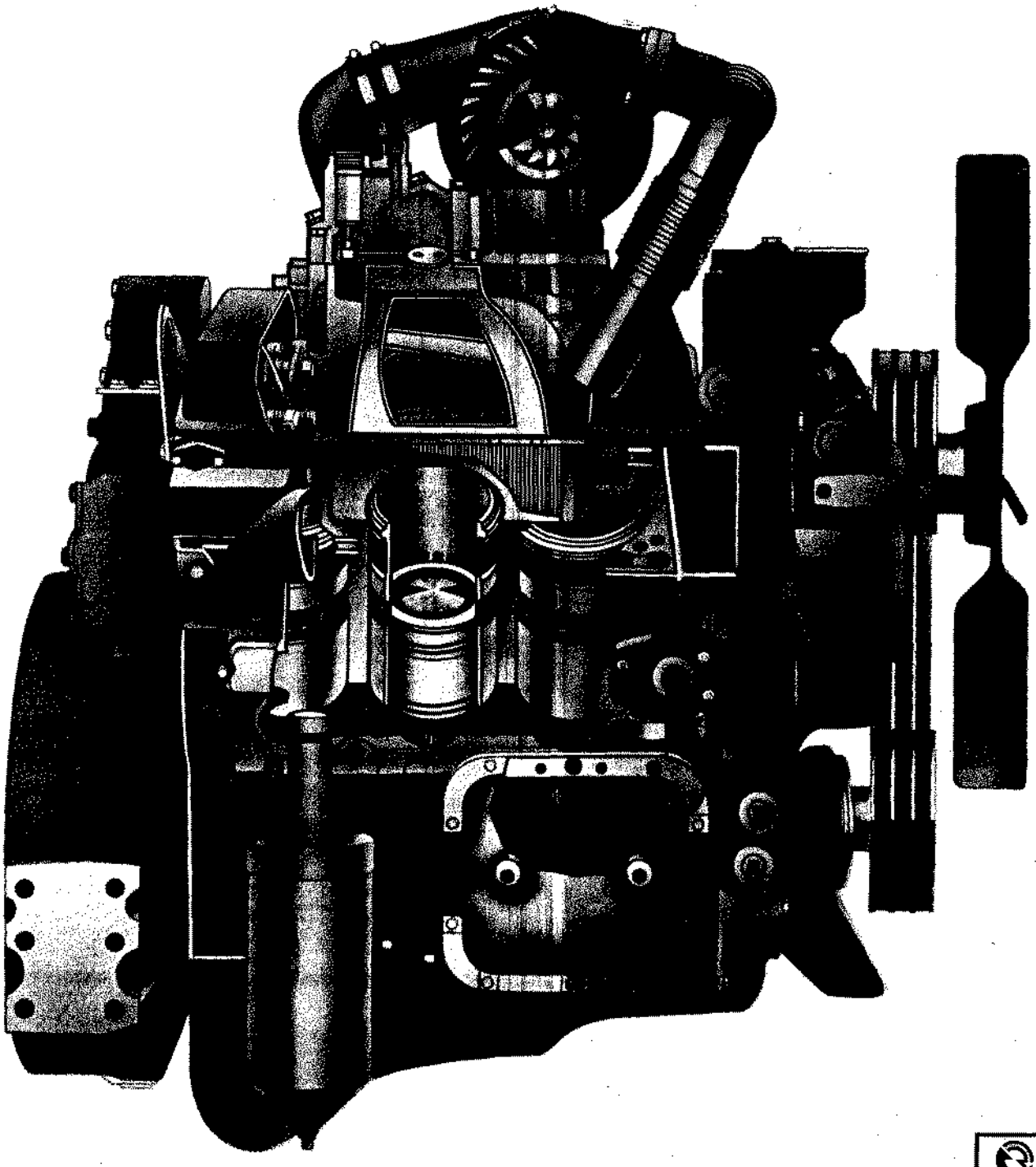
Forward Plan 71&92



Detroit Diesel Allison

GM

Binder No. 109

Forward Plan 71 & 92

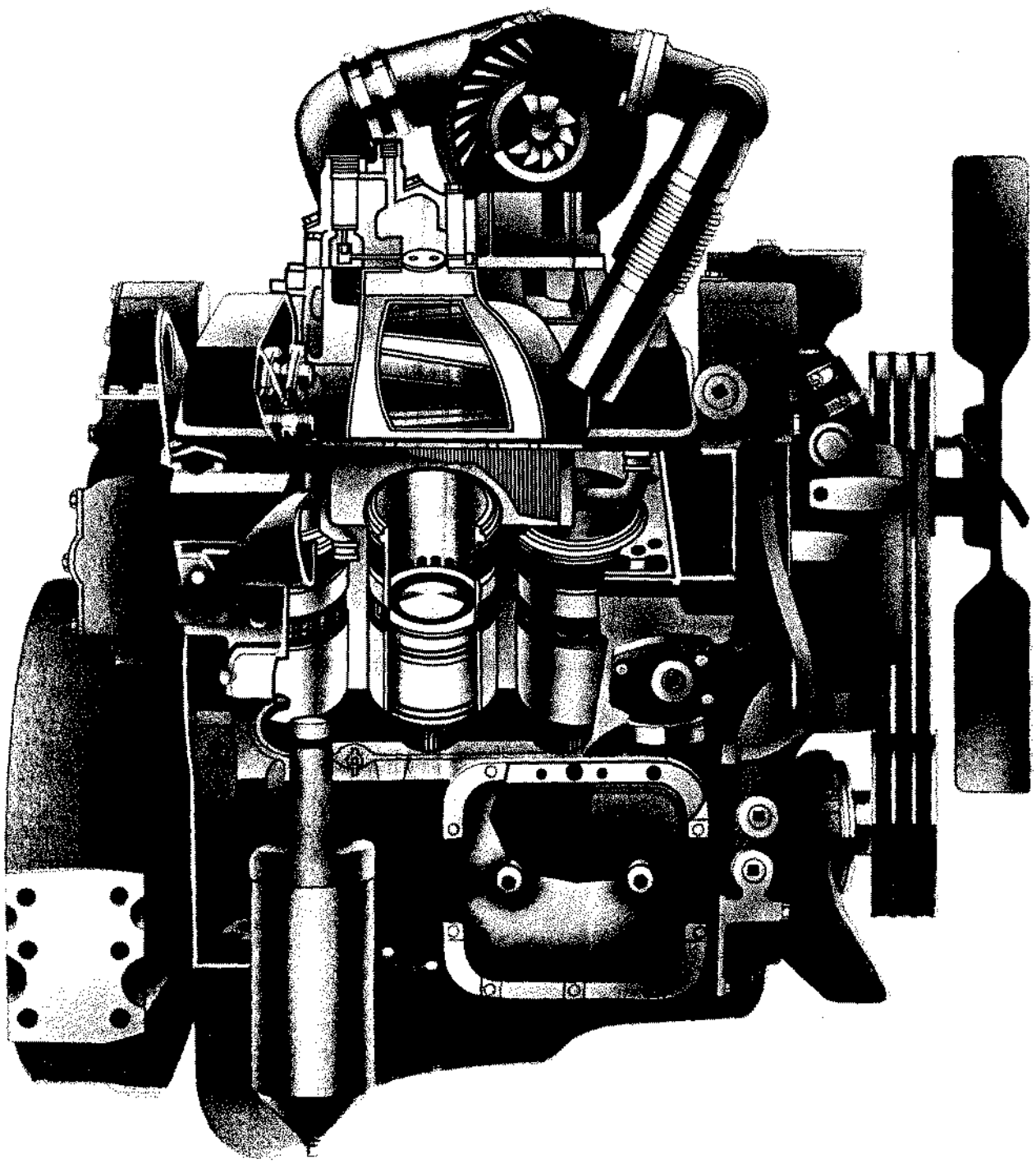
This Forward Plan 71 & 92 Application Guide has been prepared for you, the key decision maker, the OEM.

Its purpose is to demonstrate Detroit Diesel Allison's commitment to product design advancement.

As additional information of this subject becomes available, we will send it to you. So that this will be possible, please fill out the card below and drop it in the mail.

(PLEASE DETACH AND MAIL)

Forward Plan 71&92



Detroit Diesel Allison

GM

Forward Plan 71&92

Forward Plan Series 71 and 92... New Standards of Performance and Fuel Efficiency

As a leading producer of diesel engines for construction and industrial equipment for more than 45 years, Detroit Diesel Allison is keenly aware of the changing needs in your industry. In today's tough business climate, users are looking for more durable equipment—more horsepower with greater fuel efficiency—lower life cycle costs—a greater return on investment.

To help you meet these demands, Detroit Diesel Allison has launched a wide-ranging program to introduce innovative design technology to Series 71 and 92 engines—technology that establishes new standards of performance and fuel efficiency. With ratings ranging from approximately 150 to 1000 horsepower, these state-of-the-art diesels will meet a large share of your future power needs.

In addition to significant improvements in power output and fuel economy, you can depend on the new Forward Plan engines to run longer between overhauls and keep maintenance costs at a minimum. In short, they're engines that can help sell your products in the years ahead. And the people of Detroit Diesel Allison are ready to work closely with you in making these engines a part of your current and future product plans.

Proven Design Principle

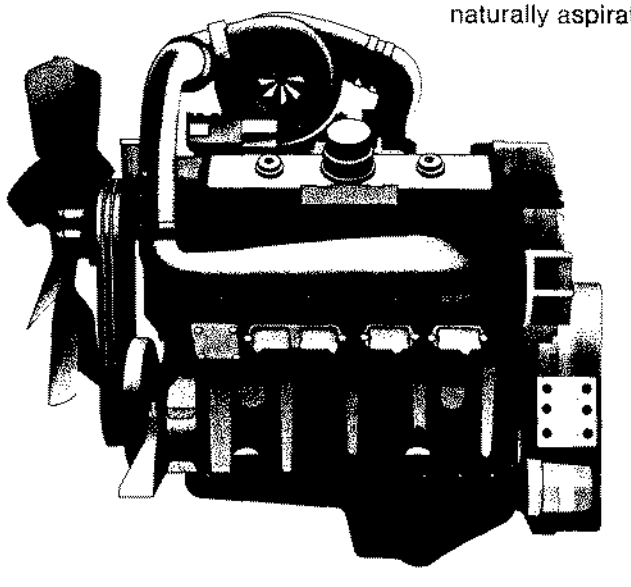
Both 71 and 92 Series engines are built on the same proven design principle. The Series designation refers to cubic inch displacement per cylinder—71 and 92 cubic inches respectively. With millions of Series 71 and 92 engines in use, parts and service are available almost anywhere in the world. Diesel mechanics everywhere are familiar with them.

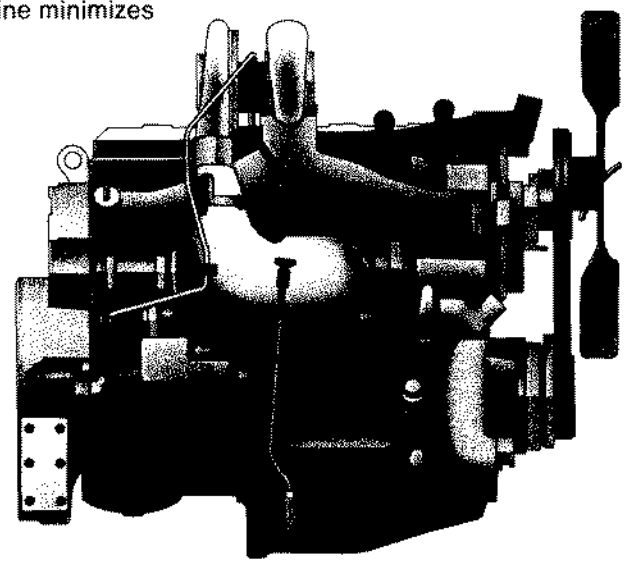
Lower Engineering Costs

Selecting a Forward Plan model to replace an existing Detroit Diesel naturally aspirated engine minimizes the cost resulting from major design change. You can gain the performance and efficiency needed to meet the demands of the future and stay with the proven Detroit Diesel design.

If you already use a Detroit Diesel turbocharged engine, you have the option of increasing your power or maintaining the current level with less fuel input from smaller injectors.

The thousands of accessories developed over the years for Series 71 and 92 engines are still available—this gives engineers a great deal of installation flexibility. Associated with this are the mounts, radiators, drive systems and other components you have developed for the 71s and 92s—the vast majority of these items are adaptable to the new Forward Plan engines.





Forward Plan 71&92

Reliability and Durability Improvements Already in Place

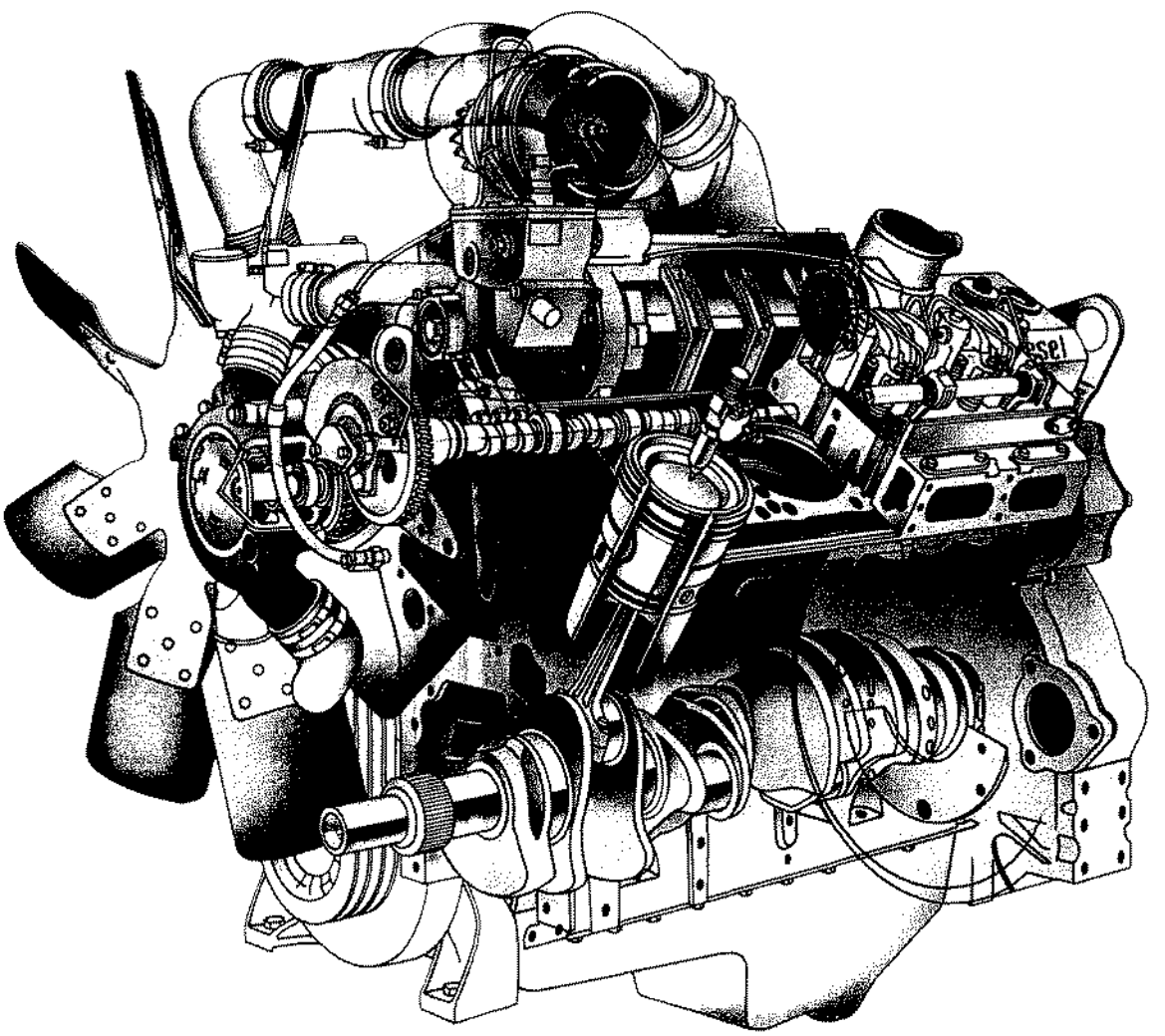
The Series 71 and 92 engines currently in production are tougher, more reliable, more productive than ever before. This has been accomplished through the application of new design technology, new manufacturing techniques and high quality control standards.

Component improvements which significantly extend life-to-overhaul include piston fire ring, cam and crankshaft, cylinder block and head, liner seal ring, blower drive system and water pump.

The turbocharged engines being built today deliver 14 to 25 percent more power than their naturally aspirated counterparts while showing a brake specific fuel consumption (BSFC) improvement of up to 10%. Turbocharging also provides up to 11% better high altitude performance and noise levels are reduced by 20 to 30%.

A Commitment To Build Even Better Engines

The Forward Plan for Series 71 and 92 engines is a commitment to building *even better* engines in the years ahead—efficient engines with improved power-to-weight ratios that will provide sales benefits for both you and Detroit Diesel Allison.

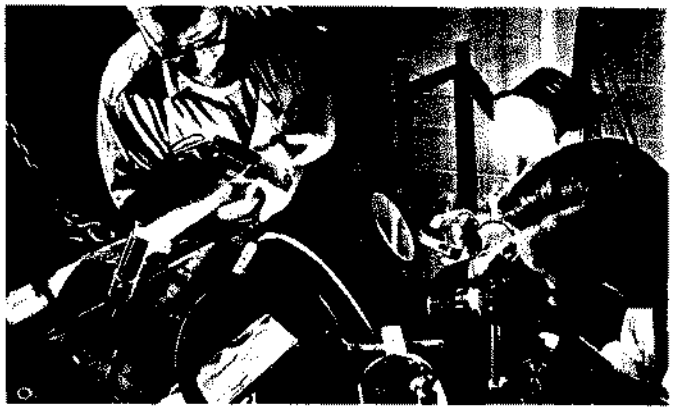


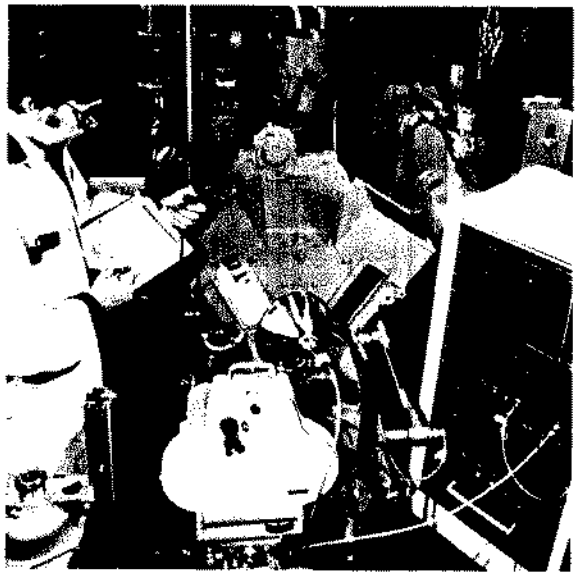
Development Capability

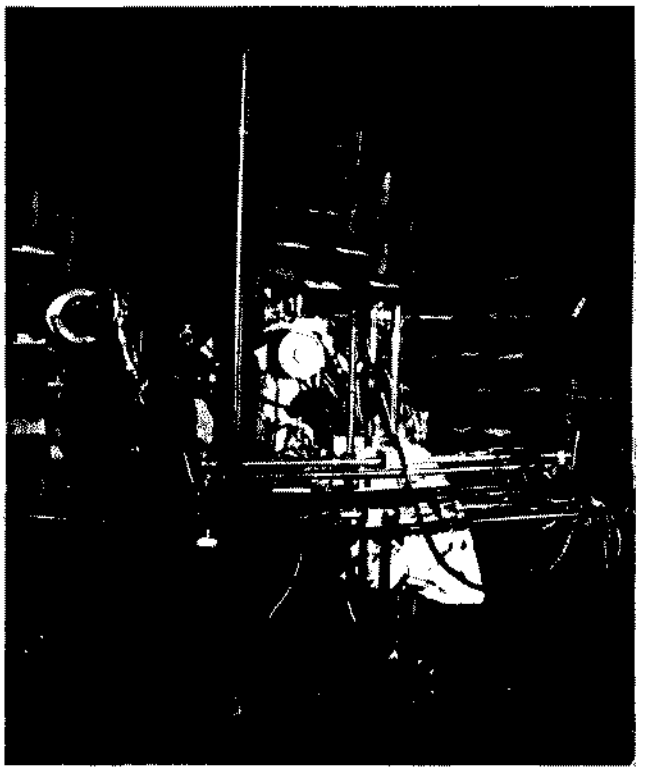
Detroit Diesel Allison is well-positioned to handle the Forward Plan commitment. The research and engineering staff, working in the most complete and modern engine development facilities in the industry, was able to carry out extensive studies of air flow and combustion processes. This led to the development of advanced component designs and fuel-saving innovations.

In addition, DDA builds gas turbine engines and a wide variety of heavy-duty automatic transmissions as well as diesel engines. The advantage to DDA and its customers is that new technology in materials and manufacturing techniques can be transferred between the various power products to insure state-of-the-art progress in product development. As a Division of General Motors, DDA is also in a position to draw upon the technical expertise of the entire Corporation.

It's also important to mention DDA's *team concept* for product development. Every new program has input from engineering, manufacturing, quality control, sales and service. This team effort helps produce a quality product for specific market needs. It also helps in producing an efficient, dependable product that's easy to service.







Forward Plan 71&92

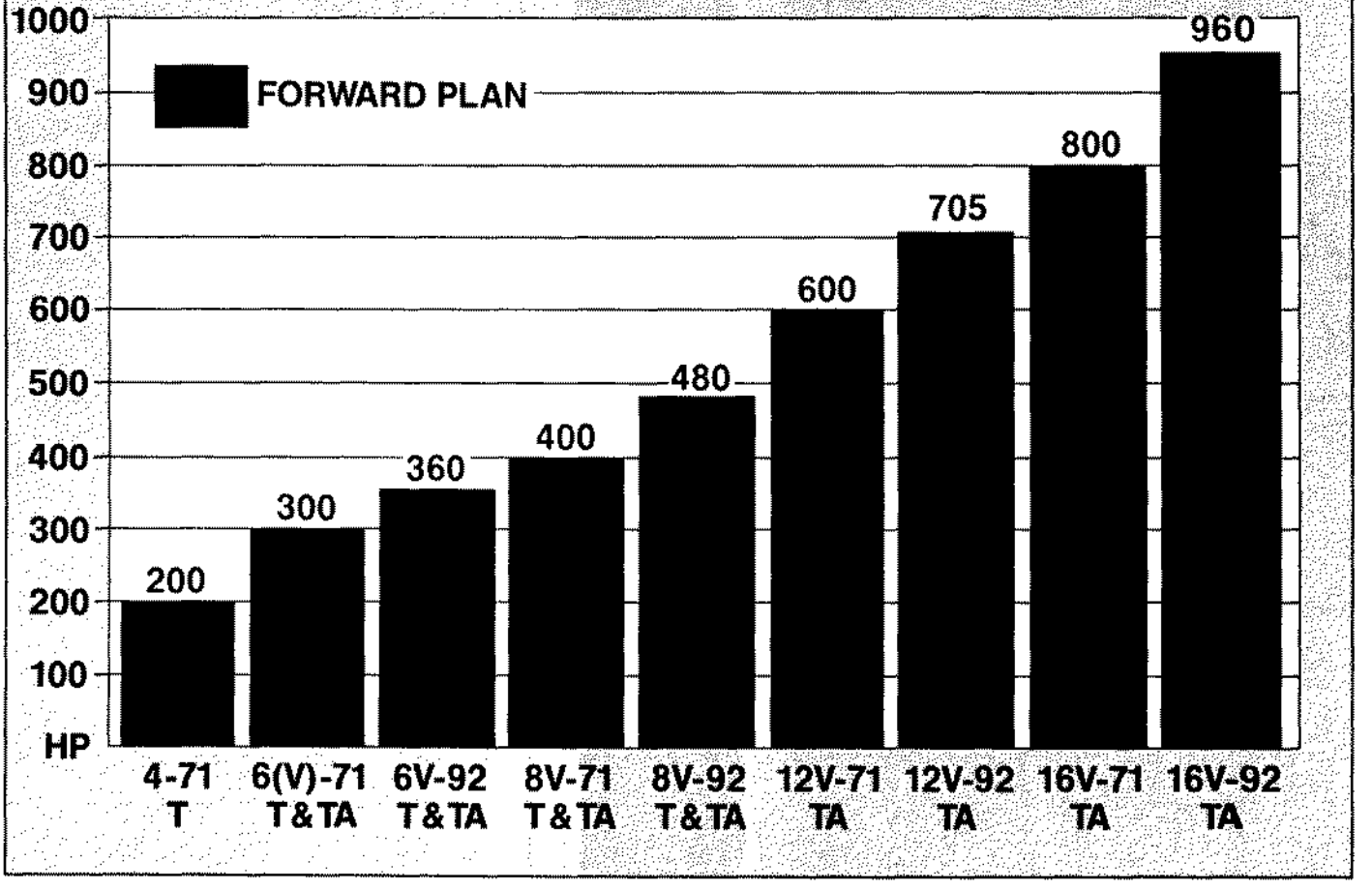
A Complete Line of Engines To Meet Your Power Needs

The Forward Plan includes turbocharged (T) and turbocharged aftercooled (TA) engines from 4 to 16 cylinders with ratings ranging from approximately 150 to 1000 horsepower. Power ratings are well integrated between the two Series. There is also some overlap in ratings which gives greater flexibility in engine selection.

The advantages of the Forward Plan are such that we plan a gradual phasing out of older design turbo configurations. The Forward Plan engines will be phased into production throughout 1984 with the first models becoming available in the second quarter.

HORSEPOWER RATINGS

Forward Plan 71&92



Forward Plan Elements

The Forward Plan for Series 71 and 92 engines includes:

- Advanced Air Induction System
- Improved Combustion Efficiency
- New Piston Rings
- Thermatic Oil Cooler

The air induction system on all engines with six or more cylinders will include:

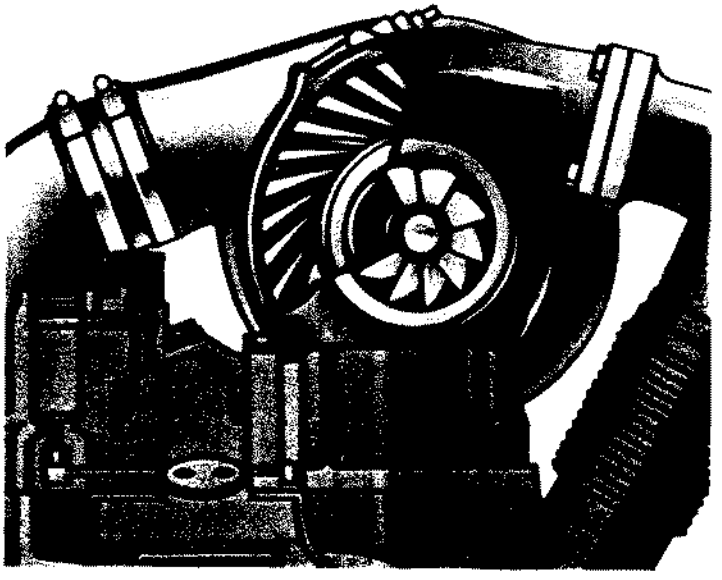
- Third-Generation High-Efficiency Turbocharger
- New Bypass Blower
- Aftercooler

The air induction system on the 4-71T engine will have an advanced design turbocharger and reduced speed blower.

Most of the Forward Plan engine improvements are internal. The air induction system will continue to be located on the side of the in-line models and in the cradle of the vee models. The turbocharger will be mounted directly on the blower on 6V and 8V models. This eliminates the need for external oil return lines and complicated bracketry. Overall installation dimensions are reduced.

