BRUSH TRUCK

CET Quick Attack Unit

Ford Cab & Chassis

Ford F350, 2 Doors Regular Cab SRW, with a 60" CA

Rear Hitch

A rear mounted Class III trailer hitch shall be securely attached to the chassis frame and shall include the 7-pin wiring trailer harness.

Lettering & Stripping

The finished apparatus shall be lettered to match the existing apparatus, the door logo shall be provided by the Fire Department. The Apparatus number shall be applied to each side of the chassis hood. 4" Reflective 3M stripping shall be applied on the Cab & the truck bed as per NFPA.

CET Flat Bed Body

One (1) custom Fire Application aluminum flat bed body, 108" (9') long x 84" wide. The aluminum plate used in construction is 1/8" 3003-H22 polished aluminum alloy treadplate.

Body sub-frame is made from 6061-T6 aluminum tubes and channels. Sub-frame crossmembers are installed every 16". The channel is 1-1/2" wide x 3" high x 3/16" thick. The body crossmembers shall be welded to the sub-frame main members.

The Body sub-frame main members consist of 6061-T6 Aluminum square tubing of 4" wide x 6" high x ¼" thick.

Aluminum Side designed to embed emergency lighting.

The body shall be attached to the chassis rails with a minimum of four (4) heavy duty "U" bolts. The body shall be separated from the chassis by 3/8" Teflon. Attachment of the body and sub-frame will allow the body to resist from all distortion and off road operational condition.

The body is a modular design to allow removal from the chassis for major repair or mounting on a new chassis. Isolating material between the body and the chassis to be installed

All welding shall be done electrically using 5356 aluminum welding wire.

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Rear vertical skirt will be made from 1/8" 3003-H22 polished aluminum alloy treadplate. Rear skirt to include Signal, brake, reverse lights, D.O.T., license plate & NFPA steps.

Rear mudflaps are provided. Rear rubber mud flaps are provided. A bracket attached to the side of the muffler pipe end is installed to prevent any damaged that can occur to the mud flap.

Two (2) heavy duty tow eyes shall be installed at the rear of the body (NFPA 1906 requirement). The tow eyes will be fastened directly to each rear chassis frame rail. Hardware shall have a clear and unobstructed access.

The rear of the flat bed shall have two (2) non-skid rear steps for access to pump and controls. The rear steps shall be made so it can be folded up for use in rough terrain. All steps shall sustain a minimum static load of 500 lb (227 kg) without deformation (NFPA 1906 & 1901 compliant). Stepping height from the ground to the first step shall not exceed 24".

Access handrails shall be provided where steps for climbing are located.

An angle of approach and an angle of departure of at least 20 degrees shall be maintained at the front and the rear of the vehicle when it is loaded.

This will be no exception to the body specifications. Pre-built commercial flat bed bodies are not acceptable.

Upper Compartments

All compartment will be made with .100 mil bright polished diamond tread aluminum.

All compartment seams is sealed with a pliable automotive body caulking.

The compartment doors shall be securely attached to the body with a full stainless steel hinge. Door openings shall be fitted with solid neoprene weather strip completely sealing the perimeter of the compartment door opening.

All door lock mechanisms shall be fully enclosed within the door panels to prevent fouling of the lock in the event equipment inside into the lock area.

The compartment doors is latched with recessed, polished stainless steel handles and locks.

R1 One (1) 66" long x 30" high x 14" deep compartment with one (1) door. Compartment located behind the chassis, on the right side of the water tank. Two (2) 12" tube lights are included in this compartment. Lift up door shall be installed with gas hold open struts.

L1. One (1) 60" long x 18" high x 14" deep compartment with two (2) doors. Compartment located behind the chassis, on the left side of the water tank. Two (2) 12" tube lights are included in this compartment. Doors to be drop down type. The compartments shall have useable openings of approximately 56" L x 12" H.

