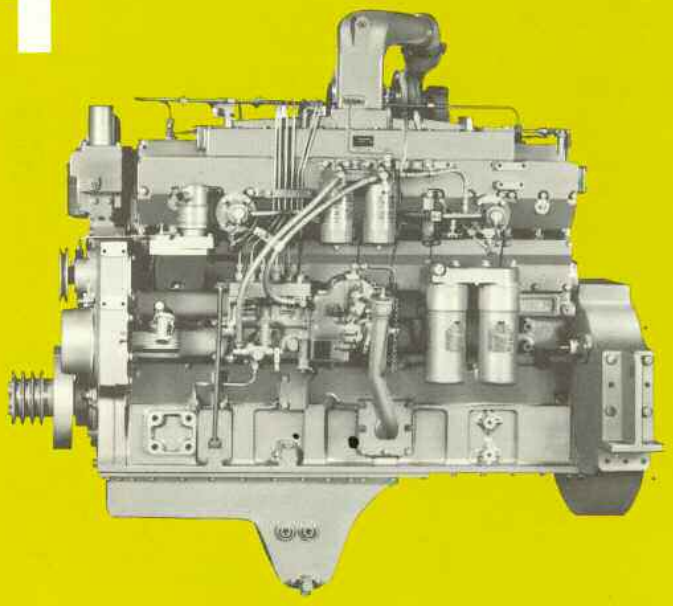
INDUSTRIAL ENGINE

S6D170-1



SPECIAL FEATURES

High quality: The S6D170-1 diesel engine is a true achievement of out total engine production system—from the casting of components, all the way through machining processes using Komatsu-made machine tools to final assembly.

High Reliablity: Based on Komatsu's proven success with various engine manufacturing technologies, the S6D170-1 diesel engine will power all heavy-duty construction equipment with outstanding reliabilty and durability.

Economical operation: The direct-injection system and special fuel-minimizing design of the S6D170-1 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

	Metric	English
Power ratings:		
Intermittent (at 2100 RPM):	402 kW	540 HP
Continuous (at 2000 RPM):	354 kW	475 HP
Type	4-cycle, water-cooled, direct-injection	
Aspiration	Turbocharged	
Cylinder arrangement	6 in-line	
Bore x stroke	170 x 170 mm	6.69" x 6.69"
Piston displacement	23.15 ltr	1,413 cu.in
Compression ratio	14.3:1	
Lube system oil capacity	60 ltr	15.8 U.S. Gal
Coolant capacity	40 ltr	10.6 U.S. Gal
Dry weight (approx.)	2390 kg	5,270 lb
Dimensions:		
Length	1938 mm	76.30"
Width	998 mm	39.29"
Height	1685 mm	66.34"

KOMATSU LTD.

S6D170-1 Design Features

Cylinder head: One cast-iron alloy head for each cylinder simplifies maintenance. The lower surface of the head with water cooling line inside is force cooled. Each head has four independent ports. Spiral air intake port design and its ultra-smooth internal surface increase the force of air swirl and air absorption capacity. Wear-resistant exhaust valve seat is made of stellite.

Cylinder block: Cylinder block with 7 bearings is made of cast iron alloy. Compact design and short overall length. Lubricating oil lines are built in the cylinder block. Wet type, easy-to-replace cylinder liner is made of special cast iron alloy. The surface of the cylinder liner is tuft-ride treated for low oil consumption and it is scuff-free. Clevis seal is used to seal the liner, preventing the liner from cavitation and water leakage.

Pistons and piston rings: Deep chamber design. Pistons made of heat-treated AC8A alminum alloy. Piston heads are costed with a hard oxidized film to increase thermal strength. Niresist ring trigger cast into the top rings's groove for added wear resistance. Cutback type top land design for low oil consumption. Two compression rings and one oil control ring. The top compression ring is a barrel-faced keystone type, while the second compression ring is a taper-faced keystone type. The oil control ring has a coil expander.

Crankshaft: Single-piece, eight-balance type made of forged alloy steel. Large main journal diameter of 140 mm increases sturdiness. Viscous-type torsional damper installed on the front end of the crankshaft to minimize excessive torque fluctuation.

Connecting rods: Made of forged chromium-molybdenum steel. Small ends of the connecting rods are keystone type to reduce surface pressure on the boss of piston pin. Bolt fitting of the large end incresese strength.

