DENEL

MECHEM

CASSPIR Mk-I

THE MECHEM SPECIFICATION CASSPIR Mk-I ARMOURED PROTECTED PERSONNEL CARRIER

The CASSPIR Armoured Protected Personnel Carrier (APC) is a leader in its class bringing high technology and battle proven effectiveness together to provide one of the safest landmine resistant personnel carriers in the world.

The CASSPIR APC use to be defended by its crew using their personal weapons and a gunner fired a roof or front mounted LMG from inside this completely armor protected vehicle. However, these vehicles have served their purpose in war and are now applied in an opposite roll as humanitarian demining work platforms and personnel carriers.

Double cab 4x4 after landmine exploded

Casspir MK1 with fitted Steelwheels after landmine exploded

VISION/MISSION: MECHEM - A WORLD LEADER IN CREATING A SAFER ENVIRONMENT THROUGH PROVIDING: MINE ACTION SERVICES; BATTLE AREA CLEARANCE SOLUTIONS; CONTRABAND DETECTION SERVICES; MINE PROTECTED VEHICLES AND ANCILLARY EQUIPMENT

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General

A CASSPIR Mk-I has proven landmine resistance that allow a crew of twelve plus, driver and co-driver, to be transported safely in landmine ridden areas.

The vehicle has robust front impact resistance with external components protected against heavy brush, and foliage often found in combat areas.

Access to the vehicle is through pneumatically operated double doors at the rear of the hull. The external pneumatic switch for door operation can be isolated from inside the vehicle. A roof hatch is provided above the driver's seat.

Low noise levels make internal communication easy.

All seats are fitted with safety belts. The driver's seat is adjustable offering most drivers extremely good visibility.

Stringent testing to internationally approved standards and modern manufacturing methods (including 8 years of combat in the toughest battle environments and climate in the world) have made the CASSPIR Mk-I APC the most advanced personnel carrier of its type.

The hull shape ensure limited damage should a landmine be detonated by a wheel. Under normal conditions modular replacement repair of components will have the CASSPIR back and running in approximately twelve hours.

Bullet resistant glass and a welded armor hull will resist small arms fire as well as landmine blasts protecting not only its personnel but all vital automotive components housed inside the hull.

All MECHEM specification CASSPIR MK-I models are fitted with later model turbocharged diesel engines. This gives a MK-I similar power and performance capabilities as the Mk-II and Mk-III models.

The CASSPIR suspension consists of heavy duty leaf springs with heavy duty double action shockabsorbers. Check straps limit the maximum axle movement allowed by the leaf spring suspension.

Brake systems (including an exhaust brake) used on MECHEM Specification CASSPIR Mk-I's further enhances on- and off-road handling characteristics. This together with a differential lock, selectable 4 wheel drive and tremendous axle movement give the CASSPIR Mk-I a go-anywhere capability in off-road conditions.

A basic CASSPIR APC Mk-I comes with the following equipment fitted as standard:

- 200 liter drinking water tank.
- 2 Spare wheels.
- Tarpaulin Cover for Roof Opening –(Steel Cover and Air-conditioning is optional)
- Front and Rear Tow Hitch.
- 2 Fire Extinguishers Onboard.
- Tow Bar Mounted On Roof Side.
- Dual Fan Ventilation.

Repair

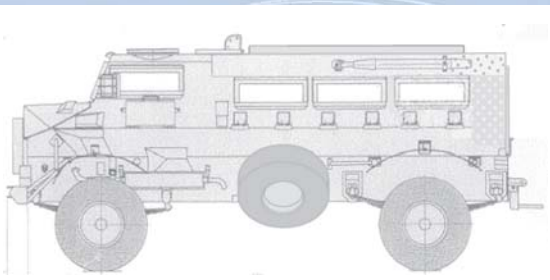
The CASSPIR Mk-I has been designed to ensure that the cost of repair of mine damaged vehicles remains within reasonable cost limits.

The degree of mine protection is such that repair costs are highly favorable compared to cost of purchase of a new vehicle. Interchangeability of components and protection given to vital and expensive components make the CASSPIR series very economical in mine clearing operations.