Advanced Air Induction System

New Turbocharger Design

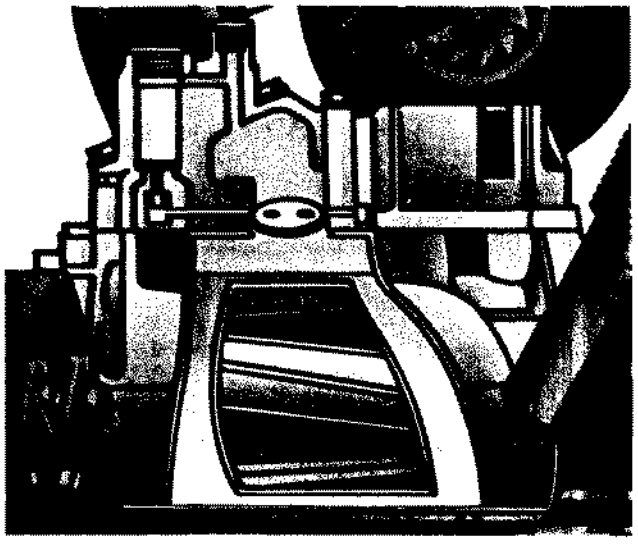


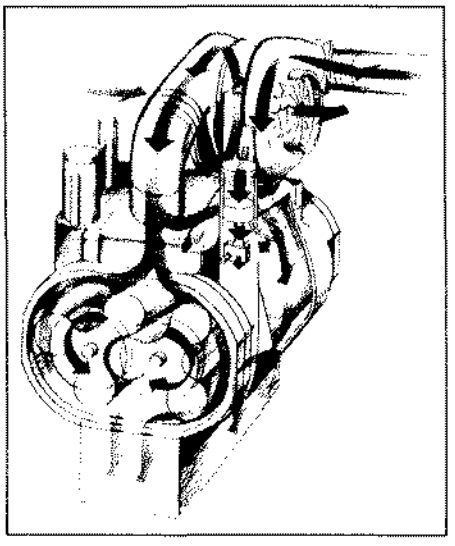
The overall efficiency of the Forward Plan turbo was raised by reshaping the compressor wheel blades.

This new turbo moves air more efficiently into the engine throughout the engine's normal operating range. This is important in maximizing horsepower and fuel economy.

Advanced Air Induction System (Continued)

New Bypass Blower





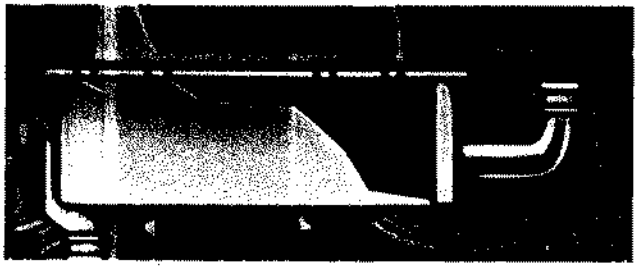
The new bypass blower is the result of an intensive research and development effort. It produces dramatic improvements in operating efficiency.

The theory is simple: As the engine speed and load increase, air flow requirements from the blower are reduced. When the turbocharger can provide all of the engine air requirements, butterfly valves in the air inlet housing open, allowing incoming air from the turbocharger to bypass the blower lobes and go directly to the combustion chamber. This eliminates the pumping load on the blower which reduces parasitic horsepower losses. The new system optimizes air flow into the engine.

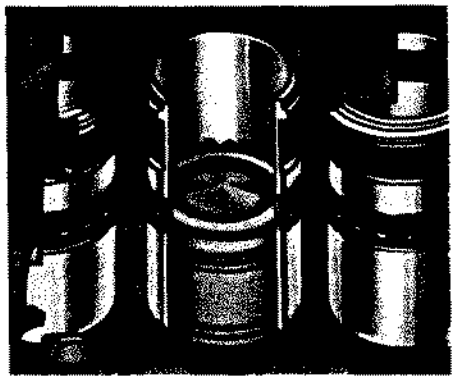
Aftercooler

When air is compressed by a turbocharger or blower, it gains heat. An aftercooler is a heat-exchanging device that allows heat to be transferred to the engine coolant. Cooler and therefore denser air provides more efficient combustion. And cooler intake air also lowers combustion and exhaust temperatures which helps to extend engine life.

An aftercooler is featured on all Forward Plan engines except the 4-71T as part of the new air induction system. Models with 8 cylinders or less will also be available without aftercoolers.



Improved Component Efficiency

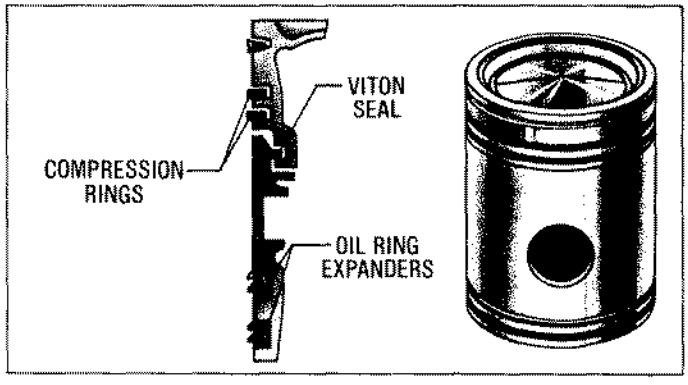


Reshaped Cylinder Liner Ports

The new air induction system allowed our engineers to reshape the ports in the cylinder liners through which air enters the combustion chambers. This also made possible a modification of exhaust timing. These changes contribute to improved thermal efficiency.

The new air induction system improves air flow in the engine and allows for more efficient air-to-fuel ratios. This translates directly into lower BSFC figures and more horsepower without increasing the fuel input. And engine life is not reduced even though the engine is producing more horsepower.

New Piston Rings



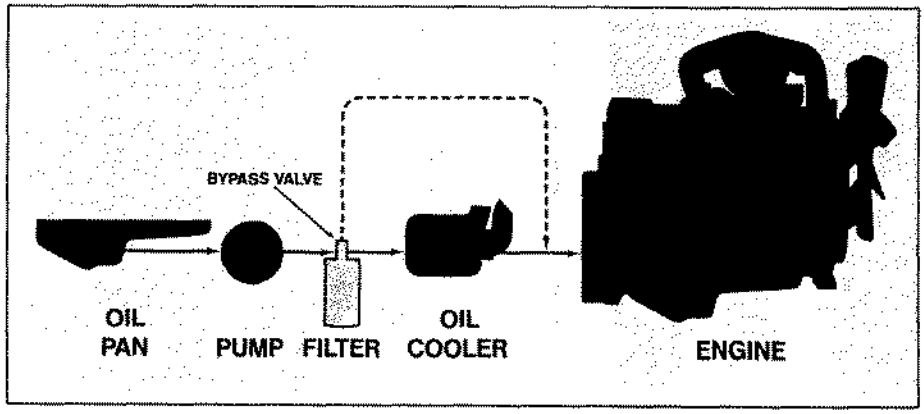
The next element of the Forward Plan program enhances durability as well as engine efficiency.

The compression rings will be barrel-faced without a groove. The barrel face provides a uniform coating of oil on the liner wall to improve ring life. It also reduces sliding friction. The tension of the oil ring expanders has been reduced on the Series 92. This change also reduces sliding friction and further improves lubrication. A new non-metallic viton seal ring will be used between the piston dome and skirt for longer life.

Based on tests, DDA engineers estimate a 30 to 50% increase in ring life when proper maintenance procedures are followed. We also estimate a concurrent reduction in lube oil consumption. These rings will be more resistant to the effects of high sulfur fuels.

Thermatic Oil Cooler

A Thermatic oil cooler makes a smaller but important contribution to operating efficiency—particularly in those applications where a large portion of operating time is at light load. The Thermatic system adds a thermostatically controlled bypass valve between the oil filter and the oil cooler. During the engine warm up or whenever the oil is below normal operating temperature, the valve allows oil to bypass the oil cooler. This provides for faster oil warm up. Warm oil provides better lubrication which reduces frictional losses and extends life. As oil temperature reaches the normal operating range, the flow is redirected back through the cooler for efficient oil temperature control.



The Primary Benefit... Improved Fuel Economy

Forward Plan 71

BRAKE SPECIFIC FUEL CONSUMPTION (2100 RPM)

MODEL	CURRENT NA	CURRENT TURBO	FORWARD PLAN	% IMPROVEMENT —VERSUS— N	% IMPROVEMENT —VERSUS— T
4-71	.398	.371	.356	11	4
6(V)-71	.398	.378	.350	12	7
8V-71	.399	.386	.350	12	9
12V-71	.399	.378	.350	12	7
16V-71	.399	.386	.350	12	9

Forward Plan 92

BRAKE SPECIFIC FUEL CONSUMPTION (2100 RPM)

MODEL	CURRENT NA	CURRENT TURBO	FORWARD PLAN	% IMPROVEMENT —VERSUS— N	% IMPROVEMENT —VERSUS— T
6V-92	.413	.372	.345	16	7
8V-92	.413	.389	.345	16	11
12V-92	.413	.377	.347	16	8
16V-92	.413	.389	.349	15	10

Converting to a Forward Plan engine model provides a dramatic improvement in fuel efficiency. These charts show what's been accomplished.

In the 71 Series lineup, BSFC will be .350lbs/BHP-HR on the TA models at rated speed. This is a 12 percent improvement over the naturally aspirated engines and an improvement of up to 9 percent over the current turbocharged engines.

Important BSFC advancements have also been made in the 92 Series. TA models will have a rated speed BSFC ranging from .345 to .349. This is approximately a 16 percent gain over the natural engines and up to a 11 percent over the current turbos.

Increased Horsepower Benefits

Forward Plan 71&92

HORSEPOWER COMPARISON (2100 RPM)

MODEL	CURRENT N	CURRENT TURBO	FORWARD PLAN
4-71	152	190	200
6(V)-71	228	285	300
6V-92	270	330	360
8V-71	304	362	400
8V-92	360	435	480
12V-71	456	553	600
12V-92	533	655	705
16V-71	635	725	800
16V-92	720	860	960

The turbocharged and aftercooled Forward Plan engines will have over 30% more horsepower than their naturally aspirated counterparts and up to 12% more horsepower than the current production turbo models.

The horsepower increases are generally uniform throughout the product line. The Series 71 TA models will produce approximately 50 hp/cylinder; the Series 92 TAs will be rated at approximately 60 hp/cylinder. Lower horsepower ratings will also be available through the application of smaller injectors.

Forward Plan 71&92

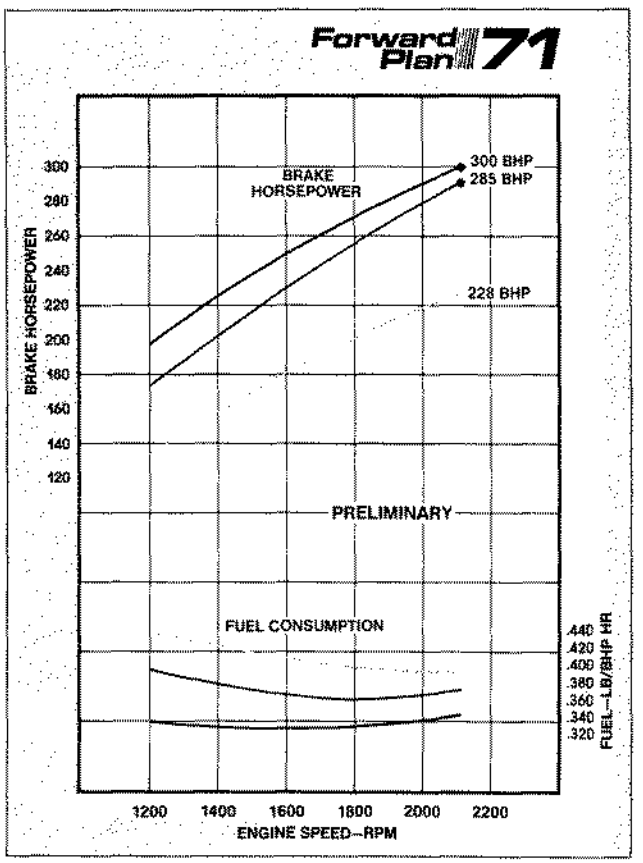
New Technology Delivers Power Plus Economy

Forward Plan technology makes it possible to simultaneously increase horsepower and improve fuel economy.

These performance curves for a representative 71 Series engine illustrate the dramatic effects of the Forward Plan improvements across the entire RPM range. Maximum horsepower for the 6-71TA is 31% higher than the naturally aspirated and 5% higher than the current turbo model. BSFC is better across the entire range—averaging 17% better than the naturally aspirated engine and 8% better than the current turbo-charged model. The low point on the BSFC curve is .337 at 1600 RPM.

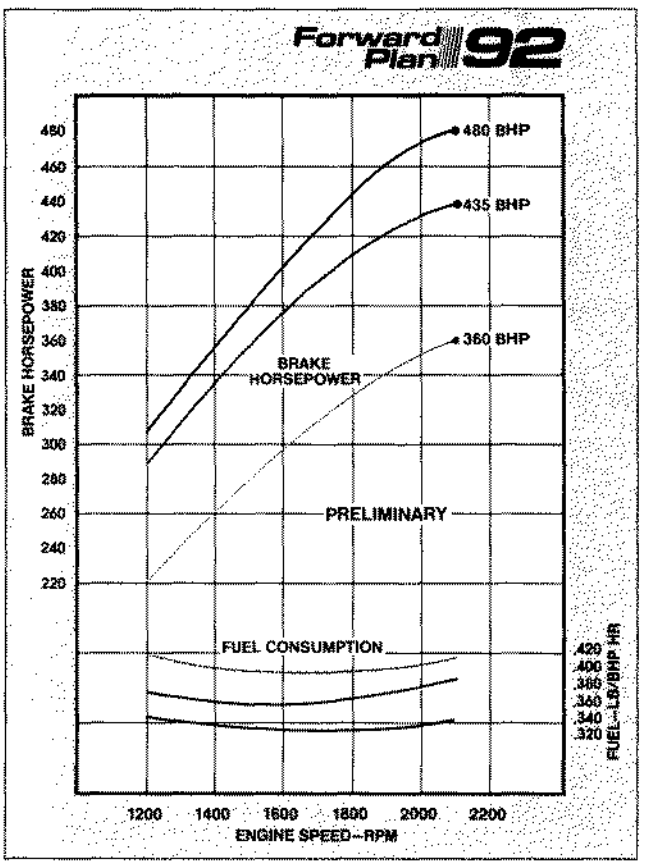
In the 92 Series, horsepower gains are also impressive with the Forward Plan TA models. In fuel economy, with the representative 8V-92 engine, the improvements range from 15% to 17% over the naturally aspirated version and from 6% to 11% over the current turbo models. The low point on the BSFC curve is .335 at 1800 RPM.

6-71 RATINGS COMPARISON



6-71N
6-71T (CURRENT)
6-71TA (FORWARD PLAN)

8V-92 RATINGS COMPARISON



8V-92N
8V-92T (CURRENT)
8V-92TA (FORWARD PLAN)

Forward Plan Engines VS Competition

FUEL ECONOMY COMPARISON — Forward Plan 71

	CUMMINS NTA 855	CAT 3406 DITA	FORWARD PLAN 8V-71TA
RATED HP	400	380	400
RPM	2100	2100	2100
PEAK TORQUE	1150	1160	1173
RPM	1500	1200	1200
BSFC @ RATED RPM	.378	.365	.350
@ PEAK TORQUE	.372	.361	.345

Forward Plan engines not only match the competition, but in most cases have a clear superiority in fuel efficiency. Here are some examples:

The 8V-71TA competes directly with the Cummins NTA 855 and CAT 3406. These engines produce comparable horsepower and torque, but the 8V-71TA is clearly superior in fuel economy. At rated speed it is 7.4% better than Cummins and 4% better than CAT. At peak torque the advantage is 7.3% and 4.4% respectively.

FUEL ECONOMY COMPARISON — Forward Plan 92

	CUMMINS KT2300	CAT D348	FORWARD PLAN 16V-92TA
RATED HP	900	900	960
RPM	2100	2000	2100
PEAK TORQUE	2475	2680	2655
RPM	1500	1400	1200
BSFC @ RATED RPM	.371	.374	.349
@ PEAK TORQUE	.352	.372	.355

The 16V-92TA has a higher horsepower rating than either the Cummins KT 2300 or CAT D348. At the same time it is clearly the winner when it comes to fuel efficiency with a BSFC of .349 at rated horsepower and .355 at peak torque. That amounts to 5.9% to 6.7% advantage over the competition at rated RPM.

FUEL ECONOMY COMPARISON — Forward Plan 92

	DEERE 8955T	FORWARD PLAN 6V-92TA
RATED HP	356	360
RPM	2100	2100
PEAK TORQUE	1130	1000
RPM	1400	1200
BSFC @ RATED RPM	.375	.345
@ PEAK TORQUE	.365	.349

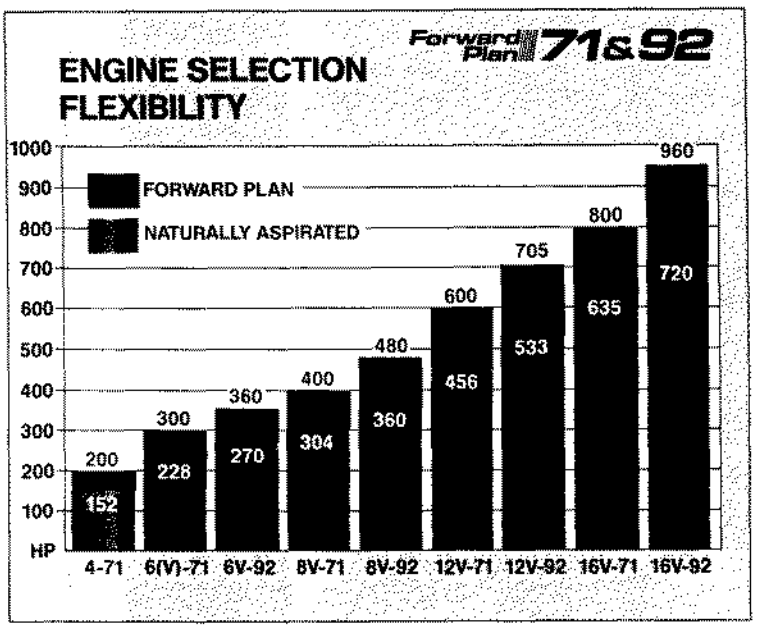
The John Deere 8955T is roughly equivalent in horsepower to the 6V-92TA. However, in fuel economy, the 92 is the clear leader, with an 8% edge at rated speed and 4.4% at peak torque speed.

Engine Selection Flexibility

It's important to recognize that with more power in a durable, compact package, the Forward Plan engines give you an improved power-to-weight ratio as well as added flexibility in engine selection and equipment design. The additional power—a result of efficiency gains, not more fuel input—provides an excellent opportunity to upgrade your equipment.

Where before you might have needed an eight-cylinder configuration to meet your power requirements, you can now get it from a six.

For example, if you currently use an 8V-71N at 304 hp you have the option of using a 6-71TA at 300 hp or a 6V-92TA up to 360 hp. Either of these provide the benefit of two fewer cylinders, more power per cylinder, lower rebuild costs, and the economy and performance advantages from turbocharging.



Less Heat Rejection

Converting to a Forward Plan engine from a naturally aspirated model provides the additional advantage of less heat rejected to coolant. In the 8V-71N example, total heat rejection is reduced by 1024 BTU/min. with the 6-71TA of comparable horsepower. If the larger 6V-92T at 345 horsepower is selected, total heat rejection remains approximately the same at 9220 BTU/min. This reduces radiator sizing problems on your Forward Plan installations. In general, the 71 Series will have specific heat rejection ranging from 27 to 31 BTU/hp min. and the 92 will be approximately 28 to 29 BTU/hp min.

LOWER HEAT REJECTION

Forward Plan 71&92

MODEL	HP	BTU/MIN	DIFFERENCE
8V-71N	304	9424	
6-71TA	300	8400	(1024)
6V-92T	345	9220	(204)

Engine Speeds to Suit Application

With Forward Plan engines, you have the option of choosing RPM settings to suit the application. There are many good reasons for operating at reduced RPM—improved fuel economy, greater life-to-overhaul and reduced noise levels. If you should elect to design your equipment around an engine speed below the standard 2100 RPM setting, some horsepower will be forfeited.

Forward Plan 71 & 92

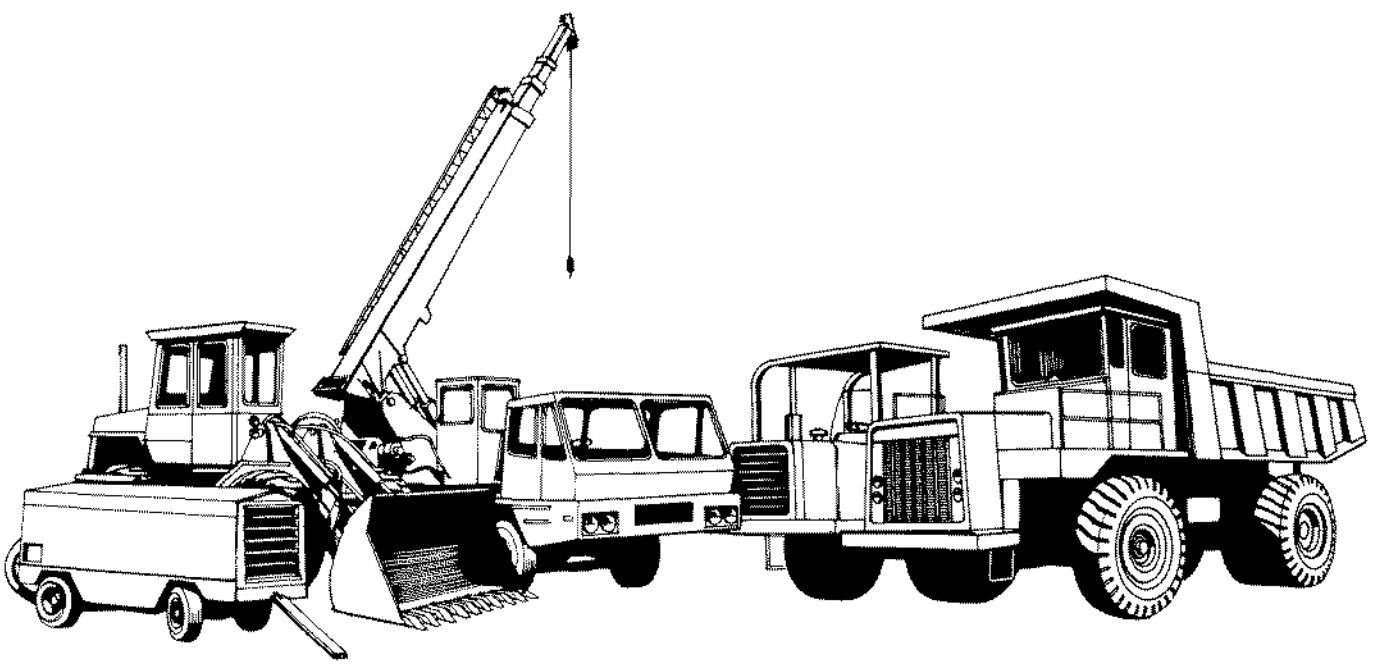
The Performance and Efficiency You Need For The Future

As you have seen, the Detroit Diesel Forward Plan Series 71 and 92 engines offer meaningful engineering advancements in a basic design proven over many years.

State-of-the-art air induction technology plus other improvements give you these benefits:

- A complete line of high power-to-weight ratio engines with ratings from approximately 150 to 1000 HP.
- A dramatic increase in fuel economy:
  - 11% to 16% BSFC improvement over naturally aspirated engines
  - Up to 11% BSFC improvement over current turbos
  - Superiority in most cases over competitive engines
- Up to 33% more HP than naturally aspirated Detroit Diesels
- Up to 12% more HP than current Detroit Diesel turbos
- Added flexibility in engine selection
- Less heat rejection
- Flexibility in RPM settings

When you add up the Forward Plan benefits we think you'll agree they deliver the kind of efficient, dependable performance you need for the 1980s and beyond.

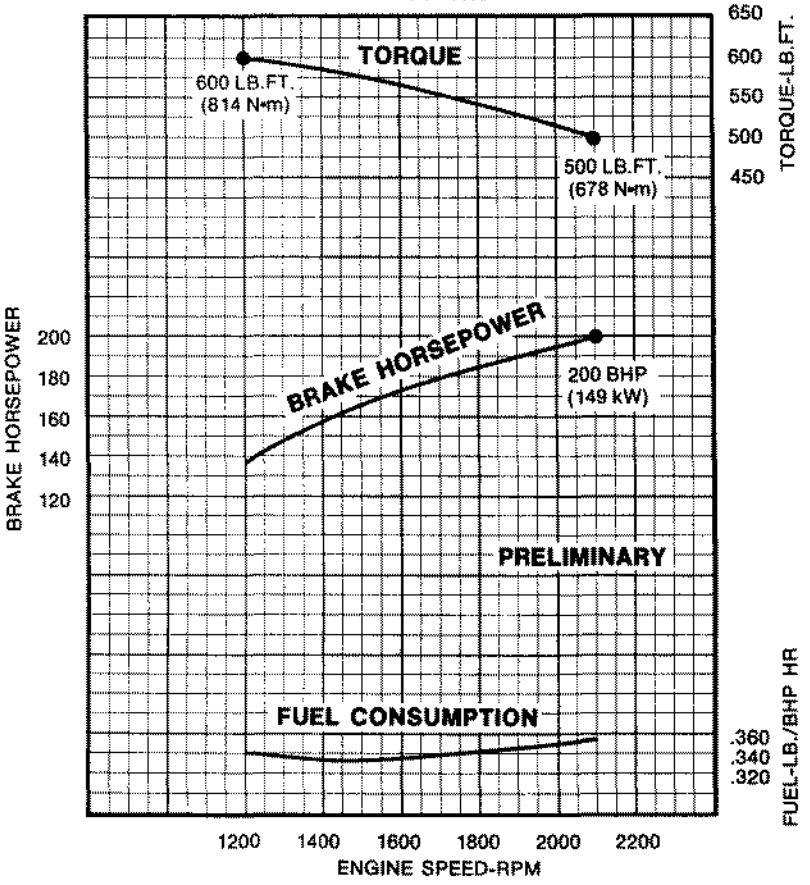


150-300 HORSEPOWER

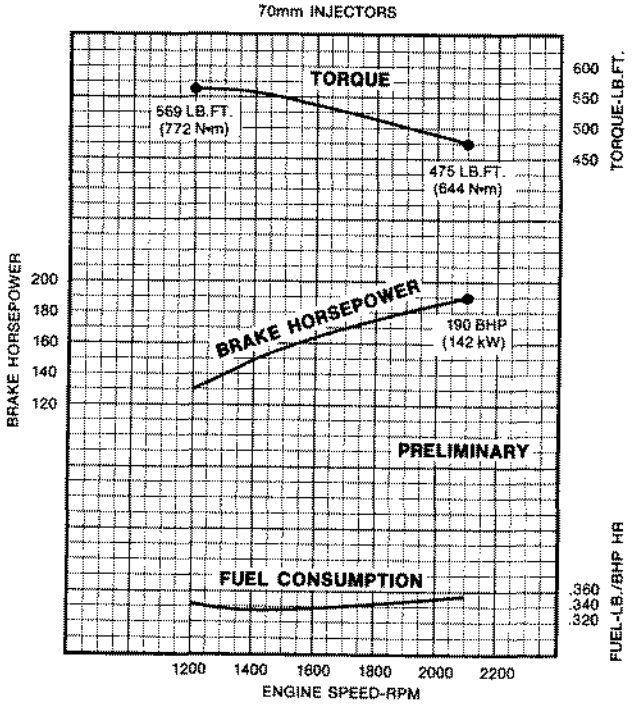
MODEL 4-71T ENGINE PERFORMANCE

Forward Plan 71

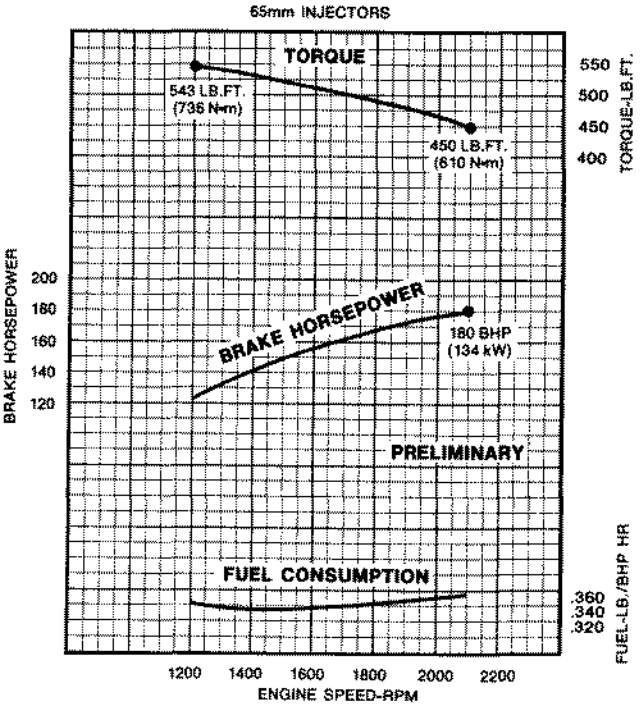
75mm INJECTORS



70mm INJECTORS



65mm INJECTORS



- Rated Power Output is at SAE J1349 Standard Conditions: 77°F (25°C)—air inlet temperature, and 29.31 in. Hg (99kPa)—Barometer (Dry)
- Specific gravity of fuel—.853 at 60°F (15.6°C)
- Metric conversion factors: Power kW = BHP × 0.746
  Torque N•m = lb. ft. × 1.356
  Fuel kg/kW hr = lb./BHP hr × 0.608
- This curve is based on preliminary data and is the best estimate of production engine performance.
- Values are derived from currently available data and are subject to change without notice.

