

ژنراتور : Stamford

موتور دیزل : Cummins

Standby		Prime		دیزل ژنراتور
KVA	KW	KVA	KW	
120	96	110	87	



موتور دیزل		
Manufacturer	Cummins	تولید کننده
Type	6BTA5.9-G2	تیپ
Number of cylinders	6	تعداد سیلندر ها
Cylinder arrangement	Vertical in-line	آرایش سیلندر ها
Displacement , Liters	5.88	جا به جایی
Bore × Stroke , mm	102 X 120	قطر سیلندر × کورس پیستون
Compression Ratio	16.5 : 1	نسبت تراکم
Aspiration	Turbocharged	سیستم تنفس
Gross engine power, kWb	87	قدرت نافالص موتور
Combustion air flow, L/sec	205	جریان هوای امتراق
Exhaust gas temp.(after turbo) , °C	550	دمای گاز فروجی از اگزوز
Exhaust gas flow (after turbo) , L/sec	205	جریان هوای فروجی از اگزوز
Mean Piston Speed , m/s	7.2	میانگین سرعت پیستون

ژنراتور		
Manufacturer	Stamford	تولید کننده
Type	UCI274C	تیپ
Standby power at rated voltage ,KVA	100	توان standby در ولتاژ نامی
Efficiency, %	90.7	راندمان
Power factor	0.8	ضریب قدرت
Phase	3	فاز
Frequency, Hz	50	فرکانس
Speed, Rpm	1500	سرعت
Voltage, V	380	ولتاژ
Stator windings	Double layer concentric	سیم پیچ استاتور
Voltage Regulation, %	± 1.0	تنظیم ولتاژ
Over speed, Rpm	2250	مداکثر سرعت مجاز
Short circuit ratio	1/Xd	جریان اتصال کوتاه
Insulation class	H	کلاس عایق
Protection class	IP23	کلاس حفاظتی
Cooling air volume,m ³ / sec	0.514	دبی هوای فنک کننده



6BTA5.9-G2 Advantage Data Sheet

Cummins Engine Company, Inc. Columbus, Indiana 47201

Curve Number: FR-90766	Engine Critical Parts List: CPL 2893	Date: 19Jun00
Displacement : 5.88 litre (359.0 in³)	Bore : 102 mm (4.02 in.)	Stroke : 120 mm (4.72 in.)
No. of Cylinders : 6	Aspiration : Turbocharged and Aftercooled	

