



Enriching Lives

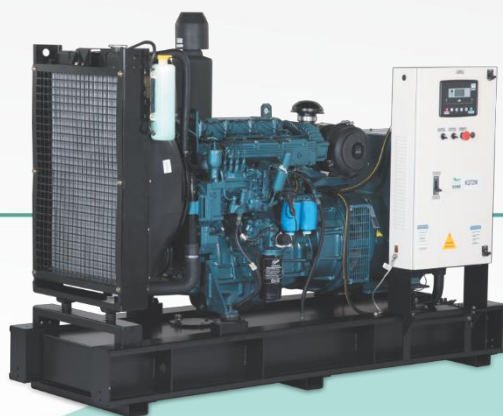
## KIRLOSKAR OIL ENGINES LIMITED

A Kirloskar Group Company

# DIESEL GENERATING SETS

Model		352WS60	352W60
Type		SAE	Open
Standby Power (ESP)	kVA / kWe	352 / 281.6	
Prime Power (PRP)	kVA / kWe	320 / 256	
Phase / Volts		3 Phase / 380 V	

SAE: Sound Attenuated Enclosure, Ratings are as per ISO8528; refer page 5 for definitions



Power, Performance, Peace of mind

# 60 Hz



**KIRLOSKAR**  
**GREEN**  
POWER IDEAS

Note: Above picture shown for illustration purpose only, actual product may be different.



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Generating Set Specifications			
Model		352WS60	352W60
Type		SAE	Open
Line Voltage	V	380	
Phase Voltage	V	220	
Power factor	---	0.8 (lag)	
Fuel tank capacity	L	530	530
Fuel consumption % of PRP <sup>1</sup>	50% load	L/hr	41.5
	75% load	L/hr	56.0
	100% load	L/hr	72.0
Sound level at 7m at 75% load as per ISO8528-10	dB(A)	70	---

Engine, Alternator and Controller			
	Engine	Alternator	Controller
Make	Kirloskar	Stamford	Deepsea
Model	DV8	HCI444E1	DSE7320 MKII
Type	Liquid cooled	Brushless	Microprocessor based

### Product Benefits

- High Performance and Reliability
- Low Fuel Consumption
- Extended Service Interval
- Easy Installations
- Low maintenance cost

### Performance Assurance

- Total Quality Management System
- Engines & Generating set fully manufactured by us in facilities certified to ISO9001, ISO 14001 & OHSAS 18001
- Generating set complies to ISO 8528
- Engines comply to ISO 3046 & AC Generators comply to BS5000, IEC34

### Support

- Service support in all countries of operation

1. +5% tolerance is applicable as per ISO3046. Fuel consumption based on diesel fuel with a specific gravity of 0.85 and confirming to BS 2869, Class A2.





## Engine Specifications

Physical Data		Air System	
Engine rpm	1800	Air filter type	Dry replaceable
Configuration	V	Air volume required for combustion (m <sup>3</sup> /hr)	1980
Cylinders	8	Air volume required for cooling (m <sup>3</sup> /hr)	36000
Type	Four stroke	Air volume required by alternator (m <sup>3</sup> /hr)	2880
Bore x Stroke (mm)	130 x 150	Total fresh air required (m <sup>3</sup> /hr)	40860
Displacement (L)	15.91		
Cooling	Liquid cooled	Cooling System	
Aspiration	Turbocharged Aftercooled	Cooling system capacity (L)	123
Compression ratio	16.5 : 1	Coolant type	Ethylene glycol based premixed with water in ratio 50:50, antifreeze & anti corrosion type
Piston speed (m/s)	9.0	Radiator fan load (hp)	13.5
hp Prime @ 1800rpm	400		
hp Standby @ 1800rpm	440		

Fuel System		Exhaust System	
Type of fuel filter	Two stage spin on type	Exhaust gas flow rate (kg/hr)	TBA
Governor type	Electronic	Maximum exhaust gas temperature (°C)	550
Class of governing	ISO 8528-5, Class G2	Max. allowed back pressure (mm of Hg)	50
Recommended Fuel	Class A2, High speed diesel	Flange details for exhaust piping extension (mm)	PCD 280+/-0.5, 8 holes 22.0 +/-0.5

Electrical System		Lubrication System	
Starting arrangement	24V Electric	Type of lube oil filter	Full flow spin on type
Starter battery rating	2 x 200Ah	Oil to be used	SAE 15W40 API:CI4
Battery charging alternator	Engine mounted 24V	Oil pump type	Through G-rotor gear pump
Battery charging alternator	45 A	Lube oil sump capacity (L) refill / first fill	38 / 41
Battery charger <sup>2</sup>	24V 2A / 5A with float & boost mode	Lube oil consumption	0.3% of fuel consumption

2. Optional extra accessory.



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## Alternator Specifications

Alternator Physical Data			Alternator Operating Data	
Continuous rating	Insulation Class	H	Over speed (RPM)	2250
	kVA at 0.8 PF	320	Excitation	Self excited (brushless)
	Temperature rise (°C)	125 /40°C	Cooling method	Forced through shaft mounted blower fan
Number of bearings		1	THD at full linear balanced load AC waveform	Less than 5%
Pole		4	Efficiency at full load (%)	93.4
Leads		12	Voltage Regulation (%)	± 1.0
Winding pitch		2/3	Reactance per unit (Xd)	3.47
Ingress Protection Rating		IP 23	Reactance per unit (X'd)	0.21
Voltage regulator		AS440	Reactance per unit (X''d)	0.15
Recommended earthing type		Solid separate for neutral and body		

