cummins	CUMMINS ENGINE COM	MPANY, INC	Basic Engine Model: QST30-G4	Date: 8May00	G-DRIVE QST			
	Columbus, Indiana 4	7201	Engine Critical Parts List:	Curve Number:	1			
	ENGINE PERFORMAN	CE CURVE	CPL: 2499 (2 Pump / 2 Loop) CPL: 2548 (Air-to-Alr)	FR-5160 (2P/ 2L) FR-5162 (Air-to-Air)				
Displacement : 30.48 litre (1860 in ³)		Bore : 140 mm	Bore : 140 mm (5.51 in) Stroke : 165 mm (6.50 in)					
No. of Cylinde	rs : 12	Aspiration : Turbocharged and Low Temperature Aftercooled						

Para mayor información viste: www.plantaselectricasdemexico.com

Engine Speed	Standby Power		Prime	Power	Continuous Power		
RPM	kWm	BHP	kWm	BHP	kWm	BHP	
1500	970	1300	880	1180	683	915	
1800	1112	1490	1007	1350	832	1115	

Engine Performance Data @ 1500 RPM

OUT	PUT PO	WER	F	UEL CON	SUMPTI	ION	Litre/hour
%	kWm	BHP	kg/ kWm∙h	lb/ BHP∙h	litre/ hour	U.S. Gal/ hour	250.0 200.0 1500 RPM
STAN	DBY PO	WER					
100	970	1300	0.196	0.323	224	59.1	
PRIM	E POWE	R					
100	880	1180	0.195	0.320	202	53.2	
75	660	885	0.194	0.319	151	39.8	
50	440	590	0.197	0.324	102	26.9	
25	220	295	0.207	0.341	54	14.2	
CONT		S POWE	R				0 100 200 300 400 500 600 700 800 900 1000
100	683	915	0.194	0.319	156	41.1	Gross Engine Output - kWm

CONVERSIONS: (litres = U.S. Gal x 3.785)

Gal x 3.785) (Eng

(Engine kWm = BHP x 0.746) (U.S. Gal = litres x 0.2642)

(Engine BHP = Engine kWm x 1.34)

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. Generator drive engines are not designed for and shall not be used in variable speed D.C. generator set applications.

STANDBY POWER RATING

Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Standby Power rating. This rating should be applied where reliable utility power is available. A Standby rated engine should be sized for a maximum of an 80% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Standby Power rating. Standby rating should be never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency.

PRIME POWER RATING

Applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories:

UNLIMITED TIME RUNNING PRIME POWER

Prime Power is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours. The total operating time at 100% Prime Power shall not exceed 500 hours per year. A 10% overload capability is available for a period of 1 hour within a 12-hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year.

LIMITED TIME RUNNING PRIME POWER

Limited Time Prime Power is available for a limited number of hours in a non-variable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation exceeding 750 hours per year at the Prime Power rating should use the Continuous Power rating.

CONTINUOUS POWER RATING

Applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.

Data shown above represent gross engine performance capabilities obtained and corrected in accordance with ISO-3046 conditions of 100 kPa (29.53 in Hg) barometric pressure [110 m (361 ft) altitude], 25 °C (77 °F) air inlet temperature, and relative humidity of 30% with No. 2 diesel or a fuel corresponding to ASTM D2. See reverse side for application rating guidelines.

The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/litre (7.1 lbs/U.S. gal).

Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan, optional equipment and driven components.

DK. Inueblood CHIEF ENGINEER

CERTIFIED WITHIN 5%

QST30-G4 Derate Curves @ 1500 RPM CURVE NO: FR-5160 (2 Pump 2 loop) FR5162 (Air-to-Alr) FR5162 (Air-to-Alr) DATE: 8May00



Ambient Temp. (°C / °F)



Reference Standards:

BS-5514 and DIN-6271 standards are based on ISO-3046.

Operation At Elevated Altitude and Temperature:

For sustained operation above these conditions, derate an additional 9% per 500 m (1640 ft) and 15% per 10°C (18°F)

cummins	CUMMINS ENGINE COM	PANY, INC	ANY, INC Basic Engine Model: QST30-G4		G-DRIVE QST		
			Engine Critical Parts List: CPL: 2499 (2 Pump / 2 Loop)	Curve Number: FR-5160 (2P / 2L)	3		
	ENGINE PERFORMANC		CPL: 2548 (Air-to-Alr)	FR-5162 (Air-to-Air)			
Displacement : 30.48 litre (1860 in ³)		Bore : 140 mm (5.51 in) Stroke : 165 mm (6.50 in)					
No. of Cylinders : 12		Aspiration : Turbocharged and Low Temperature Aftercooled					

Engine Speed	Standby Power		Prime	Power	Continuous Power		
RPM	kWm	BHP	kWm	BHP	kWm	BHP	
1500	970	1300	880	1180	683	915	
1800	1112	1112 1490		1350	832 1115		

Engine Performance Data @ 1800 RPM



These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. Generator drive engines are not designed for and shall not be used in variable speed D.C. generator set applications.

