

WHY?

**Kubota Telecom engines are the best choice for
HARSH APPLICATIONS**



[1] MADE IN JAPAN

All Kubota Engines are made in Japan



Head Office

1-2-47, Shikitsu-higashi,
Osaka 556-8601 Japan
TEL 06-6648-2111

Tokyo Head Office

Kyobashi Trust Tower
2-1-3 Kyobashi, Chuo-ku,
Tokyo 104-8307 Japan
TEL 03-3245-3111



Sakai Plant

Place : Sakai city OSAKA
Established : 1937
Total ground area : 200,000m²
Employees : 2,200
Engine Production Capacity : 200,000 units
Main Products : 05 / V3 series



Sakai-Rinkai Plant

Place : Sakai city OSAKA
Established : 1985
Total ground area : 210,000m²
Employees : 616
Engine Production Capacity : 230,000 units
Main Products : Super Mini series



Okajima Foundry

Place : Osaka city OSAKA
Established : 1900
Total ground area : 341,000m²
Main Products : Crank Case



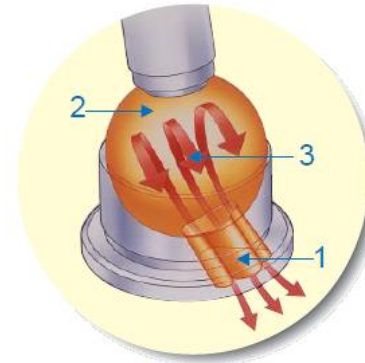
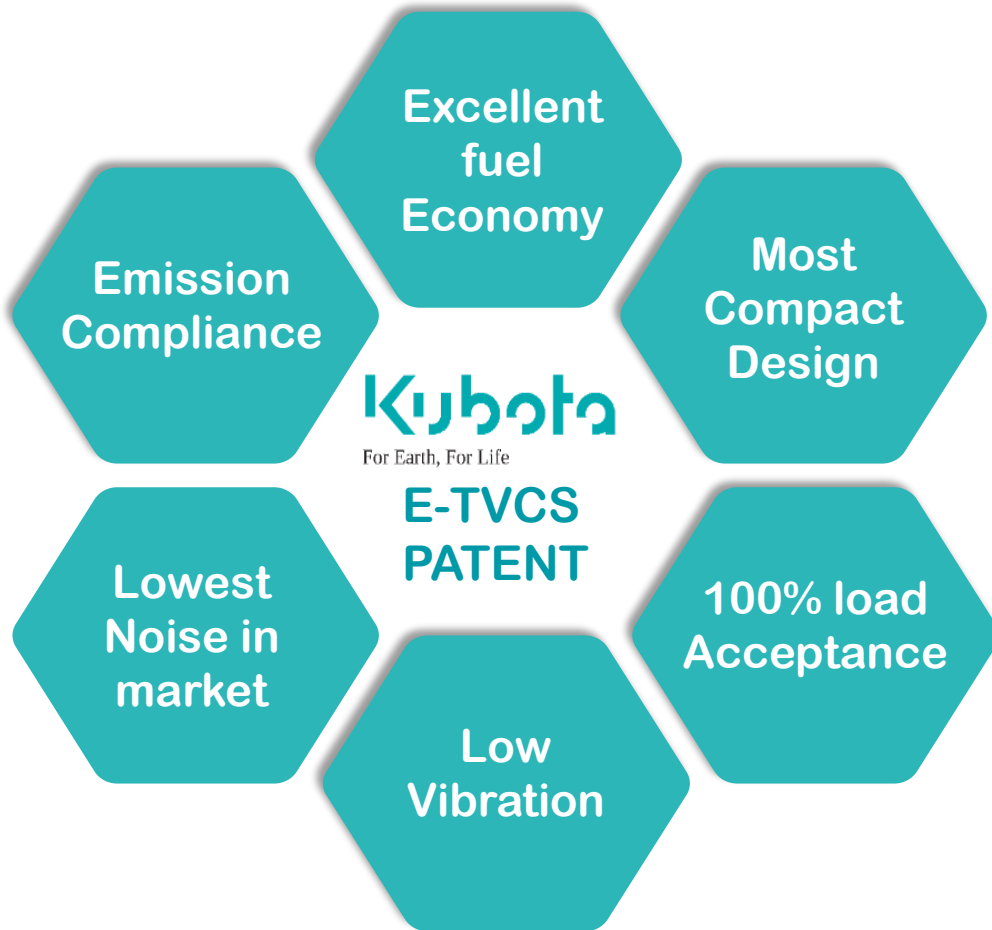
Tsukuba Plant

Place : Tsukuba city IBARAGI
Established : 1975
Total ground area : 341,000m²
Employees : 1,100
Engine Production Capacity : 220,000 units
Main Products : 03 / 07 series

