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**NATO STANDARD**

**AEP-87**

**Soldier Systems Representative Targets,  
Helicopters and Unarmored Vehicles**

**Edition A Version 1**

**October 2013**



**NORTH ATLANTIC TREATY ORGANIZATION**

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**CHAPTER 1 INTRODUCTION**

1. The aim of this document is to establish representative unarmored vehicles and helicopters for use in operational analysis and weapon system assessments.
2. This document deals with the target description and pictorial representation for operational analysis and; the definition of a representative test target for weapon system assessment.
3. The following targets are covered:

Light Truck	Annex A
Medium Truck	Annex B
Civilian Light Truck	Annex C
Assault Helicopter	Annex D
Utility Helicopter	Annex E

4. This document does not cover armored vehicles.
5. The following terms and definitions are used for the purpose of this document:.

Test Target - Representative section of the vehicle and helicopter body shell.

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ANNEX A LIGHT TRUCK

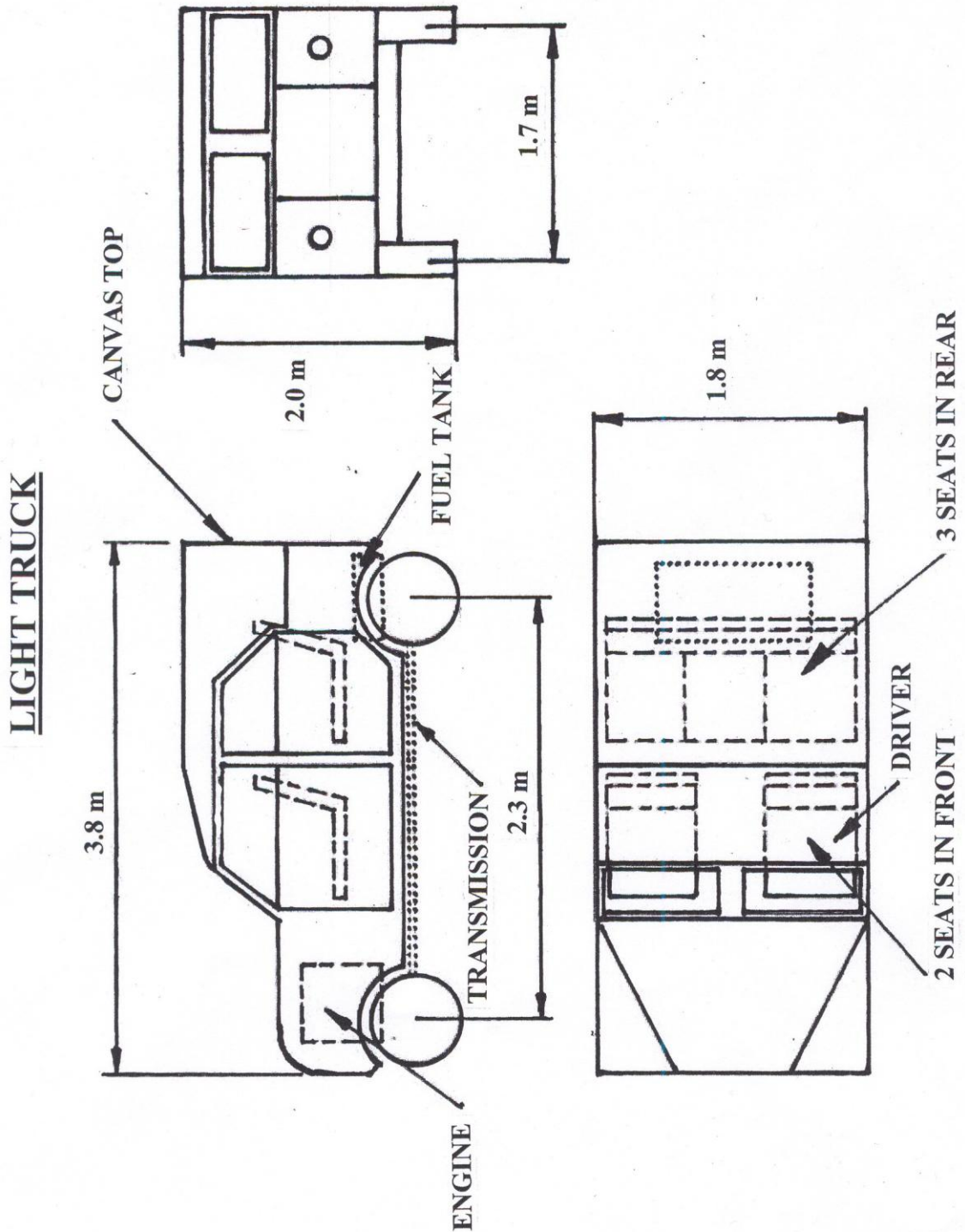
**General**

1. The aim of this Annex is to:
  - a. Define a typical light truck and location of personnel
  - b. Define a test target

