

TM 11-5855-239-10

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TECHNICAL MANUAL  
**OPERATOR'S MANUAL**  
FOR  
**METASCOPE AN/PAS-6**  
**(5855-790-6197)**

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HEADQUARTERS, DEPARTMENT OF THE ARMY

17 APRIL 1973

## WARNING

IMPROPER USE OF THIS EQUIPMENT CAN EXPOSE YOU TO THE ENEMY. OBSERVE THE FOLLOWING PRECAUTIONS:

1. BEFORE TURNING ON THE LIGHT SOURCE, LOOK THROUGH THE METASCOPE TO DETECT THE PRESENCE OF ANY ENEMY INFRARED.
2. THE INFRARED BEAM FROM THE LIGHT SOURCE CAN BE DETECTED BY THE ENEMY USING LOW LIGHT LEVEL NIGHT VISION DEVICES. USE WITH CAUTION.
3. THE LIGHT SOURCE EMITS A DULL RED GLOW WHICH CAN BE SEEN FROM UP TO 15 METERS BY THE UNAIDED EYE.
4. YOUR FACE MAY BE ILLUMINATED BY VISIBLE BACKGLOW IF THE EYESHIELD IS NOT SNUG AGAINST THE FACE.

## CAUTION

DO NOT POINT THE METASCOPE TOWARD THE SUN OR ANY OTHER INTENSE LIGHT SOURCE; DAMAGE TO THE IMAGE TUBE MAY RESULT.

TECHNICAL MANUAL

No. 11-5855-239-10

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
WASHINGTON, D. C., 17 April 1973

OPERATOR'S MANUAL  
FOR  
METASCOPE AN/PAS-6

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\* This manual supersedes so much of TM 5-1090-203-15, 11 July 1962, including all changes, that pertains to operation and operator's maintenance.



# CHAPTER 1

## INTRODUCTION

---

### Section I. GENERAL

#### 1-1. Purpose and Scope

**This manual is for your use in operating and maintaining Metascope AN/PAS-6.**

#### 1-2. Maintenance Forms and Records

**Maintenance forms and records that you are required to use are explained in TM 38-750.**

#### 1-3. Recommending Improvements

**You can improve this manual by recommending improvements using DA Form 2028 (Recommended Changes to Publications) or a letter. Mail direct to: Commander, U.S. Army Electronics Command, ATTN : AMSEL-MA-S, Fort Monmouth, NJ 07703. A reply will be furnished direct to you.**

### Section II. DESCRIPTION AND DATA

#### 1-4. Description (fig. 1-1)

*a. General.* **Metascope AN/PAS-6 is a hand-held, battery powered, infrared viewer for nighttime use. It may be used as a general purpose viewer, as a**

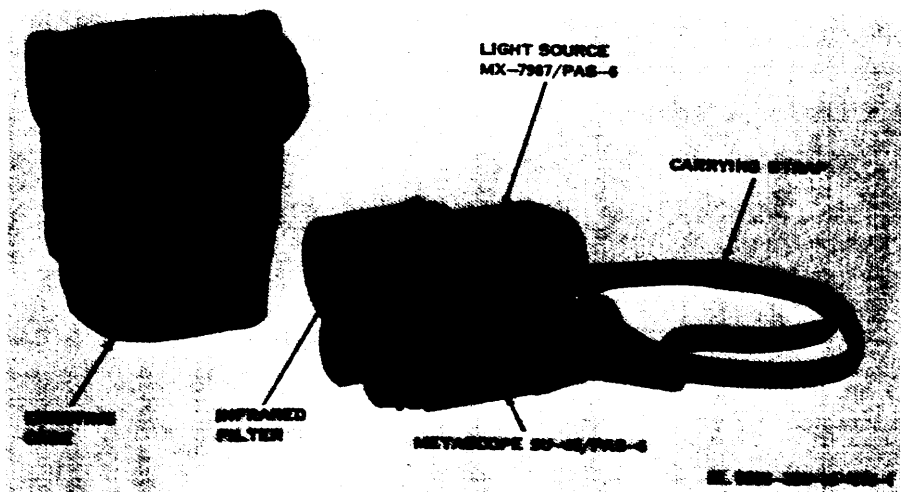


Figure 1-1. Metascope AN/PAS-6.

standard flashlight would be used, or to detect enemy infrared sources.

