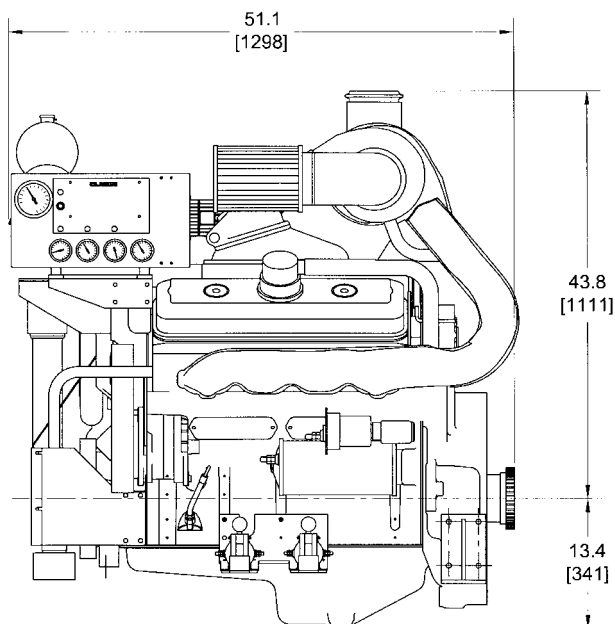


# CLARKE FIRE PUMP DRIVERS



DDFP-08FA  
OVERALL WIDTH  
41.0 [1042]

## MODELS

DDFP-08FH

DDFP-08FA

DDFP-12FH

### APPROVED RATINGS BHP/kw FM-UL-ULC\*

MODEL	SPEED (RPM)			
	1470	1760	2100	2350
DDFP-08FA	420 313	509 380	552 412	570 425
DDFP-08FH	468 349	575 429	669 499	708 528
DDFP-12FH	686 511	830 619	940 700	1000 745

## ENGINE EQUIPMENT

**Air Cleaner** — (S) Direct Mounted, Washable, For Indoor Service Only

**Alternator** — (S) 24V-DC, 40 Ampere, with Belt Guard

**Exhaust Protection** — (S) Blankets On Manifolds & Turbo Charger

**Exhaust Flex Connection** — (O) SS Flex, 150# Flange

**Flywheel Housing** — (S) SAE #1

**Flywheel Power Take Off** — (S) Engine Half Falk Coupling — 08FA/08FH 1090T10; 12FH 1100T10

**Fuel Connections** — (S) Fire Resistant Flexible Supply & Return Lines

**Fuel Filters** — (S) Primary & Secondary

**Engine Heater** —  
(S) 230 V-AC, (O) 115 V-AC, 2500 W (8 Cyl.);  
(S) 230 V-AC, (O) 460 V-AC, 4000 W (12 Cyl.)

**Governor** — (S) Constant Speed Mechanical

**Heat Exchanger** — (S) Tube & Shell Type, Rated 60 PSI w/NPTF Connections

**Instrument Panel** — (S) English & Metric, Tachometer, Hourmeter, Water Temperature, Oil Pressure, Two (2) Voltmeters

**Junction Box** — (S) Integral With Instrument Panel For DC Wiring Interconnection To Engine Controller

**Lube Oil Cooler** — (S) Engine Water Cooled, Plate Type

**Lube Oil Filter** — (S) Full Flow w/By-Pass Valve

**Lube Oil Pump** — (S) Gear Driven, Gear Type

**Manual Start Controls** — (S) Per NFPA-20 On Instrument Panel With Control Position Warning Light

**Raw Water Solenoid Operation** — (S) Automatic From Engine Controller & From Energizing Local Control

**Run-Stop Control** — (S) On Instrument Panel With Control Panel Position Warning Light

**Overspeed Control** — (S) Electronic w/Reset & Test On Instrument Panel

**Starter** — (S) One 24V DC Motor

**Throttle Control** — (S) Adjustable Speed Control Tamper Proof

**Water Pump** — (S) Gear Driven, Centrifugal Type

(S) – Standard Equipment

(O) – Optional Equipment



LISTED  
513Y



meets  
NFPA-20  
Requirements



approved  
1333



listed  
C448A

## SPECIFICATIONS

Item	DDFP Model		
	08FA	08FH	12FH
DDC Engine Series	V-92	V-92	V-92
No. Cylinders	8	8	12
Aspiration	TSJWA	TSJWA	TSJWA
Rotation**	Clockwise (CW)		
Displacement – cu. in. (l)*	736 (12.1)	736 (12.1)	1104 (18.1)
Net Wt. – lbs. (kg)	2560 (1161)	2605 (1181)	4690 (2127)
Bore & Stroke – in. (mm)	4.84 x 5.00 (123 x 127)		
Compression Ratio	17:1	15:1	15:1
Installation Drawing	D-433	D-433	D-445

DDC - DETROIT DIESEL CORP.  
 TSJWA - TURBOCHARGED, SUPERCHARGED  
 AND AFTERCOOLED (JACKET WATER)

\*V-92 UNITS ARE 2 STROKE CYCLE  
 \*\*VIEW FROM HEAT EXCHANGER/FRONT OF ENGINE

\*Engines are rated at standard SAE conditions of 29.61 in. (7521 mm) Hg barometer and 77°F (25°C) inlet air temperature [approximates 300 ft. (91.4 m) above sea level] by the testing laboratory (see SAE Standard J 1349).