**Target Description**

2. General Data
  - a. General purpose 4 x 4 vehicle (maximum pay load 600 kg)
  - b. Construction: Body: 18 gauge (1.2 mm) mild steel  
Windows: toughened glass  
Canvas top
  - c. Vehicle Weight (empty): 1535 kg
  - d. Engine at front of vehicle
  - e. Windscreen can be laid flat on the bonnet and the side windows can be removed
  - f. Can be adapted to carry light armaments
  - g. Number of crew: 1 (driver)
  - h. Maximum number of troops: 4 (1 in cab, 3 in rear)
  - i. Maximum Speed (road): 90 km/h
  - j. Maximum Gradient (front): 60%
  - k. Fording capability: 0.55 m
  - l. Maximum Range: 530 km (based on a fuel tank capacity of 75 litres)
  - m. Other Variants:
    - Anti Tank – Missiles mounted on rear
    - Anti Tank – Recoilless rifle
    - Aircraft starter
    - Mine detector in vehicle
    - Tractor version

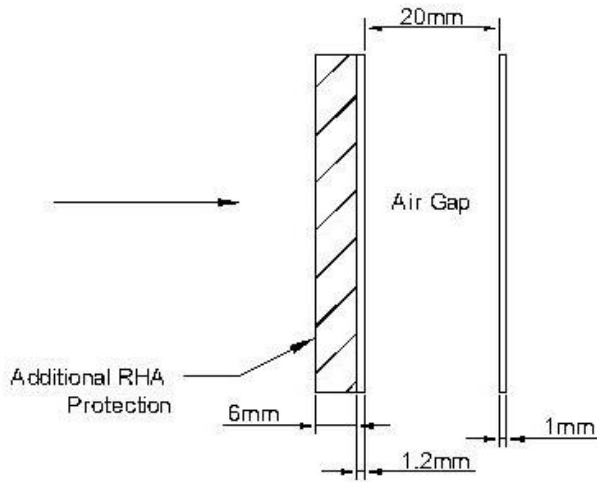
Appendix A-1: Pictorial Target Description





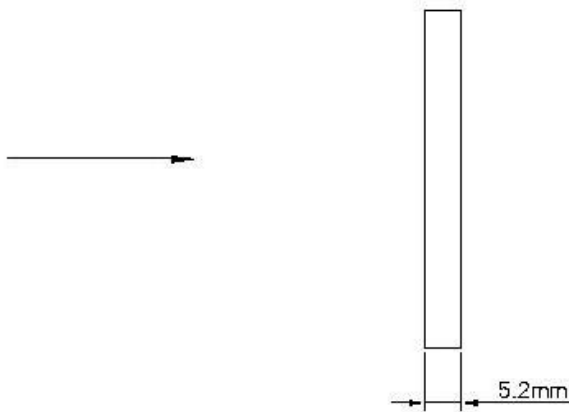
Appendix A-2: Test Target

Door Skin



Material:  
Mild Steel for Outer and Inner Skin  
RHA for Additional Protection

Windscreen



Material:  
Toughened Glass

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**ANNEX B      MEDIUM TRUCK**

**General**

1.                      The aim of this Annex is to:
  - a.    Define a typical medium truck and location of personnel
  - b.    Define a test target.