STANDBY POWER RATING

Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Standby Power rating. This rating should be applied where reliable utility power is available. A Standby rated engine should be sized for a maximum of an 80% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Standby Power rating. Standby rating should be applied where reliable utility company are not considered an emergency.

PRIME POWER RATING

Applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories:

UNLIMITED TIME RUNNING PRIME POWER

Prime Power is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours. The total operating time at 100% Prime Power shall not exceed 500 hours per year. A 10% overload capability is available for a period of 1 hour within a 12-hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year.

LIMITED TIME RUNNING PRIME POWER

Limited Time Prime Power is available for a limited number of hours in a non-variable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation exceeding 750 hours per year at the Prime Power rating.

CONTINUOUS POWER RATING

Applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.

Data shown above represent gross engine performance capabilities obtained and corrected in accordance with ISO-3046 conditions of 100 kPa (29.53 in Hg) barometric pressure [110 m (361 ft) altitude], 25 °C (77 °F) air inlet temperature, and relative humidity of 30% with No. 2 diesel or a fuel corresponding to ASTM D2. See reverse side for application rating guidelines.

The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/litre (7.1 lbs/U.S. gal).

Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan, optional equipment and driven components.

OK. Inueblood

CERTIFIED WITHIN 5%

CHIEF ENGINEER



Reference Standards:

BS-5514 and DIN-6271 standards are based on ISO-3046.

Operation At Elevated Altitude and Temperature:

For sustained operation above these conditions, derate an additional 9% per 1000 ft (300 m) and 15% per 10°C (18° F).

Note: Derates shown are based on 15 in H₂0 air intake restrictions and 2 in Hg exhaust back pressure.

