CLARKE®

FIRE PUMP ENGINES

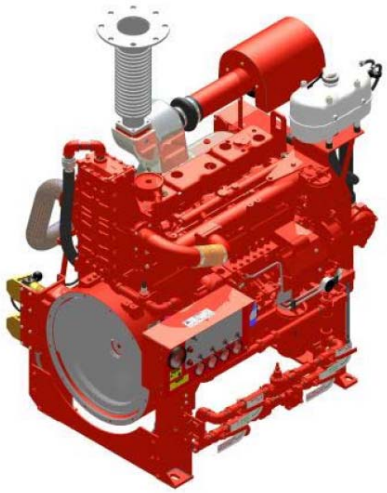
MODELS

DP6H-UFKAX8 DP6H-UFKA88
DP6H-UFKA50 DP6H-UFKA62
DP6H-UFKA70

FM-UL-cUL APPROVED RATINGS KW/*BHP*

DP6H MODEL λ	RATED SPEED 1470		1760		2100		2350	
DP6H-UFKAX8	179	*240*						
DP6H-UFKA50			198	*265*	209	*280*	213	*286*
DP6H-UFKA88			216	*290*				
DP6H-UFKA62							224	*300*
DP6H-UFKA70					233	*312*	236	*316*

λ = Non-Emissionized



SPECIFICATIONS

ITEM	DP6H MODELS UFKAX8	UFKA50	UFKA88	UFKA62	UFKA70
Number of Cylinders	6				
Aspiration	TRWA				
Rotation*	CW				
Overall Dimensions – mm (in.)	1507(59.4) H x 1554 (61.2) L x 1194 (47.0) W				
Crankshaft Centerline Height – mm (in.)	449 (17.7)				
Weight – kg (lb)	1020 (2250)				
Compression Ratio	16.7:1				
Displacement – l (cu. in.)	8.1 (492)				
Engine Type	4 Cycle, 2 Valves per Cylinder, In-Line				
Bore & Stroke – mm (in.)	111 x 139 (4.37 x 5.47)				
Installation Drawing	D659				
Wiring Diagram AC	C07651				
Wiring Diagram DC	C071842				
Speed Interpolation	Optional				

Abbreviations: CW – Clockwise TRWA – Turbocharged with Raw Water Aftercooling H – Height L – Length W - Width

*Rotation viewed from Heat Exchanger / Front of engine

CERTIFIED POWER RATING

- Each engine is factory tested to verify power and performance.

ENGINE RATINGS BASELINES

- Engines are to be used for stationary emergency standby fire pump service only. Engines are to be tested in accordance with NFPA 25.
- Engines are rated at standard SAE conditions of 29.61 in. (752.1 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.

c UL us

Meets NFPA 20 Requirements

FM C US APPROVED

CLARKE®

FIRE PUMP ENGINES

MODELS

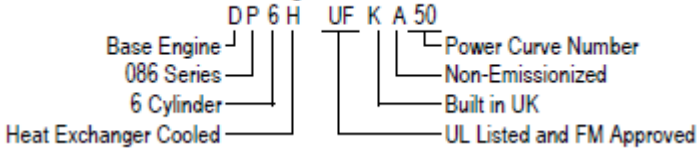
DP6H-UFKAX8 DP6H-UFKA88
DP6H-UFKA50 DP6H-UFKA62
DP6H-UFKA70