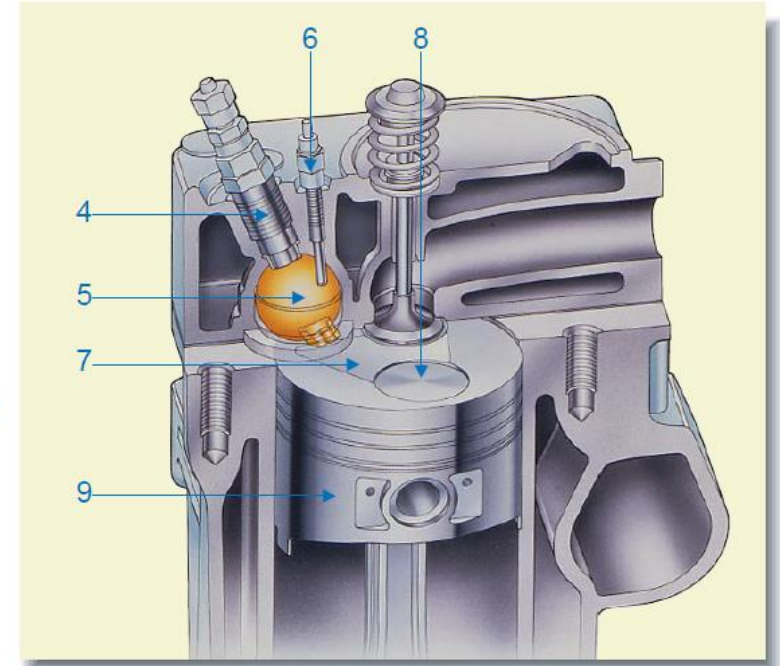


[2] E-TVCS PATENT

Kubota patented design for combustion chamber



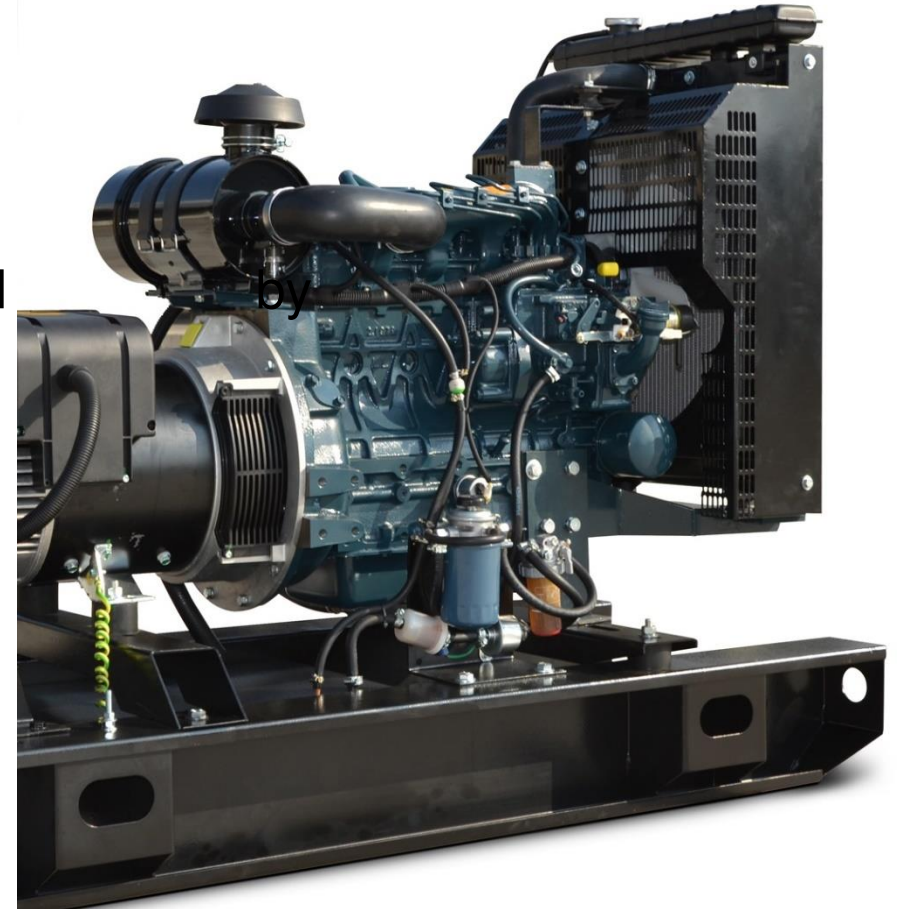
1. Throat of Combustion Chamber
2. Combustion Chamber
3. Three Vortex
4. Injection Nozzle
5. Combustion Chamber
6. Glow Plug
7. Recess Concave
8. Valve Recess
9. Piston