*b. Light Source MX-7987/PAS-6.* Light Source MX-7987/PAS-6, hereafter called the light source, is basically a flashlight with an infrared filter over the reflector. It illuminates the area of interest with infrared radiation.

*c. Metascope SU-43/PAS-6.* Metascope SU-43/PAS-6, hereafter called the metascope, is basically a monocular containing an image tube which converts infrared radiation to visible light. It will detect objects when illuminated by the light source or any other infrared light source.

*d. Carrying Case.* The canvas carrying case is fitted with clips for attachment to a standard pistol or rifle belt.

*e. Additional Information.* If you need a detailed description of the AN/PAS-6, ask your supervisor to see TM 11-5855-239-23.

#### **1-5. Items Comprising Metascope AN/PAS-6** (fig. 1-1)

The items listed in table 1-1 make up an operable Metascope AN/PAS-6, FSN 5855-790-6197.

#### **1-6. Tabulated Data**

Normal operating

range . . . . . -15° F (-26° C) to 115° F (46° C).

Magnification . . . . . 1.1.

Focus range . . . . . 12 in. to infinity.

Field of view . . . . . 26° minimum.

*Table 1-1. Items Comprising Metascope AN/PAS-6.*

| Federal stock number | Name                       | Quantity |
|----------------------|----------------------------|----------|
| 5855-832-8796        | Light Source MX-7987/PAS-6 | 1        |
| 5855-089-7274        | Metascope SU-43/PAS-6      | 1        |
| 5340-823-5197        | Strap, carrying            | 1        |
| 5855-010-5068        | Case, carrying             | 1        |
| 6135-120-1020        | Battery BA-30              | 2        |
| 6135-269-5843        | Battery BA-1312            | 1        |
| 6640-597-6745        | Tissue, lens               | 1        |



|                                        |                         |
|----------------------------------------|-------------------------|
| Total weight (in carrying case)        | 2 lb 12 oz.             |
| Overall dimensions (in carrying case ) | 4½ in. X 4½ in. X 6 in. |

# CHAPTER 2

## OPERATING INSTRUCTIONS

---

### Section I. OPERATING PROCEDURES

#### 2-1. Battery Installation

Refer to figures 2-1 and 2-2 for directions on installing the batteries.

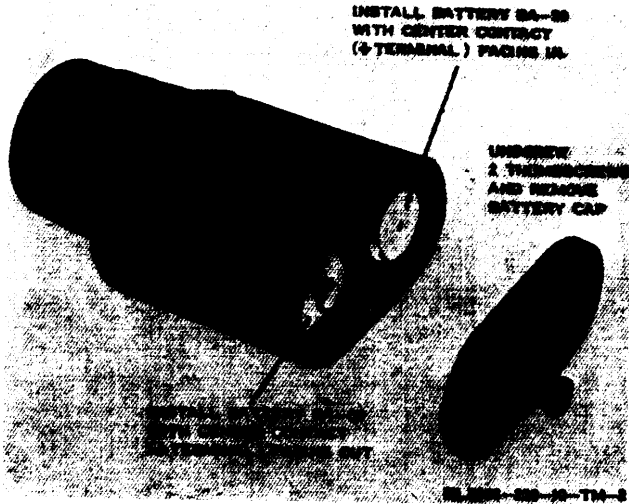


Figure 2-1. Battery BA-30 installation.