ENGINE EQUIPMENT

EQUIPMENT	STANDARD	OPTIONAL
Air Cleaner	Direct Mounted, Washable, Indoor Service with Drip Shield	Disposable, Drip Proof, Indoor Service Outdoor Type, Single or Two Stage (Cyclonic)
Alarms	Overspeed Alarm & Shutdown, Low Oil Pressure, Low & High Coolant Termperature, High Raw Water Flow, High Raw Water Temperature	Low Coolant Level, Low Oil Level, Oil Filter Differential Pressure, Fuel Filter Differential Pressure, Air Filter Restriction
Alternator	24V-DC, 45 Amps with Dual (2) V-Belt Drive with Guard	
Coupling	Bare Flywheel	Listed Driveshaft & Guard CDS50-SC at 1470, 1760 and 2100 RPM only; Non-Listed Driveshaft and Guard SC81A at 2350 RPM; Vertical Turbine Drivedisc
Engine Heater	230V-AC, 1500 Watt	115V-AC,1500 Watt
Exhaust Flex Connection	DP6H-UFKAX8, UFKA50, UFKA88, UFKA62 - SS Flex, Clamped Connection, 5” DP6H-UFKA70 - SS Flex, Clamped Connection, 6”	DP6H-UFKAX8, UFKA50, UFKA88, UFKA62 - SS Flex, Clamped Connection, 6” DP6H-UFKA70 - SS Flex, Clamped Connection, 8”
Exhaust Protection	Blankets	
Flywheel Housing	SAE #1	
Flywheel Power Take Off	14.0” Industrial Flywheel Connection	
Fuel Connections	Fire Resistant, Flexible, USA Coast Guard Approved, Supply and Return Lines	
Fuel Filter	Primary and Secondary	
Fuel Injection System	Direct Injection, Inline Pump	
Fuel Solenoid	24V-DC Energized to Stop	
Governor, Speed	Variable Speed, Mechanical	
Heat Exchanger	Tube and Shell Type, 60 PSI (4 BAR), NPT(F) Connections	Sea Water Compatible
Instrument Panel	Tachometer, Hourmeter, Water Temperature, Oil Pressure and Two (2) Voltmeters, Front Opening	
Junction Box	Integral with Instrument Panel; For DC Wiring Interconnection to Engine Controller	
Lube Oil Cooler	Engine Water Cooled, Plate Type	
Lube Oil Filter	Full Flow with By-Pass Valve	
Lube Oil Pump	Gear Driven, Gear Type	
Manual Start Control	On Instrument Panel with Control Position Warning Light	
Overspeed Control	Electronic with Reset and Test on Instrument Panel	
Raw Water Cooling Loop – w/ Alarms	Galvanized	Sea Water, All 316 SS, High Pressure
Raw Water Cooling Loop Solenoid Operation	Automatic from Fire Pump Controller and from Engine Instrument Panel (for Horizontal Fire Pump Applications)	Not Supplied (for Vertical Turbine Fire Pump Applications)
Run – Stop Control	On Instrument Panel with Control Position Warning Light	
Starters	One (1) 24V-DC with Two (2) Start Contactors	
Throttle Control	Adjustable Speed Control, Tamper Proof	
Water Pump	Centrifugal Type, Dual (2) V-Belt Drive with Guard	

Abbreviations: DC – Direct Current, AC – Alternating Current, SAE – Society of Automotive Engineers, NPT(F) – National Pipe Tapered Thread (Female), SS – Stainless Steel

MODEL NOMENCLATURE (10 Digit Models)



CLARKE®

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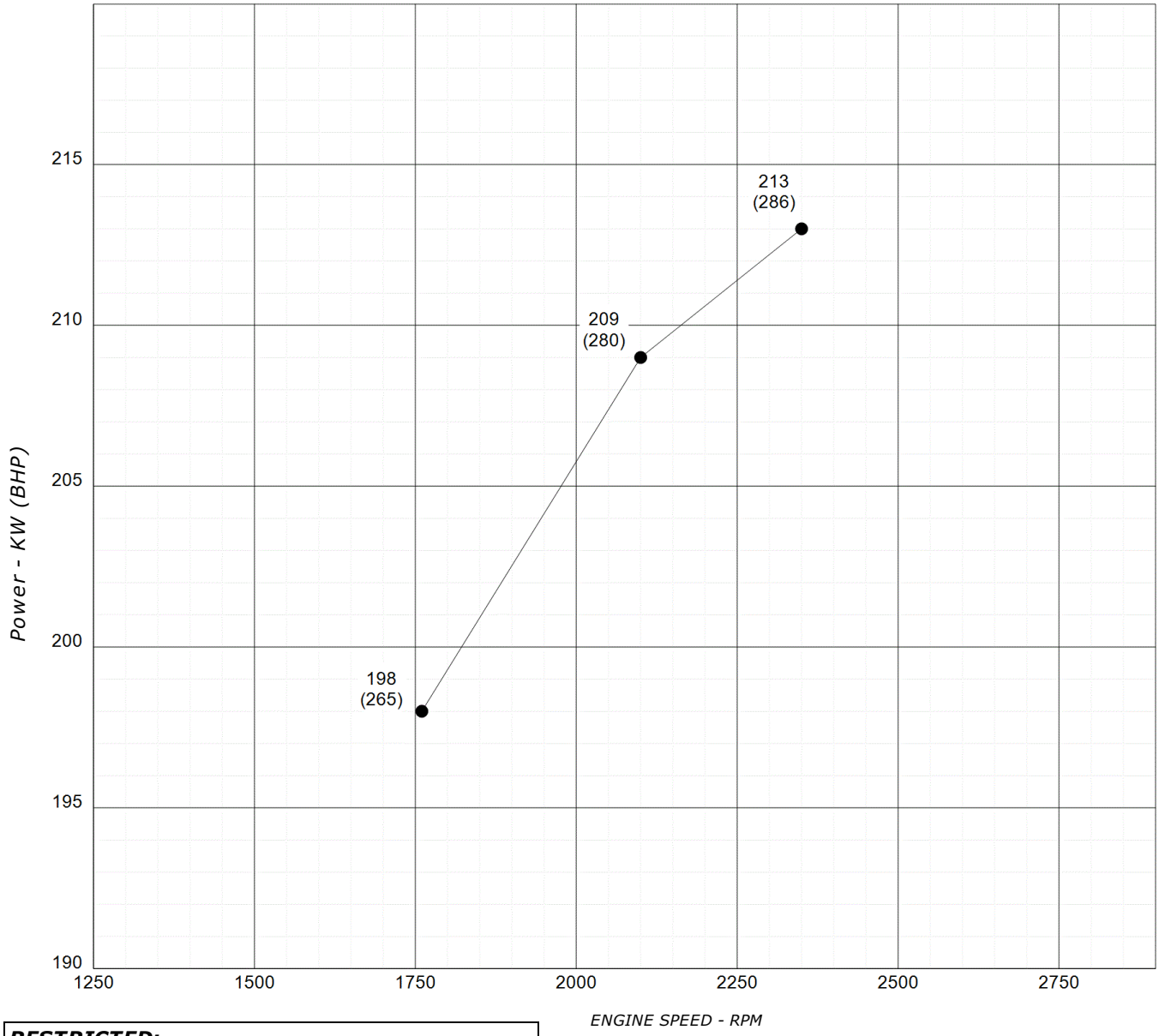
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www.clarkefire.com