A deduction of 3 percent from engine horsepower rating at standard SAE conditions shall be made for diesel engines for each 1000 ft. (305 m) altitude above 300 ft. (91.4 m).

A deduction of 1 percent from engine horsepower rating as corrected to standard SAE conditions shall be made for diesel engines for every 10°F (5.6°C) above 77°F (25°C) ambient temperature.

Note: Engines certified at any speed between 1470 & 2600. See details on reverse side for linear BHP interpolation.

## CERTIFIED POWER AT ANY SPEED

Although specific FM-UL Certified BHP ratings are shown at four (4) specific speeds, these Clarke engines can be applied to fire pumps at any intermediate speed between 1470 to 2350 RPM. To determine the applicable intermediate certified power, make a linear interpolation of the Clarke FM-UL certified power curve. Contact Clarke or your Pump OEM representative to obtain details.

# CLARKE

[www.clarkefire.com](http://www.clarkefire.com)

*Fire Protection Products*

### CLARKE USA

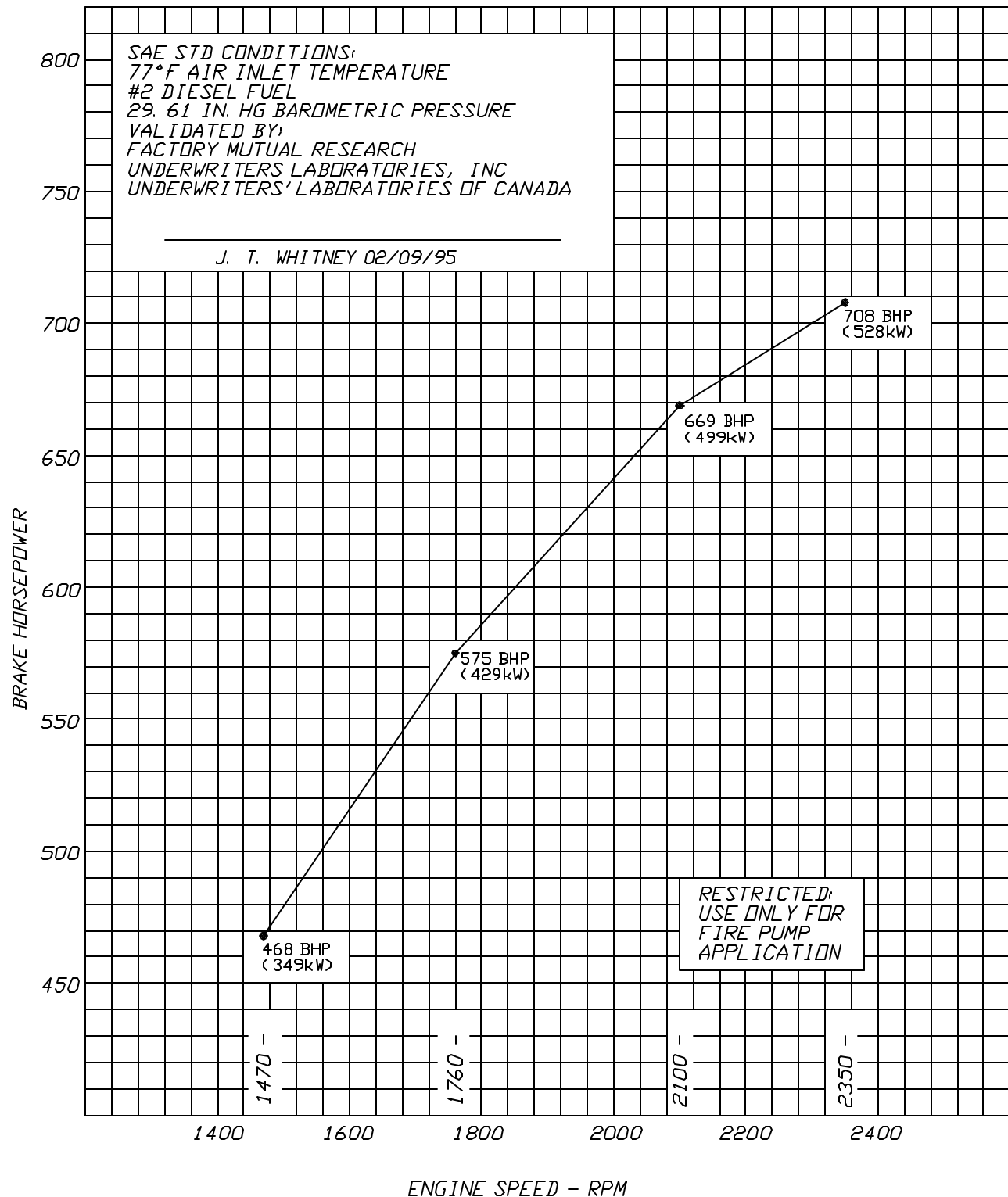
3133 E. Kemper Rd.  
 Cincinnati, Ohio 45241  
 United States of America  
 P 513-771-2200  
 F 513-771-0726