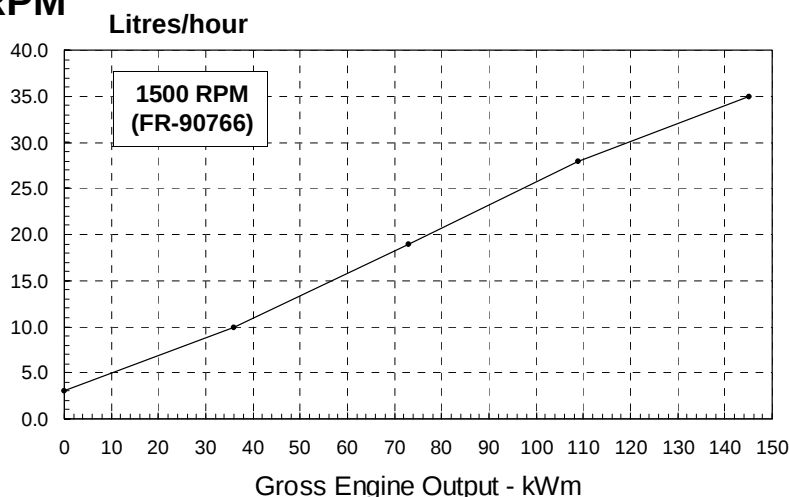
•• PRELIMINARY ••

Emergency Standby Ratings for application in Corporate Generator Sets Only

Engine Speed RPM	Standby Power	
	kWm	BHP
1500	145	195
1800	164	220

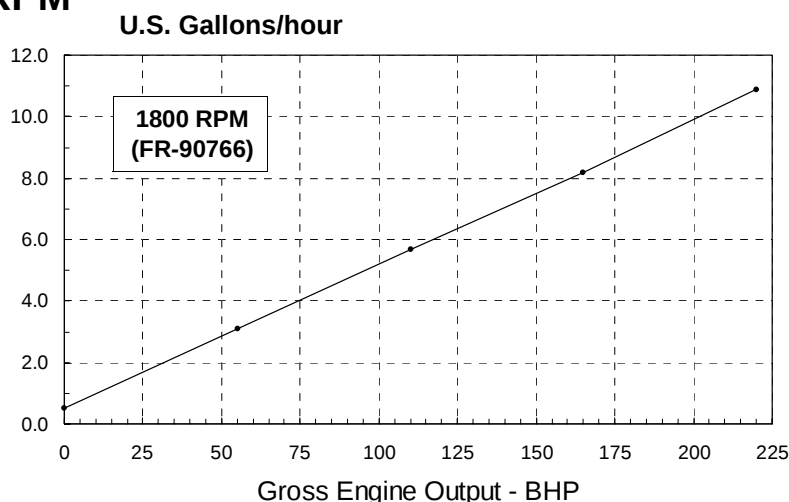
Engine Performance Data @ 1500 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm·h	lb/ BHP·h	litre/ hour	U.S. Gal/ hour
STANDBY POWER						
100	145	195	0.209	0.343	35	9.3
75	109	146	0.211	0.346	27	7.1
50	73	98	0.217	0.365	19	4.9
25	36	49	0.233	0.382	10	2.6



Engine Performance Data @ 1800 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm·h	lb/ BHP·h	litre/ hour	U.S. Gal/ hour
STANDBY POWER						
100	164	220	0.213	0.350	41	10.9
75	123	165	0.215	0.353	31	8.2
50	82	110	0.226	0.371	22	5.7
25	41	55	0.246	0.404	12	3.1



CONVERSIONS: (Litres = U.S. Gal x 3.785) (Engine kWm = BHP x 0.746) (U.S. Gal = Litres x 0.2642) (Engine BHP = Engine kWm x 1.34)

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.



6BTA5.9-G2 Advantage Data Sheet

Cummins Engine Company, Inc. Columbus, Indiana 47201

•• PRELIMINARY ••

GENERAL ENGINE DATA

Type.....	4-Cycle; In-line; 6-Cylinder Diesel	
Aspiration.....	Turbocharged and Aftercooled	
Bore x Stroke	4.02 x 4.72 (102 x 120)	
Displacement	359 (5.88)	
Compression Ratio	16.5 : 1	
Dry Weight		
Fan to Flywheel Engine	— lb (kg)	903 (411)
Wet Weight		
Fan to Flywheel Engine	— lb (kg)	958 (435)
Moment of Inertia of Rotating Components		
• with FW 9420 Flywheel	— lb _m • ft ² (kg • m ²)	22.9 (0.97)
Center of Gravity from Rear Face of Flywheel Housing	— in (mm)	21.4 (544)
Center of Gravity Above Crankshaft Centerline.....	— in (mm)	6.1 (155)
Maximum Static Loading at Rear Main Bearing.....	— lb (kg)	N.A.

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Block.....	— lb • ft (N • m)	1000 (1356)
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EXHAUST SYSTEM

Maximum Back Pressure.....	— in Hg (mm Hg)	3 (76)
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AIR INDUCTION SYSTEM

Maximum Intake Air Restriction		
• with Dirty Filter Element	— in H ₂ O (mm H ₂ O)	25 (635)
• with Normal Duty Air Cleaner and Clean Filter Element.....	— in H ₂ O (mm H ₂ O)	10 (254)
• with Heavy Duty Air Cleaner and Clean Filter Element	— in H ₂ O (mm H ₂ O)	15 (381)

