

# URGENT

\*TB 1-1520-243-20-29

## DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

---

### ONE TIME INSPECTION OF POWER SHAFT BOLTS, ALL UH-1 AND AH-1 SERIES AIRCRAFT

---

Headquarters, Department of the Army, Washington, D. C.

23 November 2001

---

**DISTRIBUTION STATEMENT A:** Approved for public release; distribution is unlimited.

#### NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

#### 1. Priority Classification. URGENT.

#### NOTE

IAW AR 95-1, paragraph 6-6.a., MACOM commanders may authorize temporary exception from ASAM message requirements. Exception may only occur when combat operations or matter of life or death in civil disasters or other emergencies are so urgent that they override the consequences of continued aircraft operation.

**a. Aircraft in Use.** Upon receipt of subject message/Technical Bulletin (TB) make the following entry on the DA Form 2408-13-1. Enter a **RED HORIZONTAL DASH //--//** status symbol with the following statement: "Inspect Engine Power Shaft Bolt IAW UH-1-01-ASAM-05, AH-1-01-ASAM-04 (TB 1-1520-243-20-29) within the next 150 flight hours, but NLT 30 June 2002." Clear the **RED HORIZONTAL DASH //--//** entry when the procedures IAW paragraph 8, 9 are completed. The affected aircraft shall be inspected as soon as practical but no later than 30 June. Commanders who are unable to comply with the requirements of this message within the time frame specified will upgrade the affected aircraft status symbol to a red **//X//**.

**b. Aircraft in Depot Maintenance.** Same as paragraph 1a.

(1) Aircraft in AVUM, AVIM, or Depot Lever Maintenance. Same as paragraph 1a.

(2) Aircraft at contractor facility. U.S. Helicopters will inspect DD 250 aircraft prior to those aircraft departing for ferry to final destination

**c. Aircraft In Transit.**

\*This TB supersedes USAAMCOM Aviation Safety Action Message (ASAM) AH-1-01-ASAM-04 and UH-1-01-ASAM-05, 281200Z September 01.

(1) **Surface/Air Shipment.** Same as paragraph 1a.

(2) **Ferry Status.** Same as paragraph 1a.

d. **Maintenance Trainers (Category A and B).** Not applicable.

e. **Component/Parts in Stock at All Levels (Depot and Others) Including War Reserves.** Upon receipt this message/TB, depot and materiel activity commander will ensure the material condition tags of all items in all condition codes listed in paragraphs 6 and 7 shall be annotated to read "UH-1-01-ASAM-05, AH-1-01-ASAM-04, (TB 1-1520-243-20-29), Inspection of Power Shaft Bolts Not Complied With".

(1) **Wholesale Stock.** Upon receipt of subject message/TB, depot and materiel activity commanders will ensure all serviceable items in (condition codes A and B) listed in paragraphs 6 and 7 are placed in condition code "J" and tagged with a suspended tag/label - Materiel, DD Form 1575/DD Form 1575-1. Do not remove original condition tags. Report compliance with this message/TB IAW paragraph 14.b.(2) NLT 12 October 2001.

(2) **Retail Stock.** Upon receipt of this message/TB commanders and facility managers maintaining retail stock at installation level and below shall contact the supported aviation unit to perform the procedures required IAW paragraphs 8 and 9 on suspect materiel. Dispose of discrepant materiel IAW paragraph 10.

f. **Components/Parts in Work. (Depot Level and Others).** Not Applicable.

2. **Task/Inspection Suspense Date.** Complete the inspection IAW paragraph 8 within the next 150 flight hours but no later than 30 June 2002.

3. **TAMMS Reporting Compliance Suspense Date.** Report compliance IAW paragraph 14.a. NLT 19 October 2001.

4. **Summary of the Problem.**

a. There have been two civilian T53 shouldered Shaft Bolts, part number 1-140-067-14, found in service containing inclusions in the metal. This same bolt is used on the Army T53 series Engines and is commonly referred to as the "Power Shaft Bolt" this bolt positions the AFT end of the power shaft in the engine assembly. Failure of the Power Shaft Bolt can result in engine shutdown. If the Power Shaft Bolt fails, the Power Shaft could move forward and contact the compressor shaft, causing the compressor and power turbine to become welded together.

b. **For Manpower/Downtime and Funding Impacts.** See paragraph 12.

c. **The Purpose of this TB is to require a mandatory magnetic particle inspection of all Power Shaft Bolts, part number 1-140-067-14.**

5. **End Items to be inspected.** All UH-1 and AH-1 series aircraft with T53 series engine installed.