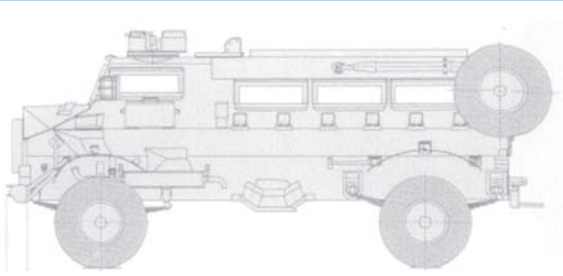
Maintenance

Although all vital components are well protected they are easily accessed. Routine maintenance can be carried out under field conditions. (i.e. The braking system is modular and contained within a single compartment.)

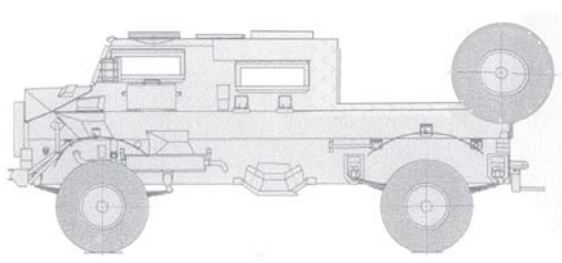
Apart from the shell which is landmine resistant, external components are also protected against blast and bush Impact. Special features are; Blast proofing of the battery box, engine sump drain, front differential and transfer case protection. Magnetic fuel cap is in a blast proof protector.



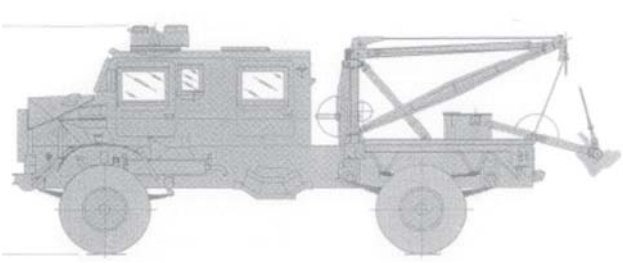
MK-I PROTECTED PERSONNEL CARRIER



MK-II & III PROTECTED PERSONNEL CARRIER



CASSPIR-S PROTECTED LOG CARRIER



15-Tonne PROTECTED RECOVERY

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TAPIR MPV 4x4

ENGINE

ADE 409N (5 cylinder), water-cooled, diesel
138kW at 2 200 r/min
674 Nm at 1 300 r/min
(altitude : sea level)

GEARBOX

ASTAS S6-65 six-speed synchromesh

TRANSFER GEARBOX

Z-65 two-speed with differential lock

AXLES AND CAPACITIES

FRONT	Iveco 8 000kg drive axle
REAR	Iveco 13 000kg drive axle with differential lock

TYRES

14.00 x 20 – 18 ply

SUSPENSION

Semi-elliptical leaf springs with telescopic shock absorbers.
Anti-roll bars front and rear.

ELECTRICAL SYSTEM

24V system

DIMENSIONS, MASS AND CAPACITY

Wheelbase	3 910 mm
Length	7 100 mm
Height (roof)	3 030 mm
Width	2 460 mm
Vehicle mass (tare)	12 000 kg
Vehicle mass (gross)	14 000 kg
Vehicle mass (with TMRP6 kit)	14 500 kg
Fuel tank capacity	360 l
Water tank capacity	360 l
Max speed	90 km/h
Grade ability	60 %

HULL

Monocoque hull design accommodating 4 occupants
7,62mm x 51mm ball ammunition protection
2 x TM57 land-mine protection

GENERAL

Air conditioner & heating system (cab & engine) fitted.
Vehicle fitted with TMRP-6 kit.