COOLING SYSTEM

Coolant Capacity — Engine Only	— US gal (liter)	2.6 (9.9)
Maximum Coolant Friction Head External to Engine		
— 1800 rpm.....	— psi (kPa)	5 (35)
— 1500 rpm.....	— psi (kPa)	4 (28)
Maximum Static Head of Coolant Above Engine Crank Centerline.....	— ft (m)	46 (14)
Standard Thermostat (Modulating) Range	— °F (°C)	180 - 203 (82 - 95)
Minimum Pressure Cap.....	— psi (kPa)	10 (69)
Maximum Top Tank Temperature	— °F (°C)	230 (110)

LUBRICATION SYSTEM

Oil Pressure @ Idle Speed	— psi (kPa)	30 (207)
@ Governed Speed.....	— psi (kPa)	50 (345)
Maximum Oil Temperature	— °F (°C)	250 (121)
Oil Capacity with OP 9006 Oil Pan : High - Low.....	— US gal (liter)	3.8 - 3.3 (14.2 - 12.3)
Total System Capacity (Including Full Flow Filter).....	— US gal (liter)	4.3 (16.4)
Angularity of OP 9006 Oil Pan		
— Front Down.....		40°
— Front Up.....		40°
— Side to Side		40°

FUEL SYSTEM

Type Injection System.....	Stanadyne DB4 Direct In-jection	
Maximum Restriction at Lift Pump.....	— in Hg (mm Hg)	4 (102)
Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head).....	— in Hg (mm Hg)	20 (508)
Maximum Fuel Flow to Injection Pump	— US gph (liter / hr)	8 (30)

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement).....	— volt	12	24
Battery Charging System, Negative Ground.....	— ampere	63	40
Maximum Allowable Resistance of Cranking Circuit.....	— ohm	0.00075	0.002
Minimum Recommended Battery Capacity			
• Cold Soak @ 10 °F (-12 °C) and Above	— 0°F CCA	800	400



6BTA5.9-G2 Advantage Data Sheet

Cummins Engine Company, Inc. Columbus, Indiana 47201

COLD START CAPABILITY

Minimum Ambient Temperature for Aided (with Coolant Heater) Cold Start within 10 seconds	— °F (°C)	50	(10)
Minimum Ambient Temperature for Unaided Cold Start	— °F (°C)	10	(-12)

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%

Steady State Stability Band at any Constant Load	— %	+/- 0.50
Estimated Free Field Sound Pressure Level of a Typical Generator Set; Excludes Exhaust Noise; at Rated Load and 7.5 m (24.6 ft); 1800 rpm / 1500 rpm.....	— dBA	N.A.
Exhaust Noise at 1 m Horizontally from Centerline of Exhaust Pipe Outlet Upwards at 45°	— dBA	N.A.

Governed Engine Speed	— rpm
Engine Idle Speed	— rpm
Gross Engine Power Output.....	— BHP (kW _m)
Brake Mean Effective Pressure.....	— psi (kPa)
Piston Speed	— ft / min (m / s)
Friction Horsepower	— HP (kW _m)
Engine Water Flow at Stated Friction Head External to Engine:	
• 1 psi Friction Head	— US gpm (liter / s)
• Maximum Friction Head.....	— US gpm (liter / s)

Engine Data with Dry Type Exhaust Manifold

Intake Air Flow	— cfm (liter / s)
Exhaust Gas Temperature	— °F (°C)
Exhaust Gas Flow	— cfm (liter / s)
Air to Fuel Ratio.....	— air : fuel
Radiated Heat to Ambient	— BTU / min (kW _m)
Heat Rejection to Coolant.....	— BTU / min (kW _m)
Heat Rejection to Exhaust	— BTU / min (kW _m)

STANDBY POWER			
1800		1500	
950 - 1150		950 - 1150	
220	(164)	195	(145)
269	(1857)	282	(1945)
1416	(7.2)	1180	(6.0)
22	(16.4)	17	(12.7)
38	(2.4)	32	(2.0)
30	(1.9)	24	(1.5)
434	(205)	321	(151)
1022	(550)	1096	(591)
1137	(537)	892	(421)
24 : 1		20.7 : 1	
1445	(25.4)	1235	(21.7)
3945	(69.3)	3800	(66.8)
8320	(146.1)	6770	(118.9)

CUMMINS ENGINE COMPANY, INC.

