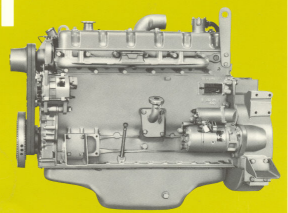
# INDUSTRIAL ENGINE

# 6D105-1



## SPECIAL FEATURES

**High quality:** The 6D105-5 diesel engine is a true achievement of our total engine production system—from the casting of components, all the way through machining processes using Komatsu-made machine tools to final assembly.

**Proven reliability:** The 6D105-1 diesel engine matched with our heavy-duty construction equipment makes for the powerful combination of unbeatable performance and durability.

**Economical operation:** The direct-injection system and special fuel-minimizing design of the 6D105-1 provide maximum economy. Low lube oil consumption is also a remarkable advantage.

**Lightweight and compact design:** Advanced design and an efficient production system make Komatsu diesel engines compact and lightweight, enhancing their versatility.

**Wider applications:** A wide range of optional equipment offer a variety of applications to meet any specific customers' requirements.

**Low-noise operation:** Ideal designing keeps engine noise and vibration to a minimum.

## SPECIFICATIONS

Power ratings:

| | Metric | English |
|---|---|---|
| Intermittent (at 2500 RPM): | 92 kW | 123 HP |
| Continuous (at 2300 RPM): | 72 kW | 97 HP |
| Type | 4-cycle, water-cooled, direct-injection | |
| Aspiration | Natural aspiration | |
| Cylinder arrangement | 6 in-line | |
| Bore x stroke | 105 x 125 mm | 4.13" x 4.92" |
| Piston displacement | 6.49 ltr | 396 cu.in |
| Compression ratio | 17:1 | |
| Lube system oil capacity | 24 ltr | 6.3 U.S. Gal |
| Coolant capacity | 12 ltr | 3.2 U.S. Gal |
| Dry weight (approx.) | 510 kg | 1,125 lb |
| Dimensions: | | |
| Length | 1178 mm | 46.38" |
| Width | 693 mm | 27.28" |
| Height | 946 mm | 37.24" |

KOMATSU LTD.

## 6D105-1 Design Features

**Cylinder head:** Cross-flow type cylinder head made of one-piece cast iron alloy, for uniform temperature distribution along the bottom of the head. Spiral air intake port design and ultra-smooth internal surface of this port increase the force of air swirl and air absorption volume. Heat- and wear-resistant valve inserts of high-quality cast chromium steel.

**Cylinder block:** Cast iron alloy cylinder block with 7 bearings and curved skirts for maximum sturdiness. Wet-type cylinder liners made of special cast alloy iron. A clevis seals for the top seal and O-rings for the middle and bottom seals increases durability.

**Pistons and piston rings:** Pistons made of AC8A and T-5 heat-treated. Thermal-flow type piston design for minimum fuel consumption. Piston rings consist of two compression rings and an oil control ring. The top compression ring is a barrel-faced rectangular type and the second compression ring is an inner-cut taper-faced rectangular type. Bevel-cutter type oil control ring includes a coil expander. External surfaces of top and oil control rings are hardened through chrome-plating. Ring grooves and top surface of the piston are cooled by oil jet.

**Crankshaft:** 8-balance type made of one-piece, forged alloy steel. Journals are induction hardened. Rubber-type torsional damper installed on the front end of crankshaft to minimize excessive torque fluctuation.

**Connecting rods:** Made of forged alloy steel. Connecting rods receive combustion pressure uniformly throughout the surface.

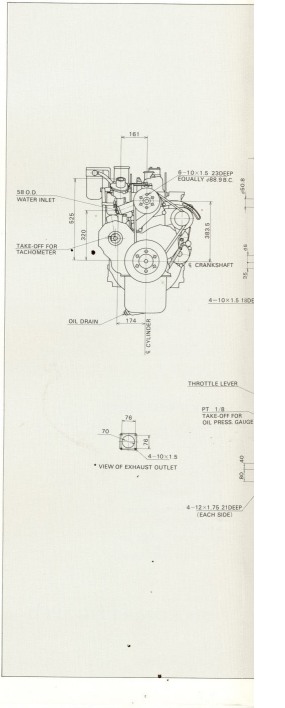
**Valve mechanism:** Low camshaft type made of forged carbon steel. Cams and journals are induction hardened. Four bearings are supported by a coil housing inserted into the cylinder block. Cam profile with a large base circle and special outline increase air intake efficiency. Mushroom-type tappet is made of special cast iron and the surface is lubrite treated to increase wear resistance. Hollow shafting construction of locker pushrods and a locker arm of cast iron. A locker shaft (hollow shaft) is supported by locker shaft brackets of cast iron to increase sturdiness. Cone angle of 30° for intake valves and 45° for exhaust valves.