Detroit Diesel Allison GM

MECHANICAL DATA FOR 4-71T ENGINES

MAIN BEARINGS
Type ..... Precision Half Shells — 2 Per Journal

Journal Diameter ..... 3.50 in. (88.9 mm)
Length ..... 1.19 in. (30.2 mm)
Projected Area/Bearing ..... 4.165 in.^{2} (2687.1 mm^2)
Material ..... Steel Backed Copper Lead

CRANK PIN BEARINGS
Type ..... Precision Half Shells

Number ..... 1 pair/cyl.
Journal Diameter ..... 2.75 in. (69.9 mm)
Length ..... 1.2 in. (30.5 mm)
Projected Area/Bearing ..... 3.3 in.^{2} (2129.1 mm^2)
Material ..... Steel Backed Copper Lead

CAMSHAFT BEARING—END
Journal Diameter ..... 1.497 in. (38.0 mm)
Length ..... 2.875 in. (73.0 mm)
Materials ..... Bronze Steel Backed

CAMSHAFT BEARING—INTERMEDIATE
Journal Diameter ..... 1.498 in. (38.0 mm)
Length ..... 1.218 in. (30.9 mm)
Materials ..... Aluminum

PISTON PIN BUSHING
Projected Area/Piston Bushing
Material ..... Bronze with SAE 19 Overlay, Steel Backed

PISTON
Type and Material ..... Crosshead—Malleable Iron
Cooling ..... Oil—Cocktail Shaker

PISTON RINGS—COMPRESSION
Type
Top Ring ..... Chrome Faced Keystone
Remaining 2 ..... Barrel Faced Chrome Flashed

PISTON RINGS—OIL
Type ..... Double Scraper with Expander
Number per Piston ..... 2 Sets
Location ..... Bottom of Skirt

PISTON PIN
Type ..... Crosshead—Polished & Hardened

CONNECTING ROD
Type ..... Forged I Section
Material ..... Forged Steel

CRANKSHAFT
Material ..... Forged Steel (SAE 1548)
Type of Balance ..... Dynamic
Heat Treat ..... Induction Hardened

CAMSHAFT
Material ..... Forged Steel
Location ..... In Block, 1 Per Bank
Drive ..... Gear
Type of Cam ..... Ground

EXHAUST VALVE
Type ..... Poppet
Arrangement ..... Overhead Valve
Number/Cylinder 4
Operating Mechanism ..... Mechanical Rocker Arm
Type of Lifter ..... Solid
Valve Spring
Number/Valve ..... 1 Per Valve
Valve Seat Insert
Material ..... Steel Alloy

CYLINDER BLOCK
Type ..... Dry Liner
Material ..... Cast Iron Alloy

LINERS
Type ..... Dry Liner
Material ..... Cast Iron
Ports
Type ..... Oval
Number 18
Height ..... To Be Determined
Width ..... To Be Determined
Angle ..... To Be Determined

CYLINDER HEAD
Type ..... 4 Valve
Material ..... Cast Iron

Preliminary-Specifications subject to change without notice.

OPERATING DATA FOR 4-71T ENGINES

GENERAL ENGINE DATA

Type	2 Stroke
Number of Cylinders	4
Bore	4.25 in. (108 mm)
Stroke	5 in. (127 mm)
Displacement	284 in.³ (4.65 liters)
Number of Exhaust Valves Per Cylinder	4
Compression Ratio	To Be Determined
Firing Order	1-3-4-2
Turbocharger	To Be Determined
Blower Drive Ratio	To Be Determined
Engine Weight and Dimensions With Standard Accessories—	
Dry Weight (T engines)	1830 lbs (830.1 kg)
(TA engines	—
Length	44 in. (1117.6 mm)
Width	31 in. (787.4 mm)
Height	44 in. (1117.6 mm)
Engine Center of Gravity With Standard Accessories—	
C.G. Distance From R.F.O.B. (*x* axis)	2.36 in. (59.9 mm)
C.G. Distance Above Crankshaft (*y* axis)	7.06 in. (179.3 mm)
C.G. Distance Right of ℄ as Viewed From Rear (*z* axis)	.469 in. (11.9 mm)
Roll Axis (see installation drawing)	
Maximum Allowable Bending Moment at Rear Face of Block—	
Aluminum Hsg.	0
Cast Iron Hsg.	0

APPLICATION DATA

AIR INTAKE SYSTEM—(Ref. Coolant Bulletin #28)	
Maximum Allowable Intake Res. With Clean Air Cleaner Element	12 in. H_2O (3.0 kPa)
Maximum Allowable Intake Res. With Dirty Air Cleaner Element	20 in. H_2O (5.0 kPa)
EXHAUST SYSTEM	
Maximum Allowable Exhaust Back Pressure Imposed by Piping & Muffler—	
Full Load @ 2100 RPM	3.0 in. Hg (10.1 kPa)
COOLING SYSTEM	
Coolant Capacity (Engine Only)	3.5 gal. (13.2 liters)
Standard Thermostat—Type	Full Blocking
Maximum Allowable Top Tank Coolant Temperature	210°F (98.9°C)
Minimum Allowable Dearation Rate	.1 CFM/cyl. (.003 m³/min)
Recommended Pressure Cap	7 psi (48.3 kPa)
Minimum Cooling Capability—(Will Vary With Ambient Conditions)	
Air to Boil @ 2100 RPM	117°F (47.2°C)
Air to Water @ 2100 RPM	95°F (35°C)
Coolant Pump Inlet Restriction—Maximum	3 in. Hg. (10.1 kPa)
LUBRICATION SYSTEM	
Oil Pressure @ Idle (500 RPM) Minimum	7 psi (48.3 kPa)
@ Rated Speed (2100 RPM) Minimum	30 psi (206.9 kPa)
Oil Flow @ Rated Speed (2100 RPM) Nominal	23 GPM (87.1 liters/min)
Lube Oil Sump Temperature Normal Range	200–235 (93.3°–112.8°C)
Oil Capacity of Standard Oil Pan (low-high)	15–20 Qts. (14.2–18.9 liters)
Angularity of Standard Pan (5167808)	
Front Down	16°
Front Up	16°
Crankcase Pressure @ 2100 RPM Maximum	1.9 in. H_2O (.475 kPa)

Preliminary-Specifications subject to change without notice.

APPLICATION DATA (continued)

FUEL SYSTEM (Reference Engineering Bulletin #21)

Model Injector	Brake Specific Fuel Consumption @ Rated HP And Speed lb/BHP-HR	Fuel Consumption @ Rated HP And Speed lb/hr (kg/hr)	GPH (l/hr)	Brake Specific Fuel Consumption @ Peak Torque lb/BHP-HR	Fuel Consumption @ Peak Torque lb/hr (kg/hr)	GPH (l/hr)	Fuel Flow To Pump @ Rated Speed lb/hr (kg/hr) (.8 Orifice)	GPH (l/hr)
4-71T 75 mm	.356	70.5 (32)	9.9 (37.5)	.342	47.0 (21.3)	6.6 (25)	640 (290)	90 (341)
4-71T 70 mm	.356	67.0 (30)	9.5 (36.0)	.342	44.6 (20.2)	6.3 (23.9)	640 (290)	90 (341)
4-71T 65 mm	.356	63.4 (28.8)	8.9 (33.7)	.342	42.5 (19.3)	6.0 (22.7)	640 (290)	90 (341)

Maximum Allowable Restriction to Pump—
- With Clean Filter ..... 6 in. Hg (22.1 kPa)
- With Dirty Filter ..... 12 in. Hg (44.1kPa)

Fuel Pressure Inlet Manifold—Normal Range ..... 50-70 psi (344.8-482.7 kPa)
Fuel Spill Flow—Minimum ..... .9 gpm (3.4 liters/min)
Fuel Line Size—Minimum Diameter or No. ..... Depends on length of hose
Fuel System Restricted Fitting Size ..... .080 in. (2.0 mm)
Filter Micron Size—Primary/Secondary 30/10

ELECTRICAL SYSTEM

Minimum Recommended Battery Capacity—
- SAE Cold Cranking, Amps at 0°F to 31°F—12 Volt Starter ..... 900 amps
- 24 Volt Starter ..... 600 amps

Maximum Allowable resistance of Starting Circuit—
- With 12 Volt Starter ..... .0012 ohms
- With 24 Volt Starter ..... .0020 ohms

Preliminary-Specifications subject to change without notice.

PERFORMANCE DATA

All data is based on the engine operating with fuel pump, water pump, and lubricating oil pumps: not included are alternator, fan, air compressor, air cleaner, or optional equipment. Engine performance data is based on operating under SAE Standard J1349 conditions of 29.31 in Hg (dry) barometer and 77°F (25°C) intake air temperature, using No. 2 diesel fuel at 60°F (15.6°C) fuel temperature (.853 @ 60°F specific gravity), minimum air intake and exhaust restriction (6 in H_2O and 0.2 in Hg respectively).

Engine	Injector Size	Output BHP at Rated Speed 2100 RPM	Peak Torque lb ft (N•m) @ 1200 RPM	Air Flow CFM (m^3/min)	Exhaust Gas CFM Temp °F (m^3/min) (°C)	Water Flow GPM (liter/min)	Heat Rej. BTU/min (kW)	BMEP PSI (kPa)	Piston Speed FPM
4-71T	75 mm	200	600 (813)	730 (20.7)	1478 634°F (41.9) (334°C)	48 (182)	5400 (95)	105.5 (727.4)	1750
4-71T	70 mm	190	569 (771)	720 (20.7)	1439 619°F (40.7) (326.1°C)	48 (182)	5130 (90)	100.1 (690)	1750
4-71T	65 mm	180	543 (736)	696 (19.7)	1358 594°F (38.5) (312.2°C)	48 (182)	4860 (85)	94.8 (653.6)	1750

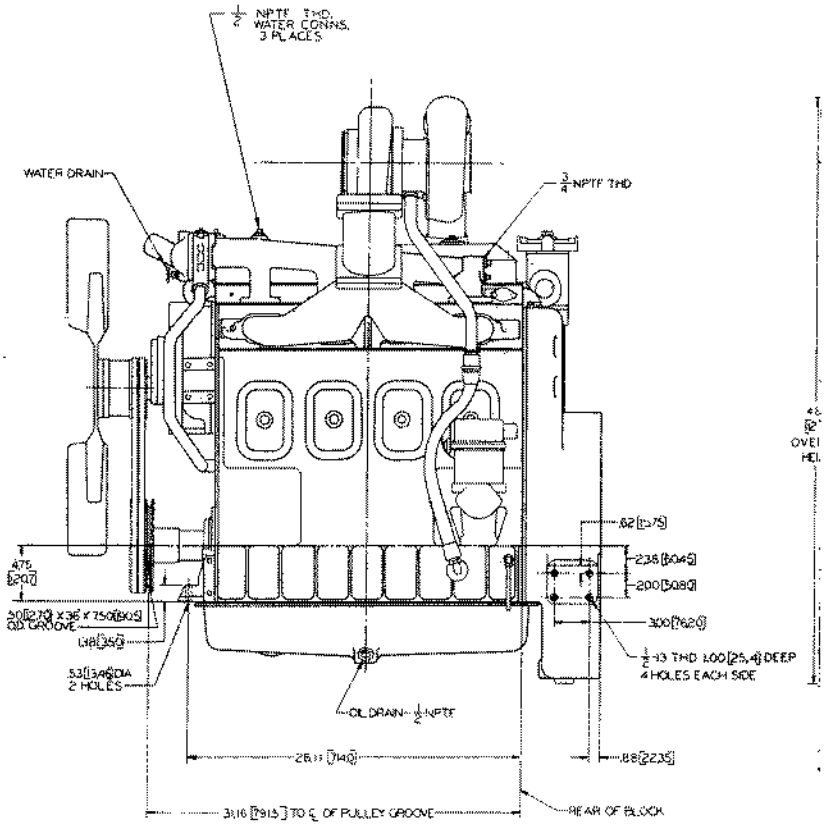
Idle Speed (minimum) ..... 500 RPM
Maximum No-Load Governed Speed ..... Approx. 200 RPM above Full Load Speed
Normal Operating Coolant Temp. ..... 160-185°F (71.1-85.0°C)
Thrust Bearing Load Limit—Max. Int. ..... 600 lbs. cont. (2669 N)
1800 lbs. intermittent (8006 N)

Preliminary-Specifications subject to change without notice.

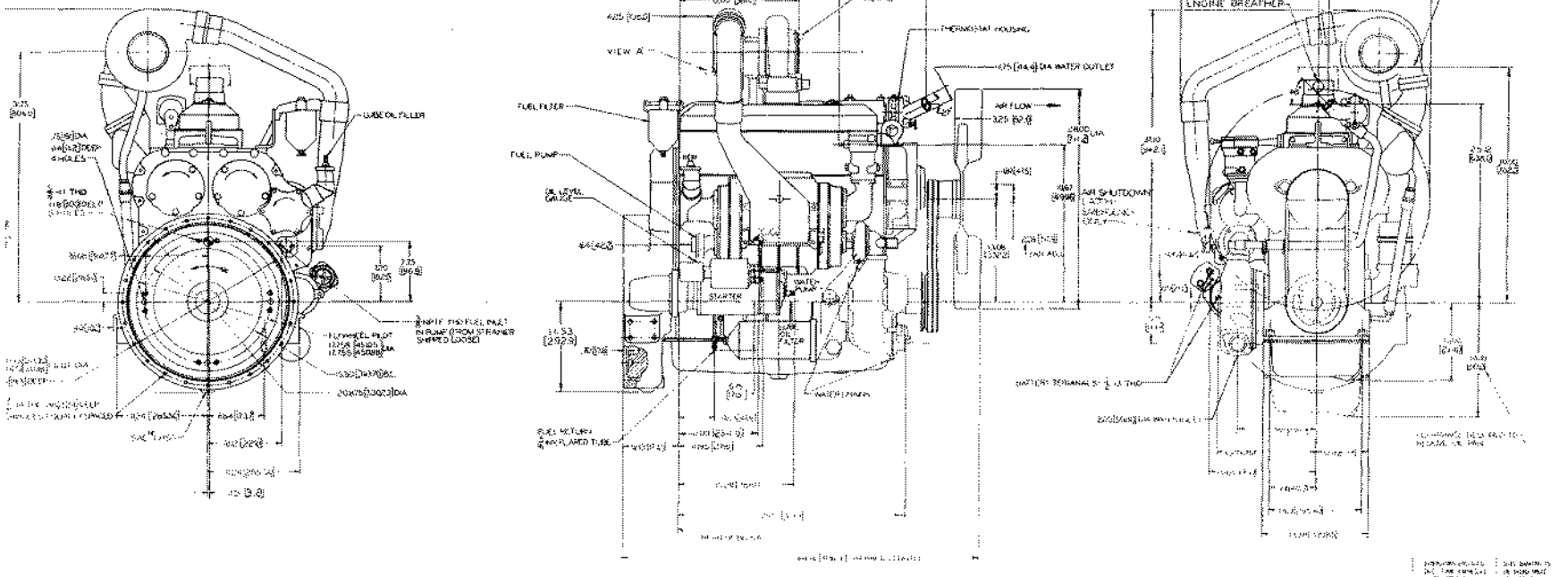
DX107824

Detroit Diesel Allison
Division of General Motors Corporation

13400 West Outer Drive Detroit, Michigan, 48228



Printed stock tends to be dimensionally unstable due to stretching, shrinking, and folding. Therefore, dimensions which are not shown on this drawing should not be calculated by scaling.



PRELIMINARY

DO NOT SCALE

DX10782 4

MODEL 10437300 2SA-478

INSTALLATION DRAWING

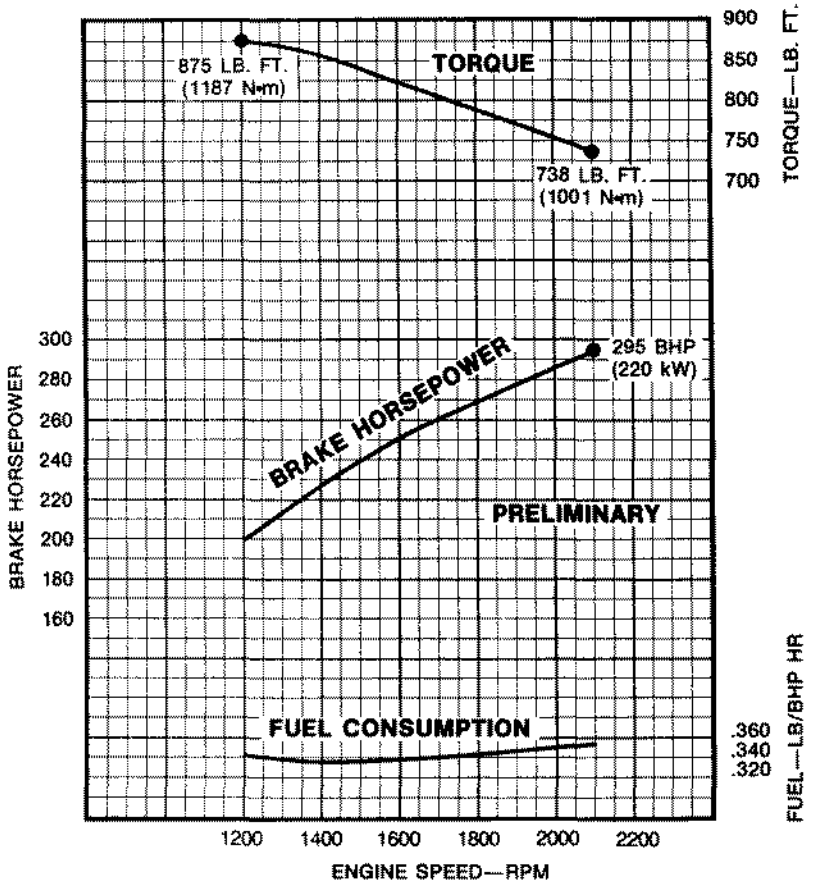
DX10782 4 R

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. LITHO IN U.S.A. SCALE3/4" TO 1" (DRAWING DATE 1-12-83) MODEL 10437300 2SA-478

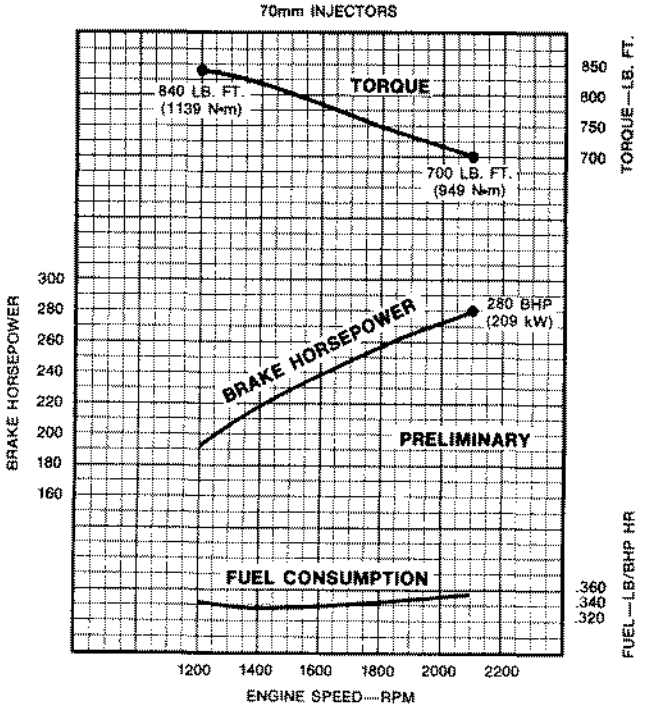
MODEL 6-71T ENGINE PERFORMANCE

Forward Plan 71

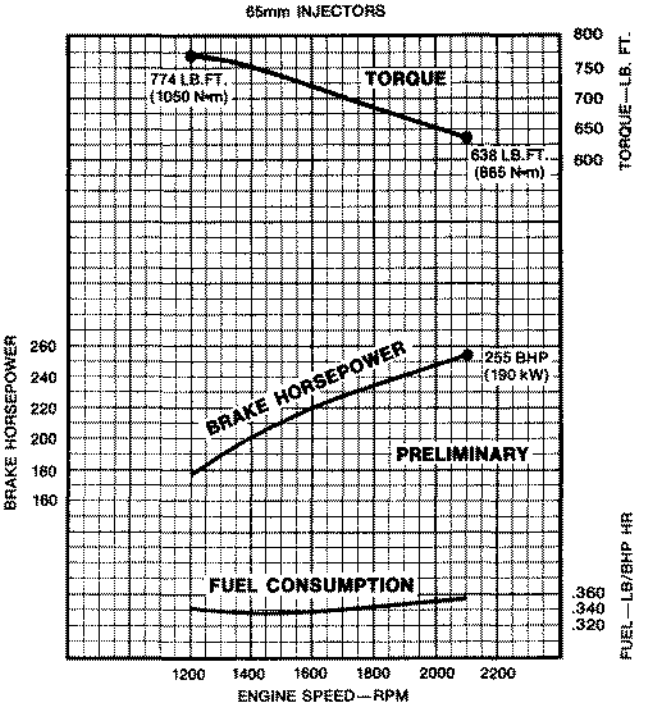
75mm INJECTORS



70mm INJECTORS



65mm INJECTORS



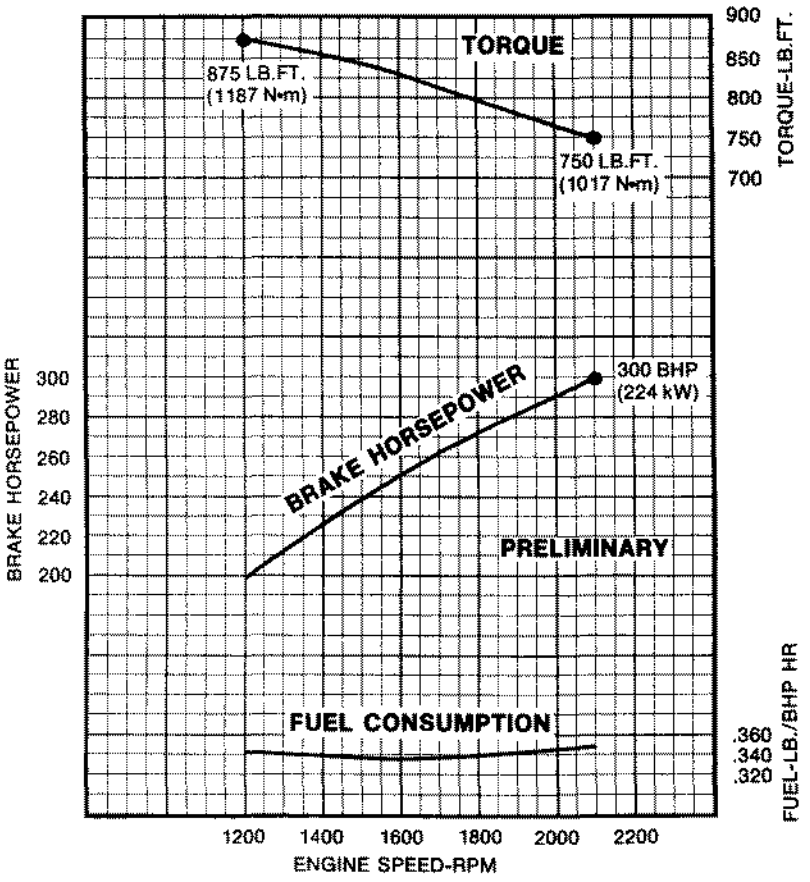
- Rated Power Output is at SAE J1349 Standard Conditions: 77°F (25°C)—air inlet temperature, and 29.31 in. Hg (99kPa)—Barometer (Dry)
- Specific gravity of fuel—.853 at 60°F (15.6°C)
- Metric conversion factors: Power kW = BHP × 0.746
  Torque N•m = lb. ft. × 1.356
  Fuel kg/kW hr = lb./BHP hr × 0.608
- This curve is based on preliminary data and is the best estimate of production engine performance.
- Values are derived from currently available data and are subject to change without notice.