### CLARKE UK

Grange Works, Lomond Rd.  
 Coatbridge, ML5-2NN  
 United Kingdom  
 P 44-1236-429946  
 F 44-1236-427274



FIRE PUMP MODEL DDFP-08FH  
8V92TA INDUSTRIAL  
HEAT EXCHANGER COOLED  
145 INJECTOR, 1.508 TIMING  
TV7512 1.23A/R 23501978 TURBO(2)  
JACKET WATER CHARGE COOLING



# DDFP-08FH

## INSTALLATION & OPERATION DATA

### Basic Engine Description

Engine Manufacturer .....	Detroit Diesel Corp.
Ignition Type .....	Compression (Diesel)
Number of Cylinders .....	8
Bore and Stroke - in. (mm) .....	4.84 x 5.00 (123 x 127)
Displacement - in. <sup>3</sup> (L) .....	736 (12.1)
Compression Ratio .....	15:1
Valves per Cylinder	
Intake .....	None
Exhaust .....	4
Combustion System .....	Direct Injection
Engine Type .....	63.5" VEE - 2 Cycle
Aspiration .....	Turbocharged
Firing Order (CW Rotation) .....	1L-3R-3L-4R-4L-2R-2L-1R
Turbocharger .....	1.23 A/R
Charge Air Cooling Type .....	Jacket Water
Blower Type .....	Roots By-Pass
Blower Drive Ratio .....	1.95:1
Rotation (Viewed from Front)	
Clockwise .....	Standard
Counter-Clockwise .....	Optional
Engine Crankcase Vent System .....	Open
Dimensions and Weight	
Length - in. (mm) (From Drive Flange) .....	51.10 (1298)
Width - in. (mm) .....	52.75 (1340)
Height - in. (mm) (Above Crankshaft Center Line) .....	35.01 (889)
Weight, Dry - lb. (kg) .....	2662 (1208)
Wet - lb. (kg) .....	2850 (1293)
Installation Drawing .....	D-433

### Cooling System

	<u>1470</u>	<u>1760</u>	<u>2100</u>	<u>2350</u>
Heat Exchanger Minimum Flow				
60°F Raw H <sub>2</sub> O - gal./min. (L/min.) .....	39 (148)	42 (159)	48 (182)	52 (197)
95°F Raw H <sub>2</sub> O - gal./min. (L/min.) .....	64 (242)	66 (250)	70 (265)	72 (273)
Engine H <sub>2</sub> O Heat - Btu/sec. (kw/sec.) .....	296 (5.2)	317 (5.6)	371 (6.5)	396 (6.6)
Engine Radiated Heat - Btu/sec. (kw/sec.) .....		55 (1.0)		
Thermostat, Start to Open - °F (°C) .....		177 (81)		
Fully Open - °F (°C) .....		197 (92)		
Engine Coolant Capacity - qt. (L) .....		63 (57)		
Coolant Pressure Cap - lb./in. <sup>2</sup> (kPa) .....		9 (62)		
Maximum Engine H <sub>2</sub> O Temperature - °F (°C) .....		200 (93)		
Minimum Engine H <sub>2</sub> O Temperature - °F (°C) .....		160 (71)		
Heat Exchanger Maximum Raw H <sub>2</sub> O				
Inlet Pressure - lb./in. <sup>2</sup> (kPa) .....		60 (414)		

### Electric System - DC

System Voltage (Nominal) .....	<u>All Speeds</u> 24
Battery Capacity for Ambients Above 32°F - CCA @ 0°F .....	900
Voltage (Nominal) .....	12
Qty. per Battery Bank .....	2
SAE size per J537 .....	8D-900
Battery Cable Circuit*, Max Resistance - ohm .....	0.002
Battery Cable Minimum Size	
0-225 in. Circuit* Length .....	No. 00
225-300 in. Circuit* Length .....	No. 000
301-380 in. Circuit* Length .....	No. 0000
Charging Alternator Output - Amp. ....	40
Starter Cranking Amps - @ 40° F .....	668

\*Positive and Negative Cables Combined Length

NOTE: This Engine Is Intended For Indoor Installation Or In A Weatherproof Enclosure.

(Continued)

# DDFP-08FH

## INSTALLATION & OPERATION DATA (Continued)

### Exhaust System

	<u>1470</u>	<u>1760</u>	<u>2100</u>	<u>2350</u>
Exhaust Flow - ft. <sup>3</sup> /min. (m <sup>3</sup> /min.) .....	3295 (93)	3892 (110)	4441 (126)	4787 (136)
Exhaust Temperature - °F (°C) .....	925 (496)	895 (479)	870 (466)	860 (460)
Maximum Allowable Back Pressure -				
in. H <sub>2</sub> O (kPa) .....	19 (4.7)	20 (4.9)	23 (5.7)	25 (6.2)
Minimum Exhaust Pipe Dia. - in. (mm)** .....	Dual 6.0 (154) Sch. 40			

