

# ENERMAX SERIES

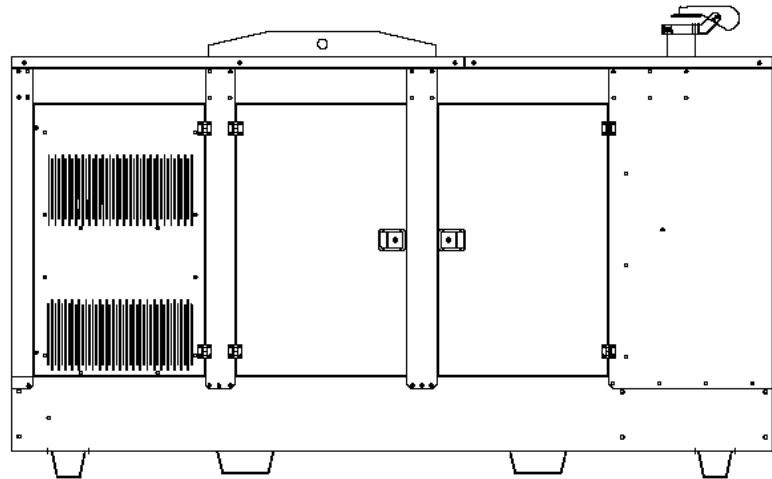
**DIESEL GENERATOR**  
**GROUPE ELECTROGENE DIESEL**  
**GRUPO ELECTROGENO DIESEL**  
**GRUPPO ELETTOGENO DIESEL**

MODEL  
 MODELE  
 MODELO  
 MODELLO

## VO 511 TSX\*



### SOUNDPROOF VERSION



GENERATING SET PERFORMANCE PERFORMANCES DU GROUPE PRESTACIONES DEL GRUPO PRESTAZIONI DEL GRUPPO		50 Hz	60 Hz
Voltage Voltage Voltaje Tensione		V 400 / 230	V 220 / 127
Continuous Power Puissance service continue Potencia servicio continuo Potenza servizio continuo	PRP	kVA 450	kVA 500
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza	LTP	kVA 495	kVA 550
Continuous Power Puissance service continue Potencia servicio continuo Potenza servizio continuo	PRP	kWe 360	kWe 400
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza	LTP	kWe 396	kWe 440
Power factor Facteur de puissance Factor de potencia Fattore di potenza	cos φ	0,8	0,8
Fuel consumption Consommation combustible Consumo de combustible Consumo combustibile	70 %	l/h 63,6	l/h 71,9

ENGINE MOTEUR MOTOR MOTORE	VOLVO PENTA		TAD 1640 GE		
PERFORMANCE PERFORMANCES PRESTACIONES PRESTAZIONI		1500 rpm		1800 rpm	
Continuous Power Puissance service continue Potencia servicio continuo Potenza servizio continuo	PRP	kWm	392	kWm	430
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza	LTP	kWm	431	kWm	479
Specific fuel consumption Consommation spécifique combustible Consumo específico de combustible Consumo specifico combustibile		g/kWh	25 % 227 50 % 203 75 % 198 100 % 200	g/kWh	25 % 245 50 % 210 75 % 202 100 % 202
Diesel 4 Stroke – Injection type Diesel 4 temps – Type injection Diesel 4 tiempos – Tipo de inyección Diesel a 4 tempi – Tipo di iniezione					Direct Directe Directa Diretta
Aspiration type Type d'aspiration Tipo de aspiracion Tipo d'aspirazione					Turbocharged Suralimentée Sobrealimentado Sovralimentata
Cooling system Refroidissement Sistema de refrigeración Raffreddamento					Water Eau Agua Acqua
Speed governor Régulateur de tours Regulador Regolatore di giri					Electronic Électronique Eléctronico Elettronico
Cylinders, numbers and arrangement Nombre et disposition des cylindres Cilindros, numero y disposición Numero e disposizione dei cilindri					6 L
Total displacement Cylindrée totale Cilindrata total Cilindrata totale				cm <sup>3</sup>	16.120
Bore x stroke Alésage x course Diámetro x carrera Alesaggio x corsa				mm	144 x 165
Compression ratio Rapport de compression Relación de compresión Rapporto di compressione					17.5:1
Engine electric system voltage Voltage système électrique moteur Voltaje sistema eléctrico motor Voltaggio sistema elettrico motore					24 V
Derating for temperature Déclassement pour temperature Declasamiento para temperatura Declassamento per temperatura					NO DERATING
Derating for altitude Déclassement pour altitude Declasamiento para altitud Declassamento per altitudine				0÷1500 m 1500÷3000 m	0 3,5%/500m
Derating for relative humidity Déclassement pour humidité relative Declasamiento para humedad relativa Declassamento per umidità relativa					NO DERATING

ALTERNATOR ALTERNATEUR ALTERNADOR ALTERNATORE		MECCALTE				
PERFORMANCE PERFORMANCES PRESTACIONES PRESTAZIONI		1500 rpm		1800 rpm		
Model Modèle Modelo Modello		ECO40-2S/4		ECO40-2S/4		
Continuous Power Puissance service continue Potencia servicio continuo Potenza servizio continuo		40 °C	kVA kWe	<b>450</b> 360	kVA kWe	<b>510</b> 408
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza		40 °C	KVA kWe	<b>468</b> 374,4	KVA kWe	<b>536</b> 428,8
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza		27 °C	KVA kWe	<b>491</b> 392,8	KVA kWe	<b>556</b> 444,8
Efficiency Rendement Eficienza Efficienza			2/4 3/4 4/4	93,2 % 94,0 % 93,7 %		94,2 % 95,5 % 94,7 %
Standard winding connections Liaison des bobinages Tipo de conexión Collegamento avvolgimenti				Y		YY
Exciter Excitatrice Excitador Excitatrice		<b>brushless</b> rotating exciter design with solid state pivotante <b>sans brosses</b> avec pont de diodes pivotants puente de diodos <b>sin escobillas</b> rotantes rotante <b>senza spazzole</b> con ponte di diodi rotanti				
Poles Poles Polos Poli		4				
Phases Phases Fases Fasi		3 + N				
Wires Fils Hilos Morsetti		12				
Voltage regulation Regulation Voltage Regulación voltaje Regolazione tensione		± 1%				
Insulation class Classe d' isolation Classe de aislamiento Classe di isolamento		H				
Enclosure Degré de protection mécanique Grado de protección mecánica Grado di protezione meccanica		IP 21				
Air Volume Volume d'air Volumen de aire Volume d'aria		50 Hz	54 m <sup>3</sup> /min			
		60 Hz	64,8 m <sup>3</sup> /min			
Standard AVR model Modèle AVR standard Modelo AVR standard Modello AVR standard		<b>DER-1</b>				
Derating for temperature Déclassement pour température Declasamiento para temperatura Declassamento per temperatura		0 ÷ 40°C	0			
		> 40 °C	3 % / 5°C			
Derating for altitude Déclassement pour altitude Declasamiento para altitud Declassamento per altitudine		0 ÷ 1000 m	0			
		1000 ÷ 2500 m	3% / 500 m			
		2500 ÷ 3000 m	4% / 500 m			