Columbus, Indiana 47202-3005

ENGINE MODEL : 6BTA5.9-G2
DATA SHEET : DS-90766
DATE : 19Jun00
CURVE NO. : FR-90766

N.A. - Data is Not Available
N/A - Not Applicable to this Engine
TBD - To Be Determined

•• PRELIMINARY ••



6BTA5.9-G2 Advantage Emission Sheet

Cummins Engine Company, Inc. Columbus, Indiana 47201

Curve Number: FR-90766	Engine Critical Parts List: CPL 2893	Date: 19Jun00
Displacement : 5.88 litre (359.0 in³)	Bore : 102 mm (4.02 in.)	Stroke : 120 mm (4.72 in.)
No. of Cylinders : 6	Aspiration : Turbocharged and Aftercooled	

•• PRELIMINARY ••

Emergency Standby Ratings for application in Corporate Generator Sets Only

Engine Speed RPM	Standby Power	
	kWm	BHP
1500	145	195
1800	164	220

Typical Exhaust Emissions @ 1500 RPM

Component	Standby Power		
	g/BHP-h	mg/m ³	PPM
HC (Total Unburned Hydrocarbons)	0.14	N.A.	N.A.
NOx (Oxides of Nitrogen as NO ₂)	7.7	N.A.	N.A.
CO (Carbon Monoxide)	3.0	N.A.	N.A.
PM (Particulate Matter)	0.59	N.A.	N.A.
SO ₂ (Sulfur Dioxide)	0.59	N.A.	N.A.

Typical Exhaust Emissions @ 1800 RPM

Component	Standby Power		
	g/BHP-h	mg/m ³	PPM
HC (Total Unburned Hydrocarbons)	0.11	N.A.	N.A.
NOx (Oxides of Nitrogen as NO ₂)	7.1	N.A.	N.A.
CO (Carbon Monoxide)	3.1	N.A.	N.A.
PM (Particulate Matter)	0.75	N.A.	N.A.
SO ₂ (Sulfur Dioxide)	0.60	N.A.	N.A.

NOTE: mg/m³ and PPM numbers are corrected to 5% O₂ content.

Data was recorded during steady state rated engine speed (± 25 RPM) with full load (± 2%). Pressures, temperatures, and emission rates were stabilized.

Fuel Specification: ASTM D975 No. 2-D diesel fuel with 0.2% sulfur content (by weight) and 42-50 cetane number.

Fuel Temperature: 99° F ± 9° (at fuel pump inlet)

Intake Air Temperature: 77° F ± 9°

Barometric Pressure: 29.6 in. Hg ± 1 in. Hg

Humidity: NOx measurement corrected to 75 grains H₂O/lb dry air

The HC, NOx, and CO emissions data tabulated here were taken from a single engine under the test conditions shown above. Data for the other components are estimates. This data is subject to instrumentation, measurement, and engine-to-engine variability. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels. Specifications May Change Without Notice.

UCI274C

WINDING 311

CONTROL SYSTEM	SEPARATELY EXCITED BY P.M.G.		
A.V.R.	MX321	MX341	
VOLTAGE REGULATION	± 0.5 %	± 1.0 %	With 4% ENGINE GOVERNING
SUSTAINED SHORT CIRCUIT	REFER TO SHORT CIRCUIT DECREMENT CURVES (page 7)		

CONTROL SYSTEM	SELF EXCITED			
A.V.R.	SX460	SX440	SX421	
VOLTAGE REGULATION	± 1.5 %	± 1.0 %	± 0.5 %	With 4% ENGINE GOVERNING
SUSTAINED SHORT CIRCUIT	SERIES 4 CONTROL DOES NOT SUSTAIN A SHORT CIRCUIT CURRENT			