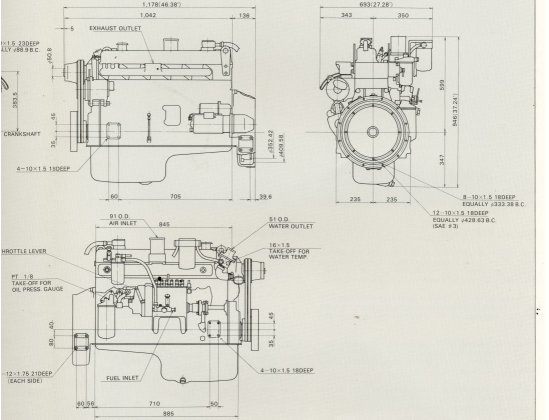
**Injection system:** Bosch A-type fuel injection pump with all-speed-control RSV type governor. Injection nozzles are arranged in line. Injection pump is driven by the front gear train and is force lubricated with engine oil.

**Lubrication system:** A gear-type oil pump is used. Plate-type oil cooler is built into the water gallery of the cylinder block. This, plus the thermostat valve keeps oil temperature constant. Full-flow type oil filter with paper element. Since the oil filter is a spin-on/off type, filter element is replaced quickly and easily.

**Cooling system:** Centrifugal water pump is installed on the front face of the cylinder block and driven by crank pulley through two V-belts. The large volume coolant passage cools efficiently and evenly around cylinder liners and valves. Wax- and bottom-bypass type thermostats are provided.

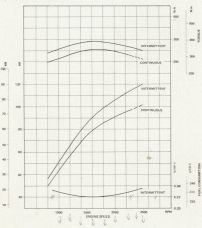
**Intake and exhaust system:** The six-cylinder exhaust manifold is unitized construction. Intake manifold on the cylinder head is box-sectioned and made of alminum, realizing lightweight and compact design.




1,178(46.38")
1,042
136
5
EXHAUST OUTLET
460.8
383.6
CRANKSHAFT
45
35
4-10×1.5 18DEEP
1052.42
459.58
60
705
39.6
693(27.28")
343
350
559
845(33.24)
347
235
235
8-10×1.5 18DEEP
EQUALLY ∅332.38 B.C.
12-10×1.5 18DEEP
EQUALLY ∅428.63 B.C.
(SAE 3-3)
910.D
AIR INLET
845
510.D
WATER OUTLET
16×1.5
TAKE-OFF FOR
WATER TEMP.
THROTTLE LEVER
PT. 1/8
TAKE-OFF FOR
OIL PRESS. GAUGE
40
80
49
35
12-11.75 21DEEP
(EACH SIDE)
FUEL INLET
4-10×1.5 18DEEP
90.5
710
90.5
885

## PERFORMANCE

**Performance curves**




Horsepower, torque, and fuel consumption curves represent performance measured under the ambient conditions of S.A.E. J1349 standards.

- Barometric pressure: 99 kPa (29.2 in Hg)
- Temperature: 25°C (77°F)
- Water vapor pressure: 1 kPa (0.3 in Hg)

**Ratings**

**Intermittent:** This rating conforms to DIN 6270, B-Horsepower "$N_B$" standards. This rating may be applied to intermittent load applications (Full throttle operation does not exceed 60 minutes without interruption, and the average load factor is set at approx. 40%).

**Continuous:** This rating conforms to DIN 6270, A-Horsepower "$N_A$" standards. This rating may be applied to constant load applications (Full throttle for long period without ill-effect, and the average load factor is set at approx. 70%.).

**Operating conditions:** Including water pump, lubricating oil pump and fuel system, and excluding air cleaner, muffler, alternator, compressor, fan, driven components and optional equipment.

**Note:** Rating curves represent a guideline only for selection. Actual power is varied to meet customer's requirements. This horsepower is obtainable with Komatsu's standard fuel pump setting.