**LOGISTIC INFORMATION**  
**INFORMATIONS LOGISTIQUES**  
**INFORMATION LOGISTICA**  
**INFORMAZIONI LOGISTICHE**

	Integrated fuel tank capacity Capacité réservoir intégré Capacidad Tanque integrado Capacità Serbatoio integrato	Weight Poids Peso Peso	Dimensions Cotes d'encombrement Medidas externas Dimensioni d'ingombro		
	( L )	(kg)	( cm )		
	STD	EXTRA 1	L	W	H
SOUND PROOF VERSION VERSION INSONORISEE VERSION INSONORISADA VERSIONE INSONORIZZATA	1000	ON REQUEST	4900	485	200 265

**GENSET STANDARD EQUIPMENT**  
**EQUIPEMENT STANDARD GROUPE ELECTROGENE**  
**EQUIPAMIENTO STANDARD GRUPO ELECTROGENO**  
**EQUIPAGGIAMENTO STANDARD GRUPPO ELETTOGENO**


GB	F	E	I
<ul style="list-style-type: none"> <li>Lifting eye</li> <li>Vibration dampers</li> <li>Integrated bunded fuel tank</li> <li>Battery</li> <li>Manual autostart control panel With <b>DSE7310</b></li> <li>Emergency stop button</li> <li>Sound proof canopy of galvanized steel with residential silencer</li> <li>Fork lift guides</li> </ul>	<ul style="list-style-type: none"> <li>Crochet de levage</li> <li>Amortisseurs de vibrations</li> <li>Réservoir intégré avec bac de rétention</li> <li>Batterie</li> <li>Coffret de contrôle manuel autostart avec <b>DSE7310</b></li> <li>Bouton arrêt d'urgence</li> <li>Capote d'insonorisation d'acier galvanisé avec silencieux résidentiel</li> <li>Supports pour fourches</li> </ul>	<ul style="list-style-type: none"> <li>Gancho central</li> <li>Apagadores de vibracion</li> <li>Tanque combustible integrado con bandeja para la recogida de líquidos</li> <li>Bateria</li> <li>Cuadro manual autostart con <b>DSE7310</b></li> <li>Botón parada de emergencia</li> <li>Cabina de insonorización de acero cincado con silenciador residencial</li> <li>Supportes para carretilla</li> </ul>	<ul style="list-style-type: none"> <li>Gancio centrale di sollevamento</li> <li>Antivibranti</li> <li>Serbatoio integrato con vasca di raccolta liquidi</li> <li>Batteria</li> <li>Quadro manuale autostart con <b>DSE7310</b></li> <li>Pulsante arresto di emergenza</li> <li>Cabina di insonorizzazione di acciaio zincato con marmitta residenziale</li> <li>Porta forche</li> </ul>

**MANUAL AUTOSTART CONTROL PANEL**  
**COFFRET ELECTRIQUE MANUEL AUTOSTART**  
**CUADRO ELECTRICO MANUAL AUTOSTART**  
**QUADRO ELETTRICO MANUALE AUTOSTART**

**ACP 7310 AUS**

800 A (400 V - 3 ph - 50Hz - 1500 rpm)  
1600 A (220 V - 3 ph - 60Hz - 1800 rpm)

<b>STANDARD EQUIPMENT:</b> 4 poles circuit breaker Electronic control board <b>DSE 7310</b> Control panel box key Emergency Stop button	<b>EQUIPEMENT STANDARD:</b> Disjoncteur de protection 4 pôles Fiche électronique <b>DSE 7310</b> Clé pour serrure du coffret Interrupteur d'arrêt d'urgence	<b>EQUIPAMIENTO STANDARD:</b> Interruptor magnetotermico 4 polos Carta electronica <b>DSE 7310</b> Llave cuadro Botón de parada de emergencia	<b>EQUIPAGGIAMENTO STANDARD:</b> Interruttore magnetotermico 4 poli Scheda elettronica <b>DSE 7310</b> Chiave quadro Pulsante di arresto di emergenza
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 <p><b>DSE 7310</b></p>	<p><b>CONTROL BOARD</b>  <b>CARTE ELECTRONIQUE DE CONTROL</b>  <b>CARTA ELECTRONICA DE CONTROL</b>  <b>SCHEDA ELETTRONICA DI CONTROLLO</b></p>
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PROTECTIONS	PROTECTIONS	PROTECCIONES	PROTEZIONI
Low oil pressure High engine temperature Low fuel level Fail to start Fail to stop Emergency stop Over/under generator frequency Over/under generator voltage Over/under speed Fuel level Belt breakage Over current Over/under battery voltage	Basse pression huile moteur Haute température moteur Basse niveau combustible Non démarrage Non arrêt Arrêt d'urgence Sur/sous générateur fréquence Sur/sous générateur voltage Sur/sourvitesse Niveau de combustible Rupture courroie Surcourant Sur/sus la tension de batterie	Baja presión aceite Elevada temperatura motor Baja nivel carburante Falta de arranque Falta de parada Parada de emergencia Sobre/bajo generatore frecuencia Sobre/bajo generatore voltaje Sobre/bajo velocidad nivel de combustible Ruptura correa Corriente maxima Sobre/bajo voltaje de la batería	Bassa pressione olio Alta temperatura motore Basso livello di carburante Mancato avviamento Mancato arresto Stop d'emergenza Sovra/sotto frequenza generatore Sovra/sotto voltaggio generatore Sovra/sotto velocità Livello del carburante Rottura cinghia Sovracorrente Sovra/sotto tensione della batteria
DIGITAL METERS	VOYANT NUMERIQUE POUR	VISOR DIGITAL PARA	MISURATORE DIGITALE PER
Generator volts ( 3 phases ) Generator amperes ( 3 phases ) Generator frequency KW-meter kVA-meter Cos φ-meter Rpm meter Gen set hours counter Battery Volts	Voltmètre générateur ( 3 phases ) Ampèremètre générateur (3 phases) Fréquencemètre générateur KW-mètre kVA- mètre Cos φ- mètre Tm mètre Totalisateur d'heures de marche Voltmètre batterie	Voltmetro ( 3 fases ) Amperímetro ( 3 fases ) Frecuencímetro KW- metro kVA- metro Cos φ-metro Revoluciones por minuto metro Medida horas de marcha Voltmetro batería	Voltmetro tensione generatore (3 fasi) Amperometro generatore ( 3 fasi ) Frequenzímetro generatore KW- metro kVA- metro Cos φ-metro Gm metro Contaore di funzionamento gruppo Voltmetro batteria