[3] COOLING CAPABILITY

KONTROL-C GENSETS ARE EQUIPPED WITH SPECIAL COOLING PACKAGES

- Kontrol-C Market is centered in Hot regions (KUWAIT,IRAQ,SAUDI,UAE..)
- Engine fan Drive have been adjusted for highest Air flow
- Cooling packages are designed to suite 60C ambient
- Canopies are designed to suite the air flow requirements
- The selection and application of new Radiator is controlled Kubota-Japan



[3] COOLING CAPABILITY

KONTROL-C GENSETS ARE EQUIPPED WITH SPECIAL COOLING PACKAGES



KUBOTA Corporation
 2-47, Shikatsugashi 1-chome, Naito-ku
 Osaka, 556-8601 Japan
 Phone: 81-(0)6-6648-2139
 Fax: 81-(0)6-6648-3521
 No. of pages:
 1 including this page
 Date: July, 2019
 From: Engine Global Marketing II
 (Market Development Group)

We duly confirm that application check results for the following Kubota diesel engine is in accordance with our standard value of evaluation based on the following application test results. We also confirm that this engine model can be proceeded for the mass production to be used for K20/24 with closed canopy.

OEM product model	K20/24
Engine model/code	V2203-E2BG-GDR-1 (1G296-64000)
Test date	29 th March, 2019 (1500rpm) 5 th July, 2019 (1800rpm)
Standby power	20.1kw @1500rpm, 24.0kw @1800rpm
ATB (Air To Boil)	Appx. 52.7 degree C with closed canopy @1500rpm Appx. 61.3 degree C with closed canopy @1800rpm
Vibration	Within acceptable level for mass production The supplemental conditions are agreed separately
Remarks	With local procured bigger radiator (K-20)

Takashi Aoshima
 Engine Engineering Dept.
 Kubota Corporation

Akihiko Adachi
 Engine Global Marketing Dept.II
 Kubota Corporation

We duly confirm that application check results for the following Kubota diesel engine is in accordance with our standard value of evaluation based on the following application test report. We also confirm that this engine model can be proceeded for the mass production to be used for K20/24 with closed canopy.

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[4] ENGINE TESTING

KUBOTA ENGINES 100% LOAD TEST

- 1M engine per annum stipulates very strict testing
- Engine is 100% load tested



100% Hot Test in Japan

[5] SPECIAL FILTERS & OIL SUMP

SPECIAL OIL FILTER, FUEL FILTER, OIL SUMP, ELECTRIC LIFT PUMP



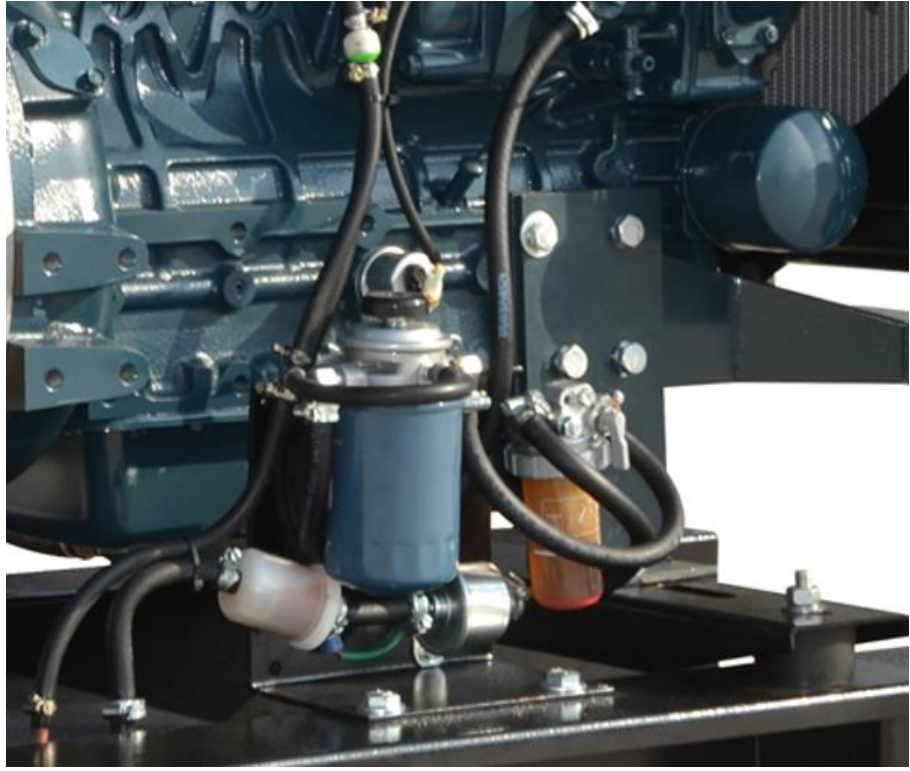
KUBOTA Corporation
2-47, Shikitsuhigashi 1-chome,
Naniwa-ku Osaka, 556-8601 Japan
Dec, 2020
No. 131-EGMD2-GHAD-03-02

Subject: 1,000 Engine Hours Extended Oil Change Interval for Generators

The purpose of this letter is to approve the D1703-E2BG-GDR-1 engine and V2203-E2BG-GDR-1 engine used in generator applications for 1,000 hours oil and filter change interval.