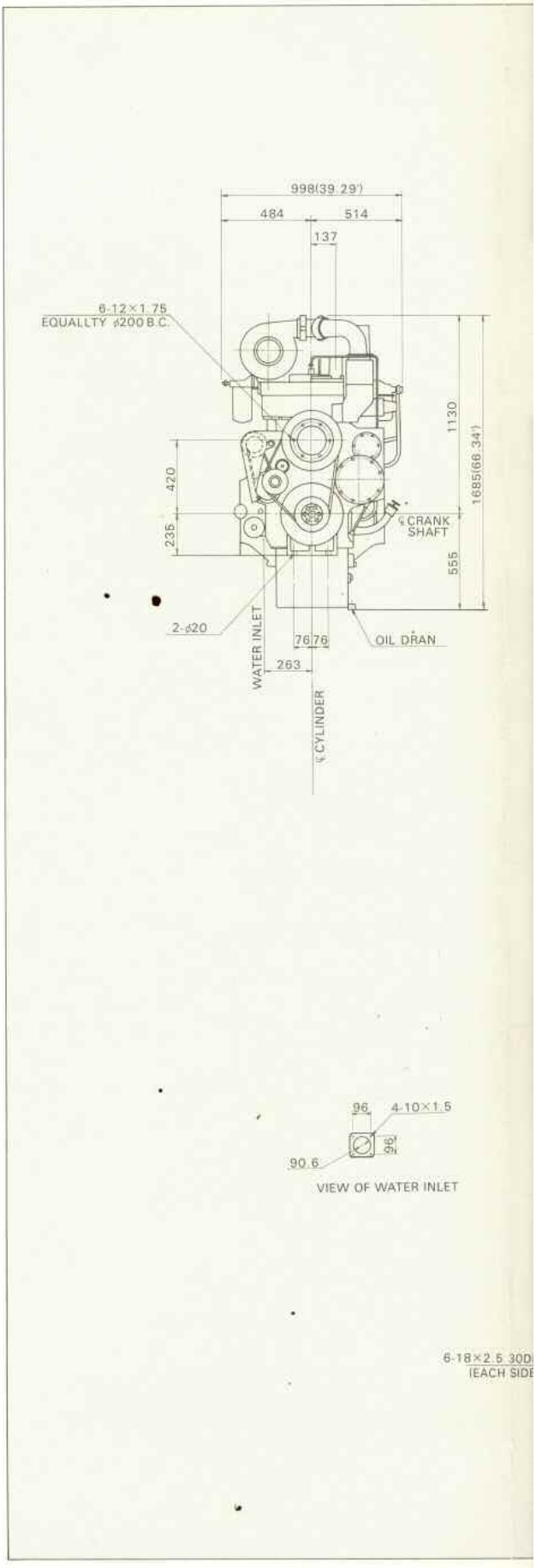
Valve mechanism: High camshaft type made of forged alloy steel. Seven bearings of 72 mm (2.83") diameter are replaceable precision type. Special cam profile and swing-type cam follower assure smooth valve action and they are scuff- and pit-proof. Four valves for each cylinder. Exhaust valve seat is made of stellite. Intake valve is lubricated for greater wear resistance.

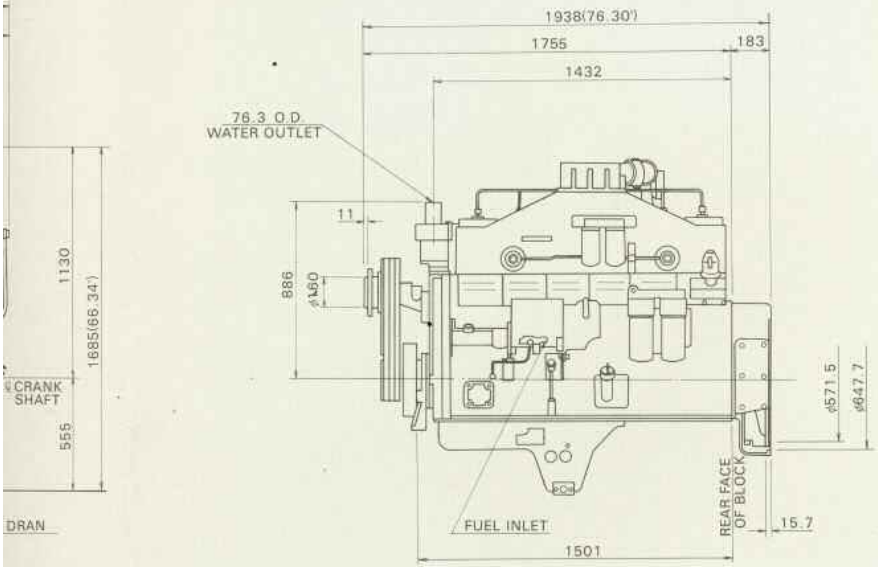
Lubrication system: A gear-type oil pump with an oil-pressure sensor, which determines the oil pressure of the main gallery and relieves excessive oil to reduce the pump's drive torque, assuring high lubrication efficiency. In-block oil line prevents oil leakage. Plate-type oil cooler is also built into the cylinder block to simplify construction. Full-flow type oil filter with paper element. Since the oil filter is a spin-on/off type, filter element is replaced quicily and easily.

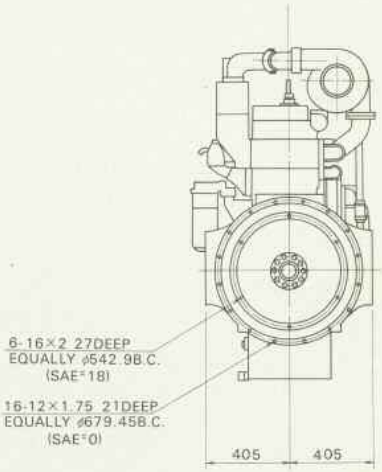
Cooling system: Gear-driven, centrifugal water pump is installed on the side of the cylinder block. The large volume coolant passage cools efficiently and evenly around the cylinder liners and the lower surface of the cylinder head. Corrosion resistor protects cylinder liners and water pump impeller from cavitation. Wax-type thermostats provided.