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UNISCOUT

ENGINE	
Model	Mercedes Benz
Type	Normally aspirated
Design	In-line 6cylinder
Displacement	5675cc
Maximum power	96 kW @ 2500 rpm
Maximum Torque	363 Nm @ 1500 rpm
Fuel type	Diesel
Cooling	Liquid, pump driven circulation
MAIN TRANSMISSION	
Type	Mercedes Benz Unimog
Number of gears	8 forward and 4 reverse
Transfer case	Part of gearbox
VEHICLE DIMENSIONS	
Overall length	6250mm
Body width	2155mm
Overall height	2570mm
Ground clearance	400mm
Approach angle	37 degrees
Departure angle	27 degrees
VEHICLE MASS	
Un-laden	5600kg
Gross vehicle mass	7600kg
VEHICLE PERFORMANCE	
Maximum speed	90km/h
Fuel range	1000+ km
Climbing ability	70%
Side slope – empty	30 degrees
Side slope – laden	37 degrees
Wading depth	1000mm
Step climbing	400mm
0-60 km/h	25sec
0-80 km/h	45sec
60-80 km/h	29sec
80-120 km/h	33.3sec
Double lane change, ISO	45 km/h
REAR AXLE	
Maximum load	3,800kg
FRONT AXLE	
Maximum load	3,800kg
STEERING BOX	
Type	Power assisted
BRAKES	
Front and rear	Dual Air over Hydraulic
Parking brake	Spring actuated parking brake
SUSPENSION	
Type	Beam axles with coil springs
Springs	Coil springs front and rear
Shock absorbers	Double action telescopic
WHEELS AND TYRES	
Rim size	8.00 x 20
Number of holes	6
Wheel size	12.00 x 20 – 18 PR
WHEEL BASE	
Wheel base	2900mm
Turning circle	12.0m
Track width front	1810mm
Track width rear	1824mm
ELECTRICAL SYSTEM	
Battery	12V 90Ah x 2 - 24V
FUEL CAPACITY	
Tank	200 litres

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KF 46 APC

ENGINE	
Model	Cummings GBT-5.9TC
Type	Turbo Intercooler
Design	In-line 6cylinder
Displacement	5883cc
Maximum power	89 kW @ 2500 rpm
Maximum Torque	400 Nm 1500 rpm
Fuel type	Diesel
Cooling	Liquid, pump driven circulation
MAIN TRANSMISSION	
Type	Mercedes equivalent GBS 40
Number of gears	5 forward and 1 reverse
Transfer case	High -1.05 / Low -1.6
VEHICLE DIMENSIONS	
Overall length	5995 mm
Body width	2100 mm
Overall height	2500 mm
Ground clearance	300 mm
Approach angle	34 degrees
Departure angle	21 degrees
VEHICLE MASS	
Un-laden	8300 kg
Gross vehicle mass	12000 kg
VEHICLE PERFORMANCE	
Maximum speed	95 km/h
Fuel range	1000+ km
Climbing ability	60%
Side slope – empty	35 degrees
Side slope – laden	37 degrees
Wading depth	1000 mm
Step climbing	400 mm
0-60 km/h	25 sec
0-80 km/h	55 sec
60-80 km/h	29 sec
REAR AXLE	
Maximum load	7 000 kg
FRONT AXLE	
Maximum load	5 000 kg
STEERING BOX	
Type	Power assisted
BRAKES	
Front and rear	Dual Air over Hydraulic
Parking brake	Spring actuated parking brake
Auxiliary	Exhaust
SUSPENSION	
Type	Beam axles with leaf springs
Springs	Semi-elliptic steel leaf springs
Shock absorbers	Double action telescopic
WHEELS AND TYRES	
Rim size	8.00 x 20
Number of holes	8
Wheel size	12.00 x 20 – 18 PR
WHEEL BASE	
Wheel base	3225 mm
Turning circle	15 m
Track width front	1810 mm
Track width rear	1824 mm
ELECTRICAL SYSTEM	
Battery	12V 180 Ah 12V
FUEL CAPACITY	
Tank	200 liters

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MMPG

MECHEM MINE PROTECTED GRADER

MECHEM MINE PROTECTED GRADER (MMPG)

MECHEM has developed a Mine Protected Cabin which can be fitted on a Road Grader, keeping the operator safe from the effects of a landmine blast up to the blast of an anti-tank mine. The MMPG provides more flexibility during the execution of Road Clearance Operations in areas suspected of containing landmines, especially during the emergency phase of peace keeping operations where rapid road rehabilitation needs to be done.

The MMPG is fitted with rippers in the front of the vehicle enabling it to expose sub-surface objects up to a depth of 400mm.