## STANDARD EQUIPMENT

- Intake manifold
- Exhaust manifold
- Flywheel housing (SAE #3)
- Flywheel
- Oil pan (front sump)
- Trochoid oil pump
- Spin-on/off cartridge type oil filter
- Centrifugal water pump
- Engine oil cooler
- Thermostat
- Spin-on/off cartridge type corrosion resistor
- Bosch type injection pump
- Mechanical all-speed-control governor
- Spin-on/off cartridge type fuel filter
- Ribbon heater
- Oil level gauge
- Lifting hooks

## OPTIONAL EQUIPMENT

- Dry-type air cleaner
- Exhaust elbow
- Muffler
- Mounting brackets
- Flywheel housing (SAE #2)
- Rear P.T.O.
- Front P.T.O.
- Fan (blower, suction or reversible type)
- Radiator
- Starting motor (24 V, 5.5 kW)
- Alternator (25 A or 35 A)
- Air compressor
- Ether spray

Materials and specifications are subject to change without notice.

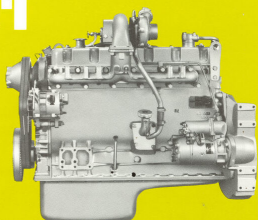

KOMATSU LTD. Tokyo, Japan

Form No. 6D105-05-312

Printed in Japan 6315As

# INDUSTRIAL ENGINE

# S6D105-1



## SPECIAL FEATURES

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**Proven reliability:** The S6D105-1 diesel engine matched with our heavy-duty construction equipment makes for the powerful combination of unbeatable performance and durability.

**Economical operation:** The direct-injection system and special fuel-minimizing design of the S6D105-1 provide maximum economy. Low lube oil consumption is also a remarkable advantage.

**Lightweight and compact design:** Advanced design and an efficient production system make Komatsu diesel engines compact and lightweight, enhancing their versatility.

**Wider applications:** A wide range of optional equipment offer a variety of applications to meet any specific customers' requirements.

**Low-noise operation:** Ideal designing keeps engine noise and vibration to a minimum.

## SPECIFICATIONS

| Power ratings: | Metric | English |
|---|---|---|
| Intermittent (at 2500 RPM): | 125 kW | 168 HP |
| Continuous (at 2300 RPM): | 103 kW | 138 HP |
| Type | 4-cycle, water-cooled, direct-injection | |
| Aspiration | Turbocharged | |
| Cylinder arrangement | 6 in-line | |
| Bore x stroke | 105 x 125 mm | 4.13" x 4.92" |
| Piston displacement | 6.49 ltr | 396 cu.in |
| Compression ratio | 16:1 | |
| Lube system oil capacity | 24 ltr | 6.3 U.S. Gal |
| Coolant capacity | 12 ltr | 3.2 U.S. Gal |
| Dry weight (approx.) | 515 kg | 1,136 lb |
| Dimensions: | | |
| Length | 1178 mm | 46.38" |
| Width | 693 mm | 27.28" |
| Height | 1057 mm | 41.61" |

KOMATSU LTD.

## S6D105-1 Design Features

**Cylinder head:** Cross-flow type cylinder head made of one-piece cast iron alloy, for uniform temperature distribution along the bottom of the head. Spiral air intake port design and ultra-smooth internal surface of this port increase the force of air swirl and air absorption volume. Heat- and wear-resistant valve inserts of high-quality cast chrominum steel.

**Cylinder block:** Cast iron alloy cylinder block with 7 bearings and curved skirts for maximum sturdiness. Wet-type cylinder liners made of special cast alloy iron. A clevis seals for the top seal and O-rings for the middle and bottom seals increases durability.

**Pistons and piston rings:** Pistons made of AC8A and T-5 heat-treated. Niresist insert cast into the top ring's groove for added resistance to wear. Thermal-flow type piston design for minimum fuel consumption. Piston rings consist of two compression rings and an oil control ring. The top compression ring is a barrel-faced keystone type and the second compression ring a taper-faced semi-keystone type. Bevel-cutter type oil control ring includes a coil expander. External surfaces of top and oil control rings are hardened through chrome-plating. Ring grooves and top surface of the piston are cooled by oil jet.

**Crankshaft:** 8-balance type made of one-piece, forged alloy steel. Journals are induction hardened. Rubber-type torsional damper installed on the front end of crankshaft to minimize excessive torque fluctuation.

