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PRODUCT STANDARD  
TRANSFORMER  
SHOP/ENGG. INSTRUCTION

TR 10205P

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शीर्षक TITLE

OLD PR. SPEC. BPO674186

OUTSIDE PAINTING OF TRANSFORMER RADIATORS WITH ETCH PRIMER (AA 56103), ANTI-CORROSIVE PRIMER (AA 56101) AND FULL GLOSSY FINISHING PAINT (AA 56126)

1. GENERAL:  
THE STANDARD DETAILS THE PROCESS TO BE FOLLOWED TO PROVIDE A STANDARD PROTECTIVE PAINT FINISH TO TRANSFORMER RADIATORS EITHER FOR INDOOR <sup>OR OUTDOOR</sup> SERVICE BY USING ETCH PRIMER (AA 56103), ANTICORROSIVE PRIMER (AA 56101) AND FULL GLOSSY FINISHING PAINT (AA 56126).

2. MATERIAL:

- 2.1 ANTI-CORROSIVE PRIMING PAINT RED/BROWN : AA 56101
- 2.2 HIGH QUALITY FULL GLOSSY OUTDOOR FINISHING PAINT LIGHT GREY SHADE NO.631 OF IS-5 : AA 56126  
OR DARK GREY SHADE NO. 632 OF IS-5 : AA 56126
- 2.3 ETCH PRIMER : AA 56103
- 2.4 WHITE SPIRIT GR. 145/205 : AA 56701
- 2.5 HARD DRYING CLEAR COPAL VARNISH : BP 27598

3. PREPARATION OF PAINTS:

- 3.1 CONSISTENCIES OF ANTI-CORROSIVE PRIMING PAINT (2.1) FULL GLOSSY FINISHING PAINT (2.2), ETCH PRIMER (2.3) & COPAL VARNISH (2.5).

BEFORE APPLICATION, ANY SKIN FORMED ON THE PAINT IN THE CONTAINER SHALL BE CAREFULLY REMOVED, ANY SETTLED PIGMENT BROKEN-UP AND THE PAINT THOROUGHLY STIRRED TO ENSURE COMPLETE AND UNIFORM MIXING OF THE CONSTITUENTS. CARE SHALL BE TAKEN TO AVOID ENTRAINING AIR INTO THE PAINT WHILE STIRRING. THE PAINT SHALL BE STRAINED THROUGH MUSLIN CLOTH / 60 MESH SHIEVE (NYLON OR METALIC). THE CONSISTENCIES OF THE PAINTS SHALL BE ADJUSTED AS BELOW, USING WHITE SPIRIT (CL.2.4) AS THINNER. VISCOSITY SHOULD BE MEASURED WITH FLOW CUP NO.4 OF IS:3944 AT THE NORMAL SHOP TEMPERATURE.

CONSISTENCIES WITH CUP NO.4 (SEC.)

	BRUSH COATING	SPRAY COATING	FLOOD COATING
a) ANTI CORROSIVE PRIMING PAINT (AA 56101), RED/BROWN	65 ± 5	35 ± 3	35 ± 5

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REV. A  
DT: 23/09/94  
DRAWING CONVERTED INTO THIN SHEET  
ORIGINAL: AKG 26/2/03

वितरण DIST.  
TRE/COX/BAY8  
TRP/BAY9

स्वीकृत किया  
APPROVED BY S. K. JATALE, SR-

तैयार किया PREPD. ISSUED DATE  
AWASHI-SR- TRE/STD 07.09.94



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| b) | HIGH QUALITY FULL GLOSSY OUTDOOR FINISHING PAINT (AA 56126) | 60 ± 5 | 30 ± 3 | 35 ± 5 |
| c) | HARD DRYING CLEAR COPAL VARNISH (BP 27598)                  | 50 ± 5 | -      | -      |

### 3.2 AA 56103 ETCH PRIMER:

AA 56103 ETCH PRIMER AS SUPPLIED CONSISTS OF TWO SEPARATE INGREDIENTS VIZ. PRIMER BASE AND ACCELERATOR (M/S (M/S SHALIMAR, ALKALI CHEMICALS, ASIAN PAINTS, JENSON & NICHOLSON-1:1 BY VOL) IN PROPORTIONS AS PER THE RECOMMENDATION OF THE SUPPLIER. FOR BOTH BRUSHING AS WELL AS SPRAYING THE PAINT PREPARED AS ABOVE DOES NOT REQUIRE ANY THINNING.