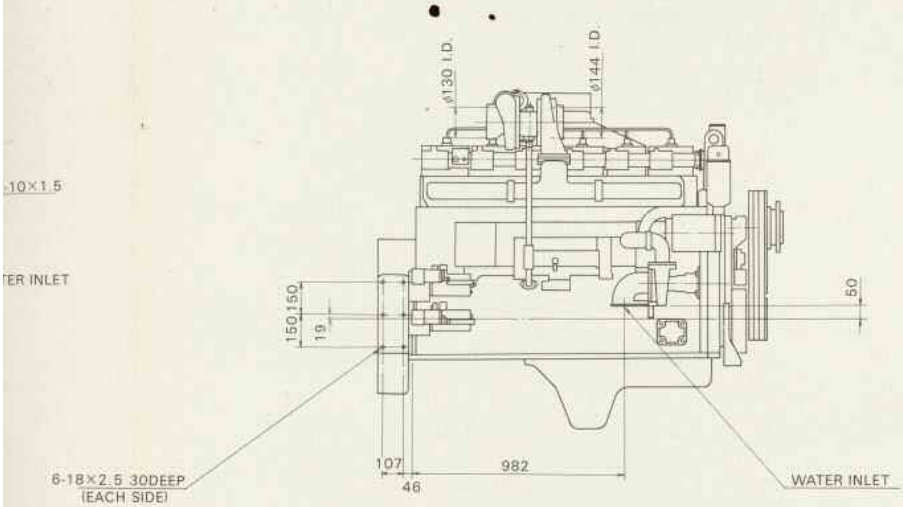
Injection system: In-line Bosch PD type injection pumps are driven by front gear train. Since pipings for injection pumps are externally mounted, leaked fuel is not mixed with lubricating oil. Injection pumps are force lubricated and equipped with an all-speed RSUV type governor. Automatic priming system facilitates smooth engine starts.

Intake and exhaust system: Komatsu-made KTR130 turbocharger has a super-back type blower impeller for high efficiency and reliability. Three-sectioned exhaust manifold and aluminum, box-sectioned intake manifold.



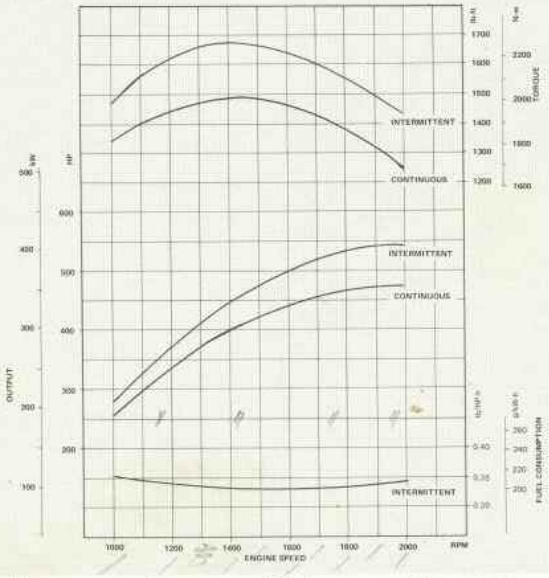

1938(76.30")
1755
183
1432
76.3 O.D.
WATER OUTLET
11
886
φ160
1130
1685(66.34)
CRANK
SHAFT
555
DRAN
φ571.5
φ647.7
REAR FACE
OF BLOCK
15.7
FUEL INLET
1501


6-16×2 27DEEP
EQUALLY φ542.98.C.
(SAE#18)
16-12×1.75 21DEEP
EQUALLY φ679.458.C.
(SAE#0)
405
405


-10×1.5
TER INLET
φ130 I.D.
φ144 I.D.
150
150
19
50
6-18×2.5 30DEEP
(EACH SIDE)
107
46
982
WATER INLET

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

- Turbocharger
- Intake manifold
- Exhaust manifold
- Flywheel housing (SAE #0)
- Flywheel
- Oil pan (center sump)
- Gear 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
- Automatic priming
- Oil level gauge
- Lifting hooks

OPTIONAL EQUIPMENT

- Dry type air cleaner
- Exhaust elbow
- Muffler
- Mounting brackets
- Rear P.T.O.
- Front P.T.O.
- Fan (blower, suction or reversible type)
- Radiator
- Starting motors (24V, 7.5 kW x 2)
- Alternator (25 A, 35 A or 50 A)
- Air compressor
- Ether spray

Materials and specifications are subject to change without notice.

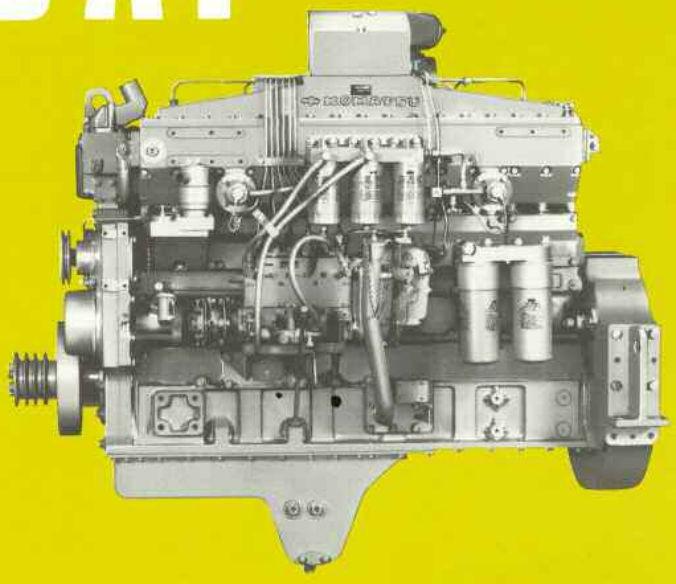
KOMATSU LTD. Tokyo, Japan

Form No. S6D170-01-312

Printed in Japan 6226As

INDUSTRIAL ENGINE

SA6D170-A-1



SPECIAL FEATURES

High quality: The SA6D170-A-1 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.