Engine Model (Generator Application):
D1703-E2BG-GDR-1 for generators: 15.0KW @ 1500rpm, 18.1KW @ 1800rpm (Net Standby)
V2203-E2BG-GDR-1 for generators: 20.1KW @ 1500rpm, 24.2KW @ 1800rpm (Net Standby)

- Requirements:
- Oil Pan: Kubota 16414-01504 for D1703 (124mm depth, 7L)
Kubota 19077-01504 for V2203 (124mm depth, 9.5L)
 - Oil Filter Cartridge: Kubota 15004-20104 for D1703/V2203 (Filtration area: 2000 cm²)



[7] GURANTEED DURABILITY

Kubota engine is engineered for best performance

STARTING AT LOW TEMPERATURE

Kubota has re-designed their engines to be very resistant to side effects of light load operation

- ↳ Kubota provides electric lift pump to ensure the fuel pressure whatever the depth of tank is.
- ↳ Kubota provides electric DC pre-heater (glow plugs) to support cold starting even temp is within -15C (05 & 03 Series) and -20C (V3 Series).
- ↳ This is another advantage of Kubota Patented E-TVCS.
- ↳ Kubota provides suitable fittings to have additional coolant and Lube oil heater when needed for low temperature applications.

[7]

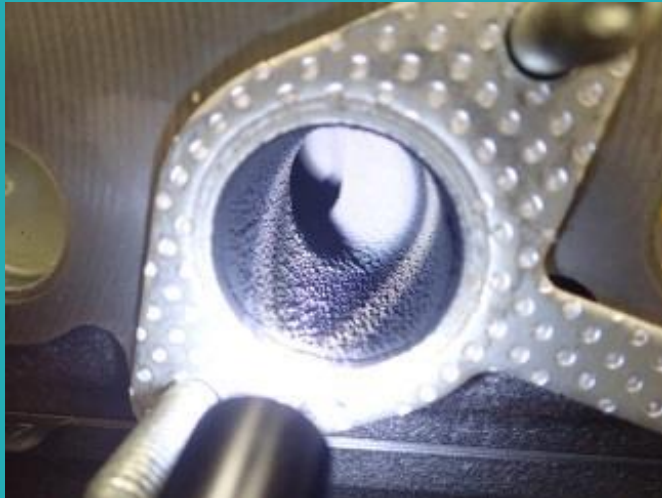
GURANTEED DURABILITY

Kubota engine is engineered for best performance

Light Load Operation

Kubota has re-designed their engines to be very resistant to side effects of light load operation

Kubota



After 24hrs at NO LOAD.

Durability is verified for 500hrs continuous test at NO LOAD

Kubota Competition



Oil dripping in Exhaust manifold after 24hrs of NO LOAD operation

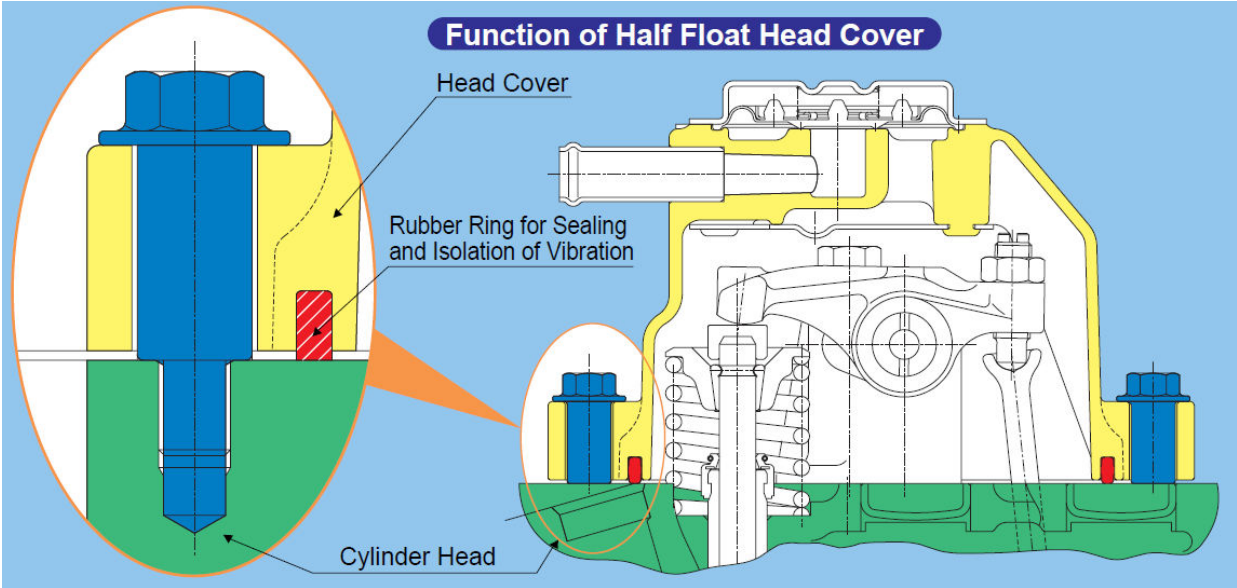
This is one of the major side effects of light load operation that can be easily detected. Continuous operation will lead to carbon deposited on exhaust manifolds which increases the engine back pressure