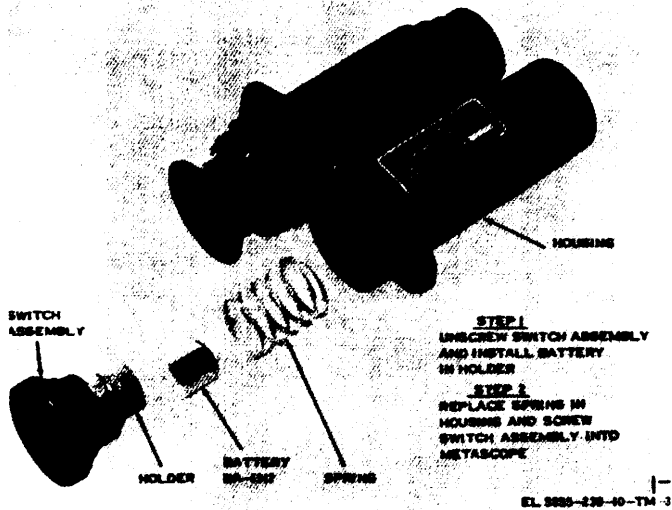


Figure 2-2. Battery BA-1312 installation.

## 2-2. AN/PAS-6 Assembly Instructions

Refer to figure 2-3 for directions on assembling the AN/PAS-6.

## 2-3. Normal Operating Instructions

### WARNING

IMPROPER USE OF THIS EQUIPMENT  
CAN EXPOSE YOU TO THE ENEMY.  
OBSERVE THE FOLLOWING OPERATING  
PRECAUTIONS:

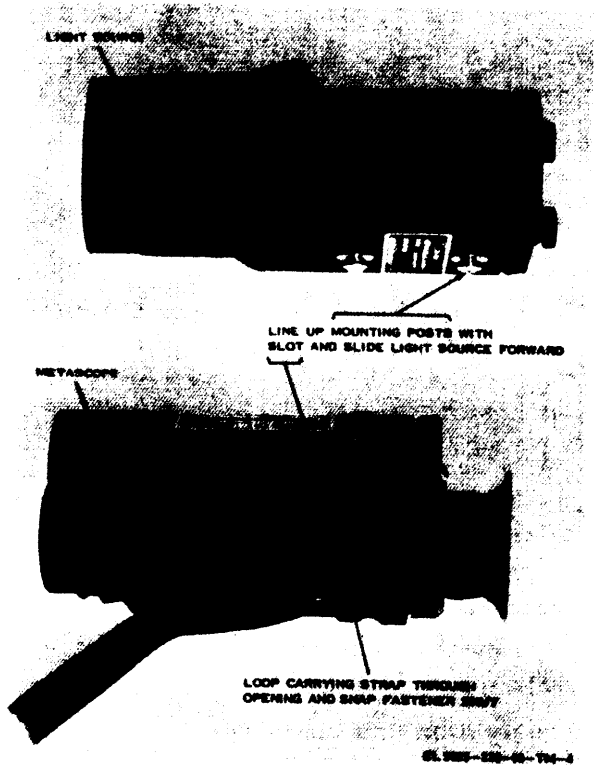


Figure 2-3. AN/PAS-6 assembly instructions

1. BEFORE TURNING ON THE LIGHT SOURCE, LOOK THROUGH THE METASCOPE TO DETECT THE PRESENCE OF ANY ENEMY INFRARED.
2. THE INFRARED BEAM FROM THE LIGHT SOURCE CAN BE DETECTED BY THE ENEMY USING LOW LIGHT LEVEL NIGHT VISION DEVICES. USE WITH CAUTION.
3. THE LIGHT SOUR EMITS A DULL RED GLOW WHICH CAN BE SEEN FROM UP TO 15 METERS BY THE UNAIDED EYE.
4. YOUR FACE MAY BE ILLUMINATED BY VISIBLE BACKGLOW IF THE EYESHIELD IS NOT SNUG AGAINST THE FACE.