#### IMPORTANT NOTE:

AFTER MIXING, THE PAINT SHALL BE ALLOWED TO MATURE FOR 1/2 HOUR. THE MIXED PAINT SHALL BE USED WITHIN 8 HOURS.

#### SAFETY PRECAUTIONS:

AA 56103 ETCH PRIMER IS LIABLE TO CAUSE IRRITATION TO THE SKIN. THIS MAY TRANSPIRE INTO INFLAMMATION, SWELLING, RASH OR PUSTULES ON THE HANDS, ARMS AND OCCASIONALLY ON WHOLE OF THE BODY.

FOLLOWING PRECAUTIONS SHOULD BE OBSERVED WHILE HANDLING THIS MATERIAL.

- WORK PLACE AND STORAGE ROOMS SHOULD BE ADEQUATELY VENTILATED.
- BEFORE STARTING THE WORK, HANDS SHOULD BE WASHED WITH SOAP & WATER AND GOOD BARRIER CREAM APPLIED.
- MAXIMUM CARE SHOULD BE TAKEN TO AVOID SPLASHES ON THE SKIN.
- SPLASHINGS ON THE SKIN SHOULD BE IMMEDIATELY WASHED WITH WATER.
- AFTER THE WORK, HANDS, ARMS AND FACE SHOULD BE WASHED WITH WATER.

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4. SURFACE PREPARATION:

4.1 DRESSING/GRINDING

AFTER WELDING, ALL WELDS AND CUT EDGES SHALL BE DRESSED AND ANY SURFACE IMPERFECTIONS SHALL BE REMOVED BY GRINDING, IF NECESSARY.

4.2 RADIATOR ELEMENT

4.2.1 DEGREASING

SINGLE RADIATOR ELEMENT AFTER AIR PRESSURE TESTING UNDER WATER SHALL BE WIPED WITH CLEAN DRY CLOTH/CLOTH PIECES TO REMOVE WATER AND SHALL BE DEGREASED USING CLOTH MOISTIONED WITH WHITE SPIRIT (CL.2.4)

4.2.2 RADIATOR DETAILS:

ALL SUPPORTS AND BRACING DETAILS INCLUDING HEATER AND OR HEADER COVER ETC. SHALL BE SHOT BLASTED TO SWEDISH STANDARD SIS 055900 GR. SA 2.5.

4.3 THE FIRST PRIMER COAT SHALL BE APPLIED WITHIN 16 HOURS AFTER SAND / SHOT BLASTING.

NOTE : BEFORE APPLICATION OF PRIMER COAT SURFACES SHOULD BE CLEANED BY COMPRESSED AIR TO REMOVE DUST ETC. IF ANY.

5. APPLICATION OF PAINTS:

5.1 BRUSH/SPRAY PAINTING OF RADIATOR ELEMENTS AND ITS DETAILS WITH ETCH PRIMER

AFTER DEGREASING AND RUST REMOVAL (AS SPECIFIED IN CL.4 THE SINGLE ELEMENT SHALL BE BRUSH/SPRAY PAINTED WITH ETCH PRIMER AS SPECIFIED IN CLAUSE 3.2 TO PROVIDE A UNIFORM THIN COAT.

5.1.1 DRYING OF THE PAINT

THE PAINTED SURFACES SHALL BE ALLOWED TO AIR DRY FOR A PERIOD OF 4 HOURS.

5.2 BRUSH/SPRAY PAINTING OF SUPPORT AND BRACING DETAILS FOR RADIATOR ELEMENTS AND RADIATOR HEADER & OUTSIDE OF HEADER COVER WITH ANTI-CORROSIVE PRIMING PAINT.