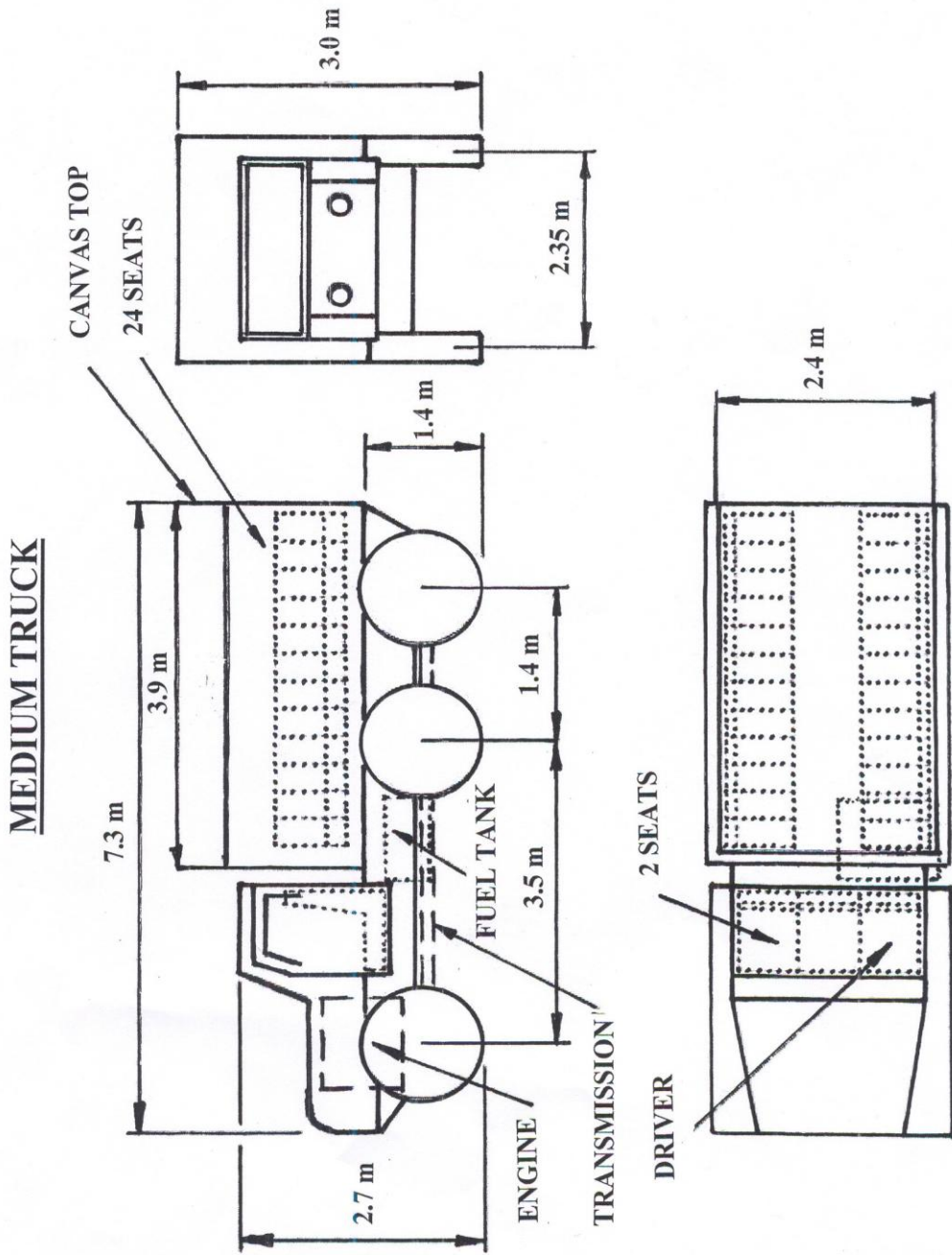
**Target Description**

2.    General data
  - a.    General purpose 6 x 6 medium truck (maximum pay load 4500 kg by road and 4000 kg cross country)
  - b.    Construction:      Body. 18 gauge (1.2 mm) mild steel  
                                 Windows: toughened glass  
                                 Wooden cargo platform, mild steel and open wooden slat sides  
                                 and/or canvas top
  - c.    Vehicle Weight (empty): 8400 kg
  - d.    Engine at front of vehicle
  - e.    number of crew: 1 (driver)
  - f.    Maximum number of troops: 26 (2 in cab and 24 on rear either on seats back to back or along outside facing)
  - g.    Maximum Speed (road): 75 km/h
  - h.    Maximum Gradient (front): 60%
  - i.    Fording capability:  
                                 with preparation 1.5 m  
                                 without preparation 1.0 m
  - j.    Maximum Range: 750km (based on a fuel tank capacity of 360 litres)

k. Variants:

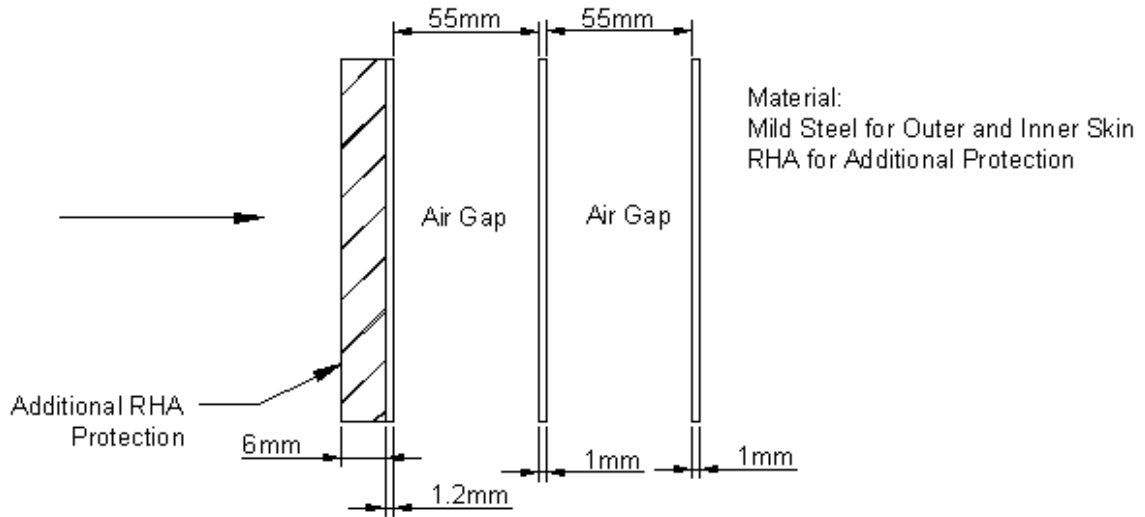
- Timber truck
- Cargo truck with drop sides
- Tractor truck for towing semi-trailers
- Fuel tank truck
- Decontamination truck
- Fire engine
- ST Crane truck
- Van type bodies for command, communications and other roles
- Recovery vehicle
- Multiple Rocket Launcher
- Electrical testing laboratory
- Pontoon carrying vehicle
- Transporter-loader

