

WS70

WATER SPRINKLER



Salient Features

Performance :

- High power diesel engine and well matched with mechanical drive transmission offers ample reserve power, high hp to weight ratio. Pressurized discharge of water through sprinkling nozzles & larger spreading width for effective dust settling assisted by hydraulic motor and centrifugal pump.

Adaptability :

- Quick adaptability for fire fighting.

Reliability :

- Oil cooled multiple disc rear brakes are free from fading even during repeated and continuous operations. Due to ample capacity the rear brakes also act as retarder brakes.

Serviceability:

- Low maintainability and reparability indices make easy servicing and increases availability.

Manoeuvrability :

- Power steering with unique A-frame design coupled with wide angle offers extra small turning radius of 9.9m and makes the machine highly manoeuvrable even in confined area. Water tank with baffles minimizes surging & improves control of vehicle.

Comfort :

- Ideally located spacious cabin with ergonomically designed operator seat and controls offer maximum comfort and operational ease. Pneumatically operated water valves reduces operator's effort.

Safety :

- Features include Integral ROPS cabin, emergency steering, dual brake system to meet relevant safety standards.

Comprehensive customer support :

- The best in the industry.



Flywheel Power (net) : 70,000 Litres
Capacity : 659 kW (883 hp) @ 2100 rpm.

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Technical Specifications



Engine

Make	CUMMINS(INDIA)	KOMATSU (Alternative)
Model	KTA-38-C	SA12V140-1
Type	Diesel, 4 Stroke, Turbo-charged, After Cooled, direct Injection water Cooled injection	Diesel, 4 Stroke, Turbo-charged, after Cooled, direct Injection water Cooled injection
Flywheel power	659 kW(883 hp) @2100 rpm	664 kW(890 hp) @2100 rpm
Maximum Torque	3900 N-m(398 kgm) @1600 rpm	3483 N-m(355 kgm) @1600 rpm
No. of cylinder	12	12
Bore x Stroke	168.8 x 158.8 mm	140 x 165 mm
Displacement	0.0377 m ³ (37.7 ℓ)	0.0305 m ³ (30.5 ℓ)
Electricals :		
Alternator	24V, 75 A	24V, 75 A
Starting motor	24V DC, 9kW -2 no	24V DC, 7.5 kW -2 no
Battery	4 x 12 V, 200 Ah	4 x 12 V, 200 Ah



Power Train

Torque flow Transmission :

Torque flow transmission consists of a water cooled, 3-element, Single stage two phase torque converter and a planetary gear, multiple disc clutch transmission which is hydraulically actuated and force-lubricated for optimum heat dissipation, 7 forward speeds and 1 reverse speed, Rubber damper comfortably reduces harmful engine shock and vibration to the transmission. A lock up system, consisting of a we, double disc clutch, is actuated in F1 - F7 gears for higher fuel savings, Neutral safety switch prevents accidental machine starts.

Stall ratio2.3 : 1

Axle and final drives:

Independent suspension type front axle and full floating type rear axle, hydropneumatic suspensions are installed on the lateral end of the axles. Planetary gear-type final drive straight bevel gear for differential and spiral bevel gear for reduction.

Reduction Ratio :

Reduction gear	3.071 : 1
Final	7.235 : 1
Total reduction	22.218 : 1

Travel Speeds (km/h)

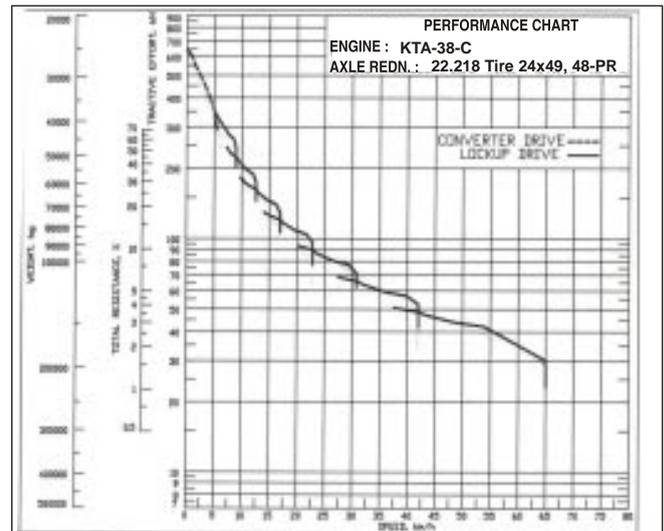
Range	1st	2nd	3rd	4th	5th	6th	7th
Forward	10	14	19	25	34	47	65
Reverse				12			



