



6 5 4 3 2 1

D

C

B

A

10.9  
MAGNETIC  
GAP  
(SEE NOTE 2)

1.75  
AIR GAP

A (2:1)

Ø8 THRU  
ON 150.0 PCD,  
8 SUPPORT HOLES  
(SEE NOTE 3)

M4 x 5 DEEP  
FULL THREAD,  
10 HOLES ON 240.0 PCD,  
& 10 HOLES ON 300.0 PCD.  
(BOTH PLATES)

BACKING PLATE  
(SEE NOTE 4)

RARE EARTH MAGNET  
ROTOR

ENCAPSULATED  
LITZ WIRE  
STATOR

44.6  
11.4

16  
7.4

Ø120  
Ø227.6  
Ø315.0  
Ø355

WARNING!  
FORCE OF ATTRACTION BETWEEN ROTORS  
IS 4966N (506Kg) WHEN 10.9 mm APART.

GENERAL FORMULA  $F \sim 6.4 / (0.025 + d)^2$

WHERE F = FORCE (NEWTONS)  
AND d = MAGNETIC GAP (METRES)

NOTES:  
1. POSITION SENSOR AND WIRES  
ARE NOT SHOWN.  
2. IF THE MAGNETIC GAP IS INCREASED TO 11.9mm  
FOR MECHANICAL REASONS THE EFFICIENCY  
SHALL FALL BY APPROXIMATELY 1%.  
3. HOLES NOT DRILLED, SHOWN AS EXAMPLE ONLY.  
SEE DRAWING # Solar\_SMt-Sensor-LOCATION (Rev 0).  
4. REFER TO DRAWING # Solar\_SM-Backing-ATTACHMENT (Rev 0).

Item ref.	Quantity	Designation, material etc.
Designed by C. F. BILSON	Checked by	Approved by - date
File Name	Date 8/03/2005	Scale 1:2

REMOVE ALL SHARP EDGES AND BURRS.

THIRD ANGLE PROJECTION

ALL DIMENSIONS ARE IN MILLIMETRES.  
UNLESS SPECIFIED TOLERANCE SHALL BE  
LINEAR DIMENSIONS X. ± 0.5mm  
LINEAR DIMENSIONS X.X ± 0.05mm  
LINEAR DIMENSIONS X.XX ± 0.02mm  
ANGULAR DIMENSIONS ± 0.5°

THIS DOCUMENT IS THE PROPERTY OF THE  
COMMONWEALTH SCIENTIFIC AND INDUSTRIAL  
RESEARCH ORGANISATION AND IS THE SUBJECT  
OF COPYRIGHT. OTHER THAN AS PERMITTED  
BY LAW, NO PART MAY BE REPRODUCED IN  
ANY WAY WITHOUT WRITTEN APPROVAL.

Division of  
Industrial Physics.  
Energy & Sustainability Theme

Solar Motor - Surface Mount

Solar\_SurfaceMount-Profile

Revision  
0

Sheet  
1 / 1

6 5 4 3 2 1