High Reliability: Based on Komatsu's proven success with various engine manufacturing technologies, the SA6D170-A-1 diesel engine will power all heavy-duty construction equipment with outstanding reliabilty and durability.

Economical operation: The direct-injection system and special fuel-minimizing design of the SA6D170-A-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 overall versatility.

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

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

SPECIFICATIONS

	Metric	English
Power ratings:		
Intermittent (at 2000 RPM):	533 kW	715 HP
Continuous (at 2000 RPM):	448 kW	600 HP
Type	4-cycle, water-cooled, direct-injection	
Aspiration	Turbocharfed and after-cooled	
Cylinder arrangement	6 in-line	
Bore x stroke	170 x 170 mm	6.69" x 6.69"
Piston displacement	23.15 ltr	1,413 cu.in
Compression ratio	13.1:1	
Lube system oil capacity	60 ltr	15.8 U.S. Gal
Coolant capacity	43 ltr	11.4 U.S. Gal
Dry weight (approx.)	2440 kg	5,380 lb
Dimensions:		
Length	1938 mm	76.30"
Width	998 mm	39.29"
Height	1685 mm	66.34"

KOMATSU LTD.

SA6D170-A-1 Design Features

Cylinder head: One cast-iron alloy head for each cylinder simplifies maintenance. The lower surface of the head with water cooling line inside is force cooled. Each head has four independent ports. Spiral air intake port design and its ultra-smooth internal surface increase the force of air swirl and air absorption capacity. Wear-resistant exhaust valve seat is made of stellite.

Cylinder block: Cylinder block with 7 bearings is made of cast iron alloy. Compact design and short overall length. Lubricating oil lines are built in the cylinder block. Net type, easy-to-replace cylinder liner is made of special cast iron alloy. The surface of the cylinder liner is tuft-ride treated for low oil consumption and it is scuff-free. Clevis seal is used to seal the liner, preventing the liner from cavitation and water leakage.

Pistons and piston rings: Deep chamber design. Pistons made of heat-treated AC8A alminum alloy. Piston heads are coated with a hard oxidized film to increase thermal strength. Niresist ring trigger cast into the top ring's groove for added wear resistance. Cutback type top land design for low oil consumption. Two compression rings and one oil control ring. The top compression ring is a barrel-faced keystone type, while the second compression ring is a taper-faced keystone type. The oil control ring has a coil expander. Shaker type cooling system efficiently decreases thermal load at the piston head and piston rings.

Crankshaft: Single-piece, eight-balance type made of forged alloy steel. Large main journal diameter of 140 mm (5.51") increases sturdiness. Pin fillets are induction hardened. Viscous-type torsional damper installed on the front end of the crankshaft to minimize excessive torque fluctuation.

Connecting rods: Made of forged chromium-molybdenum steel. Small ends of the connecting rods are keystone type to reduce surface pressure on the boss of piston pin. Bolt fitting of the large end increases strength.

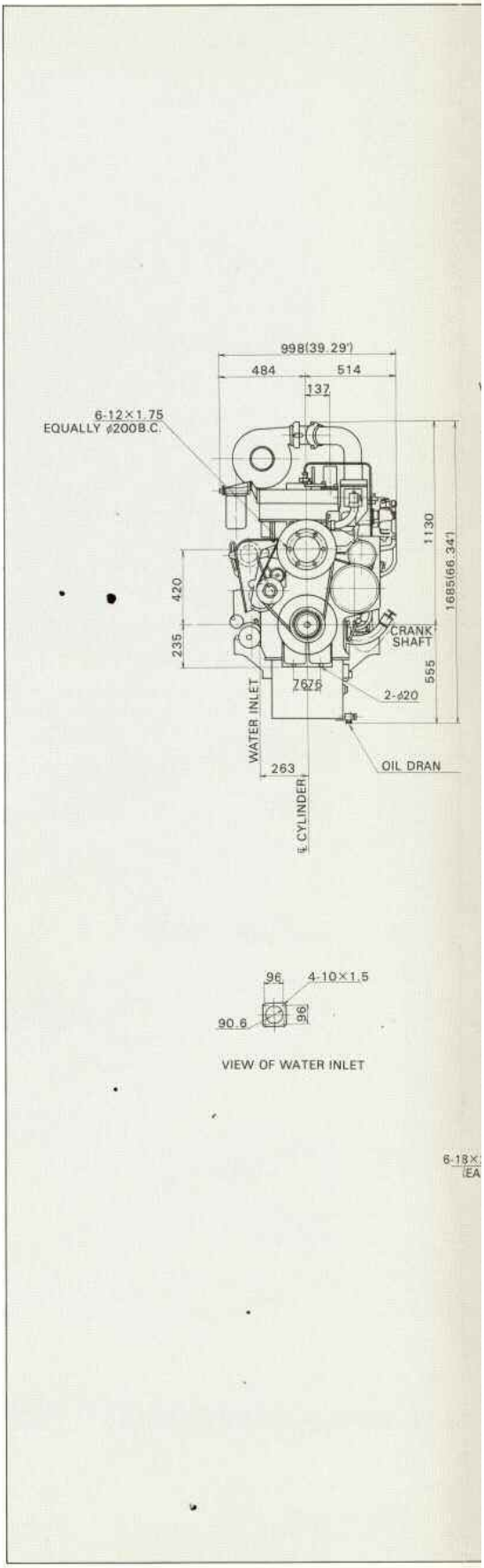
Valve mechanism: High camshaft type made of forged alloy steel. Seven bearings of 72 mm (2.83") diameter are replaceable precision type. Special cam profile and swing-type cam follower assure smooth valve action and they are scuff- and pit-proof. Four valves for each cylinder. Exhaust valve seat is made of stellite. Intake valve is lubricated for greater wear resistance.