**AUTOMATIC CONTROL PANEL  
COFFRET ELECTRIQUE AUTOMATIQUE  
CUADRO ELECTRICO AUTOMATICO  
QUADRO ELETTRICO AUTOMATICO**

<p>1) <b>ACP 7320 ATS</b></p> 	<p><b>COMPLETE CONTROL PANEL FREE STANDING TYPE</b> Equipment: control board, circuit breaker, battery charger, transfer switch, box key. <b>COFFRET ELECTRIQUE COMPLET TYPE ARMOIRE SEPRE DU GROUPE</b> Equipement : carte électronique de contrôle, disjoncteur de protection, chargeur de batterie, inverseur de source, clé coffret. <b>CUADRO ELECTRICO COMPLETO EN ARMARIO SEPARADO DEL GRUPO</b> Equipamiento: carta electronica de controllo, interruptor magnetotermico, cargador de bateria, transferencial, llave quadro. <b>QUADRO ELETTRICO COMPLETO SEPARATO DAL GRUPPO</b> Equipaggiamento: scheda elettronica di controllo, interruttore magnetotermico, carica batteria, telecommutazione e chiave quadro.</p>
<p>2) <b>ACP 7320 AMF</b></p> 	<p><b>AMF CONTROL PANEL FITTED ON THE GEN-SET WITHOUT TRANSFER SWITCH</b> Equipment: control board, circuit breaker, battery charger, box key. <b>COFFRET ELECTRIQUE MONTE SUR LE GROUPE SANS INVERSEUR DE SOURCE</b> Equipement : carte électronique de contrôle, disjoncteur de protection, chargeur de batterie, clé coffret. <b>CUADRO ELECTRICO MONTADO SOBRE EL GRUPO SIN TRANSFERENCIAL</b> Equipamiento: carta electronica de controllo, interruptor magnetotermico, cargador de bateria, llave quadro. <b>QUADRO ELETTRICO MONTATO SUL GRUPPO ELETTROGENO SENZA TELECOMMUTAZIONE</b> Equipaggiamento: scheda elettronica di controllo, interruttore magnetotermico, carica batteria, chiave quadro.</p>
<p>3) <b>ACP 7320 STS</b></p> 	<p><b>CONTROL PANEL FITTED ON THE GEN-SET WITH TRANSFER SWITCH SUPPLIED IN A SEPARATED BOX</b> Equipment: control board, circuit breaker, battery charger, box key, separate transfer switch. <b>COFFRET ELECTRIQUE MONTE SUR LE GROUPE + INVERSEUR DE SOURCE FOURNI DANS UN COFFRET SEPRE</b> Equipement : carte électronique de contrôle, disjoncteur de protection, chargeur de batterie, inverseur de source séparé, clé coffret. <b>CUADRO ELECTRICO MONTADO SOBRE EL GRUPO CON TRANSFERENCIAL SEPARADO</b> Equipamiento: carta electronica de controllo, interruptor magnetotermico, cargador de bateria, llave quadro, transferencial separado. <b>QUADRO ELETTRICO MONTATO SUL GRUPPO ELETTROGENO CON TELECOMMUTAZIONE SEPARATA</b> Equipaggiamento: scheda elettronica di controllo, interruttore magnetotermico, carica batteria, chiave quadro, telecommutazione in armadio separato.</p>

**CONTROL BOARD  
CARTE ELECTRONIQUE DE CONTROL  
CARTA ELECTRONICA DE CONTROL  
SCHEDA ELETTRONICA DI CONTROLLO**

GB	F	E	I
The DSE7320 is an Automatic Mains Failure Control Module designed to automatically start and stop diesel generating sets that include electronic and non electronic engines. The module also provides excellent genset monitoring and protection features.	La DSE7320 est une carte de contrôle projetée pour démarrer et arrêter automatiquement groupes électrogènes diesels avec moteurs électroniques et non électroniques. La carte représente un système excellent de contrôle et de protection du groupe électrogène.	La DSE7320 es una carta de control para arrancar y parar automáticamente grupos electrógenos diesel con motores electrónicos y no electrónicos. La carta constituye un excelente sistema de control y protección del grupo electrógeno.	La DSE7320 è una scheda di controllo progettata per avviare e arrestare automaticamente gruppi elettrogeni diesel con motori elettronici e non elettronici. La scheda costituisce un eccellente sistema di controllo e di protezione del gruppo elettrogeno.
<b>FEATURES</b>	<b>EQUIPEMENT</b>	<b>EQUIPMENT</b>	<b>EQUIPAGGIAMENTO</b>
Stop/reste – Auto – Manual – Start LCD display scroll Event log view Acoustic alarm	Fiche électronique de contrôle DSE7320 Disjoncteur de protection Chargeur de batterie Bouton poussoir arrête d'urgence	Ficha electrónica de control DSE7320 Interruptor magnetotermico Cargador de batería Boton de parada de emergencia	Scheda elettronica di controllo DSE7320 Interruttore magnetotermico Carica batteria Pulsante stop emergenza
<b>DIGITAL MEASURING</b>	<b>MESURES NUMERIQUES</b>	<b>MEDIDAS DIGITALES</b>	<b>MISURAZIONI DIGITALI</b>
Generator volts (3 phases) Generator amperes (3 phases) Generator frequency KW-meter kVA-meter Cos φ- meter Rpm meter Water temperature (optional) Oil pressure (optional) Gen set hours counter Mains volts Battery volts Mains frequency Charging voltage Start-counter Fuel level %	Voltmètre générateur (3 phases) Ampèremètre générateur (3 phases) Fréquencemètre générateur KW-mètre kVA- mètre Cos φ- mètre Tm mètre Température eau (facultatif) Pression huile (facultatif) Totalisateur d'heures de marche Voltmètre secteur Voltmètre batterie Fréquence réseau Tension de charge Compteur démarrages Niveau combustible %	Voltmetro (3 fases) Amperimetro (3 fases) Frecuencimetro KW- metro kVA- metro Cos φ-metro Revoluciones por minuto metro Termometro agua (opcional) Presión aceite (opcional) Medida horas de marcha Voltmetro tensión de red Voltmetro batería Frecuencia red Tensión de carga Numero de arranques Nivel carburante %	Voltmetro tensione generatore (3 fasi) Amperometro generatore (3 fasi ) Frequenzimetro generatore KW- metro kVA- metro Cos φ-metro Gm metro Temperatura acqua (facoltativo) Pressione olio (facoltativo) Contaore di funzionamento gruppo Voltmetro tensione rete Voltmetro batteria Frequenza rete Tensione di carica Contavviamenti Livello carburante %
<b>INDICATORS</b>	<b>INDICATEURS</b>	<b>INDICADORES</b>	<b>INDICATORI</b>
Mains live Generator live Mains contactor closed Generator contactor closed Engine running	Présence secteur Présence tension générateur Inverseur secteur fermé Inverseur générateur fermé Moteur en marche	Presencia tensión de red Presencia tensión grupo Transferencial red cerrado Transferencial grupo cerrado Motor en marcha	Presenza tensione di rete Presenza tensione generatore Erogazione da rete Erogazione da gruppo Motore avviato
<b>PROTECTIONS</b>	<b>PROTECTIONS</b>	<b>PROTECCIONES</b>	<b>PROTEZIONI</b>
Low oil pressure High engine temperature Low fuel level Fail to start Fail to stop Emergency stop Over/under frequency Over/under voltage Over/under speed Fuel level Belt breakage Over current Over/under battery voltage	Bas pression huile moteur Haute température moteur Bas niveau combustible Non démarrage Non arrêt Arrêt d'urgence Sur/sous fréquence Sur/sous voltage Sur/sous vitesse Niveau de combustible Rupture courroie Surcourant Sur/sus la tension de batterie	Baja presión aceite Elevada temperatura motor Baja nivel carburante Falta de arranque Falta de parada Parada de emergencia Sobre/bajo frecuencia Sobre/bajo voltaje Sobre/bajo velocidad nivel de combustible Ruptura correa Corriente maxima Sobre/bajo voltaje de la batería	Bassa pressione olio Alta temperatura motore Basso livello di carburante Mancato avviamento Mancato arresto Stop d'emergenza Sovra/sotto frequenza Sovra/sotto voltaggio Sovra/sotto velocità Livello del carburante Rottura cinghia Sovracorrente Sovra/sotto tensione della batteria

