TECHNICAL MANUAL
OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT

MAINTENANCE MANUAL

FOR

DRILLING MACHINE, WELL,

1500 FT. COMBINATION ROTARY

AND PERCUSSION, DED,

SEMI-TRAILER MOUNTED (CCE)

GEORGE E. FAILING CO.

MODEL CF-15-S

NSN 3820-01-075-4974

HEADQUARTERS, DEPARTMENT OF THE ARMY

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OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL FOR

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REPORTING OF ERRORS

You can help improve this manual. Let us know if you find any mistakes, or if you know of a way to improve the procedures. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) or DA Form 20282, located in the back of this manual, direct to: Commander US Army Tank-Automotive Command, ATTN: DRSTA-MBP, Warren MI, 48090. A reply will be-furnished direct to you.

This technical manual is authentication of the manufacturer's commercial literature and does not conform with the format and content specified in AR 310-3, Military Publications. This technical manual does, however, contain available information that is essential to the operation and maintenance of the equipment.

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SECTION I

GENERAL INFORMATION AND OPERATION

1-1. GENERAL. This manual contains operation, service, and repair instructions for the Rotary Well Drilling Machine, Model CF-15-S, manufactured by George E. Failing Company, Division of Azcon Corporation, Enid, Oklahoma.

1-2. DESCRIPTION. The model CF-15-S Drilling Machine is a compact, mobile drilling unit equipped to handle all types of exploration drilling. The drilling machine is powered by an eight cylinder, 2-cycle, diesel engine coupled to a power take-off. Other major components include an air compressor, air compressor drive, transfer case, auxiliary transmission, mud pump, mud pump drive, subdrive assembly, rotary table transmission, rotary table, and a 3-drum drawworks. A hydraulic system is installed and operates the hydraulic leveling jacks, mast raising cylinder, pulldown and hold-back assemblies, rotary table cylinder, and breakout cylinder. The complete drilling machine is mounted on a semi-trailer for mobility. Two lifting slings are welded to the frame. The sling lifting eyes are located adjacent to the four leveling jacks. The slings are provided as a means of hoisting the entire drilling machine if it is being transported aboard a surface carrier. The machine is equipped with a detachable mast to enable loading the machine aboard an air carrier. The machine has the capability for drilling to a depth of 1500 feet.

1-3. CONTROLS AND INDICATORS. The controls and indicators necessary to operate the machine are conveniently located and visible from the driller's platform. Other controls and indicators that affect operation of the machine, but are not available from the driller's or helper's platforms, are also included in this section. The locations of the controls and indicators are shown in Figure 1-1, and the name and function of each are listed in Table 1-1. The identification numbers in the figure correspond to the index numbers in the table.

DRILLING MACHINE:

Manufacturer	George E. Failing Co.
Manufacturer's Model	CF-15-S
Type	Mobile, combination rotary and down-the-hole percussion

Overall Dimensions:

Length	45 Feet, 2 Inches
Width	8 Feet, 4 Inches
Height (With Mast Lowered)	12 Feet, 4 Inches
Height (With Mast Raised)	45 Feet, 4-3/4 Inches
Shipping Cubage	4,549 Cubic Feet
Shipping Weight	47,270 Pounds

Capacities:

Fuel Tank	100 Gallons
Hydraulic Reservoir	48 Gallons
Water Injection Tank	100 Gallons
Air Tank	7.5 Cubic Feet