Detroit Diesel Allison GM

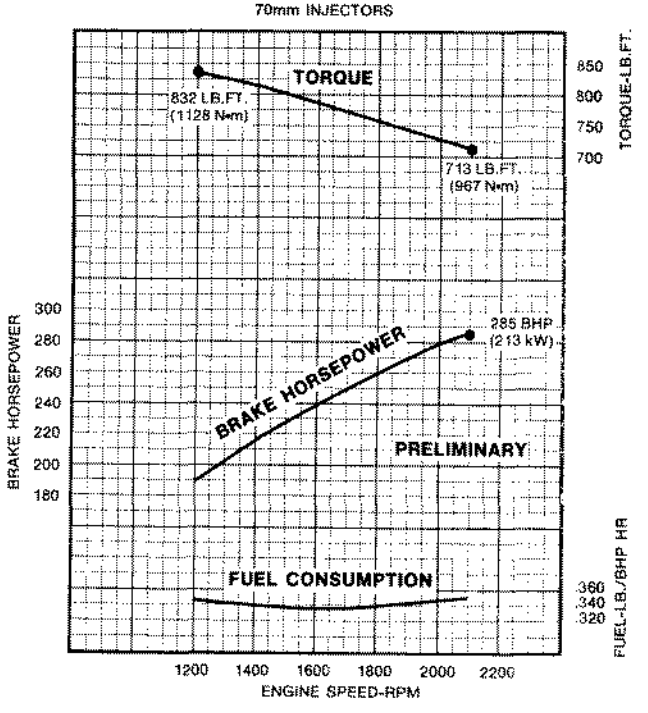
MODEL 6-71TA ENGINE PERFORMANCE

Forward Plan 71

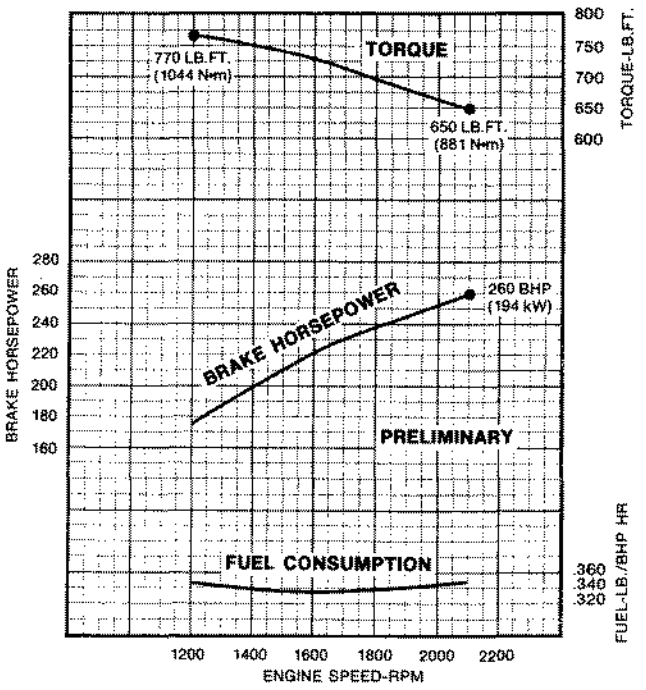
75mm INJECTORS



70mm INJECTORS



65mm INJECTORS



- Rated Power Output is at SAE J1349 Standard Conditions: 77°F (25°C)—air inlet temperature, and 29.31 in. Hg (99kPa)—Barometer (Dry)
- Specific gravity of fuel—.853 at 60°F (15.6°C)
- Metric conversion factors: Power kW = BHP × 0.746
  Torque N•m = lb. ft. × 1.356
  Fuel kg/kW hr = lb./BHP hr × 0.608
- This curve is based on preliminary data and is the best estimate of production engine performance.
- Values are derived from currently available data and are subject to change without notice.

Detroit Diesel Allison GM

MECHANICAL DATA FOR 6-71T/TA ENGINES

MAIN BEARINGS
Type ..... Precision Half Shells — 2 Per Journal

Journal Diameter ..... 3.50 in. (88.9 mm)
Length ..... 1.19 in. (30.2 mm)
Projected Area/Bearing ..... 4.165 in.^{2} (2687.1 mm^2)
Material ..... Steel Backed Copper Lead

CRANK PIN BEARINGS
Type ..... Precision Half Shells

Number ..... 1 pair/cyl.
Journal Diameter ..... 2.75 in. (69.9 mm)
Length ..... 1.2 in. (30.5 mm)
Projected Area/Bearing ..... 3.3 in.^{2} (2129.1 mm^2)
Material ..... Steel Backed Copper Lead

CAMSHAFT BEARING—END
Journal Diameter ..... 1.497 in. (38.0 mm)
Length ..... 2.875 in. (73.0 mm)
Materials ..... Bronze Steel Backed

CAMSHAFT BEARING—INTERMEDIATE
Journal Diameter ..... 1.498 in. (38.0 mm)
Length ..... 1.218 in. (30.9 mm)
Materials ..... Aluminum

PISTON PIN BUSHING
Projected Area/Piston Bushing
Material .... Bronze with SAE 19 Overlay, Steel Backed

PISTON
Type and Material ..... Crosshead—Malleable Iron
Cooling ..... Oil—Cocktail Shaker

PISTON RINGS—COMPRESSION
Type
Top Ring ..... Chrome Faced Keystone
Remaining 2 ..... Barrel Faced Chrome Flashed

PISTON RINGS—OIL
Type ..... Double Scraper with Expander
Number per Piston ..... 2 Sets
Location ..... Bottom of Skirt

PISTON PIN
Type ..... Crosshead—Polished & Hardened

CONNECTING ROD
Type ..... Forged I Section
Material ..... Forged Steel

CRANKSHAFT
Material ..... Forged Steel (SAE 1548)
Type of Balance ..... Dynamic
Heat Treat ..... Induction Hardened

CAMSHAFT
Material ..... Forged Steel
Location ..... In Block, 1 Per Bank
Drive ..... Gear
Type of Cam ..... Ground

EXHAUST VALVE
Type ..... Poppet
Arrangement ..... Overhead Valve
Number/Cylinder 4
Operating Mechanism ..... Mechanical Rocker Arm
Type of Lifter ..... Solid
Valve Spring
Number/Valve ..... 1 Per Valve
Valve Seat Insert
Material ..... Steel Alloy

CYLINDER BLOCK
Type ..... Dry Liner
Material ..... Cast Iron Alloy

LINERS
Type ..... Dry Liner
Material ..... Cast Iron
Ports
Type ..... Oval
Number 18
Height ..... To Be Determined
Width ..... To Be Determined
Angle ..... To Be Determined

CYLINDER HEAD
Type ..... 4 Valve
Material ..... Cast Iron

Preliminary-Specifications subject to change without notice.

OPERATING DATA FOR 6-71T/TA ENGINES

GENERAL ENGINE DATA

Type	2 Stroke
Number of Cylinders	6
Bore	4.25 in. (108 mm)
Stroke	5 in. (127 mm)
Displacement	426 in.³ (6.99 liters)
Number of Exhaust Valves Per Cylinder	4
Compression Ratio	To Be Determined
Firing Order	1-5-3-6-2-4
Turbocharger	To Be Determined
Blower Drive Ratio	To Be Determined
Engine Weight and Dimensions With Standard Accessories—	
Dry Weight (T engines)	2150 lbs. (975.2 kg)
(TA engines)	2195 lbs. (995.7 kg)
Length	56 in. (1422.4 mm)
Width	32 in. (812.8 mm)
Height	50 in. (1270.0 mm)
Engine Center of Gravity With Standard Accessories—	
C.G. Distance from R.F.O.B. (*x* axis)	1.91 in. (45.5 mm)
C.G. Distance Above Crankshaft (*y* axis)	5.12 in. (130.0 mm)
C.G. Distance Right of ℄ as Viewed From Rear (*z* axis)	−1.49 in. (−37.8 mm)
Roll Axis (see installation drawing)	
Maximum Allowable Bending Moment at Rear Face of Block—	
Aluminum Hsg.	0
Cast Iron Hsg.	0

APPLICATION DATA

AIR INTAKE SYSTEM (Ref. Coolant Bulletin #38)	
Maximum Allowable Intake Res. With Clean Air Cleaner Element	12 in. H_2O (3.0 kPa)
Maximum Allowable Intake Res. With Dirty Air Cleaner Element	20 in. H_2O (5.0 kPa)
EXHAUST SYSTEM	
Maximum Allowable Exhaust Back Pressure Imposed by Piping & Muffler—	
Full Load @ 2100 RPM	3.0 in. Hg. (10.1 kPa)
COOLING SYSTEM	
Coolant Capacity (Engine Only)	5.5 gal. (20.8 liters) T, 6 gal. (22.7 liters) TA
Standard Thermostat—Type	Partial
Maximum Allowable Top Tank Coolant Temperature	210°F (98.9°C)
Minimum Allowable Dearation Rate	.1 CFM/cyl. (.003 m³/min)
Recommended Pressure Cap	7 psi (48.3 kPa)
Minimum Cooling Capability—(Will Vary With Ambient Conditions)	
Air to Boil @ 2100 RPM	117°F (47.2°C)
Air to Water @ 2100 RPM	95°F (35°C)
Coolant Pump Inlet Restriction—Maximum	3 in. Hg. (10.1 kPa)
LUBRICATION SYSTEM	
Oil Pressure @ Idle (500 RPM) Minimum	7 psi (48.3 kPa)
@ Rated Speed (2100 RPM) Minimum	30 psi (206.9 kPa)
Oil Flow @ Rated Speed (2100 RPM) Nominal	32 GPM (121.0 liters/min)
Lube Oil Sump Temperature Normal Range	200–235°F (93.3°–112.8°C)
Oil Capacity of Standard Oil Pan (Low-High)	21–25 qts. (19.9–23.7 liters)
Angularity of Standard Pan (P/N 5110008 Upper, 5163616 Front)	
Front Down	28°
Front Up	30°
Crankcase Pressure @ 2100 RPM Maximum	2.0 in H_2O (.50 kPa)

Preliminary-Specifications subject to change without notice.

Detroit Diesel Allison GM

APPLICATION DATA (continued)

FUEL SYSTEM (Reference Engineering Bulletin #21)

Model Injector	Brake Specific Fuel Consumption @ Rated HP And Speed lb/BHP-HR	Fuel Consumption @ Rated HP And Speed lb/hr (kg/hr)	GPH (l/hr)	Brake Specific Fuel Consumption @ Peak Torque lb/BHP-HR	Fuel Consumption @ Peak Torque lb/hr (kg/hr)	GPH (l/hr)	Fuel Flow To Pump @ Rated Speed lb/hr (kg/hr) (.8 Orifice)	GPH (l/hr)
6-71T 75 mm	.356	105.1 (47.7)	14.8 (56.1)	.342	68.6 (31.1)	9.7 (36.7)	640 (290)	90 (341)
6-71T 70 mm	.356	99.8 (45.3)	14.1 (53.4)	.342	65.6 (29.8)	9.2 (34.8)	640 (290)	90 (341)
6-71T 65 mm	.356	91.1 (41.3)	12.9 (48.9)	.342	60.6 (27.5)	8.6 (32.6)	640 (290)	90 (341)
6-71TA 75 mm	.350	105.1 (47.7)	14.8 (56.1)	.344	68.6 (31.1)	9.7 (36.7)	640 (290)	90 (341)
6-71TA 70 mm	.350	99.8 (45.3)	14.1 (53.4)	.344	65.6 (29.8)	9.2 (34.8)	640 (290)	90 (341)
6-71TA 65 mm	.350	91.9 (41.3)	12.9 (48.9)	.344	60.6 (27.5)	8.6 (32.6)	640 (290)	90 (341)

Maximum Allowable Restriction to Pump—
With Clean Filter ..... 6 in. Hg (22.1 kPa)
With Dirty Filter ..... 12 in. Hg (44.1kPa)
Fuel Pressure Inlet Manifold—Normal Range ..... 50-70 psi (344.8-482.7 kPa)
Fuel Spill Flow—Minimum ..... .9 gpm (3.4 liters/min)
Fuel Line Size—Minimum Diameter or No. ..... Depends on length of hose
Fuel System Restricted Fitting Size ..... .080 in. (2.0 mm)
Filter Micron Size—Primary/Secondary 30/10

ELECTRICAL SYSTEM

Minimum Recommended Battery Capacity—
SAE Cold Cranking, Amps at 0°F to 31°F—12 Volt Starter ..... 900 amps
24 Volt Starter ..... 600 amps
Maximum Allowable resistance of Starting Circuit—
With 12 Volt Starter ..... .00075 ohms
With 24 Volt Starter ..... .0020 ohms

Preliminary-Specifications subject to change without notice.

PERFORMANCE DATA

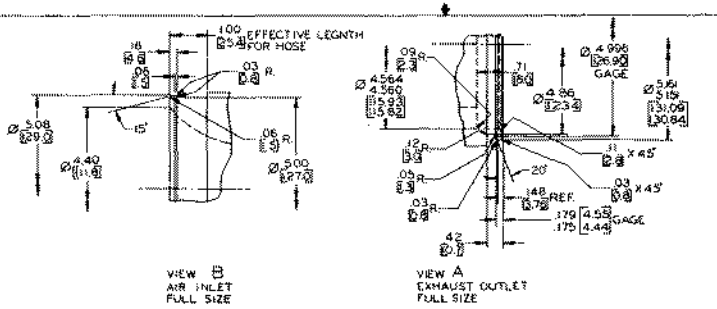
All data is based on the engine operating with fuel pump, water pump, and lubricating oil pumps: not included are alternator, fan, air compressor, air cleaner, or optional equipment. Engine performance data is based on operating under SAE Standard J1349 conditions of 29.31 in Hg (dry) barometer and 77°F (25°C) intake air temperature, using No. 2 diesel fuel at 60°F (15.6°C) fuel temperature (.853 @ 60°F specific gravity), minimum air intake and exhaust restriction (6 in H_2O and 0.2 in Hg respectively).

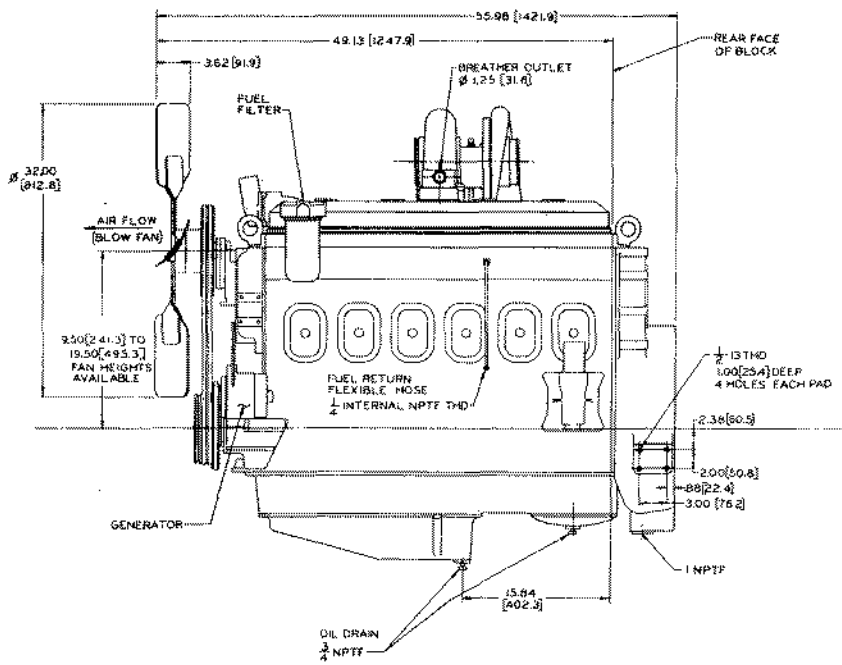
Engine	Injector Size	Output BHP at Rated Speed 2100 RPM	Peak Torque lb ft (N·m) @ 1200 RPM	Air Flow CFM (m^3/min)	Exhaust Gas CFM Temp °F (m^3/min) (°C)	Water Flow GPM (liter/min)	Heat Rej. BTU/min (kW)	BMEP PSI (kPa)	Piston Speed FPM
6-71T	75 mm	295	875 (1186)	992 (28)	2079 672°F (58.9) (356°C)	68 (257)	7965 (140)	104.7 (721.9)	1750
6-71T	70 mm	280	840 (1139)	968 (27.4)	1983 646°F (56.2) (341.1°C)	68 (257)	7560 (133)	99.4 (685.3)	1750
6-71T	65 mm	255	775 (1051)	949 (26.9)	1907 625°F (54.0) (329.4°C)	68 (257)	6885 (121)	90.9 (626.7)	1750
6-71TA	75 mm	300	875 (1186)	932 (26.4)	1893 637°F (53.6) (336°C)	68 (257)	8700 (153)	106.5 (734.3)	1750
6-71TA	70 mm	285	832 (1128)	910 (25.8)	1804 611°F (51.1) (321.7°C)	68 (257)	8265 (145)	101.2 (697.7)	1750
6-71TA	65 mm	260	770 (1044)	890 (25.2)	1734 592°F (49.1) (311.1°C)	68 (257)	7540 (133)	92.3 (636.4)	1750

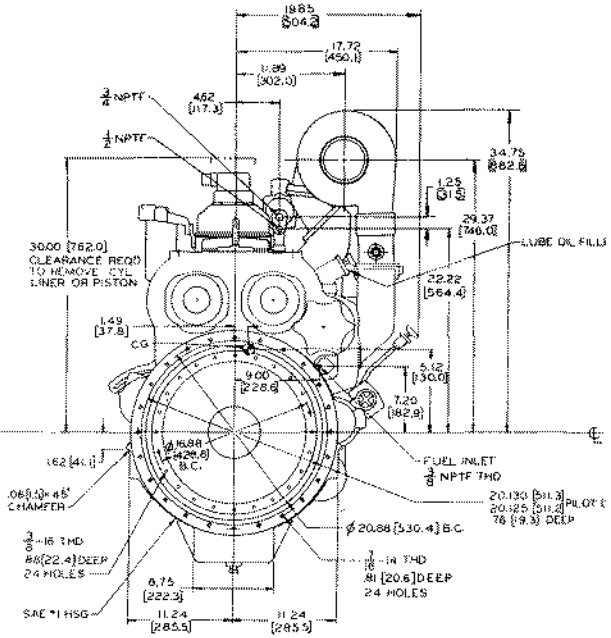
Idle Speed (minimum) ..... 500 RPM
Maximum No-Load Governed Speed ..... Approx. 200 RPM above Full Load Speed
Normal Operating Coolant Temp. ..... 160-185°F (71.1-85.0°C)
Thrust Bearing Load Limit—Max. Int. ..... 600 lbs. continuous (2669 N)
1800 lbs. intermittent (8006 N)

Preliminary-Specifications subject to change without notice.

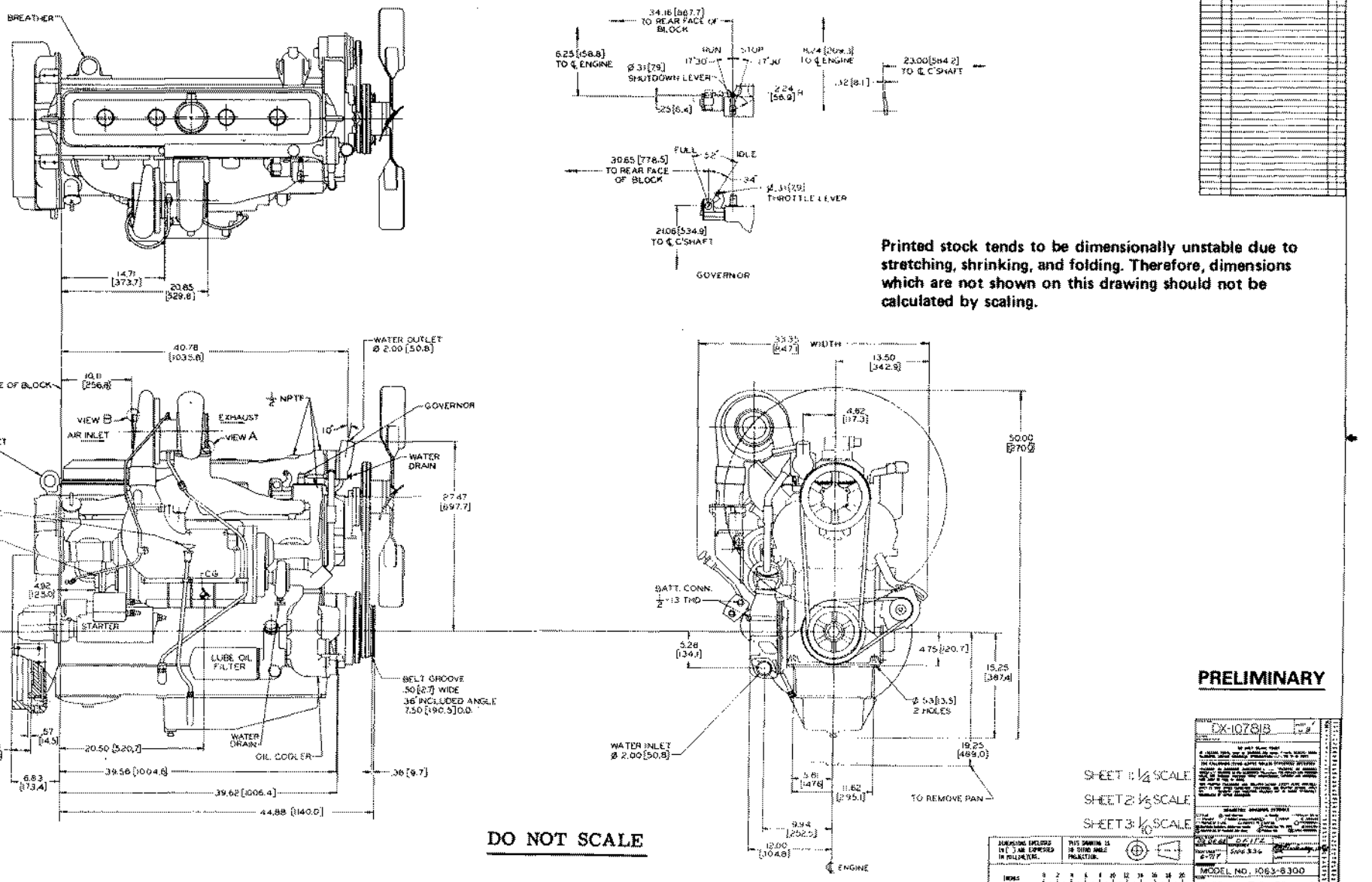
Detroit Diesel Allison
Division of General Motors Corporation
13400 West Outer Drive Detroit, Michigan, 48228







DX-10788



Printed stock tends to be dimensionally unstable due to stretching, shrinking, and folding. Therefore, dimensions which are not shown on this drawing should not be calculated by scaling.

PRELIMINARY

DO NOT SCALE

SHEET 1: 1/4 SCALE
SHEET 2: 1/5 SCALE
SHEET 3: 1/10 SCALE

DX-10781S

DX-10781S

DX-10781S

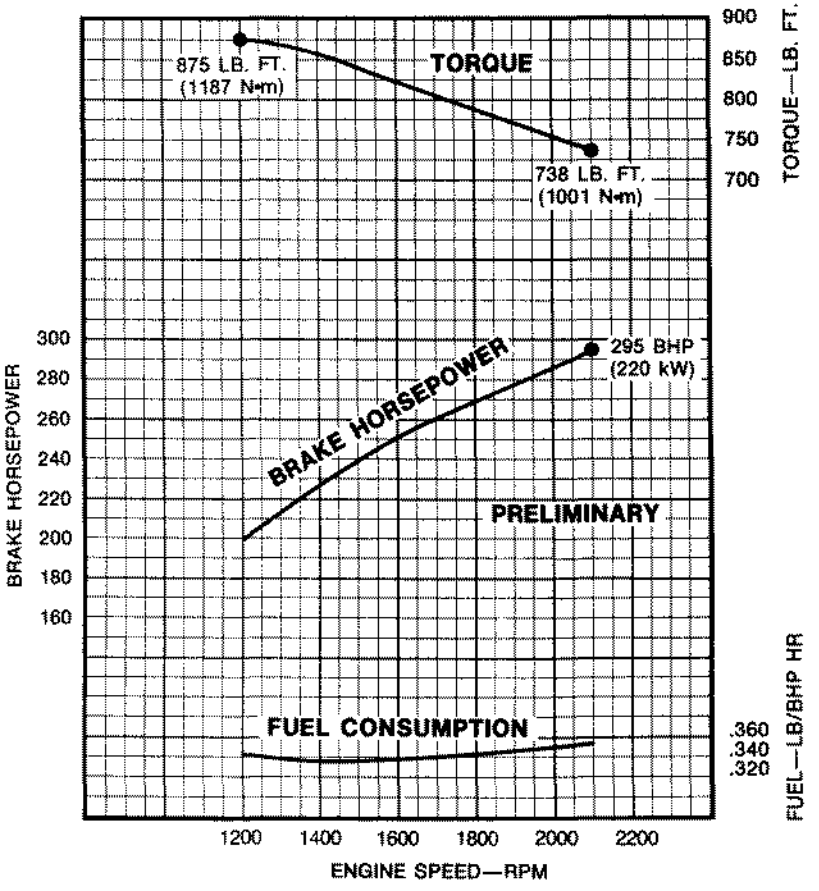
MODEL NO. 1063-8300
INSTALLATION DRAWING
DX-10781S R

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. LITHO IN U.S.A. SCALE3/4" TO 1" (DRAWING DATE 12-2-82) MODEL 10638300,8600 2SA-481

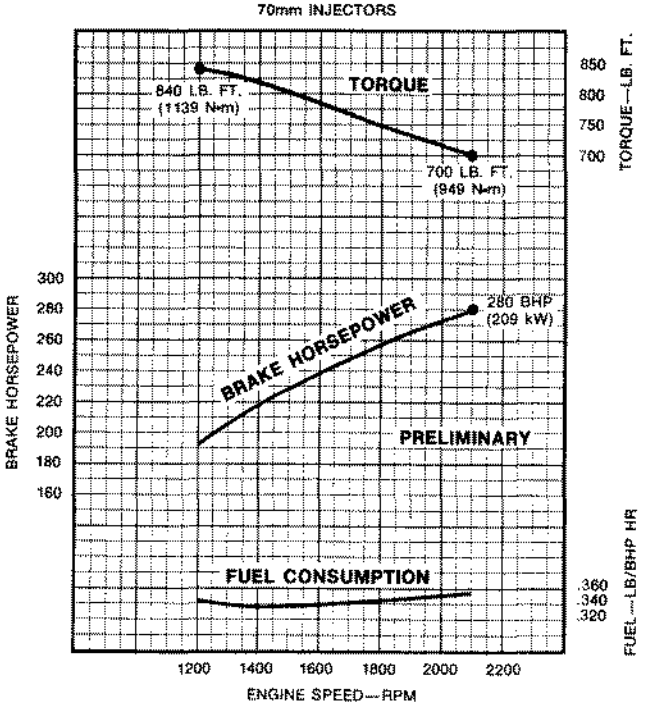
6V-71T/TA

MODEL 6V-71T ENGINE PERFORMANCE

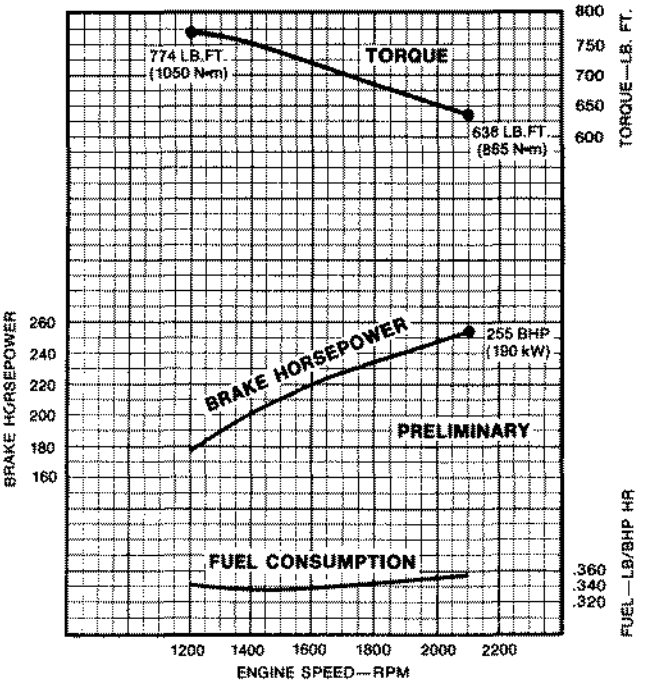
75mm INJECTORS



70mm INJECTORS



65mm INJECTORS

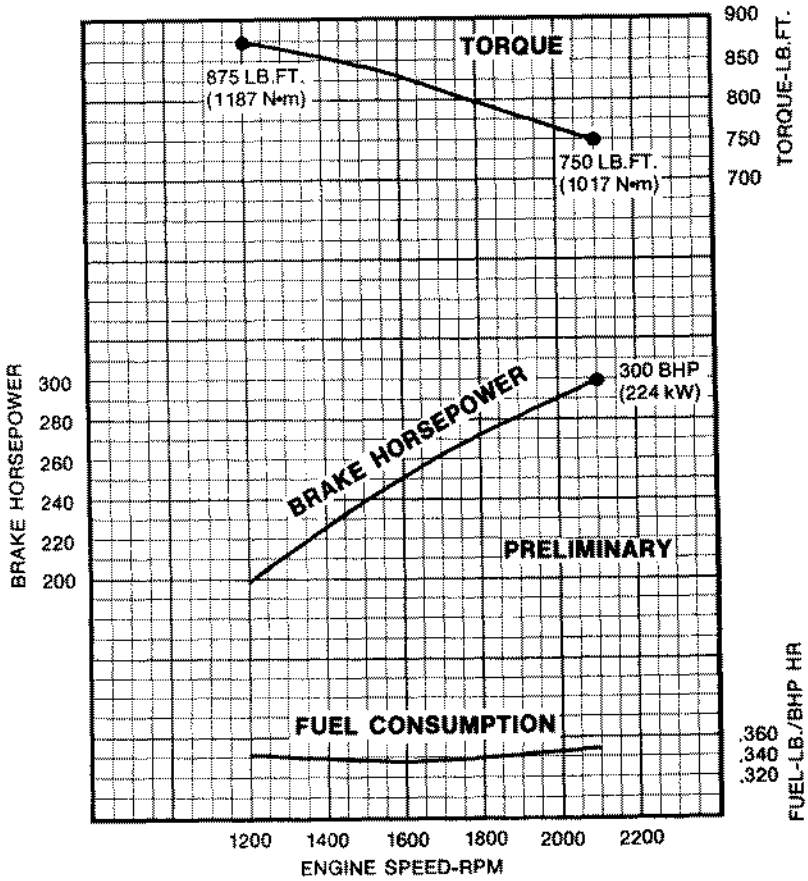


- Rated Power Output is at SAE J1349 Standard Conditions: 77°F (25°C)—air inlet temperature, and 29.31 in. Hg (99kPa)—Barometer (Dry)
- Specific gravity of fuel—.853 at 60°F (15.6°C)
- Metric conversion factors: Power kW = BHP × 0.746
  Torque N•m = lb. ft. × 1.356
  Fuel kg/kW hr = lb./BHP hr × 0.608
- This curve is based on preliminary data and is the best estimate of production engine performance.
- Values are derived from currently available data and are subject to change without notice.