[8] QUIET OPERATION

KUBOTA HAS THE LOWEST NOISE & VIBRATION ENGINE

- Kubota engine is always the choice for quite and no vibration application.
- Kubota range includes 4 cylinder configuration at the key power nodes.

Engine	V1505	V2203	V2003T	V3300	V3300T	V3800T
Rating KVA	12KVA	20KVA	22.5KVA	30KVA	36KVA	45kva



Special Coating of Piston to decrease noise and Vibration

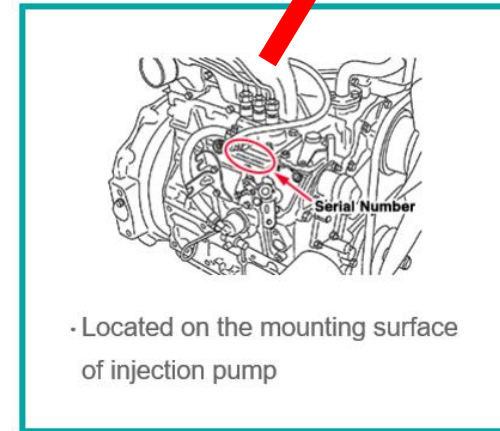
Half float head cover to decrease noise of Engine



[9] ENGINE SERVICE

Kubota is well known for reliability and ease of service

- Engine is highly reliable
- Engine is serviced from one side only
- Excellent oil service interval
- Kubota has extended service capability based on testing
- Engine overhauling is easy, and needs so special tools.
- Engine used liquid gaskets, except for cylinder head
- Engine serial number is needed for spares enquiry
- Genuine spare parts are protected by Kontrol-C network of dealers
- Same spare parts used for all applications: Gensets, Bobcat, Kubota Equipment, CAT Equipment,....



**Kubota
03 series**

[10] AFTER SALES SERVICE

Kubota is well known for reliability and ease of service

- Same engine for multiple applications
- Dealers, whether for power generation, Agricultural or construction equipment, can provide engine spares parts
- Provides global warranty of 24month / 2000hrs
- Warranty is covered by 4000 dealers network
- Dealer provides warranty, spare-parts, application support, technical assistance and service
- Engine serial number is always needed for any aftersales enquiry.