### Fuel System

Fuel Pressure - lb./in. <sup>2</sup> (kPa) .....	58 (400)	62 (428)	64 (442)	65 (449)
Fuel Consumption - gal./hr. (L/hr.) .....	25 (95)	25 (95)	34 (129)	37 (140)
Fuel Return Rate - gal./hr. (L/hr.) .....	63 (239)	71 (269)	80 (303)	83 (315)
Total Fuel Flow - gal./hr. (L/hr.) .....	88 (334)	96 (364)	114 (432)	120 (455)
Minimum Line Size - Supply - in. (mm)** .....	.75 (19) Sch. 40 - Black			
Return - in. (mm)** .....	.50 (13) Sch. 40 - Black			
Maximum Allowable Fuel Pump Suction				
Clean System - in. H <sub>2</sub> O (kPa) .....	82 (20)			
Dirty System - in. H <sub>2</sub> O (kPa) .....	164 (40)			
Fuel Filter Micron Size - Primary .....	30			
Secondary .....	12			
Fuel Injector/Timing .....	145/1.508			
Fuel Modulator/Setting .....	6#/1.490			

### Heater System

	<u>All Speeds</u>
Jacket Water Heater .....	Standard
Wattage (Nominal) .....	2500
Voltage - VAC, 1P .....	230
Optional Voltage - VAC, 1P .....	115
Lube Oil Heater (Required When Ambient Is Below 50°F (10°C)) .....	Optional
Wattage .....	150

### Induction Air System

	<u>1470</u>	<u>1760</u>	<u>2100</u>	<u>2350</u>
Air Cleaner Type .....	Indoors Service Only - Washable			
Air Intake Restriction Maximum Limit				
Dirty Air Cleaner - in. H <sub>2</sub> O (kPa) .....	5.5 (1.4)	6.5 (1.7)	8.0 (2.0)	9.0 (2.3)
Clean Air Cleaner - in. H <sub>2</sub> O (kPa) .....	3.5 (0.9)	4.5 (1.1)	6.0 (1.5)	7.0 (1.8)
Engine Air Flow - ft. <sup>3</sup> /min. (m <sup>3</sup> /min.) .....	1325 (38)	1600 (45)	1860 (53)	2020 (57)
Maximum Allowable Temperature Rise (Ambient Air To Engine Inlet) - °F (°C) .....	30 (17)			

### Lubrication System

	<u>All Speeds</u>
Oil Pressure - normal - lb./in. <sup>2</sup> (kPa) .....	40-70 (276-433)
In Pan Oil Temperature - °F (°C) .....	230-245 (110-118)
Oil Pan Capacity - High - qt. (L) .....	23 (22)
Low - qt. (L) .....	17 (16)
Total Oil Capacity with Filters - qt. (L) .....	27 (26)

### Performance

	<u>1470</u>	<u>1760</u>	<u>2100</u>	<u>2350</u>
BMEP - lb./in. <sup>2</sup> (kPa) .....	171 (1180)	176 (1214)	171 (1180)	162 (1112)
Piston Speed - ft./min. (m/min.) .....	1225 (373)	1467 (447)	1750 (533)	1958 (597)
Noise - dB (A) @ 1m .....	100 (EST)	102 (EST)	104 (EST)	106 (EST)
Power Curve .....	CDDA - 8084 - 03			

\*\*Based On Nominal System. Flow Analysis Must Be Done To Assure Adherence To System Limitations.  
 (Minimum Exhaust Pipe Diameter is based on 15 feet of pipe, one elbow, and a silencer  
 pressure drop no greater than one half the max. allowable back pressure.)