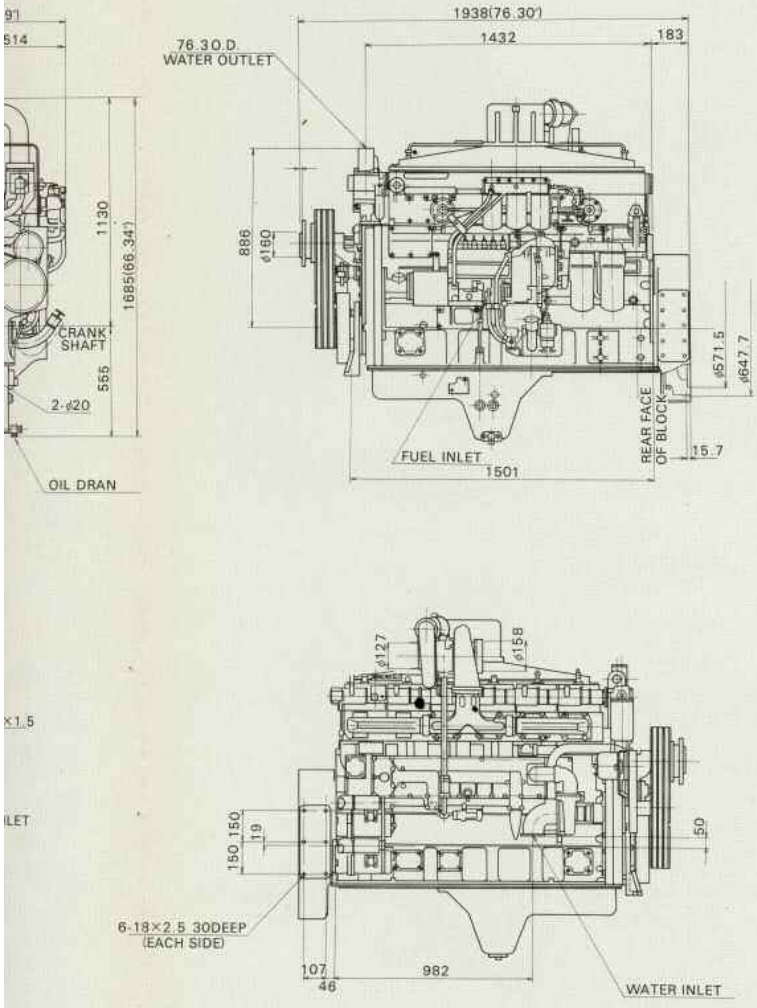
Lubrication system: A gear-type oil pump with an oil-pressure sensor, which determines the oil pressure of the main gallery and relieves excessive oil to reduce the pump's drive torque, assuring high lubrication efficiency. In-block oil line prevents oil leakage. Plate-type oil cooler is also built into the cylinder block to simplify construction. Full-flow type oil filter with paper element. Since the oil filter is a spin-on/off type, filter element is replaced quicily and easily.

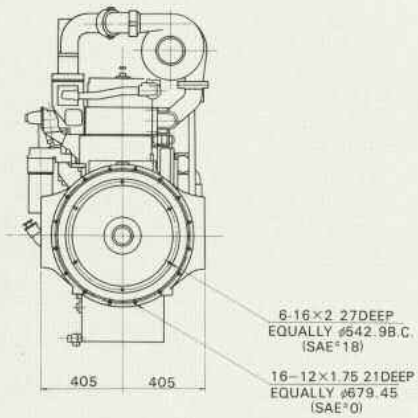
Cooling system: Gear-driven, centrifugal water pump is installed on the side of the bylinder block. The large volume coolant passage cools efficiently and evenly around the cylinder liners and the lower surface of the cylinder head. Corrosion resistor protects cylinder liners and water pump impeller from cavitation. Wax-type thermostats provided.

Injection system: In-line Bosch ZW type injection pumps are driven by front gear train. Since pipings for injection pumps are externally mounted, leaked fuel is not mixed with lubricating oil. Injection pumps are force lubricated and equipped with an all-speed RSUV type governor. Automatic priming system facilitates smooth engine starts.