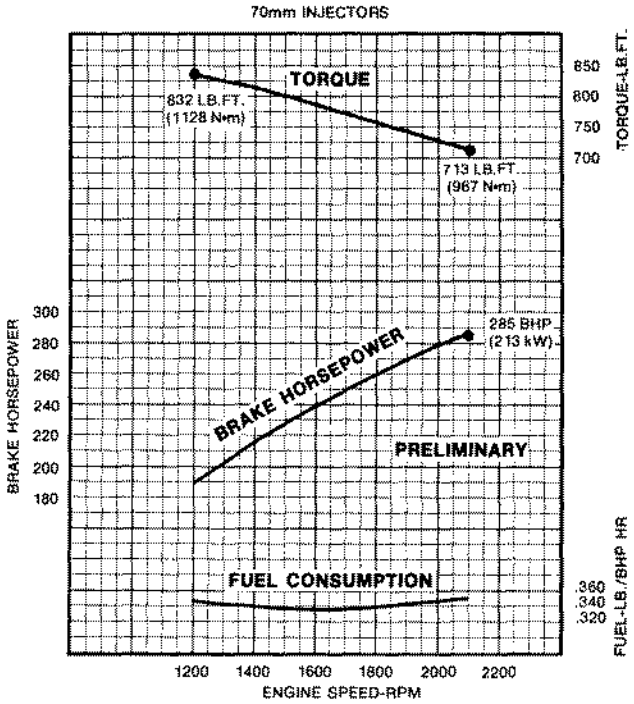
MODEL 6V-71TA ENGINE PERFORMANCE

Forward Plan 71

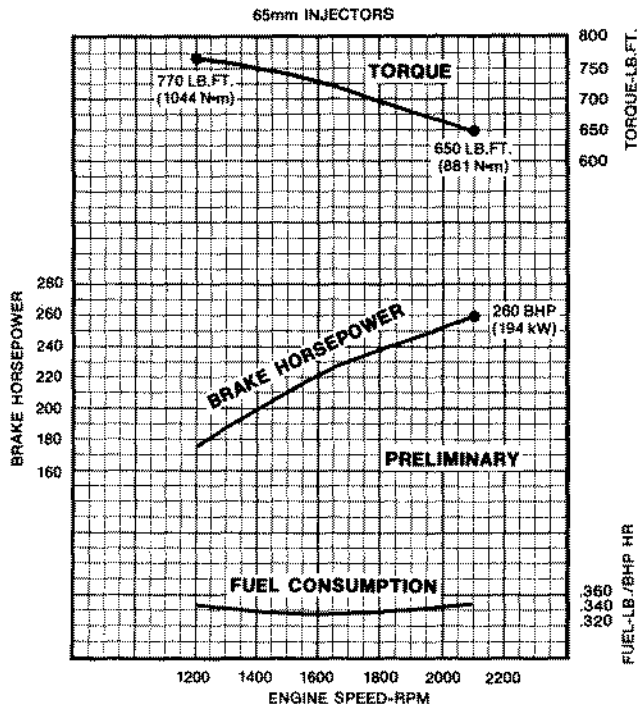
75mm INJECTORS



70mm INJECTORS



65mm INJECTORS



- Rated Power Output is at SAE J1349 Standard Conditions: 77°F (25°C)—air inlet temperature, and 29.31 in. Hg (99kPa)—Barometer (Dry)
- Specific gravity of fuel—.853 at 60°F (15.6°C)
- Metric conversion factors: Power kW = BHP × 0.746
  Torque N•m = lb. ft. × 1.356
  Fuel kg/kW hr = lb./BHP hr × 0.608
- This curve is based on preliminary data and is the best estimate of production engine performance.
- Values are derived from currently available data and are subject to change without notice.

Detroit Diesel Allison GM

MECHANICAL DATA FOR 6V-71T/TA ENGINES

MAIN BEARINGS
Type ..... Precision Half Shells — 2 Per Journal

Journal Diameter ..... 4.50 in. (114.3 mm)
Length ..... 1.24 in. (31.5 mm)
Projected Area/Bearing ..... 5.58 in.² (3600.0 mm²)
Material ..... Steel Backed Copper Lead

CRANK PIN BEARINGS
Type ..... Precision Half Shells

Number ..... 1 pair/cyl.
Journal Diameter ..... 3 in. (76.2 mm)
Length ..... 1.2 in. (30.5 mm)
Projected Area/Bearing ..... 3.6 in.² (2322.6 mm²)
Material ..... Steel Backed Copper Lead

CAMSHAFT BEARING—END
Journal Diameter ..... 1.497 in. (38.0 mm)
Length ..... 2.875 in. (73.0 mm)
Materials ..... Bronze Steel Backed

CAMSHAFT BEARING—INTERMEDIATE
Journal Diameter ..... 1.498 in. (38.0 mm)
Length ..... 1.218 in. (30.9 mm)
Materials ..... Aluminum

PISTON PIN BUSHING
Projected Area/Piston Bushing
Material .... Bronze with SAE 19 Overlay, Steel Backed

PISTON
Type and Material ..... Crosshead—Malleable Iron
Cooling ..... Oil—Cocktail Shaker

PISTON RINGS—COMPRESSION
Type
Top Ring ..... Chrome Faced Keystone
Remaining 2 ..... Barrel Faced Chrome Flashed

PISTON RINGS—OIL
Type ..... Double Scraper with Expander
Number per Piston ..... 2 Sets
Location ..... Bottom of Skirt

PISTON PIN
Type ..... Crosshead—Polished & Hardened

CONNECTING ROD
Type ..... Forged I Section
Material ..... Forged Steel

CRANKSHAFT
Material ..... Forged Steel (SAE 1548)
Type of Balance ..... Dynamic
Heat Treat ..... Induction Hardened

CAMSHAFT
Material ..... Forged Steel
Location ..... In Block, 1 Per Bank
Drive ..... Gear
Type of Cam ..... Ground

EXHAUST VALVE
Type ..... Poppet
Arrangement ..... Overhead Valve
Number/Cylinder 4
Operating Mechanism ..... Mechanical Rocker Arm
Type of Lifter ..... Solid
Valve Spring
Number/Valve ..... 1 Per Valve
Valve Seat Insert
Material ..... Steel Alloy

CYLINDER BLOCK
Type ..... Dry Liner
Material ..... Cast Iron Alloy

LINERS
Type ..... Dry Liner
Material ..... Cast Iron
Ports
Type ..... Oval
Number 18
Height ..... To Be Determined
Width ..... To Be Determined
Angle ..... To Be Determined

CYLINDER HEAD
Type ..... 4 Valve
Material ..... Cast Iron

Preliminary-Specifications subject to change without notice.

OPERATING DATA FOR 6V-71T/TA ENGINES

GENERAL ENGINE DATA

Type	2 Stroke
Number of Cylinders	6
Bore	4.25 in. (108 mm)
Stroke	5 in. (127 mm)
Displacement	426 in.³ (6.99 liters)
Number of Exhaust Valves Per Cylinder	4
Compression Ratio	To Be Determined
Firing Order (RH Rotation)	1L-3R-3L-2R-2L-1R
Turbocharger	To Be Determined
Blower Drive Ratio	To Be Determined
Engine Weight and Dimensions With Standard Accessories—	
Dry Weight (T engines)	2020 lbs. (916.3 kg)
(TA engines)	2080 lbs. (943.5 kg)
Length	41 in. (1041.4 mm)
Width	40 in. (1016.0 mm)
Height	53 in. (1346.2 mm)
Engine Center of Gravity With Standard Accessories—	
C.G. Distance from R.F.O.B. (*x* axis)	10.25 in. (260.4 mm)
C.G. Distance Above Crankshaft (*y* axis)	6.7 in. (170.2 mm)
C.G. Distance Right of ℄ as Viewed From Rear (*z* axis)	1.5 in. (38.1 mm)
Roll Axis (see installation drawing)	
Maximum Allowable Bending Moment at Rear Face of Block—	
Aluminum Hsg.	0
Cast Iron Hsg.	0

APPLICATION DATA

AIR INTAKE SYSTEM (Ref. Coolant Bulletin #38)	
Maximum Allowable Intake Res. With Clean Air Cleaner Element	12 in. H_2O (3.0 kPa)
Maximum Allowable Intake Res. With Dirty Air Cleaner Element	20 in. H_2O (5.0 kPa)
EXHAUST SYSTEM	
Maximum Allowable Exhaust Back Pressure Imposed by Piping & Muffler—	
Full Load @ 2100 RPM	3.0 in. Hg (10.1 kPa)
COOLING SYSTEM	
Coolant Capacity (engine only)	7 gal (26.5 liters) T, 7.5 gal (28.4 liters) TA
Standard Thermostat—Type	Full Blocking
Maximum Allowable Top Tank Coolant Temperature	210°F (98.9°C)
Minimum Allowable Dearation Rate	.1 CFM/cyl. (.003 m³/min)
Recommended Pressure Cap	7 psi (48.3 kPa)
Minimum Cooling Capability—(Will Vary With Ambient Conditions)	
Air to Boil @ 2100 RPM	117°F (47.2°C)
Air to Water @ 2100 RPM	95°F (35.0°C)
Coolant Pump Inlet Restriction—Maximum	3 in. Hg. (10.1 kPa)
LUBRICATION SYSTEM	
Oil Pressure @ Idle (500 RPM) Minimum	7 psi (48.3 kPa)
@ Rated Speed (2100 RPM) Minimum	30 psi (206.9 kPa)
Oil Flow @ Rated Speed (2100 RPM) Nominal	37 GPM (140.1 liters/min)
Lube Oil Sump Temperature Normal Range	200–250°F (93.3–121.1°C)
Oil Capacity of Standard Oil Pan (Low-High)	15–19 qts. (14.2–18.0 liters)
Angularity of Standard Pan (P/N 5117539)	
Front Down	23°
Front Up	23°
Crankcase Pressure @ 2100 RPM Maximum	2.0 in. H_2O (.5 kPa)

Preliminary-Specifications subject to change without notice.

Detroit Diesel Allison GM

APPLICATION DATA (continued)

FUEL SYSTEM (Reference Engineering Bulletin #21)

Model Injector	Brake Specific Fuel Consumption @ Rated HP And Speed lb/BHP-HR	Fuel Consumption @ Rated HP And Speed lb/hr (kg/hr)	GPH (l/hr)	Brake Specific Fuel Consumption @ Peak Torque lb/BHP-HR	Fuel Consumption @ Peak Torque lb/hr (kg/hr)	GPH (l/hr)	Fuel Flow To Pump @ Rated Speed lb/hr (kg/hr) (.8 Orifice)	GPH (l/hr)
6V-71T 75 mm	.356	105.1 (47.7)	14.8 (56.1)	.342	68.6 (31.1)	9.7 (36.7)	640 (290)	90 (341)
6V-71T 70 mm	.356	99.8 (45.3)	14.1 (53.4)	.342	65.6 (29.8)	9.2 (34.8)	640 (290)	90 (341)
6V-71T 65 mm	.356	91.1 (41.3)	12.9 (48.9)	.342	60.6 (27.5)	8.6 (32.6)	640 (290)	90 (341)
6V-71TA 75 mm	.350	105.1 (47.7)	14.8 (56.1)	.344	68.6 (31.1)	9.7 (36.7)	640 (290)	90 (341)
6V-71TA 70 mm	.350	99.8 (45.3)	14.1 (53.4)	.344	65.6 (29.8)	9.2 (34.8)	640 (290)	90 (341)
6V-71TA 65 mm	.350	91.9 (41.3)	12.9 (48.9)	.344	60.6 (27.5)	8.6 (32.6)	640 (290)	90 (341)

Maximum Allowable Restriction to Pump—
With Clean Filter ..... 6 in. Hg (22.1 kPa)
With Dirty Filter ..... 12 in. Hg (44.1 kPa)
Fuel Pressure Inlet Manifold—Normal Range ..... 50-70 psi (344.8-482.7 kPa)
Fuel Spill Flow—Minimum ..... .9 gpm (3.4 liters/min)
Fuel Line Size—Minimum Diameter or No. ..... Depends on length of hose
Fuel System Restricted Fitting Size ..... .080 in. (2.0 mm)
Filter Micron Size—Primary/Secondary 30/10

ELECTRICAL SYSTEM

Minimum Recommended Battery Capacity—
SAE Cold Cranking, Amps at 0°F to 31°F—12 Volt Starter ..... 900 amps
24 Volt Starter ..... 600 amps
Maximum Allowable resistance of Starting Circuit—
With 12 Volt Starter ..... .0012 ohms
With 24 Volt Starter ..... .0020 ohms

Preliminary-Specifications subject to change without notice.

PERFORMANCE DATA

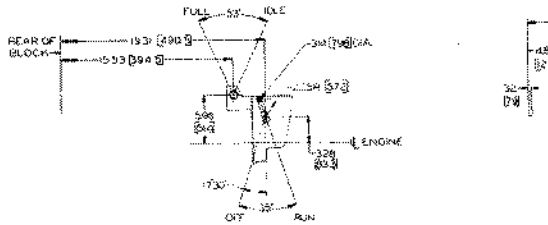
All data is based on the engine operating with fuel pump, water pump, and lubricating oil pumps: not included are alternator, fan, air compressor, air cleaner, or optional equipment. Engine performance data is based on operating under SAE Standard J1349 conditions of 29.31 in Hg (dry) barometer and 77°F (25°C) intake air temperature, using No. 2 diesel fuel at 60°F (15.6°C) fuel temperature (.853 @ 60°F specific gravity), minimum air intake and exhaust restriction (6 in H_2O and 0.2 in Hg respectively).

Engine Ratings	Injector Size	Output BHP at Rated Speed 2100 RPM	Peak Torque lb ft (N•m) @ 1200 RPM	Air Flow CFM (m^3/min)	Exhaust Gas CFM Temp °F (m^3/min) (°C)	Water Flow GPM (liter/min)	Heat Rej. BTU/min (kW)	BMEP PSI (kPa)	Piston Speed FPM
6V-71T	75 mm	295	875 (1186)	973 (27.6)	1946 620°F (55.1) (327°C)	109 (413)	7965 (140)	104.7 (721.9)	1750
6V-71T	70 mm	280	840 (1139)	949 (26.9)	1866 602°F (52.8) (316.7°C)	109 (413)	7560 (133)	99.4 (685.3)	1750
6V-71T	65 mm	255	775 (1050)	922 (26.1)	1777 581°F (50.3) (305°C)	109 (413)	6885 (121)	90.9 (626.7)	1750
6V-71TA	75 mm	300	875 (1186)	914 (25.9)	1772 587°F (50.2) (308°C)	109 (413)	8700 (153)	106.5 (734.3)	1750
6V-71TA	70 mm	285	832 (1128)	892 (25.3)	1701 570°F (48.2) (298.9°C)	109 (413)	8265 (145)	101.2 (697.7)	1750
6V-71TA	65 mm	260	770 (1044)	866 (24.5)	1620 550°F (45.9) (287.8°C)	109 (413)	7540 (133)	92.3 (636.4)	1750

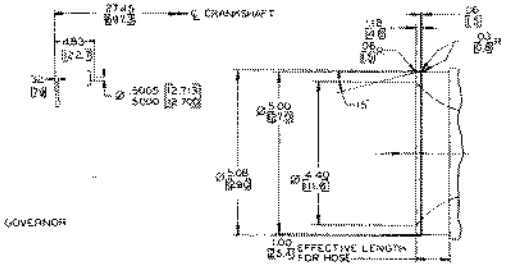
Idle Speed (minimum) ..... 500 RPM
Maximum No-Load Governed Speed ..... Approx. 200 RPM above Full Load Speed
Normal OperatiNormal Operati Normal Operating Coolant Temp. ..... 160-185°F (71.1-85.0°C)
Thrust Bearing Load Limit—Max. Int. ..... 600 lbs. continuous (2669 N)
1800 lbs. intermittent (8006 N)

Preliminary-Specifications subject to change without notice.

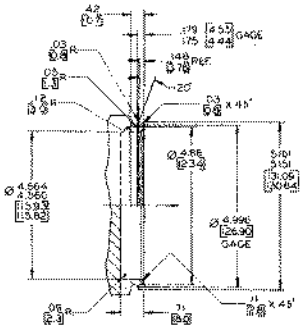
Detroit Diesel All
Division of General Motors Corp
13400 West Outer Drive Detroit, Michiga

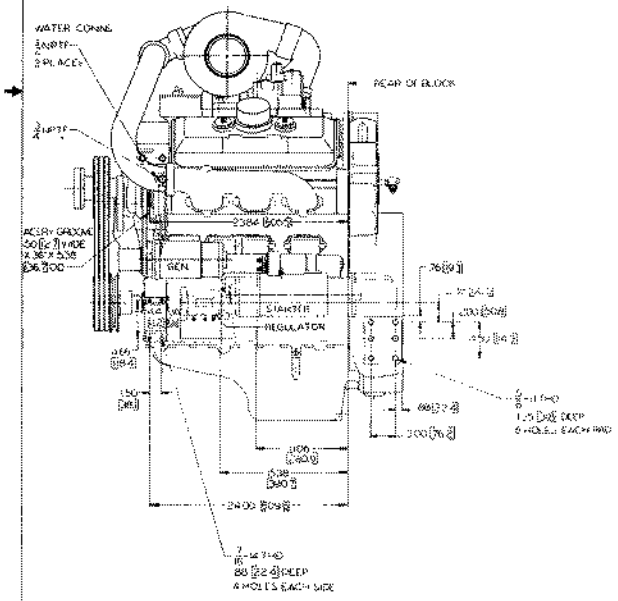


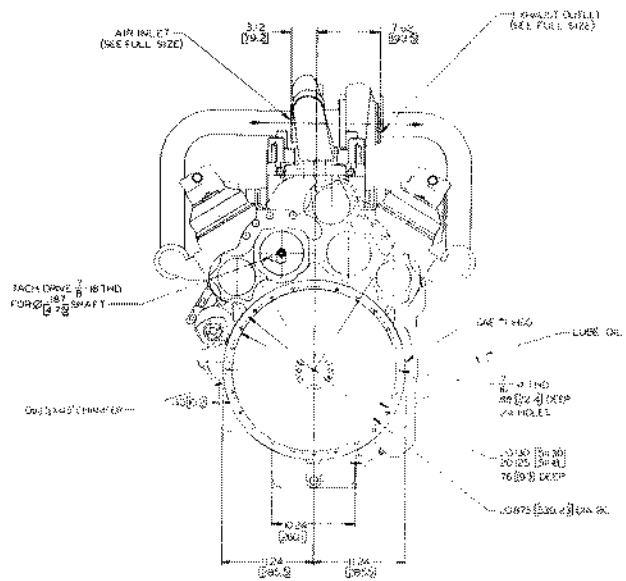
VARIABLE SPEED GOVERNOR

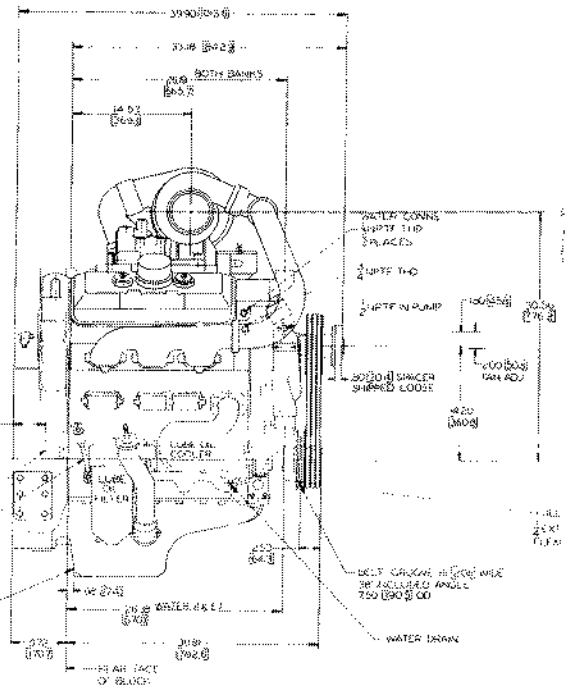


AIR INLET
(FULL SIZE)


EXHAUST OUTLET
(FULL SIZE)





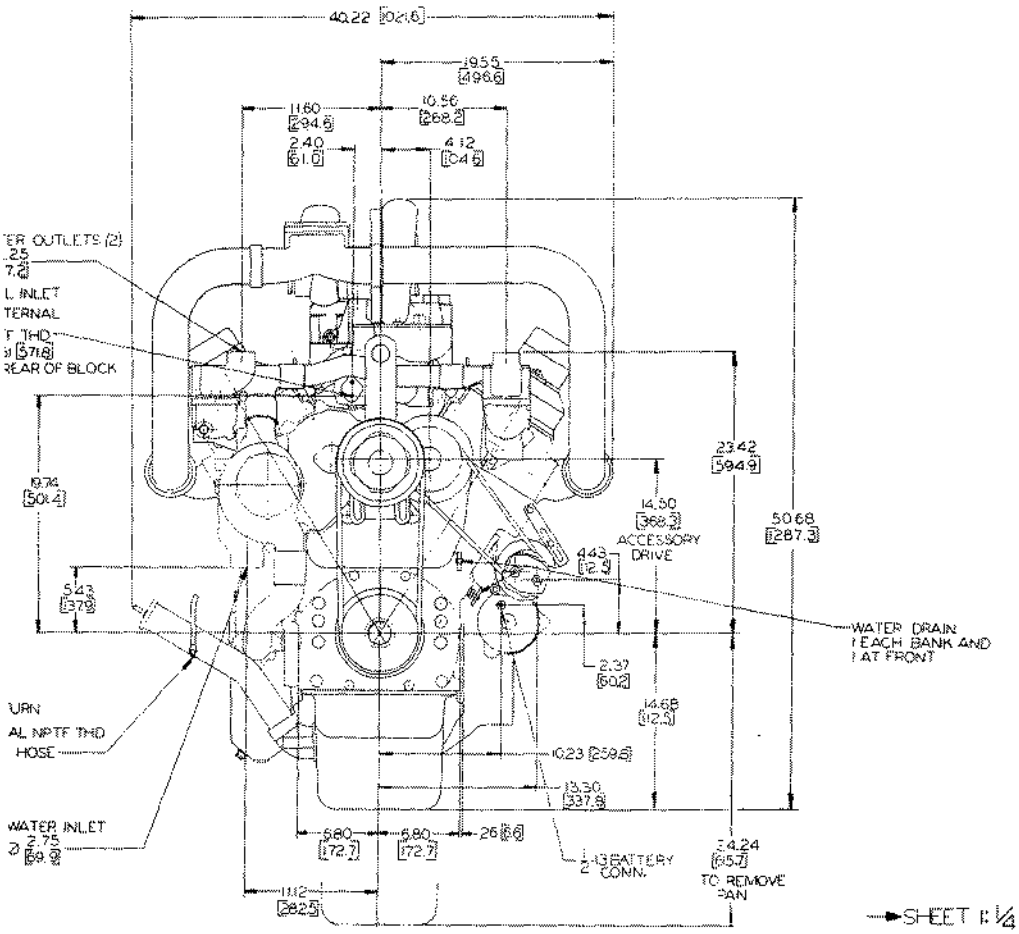


SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTIC

son
oration

. 48228

Printed stock tends to be dimensionally unstable due to stretching, shrinking, and folding. Therefore, dimensions which are not shown on this drawing should not be calculated by scaling.