Appendix B-1: Pictorial Target Description

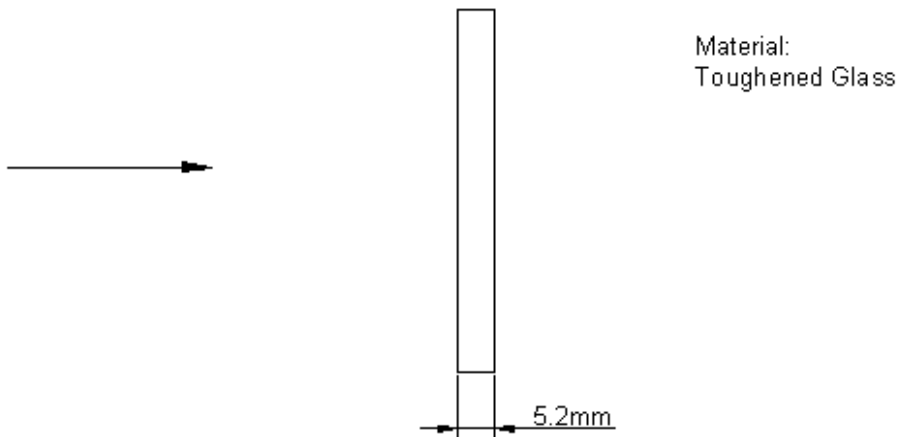


Appendix A-2: Test Target

Door Skin



Winds creen



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**ANNEX C CIVILIAN LIGHT TRUCK**

**General**

1. The aim of this Annex is to:
  - a. Define a typical civilian light truck and location of personnel
  - b. Define a test target.

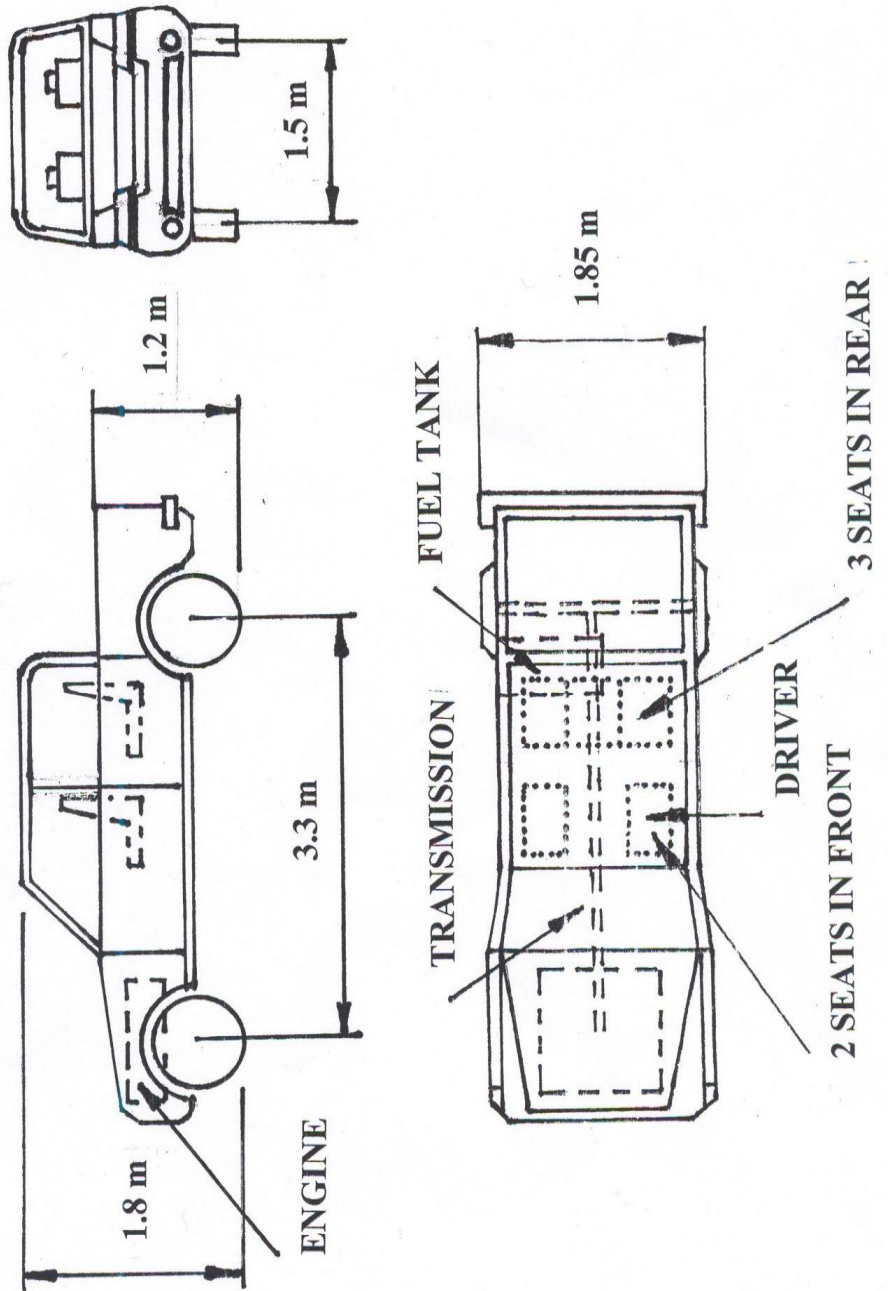
**Target Description**

2. General data
  - a. General purpose 2 x 4/ 4 x 4 civilian light truck (maximum pay load 1000 kg)
  - b. Construction: Body: 18 gauge (1.2 mm) mild steel  
Windows: toughened glass  
Separated personnel cabin  
Self-supporting body, steel plated / plastic coated cargo platform,  
hardtop
  - c. Vehicle Weight (empty): 1900 kg
  - d. Engine at front of vehicle
  - e. number of crew: 1 (driver)
  - f. Maximum number of passengers: 4
  - g. Maximum Speed (road): 175 km/h
  - h. Maximum Gradient (front): 60%
  - i. Fording capability: 1.0 m
  - j. Maximum Range: 700km (based on a fuel tank capacity of 90 litres)