U131308 revJ
25APR16

Specifications and information contained in this brochure subject to change without notice.

CLARKE®

FIRE PUMP MODEL: DP6H-UFKA50
Heat Exchanger Cooled/Turbocharged
Raw Water Charge Cooling
8.1 Liter



RESTRICTED:
Use only for Stand-By Fire Pump Applications

ENGINE PERFORMANCE:
STANDARD CONDITIONS: (SAE J1349, ISO 3046)
77°F (25°C) AIR INLET TEMPERATURE
29.61 IN. (751.1MM) HG BAROMETRIC PRESSURE
#2 DIESEL FUEL (SEE C13940)

Kevin Kunkler 31MAY11

NAMEPLATE kW (MAXIMUM PUMP LOAD)

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CREATED	DATE CREATED
KTE	05/31/11

ENGINE MODEL DP6H-UFKA50

DRAWING NO.	REV
C134054	A

DP6H-UFKA50
INSTALLATION & OPERATION DATA (I&O)
UK Produced

Basic Engine Description

Engine Manufacturer	PU086TI
Ignition Type	Compression (Diesel)
Number of Cylinders	6
Bore and Stroke - mm (in)	111 (4.37) X 139 (5.47)
Displacement - L (in³)	8.1 (492.5)
Compression Ratio	16.7:1
Valves per cylinder	
Intake	1
Exhaust	1
Combustion System	Direct Injection
Engine Type	In-Line, 4 Stroke Cycle
Fuel Management Control	Mechanical, Inline Pump
Firing Order (CW Rotation)	1-5-3-6-2-4
Aspiration	Turbocharged
Charge Air Cooling Type	Raw Water
Rotation, viewed from front of engine, Clockwise (CW)	Standard
Engine Crankcase Vent System	Open
Installation Drawing	D659
Weight - kg (lb)	1020 (2250)

Power Rating	**1760**	**2100**	**2350**
Nameplate Power - kW (HP) [1]	198 (265)	209 (280)	213 (286)

Cooling System - [C051529]	**1760**	**2100**	**2350**
Engine Coolant Heat - kW (Btu/sec)	118 (112)	125 (118)	128 (121)
Engine Radiated Heat - kW (Btu/sec)	19.2 (18.2)	20 (19)	20.5 (19.4)
Heat Exchanger Minimum Flow			
15°C (60°F) Raw H_2O - L/min (gal/min)	75.7 (20)	75.7 (20)	75.7 (20)
37°C (100°F) Raw H_2O - L/min (gal/min)	94.6 (25)	94.6 (25)	94.6 (25)
Heat Exchanger Maximum Cooling Raw Water			
Inlet Pressure - bar (psi)	4.1 (60)		
Flow - L/min (gal/min)	303 (80)		
Typical Engine H_2O Operating Temp - °C (°F)	76.7 (170) - 87.8 (190)		
Thermostat			
Start to Open - °C (°F)	71.1 (160)		
Fully Opened - °C (°F)	85 (185)		
Engine Coolant Capacity - L (qt)	27.4 (29)		
Coolant Pressure Cap - kPa (lb/in²)	68.9 (10)		
Maximum Engine Coolant Temperature - °C (°F)	96.1 (205)		
Minimum Engine Coolant Temperature - °C (°F)	71.1 (160)		
High Coolant Temp Alarm Switch - °C (°F)	96.1 (205)		