Lower Compartments

All compartment will be made with .100 mil bright polished diamond tread aluminum.

All compartment seams is sealed with a pliable automotive body caulking.

The overlap aluminum compartment doors shall be securely attached to the body with a full stainless steel hinge. Door openings shall be fitted with solid neoprene weather strip completely sealing the perimeter of the compartment door opening. Drop down door shall be installed with heavy duty retaining cables.

All door lock mechanisms shall be fully enclosed within the door panels to prevent fouling of the lock in the event equipment inside into the lock area.

The compartment doors is latched with recessed, polished stainless steel handles and locks.

R1 – L1. Two (2) 24" long x 12" high x 14" deep compartments under body behind the chassis, one (1) each side of the truck bed. One (1) 12" tube light is included in each compartment

Pre-connect hose tray

Integrated to the side of the flat bed body, one enclosed pre-connected hose tray made from aluminium to hold a minimum of 200' of 1-3/4" hose.

Integrated hose tray shall slide in and out for ease of use. Hoses shall be able to pay on both front and rear side.

The Hose tray shall have a 1-1/2" Pre-Connect elbow.

The area shall be designed to prevent the accumulation of water and allow for ventilation to aid in drying hose in the storage area.

1.5" Discharge to Pre-connected Hose tray

There shall be a 1.5" valve piped from the discharge manifold to the hose tray. The valve shall be an Akron 8815, quarter turn self-locking swing out valve with a R1 handle and be connected to the hose tray by high pressure flexible plumbing.

Storage tray

At the top of the left compartment, one (1) aluminum diamond plate storage tray, 60" long x 14" wide x 10" high with Turtle plastic tile and protective net.

The area shall be designed to prevent the accumulation of water and allow for ventilation to aid in drying hose in the storage area.

Electrical components

A 12 volt electrical system is supply. The built in emergency light switch panel have a master switch plus individual switches for selective control. The switch panel is located in the cab on the driver's side to allow for easy access. The switches on the dashboard are lighted rocker type.

The wiring is secured in place, readily accessible and protected against heat, water and physical damage.

The complete electrical system is separated from the chassis wiring system except for a power supply connection at chassis battery. It is also protected by bolt-on type automatic circuit breakers.

All wiring will be run in heat and moisture resistant plastic convoluted split loom.

Grommets will be used where conductors or loom pass through metal.

Power control relays and solenoids shall have a direct current rating of 125 percent of the maximum current for which the circuit is protected.

Conductor insulation will conform to S.A.E. requirements. All circuit are protected by automatic reset circuit breakers.

All wiring furnished will conform to the national Electric Code.

All circuits will be wired in conformance with S.A.E. J1292, Automobile wiring standard.

All wiring will be function worded schematically.

A set (2) of electric diagram will be remit upon delivery.

DOT (LED)

Rear Signal, brake and reverse lights will be furnished and recessed mount into rear bumper area of body. Lights to be oval 2-1/4" x 6-1/2" High Quality Grote Automotive LED lights with chromed housing. Red lights to have 10 LED's each and white clear lights to have 28 LED'S each.

Five red and Two amber clearance lights shall be installed on the bed as per DOT. Lights to be oval 2-1/2" High Quality Grote Automotive round LED lights with chromed housing. 2-1/2" lights to have 13 LED'S each. In addition to that, six 2-3/16" Red and amber reflector shall be installed as per DOT on the bed.

Two License plate lights shall be mount into rear bumper area of body

One (1) back-up alarm that meets the type D (87 dba) requirements of SAEJ994 shall be provided at the rear of the apparatus. It will activate when the transmission is placed in reverse.

Scene Lights

Two (2) 300W telescoping 12v scene lights mounted at the front of the Truck Bed. The light shall be single head design. One light mounted on each side will increase visibility around the apparatus during night or light operations. Model is to be Fire Research FCA512-D30. Option to be installed on each light : 1- On/Off lamphead switch FCAoption-ON, 2- Wire Guard FCAoption-G, 3- Rubber bumper FCAoption-NS.