**SOUNDPROOF CANOPY**  
**CAPOTE D'INSONORISATION**  
**CAPOTA DE INSONORIZACION**  
**CABINA INSONORIZZATA**

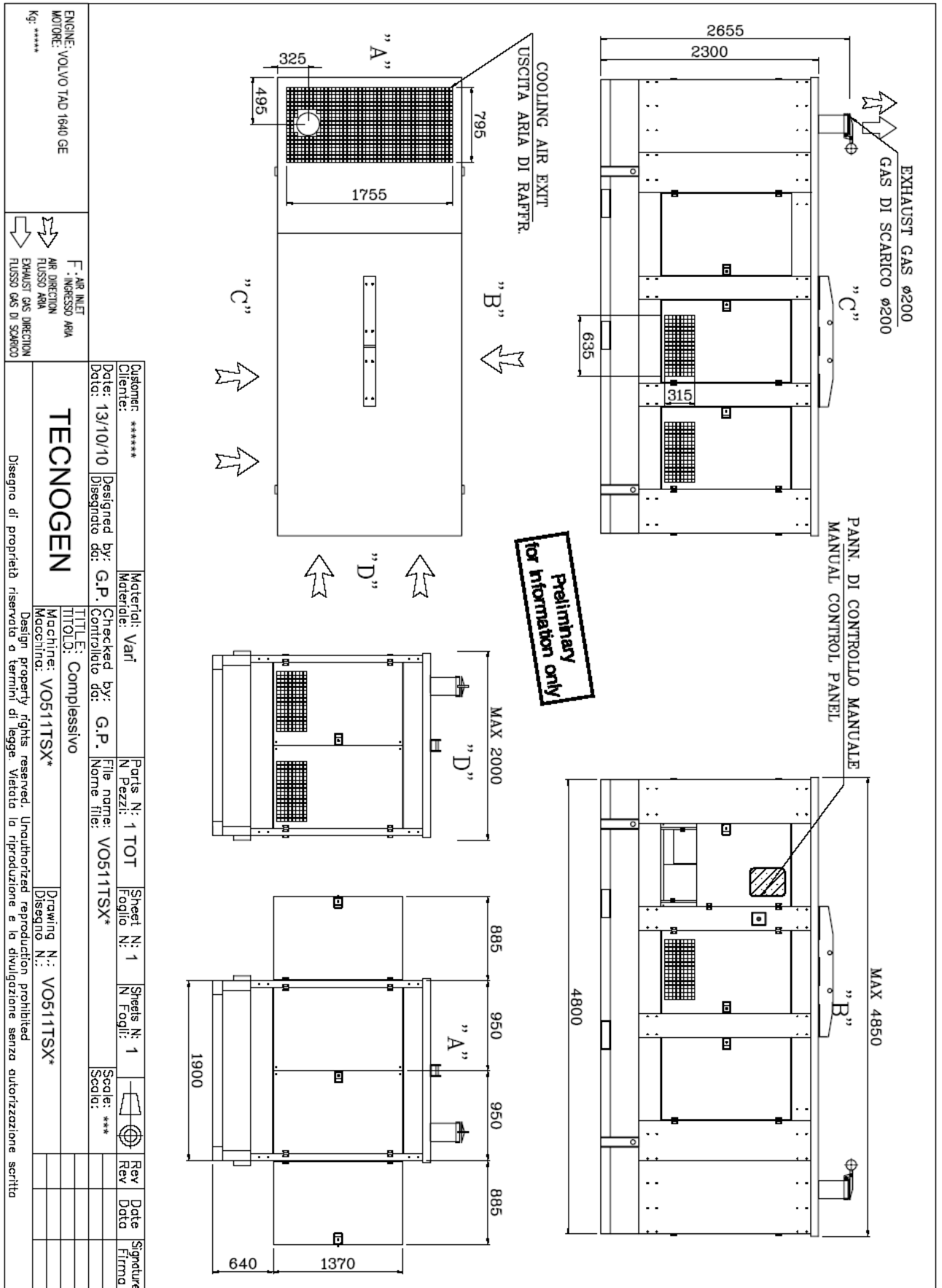
GB	F	E	I
<p>The TecnoGen Super Silent soundproof canopy has been designed with the aim of achieving the maximum noise level reduction and to provide a perfect cooling of the engine. The cooling airflow is forced through fixed circuits. The canopy is suitable for tropical ambient application. The exhaust gas silencer is residential type internally mounted. The canopy is completely built of hot galvanized carbon sheet steel. The sheets have a thickness 20/10. The structure is fully bolted, fixed by a special polyethylene sealing, completely free from electrical installation. All the panels can be easily removed. The cab is provided with doors of wide opening for easy access to generating set for the maintenance operations. The soundproofing materials are highly fire resistant and self-extinguishing.</p>	<p>La capote insonorisée TecnoGen Super Silent à été conçue pour atteindre le niveau de bruit le mineur possible et un refroidissement du moteur parfait. Le souffle d'air refroidissant est canalisé en circuits fixes. La capote est apte à être utilisée dans les ambiances tropicales. Le silencieux des gaz d'échappement, de type résidentiel, est mis à l'intérieur de la capote. La cabine est construite en acier galvanisé à chaud. Les tôles ont une épaisseur de 20/10. La structure est complètement boulonnée et fixée à travers des garnitures spéciales au polyéthylène. Tous les panneaux sont facilement amovibles. La cabine est dotée de portes avec grandes ouvertures qui permettent un accès facile au groupe électrogène pour les opérations de manutention. Les matériaux d'insonorisation sont fortement résistant au feu et auto-extinguibles.</p>	<p>La capota insonorizada TecnoGen Super Silent tiene sido planeada con el objetivo de alcanzar el menor nivel de rumorosidad posible y un perfecto enfriamiento del motor. El soplo de aire es canalizado en circuitos fijos. La cabina es apta a ser utilizada en ambientes tropicales. El silenciador de los gases de descargue, de tipo residencial, es colocado dentro de la cabina. La cabina es construida en acero cincado. Las chapas tienen un espesor de 20/10. La estructura es completamente bullonata y montada con sellos especiales de polietilene. Todos los paneles son fácilmente removibles. La cabina es dotada con puertas con amplias aberturas que permiten el fácil acceso al grupo eléctrico por las operaciones de manutención. Los materiales insonorizantes son muy resistentes al fuego y auto-extinguentes.</p>	<p>La cabina insonorizzata TecnoGen Super Silent è stata progettata allo scopo di raggiungere il minor livello di rumorosità possibile e un perfetto raffreddamento del motore. Il soffio d'aria raffreddante è canalizzato in circuiti fissi. La cabina è adatta ad essere utilizzata in ambienti tropicali. Il silenziatore dei gas di scarico, di tipo residenziale, è collocato all'interno della cabina. La cabina è costruita in acciaio zincato a caldo. Le lamiere hanno uno spessore di 20/10. La struttura è completamente bullonata e fissata tramite speciali sigilli al polietilene. Tutti i pannelli sono facilmente rimovibili. La cabina è dotata di porte con ampie aperture che consentono il facile accesso al gruppo elettrogeno per le operazioni di manutenzione. I materiali insonorizzanti sono altamente resistenti al fuoco e autoestinguenti.</p>