Electric System - DC	**Standard**	
System Voltage (Nominal)	24	
Battery Capacity for Ambients Above 32°F (0°C)		
Voltage (Nominal)12	12	{C07633}
Qty. Per Battery Bank	2	
SAE size per J537	8D	
CCA @ 0°F (-18°C) per J537	1400	
Reserve Capacity - Minutes per J537	430	
Battery Cable Circuit, Max Resistance - ohm	0.0012	
Battery Cable Minimum Size		
0-3.1m Circuit Length [2]	00	
3.1m-4.1m Circuit Length [2]	000	
4.1m-5.1m Circuit Length [2]	0000	
Charging Alternator Maximum Output - Amp,	45	{65.26101-7153C}
Starter Cranking Amps, Rolling - @60°F (15°C)	250	{65.26101-7070D}

* All footnotes are at the bottom of Page 2

DP6H-UFKA50
INSTALLATION & OPERATION DATA (I&O)
UK Produced

Exhaust System (Single Exhaust Outlet)	**1760**	**2100**	**2350**
Exhaust Flow - m³/min (ft.³/min)	50.1 (1770)	57.2 (2020)	60.5 (2135)
Exhaust Temperature - °C (°F)	460 (860)	427 (800)	412 (773)
Maximum Allowable Back Pressure - kPa (in H_2O)	7.5 (30)	7.5 (30)	7.5 (30)
Minimum Exhaust Pipe Dia. - mm (in) ³	127 (5)	127 (5)	127 (5)

Fuel System	**1760**	**2100**	**2350**
Fuel Consumption - L/hr (gal/hr)	53 (14)	56.4 (14.9)	56.8 (15)
Fuel Pressure - kPa (lb/in²)	172 (25) - 241 (35)		
Minimum Line Size - Supply - in.	.50 Schedule 40 Steel Pipe		
Pipe Outer Diameter - mm (in)	21.5 (0.848)		
Minimum Line Size - Return - in.	.375 Schedule 40 Steel Pipe		
Pipe Outer Diameter - mm (in)	17.1 (0.675)		
Maximum Allowable Fuel Pump Suction Lift with clean Filter - mH_2O (in H_2O)	0.8 (31)		
Maximum Allowable Fuel Head above Fuel pump, Supply or Return - m (ft)	2.7 (9)		
Fuel Filter Micron Size	5		

Heater System	**Standard**	**Optional**
Engine Coolant Heater		
Wattage (Nominal)	1500	1500
Voltage - AC, 1 Phase	230 (+5%, -10%)	115 (+5%, -10%)
Part Number	{C123643}	{C123639}

Air System	**1760**	**2100**	**2350**
Combustion Air Flow - m³/min (ft.³/min)	20.4 (720)	24.4 (861)	26.3 (930)
Air Cleaner	**Standard**		**Optional**
Part Number	{C03749}		{C03330}
Type	Indoor Service Only, with Shield		Canister, Single-Stage
Cleaning method	Washable		Disposable
Air Intake Restriction Maximum Limit			
Dirty Air Cleaner - kPa (in H_2O)	2.5 (10)		2.5 (10)
Clean Air Cleaner - kPa (in H_2O)	1.2 (5)		1.7 (7)
Maximum Allowable Temperature (Air To Engine Inlet) - °C (°F)	54.4 (130)		

Lubrication System	
Oil Pressure - normal - kPa (lb/in²)	317 (46) - 538 (78)
Low Oil Pressure Alarm Switch - kPa (lb/in²)	138 (20)
In Pan Oil Temperature - °C (°F)	95.6 (204) - 120 (248)
Total Oil Capacity with Filter - L (qt)	15 (15.9)

Lube Oil Heater	**Optional**	**Optional**
Wattage (Nominal)	150	150
Voltage	240V (+5%, -10%)	120V (+5%, -10%)
Part Number	{C04431}	{C04430}

Performance	**1760**	**2100**	**2350**
BMEP - kPa (lb/in²)	1670 (242)	1480 (214)	1350 (196)
Piston Speed - m/min (ft/min)	489 (1605)	584 (1915)	653 (2142)
Mechanical Noise - dB(A) @ 1m	C134338		
Power Curve	C134054		

NOTE: This engine is intended for indoor installation or in a weatherproof enclosure. ¹ Derate 3% per every 1000 ft. 304.8m above 300 ft. 91.4m and derate 1% for every 10°F 5.55 °C above 77°F 25°C. ² Positive and Negative Cables Combined Length. ³ Minimum Exhaust Pipe Diameter is based on: 15 feet of pipe, one 90° elbow, and one Industrial silencer. A Back-pressure flow analysis must be performed on the actual field installed exhaust system to assure engine maximum allowable back pressure is not exceeded. See Exhaust Sizing Calculator on www.clarkefire.com. { } indicates component reference part number.

