“BUMPER BUDDY” HUMVEE TRANSPORTER
DATA PACKAGE
INSTALLATION GUIDE AND DRAWINGS

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The intent of this document is to provide the reader with instructions on installation of the "Bumper Buddy" Humvee Transporter and drawings as a collective data package.
The Bumper Buddy robot transporter was accomplished by the Air Force Research Laboratory (AFRL) at the urgent request of Central Air Forces and Headquarters Air Combat Command for Explosives Ordnance Disposal (EOD) personnel to transport and haul robots instead of using a trailer. The bumper mount and ramp allow deployed forces to carry small robots such as the Andros Mark VI Robot on the rear of armored Humvees. The Bumper Buddy was transitioned to Operation Iraqi Freedom troops for field use.
Tools required for first assembly and installation: Two 3/4-in wrenches, one 9/16-in wrench
Tools required for reinstallation: Two 3/4-in wrenches
Note: Two 3/4-in and One 9/16-in wrenches are supplied with each transporter.

NOTE: An ANDROS MARK VI with wheels was used for this guide, however, the transporter can be used for any robot under 500 lb that fits securely.
Installation

STEP 1: Bolt platform tube to bumper. Make sure the winch umbilical connector is functional. REQUIRED: Two 3/4-in wrenches

STEP 2: Remove safety retainer pins. This will be from a total of three places.
STEP 3: Making sure the ramp is on the passenger side, slide the first platform all the way on the tube. Insert the safety retainer pin in the hole nearest the bumper. Slide the platform back so it just hits the safety retainer pin. Tighten the four bolts under the platform that secure the platform to the tube.

REQUIRED: 9/16-in wrench

NOTE: The safety retainer pin is used for both location and keeping the ramp from sliding off the tube should the bolts become loose.
STEP 4: Slide the second platform all the way to the first platform. If you are transporting an ANDROS MARK VI with wheels, insert a safety retainer pin in the second hole from the bumper and slide the platform back so it just hits the safety retainer pin. Otherwise, adjust the spacing between the platforms for the specific vehicle. Tighten the four bolts under the platform that secure the platform to the tube.
REQUIRED: 9/16-in wrench

STEP 5: Insert safety retainer pin in hole at the end of the tube. This will keep the platform from sliding off if the bolts should become loose.
STEP 6: Remove the hinge pin from the platform and insert between the platform and ramp. Secure with a retainer clip.

STEP 7: Lower the ramps and load the vehicle.
STEP 8: Center the MARK VI on the tube and fold the ramps to travel position.
STEP 9: Secure the arm with a bungee cord. This helps reduce damage to arm when transporting.
STEP 10: Strap the robot to the platform as shown.
NOTE: Follow this method explicitly as testing indicated this is the most secure and least damaging method.

STEP 11: Make sure the straps do not go over the arm. The arm may be damaged by excessive loads.
STEP 12: Place cover over the robot and secure with bungee cords.
Removal

STEP 1: Remove the transporter by removing the tube bolts and sliding off bumper.

STEP 2: Reinstall tube bolts to prevent them from being lost.
1. BOLTS USED TO ATTACH TRANSPORTER TUBE TO HAMM VEHICLE
   BOLT: 1/4-20 NC-2A x 4.000" LONG, GRADE 8 (2 REQUIRED)
   WASHER: 1/4" DIAMETER (4 REQUIRED)
   NUT, SELF LOCKING: 1/4-20 UNC-2A (2 REQUIRED)

2. PINS USED FOR LOCATION AND SAFETY.
   ZINC-PLATED SAFETY SNAP PIN SQUARE RETAINER
   WITHOUT IN LOCK, 3/8" OAL, 3" ISOLABLE LENGTH.
   PART NUMBER: 984150-431
   CASE CODE: 98428
   SUPPLIER: MASTERCRAFT

1. O30219-001 TRANSPORTER TUBE BRAKE LIGHT ASSEMBLY
1 030223-001 PRESSURE PLATE
CABLE PREPARATION:

1. Cut 12" Cable (F/N 9), to 8" and strip outer jacket back.
2. 3/4" cut off unused wire even with jacket. Solder splice remaining leads and cover each with 1/2" long, 1/4" heat shrink (F/N 7). Use 4" long, 3/16" heat shrink (F/N 8), to cover cable end and splice.
3. Replace existing 12 volt bulb with 28 volt bulb (F/N 8).
4. Fill in void around cable (F/N 9), with RTV (F/N 8).

WIRING DIAGRAM

030225-001 STOPLIGHT CABLE ASSEMBLY

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