

Roscommon Equipment Center Program

Newsnote #2

REPOWERING MILITARY VEHICLES

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1998 ADDENDUM TO REC NEWSNOTE #2

REC visited NAPCO in 1984. The information that follows was produced that year and reprinted in 1987. NAPCO still exists and presents a unique opportunity for those who wish to repower U.S. military vehicles.

Some of the information in this report is dated. For example, M-37 and M-715 vehicles have not been available through Federal Excess Personal Property (FEPP) programs for some years. NAPCO may not have repower packages available for these vehicles. Packages do exist for the 6x6 units which are still available through FEPP programs. It is likely that NAPCO 6x6 repower packages have differences from those we refer to in the 1984 report. We think that the report will still give you the general flavor of their current product.

We have not changed the text of this report since its initial release in 1984, except to update the address and contact point. Hence, the specifications and prices quoted are from 1984. NAPCO maintains a website at www.Napcointer.com. To reach a list of vehicles for which repower packages are currently available, click on "Divisions" and then click on "Repowering."

REC, November 1998

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Northeast Forest Fire Supervisors

In Cooperation with

Michigan's Forest Fire Experiment Station

1984 REC Newsnote #2

INTRODUCTION

The extensive use of FEPP military units by fire agencies has resulted in a need to find various ways to keep these useful vehicles operating. Several commercial outlets are available for purchasing military parts. NAPCO International, Inc., of Hopkins, Minnesota, differs because it designs kits to rebuild U.S. military vehicles. Primarily they develop repowering packages.

At one time, NAPCO had a large manufacturing operation. From military blueprints and specifications, they would make parts for remanufacture and repair of armed forces products. In the late 1970's, NAPCO sold their manufacturing facilities. They no longer manufacture or make parts; they develop repowering packages. Occasionally they install their packages for the customer. Parts for these packages are produced by regular automotive parts suppliers.

This project was undertaken to alert forest fire agencies of a unique alternative for maintaining and developing FEPP rolling stock. The Roscommon Equipment Center program visited NAPCO's facilities and inspected some of their repower packages discussed here. We were unable to install or test any of the conversions. Specifications and approximate prices were provided by NAPCO.

WHAT IS AVAILABLE?

NAPCO makes repowering packages for the following vehicles:

M-37	3/4 Ton 4x4
M-715	5/4 Ton 4x4
M-34, M-35, M-36	2-1/2 Ton 6x6
M-52	5 Ton 6x6

Each package features a diesel engine of at least equal performance characteristics as the original. The repowering packages include many peripheral systems such as transmissions, radiators, or electrical harnesses. The packages have each part needed to make the engine change. NAPCO also has packages to rebuild and overhaul the axles, transfer cases, brakes, propeller shafts and suspension. The prices and information that follows refers to repowering packages only.

M-37 DOUBLE SPAN 3/4 TON 4X4

The NAPCO package for the 3/4 Ton makes many significant changes to the vehicle as shown on the following chart.

	Original Gasoline	Diesel (Mitsubishi)
Cylinders	6	6
Displacement	230 cubic inch	243 cubic inch
Horsepower	94	100
Governed RPM	3,400	3,700
Fuel Consumption	9.4 MPG	12.7 MPG
Transmission	4-speed manual	3-speed automatic
Maximum Speed	55 MPH	62.5 MPH
Electrical System	24 volt	12 volt

The diesel packages add 25 pounds to the vehicle weight. The approximate cost of the repowering packages is \$9,000 to \$10,000 plus shipping and 70 hours of labor.

M-715 5/4 TON 4x4

Changes in the M-715 are as follows:

	Original Gasoline	Diesel (Mitsubishi)
Cylinders	6	6
Displacement	258 cubic inch	243 cubic inch
Horsepower	110	120*
Governed RPM	3,600	3,700
Fuel Consumption	10.5 MPG	12.7 MPG
Transmission	4-speed manual	3-speed automatic
Maximum Speed	60 MPH	61.7 MPH
Electrical System	24 volt	12 volt

* Turbo-charged

The M-715 repowering diesel package adds 25 pounds. This is the same Mitsubishi diesel as the M-37, only turbo-charged. Cost of the package (includes engine, transmission, radiator, air cleaner, and instrument panel) is about \$10,000 to \$11,000 plus shipping and 70 hours of labor.

