

# THE FORWARD REPAIR SYSTEM

PROGRAM UPDATES FOR THIS ISSUE

## The Forward Repair System Completes Developmental Testing at ATC

### Major Components of the FRS

- Generator
- Material Handling Crane
- Air Compressor
- Welding and Cutting System
- Industrial Tools
- M1075 PLS Truck

The Forward Repair System has just successfully completed developmental test at ATC, and has moved on to operation test at FT Hood TX. OTRR III was conducted on 4 Feb 00 and the FRS was given an OK to proceed to test. The first full week of a portion of the second week had been completed as of the writing of this news letter without any major problems occurring at the test site. To coin a phrase "no news is good news" is in fact the best way to describe current feedback we are receiving from the tester at TEXCOM. The Operation Test is expected to last 4 weeks with a completion date of 3 March 00.



Forward Repair System

### The Forward Repair System is selected for use IBCT

The IBCT has taken on a life of its own and the FRS has been selected as a key maintenance enabler in support of the BCT. The FRS will be transported by the HEMTT-LHS. The FRS is planned as the maintenance system for the Brigade Combat Teams envisioned by the Army Chief of Staff and is available for the Initial Brigade starting on 1 AUG 00

### Rock Island Arsenal Swings into Full Gear

The Rock Island production facility swings into full gear in anticipation of supporting both the fielding of the first Division Set to the 4ID as well as supplying 7 systems to the IBCT. The activity is in high gear and will continue that way for sometime for the folks at RIA.

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## Overall Concept

The Forward Repair System is the key maintenance system for all repair activities of heavy forces in the forward battle area. Heavy forces include tank, mechanized infantry, cavalry, field artillery, engineers, and supporting units with heavy combat, combat support, and combat service support vehicles. The system has mobility nearly equivalent to the supported force and overhead lift. Additionally, the Forward Repair System has its own air source for air tools

and inflatable lifting devices. It has welding capability, a tailored set of industrial quality hand and power tools, and its own on board power source. The power source is capable of providing power sufficient to operate the crane, welding equipment, power tools, and the on board electrical system. The Forward Repair System provides storage space for the Soldiers' Portable On-System Repair Tool (SPORT), general mechanics tool kits (GMTKs), battle damage assessment and repair

(BDAR) kits, and combat spares or other supporting equipment.



# The Generator

The Forward Repair System will have an on-board 35 Kw Generator. The generator will provide power for the maintenance module and on-board components, including the crane, welding equipment, air compressor, power tools, lights, and ancillary equipment requiring electrical/mechanical power. The Generator will provide power to all operating systems and operate at a noise level equal to, or less than, 85dbA. In addition a Power Take-Off capability provided, used to power the Material Handling Crane.

**Standard Generator Features:**

**Cummins Heavy-Duty Engine**

- Rugged 4 cycle industrial engine, water cooled
- Bore: 4.02”
- Stroke: 4.72”

- Displacement: 239 cubic inches (3.9 liters)
- Diesel fuel Tank capacity 26.8 Gal. Approximate run time at full rated load 9 hrs

**Alternator**

- Design: Brushless, 1800 RPM (60 Hz), 4 pole, drip proof revolving field
- Stator: 2/3 pitch
- Rotor: Direct coupled by flexible disc
- Insulation System: Class H per NEMA MG 1-1 –.65
- Temperature Rise: 150° C standby
- Alternator Cooling: Direct drive centrifugal blower

**Sound Attenuated Housing**

- Quiet Site II: First Stage
- Sound Performance @ 7 meters: 72dbA
- Weather Protective

**Dimension**

- Length: 82.8”
- Width: 41.3”
- Height: 76.9”
- Approximate Dry Weight: 2500 LBS.



Generator as mounted to the FRS

**FRS is a “MUST HAVE” Enabler for Force XXI**

**Mission:** Repair Battle Damaged Heavy Combat Systems “On-Site”, up through the Direct Support Level

# The Material Handling Crane

The Forward Repair System is configured with a crane capable of removing and replacing major components from Army’s currently supported track and wheeled vehicles, including M1A1/A2 power packs. The crane is capable of lifting and maneuvering 10,000 pounds at a 14 foot radius. The ability of the Forward Repair System to remove and replace major components with an on-board crane will allow diverted recovery assets (wreckers or other recovery vehicles) to perform their intended mission.