## Control System Features and safeties

On display screen		Protections	Warning	Shutdown	Indication	Digital Input
Generator Volts, Amps. Hz	✓	Low oil pressure	No	✓	✓	----
Generator kW, kVA, kVA <sub>r</sub>	✓	High coolant temperature	✓	✓	✓	----
Generator per phase PF	✓	Low fuel level	✓	✓	✓	----
Generator kWhr meter	✓	Low coolant level	No	✓	✓	----
Earth current (A)	✓	Under & over speed	✓	✓	✓	----
Grid (Mains) Voltage (L-L)	✓	Low & high battery voltage	✓	No	✓	----
Battery Voltage (V)	✓	Low charge alternator	✓	No	✓	----
Engine start attempts	✓	Emergency stop	No	✓	✓	----
Engine Temperature (°C)	✓	Fail to start & fail to stop warning	✓	No	✓	----
Engine speed (RPM)	✓	Auto remote start/stop	----	----	----	✓
Engine Run Hours (Hours & Min.)	✓	Under & over voltage	✓	✓	✓	----
Lube oil Pressure (kPa, PSI, bar)	✓	Under & over frequency	✓	✓	✓	----
Fuel level (%)	✓	Over kW or Overcurrent	No	✓	✓	----
		Earth fault	No	✓	✓	----
		Reverse power	No	✓	✓	----
		Phase unbalance	No	✓	✓	----

Communication ports	✓ Available	No - Not available	---- Not applicable
RS485	✓		
RS232	✓		



# Standard and Optional Features

## Generating Set (\*applicable only for SAE type)

- Top lifting arrangement\*
- Silencer mounted inside canopy\*
- External fuel filling access\*
- Longer fuel tank breather tube
- Door for radiator access\*
- Coolant drain arrangement
- Mesh on exhaust tail pipe
- Fuel transfer pump
- Stainless steel door hinges\*
- Control panel door stopper\*
- Fuel priming manual pump
- External standalone fuel tank

## Engine

- SMF Battery
- Lube oil drain pump
- Dual (electrical + mechanical) fuel gauge
- Guard for rotating parts
- Water separator
- Electronic governor
- Over-cranking protection
- Jacket water heater

## Alternator

- Alternator space heater
- Droop current transformer
- Remote voltage adjustment potentiometer
- Alternator inlet louver filter
- PMG

## Controls

- Automatic Starting & AMF facility
- ATS Panel
- 4 Pole circuit breaker
- Communication port RS485/RS232
- Synchronization panels
- 24V DC hooter
- Static Battery charger
- Kirloskar remote monitoring (KRM) unit
- 3 Pole 630A MCCB

● Standard Feature      ○ Optional Feature

### Generating set ratings definitions as per ISO8528:

(De-rating is applicable for climatic conditions other than standard reference conditions of ISO8528-1)

**Standby Rating / Emergency Standby power / ESP:** These ratings are applicable for supplying electrical power at variable load in the event of a utility power failure. The standby power is maximum power available with no overload permitted on these ratings. The permissible average power output over 24 hours of operation shall not exceed 70% of the ESP. The alternator on this model is peak continuous rated (as defined in ISO 8528-3)

**Prime Rating / PRP:** These ratings are applicable for supplying continuous electrical power at variable load in lieu of commercial purchased power. There is no limitation to the annual hours of operation and this model can supply 10% overload power for 1 hour in 12 hours. The permissible average power output over 24 hours of operation shall not exceed 70% of the PRP.

**Continuous Rating / COP:** These ratings are applicable for supplying power continuously to a constant load up to the maximum output rating for unlimited hours. No sustained overload capability is available for this rating.





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## Documents & Quality Standards

### Documents

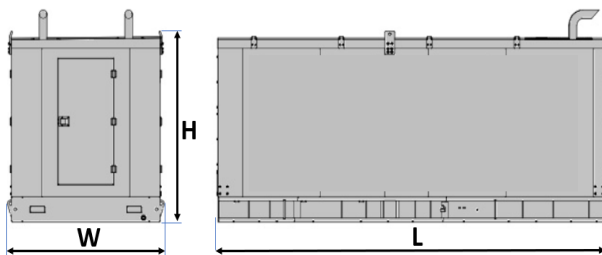
Generating set user manual, engine operation and maintenance manual – in soft form

### Quality standards

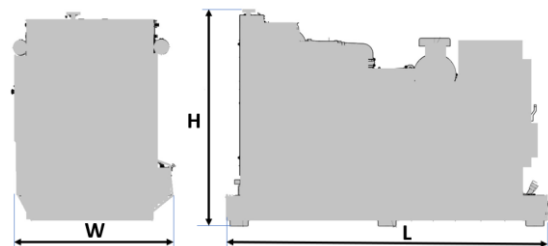
ISO 8528, ISO 3046, IS 10002, BS5514, DIN 6271, ISO 9001, ISO 14001

Weight & Dimensions				
Model			352WS60	352W60
Type			SAE	Open
Overall dimensions <sup>3</sup>	Length x Width x Height	cm	498 x 211 x 228	340 x 166 x 222
Weight <sup>4</sup>	Weight with oil & coolant	kg	6000	4250

#### SAE



#### OPEN



3. Dimensions are for logistics purpose only. Please refer installation / GA drawing for installation.  
4. Weight mentioned is for indicative only. Actual weight may vary based on configuration.

## KIRLOSKAR OIL ENGINES LIMITED

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