ALL PLUMBING MUST BE  
SUPPORTED AND/OR ISOLATED  
SO THAT NO WEIGHT OR  
STRESS IS APPLIED TO ANY  
ENGINE COMPONENT

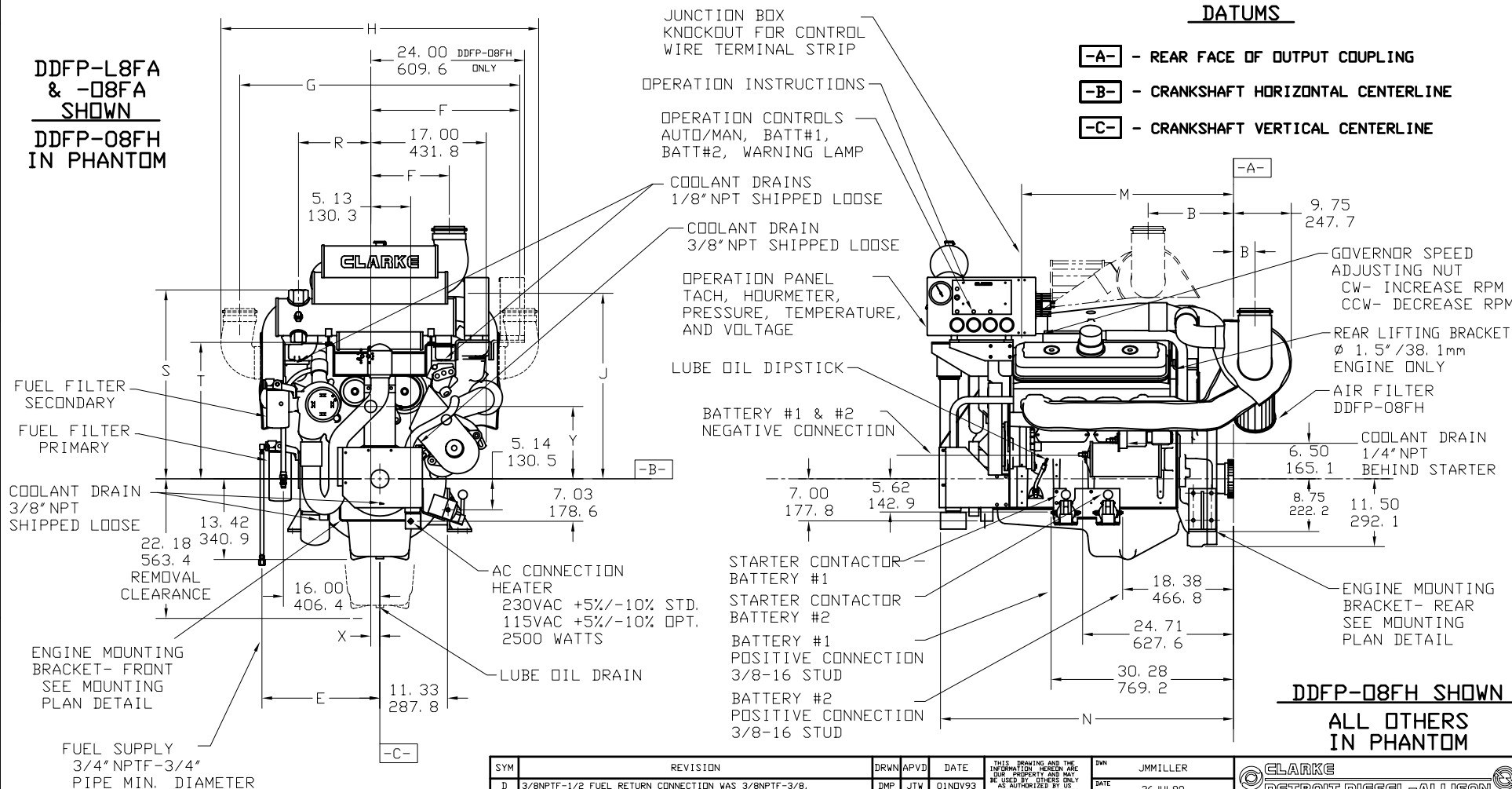
REFER TO THE SPECIFIC  
MODEL 'INSTALLATION  
AND OPERATION DATA'  
FOR INSTALLATION  
GUIDELINES

## REDUCED DRAWING

DO NOT SCALE UNKNOWN DIMENSIONS

MODEL	B	E	F	G	H	J	M	N	R	S	T	X	Y
DDFP-L6FA	11. 75 298. 5	18. 67 474. 2	11. 56 293. 6	-0-	41. 02 1041. 9	43. 75 1111. 3	29. 06 738. 1	42. 52 1080. 0	15. 50 393. 7	28. 74 730. 0	25. 85 656. 6	-0. 06 -1. 5	11. 12 282. 5
DDFP-T6FA		29. 81 757. 2								11. 35 288. 3			
DDFP-D6FA										11. 12 282. 5			
DDFP-D6FH							12. 26 311. 4						
DDFP-L8FA							-0. 05 -1. 3	0. 34 8. 64	9. 56 242. 8				
DDFP-D8FA													
DDFP-D8FH	3. 55 90. 2	19. 13 485. 9	23. 25 590. 6	46. 50 1181. 1	52. 75 1339. 9	28. 25 717. 6	35. 18 893. 6	48. 64 1235. 5	13. 50 342. 9	31. 38 797. 1	22. 63 574. 9		