ENGINE MODEL: QST30-G4 CONFIGURATION NUMBER: Data SHEET: Bit String (2P / 2L) FR 3100 (2P / 2L) NSTALLATION DIAGRAM + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 3770314 + Fan to Flywhool (2P urp / 2 Loop) 30.48 (1860) Displacement	Cu	ummins Engine Engine Da	e Company, Inc. ata Sheet			G-DRIVE QST
CPL_NUMBER •* In to Flywheld (Jarto-Air): 3170341 •* Engine Critical Parts List (2 Pump / 2 Loop) 2499 • Engine Critical Parts List (Airto-Air) 2548 Control Parts List (Airto-Air) Type Appriation 4-Cycle; 50° Vec; 12-Cylinder Diesel Type 4-Cycle; 50° Vec; 12-Cylinder Diesel Diplacement (min x m) Diplacement (min x m) Compression Ratio (min x m) Diplacement (min x m) Order of Robit Concentration of Notarity Components -4g m ² (bm, *fb) • with FVM 0000 Flywheel Engine -4g m ² (bm, *fb) • with FVM 0000 Flywheel Engine -4g m ² (bm, *fb) • with FVM 0000 Flywheel Engine -4g m ² (bm, *fb) • with FVM 0000 Flywheel Engine -4g m ² (bm, *fb) • with FVM 0000 Flywheel Engine 4g (bm) • with FVM 0000 Flywheel Engine 7g (bm, *fb) • with FVM 0000 Flywheel -7g (bm, *fb) <td< th=""><th>ENGINE MODEL : QST30-G4</th><th>CONFIGURATION NUM</th><th>IBER : D573001GX03 PERFORI</th><th>DATA SHEET : DATE : MANCE CURVE :</th><th>DS-5160 8May00 FR-5160 (2 FR-5162 (2</th><th>5 2P / 2L) A - A)</th></td<>	ENGINE MODEL : QST30-G4	CONFIGURATION NUM	IBER : D573001GX03 PERFORI	DATA SHEET : DATE : MANCE CURVE :	DS-5160 8May00 FR-5160 (2 FR-5162 (2	5 2P / 2L) A - A)
• • End to Elymone (2 Fump / 2 Loop): 3170314 • Engine Critical Parts List (2 Fump / 2 Loop): 2549 • Engine Critical Parts List (Akrto-Akr): 3170341 • Engine Critical Parts List (Akrto-Akr): • Provide (2 Fump / 2 Loop): 3170314 • Engine Critical Parts List (Akrto-Akr): 2548 GENERAL ENGINE DATA • Cycle: 50° Vec: 12-Cylinder Diesel + Cycle: 50° Vec: 12-Cylinder Diesel Appriation	INSTALLATION DIAGRAM		<u>CPL NUMBER</u>		(,
•*Pan to Flywheel (Airob-Air): 3170341 •*Engine Critical Parts List (Airob-Air) 2548 GENERAL ENGINE DATA Apiration 4-Cycle: 50° Voo: 12-Cyclinder Diesel Turbochranged and Low Temperature Apiration 4-Cycle: 50° Voo: 12-Cyclinder Diesel Turbochranged and Low Temperature Americal and Low Temperature Americal and Low Temperature Americal and Castary Components 4-Cycle: 50° Voo: 12-Cyclinder Diesel Turbochranged and Low Temperature Americal and Rating Components • Wild Waght Fan to Flywheel Engine —(m) (140 × 165 (55 1 x 8.50) 3048 (1860) 3012 (6840) Work Wight Fan to Flywheel Engine —(m) (140 × 165 (55 1 x 8.50) 3048 (1860) 3012 (6840) Work Wight Fan to Flywheel Engine —(m) (140 × 165 (55 1 x 8.50) 3048 (1860) 3012 (6840) Work Wight Fan to Flywheel Engine —(m) (160 × 177) 3012 (6840) Work Wight Fan to Flywheel Housing (FH 5031) —(m) (16 + 11) 3100 (2286) 2286) EXHAUST SYSTEM Maximum Back Pressure —(m) (16 + 11) 3100 (2286) 2286) EXHOLTION SYSTEM Maximum Inste Air Restriction —(m) H ₂ O (n H ₂ O) 381 (15) 3112 (6860) Coolant System (Low Temperature Aftercooling Required) · with Diean Filter Element. —mm H ₂ O (n H ₂ O) 381 (15) 32.3 (16) Coolant Filter Element. —mm H ₂ O (n H ₂ O) 381 (15) 32.3 (16) 32.3 (16)	Fan to Flywheel (2 Pump / 2 Lo	oop): 3170314	Engine Critical Parts List (2 P	ump / 2 Loop) :24	.99	
GENERAL ENCINE DATA 4-Cycle; 50° Vec; 12-Cylinder Diesel Trubcharged and Low Temperature Attercooled Aspiration 4-Cycle; 50° Vec; 12-Cylinder Diesel Trubcharged and Low Temperature Attercooled Bore X Stroke	 Fan to Flywheel (Air-to-Air): 	3170341	 Engine Critical Parts List (Air- 	to-Air) :25	48	
Type 4-Cycle Soft Vec: 12-Cylinder Dissel Aspiration 4-Cycle Soft Vec: 12-Cylinder Dissel Bore x Stroke	GENERAL ENGINE DATA					
Appriation Turbectoringed and Low Temperature Attercooled Bore x Stroke ————————————————————————————————————	Туре			4-Cycle; 50° Ve	ee; 12-Cylinder l	Diesel
Attended Attended Deplacement	Aspiration			Turbocharged	and Low Tempe	erature
Bore Stroke —mm x mn (n x in) 140 (156 (5.51 x 6.50) Displacement —mm x mn (n x in) 140 (156 (5.51 x 6.50) Dorpression Ratio —mm x mn (n x in) 140 (15 (16 (16 (16 (16 (16 (16 (16 (16 (16 (16				Aftercooled		
Depletement. — (iffer) iffer 30.00000000000000000000000000000000000	Bore x Stroke			140 x165 (5.51	x 6.50)	
Compression Ratio 14.01 Dry Weight-Fan to Flywheel Engine	Displacement		— (litre) in ³	30.48 (1860)		
Dy Weight-Fan to Fywheel Engine —	Compression Ratio			14.0 : 1	(00.10)	
Wet Weight Part to Flynkeel Engine —	Dry Weight, Fan to Flywheel Engine		— kg (lb)	3012	(6640)	