DP6H
ENGINE MATERIALS AND CONSTRUCTION

Air Cleaner
Type……..…….. Indoor Usage Only
Oiled Fabric Pleats
Material……..…… Surgical Cotton
Aluminum Mesh

Air Cleaner - Optiona
Type…… Canister
Material…… Pleated Paper
Housing……..…… Enclosed

Camshaft
Material……..... Carbon Steel
Induction Hardening
Location……..…….. In Block
Drive……..... Gear, Spur
Type of Cam……..... Ground

Charge Air Cooler
Type……... Raw Water Cooled
Materials (in contact with raw water)
Tubes……..…… 90/10 CU/NI
Headers…… 36500 Muntz
Covers…… 83600 Red Brass
Plumbing……..…… 316 Stainless Steel/ Brass
90/10 Silicone

Coolant Pump
Type…… Centrifugal
Drive…… Gear

Coolant Thermostat
Type…… Full Blocking
Qty…… 2

Cooling Loop (Galvanized)
Tees, Elbows, Pipe…… Galvanized Steel
Ball Valves…… Brass ASTM B 124
Solenoid Valve…… Brass
Pressure Regulator…… Bronze
Strainer……. Cast Iron (1/2"- 1" Loops)
or Bronze (1.25" - 2"Loops)

Cooling Loop (Sea Water)
Tees, Elbows, Pipe…… 316 Stainless Steel
Ball Valves…… 316 Stainless Steel
Solenoid Valve…… 316 Stainless Steel
Pressure Regulator/Strainer. Cast Brass ASTM B176 C87800

Cooling Loop (316SS)
Tees, Elbows, Pipe…… 316 Stainless Steel
Ball Valves…… 316 Stainless Steel
Solenoid Valve…… 316 Stainless Steel
Pressure Regulator/Strainer. 316 Stainless Steel

Connecting Rod
Type…… Diagonally Split
Material…… Die Forged Steel

Crank Pin Bearings
Type…… One Piece
Material…… Steel backed, Lead Bronze

Crankshaft
Material…… Forged Steel
Type of Balance…… Dynamic

Cylinder Block
Type…… One Piece with
Non-Siamese Cylinders
Material…… Cast Iron Alloy

Cylinder Head
Type…… 3 Cyl. Slab
Material…… Cast Iron

Cylinder Liners
Type…… Centrifugal Cast, Dry Liner
Material…… Alloy Iron Plateau, Honed

Valves
Type…… Poppet
Arrangement……..…… Overhead Valve
Number/Cylinder……..…… 1 intake
1 exhaust
Operating Mechanism……..…… Mechanical Rocker Arm
Valve Seat Insert……..…… Replaceable

Fuel Pump
Type……..…… Piston
Drive…… Cam Lobe

Heat Exchanger - Standard (Non-Sea Water Compatible)
Type…… Tube & Shell
Materials (in contact with raw water)
Tubes……..…… Copper
Headers…… Rubber
Shell……..…… Aluminum
Housing……..…… Cast Iron
Electrode……..…… Zinc

Heat Exchanger - Optional (Sea Water Compatible)
Type…… Tube & Shell
Materials (in contact with raw water)
Tubes……..…… Copper
Headers……..…… Copper
Shell……..…… Copper
Electrode……..…… Zinc

Injection Pump
Type……..... In-Line
Drive…… Gear

Lubrication Cooler
Type..…… Plate

Lubrication Pump
Type …… Gear
Drive…… Gear

Main Bearings
Type …… Precision Half Shells
Material …… Steel Backed, Lead Bronze

Piston
Type and Material..…… Aluminum Alloy with Reinforced
Top Ring Groove
Cooling..…… Oil Jet Through Drive

Piston Pin
Type..…… Fixed

Piston Rings
Number/Piston…….. 3
Top…… Keystone Barrel Faced-
Gas Nitride Coated
Second……..…… Tapered Cast Iron
Hard Chrome Coated
Third…… Double Rail Type
w/Expander Spring

Emissions Data Not Available

Note:

Emissions data is not available for the following engines series:
KA4H, CJ4H, DP6H, DQ6H, DR8H, DS0H, DS0R and DT2H, JU6H-UFAA/KAPG, JU6H-UFAA/KAQ8, JU6H-UFAA/KAS0, JU6R-UFAA/KAPF, JU6R-UFAA/KAQ7, JU6R-UFAA/KAS9, JW6H-UFAA60