2-1/2 TON 6x6

The REO 2-1/2 Ton repowering package consists primarily of a Detroit Diesel 4-53N engine. This 4-cylinder rated at 140 HP at 2,800 RPM, replaces the REO engine. The 4-53N engine mates with the existing transmission. The package includes all parts necessary to change fuel, exhaust, cooling, and electrical systems (to 12-volt). There is no significant weight change.

The NAPCO repowering package costs about \$11,300 plus shipping and 70 hours of labor for installation. The cost from General Motors of a Detroit Diesel 4-53N engine alone would be about \$8,500. Other packages are available to overhaul axles, transmission, transfer case, brakes, and suspension.

A package also exists for the GMC 2-1/2 Ton, which includes a Funk Power Shift for the transmission.

5-TON 6x6

A Detroit Diesel V-6 engine model 6V-53N is the basis of the 5-Ton repowering package. Again, the package includes exhaust, 12-volt electric, cooling, and other necessary modification parts. Also, an automatic 5-speed transmission is necessary and included.

NAPCO estimates a cost of \$23,000 to \$24,000 plus shipping and 100 hours of labor for the 5-Ton package. The Detroit Diesel engine alone would cost over \$12,000 from General Motors.

Because of the new engine configuration, this package modifies some of the 5-Ton dimensions, but as with the 2-1/2 Ton, there is no significant change in weight.

The purchase of a new 5-Ton 6x6 cab and chassis by state forestry agencies has been discussed between the USDA Forest Service and the Pentagon. New purchase cost would be about \$70,000.

PURCHASING DETAILS

NAPCO includes initial training in the cost with expectation of additional future purchase. If many individual fire agencies in a given location were each to order a single package, officials of NAPCO said they may need to charge additional training costs. However, they are not discouraging fire agencies from ordering the package individually. The buyer will need a well equipped shop; NAPCO labor rates are high

and they suggest that the buyer rebuild the vehicle themselves. Repower package costs include a one time visit by NAPCO personnel to train the client to install the engine. The manuals seem very complete and show the installation in detail.

The contact person for ordering these packages is:

John Kessler
Vice President of Marketing
NAPCO International, Inc.
11111 Excelsior Boulevard
Hopkins, Minnesota 55343
Telephone: (612) 931-2513

BLM EXPERIENCE

The Bureau of Land Management (BLM) repowered a 2-1/2 Ton unit with a NAPCO kit in 1982. With the help of an advisor from NAPCO, they completed the job in four days.

BLM reports that they are extremely pleased with the purchase. They said NAPCO did an excellent job in training. The parts were packaged well and were undamaged at delivery. They feel it was cost effective and will not hesitate to use NAPCO conversions in the future.

BLM has been the only domestic client that utilized a NAPCO conversion that we could locate.

SUMMARY OBSERVATIONS

NAPCO should not be looked upon as a parts store. They will locate parts or contract to have them made, although this is not their main business. They do have drawings for most of the original parts of the mentioned vehicles and the information needed to make them.

The repower packages are complete and seem well engineered. According to NAPCO, the Ethiopian government estimates they can rebuild two trucks for half the cost of a new vehicle. Here lies the most critical observation. Fire agencies that use excess property vehicles solely because of the low cost of obtaining them through GSA may not be interested in repowering costs. Those who feel that these are excellent vehicles for forest fire use, regardless of the low cost, should be very interested. The advantage of converting to diesel includes lower fuel cost, commercially available and serviceable parts and increased horsepower.

The diesel engines utilized in the 2-1/2 and 5-Ton repower packages have not been EPA certified. This does not mean that the engines would not meet pollution standards, but Detroit Diesel does not sell them for domestic transportation vehicles and has not paid for certification tests. Agencies should investigate the regulations for operating non-certified engines for emergency use with legal authorities in their states.

The 3/4 and 5/4-Ton repowering packages use Mitsubishi diesel engines. These are EPA certified.