Moment of ineria of Notaing Components kg + m ² (lbm, +tf ²) 8.7 (206) Center of Gravity from Rear Face of Plywheel Housing (FH 5031) mm (in) 845 (33.3) Center of Gravity Abox Crankbahl Centerline mm (in) 195 (7.7) Maximum Static Loading at Rear Main Bearing kg (b) 950 (2100) ENGINE MOUNTING Maximum Banding Moment at Rear Face of Block N • m (ib • ft) 3100 (2286) EXHAUST SYSTEM Maximum Indake Air Restriction mm Hg (in Hg) 51 (2) AIR INDUCTION SYSTEM Maximum Indake Air Restriction mm H ₂ 0 (in H ₂ O) 381 (15) COOLING SYSTEM (Low Temperature Aftercooling Required) mm H ₂ 0 (in H ₂ O) 381 (15) Coolant Capacity Engine Only mm H ₂ 0 (in H ₂ O) 381 (15) Maximum Pressure Cap mm H ₂ 0 (in H ₂ O) 381 (15) Maximum Coolant Friction Head External to Engine	Wet Weight, Fan to Flywheel Engine		— кд (Ib)	3112	(6860)	
• Vom PV 500 F Windel	Moment of Inertia of Rotating Components		1 2/11 (2)	0.7	(000)	
Center of Gravity Above Crasheshat Centerine — mm (in) 945 (3.3) Center of Gravity Above Crasheshat Centerine — mm (in) 195 (7.7) Maximum Static Loading at Rear Main Bearing — -kg (b) 950 (2100) ENGINE MOUNTING Maximum Bending Moment at Rear Face of Block. — N • m (b • ft) 3100 (2286) EXHAUST SYSTEM Maximum Back Pressure — mm Hg (in Hg) 51 (2) AIR INDUCTION SYSTEM Maximum Intake Air Restriction — mm Hg (in Hg) 635 (25) • with Dirty Filer Element — mm Hg (in Hg) 51 (2) Colant Capacity — Engine Only — Itre (US gal) 79 (21) — Aftercoolera (2 Pump / 2 Loop) — Itre (US gal) 79 (21) — Aftercoolera (2 Pump / 2 Loop) — Itre (US gal) 79 (21) — Aftercoolera (2 Pump / 2 Loop) — Itre (US gal) 79 (21) — Aftercoolera (2 Pump / 2 Loop) — Itre (US gal) 72 (22) Maximum Coadint Friction Head External to Engine — 1500 / 1800 rpm — VC (F) 82 - 95 (80 - 203) Maximum Coadint Friction Head External to Engine <td< td=""><td>with FVV 5050 Flywheel</td><td></td><td> — $kg \bullet m^2 (lb_m \bullet ft^2)$</td><td>8.7</td><td>(206)</td><td></td></td<>	with FVV 5050 Flywheel		— $kg \bullet m^2 (lb_m \bullet ft^2)$	8.7	(206)	
Center of Gravy Adobe Catalogia Centerine ————————————————————————————————————	Center of Gravity from Rear Face of Flywhee	el Housing (FH 5031)	— mm (in)	845	(33.3)	
Maximum State Leading at rear Viain Bearing ————————————————————————————————————	Center of Gravity Above Crankshaft Centeril	ne 	— mm (in)	195	(7.7)	
ENGINE MOUNTING Maximum Bending Moment at Rear Face of Block — N • m (b • ft) 3100 (2286) EXAUST SYSTEM Maximum Back Pressure — mm Hg (in Hg) 51 (2) AIR INDUCTION SYSTEM Maximum Intake Air Restriction — mm H ₂ O (in H ₂ O) 635 (25) • with Dinty Filter Element — mm H ₂ O (in H ₂ O) 381 (15) COOLING SYSTEM (Low Temperature Aftercooling Required) Colant Capacity — Engine Only — mm H ₂ O (in H ₂ O) 381 (15) COLING SYSTEM (Low Temperature Aftercooling Required) Colant Capacity — Engine Only — mm H ₂ O (in H ₂ O) 381 (15) Colant Capacity — Engine Only — mm H ₂ O (in H ₂ O) (21)	Maximum Static Loading at Rear Main Bear	ing	— Kġ (lb)	950	(2100)	
Maximum Bending Moment at Rear Face of Block	ENGINE MOUNTING					
EXHAUST SYSTEM Maximum Back Pressure	Maximum Bending Moment at Rear Face of	of Block	— N • m (lb • ft)	3100	(2286)	
Maximum Back Pressure — mm Hg (in Hg) 51 (2) AIR INDUCTION SYSTEM Maximum Intake Air Restriction • with Dirty Filter Element. — mm H ₂ O (in H ₂ O) 635 (25) owner Display (in the pressure Cap. — mm H ₂ O (in H ₂ O) 635 (25) Coolant Capacity — Engine Only. — itre (US gal) 79 (21) — Aftercoolers (2 Pump / 2 Loop) — litre (US gal) 12 (3.2) Minimum Pressure Cap. — kPa (psi) 69 (10) Jacket Water Circuit Requirements — mm H ₂ O (in H ₂ O) 48 / 69 (7 / 10) Maximum Static Head to Coolant Above Engine Crank Centerline. — m (ft) 14 (46) Standard Thermostat (Modulating) Range — °C (°F) 82 - 95 (180 - 203) Maximum Top Tank Temperature to Aftercooler @ 77 °F. — °C (°F) 49 (120) Maximum Inlet Water Temperature to Aftercooler @ 77 °F. — °C (°F) 43 / 48 (5 / 7) Maximum Tor, Rise Between Engine Air Inlet and Intake Manifold — 1500 / 1800 rpm — °C (°F) 33 / 39 (60 / 70) Maximum Torp. Rise Between Engine Air Inlet and Intake Manifold — 1500 / 1800 rpm — °C (°F) <	EXHAUST SYSTEM					
AIR INDUCTION SYSTEM Maximum Intake Air Restriction • with Dirty Filter Element. mm H ₂ O (in H ₂ O) 635 (25) • with Clean Filter Element. mm H ₂ O (in H ₂ O) 381 (15) COOLING SYSTEM (Low Temperature Aftercooling Required) Coolant Capacity Engine Only litre (US gal) 79 (21) - Aftercoolers (2 Pump / 2 Loop) litre (US gal) 12 (3.2) Minimum Pressure Cap	Maximum Back Pressure		— mm Hg (in Hg)	51	(2)	
Maximum Intake Air Restriction • with Dirty Filter Element	AIR INDUCTION SYSTEM					
• with Dirty Filter Element	Maximum Intake Air Restriction					
• with Clean Filter Element	with Dirty Filter Element		— mm H_2O (in H_2O)	635	(25)	