Intake and exhaust system: Komatsu-made KTR150 turbocharger has a mixed-flow turbine and a channel diffuser to increase the efficiency of turbine and blower, resulting in reduced fuel consumption. Large-capacity aftercooler (fin and plate type) efficiently cools the intake air compressed by the turbocharger, making the intake air denser for efficient combustion. Three-sectioned exhaust manifold and aluminum, box-sectioned intake manifold.




1938(76.30')
1432
183
76.3 O.D
WATER OUTLET
886
ø160
1130
1685(66.34')
CRANK SHAFT
566
2-ø20
OIL DRAN
FUEL INLET
1501
REAR FACE OF BLOCK
ø571.5
ø647.7
15.7


6-16×2 27DEEP
EQUALLY ø542.98.C.
(SAE°18)
16-12×1.75 21DEEP
EQUALLY ø679.45
(SAE°0)
405
405

ø127
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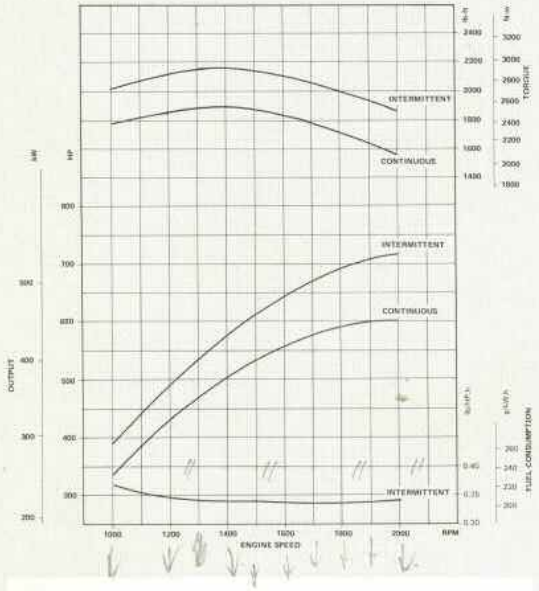
19
50
6-18×2.5 30DEEP
(EACH SIDE)
107
46
982
WATER INLET

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.

Actual lines mean a guideline for the ratings shown above at anytime. But dotted lines mean a guideline for Engineering Dept. decide if it is suitable or not to enstall the engine at the power rating.

STANDARD EQUIPMENT

- Turbocharger
- Intake manifold
- Aftercooler
- Exhaust manifold
- Flywheel housing (SAE #0)
- Flywheel
- Oil pan (center sump)
- Gear 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
- Automatic priming
- Oil level gauge
- Lifting hooks

OPTIONAL EQUIPMENT

- Dry-type air cleaner
- Exhaust elbow
- Muffler
- Mounting brackets
- Rear P.T.O.
- Front P.T.O.
- Fan (blower, suction or reversible type)
- Radiator
- Starting motor (24V, 7.5 kW x 2)
- Alternator (25 A, 35 A or 50 A)
- Air compressor
- Ether spray

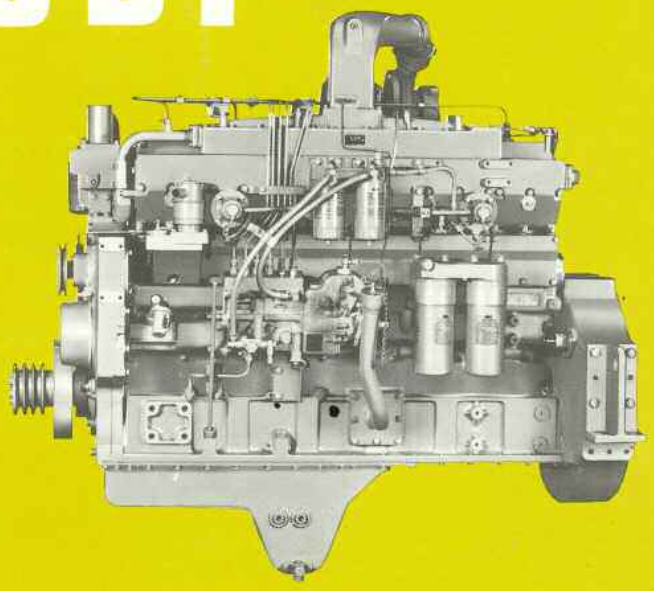
KOMATSU LTD. Tokyo, Japan

Form No. SA6D170-A-01-313

Printed in Japan 6315As

INDUSTRIAL ENGINE

SA6D170-B-1



SPECIAL FEATURES

High quality: The SA6D170-B-1 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.

High Reliability: Based on Komatsu's proven success with various engine manufacturing technologies, the SA6D170-B-1 diesel engine will power all heavy-duty construction equipment with outstanding reliabilty and durability.

Economical operation: The direct-injection system and special fuel-minimizing design of the SA6D170-B-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 overall versatility.

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

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

SPECIFICATIONS

Power ratings:

	Metric	English
Intermittent (at 2100 RPM):	552kW	739HP
Continuous (at 1800 RPM):	399 kW	535 HP
Type	4-cycle, water-cooled, direct-injection	
Aspiration	Turbocharged and after-cooled	
Cylinder arrangement	6 in-line	
Bore x stroke	170 x 170 mm	6.69" x 6.69"
Piston displacement	23.15 ltr	1,413 cu.in
Compression ratio	13.4:1	
Lube system oil capacity	60 ltr	15.8 U.S. Gal
Coolant capacity	43 ltr	11.4 U.S. Gal
Dry weight (approx.)	2410 kg	5,314 lb
Dimensions:		
Length	1938 mm	76.30"
Width	998 mm	39.29"
Height	1685 mm	66.34"

KOMATSU LTD.