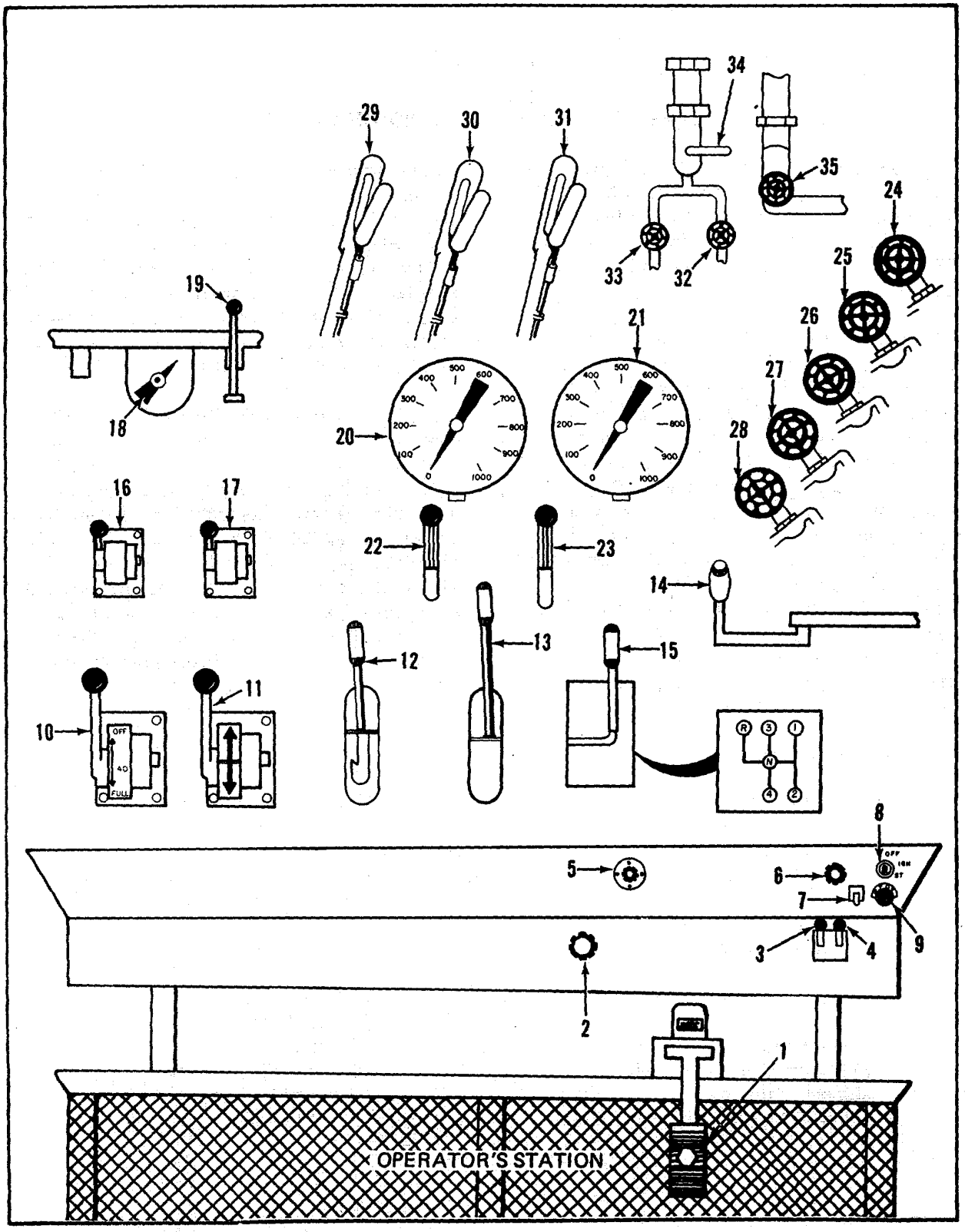

Figure 1-1. Controls and Indicators (Sheet 1 of 6)

Table 1-1. Controls and Indicators

INDEX NUMBER	NAME	FUNCTION
1	Foot Throttle	Controls engine speed. Depressing the pedal increases engine rpm proportional to the amount that the pedal is depressed. When pressure on the pedal is relieved, the pedal returns automatically to the up position and engine rpm slows to idle.
2	Hand Throttle	Controls engine speed. Clockwise rotation of the throttle increases engine rpm. Rotation of the throttle to the full counterclockwise position reduces engine rpm to idle.
3	Breakout Control Lever	This control has three positions. The center position is the off position. Pushing the lever forward from the center position extends the breakout cylinder. When the cylinder is extended the breakout tong is in position to be coupled to the pipe. With the breakout tong connected to the pipe, pulling the lever back from the center position retracts the breakout cylinder to break the connection. When the lever is released from any position it returns automatically to the center position.
4	Cathead Control Lever	This control has two positions. Pulling the lever back from the center position engages the clutch to rotate the cathead. NOTE The speed and direction of rotation of the cathead will depend on the position of the cathead transmission shift lever (INDEX NUMBER 71). When the lever is released it returns automatically to the center position and rotation of the cat- head ceases. Forward movement of the lever from the center position has no function.

Table 1-1. Controls and Indicators (Cont'd)

INDEX NUMBER	NAME	FUNCTION
5	Hold-Back Balance Control Valve	Full clockwise rotation of the valve handle is the closed position. In this position no hold-back pressure is being applied. Counterclockwise rotation of the valve handle opens the valve. NOTE The hold-back pressure ON-OFF control (INDEX NUMBER 6) must be in the ON position when hold-back pressure is being adjusted. Hold-back pressure increases proportional to the amount the valve is opened. Hold-back pressure can be adjusted by observing the hold-back pressure gauge (INDEX NUMBER 20) and turning the valve handle in the direction necessary to obtain the desired hold-back pressure. The locknut on the valve handle shaft must be loosened before the valve handle can be turned, and should be tightened after pressure adjustment has been made.
6	Hold-Back Pressure ON-OFF Control	Two position push-pull control. The OFF position is all the way in. This shuts off the hold back pressure. The ON position is, all the way out. When ON, holdback pressure is being applied, as set by the holdback balance control valve (INDEX NUMBER 5). The pressure being applied will be indicated on the holdback pressure gauge (INDEX NUMBER 20).
7	Engine Alarm Switch	Two position toggle switch. When the switch is in the ON position, the engine alarm will sound if either a low oil pressure or high water temperature condition occurs. The OFF position opens the alarm circuit. NOTE The switch should be in the ON position during normal operation.