#### **CAUTION**

Do not point the metascope toward the sun or any other intense light source; damage to the image tube may result.

a. *Controls.* Refer to figure 2-4 for location and operation of the controls.

b. *Operating Instructions.*

(1) Place the eyeshield snug against your eye and turn the metascope on. A soft green glow will be seen. Search the area for the presence of any infrared. This will appear as a bright green spot of light.

(2) Turn the light source on. The infrared beam will be seen through the metascope as a flash-light beam would be seen in normal use. Adjust the objective lens for best focus of the scene.

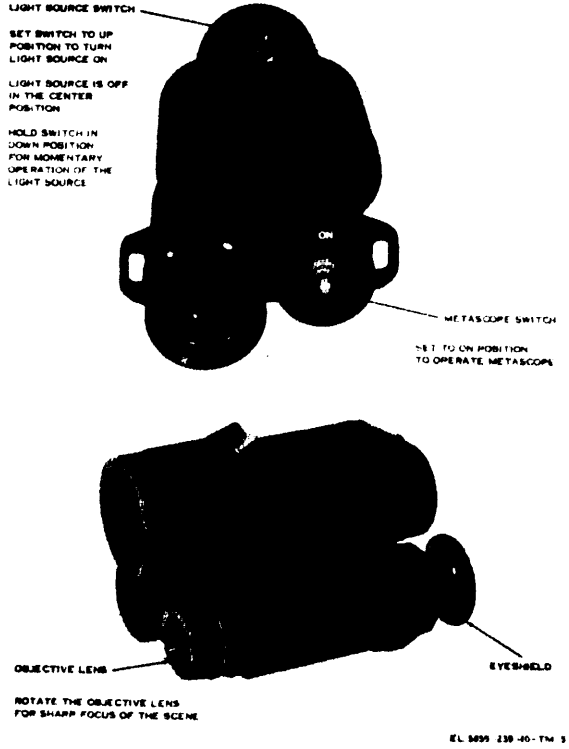
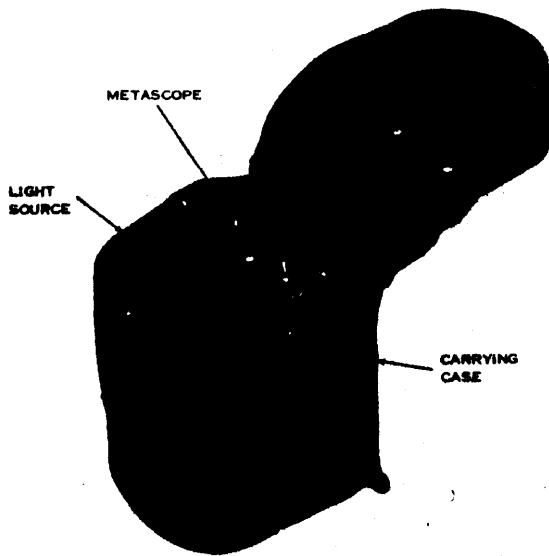


Figure 2-4. Operating instructions.



EL 3455-239-10-TM-6

*Figure 2-5. AN/PAS-6 packed.*

#### **2-4. Packing AN/PAS-6**

Remove the light source from the metascope. Wrap the carrying strap around the metascope. Place the light source and metascope in the carrying case as shown in figure 2-5.

### Section II. OPERATION UNDER UNUSUAL CONDITIONS

#### **2-5. Operation in Extreme Cold**

*a. Battery Switching.* To extend battery life, periodically switch the batteries.

(1) Keep an extra set of batteries in your inner pocket as close to your body as possible for warmth.

(2) After approximately 1 hour of operation, remove the batteries (fig. 2-1 and 2-2) and install the warm batteries from your pocket.

(3) Place the removed batteries in your inner pocket; reinstall them after approximately 1 hour.

*b. Lens Frosting.* The lenses may have a tendency to fog and frost in cold weather. Avoid breathing on them. Clean them with lens tissue.

#### **2-6. Operation in Dusty or Sandy Areas**

*a.* Avoid pointing the AN/PAS-6 into the wind unless absolutely necessary for operation. Dust and sand will scratch and pit the optical glass surfaces of the infrared filter and objective lens.

