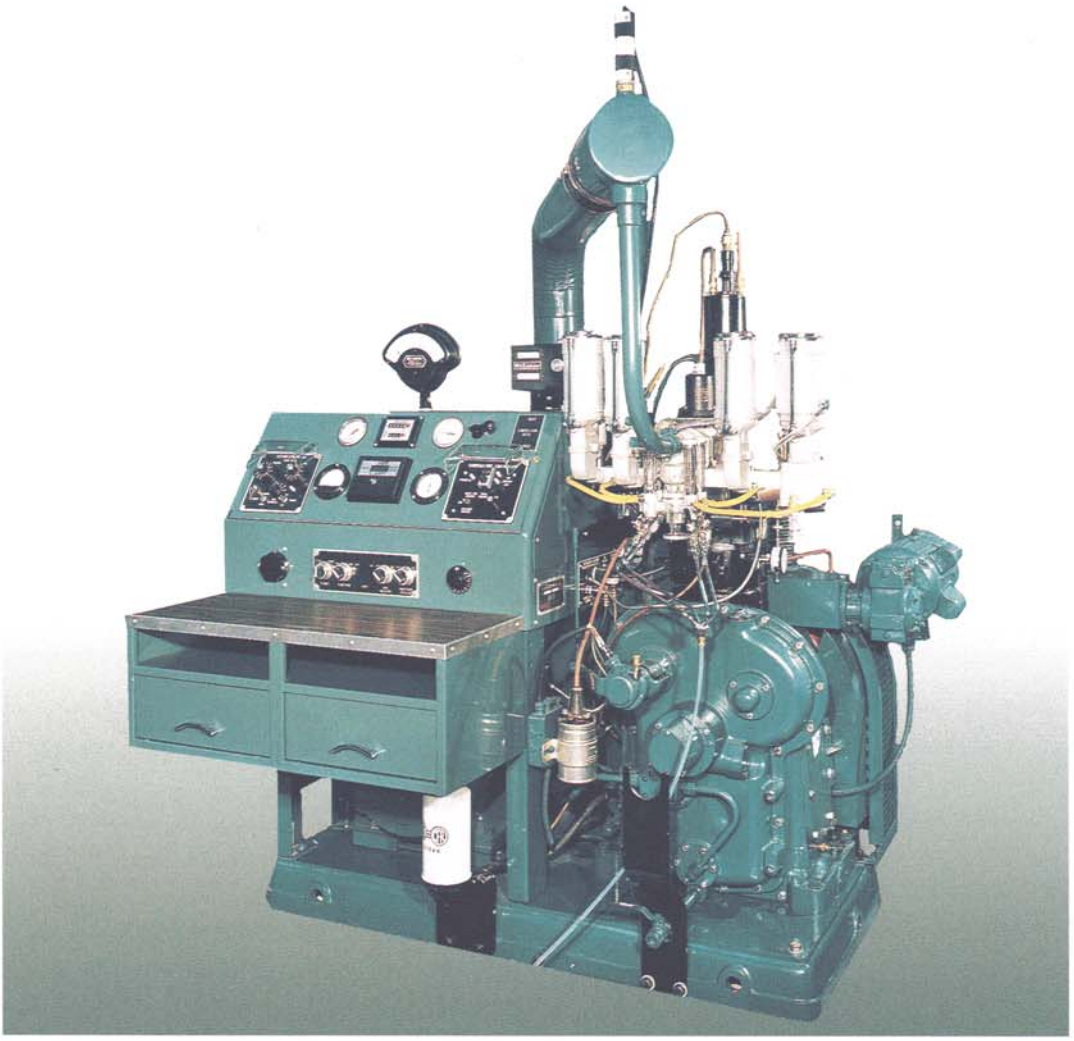
Waukesha DRESSER



CFR F-2U
Combination Research/Motor Method Octane Rating Unit

Waukesha Engine Division offers a complete system for octane determination, conforming to ASTM D 2699 (ISO 5164) and ASTM D 2700 (ISO 5163) Standard Test Method for Knock Characteristics of Motor and/or Aviation Fuels by the Research and Motor Methods respectively. These methods are accepted worldwide as the standard for determining the octane quality of gasoline and fuel blending components.