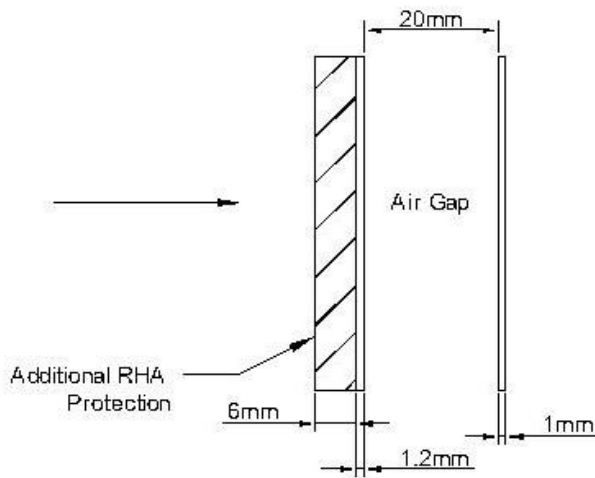
Appendix C-1: Pictorial Target Description

CIVILIAN LIGHT TRUCK



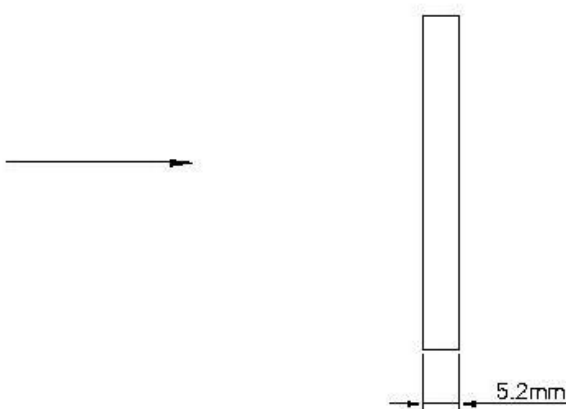
Appendix C-2: Test Target

Door Skin



Material:  
Mild Steel for Outer and Inner Skin  
RHA for Additional Protection

Windscreen



Material:  
Toughened Glass

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**ANNEX D ASSAULT HELICOPTER**

**General**

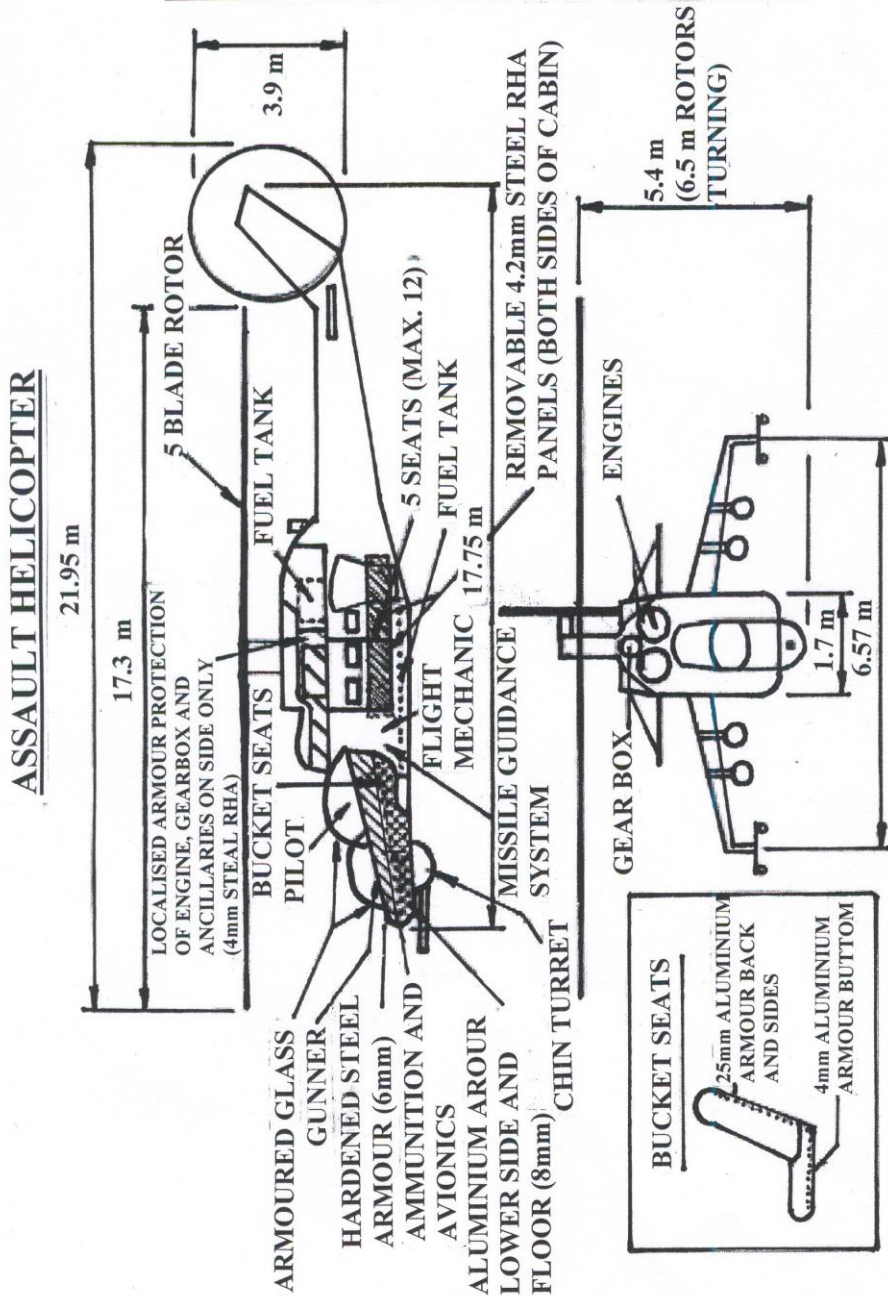
1. The aim of this Annex is to:
  - a. Define a typical assault helicopter and location of personnel
  - b. Define a test target.