Powered by
Kubota
JAPAN

Powered by
Kubota
JAPAN

Powered by
Kubota
JAPAN

LEROY
SOMER
ALTERNATOR

LEROY
SOMER
ALTERNATOR

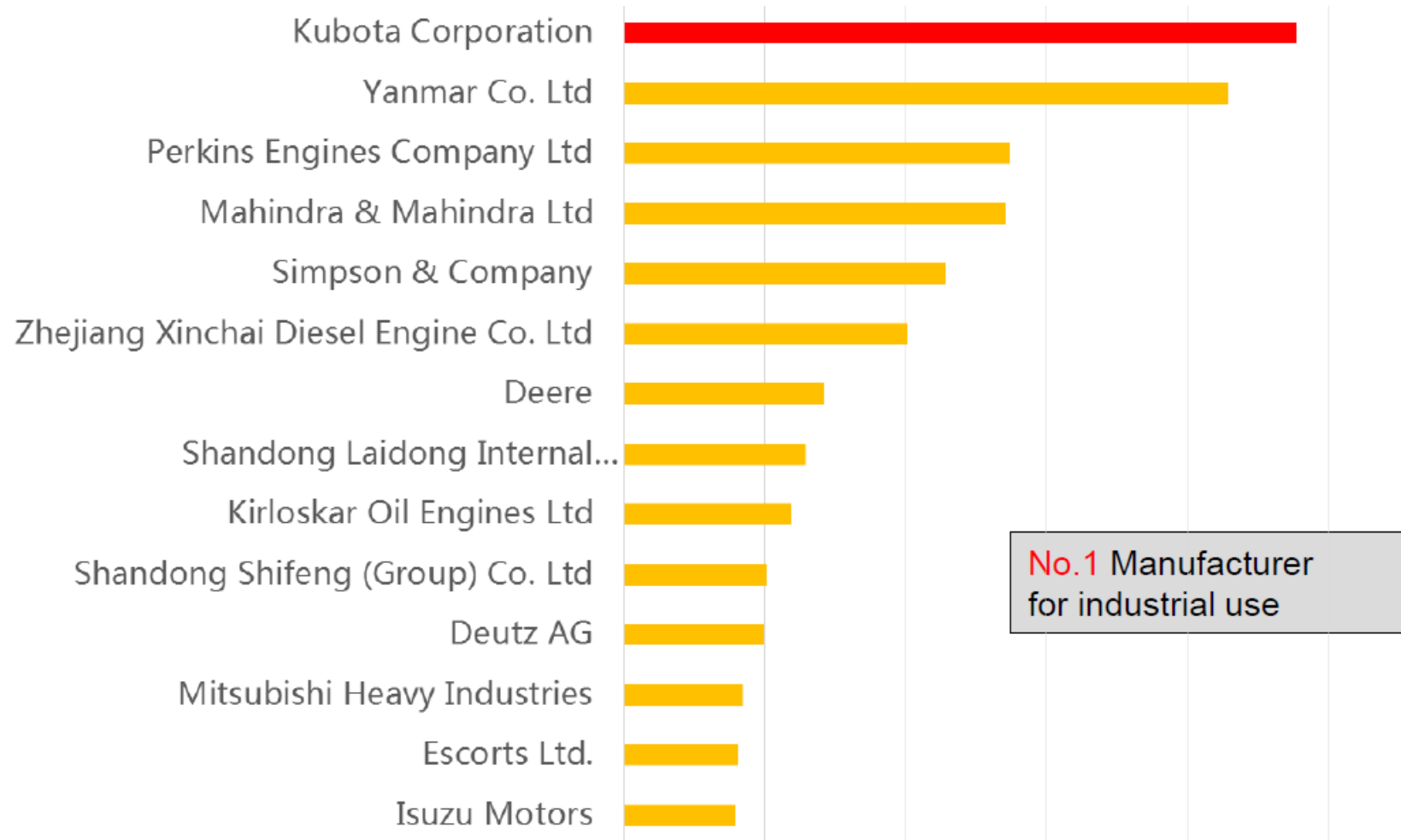


World # 1 Manufacturer

of small diesel engine (below 100HP) for industrial use

With 1M engine supplied per year

Total supplied exceed 30M in 2018





Comparison @ 20KVA 50Hz power node (1/3)

Engine model	V2203-GDR-BG	404A-22G	Notes
Manufacturing			
Factories	Japan only	UK or China	
Speed	1500/1800	1500 only	
Emissions legislations	EU Stage 3A	Non-compliant	
Paint	Primer + Paint	Only Primer	Painting is important to protect engine from rusting
Performance			
Std-by power@ 1500rpm	20.1	20.3	Power declared is in Gross KW Base-load (continuous full load operation) is available with Kubota engines, it is used for harsh application as Telecom applications and heavy duty equipment.
Prime power@ 1500rpm	18.2	18.3	
Baseload power@ 1500rpm	17.2	-	
Displacement	2.2 lit.	2.2 lit.	
Load acceptance	100%	n/a.	Kubota is best choice for high starting KW
Fuel system			
Fuel consumption at FL	233 g/KWh	244 g/KWh	V2203 has better fuel consumption
Main fuel filter	Supplied	Supplied	
Fuel filter Specs	5 micron	25 micron	Kubota has better cleaning capability – more protected system, longer lifetime
Fuel-water separator	Supplied	Option	V2203 has better fuel filtration
Electrical lift pump	Supplied	NO	Electrical lift pump is needed when using big skid fuel tank
Fuel cut off switch	Supplied	NO	
Fuel Suction head (from lift pump level)	More than 150cm	80cm	404A is limited by capability of mech lift pump, additional Electric pump is needed if base tank is more than 50cm height

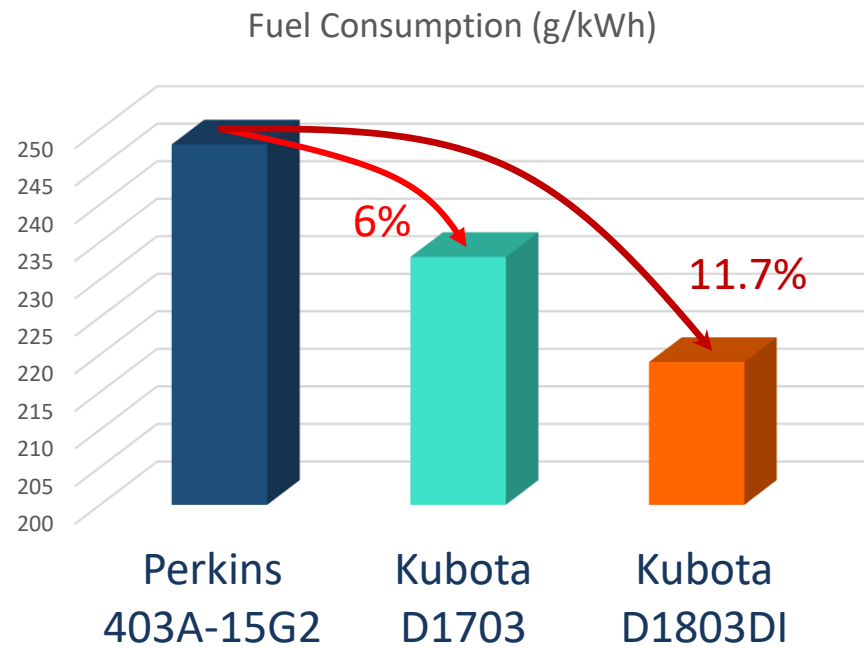
Comparison @ 20KVA 50Hz power node (2/3)