**Our quality in 13 points**  
**Notre qualité résumée en 13 points**  
**Nuestra calidad en 13 puntos**  
**La nostra qualità in 13 punti**

1		Internal residential silencer for lower sound levels Silencieux interne pour un niveau bas de bruit Silenciador interno para un nivel de rumorosidad más bajo Silenziatore interno per un livello di rumorosità più basso
2		Integrated fuel tank of different sizes Réservoirs de combustible disponibles, sur demande, de capacité supérieure Tanques integrados disponibles, como opción, de capacidad superior Serbatoi integrati disponibili, su richiesta, di capacità superiore
3		Control panel viewing window to easily check status of generating set Fenêtre de visualisation du panneau de contrôle pour un contrôle plus facile du status opérationnel du groupe Ventana de visualización del panel de control por un más fácil control del estatus operativo del grupo Finestra di visualizzazione del pannello di controllo per un più facile controllo dello status operativo del gruppo
4		Lockable access doors for extra safety and security Porte d'accès avec serrure pour une sûreté majeure Puertas de acceso con cerradura para una mayor seguridad Porte di accesso con serratura per una maggiore sicurezza
5		Galvanized bolts Boulons galvanisés Pernos cincados Bulloni zincati
6		Emergency stop button Interrupteur d'arrêt d'urgence Botón parada de emergencia Pulsante arresto di emergenza
7		Fuel tank cap with external key Bouchon gasoil avec clé positionne à l'extérieur Tapo gasoleo con llave situado a l'externo Tappo gasolio con chiave posizionato all'esterno
8		Fully banded baase frame Réservoir amovible avec bague de retention Tanque integrado sfilabile con el envase para recoger los líquidos Serbatoio integrato sfilabile con vasca raccolta liquidi
9		Central lifting hook Crochet central d'enlèvement Gancho de elevación Gancio di sollevamento centrale
10		Doors location convenient to controls and service area Placement des portes pour rendre les contrôles plus faciles Colocación de las puertas para facilitar los controles Collocazione delle porte per facilitare i controlli
11		High serviceability level Haut niveau d'accessibilité pour la manutention Alto nivel de accesibilidad para la manutención Alto livello di accessibilità per la manutenzione
12		Large cable entry area for easy installation Grande zone d'entré des câbles pour une installation plus facile Amplia área de entrada cables para una instalación fácil Ampia area di entrata cavi per una facile installazione
13		Galvanized metal steel sheet pre-treated prior to powder coating Tôles en acier galvanisé pré-traitées avant le vernissage à poudre Chapas de acero cincado pre-tratadas antes de la pintura a polvo Lamiera di acciaio zincato pre-trattate prima della verniciatura a polvere



**SOUND PROOF VERSION DRAWING  
DESSIN VERSION INSONORISEE  
DIBUJO VERSION INSONORISADA  
DISEGNO VERSIONE INSONORIZZATA**



# VOLVO PENTA GENSET ENGINE

# TAD1640GE

432 kW (588 hp) at 1500 rpm, 480 kW (653 hp) at 1800 rpm, acc. ISO 3046

The TAD1640GE is a powerful, reliable and economical Generating Set Diesel Engine built on the dependable in-line six design.

## Durability & low noise

Designed for easiest, fastest and most economical installation. Well-balanced to produce smooth and vibration-free operation with low noise level.

To maintain a controlled working temperature in cylinders and combustion chambers, the engine is equipped with piston cooling. The engine is also fitted with replaceable cylinder liners and valve seats/guides to ensure maximum durability and service life of the engine.

## Low exhaust emission

The state of the art, high-tech injection and charging system with low internal losses contributes to excellent combustion and low fuel consumption.

The TAD1640GE complies with EU Stage 2 emission regulations.

## Easy service & maintenance

Easily accessible service and maintenance points contribute to the ease of service of the engine.