## DATUMS



DDFP-08FH  
IN PHANTOM

DRAWING SUBJECT  
TO CHANGE  
WITHOUT NOTICE

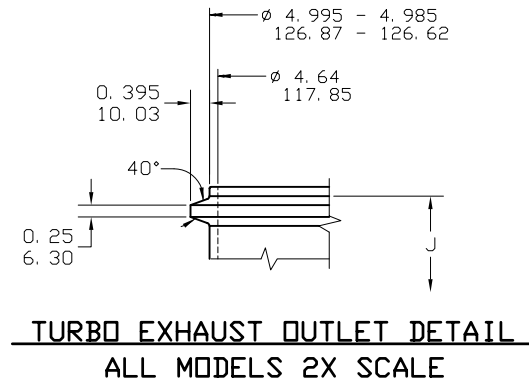
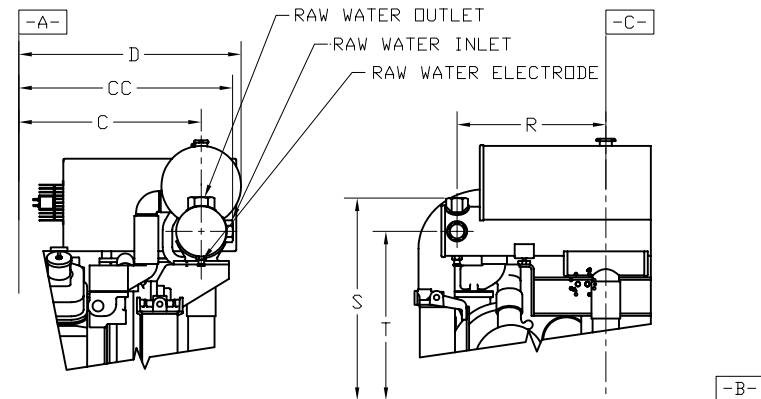
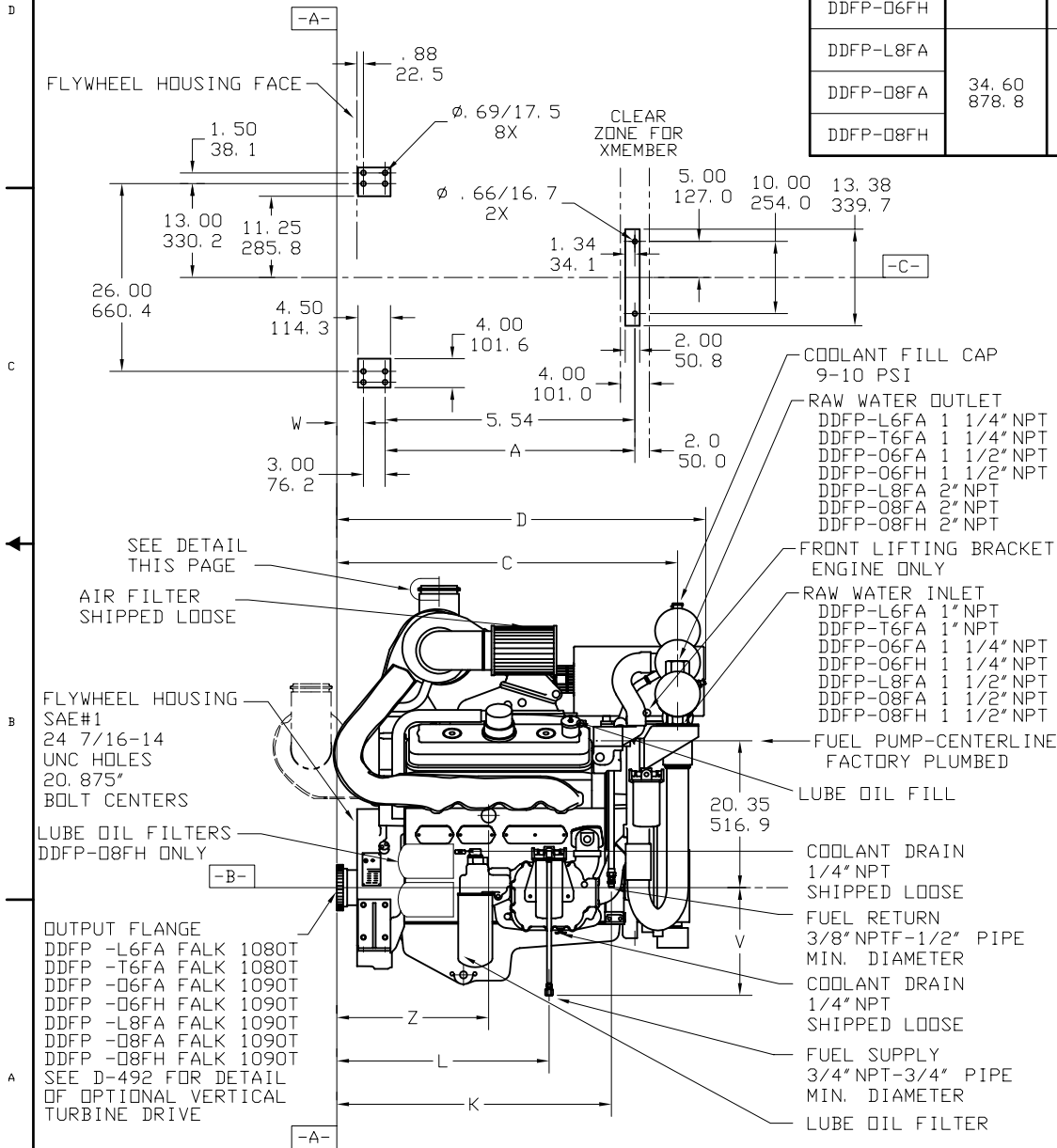
SYM	REVISION	DRWN	APVD	DATE
D	3/BNPTF-1/2 FUEL RETURN CONNECTION WAS 3/BNPTF-3/8, 3/ANPTF-3/4 FUEL SUPPLY CONNECTION WAS 3/BNPTF-1/2, 1 1/2"NPT RAW WATER INLET WAS 2"NPT, ADDED MODEL -06FH	DMP	JTW	01NOV93
E	RELOCATED FUEL FILTERS, CORRECTED DIMS 'E', 'L', & 'V'	DMP	JTW	12SEP94
F	MODELS -L6FA, -T6FA WERE -L6VT, -T6VT	DMP	JTW	22NOV94
G	REVISED J.W. HEATER AND ADDED NEW INSTRUMENT PANEL	DMP	DMP	08DEC95
H	REVISED TO NEW FORMAT WITH NO OTHER CHANGES	SEN	JTW	25JUN97
J	DIM. 'A' ON PG. 2 WAS 298.5mm IN ERROR	SK	KJK	18APR01