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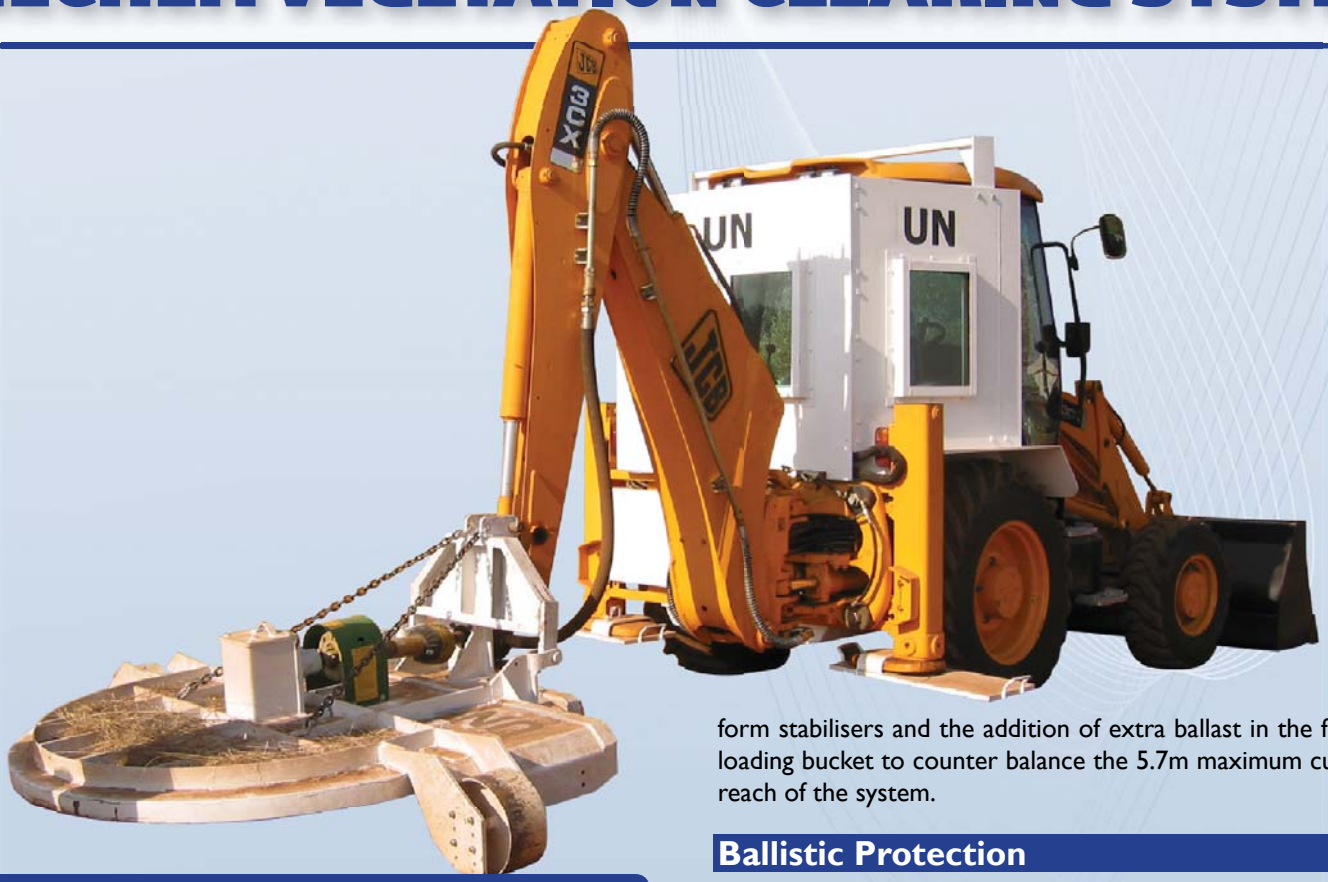
MECHEM VEGETATION CLEARING SYSTEM



The MECHEM Vegetation Clearing System (MVCS) was developed to assist demining personnel in the safe clearing of light to medium (50mm diameter max) plant growth in areas suspected to be contaminated by Landmines.

The system consists of a standard TLB (Tractor Loader Backhoe) fitted with a shrapnel proof armoured shield and an adapted vegetation clearing attachment MECHEM currently uses the JCB-3CX.

Operating Platform

The Operating Platform offered is a standard TLB. Whilst certain modifications to the TLB are neces-sary to optimise its performance in the Vegetation Cutting role, care has been taken not to invalidate the standard manufacturers warrantee.

