

Comparison study

FC-170M vs. RAM I

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# COMPARISON POINTS

I DIMENSIONAL

II PERFORMANCE

III COMMENTS ON CONSTRUCTION

IV MAINTENANCE

V LOGISTICS

~~CURB CURB~~

I DIMENSIONAL

	<u>FC-170M.</u>	<u>RAM I</u>
VEHICLE LENGTH, OVERALL	188"	172"
VEHICLE WIDTH	74.5"	86"
VEHICLE HEIGHT	87.4"	97"
VEHICLE STORAGE FLOOR SPACE	97.2 Sq. Ft.	102.7 Sq. Ft.
VEHICLE SHIPPING COBE SPACE	708 Cu. Ft.	830 Cu. Ft.
CARGO AREA - LENGTH	108"	98"
CARGO AREA - WIDTH	64"	82"
CARGO AREA	48 Sq. Ft.	56 Sq. Ft.
PASSENGER CAPACITY (CARGO AREA)	12	12
LOADING HEIGHT (PLATFORM TO GROUND)	27.8"	34.25"
WHEEL BASE	103.6"	108"
TREAD	63.43"	71.12"
GROUND CLEARANCE	8.8"	13.5"
ANGLE OF APPROACH	40°	79°
ANGLE OF DEPARTURE	30°	52°
TIRE SIZE	7.50X16	9.00X20
TURNING DIA (OUTSIDE CURB)	43.9'	50"
VEHICLE WEIGHT (CURB)	4350 LBS.	5400 LBS
VEHICLE WEIGHT (GROSS)	7000 LBS	8300 LBS
VEHICLE PAYLOAD (CROSSCOUNTRY)	2650 LBS	2500 LBS

~~COMPARISON TABLE~~

II <u>PERFORMANCE</u>	<u>FC-170 M</u>	<u>RAM I</u>
MAXIMUM VEHICLE SPEED	55 MPH	55 MPH
GRADEABILITY	60%	60%
CRUISING RANGE	440 Mi.	307 Mi.
FUEL REQUIRED	CHOICE	GASOLINE

### III COMMENTS ON CONSTRUCTION

FRAME - The Ram I has a unitized body, with no frame. Past experience at Kwasi Jap operation has shown that this type construction does not lend itself to mounting equipment to further the utilitarian aspect of the vehicle. Repairs to chassis components are also very difficult with aging of the vehicle. The FC-170M, with its frame construction, is very adaptable and repairable.

Suspension - The all wheel independent suspension of the Ram I, although contributing to a soft ride, is very misleading when used off the road where this type vehicle is designed to travel. Military experience with the M151 has lead many to believe that the independent suspension is the cause of so many vehicles tipping over when used cross-country. The driver does not have the feeling of the type terrain he is negotiating. The standard leaf spring construction, such as used on the M151, has been shown to be better than

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AXLES - Although the Ram T, with its independent <sup>propulsion</sup> has interchangeable axles front and rear, the number of moving parts in each is greatly increased over the standard solid axle as in the FC-120 m. These parts include the two extra universal joints at each wheel and also the ball joints for the suspension. All these parts are subject to wear, more maintenance and a greater mortality rate.

Brakes - The disc type used on the Ram T are very good for eliminating fade and increasing reliability. They are also enclosed within the hub for environmental protection. This type brake however is more expensive and not readily available throughout the world as in the FC-120 m. drum type brake. Power assist on the Ram T, although convenient for the driver, only means more maintenance and parts for repair.

Transmission - The Ram I has an automatic transmission, three speed, with torque converter. There again is a nicety for the driver, however not a wise choice for replacement of parts and repair by common military mechanics.

Even the most current 1/4 ton vehicle, the M151A1 utilizes a 4 speed manual transmission the same as the proposed FC-170 M.

Transfer Case - A single speed transfer case is used in the Ram I. The FC-170 M has a two speed transfer case, which allows a greater range of selection and increases mobility.

Engine - The Ram I has a V8 engine, although it can operate on standard gasoline, cannot compare with the Diesel engine in the FC-170 M and its multi-fuel capabilities. The Diesel engine can boast of greater fuel economy,

Engine (cont)

Electrical system, reduced time for maintenance and on seven line items for rebuilding compared with at least 131 items for the V8.

Electrical System - The FC-170 m has less maintenance requirements due to the absence of a primary and secondary electrical spark ignition system.

Body - The full type construction makes the Ram I ideal for a floatable vehicle. This does cause problems of extra expense to seal off exhaust and drive lines etc. Accessibility to all components is improved as components like the axle and transmission etc. can only be reached thru access doors on the top and not in the open when on a hoist like the FC-170 m.

Weight - The gross curb weight of the Ram I shows that it has a closer payload to weight ratio than the FC-170 m.



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compared for cross-country operation.  
This greater weight is undoubtedly  
the reason for power assist on the  
brakes and steering which are  
not required on the FC-170 M.

Cost - Greater cost can be expected  
for the Ram T due to:

1. Power steering
2. Power brakes
3. Automatic transmission
4. Disc brakes
5. Heavier weight
6. Independent suspension
7. Full construction.

The FC-170 M, to reduce  
costs, was conceived with the  
principles of using existing and  
available commercial components  
whenever possible while still  
keeping in mind the basic  
requirements of a military vehicle.

#### IV MAINTENANCE

Maintaining the mechanical components of the Ram T, would appear to be considerably more difficult than a standard type vehicle, such as the FC-170 M. Since the Ram T is built around a hull type construction, all components requiring service, such as brakes, differentials, transmission and transfer case, etc., will require that the mechanic open the access doors to those components and work bent over with his head down into the compartment. It would seem that servicing those same components overhead, as a panel like the FC-170 M can be, would be much more feasible.

The automatic transmission used in the Ram T also will require higher quality maintenance than the more common 4 speed manual type. This will also include the problem of servicing components in various areas of the world where such maintenance

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Disc brakes fall into the same category as the transmission although not quite so critical. Military and civilian repair personnel will require schooling for this type component.

Maintenance of the power steering and power brakes, <sup>and the Power</sup> will also be required, even and above that required on the FC-170M.

The independent suspension with numerous universal joints will also be subject to more maintenance for proper operation.

# V LOGISTICS

The FC-170M being basically built from commercially available components would have a definite advantage over the P-51 with its disc brakes, sealed components and special suspension.

Basic components for the FC-170M are presently available thru world wide distributors thereby reducing the logistics problem.

The FC-170M diesel engine alone contributes to simplified logistics by:

- 1 - Multi-fuel use such as #1 and #2 diesel oil, kerosene, JP-4 and JP-5.
- 2 - Economy for less fuel requirements.
- 3 - Greater operating range for each gallon of fuel.
- 4 - Fewer parts for second echelon maintenance due to the absence of a primary and secondary electrical spark ignition system.
- 5 - Only 7 line items for rebuild against 131 ... more

V (cont)

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items for rebuild of the V8 engine.