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C R E D I T S	DWN		JMMILLER
	DATE		26 JUL 90
	ENGR		JTWHITNEY
	CHK		
	INSP	N	SERIES CODE RP

 <b>CLARKE</b> 			
<b>DETROIT DIESEL-ALLISON</b> 3133 EAST KEMPER ROAD, CINCINNATI, OHIO 45241			
NAME	INSTALLATION DRAWING, FIVE PUMP ENGINE- DFPF-L6FA, -T6FA, -D6FA, -D6FH, -L6FA, -D6FA, & -D6FH		
SIZE	PART NO.	<b>D-433</b>	
SCALE	REV		
3/16 UNITS IN/MM OR IN	1 THIS ANGEL PROL SHEET OF 1		

7	6	5	4	3	D-433		J			
MODEL	A	C	CC	D	K	L	V	W	Z	
DDFP-L6FA	28.84 732.5	41.08 1043.4	43.75 1111.3	45.23 1148.8	31.91 810.5	26.51 673.4	14.93 379.2	3.31 84.1	19.85 504.2	
DDFP-T6FA										
DDFP-O6FA										
DDFP-O6FH	34.60 878.8	41.45 1052.8	44.75 1136.7	45.60 1158.2	32.28 819.9	23.65 600.7	15.77 400.6	3.68 93.6	20.31 515.9	
DDFP-L8FA									19.85 504.2	
DDFP-O8FA		47.20 1198.9	-0-	51.10 1297.8	38.03 965.8	29.40 746.8			24.03 610.5	
DDFP-O8FH									22.37 568.2	



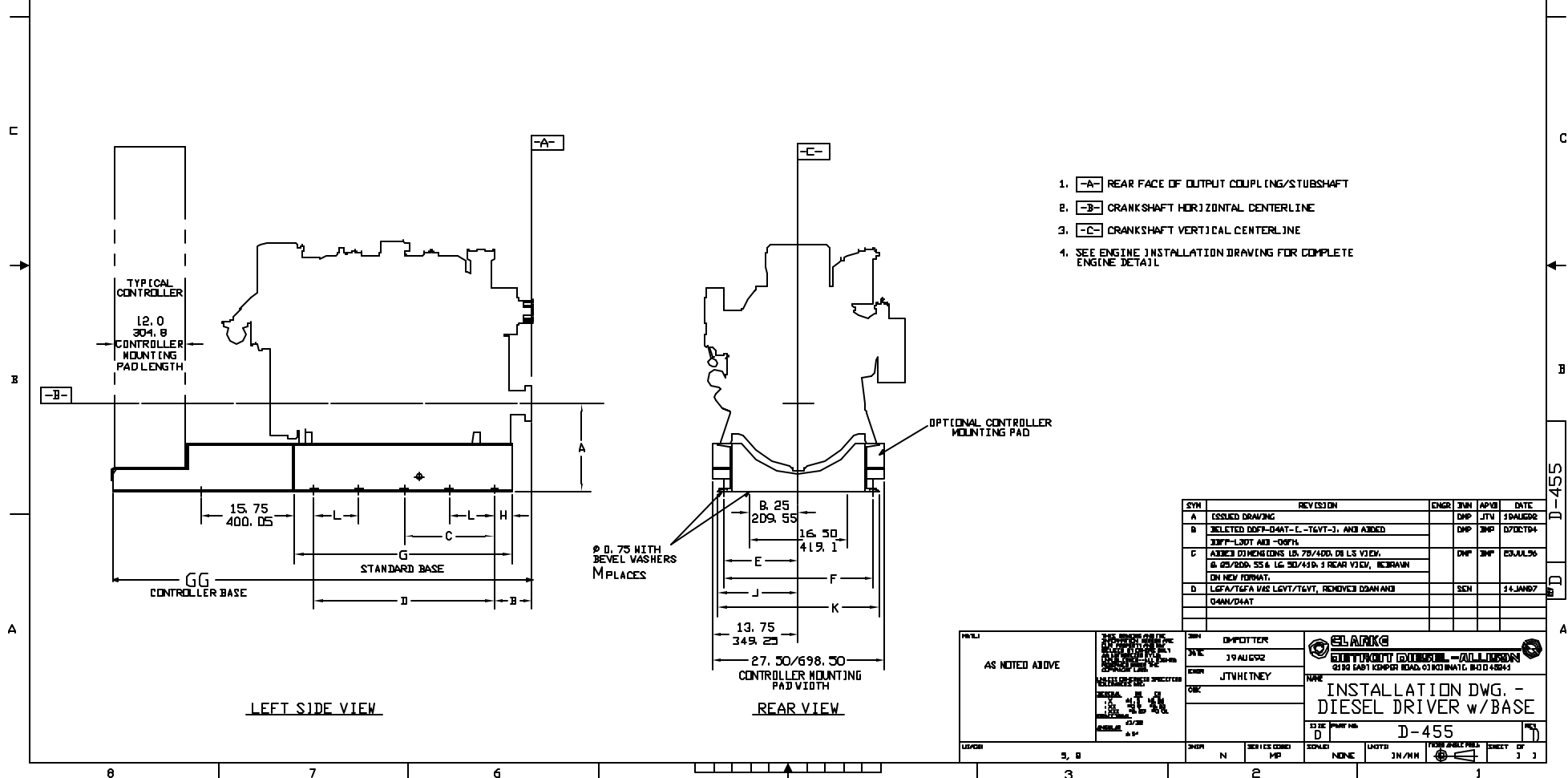
DRAWING SUBJECT TO CHANGE WITHOUT NOTICE