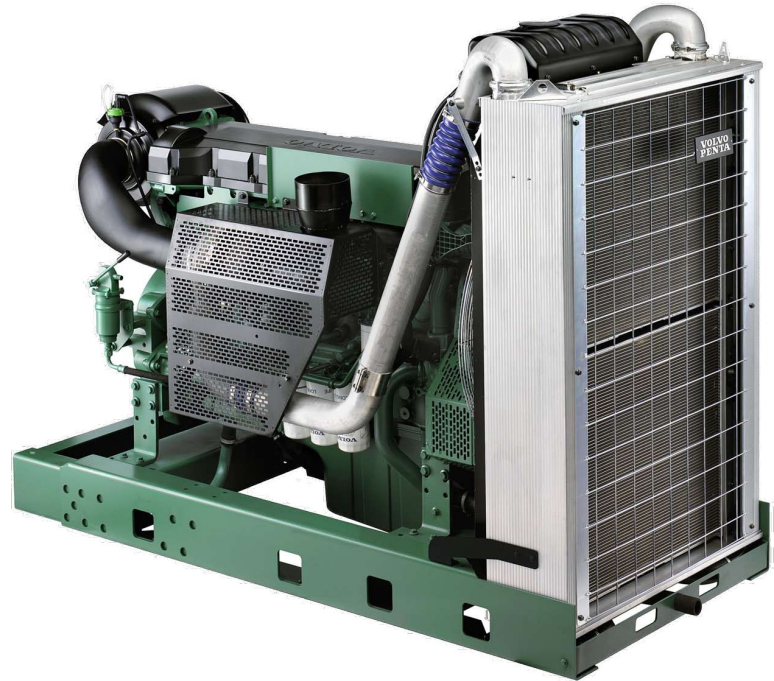
## Technical description

### Engine and block

- Optimized cast iron cylinder block with optimum distribution of forces without the block being unnecessarily heavy.
- Wet, replaceable cylinder liners
- Piston cooling for low piston temperature and reduced ring temperature
- Tapered connecting rods for reduce risk of piston cracking
- Crankshaft induction hardened bearing surfaces and fillets with seven bearings for moderate load on main and high-end bearings
- Case hardened and Nitrocarburized transmission gears for heavy duty operation
- Keystone top compression rings for long service life
- Viscous type crankshaft vibration dampers to withstand single bearing alternator torsional vibrations
- Replaceable valve guides and valve seats
- Over head camshaft and four valves per cylinder

### Lubrication system

- Full flow oil cooler
- Full flow disposable spin-on oil filter, for extra high filtration
- The lubricating oil level can be measured during operation
- Gear type lubricating oil pump, gear driven by the transmission



## Features

- Maintained performance, air temp 40°C
- Cooling system (55°C)
- Fully electronic with Volvo Penta EMS 2
- Dual frequency switch (between 1500 rpm and 1800 rpm)
- High power density
- Emission compliant
- Low noise levels
- Gen Pac configuration

## Fuel system

- Non-return fuel valve
- Electronic unit injectors
- Fuel prefilter with water separator and water-in-fuel indicator / alarm
- Gear driven low-pressure fuel pump
- Fine fuel filter with manual feed pump and fuel pressure switch
- Fuel shut-off valve, electrically operated

## Cooling system

- Efficient cooling with accurate coolant control through a water distribution duct in the cylinder block. Reliable sleeve thermostat with minimum pressure drop
- Belt driven, maintenance-free coolant pump with high degree of efficiency
- Coolant filter as standard

## Turbo charger

- Efficient and reliable turbo charger
- Extra oil filter for the turbo charger

## Electrical system

- Engine Management System 2 (EMS 2), an electronically controlled processing system which optimizes engine performance. It also includes advanced facilities for diagnostics and fault tracing
- The instruments and controls connect to the engine via the CAN SAE J1939 interface, either through the Control Interface Unit (CIU) or the Digital Control Unit (DCU). The CIU converts the digital CAN bus signal to an analog signal, making it possible to connect a variety of instruments. The DCU is a control panel with display, engine control, monitoring, alarm, parameter setting and diagnostic functions. The DCU also presents error codes in clear text.
- Sensors for oil pressure, oil temp, boost pressure, boost temp, coolant temp, fuel temp, water in fuel, fuel pressure and two speed sensors.

**VOLVO  
PENTA**



# TAD1640GE

## Technical Data

### General

Engine designation .....	TAD1640GE	
No. of cylinders and configuration.....	in-line 6	
Method of operation .....	4-stroke	
Bore, mm (in.).....	144 (5.67)	
Stroke, mm (in.).....	165 (6.50)	
Displacement, l (in <sup>3</sup> ).....	16.12 (984)	
Compression ratio.....	17.5:1	
Dry weight, kg (lb).....	1480 (3263)	
Dry weight with Gen Pac, kg (lb).....	1910 (4211)	
Wet weight, kg (lb).....	1550 (3417)	
Wet weight ith Gen Pac, kg (lb).....	2020 (4453)	

<b>Performance</b>	<b>1500 rpm</b>	<b>1800 rpm</b>
with fan, kW (hp) at:		
Prime Power	392 (533)	430 (585)
Max Standby Power	431 (586)	479 (651)

<b>Lubrication system</b>	<b>1500 rpm</b>	<b>1800 rpm</b>
Oil consumption, liter/h (US gal/h) at:		
Prime Power	0.10 (0.026)	0.10 (0.026)
Max Standby Power	0.10 (0.026)	0.11 (0.029)
Oil system capacity incl filters, liter .....	48	

<b>Fuel system</b>	<b>1500 rpm</b>	<b>1800 rpm</b>
Specific fuel consumption at:		
Prime Power, g/kWh (lb/hph)		
25 %	227 (0.368)	245 (0.397)
50 %	203 (0.329)	210 (0.340)
75 %	198 (0.320)	202 (0.327)
100 %	200 (0.323)	202 (0.328)
Max Standby Power, g/kWh (lb/hph)		
25 %	221 (0.359)	234 (0.377)
50 %	201 (0.325)	206 (0.334)
75 %	197 (0.319)	201 (0.326)
100 %	202 (0.327)	206 (0.334)

