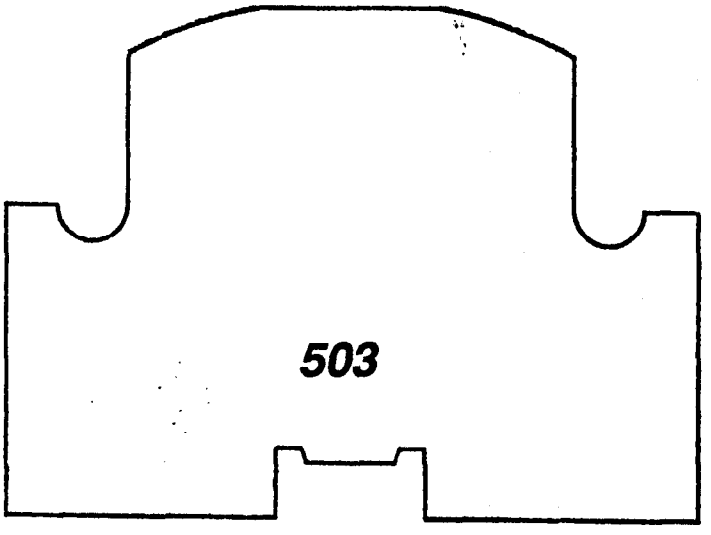
Paper pattern for crankcase covering made of carton or sheet metal

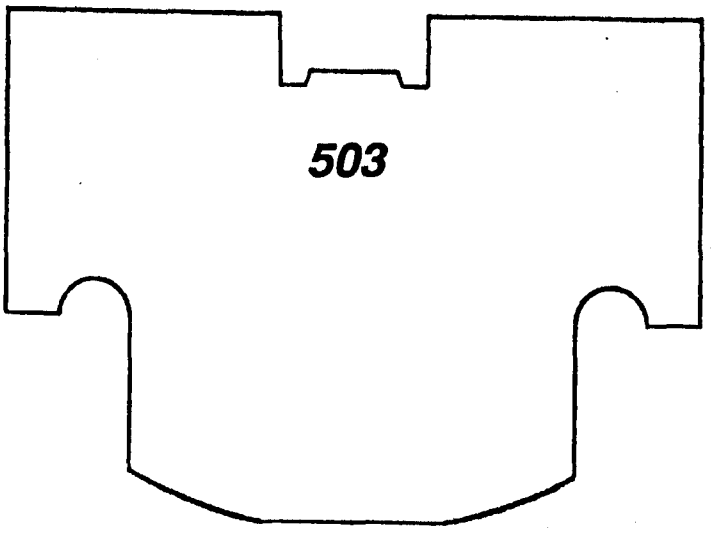




ENGINE TYPE 503

Paper pattern for crankcase covering made of carton or sheet metal





ENGINE TYPES 532 AND 587

Paper pattern for crankcase covering made of carton or sheet metal