For installations requiring emissions requirements please look to use the following series engines:
JU4H/R, JU6H/R, JW6H, and JX6H

DATUMS:

-A- - MOUNTING FACE OF FLYWHEEL

-B- - ENGINE CRANKSHAFT HORIZONTAL ℄

-C- - ENGINE CRANKSHAFT VERTICAL ℄

- CENTER OF GRAVITY

- CLOCKWISE (CW) ROTATION WHEN VIEWED FROM FRONT OF ENGINE

CAUTION:

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

ATTENTION:

REFER TO THE SPECIFIC MODELS' "INSTALLATION AND OPERATION DATA" FOR INSTALLATION GUIDELINES

AVAILABLE MODELS:

DP6H-UFAA50, DP6H-UFAA62, DP6H-UFAA88
DP6H-UFAA70, DP6H-UFAAX8
DP6H-UFKA50, DP6H-UFKA62, DP6H-UFKA88
DP6H-UFKA70, DP6H-UFKAX8

NOTES:

1) FUEL SUPPLY PIPING FROM TANK TO ENGINE SHOULD BE 1/2" MINIMUM PIPE DIAMETER
2) FUEL RETURN PIPING FROM TANK TO ENGINE SHOULD BE 3/8" MINIMUM PIPE DIAMETER

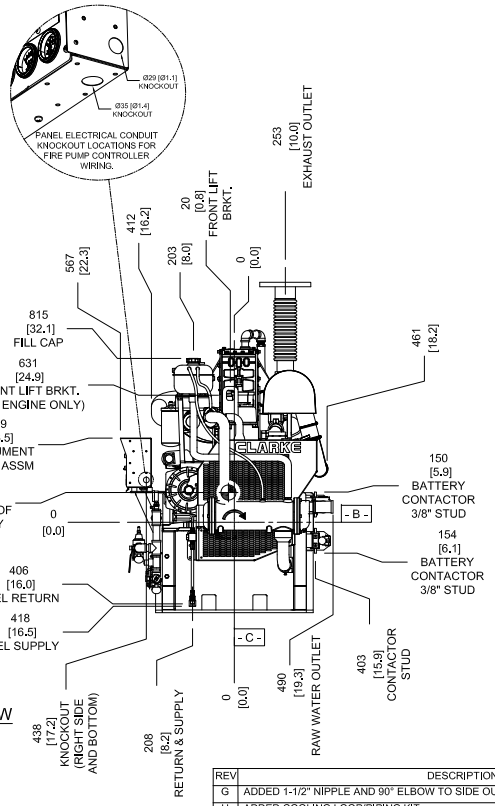
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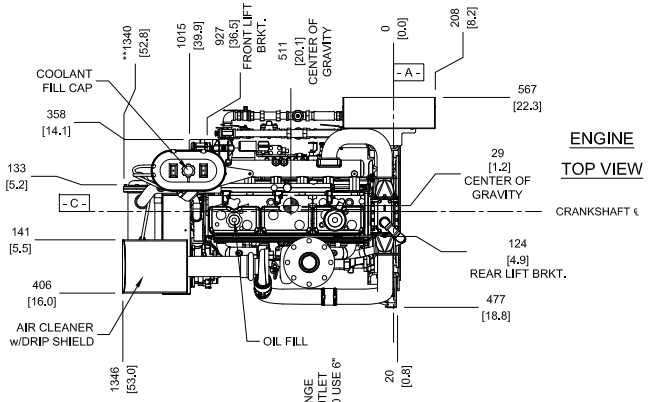
NOTE:
THE LOOP SHOWN IS BASED ON STANDARD LOOP CONSTRUCTION AND FM SIZING CONDITIONS

