

TRACTION MOTORS & CONTROLLERS

MACTM-Series

Introduction:

MACTM series of traction motors are available in more than 100 different models (100 to 100.0 kilo watts), virtually offering solutions to control very reliably and are ideally suitable for public transport, fork-lift, locomotive, machine-tools, excavation, rubber, sugar, textiles, heavy electrical/mechanical industries, research and development organizations and many defense applications. Special machine design, updated design topology and material ensure better efficiency and enhanced torque transmission with improved controllability. Company offers tailor made solution to / requirement.

Operating Principle:

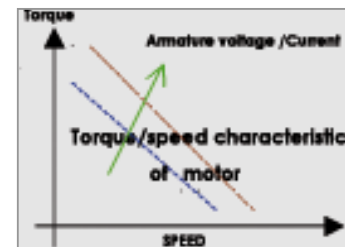
In Series motors, armature is connected I series with low impedance/high current Field coil. Voltage sharing between field/armature is depending loading behaviour and is such that inverse torque / speed is achieved to meet load behaviour of certain load like traction, excavation etc. These motors normally operate in Constant power mode and hence as the load on motor rises, its speed falls or vice versa. These motors are most suitable for auto torque regulation applications. Its Torque or speed can be stably controlled using an A.C/D.C. controller operating in Feedback. These motors are electrically impedance matched to deliver maximum Output.

Numerically, the approximate torque and power relation is as under....

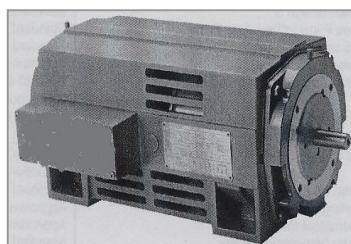
$$T = k_1 \cdot Ms \cdot Ir^2 \cdot Rr / wr$$

$$P = k_1 \cdot Ms \cdot Ir^2 \cdot Rr$$

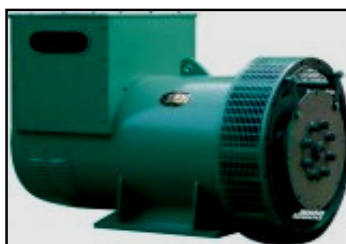
*Ms = no. of stator phase, Rr = effective rotor resistance
Ir = rotor current, wr = effective rotor speed*



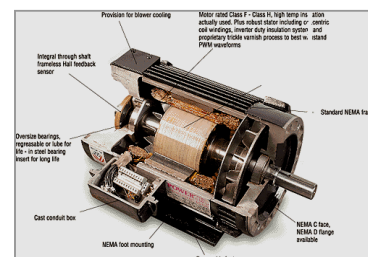
characteristic of traction motor



MACTM-0500010



MACTM-0030015



sectional view of traction motor

Mechanical Specifications of a.c.traction motors:

Model	Power Watts	Torque n.m.	rpm x10 (max)	Residual Torque x10 ⁻²	Volt d.c.	Model	Power Watts	Torque n.m. x10 ⁻²	rpm X10 (max)	Residual Torque x10 ⁻²	Volt d.c.
MACTM-0005030	500.0	1.59	300	0.008	120/96/72	MACTM-0100030	10000.0	286.2	300	0.50	200/400
MACTM-0008015	735.0	2.33	300	0.010	120/96/72	MACTM-0200010	20000.0	190.0	100	0.70	200/400
MACTM-0010030	1000.0	3.18	300	0.015	120/96/72	MACTM-0500010	50000.0	636.9	075	0.90	400/800
MACTM-0010015	1000.0	6.36	150	0.020	120/96/72	MACTM-0750008	75000.0	955.4	075	1.00	400/800
MACTM-0030030	3000.0	9.54	300	0.030	120/96/72	MACTM-1000008	100000.0	1273.8	075	3.00	400/800
MACTM-0030015	3000.0	19.1	150	0.050	120/96/72	MACTM-2000006	200000.0	2547.7	075	5.00	400/800
MACTM-0050030	5000.0	15.9	300	0.070	120/96/72	MACTM-5000006	500000.0	7961.7	060	7.00	400/800
MACTM-0050015	5000.0	31.8	150	0.090	120/96/72	MACTM-8000006	800000.0	12738.8	060	8.00	400/800

Electrical Specifications of Traction motors Controller:

Generated power: 50-500,000 Watts
 Armature vol/current: upto 800 v//300 amps -
 NO-voltage: 240 +/- 5% of rated voltage (rms)
 Direct axis-Armature reactance/pole: 0.1-0.2% ohm p.u.
 Quadrature axis armature reactance/pole: 0.005 - 0.01% ohm p.u.
 Armature resistance per pole : 0.05 -0.08 %p.u. ohm/phase
 Rpm: from 6000-300 Rpm
 Pole: 4/8/12 no
 Nominal torque: as in data sheet.
 Overall electrical efficiency: approx 85%
 Frame diameter: 6-24" with flange mounting
 Frame length: 24"/Shaft diameter: 2"
 Coupling: star
 Cooling: forced cooling
 Additional:n.a.
 Insulation: class - H
 Noise level:- as per rule/practices
 Vibration level;- as per rule/practices



MACTM-2000006

TRACTION MOTOR CONTROLLER:

MACTM-0005030	10X06X06	MACTM-0100010	16X14X14
MACTM-0008015	12X08X08	MACTM-0200010	18X16X16
MACTM-0010015	12X10X10	MACTM-0300010	20X18X18
MACTM-0050015	12X10X10	MACTM-2000006	20X18X18

Note: First five numeral after product code MACTM indicates wattsx10 and last numeral indicates R.P.M.x10.

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