Two (2) Rear Unity scene light provided on top of the CAFS. One (1) to be Floodlight, one (1) to be Spotlight. Switch to be located on the light.

Emergency lighting package

Mounted on front Ford grill, Two (2) Whelen 400 series SUPER LED, red, each with a chrome flange.

Mounted each side of the chassis, Two (2) Whelen 400 series SUPER LED, one (1) each side, red, each with a chrome flange.

Mounted each side of the body, Two (2) Whelen 400 series SUPER LED, one (1) each side, red, each with a chrome flange.

Mounted in the rear lower section of the body Two (2) Whelen 400 series SUPER LED, red, each with a chrome flange.

Siren & Speaker

One (1) Whelen, model # 295HFSA1, 100 watts electronic siren amplifier with PA and switch control center to be provided and installed.

One (1) Whelen, model # SA314P, 100 watt speaker, to be provided and mounted on the front bumper with SABKT1 universal mounting bracket.

Console

One CET aluminum fire application custom consol installed between seats with rocker switch. To be quickly identified and visible to the driver and passenger while seated, the rocker switches shall be installed on the top face of the console designed with a 40 deg. angle. This area shall be able to hold at least two rows of rocker switch. All switches shall be rocker style internally lighted and appropriately identified by panel mounted legends.

The first lighted rocker switch to be a master switch. Master switch to be red to comply with the latest NFPA edition. The power going to the fire unit from the truck chassis would need to be isolated. When the switch is in the Off position, the truck chassis will be as it was when it was delivered from the chassis manufacturer. The use of a master switch could help in trouble shooting of an eventual chassis electrical problem.

The consol will have an area to accommodate department map books, clipboards etc.. Area to be at least 13" long x 12" wide x 9" high.

The console also have an area for radio head & Siren installation.

Map Light, 12" gooseneck Halogen, Havis Shield, model C-MAP-S, side mounted on the cab console.

A Hand-Held / Tripod Spot Lamp installed on the console. Features, 1,500,000 C.P. for high intensity output ; Hand held base opens to become tripod base for a work light ; H3, 100 watt halogen bulb ; 20 ft. Power cord.

All electrical components like breaker, relays, wiring etc. will be installed inside this customized consol and protected with an aluminium box. This consol will be design to easily gain access to those breaker, relays, wiring, etc.

Controls and switches that are expected to be operated by the driver while the apparatus is in motion shall be within convenient reach for the driver.

Door Ajar

One (1) door ajar light will be provided and installed in the consol. The light will be equipped with a sign "Warning Door Ajar".

CET Fire Pumps Mfg Drop-In-Unit

Tank

The UPF Defender III series shall be constructed of 1/2" thick polypropylene sheet stock with AccTuf™ resin. The material shall be of a certified, high quality, non-corrosive, stress relieved thermo plastic, black in colour with a textured finish, and UV stabilized for maximum protection. The skid type booster tank shall be of a standard configuration and shall be so designed to have complete modular slide in capability. All joints and seams are to be fully nitrogen welded and electronically tested for maximum strength. The unit shall incorporate transverse partitions manufactured for 3/8" UPF PT2E polypropylene which shall interlock with a series of longitudinal partitions constructed of 1/2" PT2E polypropylene. All swash partitions shall be so designed to allow for maximum water and air flow between compartments and are fully welded to each other as well as to the inside of the tank. The passenger side rear wall of the tank shall have a standard built in sight gauge 2" in width, and 70% transparent.

Fill tower and tank cover

The tank shall be equipped with a combination vent/overflow and manual fill tower. The fill tower shall be an 8" round by 6" high with a moulded drop-on type cover. The cover shall be fastened to the tower with a teather to prevent loss. The tower shall be located in the right rear corner of the tank. There shall be a vent / overflow installed inside and to the extreme rear of the tower approximately 2" down from the top. This vent / overflow shall be of a standard schedule 40 polypropylene pipe with minimum ID of 3". The vent / overflow shall be piped internally toward the front and exit out the front tank wall with a 1" extension past the front tank wall.

