Farm and Industrial Machinery Consolidated Division

Weeding machine for rice field

More than 10% of whole rice growing farmers is tackling environment-conservation-type rice growing recently. Rice growing with no agricultural chemicals such as synthetic fertilizer and herbicide is conducted all over the country.
At present, there are agricultural ways using ducks, and using mulch paper as rice growing way without herbicide. However it is considered that they will not become popular from the point of view of weeding effect and cost.
Weeding by weeding machine has been being conducted in rice growing. Kubota's weeding machine for rice field contributes to the organic and less agricultural chemicals rice growing from now on. Because it realizes high efficiency in driving it with a driver on it and multi-line weeding, and high preciseness in weeding between lines and between stubble simultaneously, compared with conventional weeding machine.

SJ-6K、SJ-8K

Mini-backhoes

It is important to consider the operation noise of mini-backhoes since they are mainly used in urban area or in the construction work at night.
Those series of Mini-backhoes were approved as Ministry of Land, Infrastructure and Transport's ultra-low-noise-type construction machinery in Japan. And auto-idle function is installed to them, in which the engine becomes idle automatically when operation lever is returned to the neutral position to stop work for a while. So they can operate the mini-backhoes in urban area or in the construction work at night without worry of noise. And newly developed engine, NEW E-TVCS engine, is installed to minimize hazardous substances in exhaust gas from the point of view of air pollution prevention. We have developed "human- and environment-friendly" construction machinery which contributes to saving energy and resources, realizing high operational efficiency and energy saving by newly developed oil pressure system.

U-40-3, **U**-50-3, **RX**-503

Biodegradable oil (Bio Green Grass)

Hydraulic oil " Bio Green Grass " is oil which is excellent in biodegradability developed by Kubota for global environmental conservation. It is available for transmission oil and hydraulic oil of green machinery (lawn mowers) as well as hydraulic oil of construction machinery. So if those machinery had an accident, spilling their oil on soil, or on lawn in the park or ground, and in the river, the oil could degrade itself and not pollute environment. In addition to the basic performance as hydraulic oil, biodegradability was added to it, applying additive blending technology, which was accumulated in the development of high performance lubricant for agricultural machinery.
"Bio Green Grass" is "never-withers-lawn" hydraulic oil being applied our original surface-active agent technology to for the first time in the world. It was approved of by Japan Environment Association as Kubota's first Eco-mark product.

■ Properties of Bio Green Grass

Color (ASTM)	1.5
Kinematic viscosity 40℃、mm^2/s	47
100℃、mm^2/s	11
Viscosity index	225
Flowing point	-30
Copper plate corrosion ℃	1a
Biodegradability (CEC method)	90% or more

03M Series Engines (Low vibration, low noise, high performance, comply with exhaust emissions regulations)

Kubota has developed new 03M Engine Series a next generation engine series. The new series will be similar to current 03 Series Engines, but will have additional features.

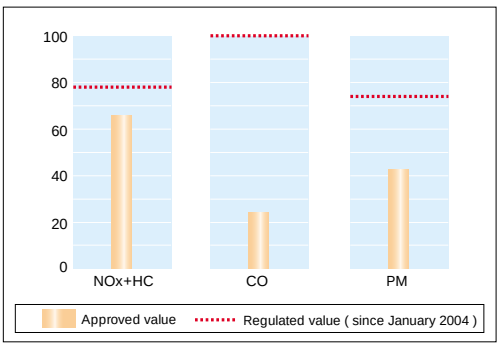
1.Higher Power Density: By increasing the displacement in the same size of the current 03 engines.

2.Lower Vibration and Noise: By adopting built-in-dynamic balancer as an extra feature.

3.Emissions Regulation: These engines meet Emissions Regulations of U.S. EPA, European Community, Japan and so on by Kubota original E-TVCS Combustion system. Kubota is manufacturing these engines under the stringent Kubota emissions audit system in conformity with the regulations. These engines are used in many farm and construction machines such as agricultural tractors, combine harvester, backhoes and generators as the low emissions, environment friendly and high performance power source.

03M series

■ Approved values of exhaust gas of V2403 (19-37kW) engine by EPA



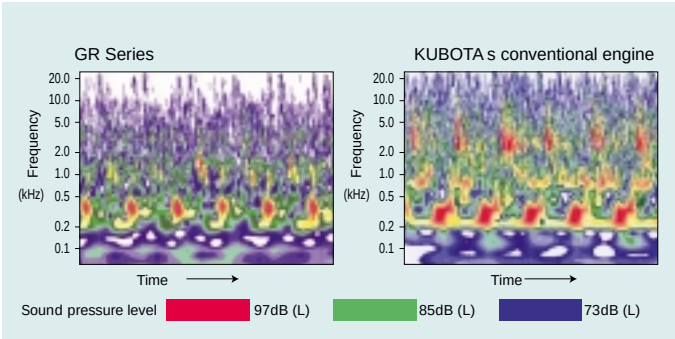
Ratio based on present regulated value as 100

Air Cooled Gasoline Engine

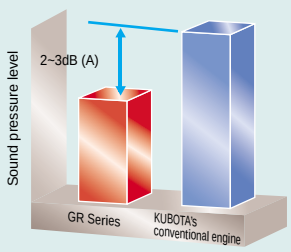
The New GR Series Engines were developed for easier installation into various industrial applications. KUBOTA achieved the lower center of gravity and compact body by adopting slanted cylinder; lower noise and better noise characteristic by adopting the newly developed valve train and by optimizing the piston profile. Moreover we achieved high power and low emissions by adopting KUBOTA original pent roof type combustion chamber. The New GR Series Engines are widely used in mini-tillers, rice planting machines, combine harvester, powered spraying machines, generators and so on, a newly developed human-friendly and environmental-friendly engines.

GR series

■ An example of noise analysis (Wavelet analysis at 30 cm from the engine)



■ Noise comparison



At rated out put

■ C-OHV combustion method