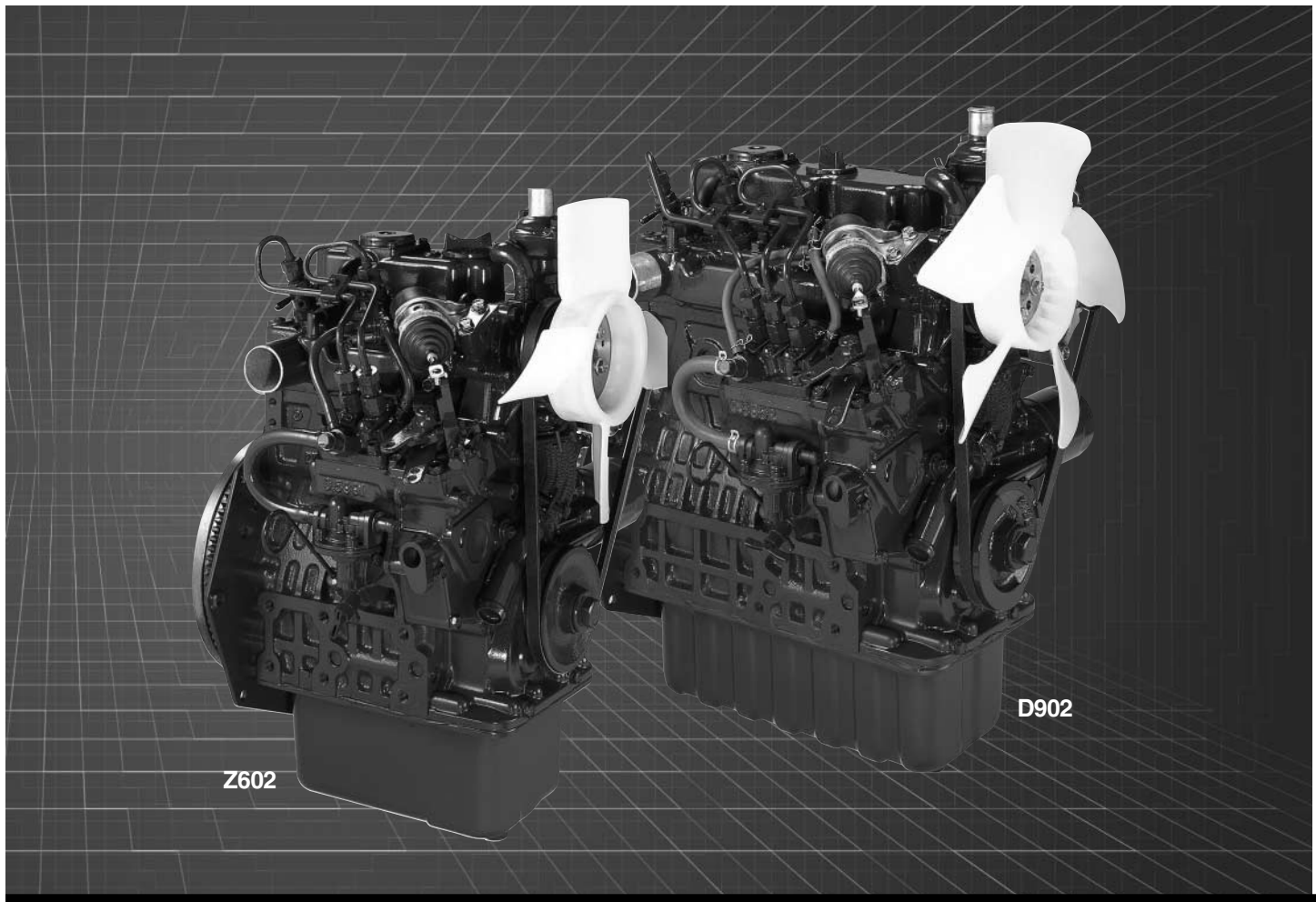




# New Super Mini

## Environmentally-Friendly Compact Engines Featuring High-Power



*Kubota Diesel Engines in the New Super Mini Series have achieved global renown for their durability, reliability, and exceptionally compact size. The lineup of this outstanding series has recently been further upgraded with the addition of models D902 and Z602 that incorporate the innovative and original technology that has been a principal reason for Kubota becoming a leader in the world market for industrial-use diesel engines of 100 HP or less.*

*Featuring significantly increased power along with low noise and vibration, these two environmentally-friendly additions perfectly clear the EPA Tier-2 Emission Gas Regulations even while retaining approximately the same configurations as the extremely popular models D722 and Z482 that preceded them. To learn more about models D902 and Z602, the Kubota Times interviewed two of the engineers responsible for their development.*

## Enhanced Power with No Sacrifice to Size

► When was the New Super Mini Series first introduced to the market?