COOLING SYSTEM (Low Temperature Aftercooling Required) Coolant Capacity — Engine Only — Iitre (US gal) 79 (21) Minimum Pressure Cap — Aftercoolers (2 Pump / 2 Loop) — Iitre (US gal) 12 (3.2) Minimum Pressure Cap — ekPa (psi) 69 (10) Jacket Water Circuit Requirements Maximum Coolant Friction Head External to Engine — 1500 / 1800 rpm — kPa (psi) 48 / 69 (7 / 10) Maximum Static Head of Coolant Above Engine Crank Centerline — m (tt) 14 (46) Standard Thermostat (Modulating) Range — - °C (°F) 82 - 95 (180 - 203) Maximum Top Tank Temperature for Standby / Prime Power — °C (°F) 104 / 100 (220 / 212) Aftercooler Circuit Requirements (2 Pump / 2 Loop Aftercooling) Maximum Inlet Water Temperature to Aftercooler @ 77 °F — °C (°F) 48 (57) Maximum Inlet Water Temperature to Aftercooler @ 77 °F — °C (°F) 65 (150) Maximum Temp. Rise Between Engine Air Inlet and Intake Manifold — 1500 / 1800 rpm — °C (°F) 33 / 39 (60 / 70) Maximum Temp. Rise Between Engine Air Inlet and Intake Manifold — 1500 / 1800 rpm — °C (°F) 102 / 127 (4 / 5)	with Clean Filter Element		— mm H_2O (in H_2O)	381	(15)	
Coolant Capacity — Engine Only	COOLING SYSTEM (Low Tempera	ature Aftercooling R	equired)			
Coolain Copacity — Aftercoolers (2 Pump / 2 Loop) — Intre (US gal) 12 (3.2) Minimum Pressure Cap — kPa (psi) 69 (10) Jacket Water Circuit Requirements — kPa (psi) 69 (10) Maximum Coolant Friction Head External to Engine — 1500 / 1800 rpm — kPa (psi) 48 / 69 (7 / 10) Maximum Static Head of Coolant Above Engine Crank Centerline — m (ft) 14 (46) Standard Thermostat (Modulating) Range — o*C (°F) 82 - 95 (180 - 203) Maximum Top Tank Temperature for Standby / Prime Power — o*C (°F) 104 / 100 (220 / 212) Aftercooler Circuit Requirements (2 Pump / 2 Loop Aftercooling) Maximum Inlet Water Temperature to Aftercooler @ 77 °F. — o*C (°F) 49 (120) Maximum Inlet Water Temperature to Aftercooler @ 77 °F. — o*C (°F) 48 (5 / 7) Maximum Coolant Friction Head External to Engine — 1500 / 1800 rpm — kPa (psi) 35 / 48 (5 / 7) Maximum Temp. Rise Between Engine Air Inlet and Intake Manifold — 1500 / 1800 rpm — w°C (°F) 33 / 39 (60 / 70) Maximum Air Press. Drop from Turbo Alr Outlet to Intake Manifold — 1500 / 1800 rpm — m(in Hg) 102 / 127 (4 / 5) <td>Coolant Capacity — Engine Only</td> <td></td> <td>— litre (LIS gal)</td> <td>70</td> <td>(21)</td> <td></td>	Coolant Capacity — Engine Only		— litre (LIS gal)	70	(21)	
Minimum Pressure CapIntercoder of L1 km p / LCop / Intercoder (L1 km p / LCop	— Aftercoolers (2 F	2umn / 2 I 00n)	— litre (US gal)	12	(3.2)	
Jacket Water Circuit Requirements (15) Maximum Coolant Friction Head External to Engine — 1500 / 1800 rpm	Minimum Pressure Cap	ump / 2 200p/	— kPa (psi)	69	(10)	
Jacket water Curcuit RequirementsMaximum Coolant Friction Head External to Engine $-1500/1800 \text{ rpm}$ $-kPa (psi)$ $48/69$ $(7/10)$ Maximum Static Head of Coolant Above Engine Crank Centerline $-m (ft)$ 14 (46) Standard Thermostat (Modulating) Range $-e^{C} (e^{F})$ $82 \cdot 95$ $(180 \cdot 203)$ Maximum Top Tank Temperature for Standby / Prime Power $-e^{C} (e^{F})$ $82 \cdot 95$ $(180 \cdot 203)$ Maximum Injet Water Temperature to Aftercooler @ 77 °F $-e^{C} (e^{F})$ 49 (120) Maximum Inlet Water Temperature to Aftercooler $-e^{C} (e^{F})$ 49 (120) Maximum Coolant Friction Head External to Engine $-1500/1800 \text{ rpm}$ $-e^{C} (e^{F})$ 49 (120) Maximum Temp. Rise Between Engine Air Inlet and Intake Manifold $-1500/1800 \text{ rpm}$ $-e^{C} (e^{F})$ $33/39$ $(60/70)$ Maximum Air Press. Drop from Turbo Air Outlet to Intake Manifold $-1500/1800 \text{ rpm}$ $-e^{C} (e^{F})$ $33/39$ $(60/70)$ Maximum Oil Temperature $-e^{C} (e^{F})$ $121/127$ $(4/5)$ $(4/5)$ LUBRICATION SYSTEMOil Pressure@ Idle Speed $-e^{C} (e^{F})$ $121/(250)$ Oil Capacity with OP 5133 Oil Pan : High - Low $-e^{C} (e^{F})$ $121/(250)$ (40.7) FUEL SYSTEMType Injection SystemType Injection SystemBosch P8500 LLA Direct InjectionVariant Description to the part of the Dame $e^{C} (e^{O})$					(10)	
Maximum Coolarit Friction Head External to Engine $-1500/1800$ rpm $-kPa$ (psi) $48/69$ $(7/10)$ Maximum Static Head of Coolarit Above Engine Crank Centerline $-m$ (ft) 14 (46) Standard Thermostat (Modulating) Range $-c$ (°F) $82-95$ $(180-203)$ Maximum Top Tank Temperature for Standby / Prime Power $-c$ (°F) $104/100$ $(220/212)$ Aftercooler Circuit Requirements (2 Pump / 2 Loop Aftercooling)Maximum Inlet Water Temperature to Aftercooler @ 77 °F $-c$ (°F) 49 (120) Maximum Inlet Water Temperature to Aftercooler @ $-1500/1800$ rpm $-c$ (°F) $48/69$ $(5/7)$ Maximum Colart Friction Head External to Engine $-1500/1800$ rpm $-c$ (°F) $35/48$ $(5/7)$ Air-to-Air Core RequirementsMaximum Temp. Rise Between Engine Air Inlet and Intake Manifold $-1500/1800$ rpm $-c$ (°F) $33/39$ $(60/70)$ Maximum Air Press. Drop from Turbo Alr Outlet to Intake Manifold $-1500/1800$ rpm $-mm$ (in Hg) $102/127$ $(4/5)$ LUBRICATION SYSTEM 0 c (°F) 121 (250) 250 c (°F) 121 (250) Oil Capacity with OP 5133 Oil Pan : High - Low $-mm$ (in CUS gal) $133 - 114$ $(35 - 30)$ 154 (40.7) FUEL SYSTEMType Injection SystemMaximum Diferent end bio Engine Fuel Data Evel Data	Jacket water Circuit Requirements	Figure 4500 (4000		40 / 00	$(\mathbf{Z} \mid \mathbf{AO})$	