INSULATION SYSTEM	CLASS H							
PROTECTION	IP23							
RATED POWER FACTOR	0.8							
STATOR WINDING	DOUBLE LAYER CONCENTRIC							
WINDING PITCH	TWO THIRDS							
WINDING LEADS	12							
STATOR WDG. RESISTANCE	0.059 Ohms PER PHASE AT 22°C SERIES STAR CONNECTED							
ROTOR WDG. RESISTANCE	1.12 Ohms at 22°C							
R.F.I. SUPPRESSION	BS EN 61000-6-2 & BS EN 61000-6-4,VDE 0875G, VDE 0875N. refer to factory for others							
WAVEFORM DISTORTION	NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%							
MAXIMUM OVERSPEED	2250 Rev/Min							
BEARING DRIVE END	BALL. 6315-2RS (ISO)							
BEARING NON-DRIVE END	BALL. 6310-2RS (ISO)							
	1 BEARING				2 BEARING			
WEIGHT COMP. GENERATOR	406 kg				420 kg			
WEIGHT WOUND STATOR	131 kg				131 kg			
WEIGHT WOUND ROTOR	133.78 kg				122.82 kg			
WR² INERTIA	1.0288 kgm²				0.9781 kgm²			
SHIPPING WEIGHTS in a crate	439 kg				452 kg			
PACKING CRATE SIZE	105 x 67 x 103(cm)				105 x 67 x 103(cm)			
	50 Hz				60 Hz			
TELEPHONE INTERFERENCE	THF<2%				TIF<50			
COOLING AIR	0.514 m³/sec 1090 cfm				0.617 m³/sec 1308 cfm			
VOLTAGE SERIES STAR	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
VOLTAGE PARALLEL STAR	190/110	200/115	208/120	220/127	208/120	220/127	230/133	240/138
VOLTAGE SERIES DELTA	220/110	230/115	240/120	254/127	240/120	254/127	266/133	277/138
kVA BASE RATING FOR REACTANCE VALUES	100	100	100	n/a	112.5	117.5	117.5	125
Xd DIR. AXIS SYNCHRONOUS	2.45	2.21	2.05	-	2.76	2.58	2.36	2.30
X'd DIR. AXIS TRANSIENT	0.20	0.18	0.17	-	0.24	0.22	0.21	0.20
X''d DIR. AXIS SUBTRANSIENT	0.14	0.13	0.12	-	0.16	0.15	0.14	0.13
Xq QUAD. AXIS REACTANCE	1.59	1.43	1.33	-	1.58	1.48	1.35	1.32
X''q QUAD. AXIS SUBTRANSIENT	0.18	0.16	0.15	-	0.23	0.21	0.20	0.19
XL LEAKAGE REACTANCE	0.07	0.06	0.06	-	0.08	0.07	0.07	0.07
X2 NEGATIVE SEQUENCE	0.16	0.14	0.13	-	0.19	0.18	0.16	0.16
Xo ZERO SEQUENCE	0.10	0.09	0.08	-	0.12	0.11	0.10	0.10
REACTANCES ARE SATURATED		VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED						
T'd TRANSIENT TIME CONST.	0.028 s							
T''d SUB-TRANSTIME CONST.	0.001 s							
T'do O.C. FIELD TIME CONST.	0.8 s							
Ta ARMATURE TIME CONST.	0.007 s							
SHORT CIRCUIT RATIO	1/Xd							