*b.* Blow dust and sand off the lenses. Remove the



remaining dust or sand with thoroughly soaked lens tissue. Finish cleaning with dry lens tissue.

### **2-7. Operation in Rainy or Humid Conditions**

To prevent corrosion or deterioration, thoroughly clean and dry all parts after exposure to salt-spray conditions. The light source and metascope may be immersed in fresh water to eliminate all traces of salt spray. Dry thoroughly after washing.

## CHAPTER 3

### MAINTENANCE INSTRUCTIONS

---

#### 3-1. Preventive Maintenance Checks and Services

Preventive maintenance checks and services (PMCS) is the systematic care, service, and inspection of equipment to insure that the equipment is serviceable and to prevent the occurrence of trouble.

*a. PMCS Periods.* Preventive maintenance checks and services table 3-1, lists checks to be performed daily. If the AN/PAS-6 is not used daily, it should be checked and serviced immediately before going on a mission and as soon after completion of a mission as possible. Do not allow the AN/PAS-6 to go beyond 1 week without performing the daily preventive maintenance checks and services.

*b. PMCS Reporting.* If you cannot correct the defect, a higher category of maintenance is required. Record all checks in accordance with TM 38-750.

*c. Table 3-1 Column Heading Explanation.* The first column lists the interval and sequence that a particular check or service is required. This column is subdivided into three columns: B (Before Operation), D (During Operation), and A (After Operation). The second column lists the item to be inspected and the procedure. The third column (Worktime (M/H)) lists the man-hours it should

take to perform the check or service. This time is expressed in tenths of an hour.

*Table 3-1. Operator's Daily Preventive Maintenance Checks and Services*

B-Before Operation      D--During Operation      A—After Operation  
 Time required: .6      Time required: .1      Time required: .1

| Interval and sequence No. |   |   | Item to be Inspected Procedure                                                                                                                                                                                                                             | Work-time (M/H) |
|---------------------------|---|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| B                         | D | A |                                                                                                                                                                                                                                                            |                 |
| 1                         |   |   | <b>EYEPiece AND OBJECTIVE LENSES (fig. 2-4)</b><br>Inspect both lenses for dirt, dust, fingerprints, scratches, chips, or cracks. Report lens damage to organizational maintenance. If necessary, clean and dry lenses, using clean water and lens tissue. | .1              |
| 2                         |   |   | <b>INFRARED FILTER (fig. 1-1)</b><br>Inspect and clean as in sequence 1 above.                                                                                                                                                                             | .1              |
| 3                         |   |   | <b>EYESHIELD HOUSING</b><br>Wipe clean with a damp cloth. Inspect for tears, holes, or any sign of deterioration. Report any damage to organizational maintenance.                                                                                         | .1              |
| 4                         |   |   | <b>HOUSING</b><br><i>a.</i> Inspect housing surfaces for scratches, cracks, dents, or other                                                                                                                                                                | .1              |

| Interval and sequence No. |   |   | Item to be Inspected Procedure                                                                                                                                                                            | Work-time (M/H) |
|---------------------------|---|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| B                         | D | A |                                                                                                                                                                                                           |                 |
|                           |   |   | <b>HOUSING (cont.)</b><br>damage. Report damage to organizational maintenance.<br><i>b.</i> Wipe with clean, dry, lint-free cloth. If necessary, dampen cloth with clean water to remove dirt and grease. |                 |
| 5                         |   |   | <b>BATTERIES</b><br>Inspect the BA-30's and BA-1312; replace them (fig. 2-1 and 2-2) if any evidence of corrosion is found.                                                                               | .1              |
| 6                         |   |   | <b>CARRYING CASE</b><br>Shake or brush out any sand, dirt, or grit.                                                                                                                                       | .1              |
|                           | 7 |   | <b>SWITCHES AND CONTROLS</b><br><i>a.</i> Check for proper mechanical action of the light source and meta-scope switches.<br><i>b.</i> Check that objective focus ring rotates smoothly.                  | .1              |
|                           |   | 8 | <b>CONDITION OF EQUIPMENT</b><br>After completion of a mission:<br><i>a.</i> Check the AN/PAS-6 for cleanliness; remove dirt, grease, or mildew as required. Clean eye-                                   | .1              |