Steering System

Type	Orbitrol, full time power steering
Cylinder	
Type	Double acting piston type
Quantity	Two
Bore x Stroke	∅ 110 x 430 mm
Relief pressure	20.6 MPa (210kg/cm ²)
Emergency steering	Automatic controlled electric supplemental steering is standard
Performance	
Turning radius	9.9m
Vehicle clearance diameter	23.0 m

Performance Chart



How to use this chart : Draw a straight line from gross vehicle mass to percent of total resistance (total resistance = grade resistance + rolling resistance) and extend the same line upto tractive effort. From this point draw horizontally to the curve with the highest obtainable gear, then vertically down to obtain maximum speed.



Brakes

Service Brakes

Front : Air-over-hydraulic, dry caliper disc

Rear : Air-over-hydraulic, oil cooled wet multiple disc

Emergency Brake Air-over-hydraulic, automatic application through relay emergency valves, front brake will activate as part of secondary brake even it is cut off from the service system

Parking Brake Spring Loaded caliper disc drive shaft

Retarder Brake Rear brake serves as retarder brake

Performance Meets ISO 3450 requirements



Hydraulic System

Hydraulic Pump

Type Tandem gear pump - 2 nos. for steering, hydraulic motor and cooling.

Capacity 522 ℓ @ engine rated 2100 rpm

Relief pressure:

Motor 14.7 MPa (150 kg/cm²)

Brake oil cooler 0.98 MPa (10 kg/cm²)

Hydraulic Motor

Type Vane type

Power (max) 60 kW (80 hp) @14.7 MPa (150 kg/cm²)

Speed 2900 rpm @ 245 ℓ/min

Control valve Spool type for hydraulic motor

The steering / Hydraulic motor and retarder cooling circuits are independently designed for sure control



Cabin

Type Integral ROPS cabin provided with tinted safety glass and electronic display dashboard



Suspension

Type - Front	Wheel Mounted, hydropneumatic integral rebound control	
Type - Rear	Axle mounted, inverted hydropneumatic integral rebound control	
Cylinder	Front	Rear
Qty	2	2
Bore x Stroke	250 x 376 mm	250 x 190 mm
Charging pressure	34.67 kg/cm ²	21.7 kg/cm ²
Load / deflection rate		
Empty	952 kg/cm	712 kg/cm
Loaded	3110 kg/cm	15373 kg/cm

Water System

Water pump	
Type	Centrifugal pump
Capacity	180 m ³ /hr @ 2900 rpm & 85m head
Drive	Hydraulic motor through flexible coupling
Piping	
Suction	100mm
Discharge	80 mm
Valves	Butterfly type
Sprinkling	
Pressurised sprinkling	Constant sprinkling velocity maintained by a centrifugal pump
Spreading width	21 metres
Gravity sprinkling	Through perforated manifold connected to tank bottom
Nozzles	Fish tail type
Self filling	By connecting the pump suction to outside reservoir or pond through armoured hose with foot valve unit
Fire fighting unit adaption	Quick connecting adaptor provided for fire fighting with canvas hose & triple purpose nozzle



System Refill Capacities

System	Capacity (ℓ)
Cooling system	270
Fuel tank	1240
Engine lub. Oil	140
Transmission & torque converter	110
Final drive (each side)	180
Hydraulic tank	490
Water tank	70,000
Air tanks	175
Suspension	
Front :	24 (each)
Rear :	16 (each)



Frame

Type	Box section construction made of high tensile strength steel
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Masses

Net Vehicle mass	55,000 kg	
Water weight	70,000 kg	
Gross vehicle mass	1,25,000 kg	
Mass distribution	Empty (kg)	Loaded (kg)
Front	26,400	40,000
Rear	28,600	85,000



Tyres

Tyre (tubeless)	24.00 x 49 - 48 PR (E-4)	
Rim Size	17.00 x 49	
BEML recommends the user to evaluate all job conditions and consult the tyre manufacturer to make proper tyre selection.		