The tank cover shall be constructed of 1/2" thick PT2E polypropylene, black in color, UV stabilized, and incorporate an exclusive self locking design. The cover shall incorporate (4) 2" polypropylene for hold-down and lifting provisions. These dowels shall be tapered for ½" -13 threads to accommodate a lifting eye with a minimum security factor of 3 to 1. These dowel shall be welded into the transverse baffles, and will assist in minimizing cover flex during normal operation

Tank Capacity

The tank shall have a capacity of 300 U.S. gallons of water. The tank shall be covered by the UPF ALL OUT No Fault Life Time Warranty.

10 gallon Drop-in integrated foam cell will be included. A label that reads "Foam" shall be placed at any foam concentrate tank fill opening.

Sump

The floor of the tank shall be manufactured from 3/4" PT2E polypropylene. There shall be one (1) sump as standard per tank. The sump shall be integral to the tank floor and be a minimum of 5/8" deep recessed into the floor. The sump shall not be visible from or protrude through the bottom of the tank.

Tank Outlets

There shall be two standard tank outlets located in the same vertical plane on the driver side rear wall of the tank. One (1) 3" female NPT tank to pump suction fitting and one (1) 1" female NPT tank fill fitting with flow deflector

Tank Mounting Blocks

The cover shall incorporate two (2) booster reel mounting blocks that shall be to accommodate two (2) each sliding nut fasteners. These mounting blocks shall be welded to the covers running from the rear edge of the tank forward.

Lifting Eyes

There shall be two removable lifting eyes to be included at the top of the tank.

Skid Base

There shall be a full width skid base manufactured of 3/4" PT2E polypropylene welded to the tank. This base shall be 48" wide by 96" long and shall extend 34" past the tank in the rear to allow for pump mounting. The pump mounting area shall be supported by ½" PT2E polypropylene gussets 15" high by 32" long. The gussets shall be equipped with 2" holes to assist in lifting the unit. The mounts shall allow for the truck to be secured directly to a truck bed without the need for any skid frame work underneath.

Tank will be baffled in accordance with NFPA bulletin 1906 requirements.

Mounting

The Drop-In-Unit shall be mounted in a manner that allows access to the engine, pump, and auxiliary systems for routine maintenance. The Drop-In-Unit shall not be welded or otherwise permanently secured to other components.

CET 35 CFM CAFS

The CET 35 Cfm CAFS provides a self-contained, gas-powered, "slide-in" type compressed air foam system (CAFS) unit. The CAFS unit is designed to fit into the back of a standard length and width pick-up truck body.

The CAFS is designed to discharge water only, air only or compressed air foam from the same discharge outlet. In addition, the consistency of the compressed air foam (expansion ratio), wet/dry is fully adjustable.

Engine

The power to drive the system is provided by a Kolher, 2-cylinder, 4-cycle, air-cooled gas engine at a rating of 25HP @ 3600 RPM. Automotive engines or ratings will not be used. The power unit has a 25-amp alternator, a dry cartridge air filter and a muffler.

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Water Pump

The water pump is a CET model 13-1D single-stage centrifugal pump with a vertically split aluminum case with replaceable bronze impeller and seal rings on a stainless steel shaft. It is designed to provide up to 180 GPM of plain water flow with the air compressor in the "unload" mode or load mode. The pump seal is of a mechanical design.

Air Compressor

The air compressor is of the oil injected piston type, designed and installed to supply a minimum of 35 CFM at 100 PSI of air at maximum engine RPM.

The air compressor is driven by one dry Goodyear -V type belts from the engine crankshaft and is mounted to the pump platform. The air compressor is capable of maintaining prolonged pressure from 100 to 125 pounds per square inch throughout the service life of the complete CAFS unit.