<b>Intake and exhaust system</b>	<b>1500 rpm</b>	<b>1800 rpm</b>
Air consumption, m <sup>3</sup> /min (cfm) at:		
Prime Power	31.7 (1119)	39.7 (1402)
Max Standby Power	36.2 (1278)	42.6 (1504)
Max allowable air intake restriction, kPa (In wc)	5 (20.1)	5 (20.1)
Heat rejection to exhaust, kW (BTU/min) at:		
Prime Power	299 (17004)	319 (18141)
Max Standby Power	335 (19051)	381 (21667)
Exhaust gas temperature after turbine, °C (°F) at:		
Prime Power	452 (846)	408 (766)
Max Standby Power	456 (853)	444 (831)
Max allowable back-pressure in exhaust line, kPa (In wc)	10 (40.2)	10 (40.2)
Exhaust gas flow, m <sup>3</sup> /min (cfm) at:		
Prime power	74.8 (2642)	86.9 (3069)
Max Standby Power	85.4 (3016)	98.0 (3461)

<b>Cooling system</b>	<b>1500 rpm</b>	<b>1800 rpm</b>
Heat rejection radiation from engine, kW (BTU/min) at:		
Prime Power	18 (1024)	20 (1137)
Max Standby Power	20 (1137)	22 (1251)
Heat rejection to coolant kW (BTU/min) at:		
Prime Power	158 (8985)	176 (10009)
Max Standby Power	166 (9440)	188 (10691)
Fan power consumption, kW (hp)	9 (12)	15 (20)

Note! Not all models, standard equipment and accessories are available in all countries. All specifications are subject to change without notice. The engine illustrated may not be entirely identical to production standard engines.

### Power Standards

The engine performance corresponds to ISO 3046, BS 5514 and DIN 6271. The technical data applies to an engine without cooling fan and operating on a fuel with calorific value of 42.7 MJ/kg (18360 BTU/lb) and a density of 0.84 kg/liter (7.01 lb/US gal), also where this involves a deviation from the standards. Power output guaranteed within 0 to +2% at rated ambient conditions at delivery. Ratings are based on ISO 8528. Engine speed governing in accordance with ISO 3046/IV, class A1 and ISO 8528-5 class G3

### Exhaust emissions

The engine complies with EU stage 2 emission legislation according to the Non Road Directive EU 97/68/EEC. The engine also complies with TA-luft -50% exhaust emission regulations.

### Rating Guidelines

PRIME POWER rating corresponds to ISO Standard Power for continuous operation. It is applicable for supplying electrical power at variable load for an unlimited number of hours instead of commercially purchased power. A10 % overload capability for governing purpose is available for this rating. MAXIMUM STANDBY POWER rating corresponds to ISO Standard Fuel Stop Power. It is applicable for supplying standby electrical power at variable load in areas with well established electrical networks in the event of normal utility power failure. No overload capability is available for this rating. 1 hp = 1 kW x 1.36

### Information

For more technical data and information, please look in the Generating Set Engines Sales Guide.

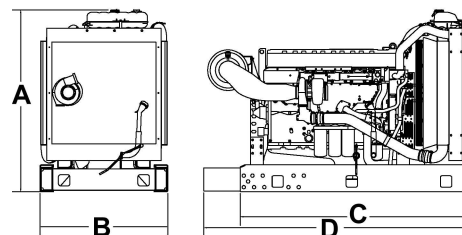
## Standard equipment

	Engine	Gen Pac
<b>Engine</b>		
Automatic belt tensioner	•	•
Lift eyelets	•	•
<b>Flywheel</b>		
Flywheel housing with conn. acc. to SAE 1	•	•
Flywheel for 14" flex. plate and flexible coupling	•	•
Vibration dampers	•	•
<b>Engine suspension</b>		
Fixed front suspension	•	•
<b>Lubrication system</b>		
Oil dipstick	•	•
Full-flow oil filter of spin-on type	•	•
By-pass oil filter of spin-on type	•	•
Oil cooler, side mounted	•	•
Low noise oil sump	•	•
<b>Fuel system</b>		
Fuel filters of disposable type	•	•
Electronic unit injectors	•	•
Pre-filter with water separator	•	•
<b>Intake and exhaust system</b>		
Air filter with replaceable paper insert	•	•
Air restriction indicator	•	•
Air cooled exhaust manifold	•	•
Connecting flange for exhaust pipe	•	•
Exhaust flange with v-clamp	•	•
Turbo charger, low right side	•	•
<b>Cooling system</b>		
Radiator incl intercooler	• <sup>1)</sup>	•
Gear driven coolant pump	•	•
Fan hub	•	•
Thrust fan	• <sup>1)</sup>	•
Fan guard	-	•
Belt guard	-	•
<b>Control system</b>		
Engine Management System (EMS) with CAN-bus interface SAE J1939	•	•
CIU, Control Interface Unit	-	-
<b>Alternator</b>		
Alternator 80A / 24 V	•	•
<b>Starting system</b>		
Starter motor, 6.0kW, 24 V	•	•
Connection facility for extra starter motor	•	•
<b>Instruments and senders</b>		
Temp.- and oil pressure for automatic stop/alarm 103°C	•	•
<b>Other equipment</b>		
Expandable base frame	-	•
<b>Engine Packing</b>		
Plastic wrapping	•	•

<sup>1)</sup> must be ordered, see order specification  
 - optional equipment or not applicable  
 • included in standard specification

## Dimensions TAD1640GE

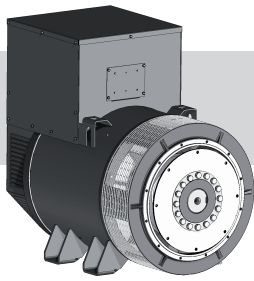
Not for installation



A\* = 1587 mm / 62.5 in  
 B\* = 1120 mm / 44.1 in  
 C\* = 1976 mm / 77.8 in  
 D = 2296 mm / 90.5 in (During transport)  
 D = Max 3311 mm / 130.5 in  
 \* Including radiator and intercooler

# VOLVO PENTA

**AB Volvo Penta**  
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 www.volvopenta.com



# meccalte



# ECO 40

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 web site: www.meccalte.com

## 4 POLE

### CHARACTERISTICS

#### INDUSTRIAL RATINGS

ambient 40 °C

Type	kVA - cos φ 0.8 - 3 Phase continuous							Efficiency		
	CL. H ( ΔT= 125 °C)				CL. F ( ΔT= 105 °C)			η % CL. H ( ΔT= 125 °C)		
50 Hz										
Series Star Y	760	800	830		760	800	830			
Parallel Star YY	380	400	415	IP45	380	400	415			
Series Delta Δ	440	460	480	400V	440	460	480	2/4	3/4	4/4
Parallel Delta ΔΔ	220	230	240		220	230	240			
ECO40-1S/4	400	<b>400</b>	400	330	370	<b>370</b>	370	92,9	93,8	93,5
ECO40-2S/4	450	<b>450</b>	450	370	410	<b>410</b>	410	93,2	94	93,7
ECO40-3S/4	500	<b>500</b>	500	410	450	<b>450</b>	450	93,3	94,2	93,9
ECO40-1L/4	550	<b>550</b>	540	450	500	<b>500</b>	490	93,7	94,6	94,2
ECO40-1.5L/4	620	<b>620</b>	620	480	560	<b>560</b>	560	93,7	94,6	94,3
ECO40-2L/4	680	<b>680</b>	680	500	630	<b>630</b>	630	93,8	94,7	94,3
ECO40-VL/4	720	<b>720</b>	710	520	660	<b>660</b>	650	93,9	94,8	94,4