6. **Assembly Components to be Inspected.**

NOMENCLATURE	PART NUMBER	NATIONAL STOCK NUMBER
Engine, Aircraft, Turbine	1-000-060-22	2840-00-234-4803
Engine, Aircraft, Turbine	1-000-060-23	2840-00-621-1860

7. **Parts to be Inspected.**

NOMENCLATURE	PART NUMBER	NATIONAL STOCK NUMBER
Shaft, Shouldered	1-140-067-14	3040-00-943-0054

**8. Inspection Procedures.**

- a. Remove Power Shaft Bolt (TM 1-2840-260-23P, figure 19, item 5) IAW TM 55-2840-229-23.

**NOTE**

Accurate measurement of the shim thickness during disassembly will save significant effort when the engine is reassembled.

- (1) Record shim thickness (TM 1-2840-260-23P, figure 19, item 4), and retain for reuse.
- (2) Discard ring (TM 1-2840-260-23P), figure 19, item 6). The engine maintenance manual (TM 55-2840-229-23) will be changed to show this ring as a one time use item.

**NOTE**

The magnetic particle (MP) inspection of this bolt is an AVUM level task that will be performed using a horizontal wet unit. The Portable test unit is not approved for this inspection due to the need to detect subsurface flaws.

- b. Inspect Power Shaft Bolt IAW TM 55-2840-229-23, paragraph 4-7.4. bolt the visual and magnetic particle inspections are required IAW TM 55-2840-229-23, paragraph H-19, with the following changes.

- (1) Clean contact area on bolt ends to ensure good conduction.
- (2) End-to-End AMPS shall be 400 (not 700/900 as specified in the TM).

- c. The following criteria apply for this inspection.

(1) Both surface and subsurface defects. No cracks, crack like indications, laminations, seams, laps, or bursts are allowed. Also suffice and subsurface indications representing discontinuities caused by pits or porosity shall be rejected.

(2) Surface nonmetallic inclusions. Total length of all indications in any one square inch area shall not exceed 0.25 inches. No single indication shall exceed 0.030 inches in length. Parallel indications shall be separated by at least 0.180 inches. Indications shall not extend over machined edges or chafers, or into holes or fillets.

(3) Subsurface nonmetallic inclusions. Total length of all indications in any one square inch area shall not exceed 0.25 inches. No single indication shall exceed 0.030 inches in length. Parallel indications shall be separated by at least 0.120 inches.

(4) Surface/subsurface notes. Two nonmetallic, colinear indications shall be considered as one indication if the distance of closest approach is less than the length of the shortest indication. If such a condition exists, the length of the indication to be evaluated shall be the sum of the two indications plus the distance separating the indications.

- d. If the Power Shaft Bolt does not meet the inspection criteria IAW paragraphs 8b and 8c, proceed to paragraph 9a..

- e. If the Power Shaft Bolt does meet the inspection criteria IAW paragraphs 8b and 8c, proceed to paragraph 9b.

**9. Corrective Procedures.**

- a. Replace all Power Shaft Bolts that do not meet the requirements specified in paragraph 8b and 8c.

b. For bolts that meet the requirements of paragraphs 8b and 8c, vibroetch the letters "MP" on the flat recessed area of the bolt head midway between the center hole and the radius transition area. Depth of vibroetch marking shall not exceed 0.005 inch. Touch up the bolt threaded end contact area per MIL-L-23398

(NSN is 9150-01-260-2534). Touch up bolt head contact area and vibroetch markings per MIL-C-10578, inhibited phosphoric acid (NSN is 6850-00-174-9672).

(1) For AH-1 users, add the following to TM 55-1520-236-23-1, paragraph 6-128.1 - Perform a visual inspection of all 204-040-604-5 couplings for spline cracks using a 3-10X magnifying glass. No cracks allowed.

**NOTE**

Pay particular attention to the specified torque scales when re-assembling the engine. The Power Shaft Bolt is torqued in inch-pounds, and the ring/nut is torqued in foot-pounds.

c. Reassemble engine IAW TM 55-2840-229-23 procedures, and clear the **RED HORIZONTAL DASH //--//** entry.

**10. Supply/Parts and Disposition.**

a. **Parts Required.** Items cited in paragraph 7 may be required to replace defective items.

b. **Requisitioning Instructions.** Requisition replacement parts using normal supply procedures. All requisitions shall use project code (CC 57-59) "XOY" (X-RA ZERO-YANKEE).