DDFP-L8FA & -O8FA SHOWN  
DDFP-O8FH IN PHANTOM

THIS DRAWING AND THE INFORMATION HEREON ARE OUR PROPERTY AND MAY BE USED BY OTHERS ONLY AS AUTHORIZED BY US. UNPUBLISHED - ALL RIGHTS RESERVED UNDER THE COPYRIGHT LAWS.		DWG JMMILLER		CLARK DETROIT DIESEL-ALLISON 3133 EAST KEMPER ROAD, CINCINNATI, OHIO 45241	
DATE 26JUL90		ENGR JTWITNEY		NAME INSTALLATION DRAWING, FIRE PUMP ENGINE- DDFP-L6FA, -T6FA, -O6FA, -O6FH, -L8FA, -O8FA, & -O8FH	
CHK		SERIES CODE BP		SIZE R	
USAGE 8		INCH N		SCALE 3/16	
UNIT IN		THIRD ANGLE PROJ.		SHEET 2 OF 2	



ENGINE M/N	STANDARD BASE OPTION		ENGINE INSTALLATION SIZE	DIMENSIONS												CONTROLLER BASE OPTION		DIMENSION
	ASSM. NO.	WGT. LB/KG		A	B	C	D	E	F	G	H	J	K	L	M	ASSM. NO.	WGT. LB/KG	GG
DDFP-03DN DDFP-130T DDFP-030T DDFP-130T	C11200	96.20 43.64	D-436	17.50 444.50	4.25 107.95	—0—	23.91 607.91	13.63 346.20	27.25 692.15	28.91 734.31	3.00 76.20	14.65 372.11	29.30 744.26	—	6 PLC'S	C11203	194.81 454.817	59.91 1321.71
DDFP-06FA DDFP-16FA	C11200	243.1 110.30	D-433	18.75 476.25	2.67 67.64	15.69 398.53	31.98 797.05	17.25 438.15	24.50 625.30	37.38 949.45	3.00 76.20	18.50 469.90	37.00 939.80	—	8 PLC'S	C11206	341.71 847.92	68.39 1526.85
DDFP-06FA DDFP-06FH	C11200	243.1 110.30	D-433	18.75 476.25	2.64 67.06	15.69 398.53	31.98 797.05	17.25 438.15	24.50 625.30	37.38 949.45	3.00 76.20	18.50 469.90	37.00 939.80	—	8 PLC'S	C11208	341.71 847.92	68.39 1526.85
DDFP-06FA DDFP-06FA DDFP-06FH	C11201	262.3 118.98	D-433	18.75 476.25	2.64 67.06	18.57 471.68	37.14 943.36	17.25 438.15	24.50 625.30	43.14 1095.76	3.00 76.20	18.50 469.90	37.00 939.80	—	8 PLC'S	C11209	360.01 9167.11	74.14 1663.16
DDFP-12FT DDFP-12FH	C11202	292.0 132.49	D-443	18.75 476.25	3.63 92.20	—0—	34.00 871.80	17.25 438.15	24.50 625.30	39.06 995.11	3.00 76.20	18.50 469.90	37.00 939.80	18.00 457.20	10 PLC'S	C11233	398.61 8921.49	90.02 2005.91



# DDFP-08FH

## FIRE PUMP DRIVER

### EMISSION DATA

*To complete an application for a Permit to Operate, the following data is provided.*

**8 Cylinders**  
**Two Cycle**  
**Lean Burn**  
**Aftercooled**  
**Diesel Oil - Fuel**  
**No - Energy Recovery from Exhaust**  
**No - Emission Control Device**

RPM	BHP	FUEL GAL / HR	AIR/FUEL RATIO	GM / BHP / HR					% O <sub>2</sub>	EXHAUST		TIMING DEGREES
				HC	NOx	CO	SO <sub>2</sub>	PART.		°F	CFM	
2350	708	36.6	34.2	0.16	8.83	1.91	0.66	0.18	12.2	860	4787	6.5
2100	669	34.0	33.9	0.15	9.94	2.02	0.64	0.17	12.2	870	4441	6.5
1900	618	31.3	34.2	0.15	10.8	2.10	0.64	0.16	12.2	880	4162	6.5
1760	575	24.5	33.7	0.15	10.9	2.61	0.65	0.16	12.1	895	3892	6.5
1470	468	25.1	32.7	0.15	10.4	5.56	0.64	0.15	11.9	925	3295	6.5

*For specific RPM & BHP ratings, some of the above data may have been extrapolated from the best available test data.*

*Degrees of timing RETARD for 'beginning of injection' based on comparison with pre-emission controlled engines from the same family.*

*Sulfur Dioxide based on 0.2% sulfur content in fuel (by weight).*

8084-7612 Base Model Engine Manufactured by Detroit Diesel Corp.  
 1.23 A/R Turbocharger  
 145MM Fuel Injectors @ 1.508 Timing Height