60 Hz	CL. H ( ΔT= 125 °C)				CL. F ( ΔT= 105 °C)			Efficiency		
								η % CL. H ( ΔT= 125 °C)		
Series Star Y	880	920	960		880	920	960			
Parallel Star YY	440	460	480	IP45	440	460	480			
Series Delta Δ	508	530	554	480V	508	530	554	2/4	3/4	4/4
Parallel Delta ΔΔ	254	265	277		254	265	277			
ECO40-1S/4	450	480	<b>480</b>	396	410	440	<b>440</b>	94,4	95,2	95
ECO40-2S/4	510	540	<b>540</b>	444	460	490	<b>490</b>	94,2	95,5	94,7
ECO40-3S/4	580	600	<b>600</b>	492	520	540	<b>540</b>	94,8	95,6	95,2
ECO40-1L/4	630	660	<b>660</b>	540	570	600	<b>600</b>	94,8	95,5	95,2
ECO40-1.5L/4	700	744	<b>744</b>	576	632	672	<b>672</b>	95,3	96,4	95,7
ECO40-2L/4	780	816	<b>816</b>	600	720	756	<b>756</b>	95,5	96,7	95,8
ECO40-VL/4	865	865	<b>865</b>	625	800	800	<b>800</b>	95,8	96,8	96

#### STANDBY RATINGS

Type	kVA Temp. Rise / Ambient °C			kVA Temp. Rise / Ambient °C		
	50 Hz			60 Hz		
	163° / 27°	150° / 40°	125° / 27°	163° / 27°	150° / 40°	125° / 27°
ECO40-1S/4	437	417	417	525	500	500
ECO40-2S/4	491	468	468	590	563	563
ECO40-3S/4	546	521	521	656	625	625
ECO40-1L/4	601	567	567	722	680	680
ECO40-1.5L/4	670	640	640	805	770	770
ECO40-2L/4	735	700	700	882	840	840
ECO40-VL/4	779	740	740	935	890	890

Type	J (Kgm <sup>2</sup> ) B3-B14 FORM	Weight (Kg)	Air Volume		Noise dB(A)			
					50 Hz		60 Hz	
			50 Hz (m <sup>3</sup> /min)	60 Hz (m <sup>3</sup> /min)	1m	7m	1m	7m
ECO40-1S/4	5,504	1040	54	64,8	94	82	98	88
ECO40-2S/4	6,240	1118						
ECO40-3S/4	6,852	1171						
ECO40-1L/4	7,356	1324						
ECO40-1.5L/4	8,739	1380						
ECO40-2L/4	9,258	1586						
ECO40-VL/4	9,874	1693						

#### ACCESSORIES

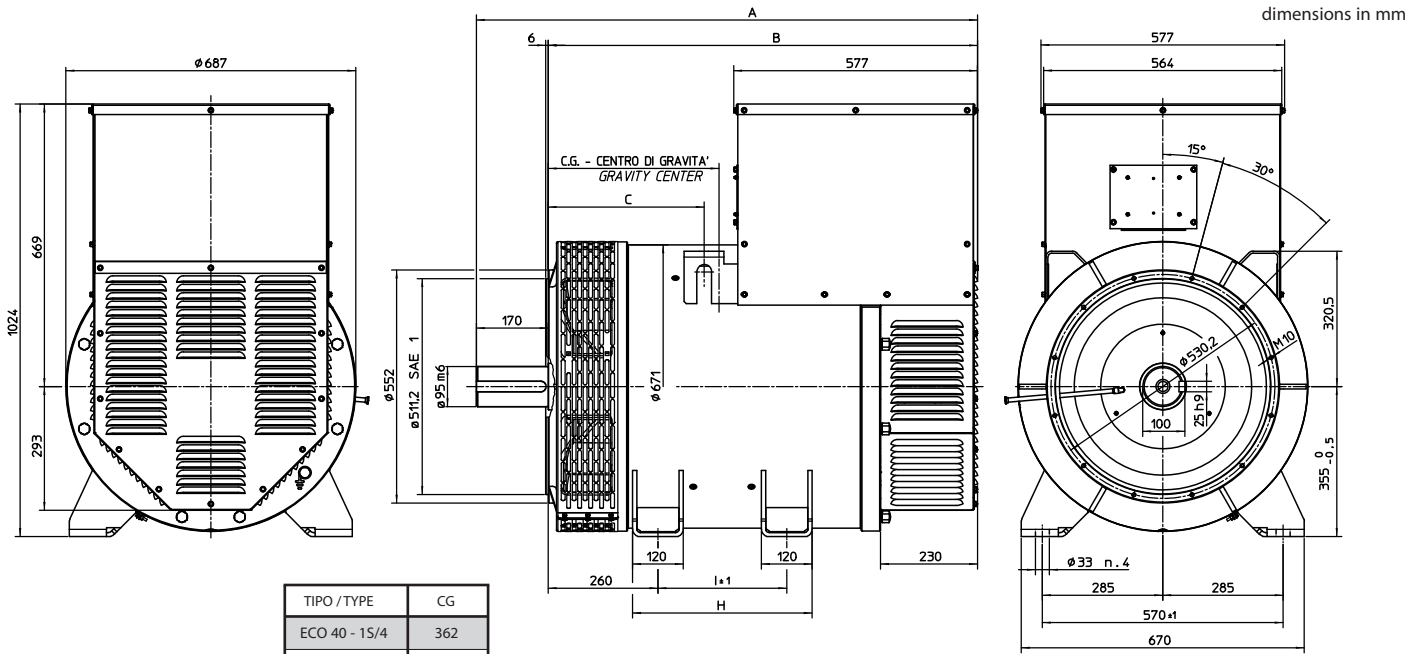
REGULATOR				PARALLEL DEVICE	THERMAL PROTECTION			HEATERS	MECHANICAL PROTECTION		
DSR	DER-1	SR7/2	UVR6		PTC	BIMET. DEVICE	PT100		IP21	IP23	IP45
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

● = Standard  
 = Optional

Rating



## OVERALL DIMENSIONS B3 - B14 FORM



## OVERALL DIMENSIONS MD35 FORM