SA6D170-B-1 Design Features

Cylinder head: One cast-iron alloy head for each cylinder simplifies maintenance. The lower surface of the head with water cooling line inside is force cooled. Each head has four independent ports. Spiral air intake port design and its ultra-smooth internal surface increase the force of air swirl and air absorption capacity. Wear-resistant exhaust valve seat is made of stellite.

Cylinder block: Cylinder block with 7 bearings is made of cast iron alloy. Compact design and short overall length. Lubricating oil lines are built in the cylinder block. Wet type, easy-to-replace cylinder liner is made of special cast iron alloy. The surface of the cylinder line is tuft-ride treated for low oil consumption and it is scuff-free. Clevis seal is used to seal the liner, preventing the liner from cavitation and water leakage.

Pistons and piston rings: Deep chamber design. Pistons made of heat-treated AC8A aluminum alloy. Piston heads are coated with a hard oxidized film to increase thermal strength. Niresist ring trigger cast into the top ring's groove for added wear resistance. Cutback type top land design for low oil consumption. Two compression rings and one oil control ring. The top compression ring is a barrel-faced keystone type, while the second compression ring is a taper-faced keystone type. The oil control ring has a coil expander. Shaker type cooling system efficiently decreases thermal load at the piston head and piston rings.

Crankshaft: Single-piece, eight-balance type made of forged alloy steel. Large main journal diameter of 140 mm increases sturdiness. Viscous-type torsional damper installed on the front end of the crankshaft to minimize excessive torque fluctuation.

Connecting rods: Made of forged alloy steel. Small ends of the connecting rods are keystone type to reduce surface pressure on the boss of piston pin. Bolt fitting of the large end increases strength.

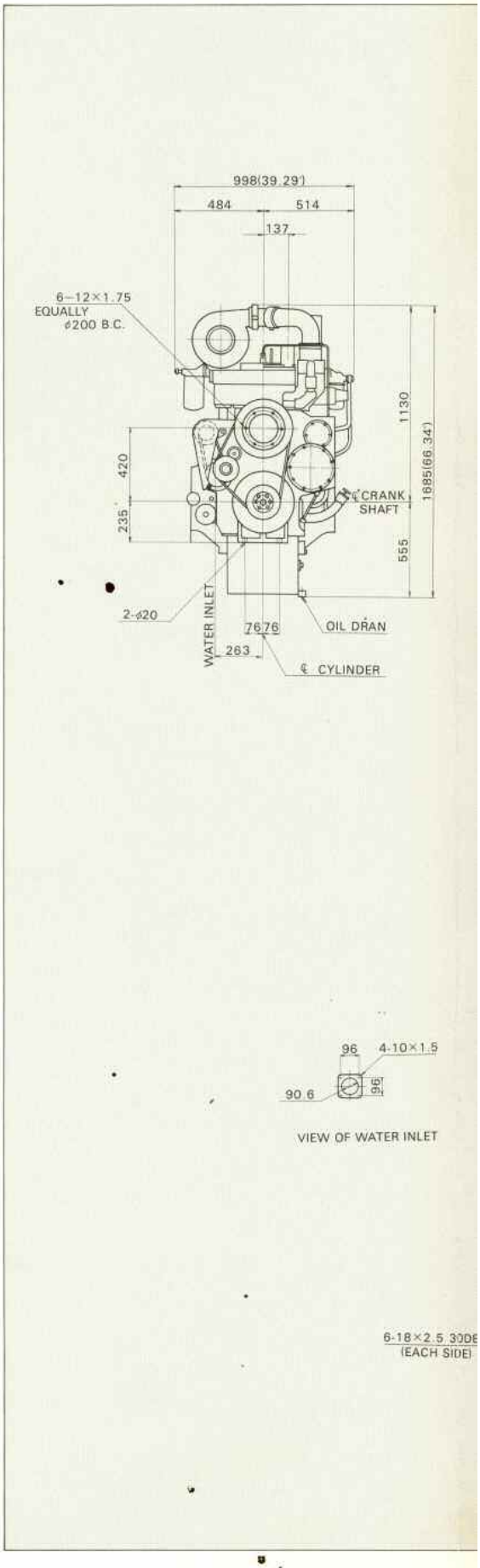
Valve mechanism: High camshaft type made of forged alloy steel. Seven bearings of 72 mm (2.83") diameter are replaceable precision type. Special cam profile and swing-type cam follower assure smooth valve action and they are scuff- and pit-proof. Four valves for each cylinder. Exhaust valve seat is made of stellite. Intake valve is lubricated for greater wear resistance.

Lubrication system: A gear-type oil pump with an oil-pressure sensor, which determines the oil pressure of the main gallery and relieves excessive oil to reduce the pump's drive torque, assuring high lubrication efficiency. In-block oil line prevents oil leakage. Plate-type oil cooler is also built into the cylinder block to simplify construction. 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: Gear-driven, centrifugal water pump is installed on the side of the clinder block. The large volume coolant passage cools efficiently and evenly around the cylinder liners and the lower surface of the cylinder head. Corrosion resistor protects cylinder liner and water pump impeller from cavitation. Wax-type thermostats provided.