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ALL SUPPORTS AND BRACING DETAILS FOR RADIATOR ELEMENTS AS WELL AS RADIATOR HEADER AND OUTSIDE OF HEADER COVER SHALL BE BRUSH/SPRAY PAINTED WITH ANTI-CORROSIVE PRIMING PAINT (CL.2.1) AT THE SPECIFIED VISCOSITY AS PER CL.3. THE MINIMUM AIR DRYING TIME SHALL BE 12 HOURS AT SHOP TEMPERATURE VARIATION. HEADER INSIDE SHALL BE BRUSH PAINTED WITH ONE COAT OF HARD DRYING CLEAR COPAL VARNISH (CL.2.5) BY BRUSHING AT THE SPECIFIED VISCOSITY AS PER CLAUSE 3. VARNISH COATING IS TO BE APPLIED BEFORE WELDING OF ELEMENTS TO THE HEADER AND TO NOPPLE.

AFTER WELDING OF ELEMENTS WITH HEADER, DAMAGED VARNISH COATING, TO BE TOUCHED UP. AFTERNATELY, A SECOND COAT OF COPAL VARNISH TO BE APPLIED. AFTER WELDING OF THE NIPPLE ALSO DAMAGED VARNISH COATING TO BE TOUCHED UP, WHEREVER NECESSARY.

NOTE:

DURING CONSTRUCTION OF RADIATOR, OPERATORS HAVE TO WEAR BREATHING MASK IN ORDER TO PROTECT THEMSELVES FROM FUMES EMITTED BY BURNING OF PAINT ON WELDING SPOTS.

5.3 FLOOD COATING:

5.3.1 EQUIPMENT FOR FLOOD COATING

THE PROCESS CONSISTS OF PAINTING THROUGH THE NOSE OVER THE RADIATORS, COLLECTING THE EXCESS PAINT AND RECIRCULATING THIS THROUGH THE NOSE, UNTILL THE RADIATOR IS COMPLETELY COVERED. THE EQUIPMENT SHALL CONSIST OF MOTOR DRIVEN CENTRIFUGAL PUMP AND DELIVERY LINE. THE RADIATORS SHALL BE SUSPENDED VERTICALLY AND THE PLATFORM SHALL BE PROVIDED FOR THE OPERATOR AT A SUITABLE HEIGHT. THE PROVISION SHALL BE MADE TO CONFINE THE PROCESS IN A LIMITED AREA. THE PAINT SHOULD BE PASSED THROUGH 30 MESH GAUGE FILTER BEFORE APPLICATION AND THE MESH SHALL BE CLEANED AFTER EACH OPERATION BY IMMERSION IN SOLVENT OR BY BURNING.

5.4 PAINTING OF ASSEMBLED RADIATORS WITH PRIMING PAINT (CL.2.1) BY FLOODING:

5.4.1 FIRST COAT WITH PRIMING PAINT (CL.2.1)

AFTER RADIATOR ELEMENTS AND ITS DETAILS ARE BRUSH PAINTED AS PER CLAUSE 5.1 & 5.2, AND AFTER AIR PRESSURE TESTING OF ASSEMBLED RADIATORS FIRST COAT OF FLOOD COATING WITH ANTI-CORROSIVE PRIMING PAINT (CL.2.1) AT THE SPECIFIED VISCOSITY AS PER CL.3 SHALL BE DONE AS FOLLOWS:

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FIRST COAT OF PRIMING PAINT (CL.2.1) SHALL BE GIVEN BY FLOOD COATING WHILE WORKING FROM TOP TO BOTTOM. WHEN THE COATING IS COMPLETE EXCESS OF PAINT SHALL BE ALLOWED TO DRAIN OFF. WHEN DRAINING CEASES, THE RADIATOR SHALL BE REMOVED TO A PLACE FOR DRYING. THE BOTTOM OF THE BOTTOM HEADER SHALL ALSO BE PAINTED. IT SHALL BE ALLOWED TO AIR DRY FOR MINIMUM PERIOD OF 12 HOURS, AT SHOP TEMPERATURE. ALTERNATIVELY, IF DESIRED, THE JOB CAN BE FORCE DRIED AS FOLLOWS:

AFTER PAINTING THE JOB, IT SHOULD BE KEPT AT SHOP TEMPERATURE FOR ABOUT 1 HOUR FOR FLASH OFF OF SOLVENT AND TRICKLING OF EXCESS OF PAINT. THE JOB SHOULD THEN BE FORCE DRIED IN AN HEATING OVEN AT A TEMPERATURE OF 50°C TO 70°C FOR 2 HOURS.

