# NOMENCLATURE

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>A, AMTEMP</td>
<td>Ambient temperature, °C</td>
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<tr>
<td>a</td>
<td>Life adjustment factor for rolling bearing</td>
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<tr>
<td>ANU</td>
<td>Kinematic viscosity of oil, mm²/s, or CS</td>
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<tr>
<td>AVTCOF</td>
<td>Average dimensionless temperature, dimensionless</td>
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<td>AVTCOF (N,A)</td>
<td>AVTCOF as a function of N &amp; A, dimensionless</td>
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<tr>
<td>b</td>
<td>A constant, dimensionless</td>
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<tr>
<td>C</td>
<td>Dynamic load carrying capacity of bearing, Kg</td>
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<tr>
<td>CGVLTB</td>
<td>Thrust bearing cage velocity (mean), M/s</td>
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<tr>
<td>COEF (i,j)</td>
<td>Coefficient as a function of nodes i &amp; j, dimensionless</td>
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<tr>
<td>CONDOL</td>
<td>Oil conductivity, Kcal/hr m°C</td>
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<tr>
<td>CONDST</td>
<td>Bearing housing conductivity, Kcal/hr m°C</td>
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<tr>
<td>D</td>
<td>Diameter, M</td>
</tr>
<tr>
<td>d</td>
<td>Diameter of bearing, M</td>
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<tr>
<td>EMSVTY</td>
<td>Emissivity of bearing housing, dimensionless</td>
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<tr>
<td>FN(I, J)</td>
<td>Variable as a function of nodes I &amp; J (or i &amp; j)</td>
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<tr>
<td>FT(I)</td>
<td>Variable as a function of node I (i)</td>
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<td>FUNVAL</td>
<td>Name of the sub-routine programme</td>
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<tr>
<td>E</td>
<td>Heat flow, Kcal/s</td>
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<tr>
<td>H1, HPLOS1</td>
<td>Radial power lost in bearing (radial) hp</td>
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<tr>
<td>H2, HPLOS2</td>
<td>Axial power lost in bearing (thrust), hp</td>
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<tr>
<td>HTGEN</td>
<td>Heat generated, Kcal/s</td>
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<tr>
<td>h</td>
<td>Heat transfer coefficient, Kcal/hr M²°C</td>
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<tr>
<td>l (i)</td>
<td>any node</td>
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</tbody>
</table>
J(j) any node
K Conductivity, Kcal/hr M°C
KOOLNG 1 Natural cooling
KOOLNG 2-'3' Fan cooling, air velocity = 3 M/s
KOOLNG 2-'6' Fan cooling, air velocity = 6 M/s
KOOLNG 3-'25' Coil cooling, tube length to dia. ratio = 25
KOOLNG 3-'50' Coil cooling, tube length to dia. ratio = 50
KOOLNG 4-'2' Fin cooling, ratio of finned area to area, without fins = 2
KOOLNG 4-'4' Fin cooling, ratio of finned area to area without fins = 4
L Fatigue life of bearing,'hr', 'mr'
L' Adjusted life of bearings,'hr', 'mr'
Lp Logarithm to the base 'e'
N, NODE Node or zone on the bearing assembly
n Shaft or bearing (rotational) speed, rpm
n' Number of power-loss levels taken
NK010 Name of the main programme
NONLNR Name of the sub-routine programme
P Equivalent load on bearing, Kg
Pr Prandtl number of oil, dimensionless
R Radius of annular structure, M
RHO Density of oil, Kg/M³
RPM Shaft (bearing) rotational speed, rpm
S Surface area normal to heat flow, M²
SOL Name of the sub-routine programme
SPHTOL Specific heat of oil, Kcal/Kg °C
T Temperature, in general, °C

TMPCOF dimensionless temperature, dimensionless

TMPCOF(N,A,H1,H2) TMPCOF as a function of N, A, H1 & H2, dimensionless

TMPDIF Temperature difference, °C

TMPDIF(N,A,H1,H2) TMPDIF as a function of N,A,H1 & H2 °C

U Peripheral speed, in general, M/s

W Bearing housing width, M

X 1. Bearing mean dia. for heat transfer between oil and bearing, M

2. Bearing housing diameter for heat transfer between oil and housing, M

3. Nodal temperature, °C

X (i) Temperature at node, i

XX XX as a function of some defined parameters, °C

XX(N,A,H1,H2) XX as a function of N,A,H1,H2; °C

v Kinematic viscosity of oil, mm²/s

e Emmissitivity of bearing housing, dimensionless

Π equals 3.1426

SUBSCRIPTS

a air

conductive/conduction

f friction

h housing

m mean or pitch circle

o oil
r radiative/radiation
t tube
v convective/convection
0 for node
1 1. inner 2. for reliability
3. for node
1-0 from node '1' to node '0'
2 1. outer 2. for materials
3. for node
2-0 from node '2' to node '0'
3-0 from node '3' to node '0'
4-0 from node '4' to node '0'
3 for node
10 1. for node 2. 10 % failure rate
for bearing or 90 % reliability
v viscous