**SF:** The first model in the New Super Mini Series — featuring a larger displacement than models in the Super Mini Series that preceded it — was launched in 1988. Prior to the introduction of models D902 and Z602, the series numbered five basic models — with the D722 as the most popular — enjoying such high acclaim that they have been fitted to a significant number of OEM products in all parts of the globe.

► What led to the development of models D902 and Z602?

**SF:** In today's competitive and technologically advancing world, customers for Kubota Diesel Engines are constantly striving to be able to offer OEM products that are ever more compact and functional while remaining reasonably-priced. This requires Kubota to pursue a program of positive and forward-looking research and development to keep pace. Towards achieving this, we use the term Power Density as an index for the requisite factors; a term that incorporates (1) the Engine Power to Size Ratio, (2) the Engine Power to Mass Ratio, and (3) the Engine Power to Cost Ratio. The higher the overall value of "Power Density," the more an engine is able to match an individual customer's needs.

Previously available models D722 (719 cc) and Z482 (479 cc) have already been on the market for 15

years. During that time, competitors have been bringing out newer engines with progressively higher Power Densities; engines that could eventually threaten Kubota's superiority in the marketplace. Therefore, starting with a request from the Tractor Division to develop engines to fit the changes being made to sub-compact tractor model BX2200 as well as smaller models, we undertook being able to offer new engines superior in all ways to those available from any other manufacturer. This has led so far to models D902 (898cc) and Z602 (599cc) that feature larger displacements while retaining approximately the same basic configurations as models D722 and D482.

► It is amazing that both the newer and the older models have the same basic configurations.

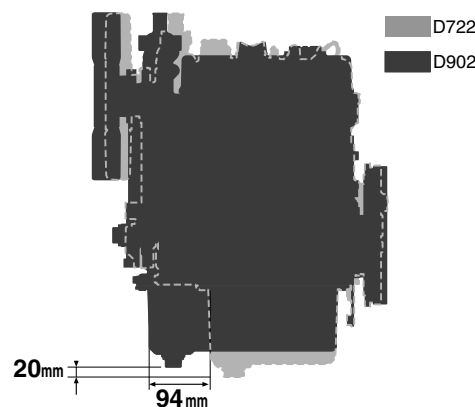
**YK:** That is a major feature as a matter of fact! The engine configurations remain basically unchanged while both Bore and Stroke have been increased; models D722 and Z482 have a 67mm Bore and a 68mm Stroke while those for models D902 and Z602 are 72mm and 73.6mm respectively.

► Any other changes in configuration?

**YK:** While overall width of the engine remains unchanged,

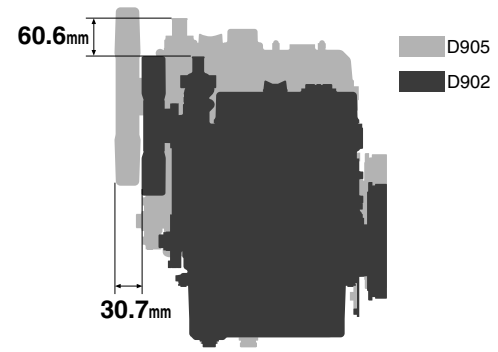
### Oil Pan Comparison

The Oil Pan in D902 and Z602 is longer and shallower to reduce engine size.



### Height Comparison

Model D902 has the same output power as the D905 (15.1kW[20.2HP/3200rpm]), yet the D902 is 60.6mm shorter in height and 30.7mm shorter in length than the D905.



**Satoshi FUJII (SF), Deputy Manager, Engine Engineering Department**

Mr. Fujii has been a primary figure in the development of the New Super Mini Series for nearly seven years. Currently responsible for small engine design in the range from 400 to 900cc, he was in charge of design for models D902 and Z602.



**Yukimasa KABE (YK): Engineer, Engine Engineering Department**

Mr. Kabe has been a research leader for the New Super Mini Series ever since being involved with the development of model D782 seven years ago. He was also responsible for research on models D902 and Z602.