Tank

Construction	All welded reinforced, 12 mm thick steel plates at the base and 10 mm plates at the sides and top. Cross battles to avoid heavy surging
Interior Coating	Coated with special anti - corrosives black paint

Standard Equipment

General:

Rear view mirror (left & right), headlights, tail lamps, back-up light, roof lamp, windshield wiper, tiltable steering wheel, rock ejector, cabin floor mat, emergency brake, emergency steering, sun visor, CO-operator seat, tool kit, underview mirror, engine overrun protection, vandalism protection caps (radiator, fuel tank, hydraulic tank), front & rear turn signal lamps (left & right), portable fire extinguisher, integral ROPS cabin, front brake cut-off switch, automatic lubrication system with warning devices.

Gauges:

Speedometer. Tachometer, ammeter, engine oil pressure, retarder oil temperature, engine coolant temperature, torque converter oil temperature, air pressure service meter (hourmeter), fuel gauge indicating 1/4, 1/2, 3/4 and full levels at fuel tank.

Light Indicators:

Central warning lamps, shift indicator and lock up indicator, pilot lamp for turn signal, indicator lamp for high beam, pilot lamp for retardation, pilot lamps for central warning

Alarms:

Back-up alarm, central warning device for hydraulic oil filter clogging (steering & pump), rear brake oil temperature, torque converter, oil temperature, engine oil pressure, engine coolant temperature, radiator water level, air pressure.

Guards:

Cab step and safety guard cat walk, engine and transmission belly guard, Splash guards and propellar shaft guard.

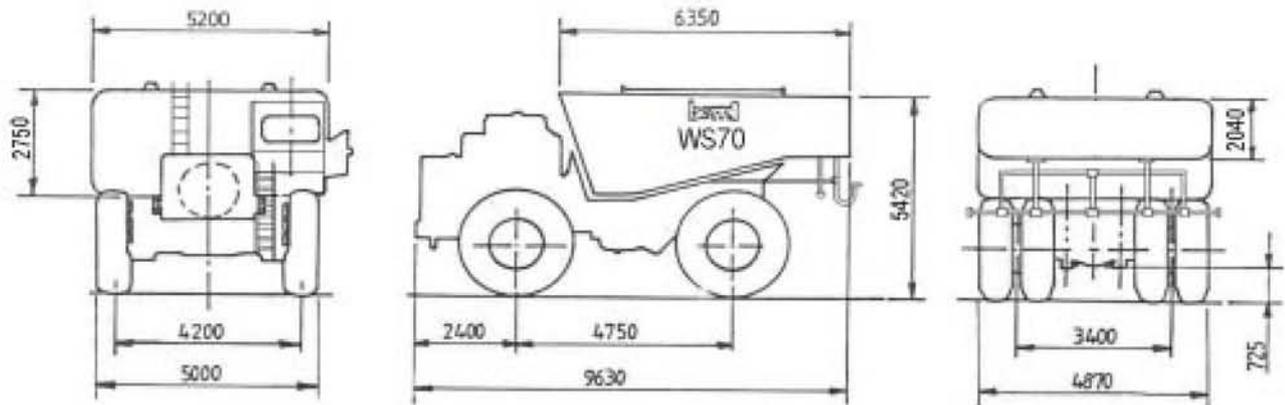
Optional Items:

Tachograph, automatic fire suppression system, auto emergency steering, tyre inflation kit, airconditioner / heater, fire fighting capability, foglamps



Dimensions

in mm



1. Illustrations may include optional equipment & accessories and may not include all standard accessories.
2. Materials and specifications are subject to change without notice.
3. All the specifications meet relevant ISO standards.



SINCE 1992

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