5.4.2 SECOND COAT WITH PRIMING PAINT (CL.2.1)

THIS SHALL BE CARRIED OUT AS PER THE CL.5.4.1 ABOVE.

5.5 PAINTING OF RADIATORS WITH FINISHING PAINT (CL.2.2)

5.5.1 FIRST COAT WITH FINISHING PAINT (CL.2.2) OF THE RADIATORS BY FLOOD COATING.

FIRST COAT OF THE HIGH QUALITY FULL GLOSSY OUTDOOR FINISHING PAINT (CL.2.2) OF THE RADIATORS BY FLOOD COATING AT THE APPROPRIATE VISCOSITY AS PER CL.3 SHALL BE CARRIED OUT. THE JOB SHALL BE ALLOWED TO AIR DRY FOR A PERIOD OF 12 HOURS AT SHOP TEMPERATURE. ALTERNATIVELY, IF DESIRED, THE JOB CAN BE FORCE DRIED IN AN HEATING OVEN AT A TEMPERATURES OF 50°C-70°C FOR 2 HOURS.

5.5.2 SECOND COAT WITH FINISHING PAINT (CL.2.2) BY SPRAY COATING

SECOND COAT OF HIGH QUALITY FULL GLOSSY OUTDOOR FINISHING PAINT OF THE RADIATORS BY SPRAYING AT THE APPROPRIATE VISCOSITY AS PER CL.3 SHALL BE CARRIED OUT. THE PAINTED RADIATORS SHALL BE ALLOWED TO AIR DRY FOR 24 HOURS AT SHOP TEMPERATURE BEFORE SHIPPING.

NOTE:

1. AS AN ALTERNATIVELY, BEFORE APPLICATION OF FLOOD COATING AS PER CLAUSES 5.4.1 TO 5.4.2 ASSEMBLED RADIATORS ARE TO BE HEATED AT 50 C - 70 C FOR 2 HOURS AND THEN FLOOD PAINTED IN PAINT IMMEDIATELY AFTER REMOVAL FROM THE OVEN.  
ONE COAT IS SUFFICIENT IF REQUIRED THICKNESS IS ATTAINED
2. FORCED DRYING OF FINAL FINISHING COAT IS NOT ALLOWED.

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6.0 INSPECTION FOR PROCESS CONTROL :

6.1 THICKNESS :

THE TOTAL DRIED FILM THICKNESS (DFT) AFTER 4/5 COATS (INCLUDING EACH PRIMER) SHALL BE WITHIN 80 TO 110 MICRONS. HOWEVER, AT CERTAIN LOCAL POINTS, DRY PAINT FILM THICKNESS UPTO 200 MICRONS SHALL BE ACCEPTABLE.

6.2 ADHESION BY TAPE TEST :

THIS TEST IS CARRIED OUT BY APPLYING & REMOVING PRESSURE SENSITIVE ADHESIVE TAPE OVER CUTS MADE IN THE PAINT FILM TO ENSURE THAT ADHESION OF PAINT FILM TO METALLIC SUBSTRATE IS ADEQUATE.

THE TEST SHALL BE CARRIED OUT GENERALLY IN LINE WITH ASTM D 3359 EXCEPT THAT TRANSPARENT PRESSURE SENSITIVE ADHESIVE TAPE OF 25 MM WIDTH, SHALL CONFORM TO IS:2880 OR SHOULD BEAR ISI MARK.

METHOD B OF ASTM D 3359 SHALL BE FOLLOWED AND ACCEPTANCE CRITERION SHALL BE "4B", VIZ SMALL FLAKES OF THE COATING ARE DETACHED AT INTERSECTIONS AND LESS THAN 5% OF THE AREA IS AFFECTED.

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