

A transparent filter that can pressurize lubricant before the internal combustion engine starts

Technical field

5 This invention is a supplementary device for the lubricating system of internal combustion engines, namely a transparent filter that can pressurize lubricant before the combustion engine starts (hereinafter called PLBCES transparent filter).

Background of invention

10 According to the current technology for lubricant filters of the internal combustion engines, there is not any device that can pressurize lubricant before the internal combustion engine starts, and filters function only to filter lubricants. According to the working principles of lubricant pumps, the current internal combustion engine can only make high pressure lubricant after attaining a rotational speed. The starting resistance is no less than 0.5 times for starting the
15 internal combustion engine before the high pressure membrane forms to facilitate the rotation of the internal combustion engine. Starting the internal combustion engine with lubricant under no pressure, represents a process of the most severe wear of its parts, which constitutes over 45% of the total wear of the engine. At present, filter covers are made of metals in all the countries of the world, and thus
20 it is impossible to monitor the filtration quality of lubricants by eye. This invention aims to solve these technical problems.

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Contents of invention

The proposal of this invention aims to provide a PLBCES transparent filter

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that can pressurize lubricant, reduce starting resistance, minimize mechanical wear, and monitor filtration quality, before the internal combustion engine starts.

5 The filter of this invention consists of a flat DC generator, a decelerator, a lubricant pump, a check valve, a gauge for the lubricant suction pipe, a filtration paper core, a glass hood, and a pedestal base. The flat DC generator, decelerator, lubricant pump, check valve, and gauge for the lubricant suction pipe are connected in sequence to the top lid of the filter. A high-density filtration paper core for the removal of impurities below 2 μm is filled into the
10 high-temperature-resistant hardened glass hood and constructs the intermediary part. The pedestal base is identical to those of ordinary filters. The 3 parts are sealed with rubber washers and connected with nets.

In application, the flat DC generator drives the decelerator which then drives the lubricant pump at the speed ratio of 1:6, so that the lubricant pump may
15 acquire a lubricant pressure of no less than 30 Kpa. The lubricant is sucked in through the lubricant inlet check valve and the gauge of the lubricant suction pipe of the lubricant pump, and high pressure lubricant is ejected out of the lubricant outlet of the oil pump to lubricate the friction surface of the internal combustion engine. A high-density filtration paper core is used to remove
20 impurities below 2 μm . Made of high-temperature-resistant glass, the hood makes it convenient to monitor the filtration quality of lubricants. When the calibrated pressure is attained, it turns off power and the oil pump stops working.

The filter of this invention is identical to the original filter in size, and may guarantee the use of the same position and the same installation method as
25 used to connect the original filter to the combustion engine, without any need

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to change any parts of the internal combustion engine. The power switch adopts an on-off circuit for oil pressure indicator lamps in the combustion engine. When the calibrated lubricant pressure is attained, the indicator lamp for lubricant pressure turns off automatically. In the meantime, the motor for the PLBCES transparent filter turns off. There is no manual control, and lubricant pressurization completes within 1 - 3 seconds.

As compared with the current technology, this invention provides a device that can pressurize lubricant before the internal combustion engine starts, which has not been available before, without changing any design parameters of the main engine. The only addition of a pressurization device to the current filter may help realize automatic pressurization before the engine starts. You may dismantle the PLBCES transparent filter and remove the filtration paper core, if you need to replace it.

Brief explanation of attached diagrams

Diagram 1 is a cross-sectional view of the structure of this invention, in which, 1= main lubricant return hole, 2= main lubricant inlet, 3= oil suction pipe and gauge, 4= sealing washers, 5= pedestal base, 6= glass hood, 7= oil suction rubber pipe, 8= flat DC generator, 9= decelerator, 10= lubricant pump, 11= filtration paper core, 12= lubricant outlet for the lubricant pump, 13= lubricant inlet and check valve of the lubricant pump.

From this diagram, you may find that the filter of this invention consists of flat DC generator 8, decelerator 9, lubricant pump 10, check valve lubricant suction pipe 13, lubricant suction pipe and gauge 3, filtration paper core 11, glass hood 6 and pedestal base 5. Flat DC generator 8, decelerator 9, lubricant



pump 10, check valve lubricant suction pipe 13, lubricant suction pipe and gauge 3 are connected in sequence to the top lid of the filter. High-density filtration paper core 11 for the removal of impurities below 2 μm , is filled into
5 high-temperature-resistant hardened glass hood 6 and constructs the intermediary part. The pedestal base is identical to those of ordinary filters. The 3 parts are sealed with rubber washers 4 and connected with nets.

The filter of this invention is identical to the original filter in size, and may guarantee the use of the same position and the same installation method as
10 used to connect the original filter to the combustion engine, without any need to change any parts of the internal combustion engine. The power switch adopts an on-off circuit for oil pressure indicator lamps in the combustion engine.

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Claims



1. A transparent filter that can pressurize lubricant before the internal combustion engine starts, whose features lie in that it consists of a flat DC generator, a decelerator, a lubricant pump, a check valve, a gauge for the lubricant suction pipe, a filter paper core, a glass hood, and a pedestal base. The flat DC generator, decelerator, lubricant pump, check valve, and gauge for the lubricant suction pipe are connected in sequence to the top lid of the filter. A high-density filtration paper core for the removal of impurities below 2 μm is filled into the high-temperature-resistant hardened glass hood and constructs the intermediary part. The pedestal base is identical to those of ordinary filters. The 3 parts are sealed with rubber washers and connected with nets.

2. The transparent filter that can pressurize lubricant before the internal combustion engine starts, as stated in Claim 1, has a feature that lies in that the power supply for the mentioned flat DC generator is connected with that for the lubricant pressure indicator lamp of the internal combustion engine.

3. The transparent filter that can pressurize lubricant before the internal combustion engine starts, as stated in Claim 1 or Claim 2, has features that lie in that it is identical, in size, to the original lubricant filter of the internal combustion engine, and the filtration paper core, in the middle, for the removal of impurities below 2 μm , is an independent and replaceable part.

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