Maximum Netation Static Head of Coolant Adove Engine Crank Centerinfe— — — — — — — — — — — — — — — — — — —	Maximum Coolant Friction Head External to	Engine — 1500 / 1800	rpm — ĸPa (psi)	48 / 69	(7 / 10)	
Standard Thermostat (Woldulating) Range — - C (°F) 52 - 95 (180 - 203) Maximum Top Tank Temperature for Standby / Prime Power. — °C (°F) 104 / 100 (220 / 212) Aftercooler Circuit Requirements (2 Pump / 2 Loop Aftercooling)	Maximum Static Head of Coolant Above Eng	gine Crank Centerline	— m (π)	14	(46)	
Maximum Top Tank Temperature for Standby Prime Power	Standard Thermostat (Modulating) Range		— ^e C (^e F)	82 - 95	(180 - 203)	
Aftercooler Circuit Requirements (2 Pump / 2 Loop Aftercooling) Maximum Inlet Water Temperature to Aftercooler @ 77 °F	Maximum rop rank remperature for Standa	by / Prime Power	— ^e C (^e F)	104 / 100	(220/212)	
Maximum Inlet Water Temperature to Aftercooler @ 77 °F	Aftercooler Circuit Requirements (2 Pum	<u>p / 2 Loop Aftercooling)</u>				
Maximum Inlet Water Temperature to Aftercooler	Maximum Inlet Water Temperature to Afterc	ooler @ 77 °F	— °C (°F)	49	(120)	
Maximum Coolant Friction Head External to Engine — 1500 / 1800 rpm — kPa (psi) 35 / 48 (5 / 7) Air-to-Air Core Requirements Maximum Temp. Rise Between Engine Air Inlet and Intake Manifold — 1500 / 1800 rpm — °C (°F) 33 / 39 (60 / 70) Maximum Air Press. Drop from Turbo Alr Outlet to Intake Manifold — 1500 / 1800 rpm — mm (in Hg) 102 / 127 (4 / 5) LUBRICATION SYSTEM	Maximum Inlet Water Temperature to Afterc	ooler	— °C (°F)	65	(150)	
Air-to-Air Core Requirements Maximum Temp. Rise Between Engine Air Inlet and Intake Manifold — 1500 / 1800 rpm — °C (°F) 33 / 39 (60 / 70) Maximum Air Press. Drop from Turbo Alr Outlet to Intake Manifold — 1500 / 1800 rpm — mm (in Hg) 102 / 127 (4 / 5) LUBRICATION SYSTEM — kPa (psi) 166 (24) @ Governed Speed — kPa (psi) 310 - 386 (45 - 56) Maximum Oil Temperature — o°C (°F) 121 (250) Oil Capacity with OP 5133 Oil Pan : High - Low. — litre (US gal) 133 - 114 (35 - 30) Total System Capacity (Including Bypass Filter) — litre (US gal) 154 (40.7) FUEL SYSTEM — Bosch P8500 LLA Direct Injection (40)	Maximum Coolant Friction Head External to	Engine — 1500 / 1800	rpm — kPa (psi)	35 / 48	(5 / 7)	
Air-to-Air Core Requirements Maximum Temp. Rise Between Engine Air Inlet and Intake Manifold — 1500 / 1800 rpm — °C (°F) 33 / 39 (60 / 70) Maximum Air Press. Drop from Turbo Alr Outlet to Intake Manifold — 1500 / 1800 rpm — mm (in Hg) 102 / 127 (4 / 5) LUBRICATION SYSTEM 0il Pressure @ Idle Speed	Air to Air Core Beguiremente					
Waximum Terrip. Rise Between Engine Air Inter and Intake Manifold — 1500 / 1800 rpm — rc (°F) 337 39 (607 70) Maximum Air Press. Drop from Turbo Alr Outlet to Intake Manifold — 1500 / 1800 rpm — mm (in Hg) 102 / 127 (4 / 5) LUBRICATION SYSTEM Oil Pressure @ Idle Speed @ Governed Speed @ Governed Speed Oil Temperature Oil Temperature Oil Capacity with OP 5133 Oil Pan : High - Low Oil Capacity (Including Bypass Filter) Oil Capacity (Air-to-Air Core Requirements	alat and latelys Manifold	1500 / 1000 mm %C (%E)	22 / 20	(00, 70)	
LUBRICATION SYSTEM Oil Pressure @ Idle Speed	Maximum Air Press. Drop from Turbo Alr O	utlet to Intake Manifold — 15	500 / 1800 rpm - mm (in Hg)	33739 102/127	(60 / 70) (4 / 5)	
Oil Pressure @ Idle Speed	LUBRICATION SYSTEM					
@ Governed Speed	Oil Pressure @ Idle Speed		— kPa (psi)	166	(24)	
Maximum Oil Temperature — °C (°F) 121 (250) Oil Capacity with OP 5133 Oil Pan : High - Low. — litre (US gal) 133 - 114 (35 - 30) Total System Capacity (Including Bypass Filter) — litre (US gal) 154 (40.7) FUEL SYSTEM Type Injection System Bosch P8500 LLA Direct Injection Maximum Distriction at Lift During — with Oleon Field Pan Filter — mm Lla (in Lla) 402 — (4.0)	@ Governed Speed		— kPa (psi)	310 - 386	(45 - 56)	
Oil Capacity with OP 5133 Oil Pan : High - Low — litre (US gal) 133 - 114 (35 - 30) Total System Capacity (Including Bypass Filter) — litre (US gal) 154 (40.7) FUEL SYSTEM Type Injection System Bosch P8500 LLA Direct Injection Maximum Destriction at Life During 402 402	Maximum Oil Temperature		— °C (°F)	121	(250)	
Total System Capacity (Including Bypass Filter) — litre (US gal) 154 (40.7) FUEL SYSTEM Type Injection System Bosch P8500 LLA Direct Injection Nonitarian Destriction of the Direct System 402 (4.0)	Oil Capacity with OP 5133 Oil Pan : High - L	.OW	— litre (US gal)	133 - 114	(35 - 30)	
FUEL SYSTEM Type Injection System	Total System Capacity (Including Bypass Fil	ter)	— litre (US gal)	154	(40.7)	
Type Injection System	FUEL SYSTEM					
Naving Destriction at Life Dump, with Clean Evel Dre Filter, men Lig (in Lin) 400 (4.0)	Type Injection System		Bosch P8500 LLA Direc	t Injection		
- with Dirty Fuel Pre-Filter	Maximum Restriction at Lift Pump — with C — with D	Clean Fuel Pre-Filter Dirty Fuel Pre-Filter	— mm H	Hg (in Hg) 10 Hg (in Hg) 20	02 (4.0 03 (8.0))))