Engine model	V2203-BG	404A-22G	Notes
Electrics			
DC Alternator	40A 12V	15A,12V	Kubota has bigger DC alternator (to quicker change the battery), and starter motor is smaller (which means needs less battery requirements during starting)
Starter	1.2KW, 12V	2KW, 12V	
Relays (Glow plug +starter)	Standard	No	Japanese accessories
Cooling			
Medium	Water cooled	Water cooled	
Coolant Capacity	9L	7L	V2203 has bigger cooling package
Ambient clearance (inside canopy)	53C	46C	Inside canopy, Kubota powered genset is tested by engine manufacturer
Durability and Reliability			
Combustion chamber	E-TVCS	Standard	E-TVCS is patent for Kubota to make the engine emission complaint, lower FC, low vibration and low noise
Average Service life	50,000 hrs	15,000 hrs	Same Kubota engine is designed for all harsh applications as Agricultural, Construction and rental power generation
Famous Generic problems	NA	Fuel solenoid	Fuel solenoid failure is very common with Perkins 400series
After-Sales			
Filters replacement	Single side service	Partial	
Standard service interval	1000hrs	500hrs	Fuel Sulfur content will affect both oil service interval
Gaskets	Only for Cylinder head	All engine parts	Kubota uses liquid gaskets
Warranty	24 month/ 2000hrs	12 month	
Model & SN engraved on block	Yes	No	

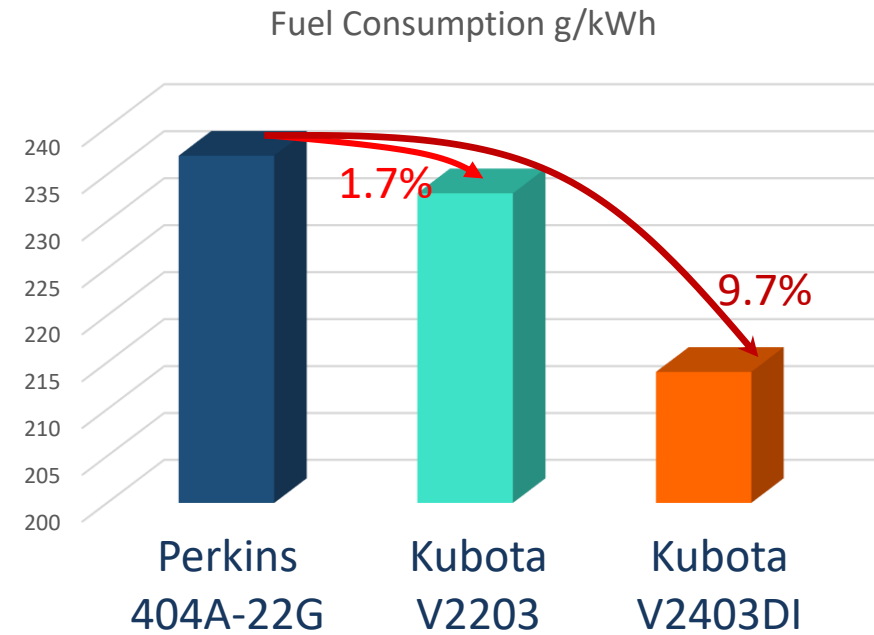
Engine model	V2203-BG	404A-22G	Notes
Company position			
Manufacture	Kubota	Perkins	
Logo			
Producing engines from casting level	Yes	No	
Every engine is 100% hot tested prior delivery	Yes	-	
Range	4 ~ 45KVA	9~ 2500KVA	Perkins is wide range Kubota is more focused on small engines
No. of engines /year	1 Million	500 K	Kubota is biggest manufacture for industrial engines below 100HB – more than 30 million engines so far
Company start	1883	1935	
Main Customers	Cummins Rental Gen CAT Equipment KONTROL-C Gen Denyo Gen AtlasCopco Gen Bobcat equipment Carrier Compressor	Olympian Gen FG Wilson Gen Visa Gen Allam-Marine Gen	Kubota is #1 is manufacturer for small engine in all industrial applications (including Genset) , since the biggest engine manufacturers use Kubota engine in small range: power generation, Construction and agricultural application