A pneumatic modulating inlet valve mounted on the air end inlet controls the compressor. An CET balancing system is provided to automatically maintain the air pressure within plus-or-minus 5% of the water pump pressure throughout the CAFS operating range.

The compressor is cooled with air and the compressed air is cooled with a water cooler. The system is be capable of maintaining recommended operating temperatures throughout the full operational range in ambient temperatures up to 115 F. A dry cartridge type air filter is provided on the compressor air intake.

Foam Proportioner

The foam proportioner is a Foampro model 1601 automatic, 12-volt, direct-injection system capable of maintaining a solution ratio of as low as 0.1% to at least 1% of class "A" foam. The proportioner has a maximum operating flow range of 3-145 GPM (11-549 liters per minute) and a maximum accuracy flow range of 5-110 GPM (19-416 liters per minute). The proportioner is capable of using different types of class "A" liquid foam concentrates. This complete system is mounted within the module.

Drive System

The water pump is directly driven. The compressor, which is mounted to the engine flywheel housing, is belt-driven using a one V-type belt.

Electrical System

All electrical equipment installed by the manufacturer is in conformance with current automotive electrical system standards ant the requirements of the applicable NFPA apparatus standards. The wiring is individually and permanently color and function coded.

All exposed wiring runs in loom with a minimum of 280F (137.8 C) rating. All wiring loom is properly supported and attached to frame members along the entire rum. At any point where wire or looms must pass through metal, rubber grommets are installed to protect the wire from abrasion.

The main low voltage electrical terminal block and circuit breaker panel are provided behind the pump operators panel in a location which provides easy service access.

The electrical connections are made using heat shrink and/or waterproof connectors. All electrical circuits are protected with automatic reset circuit breakers or fuses.

Priming System

A CET Ventury type priming system is utilized. The primer is capable of priming the water pump through 20 of hard suction hose with a 15 lift. Primer controls is mounted on the operators panel.

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Plumbing, Hoses and Lines

All piping is stainless steel. Use of grooved end pipe couplings are required for flexibility and movement of system components on mobile equipment. The compressor hoses are made of Teflon and braded with stainless steel. Hydraulic hoses are not used. Check valves are required throughout the system to maintain integrity and shall be placed so that the air, water foam and foam solution do not inadvertently mix. Drain valves are provided on the unit to completely drain the system to prevent freeze damage.

Tank to Pump

There is a 2.5" tank to pump suction valve fitted in the module and controlled from the operators panel.

Inlets

A 2.5 inlet is provided to draw water from the control panel with a 2.5" NH male connection and cap is provided. It is possible to use that line for "direct tank fill" operations with a pressurized water source.

Discharge Outlets

There is one 1.5 discharges with stainless steel, plumbing to panel, mounted CAF discharge outlet. Two additional CAF discharges are available to the side of the module for use as a hose reel and pre-connect. Swing check valve is installed to prevent foam from back flowing into the pump. The discharge valve is Fire Application self-locking, swing-out valve.

Tank Refill

A 1" tank refill line with a 1" Akron and flexible, reinforced hose using internally expanded fittings to allow maximum flow.

Module Frame

The frame is constructed of steel and designed for rigorous fire service. The top of the unit is hinged and allow for quick oil checks.

Control Panel

A laser-cut control panel is mounted to the electrical box, which is of a water resistant design. The following items are marked in a logical manner on the control panel to provide for simple and easy operation.