	0 (0/		()
Maximum Allowable Head on Injector Return Line (Consisting of Friction and Static Head)	.— mm Hg (in Hg)	508	(20)
Maximum Fuel Flow to Injection Pumps (Left and Right Banks Combined) 1500 / 1800 rpm	- litre / hr (US gph)	550 / 570	(145 / 150)
Maximum Fuel Inlet Temperature	•°C (°F)	71	(150)
Maximum Return Flow	- litre / hr (US gph)	530 / 550	(140 / 145)

G-DRIVE

6

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement) — volt	24	
Battery Charging System, Negative Ground — ampere	35	
Maximum Allowable Resistance of Cranking Circuit — ohm	0.002	
Minimum Recommended Battery Capacity		
• Cold Soak @ 10 °C (50 °F) and Above — 0°F CCA	1200	
• Cold Soak @ 0 °C to 10 °C (32 °F to 50 °F) — 0°F CCA	1280	
• Cold Soak @ -18 °C to 0 °C (0 °F to 32 °F) — 0°F CCA	1800	
COLD START CAPABILITY		
Minimum Ambient Temperature for Cold Start with 8000 watt Coolant Heater to Rated Speed °C (°F)	-7	(20)
Minimum Ambient Temperature for Unaided Cold Start to Idle Speed P°C (°F)	7	(45)
Minimum Ambient Temperature for NFPA110 Cold Start (90°F Minimum Coolant Temperature)	0	(32)