**Standard Crane Features:**

- Crane Pump Requirements: Load Sense (Variable-Displacement) Pump system
- Hydraulic Supply Requirements: 12 GPM Min. 3000 PSI
- Hydraulic connections: Per SAE J1453
- Max Reservoir Draw-Down: 9.2 GAL
- Electrical Circuit Requirements:

- 24 VDC
- Max Current Draw: 10 AMPS

**Dimension**

- Length: 95.95”
- Width: 48.75”
- Height: 52.78”
- Approximate Dry Weight: 5200 LBS.



Crane as mounted to the M1077 Flat Rack

# The Air Compressor

The Forward Repair System has an on-board air source capable of supplying enough air to operate all on-board pneumatic equipment . This capability will allow the Forward Repair System to perform maintenance operations such as tire inflation and cleaning of air filters; and greatly enhances the ability to effect repair to wheel and track vehicles, (no more breaker bars)

**Standard Air Compressor Features:**

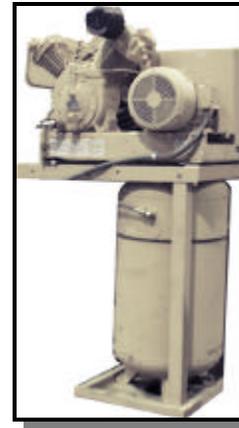
**Air Compressor:**

- Ingersoll-Rand T30 Model 7100 Two Stage
- 15 Horsepower Electric Motor
- Output: 50 Standard Cubic Feet Per minute @ 175 PSI gage
- Low Oil Level Switch
- Air cooled Aftercooler
- Inlet Filter rating of 10-

- micron
- Equipped with 80 Gallon Receiver Tank

**Dimension**

- Length: 43.5"
- Width: 31"
- Height: 82"
- Approximate Dry Weight 1000 LBS.



Air Compressor as mounted on the

# The Enclosure

The Forward Repair System equipment and supplies is mounted in a padlock-secured; weather protected enclosure, Internal and External enclosure security is provided. The enclosure structure is rigid and durable, maintaining the integrity of the enclosure when operated in all environmental conditions. Integral storage compartments suitable for stowing all attachments, publications, tools, and expendable supplies during transportation, storage, and periods of non-use are also provided. The storage compartments assures that all stowed items remain securely in place and are protected from damage during transportation.

**Inside the Enclosure**

- Convenient tool access.
- Tools and Equipment have specific storage locations.
- Modular storage cabinet's.
- General Mechanic's Tool Kit storage location (2).
- The Enclosure provides a work Enrolment away from the elements.
- Bulk Storage Location.



Passenger side view of the En-

**“The tools are a definite combat multiplier because they (the Crew) are able to complete virtually all jobs in about half the time”**  
*NCOIC, 41D NTC 99-05*

# The Tools and Equipment Load

The Tools and Equipment on board are key enablers for soldiers of the new MOS consolidation (multi-capable maintainers). The tool load allows them to accomplish maintenance and repair tasks at DS level and below. This capability replaces the on site need for the support units' number one common tool sets with prime movers. This capability allows the Forward Repair System and crew to operate more independ-

ently of the CRT to conduct repair missions.



# The Welding and Cutting Systems

The Forward Repair System has shielded metal arc as well as gas-shielded arc welding capability with propylene cutting and brazing. The welder provides constant DC current and voltage, provide arc control and operate at 100% duty cycle. The system also provides exothermic cutting capability. All support items for welding, including the oxygen bottle, propylene bottle and the argon bottle, is securely stored on the Forward Repair System.

- Thermal Arc Inverter Welder Model 400GMS CC/

CV. (250 AMP @ 100% duty cycle)

- Thermal Arc Voltage Sensing Wire Feeder.
- Stick and Mig Welding capability.
- Exothermic Cutting capability.
- Gas Cutting and Brazing capability.



Welding operations using FRS

## Key Points of Contact for the FRS Program

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See the Forward Repair System  
in action <http://w3.pica.army.mil/esd/est/dale/frsh.html>



IF YOU'RE GOING TO SHOOT AND SCOOT YOU'D BETTER BE ABLE TO WRENCH AND RUN