UCI274C

Winding 311 / 0.8 Power Factor

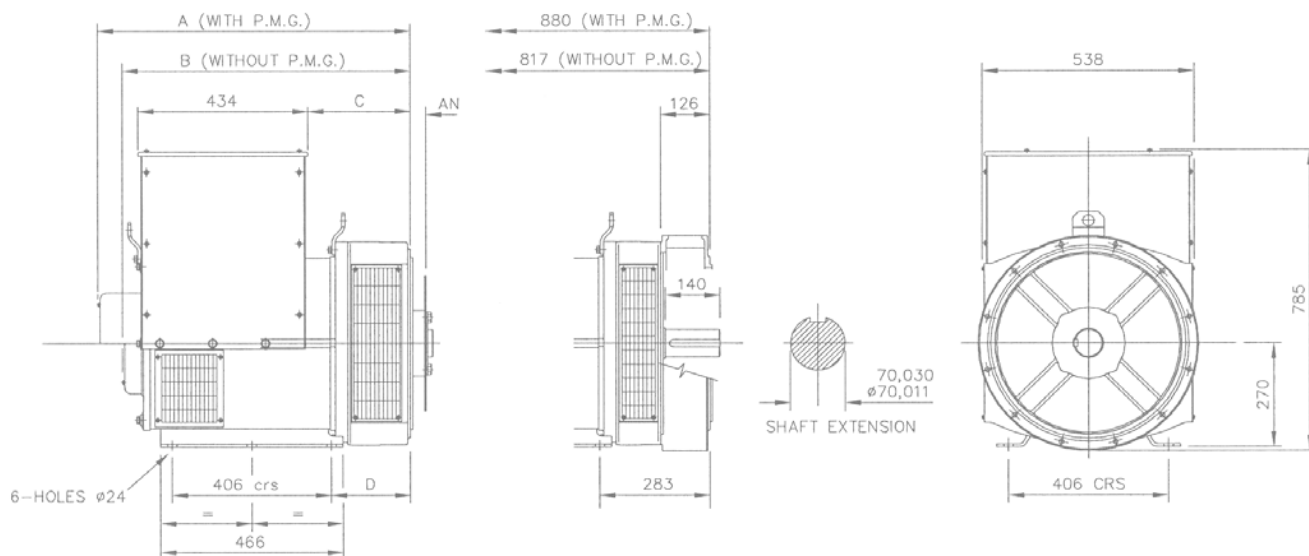


RATINGS

Class - Temp Rise		Cont. F - 105/40°C				Cont. H - 125/40°C				Standby - 150/40°C				Standby - 163/27°C			
50 Hz	Series Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
	Parallel Star (V)	190	200	208	220	190	200	208	220	190	200	208	220	190	200	208	220
	Series Delta (V)	220	230	240	254	220	230	240	254	220	230	240	254	220	230	240	254
	kVA	84.0	84.0	84.0	n/a	100.0	100.0	100.0	n/a	106.0	106.0	106.0	n/a	110.0	110.0	110.0	n/a
	kW	67.2	67.2	67.2	n/a	80.0	80.0	80.0	n/a	84.8	84.8	84.8	n/a	88.0	88.0	88.0	n/a
	Efficiency (%)	90.7	91.1	91.3	n/a	89.8	90.3	90.6	n/a	89.5	90.0	90.4	n/a	89.2	89.8	90.2	n/a
	kW Input	74.1	73.8	73.6	n/a	89.1	88.6	88.3	n/a	94.7	94.2	93.8	n/a	98.7	98.0	97.6	n/a

60 Hz	Series Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	Parallel Star (V)	208	220	230	240	208	220	230	240	208	220	230	240	208	220	230	240
	Series Delta (V)	240	254	266	277	240	254	266	277	240	254	266	277	240	254	266	277
	kVA	97.5	106.3	106.3	112.5	112.5	117.5	117.5	125.0	116.3	125.0	125.0	132.5	120.0	127.5	127.5	137.5
	kW	78.0	85.0	85.0	90.0	90.0	94.0	94.0	100.0	93.0	100.0	100.0	106.0	96.0	102.0	102.0	110.0
	Efficiency (%)	90.9	91.0	91.4	91.5	90.2	90.6	91.0	91.1	90.0	90.2	90.7	90.8	89.8	90.1	90.6	90.6
	kW Input	85.8	93.5	93.0	98.4	99.8	103.8	103.3	109.8	103.4	110.9	110.3	116.7	106.9	113.2	112.6	121.4

DIMENSIONS



SINGLE BEARING ADAPTORS				
ADAPTOR	A	B	C	D
SAE 1	813,3	750,3	274,3	216,3
SAE 2	799	736	260	202
SAE 3	799	736	260	202

COUPLING DISCS	
DISC	AN
SAE 10	53,98
SAE 11,5	39,68
SAE 14	25,40