**NOTE**

Project Code "XOY" is required to track and establish a data base of stock fund expenditures incurred by the field as a result of SOF actions.

c. **Bulk and Consumable Materials.**

NOMENCLATURE	PART NUMBER	NATIONAL STOCK NUMBER
Ring, Externally Thr	1-140-233-02	5365-00-156-8958
Seal Retainer	1-300-462	5330-00-253-1722
Protective, Steel Corrosion	MIL-C-10578	6850-00-174-9672
Lubricant, Dry Film	MIL-L-23398	9150-01-260-2534

d. **Disposition.** Demilitarize/mutilate IAW TM 1-1500-328-23 any part/component which does not meet inspection criteria.

e. **Disposition of Hazardous Material.** IAW Environmental Protection Agency directives as implemented by your servicing environmental coordinator (AR 200-1).

**11. Special Tools, Jigs and Fixtures Required.**

NOMENCLATURE	PART NUMBER	NATIONAL STOCK NUMBER
Socket, Wrench, Face	LTCT506	5120-00-473-7591
Socket, Wrench	LTCT505	4920-00-473-7589

**12. Application.**

a. **Category of Maintenance.** AVIM. Aircraft downtime will be charged to AVIM maintenance. Report aircraft non-mission capable maintenance (NMCM) while undergoing inspection and correction IAW this message/TB.

b. **Estimated Time Required.**

- (1) UH-1 – Total of 4 man-hours using 1 person. Total of 4 hours downtime for one end item.
- (2) AH-1 – Total of 6 man-hours using 1 person. Total of 6 hours downtime for one end item. Additional time for AH-1 is for removal/replacement of the IR suppressor.

**c. Estimated Cost Impact to the Field.**

NOMENCLATURE	P/N	NSN	QTY.	COST EA.	TOTAL COST
Ring Externally Thr	1-140-233-02	5365-00-156-8958	1	\$27.29	\$27.29
Shaft, Shouldered	1-140-067-14	3040-00-943-0054	1	\$46.50	\$46.50
Seal, Retainer	1-300-462	5330-00-253-1722	1	\$32.36	\$32.36
Total Cost Per Aircraft = \$106.15					

Total cost per coupling = \$449.26.

Total cost per UH-1 (8 couplings & 4 encased seals) = \$3658.44

Total cost per AH-1 (7 couplings & 4 encased seals) = \$3209.18

**d. TB/MWOs to be Applied Prior to or Concurrently with this Inspection.** Not Applicable.

**e. Publications which Require Change as a Result of this Inspection.** TM 55-1520-210-23-1 and TM 55-1520-236-23-1 shall be changed to reflect this TB. A copy of this TB shall be inserted in the appropriate TM as authority to implement the change until the printed change is received.

(1) TM 55-2840-229-23 and DMWR 1-2840-113 will be changed to reflect the lower end-to-end AMP and cleaning requirements identified in paragraph 8b.

(2) TM 55-2840-229-23 will be changed to slow P/N 1-140-233-02 as of one time use item.

(3) A copy of this message shall be inserted in the appropriate publications as authority to implement the change until the printed change is received.

**13. References.**

- a. DA PAM 738-751, 15 Mar 99.
- b. TM 1-2840-260-23P.
- c. TM 55-2840-229-23.
- d. TM 1-1500-328-23.
- e. DMWR 1-2840-113.

**14. Recording and Reporting Requirements.**

- a. Aircraft.

(1) **TAMMS Reporting Compliance Suspense.** Upon entering requirements of this message/TB on DA Form 2408-13-1 on all effected aircraft, commanders will forward a priority message, datafax or E-mail to CDR, AMCOM, ATTN: AMSAM-SF-A (SOF Compliance Officer), Redstone Arsenal, AL 35898-5000 IAW AR 95-1, NLT date specified in paragraph 3. Datafax number is DSN 897-2111 or commercial (256) 313-2111. E-mail address is <safeadm@redstone.army.mil>. The report will cite UH-1-01-ASAM-05 and AH-1-01-ASAM-04 (TB 1-1520-243-20-29), date of entry on DA Form 2408-13-1, the aircraft MDS, and serial numbers of aircraft in numerical order.

(2) **Task/Inspection Reporting Suspense.** No special report of the results of this inspection is required.

**b. Wholesale Spare Parts/Assemblies.**

(1) **Reporting Message/TB Receipt.** Not Applicable.