PRELIMINARY

SHEET 1: 1/4 SCALE
SHEET 2: 1/5 SCALE
SHEET 3: 1/10 SCALE

DO NOT SCALE

DX-107820

MODEL 70637300

INSTALLATION DRAWING

DX-107820

LITHO IN U.S.A. SCALE3/4" TO 1' (DRAWING DATE 12-22-82) MODEL 70637300,7600 2SA-477

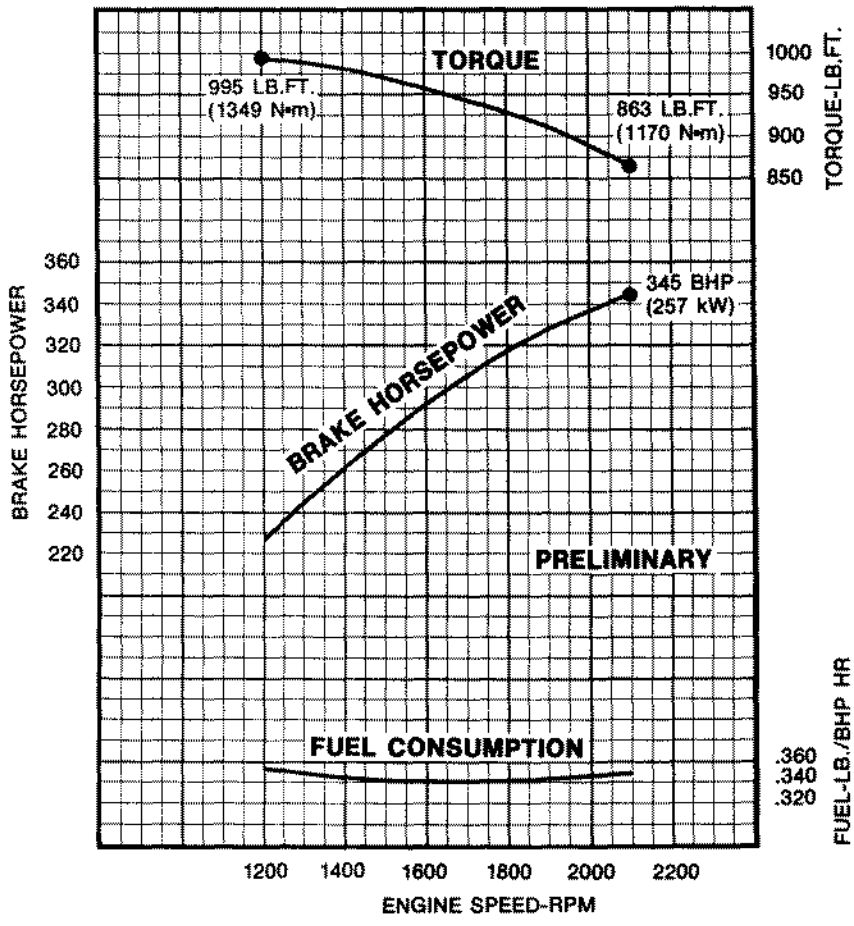
300-500 HORSEPOWER

6V-92T/TA

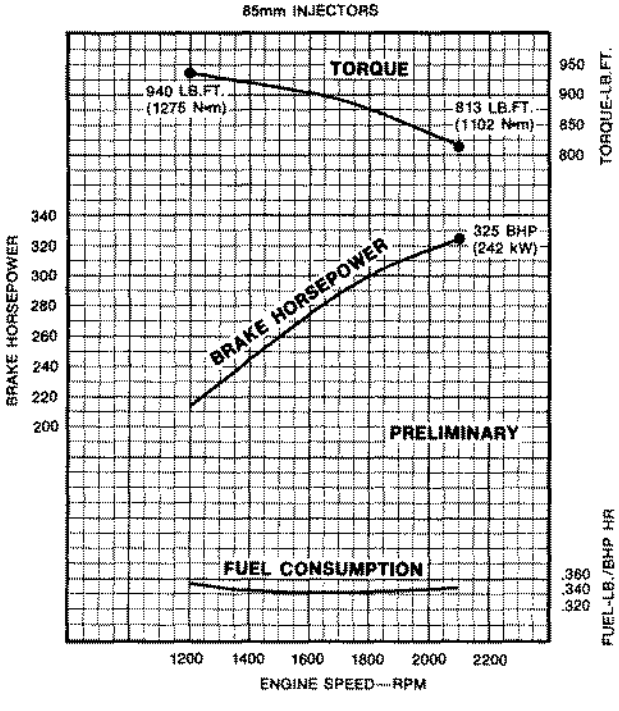
MODEL 6V-92T ENGINE PERFORMANCE

Forward Plan 92

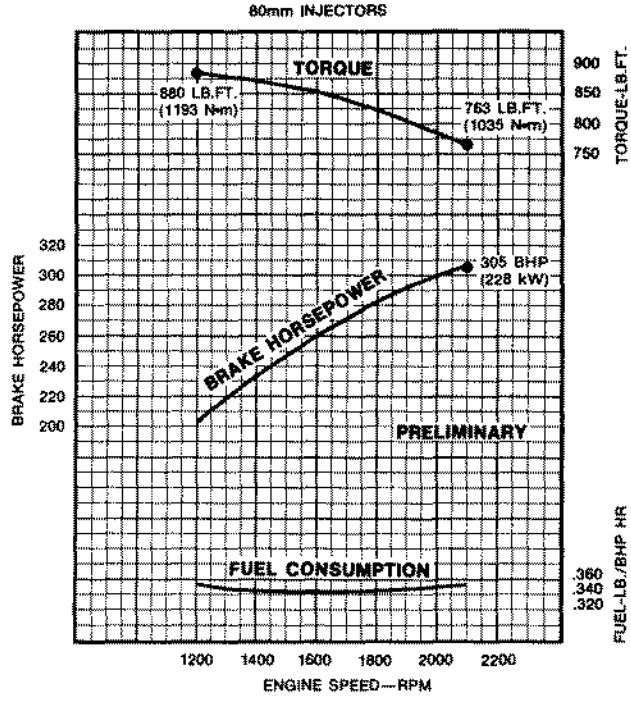
90mm INJECTORS



85mm INJECTORS



80mm INJECTORS



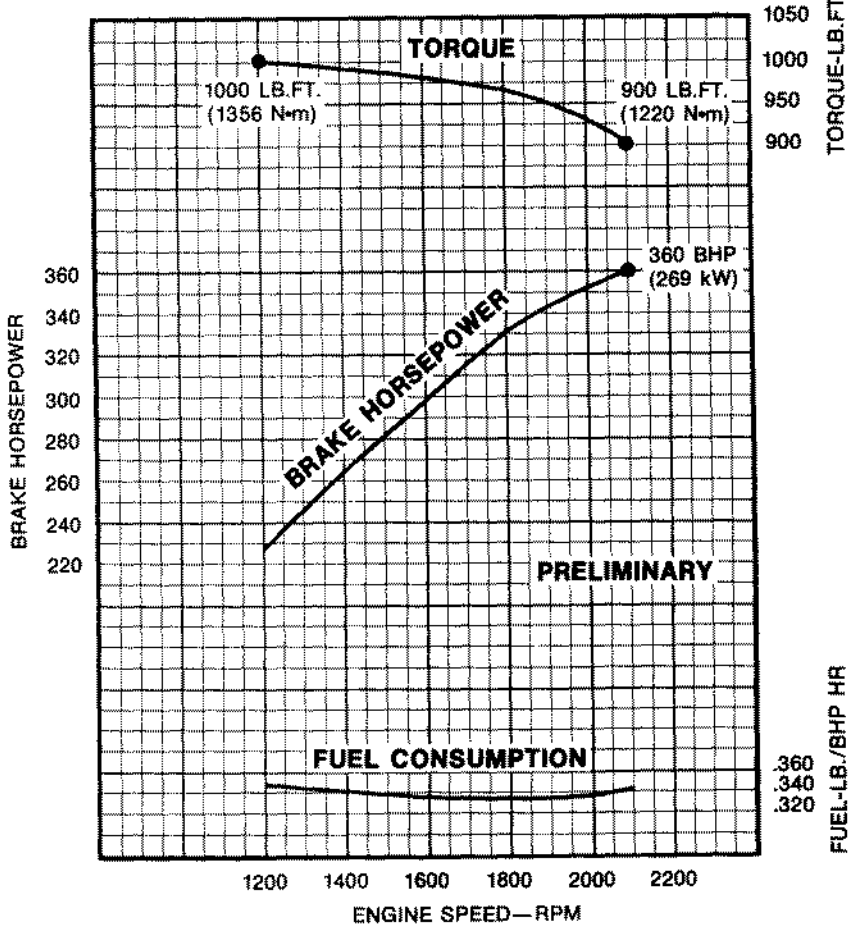
- Rated Power Output is at SAE J1349 Standard Conditions: 77°F (25°C)—air inlet temperature, and 29.31 in. Hg (99kPa)—Barometer (Dry)
- Specific gravity of fuel—.853 at 60°F (15.6°C)
- Metric conversion factors: Power kW = BHP × 0.746
  Torque N•m = lb. ft. × 1.356
  Fuel kg/kW hr = lb./BHP hr × 0.608
- This curve is based on preliminary data and is the best estimate of production engine performance.
- Values are derived from currently available data and are subject to change without notice.

Detroit Diesel Allison GM

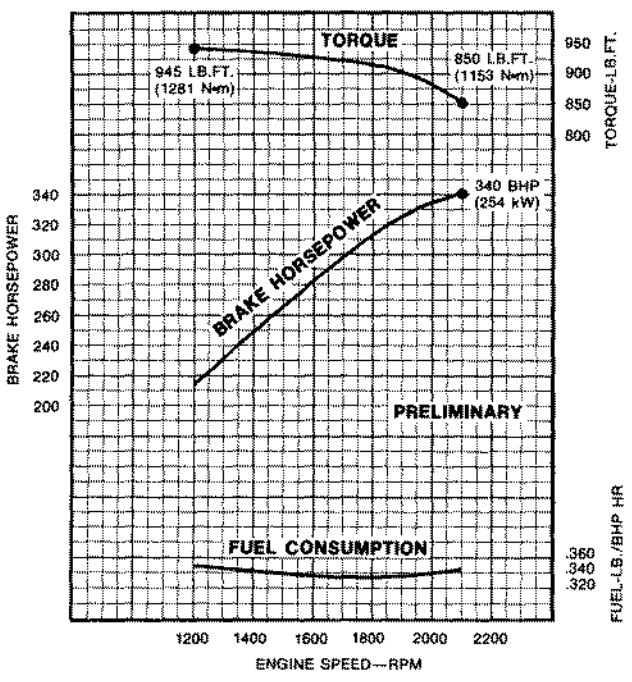
MODEL 6V-92TA ENGINE PERFORMANCE

Forward Plan 92

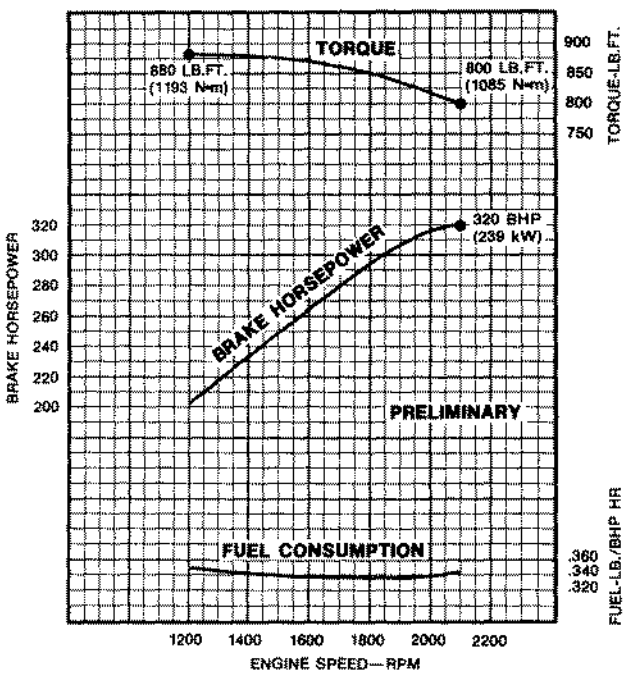
90mm INJECTORS



85mm INJECTORS



80mm INJECTORS



- Rated Power Output is at SAE J1349 Standard Conditions: 77°F (25°C)—air inlet temperature, and 29.31 in. Hg (99kPa)—Barometer (Dry)
- Specific gravity of fuel—.853 at 60°F (15.6°C)
- Metric conversion factors: Power kW = BHP × 0.746
  Torque N•m = lb. ft. × 1.356
  Fuel kg/kW hr = lb./BHP hr × 0.608
- This curve is based on preliminary data and is the best estimate of production engine performance.
- Values are derived from currently available data and are subject to change without notice.

Detroit Diesel Allison GM

MECHANICAL DATA FOR 6V-92T/TA ENGINES

MAIN BEARINGS
Type ..... Precision Half Shells — 2 Per Journal
Journal Diameter ..... 4.50 in. (114.3 mm)
Length ..... 1.24 in. (31.5 mm)
Projected Area/Bearing ..... 5.58 in.^{2} (3600.0 mm^2)
Material ..... Steel Backed Copper Lead

CRANK PIN BEARINGS
Type ..... Precision Half Shells — 2 Per Journal
Number ..... 1 Pair Per Cylinder
Journal Diameter ..... 3.0 in. (76.2 mm)
Length ..... 1.2 in. (30.5 mm)
Projected Area/Bearing ..... 3.60 in.^{2} (2322.6 mm^2)
Material ..... Steel Backed Copper Lead

CAMSHAFT BEARING—END
Journal ..... 1.4962 in. (38.0 mm)
Length ..... 2.875 in. (73.0 mm)
Materials ..... Bronze/Steel Backed

CAMSHAFT BEARING—INTERMEDIATE
Journal Diameter ..... 1.76 in. (44.7 mm)
Length ..... 1.23 in. (31.2 mm)
Materials ..... Aluminum

PISTON PIN BUSHING
Projected Area/Piston Bushing
Material ..... Bronze with SAE 19 Overlay, Steel Back

PISTON
Type and Material ..... Crosshead Malleable Iron
Cooling ..... Oil Cocktail Shaker

PISTON RINGS—COMPRESSION
Type
Top Ring ..... Chrome Faced Keystone
Remaining 2 ..... Barrel Faced Chrome Flashed

PISTON RINGS—OIL
Type ..... Double Scraper with Expander
Number per Piston ..... 2 Sets
Location ..... Bottom of Skirt

PISTON PIN
Type ..... Crosshead-Polished and Hardened

CONNECTING ROD
Type ..... Forged I Section
Material ..... Forged Steel

CRANKSHAFT
Material ..... Forged Steel (SAE 1548)
Heat Treat ..... Induction Hardened
Type of Balance ..... Dynamic

CAMSHAFT
Material ..... Forged Steel
Location ..... In Block, 1 Per Bank
Drive ..... Gear
Type of Cam ..... Honed

EXHAUST VALVE
Type ..... Poppet
Arrangement ..... Overhead Valve
Number/Cylinder 4
Operating Mechanism ..... Mechanical Rocker Arm
Type of Lifter ..... Solid
Valve Spring Number/Valve ..... 1 Per Valve
Valve Seat Insert Material ..... GM 3544M

CYLINDER BLOCK
Type ..... Wet Liner
Material ..... Cast Iron Alloy

LINERS
Type ..... Wet Liner
Material ..... Cast Iron
Ports
Type ..... Oval
Number 18
Height ..... To Be Determined
Width ..... To Be Determined
Angle ..... To Be Determined

CYLINDER HEAD
Type ..... 4 Valve
Material ..... Cast Iron

Preliminary-Specifications subject to change without notice.

Forward Plan 92

OPERATING DATA FOR 6V-92T/TA ENGINES

GENERAL ENGINE DATA

Type	Two Stroke Diesel
Number of Cylinders	6
Bore	4.84 in. (122.9 mm)
Stroke	5.0 in. (127.0 mm)
Displacement	552 cu. in. (9.04 liter)
Number of Exhaust Valves Per Cylinder	4
Compression Ratio	17:1
Firing Order	RH: 1L, 3R, 3L, 2R, 2L, 1R; LH: 1L, 1R, 2L, 2R, 3L, 3R
Turbocharger	To Be Determined
Blower Drive Ratio	To Be Determined
Engine Weight and Dimensions With Standard Accessories—	
Dry Weight (T engines)	2005 lbs. (909.5kg)
(TA engines)	2025 lbs. (918.5 kg)
Length	41 in. (1041.4 mm)
Width	39 in. (990.6 mm)
Height	52 in. (1320.8 mm)
Engine Center of Gravity With Standard Accessories—	
C.G. Distance from R.F.O.B. (*x* axis)	10.25 in. (260.4 mm)
C.G. Distance Above Crankshaft (*y* axis)	6.7 in. (170.2 mm)
C.G. Distance Right of ℄ as Viewed From Rear (*z* axis)	1.5 in. (38.1 mm)
Roll Axis (see installation drawing)	
Maximum Bending Moment at Rear Face of Block—	
Aluminum Hsg.	0
Cast Iron Hsg.	0

APPLICATION DATA

AIR INTAKE SYSTEM (REF. ENG. BULLETIN #39)	
Maximum Allowable Intake Res. With Clean Air Cleaner Element	12 in. H_2O (3.0 kPa)
Maximum Allowable Intake Res. With Dirty Air Cleaner Element	20 in. H_2O (5.0 kPa)
EXHAUST SYSTEM	
Maximum Allowable Exhaust Back Pressure Imposed by Piping & Muffler—	
Full Load @ 2100 RPM	3 in. Hg (10.1 kPa)
COOLING SYSTEM (REF. ENG. BULLETIN #28)	
Coolant Capacity (engine only)	6 Gal. (22.7 liters), T; 6.125 Gal. (23.2 liters), TA
Standard Thermostat—Type	Full Blocking
Maximum Allowable Top Tank Coolant Temperature	210°F (98.9°C)
Minimum Allowable Dearation Rate	.1 CFM/CYL. (.003 m^3/min)
Recommended Pressure Cap	7 PSI (48.3 kPa)
Minimum Cooling Capability—	
Air to Boil @ 2100 RPM	117°F (47.2°C)
Air to Water @ 2100 RPM	95°F (35°C)
Coolant Pump Inlet Restriction— Maximum	3 in. Hg (10.1 kPa)
LUBRICATION SYSTEM	
Oil Pressure @ Idle (500 RPM) Minimum	7 PSI (48.3 kPa)
@ Rated Speed (2100 RPM) Minimum	30 PSI (206.9 kPa)
Oil Flow @ Rated Speed (2100 RPM) Nominal	37 GPM (140.1 liters/min)
Lube Oil Sump Temperature Normal Range	200-250°F (93.3-121.1°C)
Oil Capacity of Standard Oil Pan (low-high)	16 Qts.-20 Qts. (15.1-18.9 liters)
Oil Capacity of Total System With Standard Pan	22 Qts. (20.8 liters)
Angularity of Standard Pan (P/N 5106631)	
Front Down	15°
Front Up	25°
Crankcase Pressure @ 2100 RPM Maximum	3 in. H_2O (.75 kPa)

Preliminary-Specifications subject to change without notice.

Detroit Diesel Allison GM

APPLICATION DATA (Continued)

FUEL SYSTEM (REF. ENG. BULLETIN #21)

Model Injector	Brake Specific Fuel Consumption @ Rated HP And Speed lb/BHP-HR	Fuel Consumption @ Rated HP And Speed lb/hr (kg/hr)	GPH (l/hr)	Brake Specific Fuel Consumption @ Peak Torque lb/hr (kg/hr)	Fuel Consumption @ Peak Torque lb/hr (kg/hr)	GPH (l/hr)	Fuel Flow To Pump @ Rated Speed lb/hr (kg/hr)	GPH (l/hr)
6V-92TA 90mm	.345	124 lb/hr (56.2)	17.4 (65.9)	.349 (.1583)	79.9 lb/hr (36.2)	11.2 (42.4)	640 (290)	90 (341)
6V-92TA 85 mm	.346	118 lb/hr (53.5)	16.4 (62.1)	.350 (.1587)	76 lb/hr (34.5)	10.6 (40.2)	640 (290)	90 (341)
6V-92TA 80 mm	.347	111 lb/hr (50.3)	15.5 (58.7)	.351 (.1592)	72 lb/hr (32.6)	10 (37.9)	640 (290)	90 (341)
6V-92T 90 mm	.350	121 lb/hr (54.9)	17.1 (64.8)	.353 (.1601)	80.4 lb/hr (36.5)	11.3 (42.8)	640 (290)	90 (341)
6V-92T 85 mm	.351	114 lb/hr (51.7)	16.1 (61.0)	.354 (.1605)	76.2 lb/hr (34.6)	10.7 (40.5)	640 (290)	90 (341)
6V-92T 80 mm	.352	107 lb/hr (53.1)	15.1 (57.2)	.355 (.1610)	72.0 lb/hr (32.6)	10.1 (38.3)	640 (290)	90 (341)

Maximum Allowable Restriction to Pump—
With Clean Filter ..... 6 in. Hg (22.1 kPa)
With Dirty Filter ..... 12 in. Hg (44.1 kPa)
Fuel Pressure Inlet Manifold—Normal Range ..... 50-70 PSI (344.8-482.7 kPa)
Fuel Spill Flow—Minimum ..... .9 GPM (3.4 liters/min)
Fuel System Restricted Fitting Size ..... .080 in. (2.0 mm)
Filter Micron Size—Primary/Secondary 30/10

ELECTRICAL SYSTEM

Minimum Recommended Battery Capacity—
SAE Cold Crank, Amps @ O°F — 12 Volt Starter ..... 1800 amps
24 Volt Starter ..... 900 amps
Maximum Allowable resistance of Starting Circuit—
With 12 Volt Starter ..... .00075 ohms
With 24 Volt Starter ..... .0020 ohms

Preliminary-Specifications subject to change without notice.

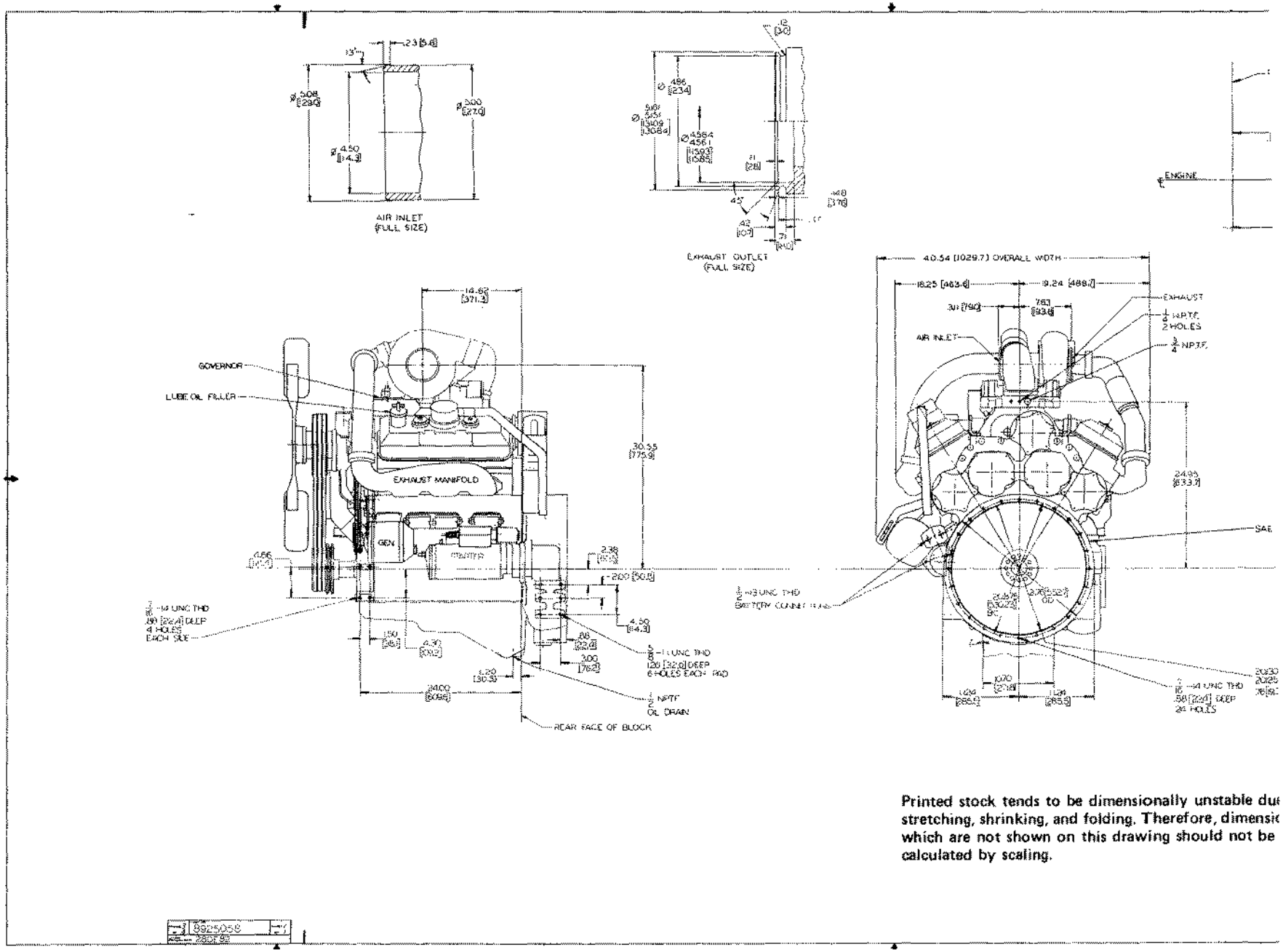
PERFORMANCE DATA

All data is based on the engine operating with fuel pump, water pump, and lubricating oil pump; not included are alternator, fan, air compressor, air cleaner, or optional equipment. Engine performance data is based on operating under SAE Standard J1349 conditions of 29.31 in Hg (dry) barometer and 77°F (25°C) intake air temperature, using No. 2 diesel fuel at 60°F (15.6°C) fuel temperature (.853 @ 60°F specific gravity), minimum air intake and exhaust restriction (6 in H_2O and 0.2 in Hg respectively).

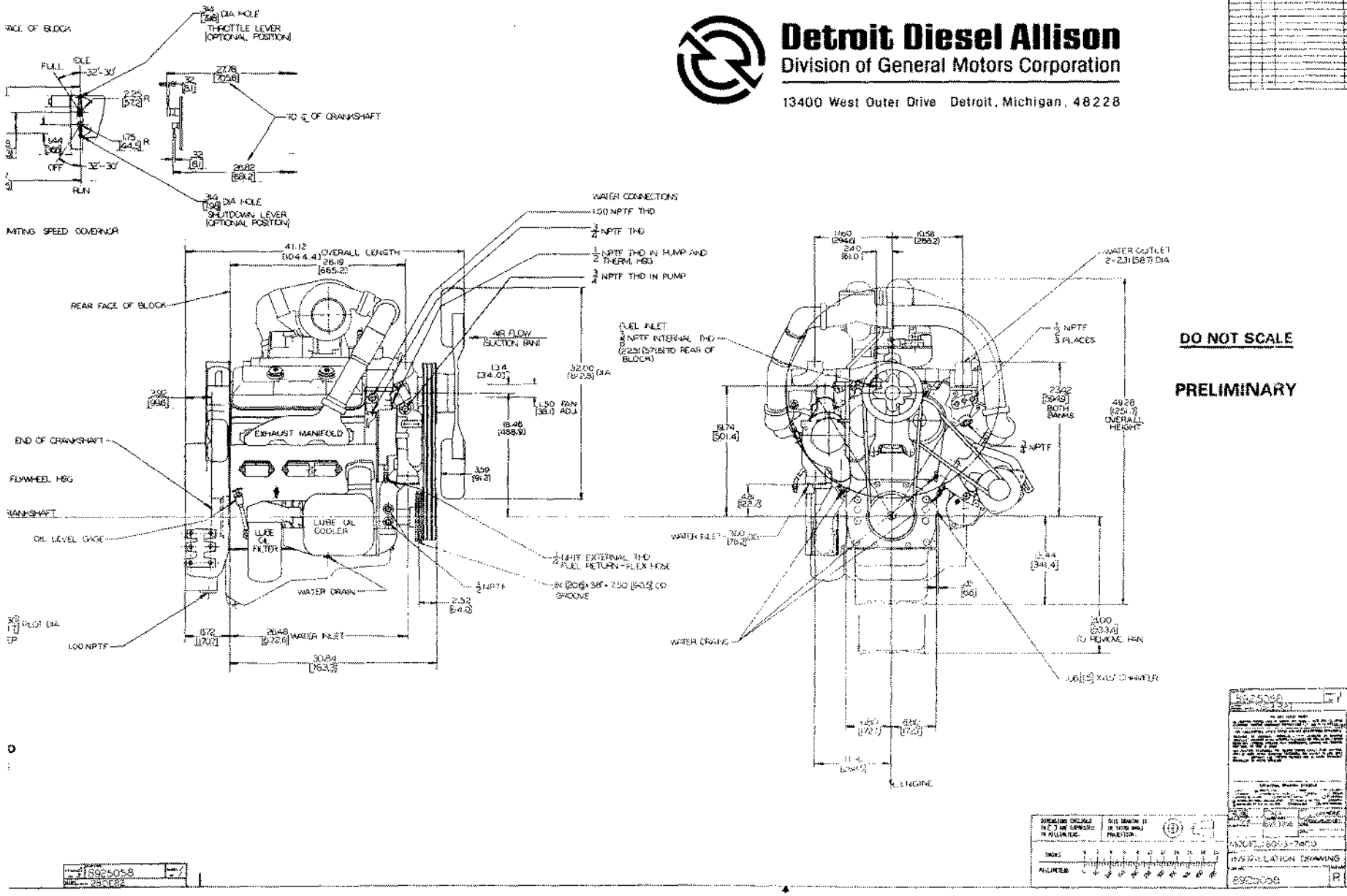
Engine	Injector Size	Output BHP (kW)	Rated Speed @ RPM	Peak Torque lb ft (N·m) @ RPM	Air Flow CFM (m^3/min)	Exhaust Gas CFM Temp °F (m^3/min) (°C)	Water Flow GPM (liter/min)	Heat Rej. BTU/min (kW)	BMEP PSI (kPa)	Piston Speed FPM
6V-92TA	90 mm	360 (269)	2100	1000 (1356) @ 1200	957 (27.1)	2086 710°F (59.1) (377°C)	160 (606)	9900 (174)	123 (848)	1750
6V-92TA	85 mm	340 (254)	2100	945 (1281) @ 1200	920 (26.1)	1987 700°F (56.3) (371°C)	160 (606)	9610 (169)	116 (800)	1750
6V-92TA	80 mm	320 (239)	2100	890 (1207) @ 1200	882 (25.0)	1890 690°F (53.5) (365°C)	160 (606)	9000 (158)	109 (752)	1750
6V-92T	90 mm	345 (257)	2100	995 (1349) @ 1200	967 (27.4)	2139 728°F (60.6) (387°C)	160 (606)	9220 (162)	118 (814)	1750
6V-92T	85 mm	325 (242)	2100	940 (1275) @ 1200	929 (26.3)	2038 718°F (57.7) (381°C)	160 (606)	8650 (152)	111 (765)	1750
6V-92T	80 mm	305 (228)	2100	880 (1193) @ 1200	891 (25.2)	1938 708°F (54.9) (375°C)	160 (606)	8070 (142)	104 (717)	1750

Idle Speed (minimum) ..... 500 RPM
Maximum No-Load Governed Speed ..... Approx. 200 RPM Above Full Load Speed
Normal Operating Coolant Temp. ..... 160-185°F (71.1-85°C)
Thrust Bearing Load Limit — Max. Int. ..... 1800 lbs (8006 N)
Max. Cont. ..... 600 lbs (2669 N)

Preliminary-Specifications subject to change without notice.