Injection system: In-line Bosch PD type injection pumps are driven by front gear train. Since pipings for injection pumps are externally mounted, leaked fuel is not mixed with lubricating oil. Injection pumps are force lubricated and equipped with an all-speed RSUV type governor. Automatic priming system facilitates smooth engine starts.

Intake and exhaust system: Komatsu-made KTR130 turbocharger has a super-back type blower impeller for high efficiency and reliability. Large-capacity aftercooler (fin and tube type) efficiently cools the intake air compressed by the turbocharger, making the intake air denser for efficient combustion. Three-sectioned exhaust manifold and aluminum, box-sectioned intake manifold.



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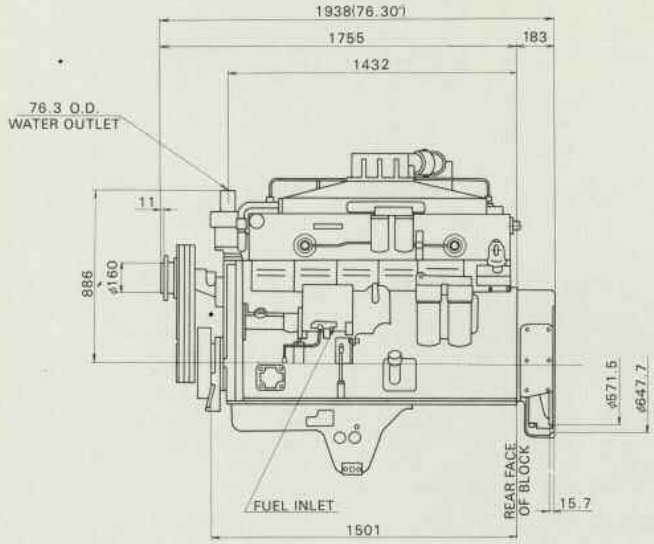

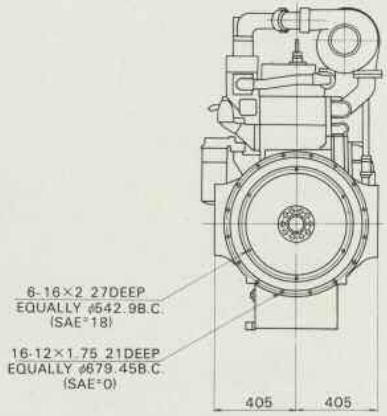

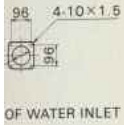

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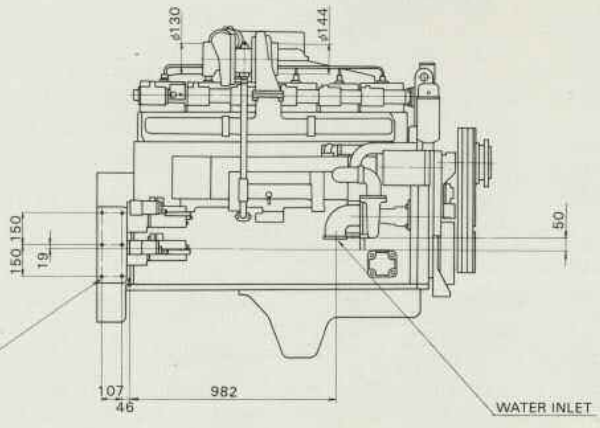
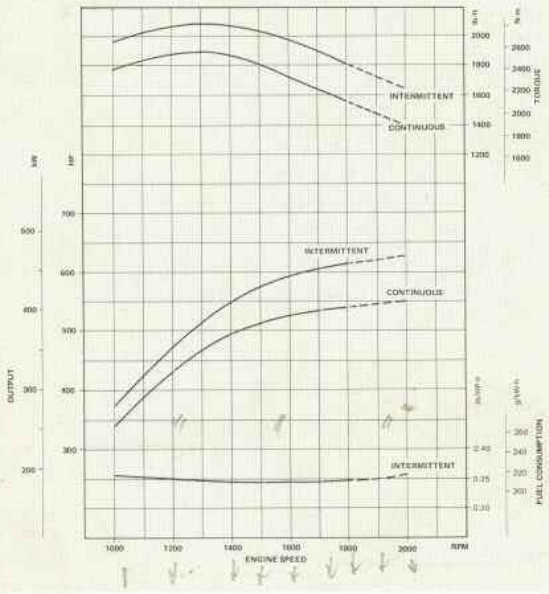


PERFORMANCE

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

- Turbocharger
- Intake manifold
- Aftercooler
- Exhaust manifold
- Flywheel housing (SAE #0)
- Flywheel
- Oil pan (center sump)
- Gear 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
- Automatic priming
- Oil level gauge
- Lifting hooks

OPTIONAL EQUIPMENT

- Dry-type air cleaner
- Exhaust elbow
- Muffler
- Mounting brackets
- Rear P.T.O.
- Front P.T.O.
- Fan (blower, suction or reversible type)
- Radiator
- Starting motors (24V, 7.5 kW x 2)
- Alternator (25 A, 35 A or 50 A)
- Air compressor
- Ether spray

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