(2) **Task/Inspection Reporting Suspense.** Depot and Materiel Activity Commanders will provide a DD Form 1225 to the wholesale materiel point of contact (Spares) listed in paragraph 16c NLT date specified in paragraph 1e (1). Provide and estimate of the cost reimbursable funding required to move serviceable items on hand listed in paragraphs 6 and 7 to a work area, unpack the materiel, repack the materiel after inspection by AMCOM inspectors, and to return the materiel to storage, as appropriate. Report, by original serviceable condition code, the quantity of materiel placed in condition code //J//. Report by E-mail or datafax and provide local point of contact.

**c. Retail Spare Parts/Assemblies.**

(1) **Reporting Message Receipt.** Not Applicable.

(2) **Task/Inspection Reporting Suspense.** Not Applicable.

**d. The Following Forms are Applicable and are to be Completed in Accordance with DA Pamphlet 738-751, dated 15 March 1999:**

**NOTE**

Unit Level Logistics System-Aviation (ULLS-A) users will use applicable electronic "E" forms.

(1) DA Form 2408-5-1, Equipment Modification Record (Engine).

(2) DA Form 2408-13, Aircraft Status Information Record.

(3) DA Form 2408-13-1, Aircraft Inspection and Maintenance Record.

(4) DD Form 1574/DD Form 1574-1, Serviceable Tag/Label - Materiel (Color Yellow). Annotate Remarks Block with "Inspected Serviceable IAW UH-1-01-ASAM-05 and AH-1-01-ASAM-04 (TB 1-1520-243-20-29)".

(5) DD Form 1575/DD Form 1575-1, Suspended Tag/Label - Materiel (Color Brown). Annotate Remarks Block with "Suspended IAW UH-1-01-ASAM-05 and AH-1-01-ASAM-04 (TB 1-1520-243-20-29)".

(6) DD Form 1577/DD Form 1577-1, Unserviceable (Condemned) Tag/Label - Materiel (Color Red). Annotate remarks block with "Condemned IAW UH-1-01-ASAM-05 and AH-1-01-ASAM-04 (TB 1-1520-243-20-29) and Mutilated IAW TM 1-1500-328-23".

(7) DD Form 1576/DD Form 1576-1, Test/Modification Tag/Label - Materiel (Color Blue). Annotate authority block with "UH-1-01-ASAM-05 and AH-1-01-ASAM-04 (TB 1-1520-243-20-29)".

**15. Weight and Balance.** Not Applicable.

**16. Points of Contact.**

**a.** Technical points of contact for this TB is Mr. Martin Ohrenberg, AMSAM-RD-AE-P, DSN 897-3887 or (256) 313-3887, Fax is 313-4961. E-mail is "martin.ohrenberg@redstone.army.mil".

**b.** Logistical points of contact for this TB is Mr. Charles Elkins, AMSAM-DSA-UH-U, DSN 645-0073 or (256) 955-0073, Fax is 645-6590. E-mail is "charlie.elkins@uh.redstone.army.mil".

**c.** AMCOM nondestructive testing center of excellence point of contact is Ms. Sandra Ratley, ASAM-DSA-AS-AG, DSN 788-8043 or (256) 842-8043, Fax is DSN 788-0572. E-mail is "sandra.ratley@redstone.army.mil".

d. Wholesale Materiel point of contact (Spares) is Mr. David M. Giratos, AMSAM-MMC-AV-SOA, DSA 897-1381 or (256) 313-1381, Datafax is DSN 788-6758. E-mail is "giratos.david@redstone.army.mil".

e. Forms and Records point of contact for this TB is Ms. Ann Waldeck, AMSAM-MMC-MA-NM DSN 746-5564 or Commercial (256) 876-5564. Datafax is DSN 746-4904 or (256) 876-4904. E-mail is <ann.waldeck@redstone.army.mil>.

f. Safety points of contact for this TB are:

(1) Primary - Mr. Harry Trumbull (SAIC), AMSAM-SF-A, DSN 897-2095 or Commercial (256) 313-2095. Datafax is DSN 897-2111 or (256) 313-2111. E-mail is "harry.trumbull@redstone.army.mil".

(2) AH-1 - Mr. Howard Chilton, AMSAM-SF-A, DSN 897-2068 or Commercial (256) 313-2068, Datafax is DSN 897-2111 or (256) 313-2111. E-mail is "howard.chilton@redstone.army.mil".