**Target Description**

2. General Data
  - a. Construction: Semi-monocoque structure in aluminium alloy (1.2 mm skin thickness)  
rotor head: titanium  
5 rotor blades: aluminium spar and glass fibre blade
  - b. Armour: See Appendix 1 to Annex C
  - c. Number of crew: 2 (1 pilot and 1 gunner, sometimes crew of 3 with the addition of a flight mechanic)
  - d. Maximum number of troops: 12
  - e. Landing Gear: fully retractable tricycle type 2 wheeled bogey at front and 1 wheeled link arm at rear. Minimum ground clearance with undercarriage down: 0.3 m
  - f. Combat Radius :  
  
max military load: 160 Km  
two external fuel tanks: 224 Km  
four external fuel tanks: 288 Km
  - g. Range with maximum internal fuel: 750 Km
  - h. Maximum Level Speed: 310 Km/h
  - i. Main Engines: Two Turbo shafts
  - j. Side doors: on both sides of helicopter. Lower half drops down to form steps
  - k. Gunner entry canopy: Port side, handle swings up to starboard
  - l. Pilot entry canopy: Starboard side, rearward hinged door
  - m. Typical weapons include:  
  
Light machine guns  
Cannons  
Anti-tank missiles  
Rocket Launchers  
Bombs

Appendix D-1: Pictorial Target Description

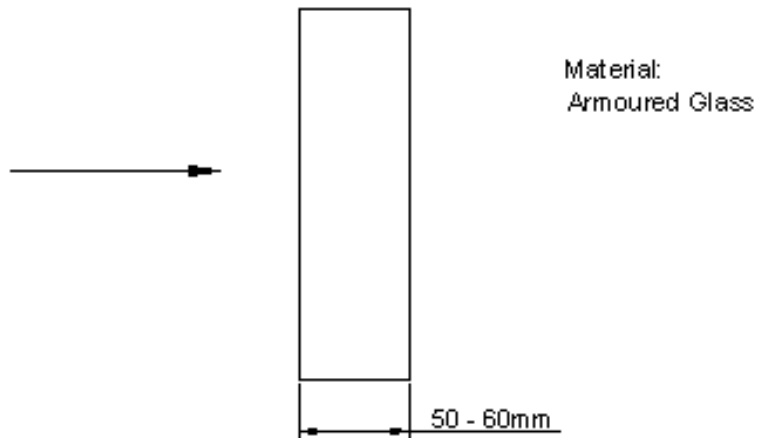
PICTORIAL TARGET DESCRIPTION



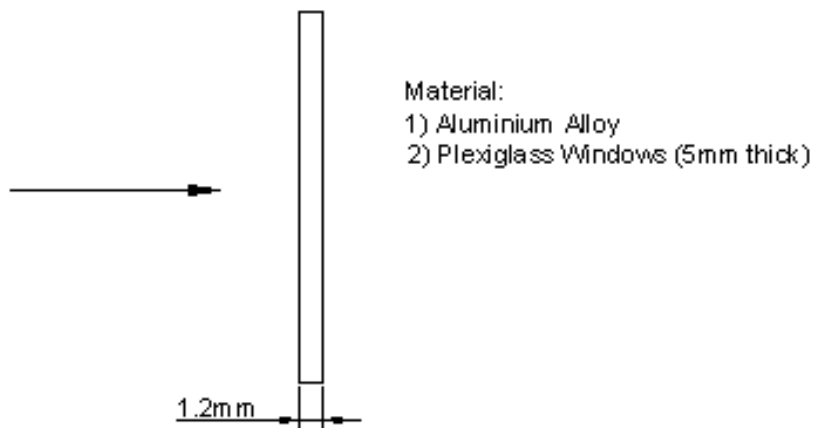
Appendix D-2: Test Target

**Cockpit Windscreen**

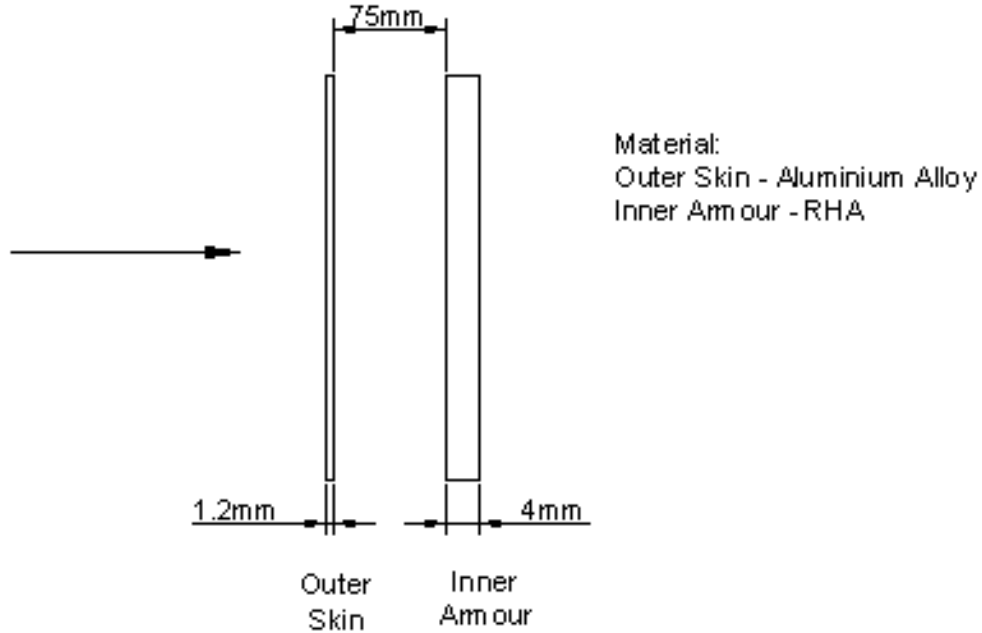
(Front Only Pilot and Gunner)



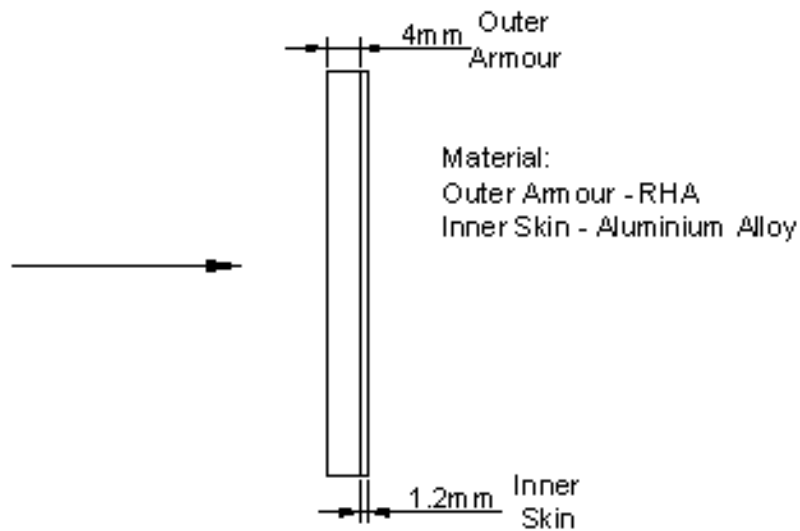
**Cabin Side and Upper Doors**



Lower Doors



Engine, Gearbox and Hydraulics Pack



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**ANNEX E: UTILITY HELICOPTER**

**General**

1. The aim of this Annex is to:
  - a. Define a typical utility helicopter and location of personnel
  - b. Define a test target.