Fuel Consumption Comparison

At 100% Prime Rating



15KVA @ 50Hz

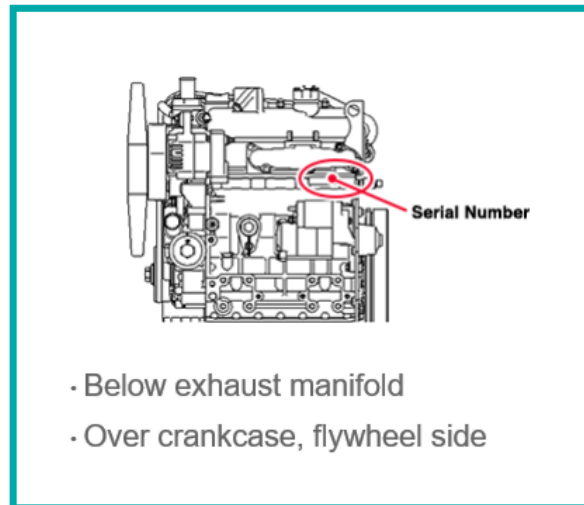


20KVA @ 50Hz

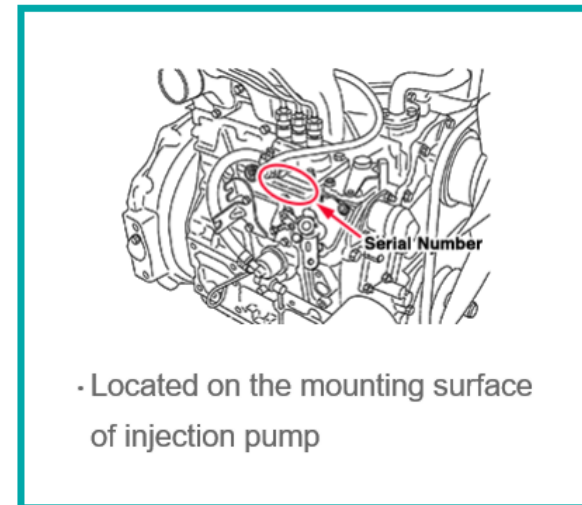
Serial Number Authentication



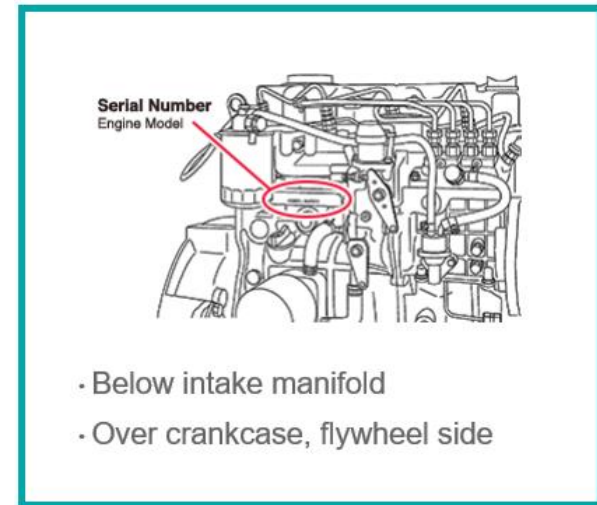
The Engine model & Serial number are engraved on engine block of all Kubota engines



05 series



03 series



V3 series

**MADE
IN
JAPAN**



Big Filters

- Electric lift pump
- Two fuel filter
- Water separator
- Fuel cut switch
- Big oil filters & sump



**Big
cooling
package to
suit Gulf
markets**



100%

Load Acceptance
Battery charging/
UPS application



Most Kubota Engines passed

50,000hrs

Before first overhaul

**Extended
Service
Interval**

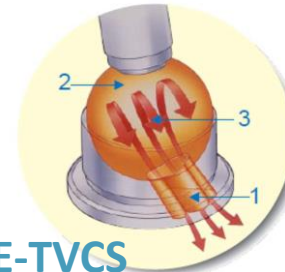


Engine PATENTS:

E-TVCS (for IDI)

E-CDIS (for DI)

**Combustion Noise
Reduction**



E-TVCS

1. Throat of Combustion Chamber
2. Combustion Chamber
3. Three Vortex

Kubota

RANGE & SOLUTIONS

1500rpm/3000rpm

Gas & Diesel



Get in Touch with
Kontrol-C



+965 97763407



support@kontrolc.com



P.O.Box 29927,
Safat 13160, Kuwait



18th street , Shuwaikh
Industrial, Kuwait



كنترول سي - Kontrol C
@kontrolcgenerators



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www.kontrolc.com