FOR ALTERNATE LOOP CONSTRUCTION (STAINLESS STEEL, SEA WATER, AND HIGH PRESSURE) SIZES MAY VARY

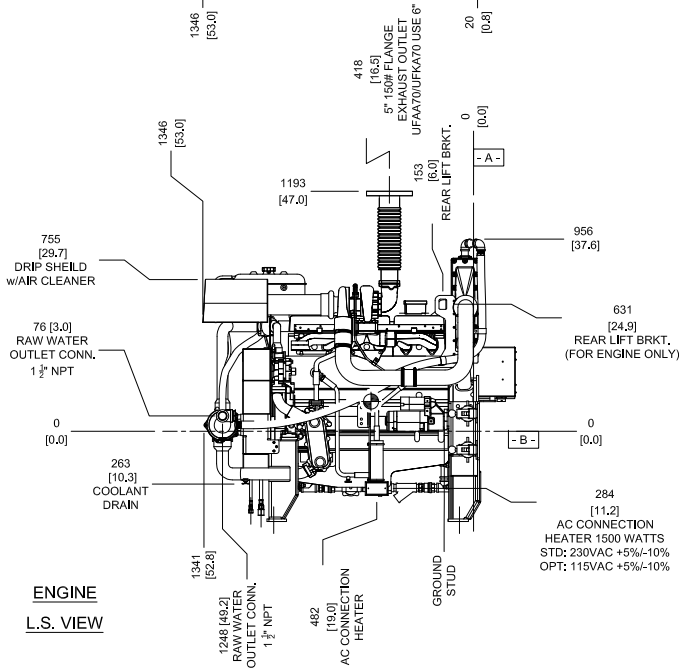
FOR ENGINES BUILT IN USA
STARTING APRIL 2015



ENGINE
FRONT VIEW



ENGINE
TOP VIEW



ENGINE
L.S. VIEW

REV	DESCRIPTION	ECN#	DWN	APVD	DATE
G	ADDED 1-1/2" NIPPLE AND 90° ELBOW TO SIDE OUTLET OF HEAT EXCHANGER	3278	JDH	ASC	23DEC13
H	ADDED COOLING LOOP/PIPING KIT	3631	KFB	ASC	29JAN15
J	ADDED FLYWHEEL INFO	4179	JGV	MCP	05AUG15
K	RAW WATER OUTLET SIZE WAS 1 1/4"	4345	CMM	KPW	02DEC15
L	UPDATED COOLING LOOP INDICATOR PLATES	4359	PMK	ASC	15DEC15
M	ADDED DIMENSIONS TO HEATER JUNCTION BOX	TBD	MJM	JCA	04FEB16
N	ADDED ENGINE HEATER DETAILS & ENGINE LIFTING BRACKET DIMENSIONS	5110, 5061	RDR	JCA	09AUG17
P	ADDED KNOCKOUT LOCATION DETAIL	5236	ECK	MCP	29NOV17
Q	UPDATED TOLERANCE, LOGO, & DIMENSION PRECISION	5393	NMM	MCP	11MAY18
R	UPDATED FRONT MOUNTING FOOT GEOMETRY	5543	MGL	ASC	28SEP18

GENERAL TOLERANCES
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS (INCHES) AND MAY VARY ± 0.5 [0.38]

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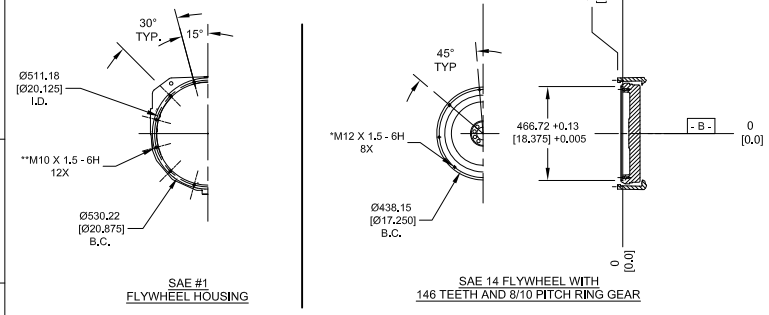
DRWN	DPOTTER
DATE	09DEC10
ENGR	KKUNKLER
MATERIAL	--
USED ON / LAYOUT PART NO.	