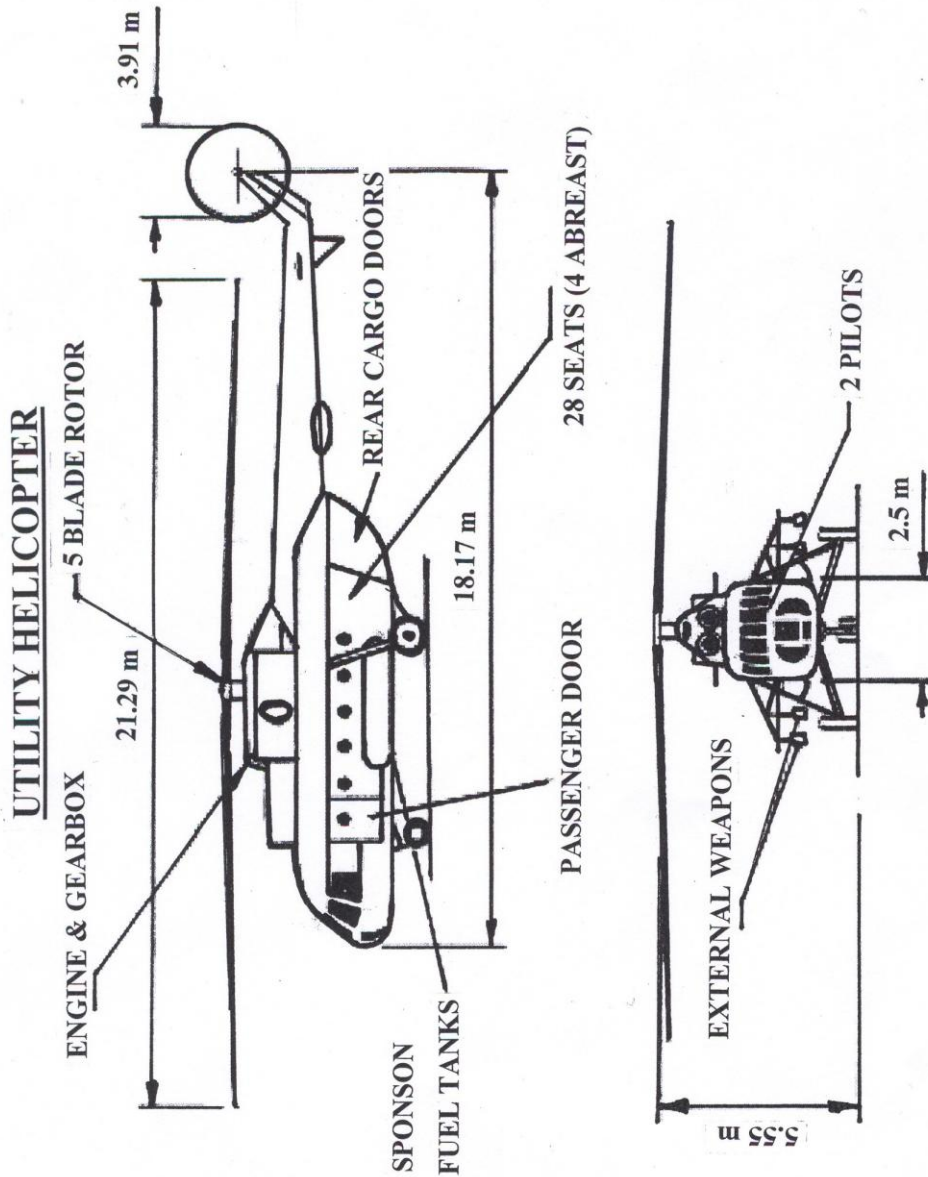
**Target Description**

2. General Data

- a. Construction: Semi-monocoque structure in aluminum (1.2 mm skin thickness)
- b. Number of crew: 2 (2 pilots)
- c. Maximum number of troops: 24
- d. Typical weapons include:
  - Light machine guns
  - Rocket Launchers
  - Anti-tank missiles
- e. Landing Gear: non retractable tricycle type
- f. Combat Radius :
  - max military load: 197 Km
  - two external fuel tanks: 276 Km
- g. Maximum Level Speed: 260 Km/h
- h. Main Engines: Two Turbo shafts
- i. Side door: Sliding jettisonable door on the port side at front of passenger/load compartment (1.4 m high x 0.8 m wide)
- j. Rear door: Clam shell door at rear of fuselage (1.3 m high x 2.34 m wide)

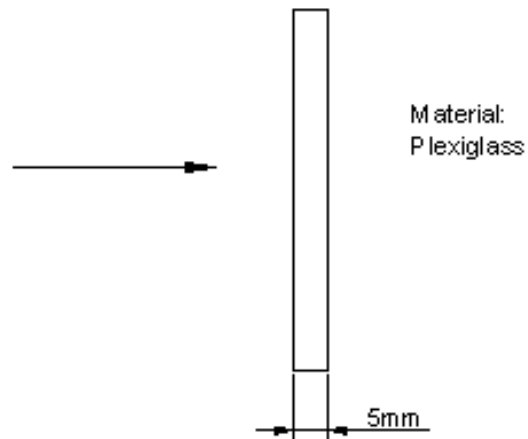
Appendix E-1: Pictorial Target Description

PICTORIAL TARGET DESCRIPTION

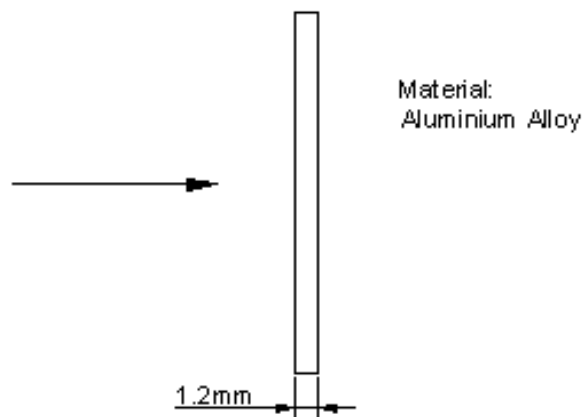


Appendix E-2: Test Target

Windows



Body Side



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**ANNEX F: TEST TARGET MATERIAL SPECIFICATIONS**

1. MILD STEEL  
GBR BS1449 CS22  
USA SAE 1020  
FRA NFA 35-501  
DEU DIN 17100
2. ROLLED HOMOGENEOUS ARMOUR (RHA)  
GBR DEF.STAN 95-13  
USA MIL-S-12560  
FRA DTAT C9640 x 0051  
DEU TL 2350-0001
3. ALUMINIUM ALLOY  
GBR BS L109 T3  
USA QQ-A-250/5 T3  
FRA A-U4G1  
DEU 3.1354
4. ALUMINIUM ARMOUR  
GBR RARDE Spec 570  
USA MIL-A-46027  
FRA  
DEU
5. TOUGHENED GLASS  
GBR BS AU278  
USA  
FRA  
DEU
6. ARMOURED GLASS  
GBR  
USA  
FRA  
DEU
7. PLEXIGLASS WINDOWS Stretched Acrylic  
GBR PR EN2343  
USA MIL-P-25690  
FRA PR EN2343  
DEU PR EN2343

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