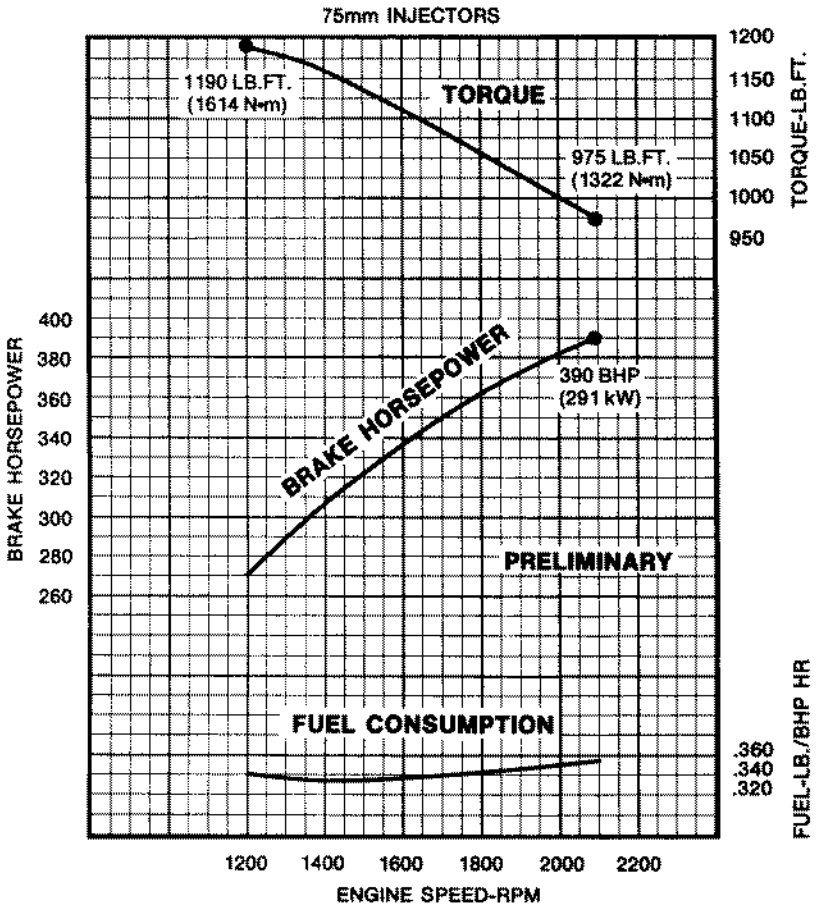
Printed stock tends to be dimensionally unstable due
stretching, shrinking, and folding. Therefore, dimensio
which are not shown on this drawing should not be
calculated by scaling.

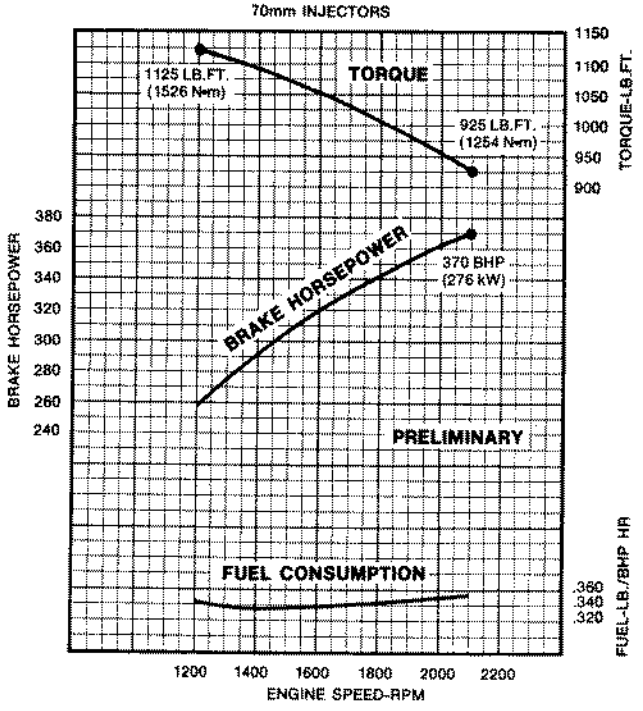


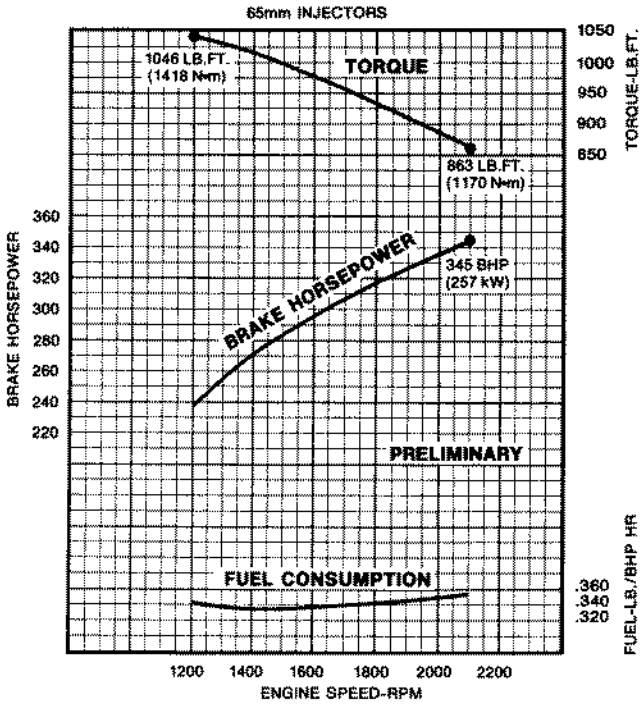
SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. LITHO IN U.S.A. SCALE: 3/8" TO 1" (DRAWING DATE 12/26/82 MODELS 8063T300, 7400 2SA-484

MODEL 8V-71T ENGINE PERFORMANCE

Forward Plan 71







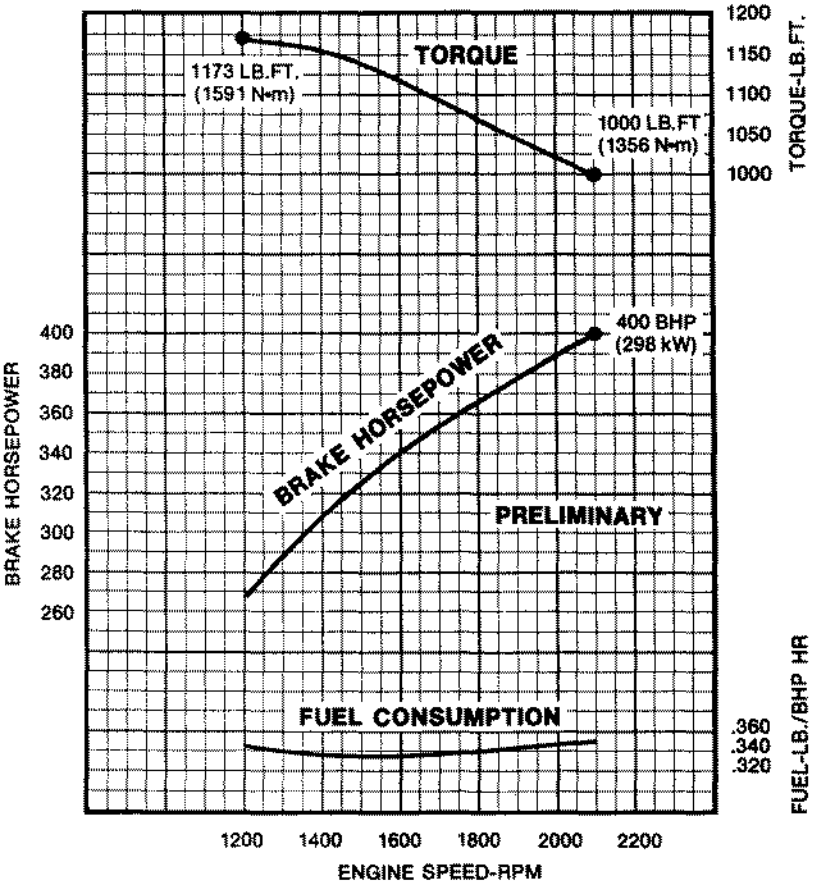
- Rated Power Output is at SAE J1349 Standard Conditions: 77°F (25°C)—air inlet temperature, and 29.31 in. Hg (99kPa)—Barometer (Dry)
- Specific gravity of fuel—.853 at 60°F (15.6°C)
- Metric conversion factors: Power kW = BHP × 0.746
  Torque N•m = lb. ft. × 1.356
  Fuel kg/kW hr = lb./BHP hr × 0.608
- This curve is based on preliminary data and is the best estimate of production engine performance.
- Values are derived from currently available data and are subject to change without notice.

Detroit Diesel Allison GM

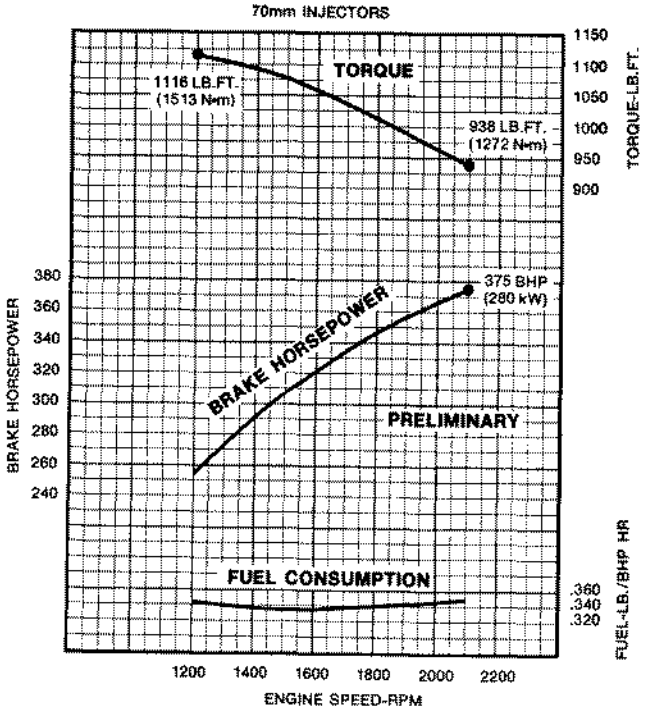
MODEL 8V-71TA ENGINE PERFORMANCE

Forward Plan 71

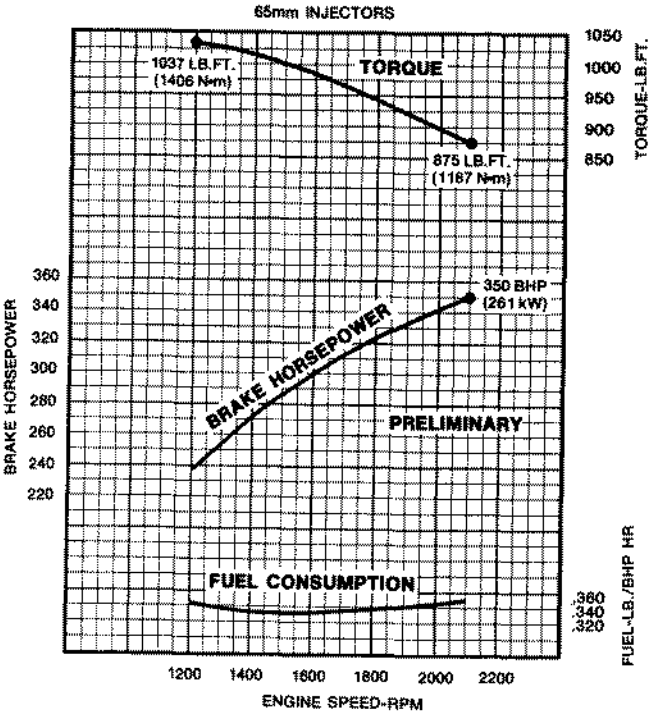
75mm INJECTORS



70mm INJECTORS



65mm INJECTORS



- Rated Power Output is at SAE J1349 Standard Conditions: 77°F (25°C)—air inlet temperature, and 29.31 in. Hg (99kPa)—Barometer (Dry)
- Specific gravity of fuel—.853 at 60°F (15.6°C)
- Metric conversion factors: Power kW = BHP × 0.746
  Torque N·m = lb. ft. × 1.356
  Fuel kg/kW hr = lb./BHP hr × 0.608
- This curve is based on preliminary data and is the best estimate of production engine performance.
- Values are derived from currently available data and are subject to change without notice.

Detroit Diesel Allison GM

MECHANICAL DATA FOR 8V-71T/TA ENGINES

MAIN BEARINGS
Type ..... Precision Half Shells — 2 Per Journal

Journal Diameter ..... 4.50 in. (114.3 mm)
Length ..... 1.24 in. (31.5 mm)
Projected Area/Bearing ..... 5.58 in.² (3600.0 mm²)
Material ..... Steel Backed Copper Lead

CRANK PIN BEARINGS
Type ..... Precision Half Shells

Number ..... 1 pair/cyl.
Journal Diameter ..... 3 in. (76.2 mm)
Length ..... 1.2 in. (30.5 mm)
Projected Area/Bearing ..... 3.6 in.² (2322.6 mm²)
Material ..... Steel Backed Copper Lead

CAMSHAFT BEARING—END
Journal Diameter ..... 1.497 in. (38.0 mm)
Length ..... 2.875 in. (73.0 mm)
Materials ..... Bronze Steel Backed

CAMSHAFT BEARING—INTERMEDIATE
Journal Diameter ..... 1.498 in. (38.0 mm)
Length ..... 1.218 in. (30.9 mm)
Materials ..... Aluminum

PISTON PIN BUSHING
Projected Area/Piston Bushing
Material .... Bronze with SAE 19 Overlay, Steel Backed

PISTON
Type and Material ..... Crosshead—Malleable Iron
Cooling ..... Oil—Cocktail Shaker

PISTON RINGS—COMPRESSION
Type
Top Ring ..... Chrome Faced Keystone
Remaining 2 ..... Barrel Faced Chrome Flashed

PISTON RINGS—OIL
Type ..... Double Scraper with Expander
Number per Piston ..... 2 Sets
Location ..... Bottom of Skirt

PISTON PIN
Type ..... Crosshead—Polished & Hardened

CONNECTING ROD
Type ..... Forged I Section
Material ..... Forged Steel

CRANKSHAFT
Material ..... Forged Steel (SAE 1548)
Type of Balance ..... Dynamic
Heat Treat ..... Induction Hardened

CAMSHAFT
Material ..... Forged Steel
Location ..... In Block, 1 Per Bank
Drive ..... Gear
Type of Cam ..... Ground

EXHAUST VALVE
Type ..... Poppet
Arrangement ..... Overhead Valve
Number/Cylinder 4
Operating Mechanism ..... Mechanical Rocker Arm
Type of Lifter ..... Solid
Valve Spring
Number/Valve ..... 1 Per Valve
Valve Seat Insert
Material ..... Steel Alloy

CYLINDER BLOCK
Type ..... Dry Liner
Material ..... Cast Iron Alloy

LINERS
Type ..... Dry Liner
Material ..... Cast Iron
Ports
Type ..... Oval
Number 18
Height ..... To Be Determined
Width ..... To Be Determined
Angle ..... To Be Determined

CYLINDER HEAD
Type ..... 4 Valve
Material ..... Cast Iron

Preliminary-Specifications subject to change without notice.

OPERATING DATA FOR 8V-71T/TA ENGINES

GENERAL ENGINE DATA

Type	2 Stroke
Number of Cylinders	8
Bore	4.25 in. (108 mm)
Stroke	5 in. (127 mm)
Displacement	568 in.^{3} (9.32 liters)
Number of Exhaust Valves Per Cylinder	4
Compression Ratio	To Be Determined
Firing Order	1L-3R-3L-4R-4L-2R-2L-1R
Turbocharger	To Be Determined
Blower Drive Ratio	To Be Determined
Engine Weight and Dimensions With Standard Accessories—	
Dry Weight (T engines)	2415 lbs. (1095.4 kg)
(TA engines)	2495 lbs. (1131.7 kg)
Length	50 in. (1270.0 mm)
Width	40 in. (1016.0 mm)
Height	53 in. (1346.2 mm)
Engine Center of Gravity With Standard Accessories—	
C.G. Distance from R.F.O.B. (*x* axis)	12.12 in. (307.8 mm)
C.G. Distance Above Crankshaft (*y* axis)	7.46 in. (189.5 mm)
C.G. Distance Right of ℄ as Viewed From Rear (*z* axis)	1.31 in. (33.3 mm)
Roll Axis (see installation drawing)	
Maximum Allowable Bending Moment at Rear Face of Block—	
Aluminum Hsg.	0
Cast Iron Hsg.	0

APPLICATION DATA

AIR INTAKE SYSTEM (Ref. Coolant Bulletin #38)	
Maximum Allowable Intake Res. With Clean Air Cleaner Element	12 in. H_2O (3.0 kPa)
Maximum Allowable Intake Res. With Dirty Air Cleaner Element	20 in. H_2O (5.0 kPa)
EXHAUST SYSTEM	
Maximum Allowable Exhaust Back Pressure Imposed by Piping & Muffler—	
Full Load @ 2100 RPM	3.0 in. Hg. (10.1 kPa)
COOLING SYSTEM	
Coolant Capacity (engine only)	7.75 gal. (29.3 liters) T, 8 gal. (30.3 liters) TA
Standard Thermostat—Type	Full Blocking
Maximum Allowable Top Tank Coolant Temperature	210°F (98.9°C)
Minimum Allowable Dearation Rate	.1 CFM/cyl. (.003 m^3/min)
Recommended Pressure Cap	7 psi (48.3 kPa)
Minimum Cooling Capability—Will Vary With Ambient Conditions	
Air to Boil @ 2100 RPM	117°F (47.2°C)
Air to Water @ 2100 RPM	95°F (35.0°C)
Coolant Pump Inlet Restriction—Maximum	3 in. Hg. (10.1 kPa)
LUBRICATION SYSTEM	
Oil Pressure @ Idle (500 RPM) Minimum	7 psi (48.3 kPa)
@ Rated Speed (2100 RPM) Minimum	30 psi (206.9 kPa)
Oil Flow @ Rated Speed (2100 RPM) Nominal	37 GPM (140.1 liters/min)
Lube Oil Sump Temperature Normal Range	200–250 (93.3–121.1°C)
Oil Capacity of Standard Oil Pan (Low-High)	19–24 qts. (18.0–22.7 liters)
Angularity of Standard Pan (P/N 5147750)	
Front Down	12°
Front Up	11°
Crankcase Pressure @ 2100 RPM Maximum	2.6 in. H_2O (.65 kPa)

Preliminary-Specifications subject to change without notice.

Detroit Diesel Allison GM

APPLICATION DATA (continued)

FUEL SYSTEM (Reference Engineering Bulletin #21)

Model Injector	Brake Specific Fuel Consumption @ Rated HP And Speed lb/BHP-HR	Fuel Consumption @ Rated HP And Speed lb/hr (kg/hr)	GPH (l/hr)	Brake Specific Fuel Consumption @ Peak Torque lb/BHP-HR	Fuel Consumption @ Peak Torque lb/hr (kg/hr)	GPH (l/hr)	Fuel Flow To Pump @ Rated Speed lb/hr (kg/hr) (.8 Orifice)	GPH (l/hr)
8V-71T 75 mm	.356	139.7 (63.4)	19.7 (74.6)	.342	92.9 (42.1)	13.1 (49.6)	640 (290)	90 (341)
8V-71T 70 mm	.356	131.9 (59.8)	18.6 (70.5)	.342	87.9 (39.9)	12.4 (47.0)	640 (290)	90 (341)
8V-71T 65 mm	.356	122.5 (55.6)	17.3 (65.5)	.342	81.9 (37.1)	11.6 (43.9)	640 (290)	90 (341)
8V-71TA 75 mm	.350	137.5 (62.4)	19.4 (73.5)	.345	92.6 (42.0)	13.1 (49.6)	640 (290)	90 (341)
8V-71TA 70 mm	.350	131.9 (59.8)	18.6 (70.5)	.345	87.9 (39.9)	12.4 (47.0)	640 (290)	90 (341)
8V-71TA 65 mm	.350	122.5 (55.6)	17.3 (65.5)	.345	81.9 (37.1)	11.6 (43.9)	640 (290)	90 (341)

Maximum Allowable Restriction to Pump—
With Clean Filter ..... 6 in. Hg (22.1 kPa)
With Dirty Filter ..... 12 in. Hg (44.1 kPa)
Fuel Pressure Inlet Manifold—Normal Range ..... 50-70 psi (344.8-482.7 kPa)
Fuel Spill Flow—Minimum ..... .9 gpm (3.4 liters/min)
Fuel Line Size—Minimum Diameter or No. ..... Depends on length of hose
Fuel System Restricted Fitting Size ..... .080 in. (2.0 mm)
Filter Micron Size—Primary/Secondary 30/10

ELECTRICAL SYSTEM

Minimum Recommended Battery Capacity—
SAE Cold Cranking, Amps at 0°F to 31°F—12 Volt Starter ..... 1800 amps
24 Volt Starter ..... 900 amps
Maximum Allowable resistance of Starting Circuit—
With 12 Volt Starter ..... .00075 ohms
With 24 Volt Starter ..... .0020 ohms

Preliminary-Specifications subject to change without notice.

PERFORMANCE DATA

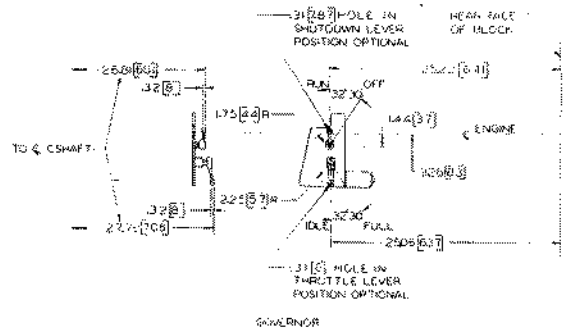
All data is based on the engine operating with fuel pump, water pump, and lubricating oil pumps; not included are alternator, fan, air compressor, air cleaner, or optional equipment. Engine performance data is based on operating under SAE Standard J1349 conditions of 29.31 in Hg (dry) barometer and 77°F (25°C) intake air temperature, using No. 2 diesel fuel at 60°F (15.6°C) fuel temperature (.853 @ 60°F specific gravity), minimum air intake and exhaust restriction (6 in H_2O and 0.2 in Hg respectively).

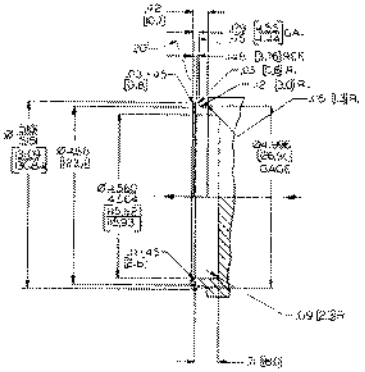
Engine	Injector Size	Output BHP at Rated Speed 2100 RPM	Peak Torque lb ft (N•m) @ 1200 RPM	Air Flow CFM (m^3/min)	Exhaust Gas CFM Temp °F (m^3/min) (°C)	Water Flow GPM (liter/min)	Heat Rej. BTU/min (kW)	BMEP PSI (kPa)	Piston Speed FPM
8V-71T	75 mm	390	1190 (1613)	1284 (36.4)	2642 651°F (74.8) (344°C)	130 (492)	10,920 (192)	104.3 (719.1)	1750
8V-71T	70 mm	370	1125 (1525)	1250 (35.4)	2500 620°F (70.8) (326.7°C)	130 (492)	10,360 (182)	98.8 (681.2)	1750
8V-71T	65 mm	345	1046 (1418)	1216 (34.4)	2423 616°F (68.6) (324.4°C)	130 (492)	9660 (170)	91.6 (631.6)	1750
8V-71TA	75 mm	400	1173 (1590)	1206 (34.2)	2403 616°F (68.0) (324°C)	130 (492)	12,000 (211)	106.5 (734.3)	1750
8V-71TA	70 mm	375	1116 (1513)	1174 (33.2)	2276 587°F (64.4) (308.3°C)	130 (492)	11,250 (198)	100.4 (692.2)	1750
8V-71TA	65 mm	350	1037 (1406)	1142 (32.3)	2206 583°F (62.4) (306.1°C)	130 (492)	10,500 (185)	93.2 (642.6)	1750

Idle Speed (minimum) ..... 500 RPM
Maximum No-Load Governed Speed ..... Approx. 200 RPM above Full Load Speed
Normal Operating Coolant Temp. ..... 170-195°F (76.7-90.6°C)
Thrust Bearing Load Limit—Max. Int. ..... 600 lbs. continuous (2669 N)
1800 lbs. intermittent (8006 N)

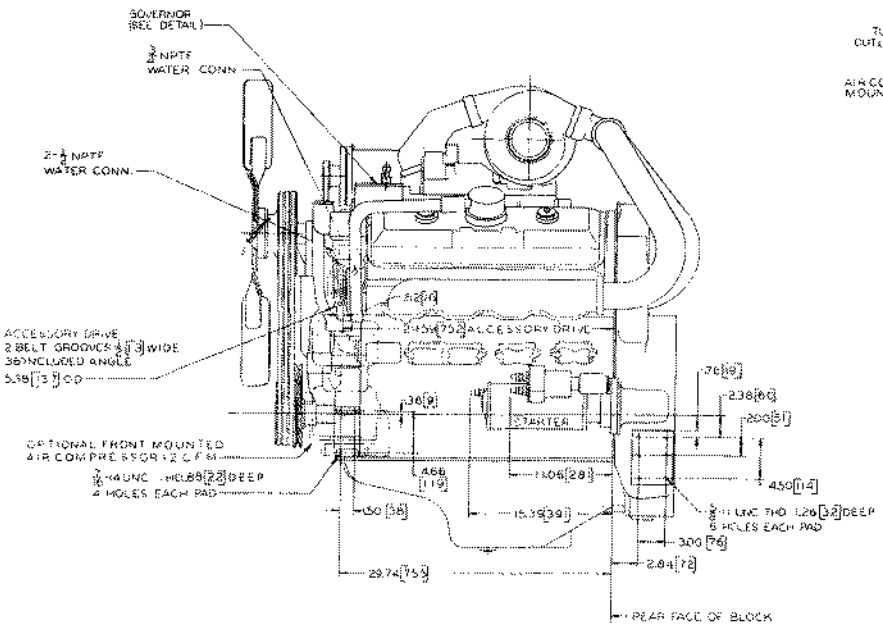
Preliminary-Specifications subject to change without notice.