The most notable modifications are improvements to the platform stabilisers and the addition of extra ballast in the front-loading bucket to counter balance the 5.7m maximum cutting reach of the system.

Ballistic Protection

The system was designed to be operated from a confirmed safe area (whilst cutting vegetation in the area suspected of being polluted by land-mines). The operating platform has therefore been fitted with a ballistic shield to protect the operator from any shrapnel that might originate from land-mines detonating as a result of the vegetation cutting process. It is therefore standard procedure to always ensure that the protective shield is positioned directly between the operator and the cutting area when working in an unsafe area.

As a result of the abovementioned the operating platform is not mine protected (protected against a landmine detonating under the vehicle as a result of its operation in unsafe terrain).

Vegetation Cutting Attachment

The heavy duty cutter attachment utilises two hardened swivel mounted cutting blades mounted on a central beam. The beam is driven by a standard angle gearbox which in turn is driven by an 80kW hydraulic motor through a power take-off shaft. The hydraulic motor is driven from the standard operating platform hydraulic supply.

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Hydraulic power supply is provided by the operating platform via reinforced hydraulic hoses fitted with quick release type couplings. This provides easy coupling to the hydraulic motor that is mounted on the cutter body.

Being fully manoeuvrable as far as tilting, lift and lowering goes, some "limiting aids" are incorpo-rated to assist operators in the application of the cutter. This is mainly to aid in cutting height control where a height-adjustable skid is fitted on the rear of the cutter.

A robust wheel type roller is provided on the side of the cutter body to assist in the prevention of 'ditching' the cutting blades. This feature increa-ses the life of the cutting blades consider-ably.

An adjustable friction clutch is incorporated in the drive train to protect the drive system should there
be a sudden cutting beam stoppage (Rocks, large tree stumps etc.).

A "purpose manufactured interface" provides the link between the hydraulic arm of the operating platform and the vegetation cutting attachment.

This interface allows easy "pin type" fitting and removal of the cutter from the operating platform. This ensures that the TLB can also be used in its standard role by merely replacing the vegetation cutting attachment with a standard tool.

Robust Wheel Type Roller

Height Adjustable Skid Hydraulic Motor

Application of the MVCS

The system is ideally suitable to clear light to medium vegeta-tion with a stem thickness of a maximum of 50-mm.

The system shall typically be applied from a confirmed 'Safe Area' - cutting vegetation in an area suspected of being contaminated by landmines. The cutting action should be in a permissible arc of 60 degrees in order to ensure adequate protection for the operator.

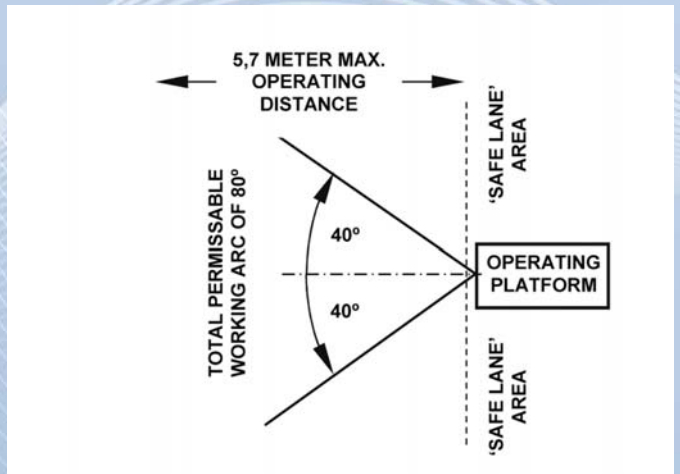
The maximum reach of the cutting attachment is 5.7m. The cut-ting attachment allows lateral cuts (per attachment swing arc) of a maximum of 1 meter per side stroke – within a cutting arc of 80°.

Transporting the MVCS

The MVCS is transported on a 10 tonne 6x4 Truck. The machine is reversed onto the truck using a purpose built ramp that du-plicates as a trailer, drawn behind the vehicle to transport the standard TLB attachments.

Minimum Power Specifications for the MVCS

Minimum Hydraulic pressure	220 Bar
Min. Hydraulic Flow:	137 l/min
Min. Cutter-Blade Revolutions:	1010 R.P.M.
Min. Backhoe Arm Carry Capacity:	1000Kg@ 5,5Meters.



OPERATING DISTANCE

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