(3) UH-1 - Mr. Signey Hernandez, AMSAM-SF-A, DSN 897-2094 or (256) 313-2094, Datafax is DSN 897-2111. E-mail is "signey.hernandez@redstone.army.mil".

g. Foreign Military Sales recipients requiring clarification of action advised by this TB should contact:

(1) Primary - Mr. Ronnie W. Sammons, AMSAM-SA-CS-NF, DSN 897-6856 or Commercial (256) 313-6856. Datafax is DSN 897-6630 or (256) 313-6630. E-mail is "ronnie.sammons@redstone.army.mil".

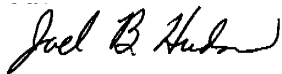
(2) Alternate - Mr. Paul W. Tarr, AMSAM-SA-CS-NF, DSN 897-6861 or (256) 313-6861. Datafax is DSN 897-6630 or (256) 313-6630. E-mail "tarrpw@redstone.army.mil".

h. After hours contact the AMCOM Command Operations Center (COC) DSN 897-2066/2067 or Commercial (256) 313-2066/2067.

**17. Reporting of Errors and Recommending Improvements.** You can improve this TB. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to: Commander, US Army Aviation and Missile Command, ATTN: AMSAM-MMC-LS-LP, Redstone Arsenal, Alabama 35898-5230. A reply will be furnished to you. You may also send in your comments electronically to our E-mail address at <2028@redstone.army.mil>, or by datafax at DSN 788-6546 or commercial (256) 842-6546. Instructions for sending a DA Form 2028 by E-mail may be found at the back of most Technical Manuals.

**By Order of the Secretary of the Army:**

Official:



**JOEL B. HUDSON**  
Administrative Assistant to the  
Secretary of the Army  
0131702

**ERIC K. SHINSEKI**  
General, United States Army  
Chief of Staff

DISTRIBUTION:

To be distributed in accordance with Initial Distribution No. (IDN) 314007, requirements for TB 1-1520-243-20-29.

PIN: 079412-000

7/(8 blank)

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



THEN...JOT DOWN THE  
DOPE ABOUT IT ON THIS FORM.  
CAREFULLY TEAR IT OUT, FOLD IT  
AND DROP IT IN THE MAIL.

SOMETHING WRONG WITH PUBLICATION

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER

PUBLICATION DATE

PUBLICATION TITLE

BE EXACT PIN-POINT WHERE IT IS

PAGE  
NO.

PARA-  
GRAPH

FIGURE  
NO.

TABLE  
NO.

IN THIS SPACE, TELL WHAT IS WRONG  
AND WHAT SHOULD BE DONE ABOUT IT.

TEAR ALONG PERFORATED LINE

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE



# THE METRIC SYSTEM AND EQUIVALENTS

## WEIGHT MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches  
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches  
 1 Kilometer = 1000 Meters = 0.621 Miles

## WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces  
 1 Kilogram = 1000 Grams = 2.2 lb.  
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

## LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces  
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

## SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches  
 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet  
 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

## CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches  
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

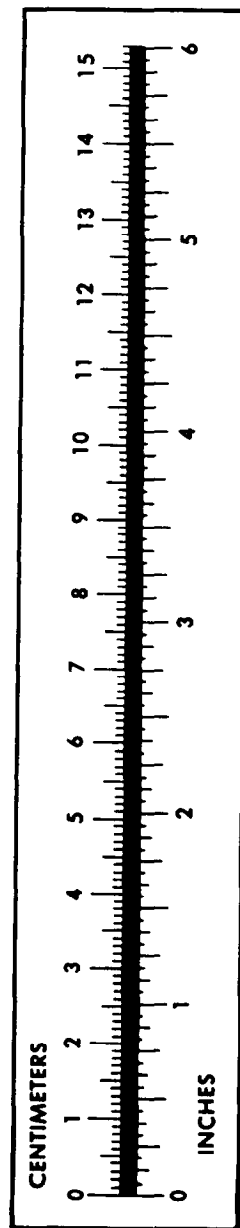
## TEMPERATURE

$5/9(^{\circ}\text{F} - 32) = ^{\circ}\text{C}$   
 212° Fahrenheit is equivalent to 100° Celsius  
 90° Fahrenheit is equivalent to 32.2° Celsius  
 32° Fahrenheit is equivalent to 0° Celsius  
 $9/5^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

## APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
its	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
ometers per Liter	Miles per Gallon	2.354
ometers per Hour	Miles per Hour	0.621



**PIN: 079412-000**