1. 2-Lamp Shielded Pump Panel Light Cluster & Switch
2. Water Tank Level Indicator
3. 2.5" Black Face, Master Water Pressure Gauge
4. 2.5" Black Face, Master Air Pressure Gauge
5. Primer Control
6. 2.5 suction intake pressure gage.
7. Direct Tank Fill, Inlet, 2.5 NH male with cap & Lanyard
8. Suction Inlet, 2.5 NH
9. CAFS/Water Compressor Unload Valve
10. Vernier Throttle Control
11. Drain Valves
12. Auxiliary Air Outlet

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13. System Operation Instruction Placard
14. One Panel Discharge CAFS Outlet 1.5 NH Male with Cap & Lanyard
15. Electrical Door
16. Hour meter
17. Compressor temperature switch gage
18. Panel light switch
19. Ignition switch
20. FoamPro Concentrate Proportioner Control

Labels

All controls, inlets and discharges are clearly labeled. The labels comply with applicable NFPA standards.

Testing

The competed unit shall undergo a manufacturers run-in test prior to delivery. The engine, pump and air compressor are operated for a minimum period of one day, during which time the test operator will monitor and record the functions and performance of each system component. Compressed air foam is produced during the test.

This testing will be performed to ensure proper system operation and performance prior to shipment. The manufacturer provides written certifications that the tested unit meets all performance criteria contained herein (NFPA). Water flow performance is measured using standard fire department test methods.

Manuals

One (1) copy of the Operation and Maintenance Manual are provided to the purchaser with each unit. This manual includes detailed instructions in the operation and maintenance of the overall unit, engine, water pump, air compressor and foam proportionner.

Dimensions

Length	34”
Width	44”
Lid Width	40”
Height	23.5”
Weight	650 lbs.

Performance

Water Pump	180 GPM @ 90 PSI
Air Compressor	35 CFM @ 100 PSI
Engine Horsepower	27 HP @ 3600 RPM

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Warranty

Engine	1 year
Compressor	1 year
Water Pump	2 years / 2000 hours
Chemical Injector	1 year
Water Tank	Lifetime

All fabrication and materials are warranted for a period of two (2) years barring accidents, abuse or negligence. Excluded from the warranty are all consumables and parts subject to routine replacement. We will repair or assist in the repair or replacement of the product in its entirety.

The performances are base on a maximum altitude of 500ft and any higher elevation will lower the pump performance. The standard engine performance drop are 3% for every 1000 ft

The Drop-In-Unit electricity will be connected directly to the main battery of the chassis.

An external fuel tank shall be provided for the pump motor. It will be large enough to run the pump motor for one (1) hour at its rated capacity and pressure as per NFPA 1906, 8.10.1. Tank will be mounted with ease of filling in mind.

Centerline of any control shall be no more than 72 in. vertically above the ground or platform that is designed to serve as the operator's standing position.

Approximate weight of the Drop-In-Unit including hose reel(s) and full of water and other liquids is 3,600 pounds.

Low Profile Booster Reel

One (1) 12v Low Profile Electric Rewind Booster Reel

One (1) 12v electric rewind booster reel capable of handling 150' of 1" diameter booster hose. The reel shall have a push button rewind control and a backup geared crank rewind handle. The reel shall be equipped with a 1" NPT 90 degree swivel inlet, and a 1" NST outlet riser. The reel shall be manufactured of bright polished aluminum. Reel to be installed on the right rear side of the Flat Bed.

150' of 1" Rubber booster hose shall be supplied and installed.

Booster Reel Rollers

One high mounted rollers and spools assemblies shall be furnished and installed facing right side of the truck.

Discharge to Booster Reel

There shall be a 1" valve piped from the discharge manifold to the booster reel. The valve shall be an industrial, quarter turn valve handle and 1" NPT threads, and shall be connected to the reel by 1" high pressure flexible hose.

Testing

The pump shall be tested after the pump and all its associated piping and equipment have been installed on the fire apparatus. The tests shall be conducted at the manufacturer's approved facility.

The testing shall include at least the pumping tests, the priming device test, the vacuum test. The water tank-to-pump flow teat, and the piping integrity test.

Manufacturer's discretion

Materials, parts, or procedures used are subject to change at manufacturer's discretion at any time to provide equal or better products.

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BRUSH TRUCK

Technical Drawing