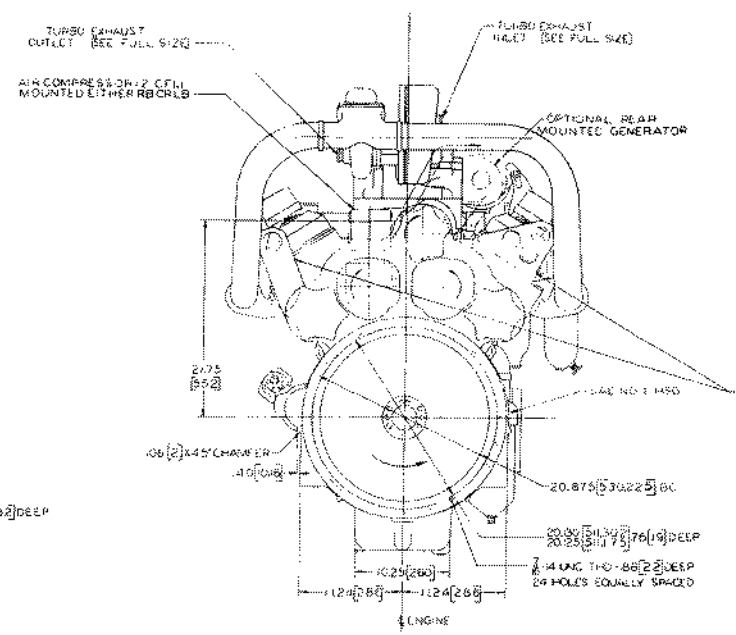
DX-07819





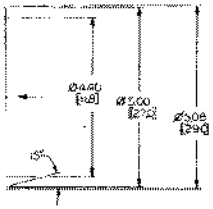
TURBO EXHAUST OUTLET (FULL SIZE)

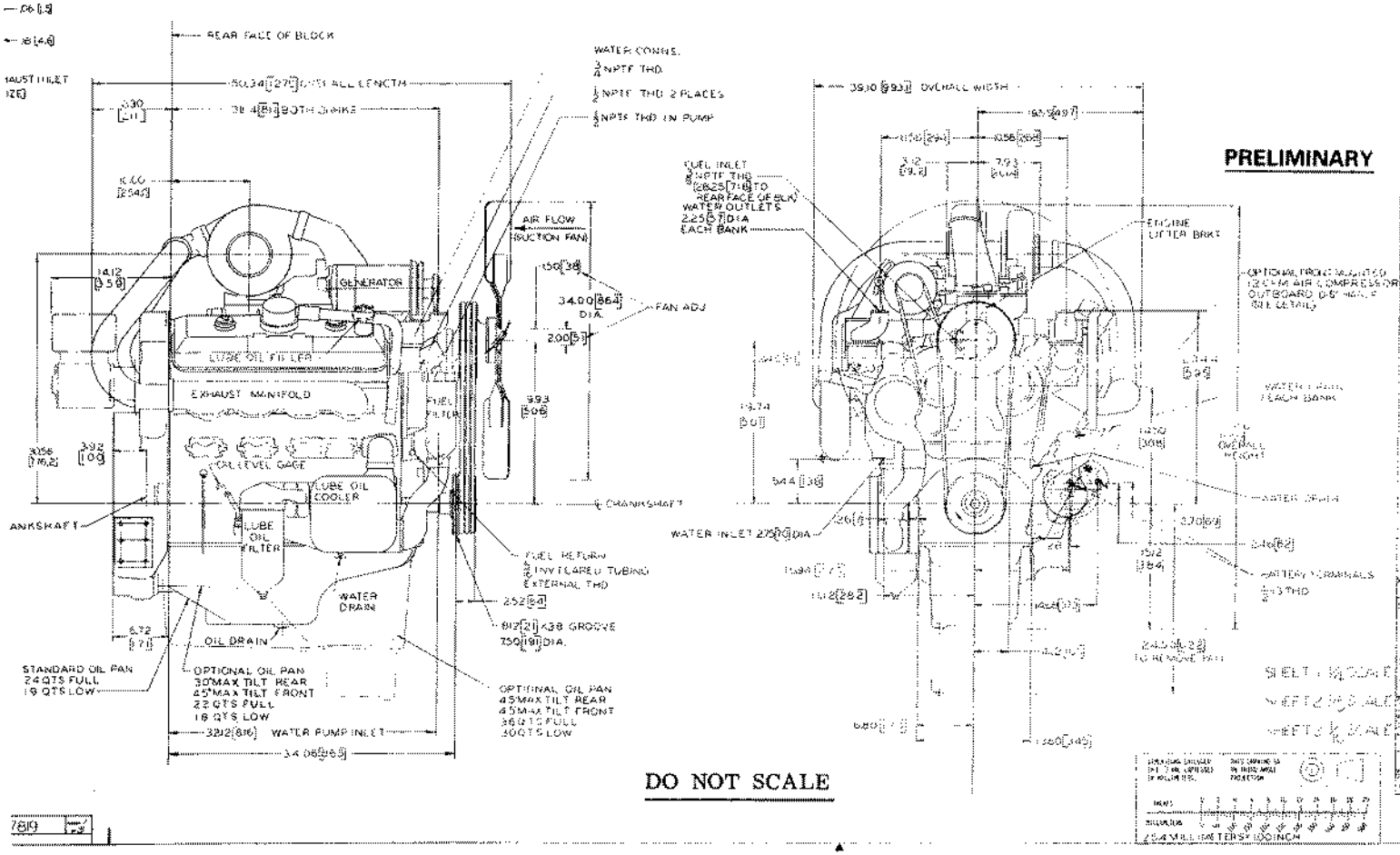




Detroit Diesel Allison
Division of General Motors Corporation
13400 West Outer Drive Detroit, Michigan, 48228

Printed stock tends to be dimensionally unstable due to stretching, shrinking, and folding. Therefore, dimensions which are not shown on this drawing should not be calculated by scaling.





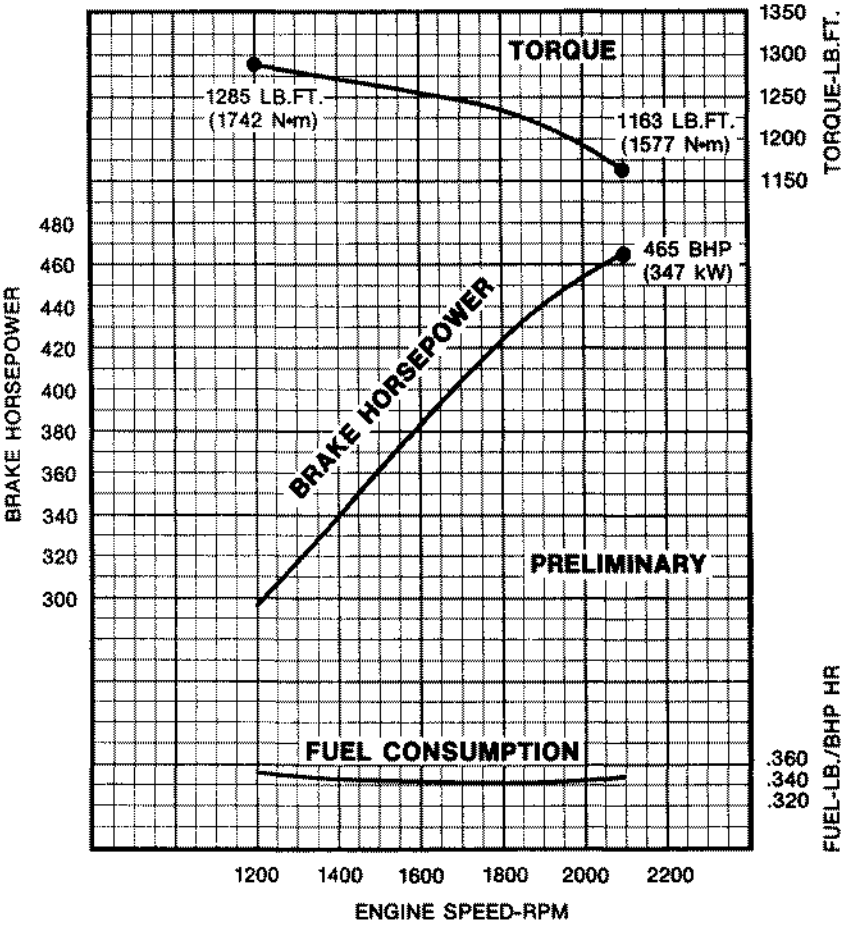
DO NOT SCALE

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. LITHO IN U.S.A. SCALE 3/4" TO 1' (DRAWING DATE 12-20-82) MODEL 7083-7300,7360 2SA-482

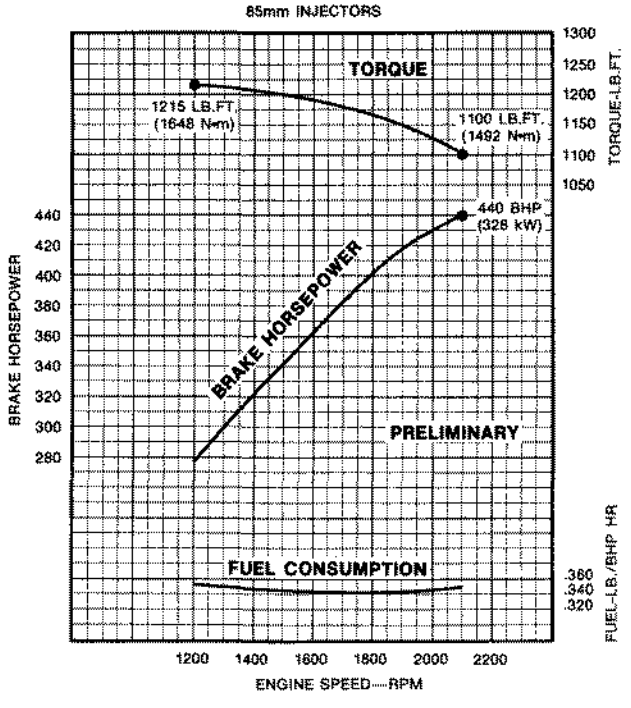
MODEL 8V-92T ENGINE PERFORMANCE

Forward Plan 92

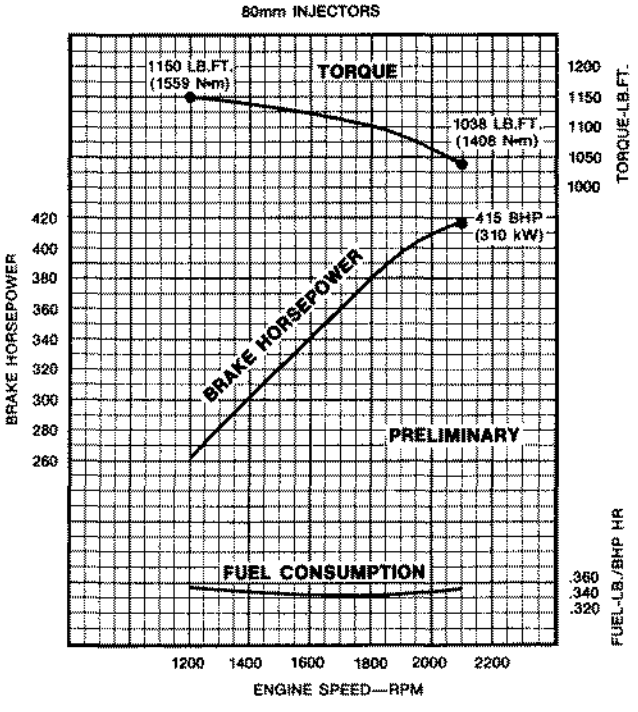
90mm INJECTORS



85mm INJECTORS



80mm INJECTORS



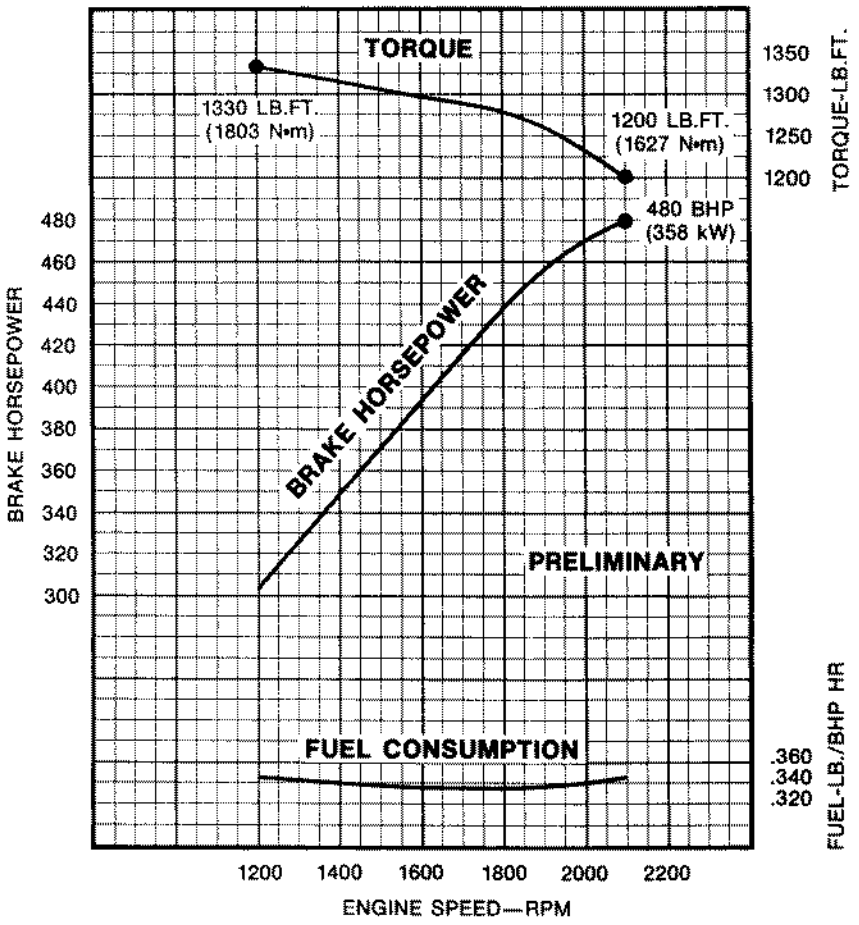
- Rated Power Output is at SAE J1349 Standard Conditions: 77°F (25°C)—air inlet temperature, and 29.31 in. Hg (99kPa)—Barometer (Dry)
- Specific gravity of fuel—.853 at 60°F (15.6°C)
- Metric conversion factors: Power kW = BHP × 0.746
  Torque N•m = lb. ft. × 1.356
  Fuel kg/kW hr = lb./BHP hr × 0.608
- This curve is based on preliminary data and is the best estimate of production engine performance.
- Values are derived from currently available data and are subject to change without notice.

Detroit Diesel Allison GM

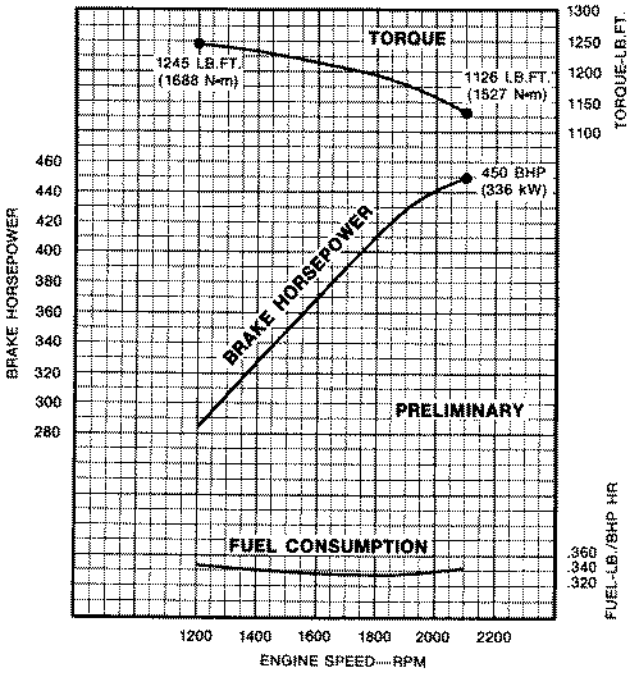
MODEL 8V-92TA ENGINE PERFORMANCE

Forward Plan 92

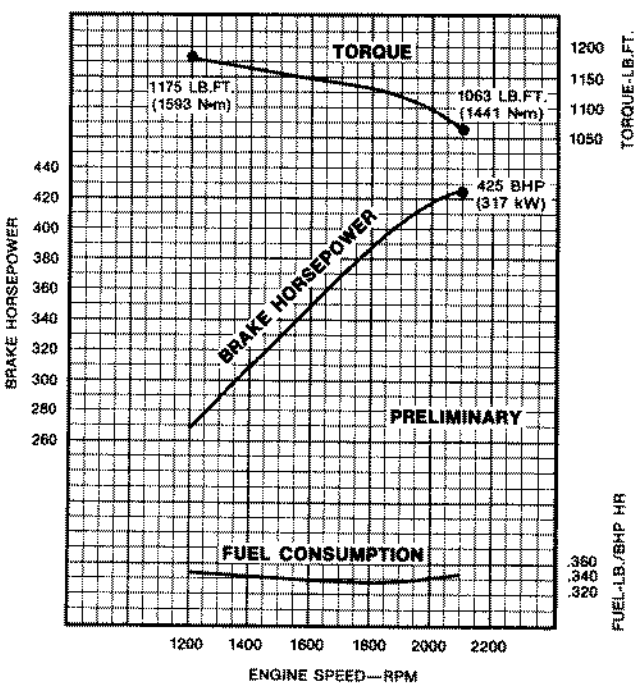
90mm INJECTORS



85mm INJECTORS



80mm INJECTORS



- Rated Power Output is at SAE J1349 Standard Conditions: 77°F (25°C)—air inlet temperature, and 29.31 in. Hg (99kPa)—Barometer (Dry)
- Specific gravity of fuel—.853 at 60°F (15.6°C)
- Metric conversion factors: Power kW = BHP × 0.746
  Torque N•m = lb. ft. × 1.356
  Fuel kg/kW hr = lb./BHP hr × 0.608
- This curve is based on preliminary data and is the best estimate of production engine performance.
- Values are derived from currently available data and are subject to change without notice.

Detroit Diesel Allison GM

MECHANICAL DATA FOR 8V-92T/TA ENGINES

MAIN BEARINGS
Type ..... Precision Half Shells — 2 Per Journal
Journal Diameter ..... 4.50 in. (114.3 mm)
Length ..... 1.24 in. (31.5 mm)
Projected Area/Bearing ..... 5.58 in.^{2} (3600.0 mm^2)
Material ..... Steel Backed Copper Lead

CRANK PIN BEARINGS
Type ..... Precision Half Shells — 2 Per Journal
Number ..... 1 Pair Per Cylinder
Journal Diameter ..... 3.0 in. (76.2 mm)
Length ..... 1.2 in. (30.5 mm)
Projected Area/Bearing ..... 3.60 in.^{2} (2322.6 mm^2)
Material ..... Steel Backed Copper Lead

CAMSHAFT BEARING—END
Journal ..... 1.4962 in. (38.0 mm)
Length ..... 2.875 in. (73.0 mm)
Materials ..... Bronze/Steel Backed

CAMSHAFT BEARING—INTERMEDIATE
Journal Diameter ..... 1.76 in. (44.7 mm)
Length ..... 1.23 in. (31.2 mm)
Materials ..... Aluminum

PISTON PIN BUSHING
Projected Area/Piston Bushing
Material ..... Bronze with SAE 19 Overlay, Steel Back

PISTON
Type and Material ..... Crosshead Malleable Iron
Cooling ..... Oil Cocktail Shaker

PISTON RINGS—COMPRESSION
Type
Top Ring ..... Chrome Faced Keystone
Remaining 2 ..... Barrel Faced Chrome Flashed

PISTON RINGS—OIL
Type ..... Double Scraper with Expander
Number per Piston ..... 2 Sets
Location ..... Bottom of Skirt

PISTON PIN
Type ..... Crosshead-Polished and Hardened

CONNECTING ROD
Type ..... Forged I Section
Material ..... Forged Steel

CRANKSHAFT
Material ..... Forged Steel (SAE 1548)
Heat Treat ..... Induction Hardened
Type of Balance ..... Dynamic

CAMSHAFT
Material ..... Forged Steel
Location ..... In Block, 1 Per Bank
Drive ..... Gear
Type of Cam ..... Honed

EXHAUST VALVE
Type ..... Poppet
Arrangement ..... Overhead Valve
Number/Cylinder 4
Operating Mechanism ..... Mechanical Rocker Arm
Type of Lifter ..... Solid
Valve Spring Number/Valve ..... 1 Per Valve
Valve Seat Insert Material ..... GM 3544M

CYLINDER BLOCK
Type ..... Wet Liner
Material ..... Cast Iron Alloy

LINERS
Type ..... Wet Liner
Material ..... Cast Iron
Ports
Type ..... Oval
Number 18
Height ..... To Be Determined
Width ..... To Be Determined
Angle ..... To Be Determined

CYLINDER HEAD
Type ..... 4 Valve
Material ..... Cast Iron

Preliminary-Specifications subject to change without notice.

Forward Plan 92

OPERATING DATA FOR 8V-92T/TA ENGINES

GENERAL ENGINE DATA

Type	Two Stroke Diesel
Number of Cylinders	8
Bore	4.84 (122.9 mm)
Stroke	5.0 (127.0 mm)
Displacement	736 cu. in. (12.1 liters)
Number of Exhaust Valves Per Cylinder	4
Compression Ratio	17:1
Firing Order	RH: 1L, 3R, 3L, 4R, 4L, 2R, 2L, 1R
Turbocharger	To Be Determined
Blower Drive Ratio	To Be Determined
Engine Weight and Dimensions With Standard Accessories—	
Dry Weight (T engines)	2395 lbs. (1086.4 kg)
(TA engines)	2415 lbs. (1095.4 kg)
Length	48 in. (1219.2 mm)
Width	39 in. (990.6 mm)
Height	52 in. (1320.8 mm)
Engine Center of Gravity With Standard Accessories—	
C.G. Distance from R.F.O.B. (*x* axis)	12.8 in. (325.1 mm)
C.G. Distance Above Crankshaft (*y* axis)	7.5 in. (190.5 mm)
C.G. Distance Right of ℄ as Viewed From Rear (*z* axis)	1.5 in. (38.1 mm)
Roll Axis (see installation drawing)	
Maximum Bending Moment at Rear Face of Block—	
Aluminum Hsg.	0
Cast Iron Hsg.	0

APPLICATION DATA

AIR INTAKE SYSTEM	
Maximum Allowable Intake Res. With Clean Air Cleaner Element	12 in. H_2O (3.0 kPa)
Maximum Allowable Intake Res. With Dirty Air Cleaner Element	20 in. H_2O (5.0 kPa)
EXHAUST SYSTEM	
Maximum Allowable Exhaust Back Pressure Imposed by Piping & Muffler—	
Full Load @ 2100 RPM	3 in. Hg (10.1 kPa)
COOLING SYSTEM (REF. ENG. BULLETIN #28)	
Coolant Capacity (engine only)	6 Gal. (22.7 liters), T; 6.125 Gal. (23.2 liters), TA
Standard Thermostat—Type	Full Blocking
Maximum Allowable Top Tank Coolant Temperature	210°F (98.9°C)
Minimum Allowable Dearation Rate	.1 CFM/CYL. (.003 m^3/min)
Recommended Pressure Cap	7 PSI (48.3 kPa)
Minimum Cooling Capability—	
Air to Boil @ 2100 RPM	117°F (47.2°C)
Air to Water @ 2100 RPM	95°F (35°C)
Coolant Pump Inlet Restriction—Maximum	3 in. Hg (10.1 kPa)
LUBRICATION SYSTEM	
Oil Pressure @ Idle (500 RPM) Minimum	7 PSI (48.3 kPa)
@ Rated Speed (2100 RPM) Minimum	30 PSI (206.9 kPa)
Oil Flow @ Rated Speed (2100 RPM) Nominal	37 GPM (140.1 liters/min)
Lube Oil Sump Temperature Normal Range	200-250°F (93.3-121.1°C)
Oil Capacity of Standard Oil Pan (low-high)	18 Qts. (17.0 liters) Low, 23 Qts. (21.8 liters) High
Oil Capacity of Total System With Standard Pan	25 Qts. (23.7 liters)
Angularity of Standard Pan (P/N 5106631)	
Front Down	17°
Front Up	28°
Crankcase Pressure @ 2100 RPM Maximum	3 in. H_2O (.75 kPa)

Preliminary-Specifications subject to change without notice.

Detroit Diesel Allison GM

APPLICATION DATA (continued)

FUEL SYSTEM (REF. ENG. BULLETIN #21)

Model Injector	Brake Specific Fuel Consumption @ Rated HP And Speed lb/BHP-HR.	Fuel Consumption @ Rated HP And Speed lb/hr (kg/hr)	GPH (l/hr)	Brake Specific Fuel Consumption @ Peak Torque @/BHR (kg/hr)	Fuel Consumption @ Peak Torque lb/hr (kg/hr)	GPH (l/hr)	Fuel Flow To Pump @ Rated Speed lb/hr (kg/hr)	GPH (l/hr)
8V-92TA 90 mm	.345	16.6 (75.3)	23 (88.6)	.346 (.1569)	106 (48.1)	14.9 (56.4)	640 (290)	90 (341)
8V-92TA 85 mm	.346	156 (70.8)	22 (83.3)	.347 (.1574)	100 (45.3)	14.1 (53.4)	640 (290)	90 (341)
8V-92TA 80 mm	.347	147 (66.7)	21 (79.5)	.348 (.1578)	95 (43.1)	13.4 (50.7)	640 (290)	90 (341)
8V-92T 90 mm	.352	164 (74.4)	23 (87.5)	.353 (.1601)	107 (48.5)	15.1 (57.2)	640 (290)	90 (341)
8V-92T 85 mm	.353	155 (70.3)	22 (83.3)	.354 (.1606)	101 (45.8)	14.2 (53.8)	640 (290)	90 (341)
8V-92T 80 mm	.354	147 (66.7)	21 (79.5)	.355 (.1610)	96 (43.5)	13.5 (51.1)	640 (290)	90 (341)

Maximum Allowable Restriction to Pump—
With Clean Filter ..... 6 in. Hg (22.1 kPa)
With Dirty Filter ..... 12 in. Hg (44.1 kPa)
Fuel Pressure Inlet Manifold—Normal Range ..... 50-70 PSI (344.8-482.7 kPa)
Fuel Spill Flow—Minimum ..... .9 GPM (3.4 liters/min)
Fuel System Restricted Fitting Size ..... .080 in. (2.0 mm)
Filter Micron Size—Primary/Secondary 30/10
ELECTRICAL SYSTEM
Minimum Recommended Battery Capacity—
SAE Cold Crank, Amps @ 0°F—12 Volt Starter ..... 1800 amps
24 Volt Starter Amps ..... 900 amps
Maximum Allowable resistance of Starting Circuit—
With 12 Volt Starter ..... .00075 ohms
With 24 Volt Starter ..... .0020 ohms

Preliminary-Specifications subject to change without notice.

2-83