PERFORMANCE DATA

All data is based on:
• Engine operating with fuel system, water pump, lubricating oil pump, air cleaner and exhaust

silencer; not included are battery charging alternator, fan, and optional driven components.

• Engine operating with fuel corresponding to grade No. 2-D per ASTM D975.

ISO 3046, Part 1, Standard Reference Conditions of:

Barometric Pressure	:	100 kPa (29.53 in Hg)	Air Temperature	:	25 °C (77 °F)
Altitude	:	110 m (361 ft)	Relative Humidity	:	30%
Air Intake Restriction	:	254 mm H_2O (10 in H_2O)	Exhaust Restriction	:	51 mm Hg (2 in Hg)

Steady State Stability Band at any Constant Load	+/- 0.25
Estimated Free Field Sound Pressure Level of a Typical Generator Set;	
Excludes Exhaust Noise; at Rated Load and 7.5 m (24.6 ft); @1500 / 1800 rpm	91 / 93
Exhaust Noise at 1 m Horizontally from Centerline of Exhaust Pipe Outlet Upwards at 45° @1500 / 1800 rpm — dBA	128 / 131

	ć	<u>STANDB`</u> 60 hz		<u>ER</u> 0 hz	6	<u>PRIME</u> 0 hz	POWER 50 hz	
Governed Engine Speed rpm		1800	1	500		1800	1500	
Engine Idle Speed — rpm	70	0 - 900	700) - 900	70	0 - 900	700) - 900
Gross Engine Power Output kW _m (BHP)	1112	(1490)	970	(1300)	1007	(1350)	880	(1180)
Brake Mean Effective Pressure kPa (psi)	2427	(352)	2544	(369)	2199	(319)	2310	(335)
Piston Speedm / s (ft / min)	9.9	(1949)	8.3	(1634)	9.9	(1949)	8.3	(1634)
Friction Horsepower	82	(110)	58	(78)	82	(110)	58	(78)
Engine Jacket Water Flow at Stated Friction Head External to Engine:							1	
• 5 psi Friction Head	17.0	(270)	14.2	(225)	17.0	(270)	14.2	(225)
Maximum Friction Head Maximum Friction Head	16.5	(262)	13.7	(217)	16.5	(262)	13.7	(217)
Engine Data with Dry Type Exhaust Manifold								
Intake Air Flow — litre / s (cfm)	1340	(2840)	1005	(2130)	1250	(2650)	945	(2005)
Exhaust Gas Temperature °C (°F)	525	(975)	575	(1070)	495	(920)	565	(1050)
Exhaust Gas Flow — litre / s (cfm)	3670	(7775)	2980	(6310)	3285	(6960)	2750	(5820)
Air to Fuel Ratio — air : fuel	2	25 : 1	22:1		26.5 : 1		22.6 : 1	
Radiated Heat to Ambient kW _m (BTU / min)	130	(7460)	115	(6410)	115	(6650)	105	(5860)
Heat Rejection to Jacket Water Coolant kW _m (BTU / min)	365	(20880)	335	(18940)	340	(19350)	320	(18150)
Heat Rejection to Exhaust Heat Rejection to Exhaust	740	(42130)	670	(38050)	660	(37640)	600	(33990)
Engine Aftercooler Data								
Heat Rejection to Aftercooler kW _m (BTU / min)	270	(15420)	170	(9560)	215	(12120)	145	(8240)
Aftercooler Water Flow at Stated Friction Head External to Engine:		. ,				. ,		. ,
• 2 psi Friction Head — litre / s (US gpm)	5.4	(85)	4.5	(71)	5.4	(85)	4.5	(71)
Maximum Friction Head — litre / s (US gpm)	5.0	(80)	4.4	(68)	5.0	(80)	4.4	(68)
Charge Air Flow kg/min (lb / min)	93	(205)	70	(154)	87	(192)	66	(145)

1859

202

(73)

(395)

1534

177

(60)

(350)

1666

183

N.A. - Data is Not Available

N/A - Not Applicable to this Engine

Turbocharger Compressor Outlet Pressure mm Hg (in / Hg)

Turbocharger Compressor Outlet Temperature...... - °C (°F)

TBD - To Be Determined

ENGINE MODEL : QST30-G4 DATA SHEET : DS-5160 DATE : 8May00

(66)

(360)

1374

165

(54)

(330)