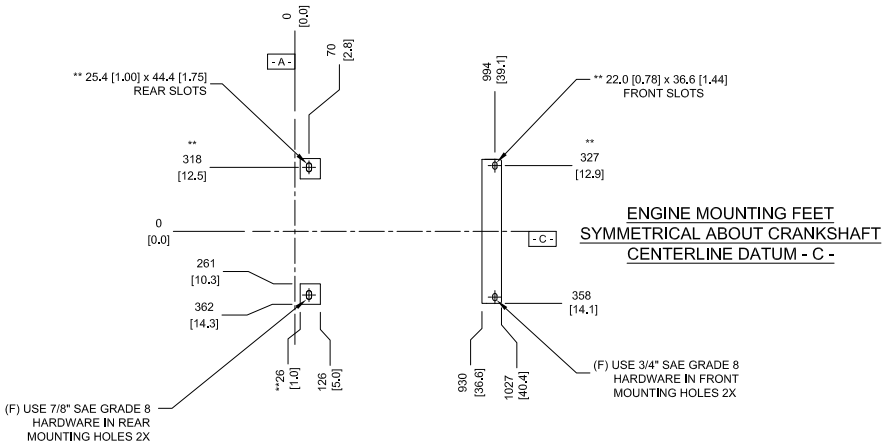
INSTALLATION DRAWING,
DP6H-UFAA/-UFKA MODELS
DIESEL FIRE PUMP DRIVER

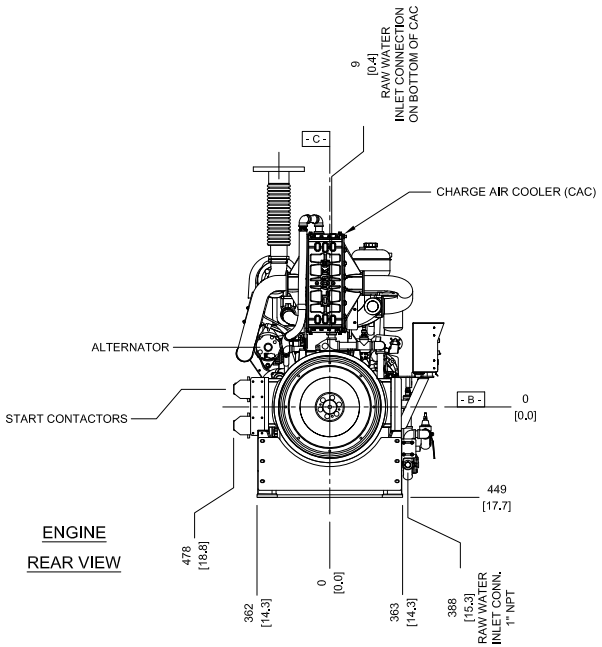
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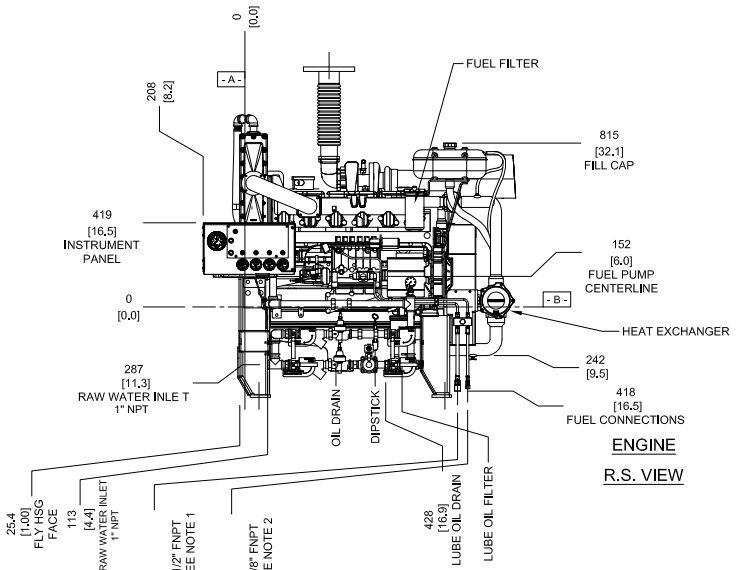
SCALE NTS UNITS MM [INCH] PAGE 1 OF 2

DETAIL DATUM -A-









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FOR ENGINE SPECIFIC OPTIONS SEE www.CLARKEFIRE.com

GENERAL TOLERANCES
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS [INCHES] AND MAY VARY ± 9.5 [0.38]

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CONTROLLED DRAWING: YES ☒ NO ☐

CLARKE®

DRAWN	DPOTTER
DATE	09DEC10
ENGR	KKUNKLER
MATERIAL	--
USED ON / LAYOUT PART NO.	

NAME: INSTALLATION DRAWING, DP6H-UFAA/ -UFKA MODELS DIESEL FIRE PUMP DRIVER

PART NO.: D659 REV: R

SCALE: NTS UNITS: MM [INCH] PAGE OF: 2 2

DP6H-UFKA50
NOISE DATA
UK Produced

Mechanical Engine Noise *

Octave Band

RPM	BHP	OVERALL dB(A)	31.5 Hz dB(A)	63 Hz dB(A)	125 Hz dB(A)	250 Hz dB(A)	500 Hz dB(A)	1 kHz dB(A)	2 kHz dB(A)	4 kHz dB(A)	8 kHz dB(A)	16 kHz dB(A)

Raw Exhaust Engine Noise **

Octave Band

RPM	BHP	OVERALL dB(A)	31.5 Hz dB(A)	63 Hz dB(A)	125 Hz dB(A)	250 Hz dB(A)	500 Hz dB(A)	1 kHz dB(A)	2 kHz dB(A)	4 kHz dB(A)	8 kHz dB(A)	16 kHz dB(A)