Our single cylinder CFR F-2U Combination Research/ Motor Method Octane Rating Unit produces test results under these operating conditions: Research—600 RPM, 212°F jacket temperature, 135°F oil temperature, adjustable intake air temperature, and spark advance set at 13 degrees BTDC; Motor—900 RPM, 212°F jacket temperature, 135°F oil temperature, 300°F mixture temperature, and spark advance automatically adjusted with changes in compression ratio. Dimensions (approx.): 61"H x 60"L x 39"W

The Combination Unit provides the capability to switch between Research and Motor Methods with only minor equipment adjustments.

No product is complete without proper parts, service and training support. Waukesha Engine provides the very best aftermarket support through a worldwide distributor network offering service and installation assistance, classroom and field training, and a global network of parts supply.

Because the Waukesha CFR Engine is the only fuel rating unit approved by ASTM, it must meet demanding quality standards prior to shipment. When you specify a Waukesha CFR fuel rating unit, you can be assured of receiving an industry standard you can depend on.

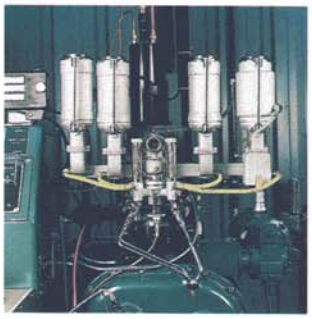
Key Design Features

Variable Compression Cylinder

A variable compression cylinder allows the compression ratio to be changed during engine operation. The available range is 4:1 to 18:1, which allows testing a wide range of fuels. A special overhead valve mechanism provides constant valve clearance as the compression ratio is adjusted. The integral head design provides for improved reliability as well as accuracy of results.

Crankcase

The CFR-48D crankcase combines durability with simplicity of design. All CFR engines use the same cast-iron, box-type crankcase, which features removable side doors and gear cover for easy measurement and repair of critical internal components.



Carburetor

Fuel/air ratios are easily adjusted with this single-venturi carburetor by varying the fuel level. The fuel level is always visible to the operator for easy reference and recording. The carburetor is available in multiple jet and venturi sizes for all applications. Both three-bowl and four-bowl models are offered, as well as various carburetor cooling options.

Knock Measurement Equipment

A factory-calibrated, 115 VAC (50 or 60 Hz) detonation meter converts changes in combustion knock to an analog signal (with knock intensity displayed on a scale of 0 to 100). The electronic equipment is cabinet-mounted in the instrument panel and connected to a magnetostrictive pickup element mounted directly in the cylinder's combustion chamber.

Other Important Features

- **Safety systems** provide engine shut-down when any of these conditions are experienced: electrical power loss, low oil pressure, loss of cooling water, or electrical overload of the synchronous/ reluctance motor.
- **Jacket coolant condenser** is of the thermal-syphon, ebullient, recirculating cylinder jacket type. While very simple in design it maintains constant cylinder water jacket temperature for stable operation.
- **Synchronous/reluctance motor** of three-phase design provides power for starting and absorbs the engine's output to maintain constant speed during operation.
- **Air humidity control equipment** is supplied to condition the engine's intake air to between 25-50 grains of moisture per pound of dry air as prescribed in the ASTM method.
- **Pressure lubrication** is used to lubricate all bearings and critical moving parts. External oil pump permits access to the main oil supply line for filtering, cooling or flow measurement.
- **Electronic ignition system** is a condenser-discharge type with coil and distributor. The adjustable spark timing is factory set in accordance with the ASTM method.
- **Research/Motor Conversion** is accomplished by the use of two pulleys provided with the unit to allow adjustment of engine speed to meet both Research (600 RPM) and Motor (900 RPM) specifications.

Equipment Options for the CFR F-2U Unit

Variable Voltage and Cycles	50 Hz or 60 Hz models are available to suit local requirements. The synchronous/reluctance motor is available in many three-phase voltages.
Motorized Compression Ratio Changer	A touch of the lever controls cylinder height, eliminating manual hand-crank height adjustment.
KVA Transformer	Converts 190, 200, 208 or 220 volts to 110 VAC (50 Hz or 60 Hz). Another option converts 240 volts to 120 VAC (50 Hz or 60 Hz).
Exhaust	Water-cooled exhaust provides constant cooling.
Carburetor	See photo caption for available options.

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