**Connecting rods:** Made of forged alloy steel. Connecting rods receive combustion pressure uniformly throughout the surface.

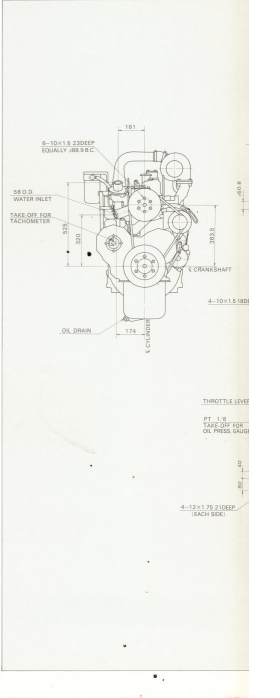
**Valve mechanism:** Low camshaft type made of forged carbon steel. Cams and journals are induction hardened. Four bearings are supported by a coil housing inserted into the cylinder block. Cam profile with a large base circle and special outline increase air intake efficiency. Mushroom-type tappet is made of special cast iron and the surface is lubrite treated to increase wear resistance. Hollow shafting construction of locker pushrods and a locker arm of cast iron. A locker shaft (hollow shaft) is supported by locker shaft brackets of cast iron to increase sturdiness. Cone angle of 30° for intake valves and 45° for exhaust valves.

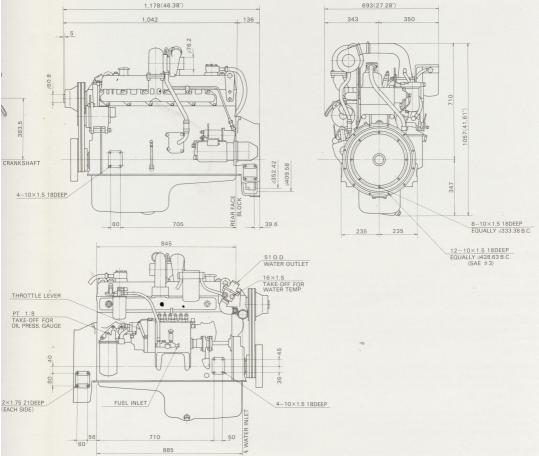
**Injection system:** Bosch A-type fuel injection pump with all-speed-control RSV type governor. Injection nozzles are arranged in line. Injection pump is driven by the front gear train and is force lubricated with engine oil.

**Lubrication system:** A gear-type oil pump is used. Plate-type oil cooler is built into the water gallery of the cylinder block. This, plus the thermostat valve keeps oil temperature constant. Full-flow type oil filter with paper element. Since the oil filter is a spin-on/off type, filter element is replaced quickly and easily.

**Cooling system:** Centrifugal water pump is installed on the front face of the cylinder block and driven by crank pulley through two V-belts. The large volume coolant passage cools efficiently and evenly around cylinder liners and valves. Wax- and bottom-bypass type thermostats are provided.

**Intake and exhaust system:** The six-cylinder exhaust manifold is unitized construction. A T04B type turbocharger is used. Intake manifold on the cylinder head is box-sectioned and made of alminum, realizing lightweight and compact design.

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8-10×1.5 18DEEP EQUALLY ⌀333.38 B.C.
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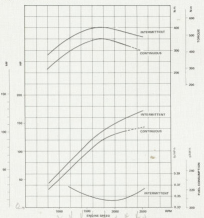
## PERFORMANCE

**Performance curves**

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## STANDARD EQUIPMENT

- Turbocharger
- Intake manifold
- Exhaust manifold
- Flywheel housing (SAE #3)
- Flywheel
- Oil pan (front sump)
- Trochoid oil pump
- Spin-on/off cartridge type oil filter
- Centrifugal water pump
- Engine oil cooler
- Thermostat
- Spin-on/off cartridge type corrosion resistor
- Bosch type injection pump
- Mechanical all-speed-control governor
- Spin-on/off cartridge type fuel filter
- Ribbon heater
- Oil level gauge
- Lifting hooks

## OPTIONAL EQUIPMENT

- Dry-type air cleaner
- Exhaust elbow
- Muffler
- Mounting brackets
- Flywheel housing (SEA #2)
- Rear P.T.O.
- Front P.T.O.
- Fan (blower, suction or reversible type)
- Radiator
- Starting motor (24 V, 5.5 kW)
- Alternator (25 A or 35 A)
- Air compressor
- Ether spray

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