| Interval and sequence No. |   |   | Item to be Inspected Procedure                                                                                                                                                                                                                                                                                                                                     | Work-time (M/H) |
|---------------------------|---|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| B                         | D | A |                                                                                                                                                                                                                                                                                                                                                                    |                 |
|                           |   | 8 | <p><b>CONDITION OF EQUIPMENT</b><br/>(cont.)</p> <p>piece, objective lens, and infrared filter with lens tissue.</p> <p><i>b.</i> Inspect housing surfaces for scratches, cracks, dents, or other damage. Report any damage to organizational maintenance.</p> <p><i>c.</i> Remove the BA-30's and BA-1312 (fig. 2-1 and 2-2) after completion of the mission.</p> |                 |

### 3-2. Troubleshooting

*a. General.* If battery replacement does not return the AN/PAS-6 to proper operation, notify organizational maintenance.

*b. Light Source.* If the light source fails, replace the batteries (fig. 2-1).

*c. Metascope.* If the metascope image tube presentation is weak, blurred, or not illuminated; replace the battery (fig. 2-2).

**APPENDIX**  
**REFERENCES**

---

- TM 11-5855-239-23 Organizational and Direct  
Support Maintenance  
Manual: Metascope  
AN/PAS-6
- TM 38-750 The Army Maintenance  
Management Systems  
(TAMMS)

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|                  |                          |
|------------------|--------------------------|
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| USAARENBD (2)    | Instl (2) except         |
| USAMB (10)       | Fort Gordon (10)         |
| USACDC (2)       | Fort Huachuca (10)       |
| USACDC Agcy (1)  | WSMR (3)                 |
| AMC (1)          | Fort Carson (15)         |
| CONARC (5)       | Ft. Richardson (ECOM     |
| ARADCOM (2)      | Oft) (2)                 |
| ARADCOM Rgn (2)  | Army Dep (2) except      |
| OS Maj Cored (4) | LBAD (14)                |
| USARJ (5)        | SAAD (30)                |
| USARYIS (5)      | TOAD (14)                |
| USARAL (5)       | LEAD (7)                 |
| LOGCOMD (5)      | NAAD (5)                 |
| MICOM (4)        | SVAD (5)                 |
| TECOM (2)        | ATAD (10)                |
| STRATCOM (4)     | USA Dep (2)              |
| USAESC (70)      | Sig Sec USA Dep (5)      |
| MDW (1)          | Sig Dep (10)             |
| Armies (2)       | Sig FLDMS (2)            |
| Corps (2)        | ATS (1)                  |
| Div (2)          | USAERDAA (2)             |
| Bde (1)          | USAERDAW (5)             |
| Inf Bn (1)       | USACRREL (2)             |
| Inf Co (1)       | MAAG (1)                 |
| Armor Bn (1)     | USARMIS (1)              |
| Armor Co (1)     | Units org under fol TOE: |
| Svc Colleges (2) | (2 cys each unit)        |
| USASESS (10)     | 1-47                     |
| USAADS (2)       | 11-15                    |
| USAFAS (2)       | 11-35                    |
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| USAIS (10)       | 11-95                    |
| USAES (10)       | 11-117                   |
| USAINTS (10)     | 11-158                   |
| WRAMC (1)        | 11-215                   |

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| 37-42          | 77-100 |

*NC*: State AC (3) Units-Same as Active Army except allowance is one (1) copy to each unit.

*USAR*: None.

For explanation of abbreviations used, see AR 310-50.

\* GOVERNMENT PRINTING OFFICE : 1993 0 342-421 (81899)



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# 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: 018635-000**