

# Fluid Power Design Data Sheet



REVISED SHEET 66 - EVOLUTION DESIGN DATA FILE

## NEMA FRAME ASSIGNMENTS - 3-PHASE INDUCTION MOTORS

The most widely used type of electric motor for driving a hydraulic pump is the 3-phase, squirrel cage induction motor, with Design B electrical characteristics. It is available in open, drip-proof, totally enclosed, and explosion-proof frames. Information in this issue is concerned with frame assignments and with the dimensions of shaft length, diameter, and height above base, which have to do with selection of a pump coupling and with the height of a pump mounting bracket. Please refer to Data Sheet Issues 3, 33, and 49 for other information on electric motors. The shaft dimensions are in inches. They are listed with the open drip-proof motors but apply also to the totally enclosed motors which have the same NEMA frame assignments. (These tables continue on the next page.)

OPEN DRIP-PROOF FRAME ELECTRIC MOTORS					
HP	Speed, RPM	NEMA Frame	Shaft Diam.	Shaft Length	Shaft Height
1	1200	145T	7/8	2-1/4	3-1/2
1	1800	143T	7/8	2-1/4	3-1/2
1½	1200	182T	1-1/8	2-3/4	4-1/2
1½	1800	145T	7/8	2-1/4	3-1/2
1½	3600	143T	7/8	2-1/4	3-1/2
2	1200	184T	1-1/8	2-3/4	4-1/2
2	1800	145T	7/8	2-1/4	3-1/2
2	3600	145T	7/8	2-1/4	3-1/2
3	1200	213T	1-3/8	3-3/8	5-1/4
3	1800	182T	1-1/8	2-3/4	4-1/2
3	3600	145T	7/8	2-1/4	3-1/2
5	1200	215T	1-3/8	3-3/8	5-1/4
5	1800	184T	1-1/8	2-3/4	4-1/2
5	3600	182T	1-1/8	2-3/4	4-1/2
7½	1200	254T	1-5/8	4	6-1/4
7½	1800	213T	1-3/8	3-3/8	5-1/4
7½	3600	184T	1-1/8	2-3/4	4-1/2
10	1200	256T	1-5/8	4	6-1/4
10	1800	215T	1-3/8	3-3/8	5-1/4
10	3600	213T	1-3/8	3-3/8	5-1/4
15	1200	284T	1-7/8	4-5/8	7
15	1800	254T	1-5/8	4	6-1/4
15	3600	215T	1-3/8	3-3/8	5-1/4
20	1200	286T	1-7/8	4-5/8	7
20	1800	256T	1-5/8	4	6-1/4
20	3600	254T	1-5/8	4	6-1/4
25	1200	324T	2-1/8	5-1/4	8
25	1800	284T	1-7/8	4-5/8	7
25	3600	256T	1-5/8	4	6-1/4
30	1200	326T	2-1/8	5-1/4	8
30	1800	286T	1-7/8	4-5/8	7
30	3600	284TS	1-5/8	3-1/4	7
40	1200	364T	2-3/8	5-7/8	9
40	1800	324T	2-1/8	5-1/4	8
40	3600	286TS	1-5/8	3-1/4	7
50	1200	365T	2-3/8	5-7/8	9
50	1800	326T	2-1/8	5-1/4	8
50	3600	324TS	1-7/8	3-3/4	8

TOTALLY ENCLOSED MOTORS		
HP	Speed, RPM	NEMA Frame
1	1200	145T
1	1800	143T
1½	1200	182T
1½	1800	145T
1½	3600	143T
2	1200	184T
2	1800	145T
2	3600	145T
3	1200	213T
3	1800	182T
3	3600	182T
5	1200	215T
5	1800	184T
5	3600	184T
7½	1200	254T
7½	1800	213T
7½	3600	213T
10	1200	256T
10	1800	215T
10	3600	215T
15	1200	284T
15	1800	254T
15	3600	254T
20	1200	286T
20	1800	256T
20	3600	256T
25	1200	324T
25	1800	284T
25	3600	284TS
30	1200	326T
30	1800	286T
30	3600	286TS
40	1200	364T
40	1800	324T
40	3600	324TS
50	1200	365T
50	1800	326T
50	3600	326TS

OPEN DRIP-PROOF FRAME ELECTRIC MOTORS					
HP	Speed, RPM	NEMA Frame	Shaft Diam.	Shaft Length	Shaft Height
60	1200	404T	2-7/8	7-1/4	10
60	1800	364TS	1-7/8	3-3/4	9
60	3600	326TS	1-7/8	3-3/4	8
75	1200	405T	2-7/8	7-1/4	10
75	1800	365TS	1-7/8	3-3/4	9
75	3600	364TS	1-7/8	3-3/4	9
100	1200	444T	3-3/8	8-1/2	11
100	1800	404TS	2-1/8	4-1/4	10
100	3600	365TS	1-7/8	3-3/4	9
125	1200	445T	3-3/8	8-1/2	11
125	1800	405TS	2-1/8	4-1/4	10
125	3600	404TS	2-1/8	4-1/4	10
150	1800	444TS	2-3/8	4-3/4	11
150	3600	405TS	2-1/8	4-1/4	10
200	1200	445TS	2-3/8	4-3/4	11
200	1800	444TS	2-3/8	4-3/4	11
200	3600	445TS	2-3/8	4-3/4	11

TOTALLY ENCLOSED MOTORS		
HP	Speed, RPM	NEMA Frame
60	1200	404T
60	1800	364TS
60	3600	364TS
75	1200	405T
75	1800	365TS
75	3600	365TS
100	1200	444T
100	1800	405TS
100	3600	405TS
125	1200	445T
125	1800	444TS
125	3600	444TS
150	1800	445TS
150	3600	445TS
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### POLYCARBONATE (PLASTIC) BOWLS FOR AIR LINE FILTERS & LUBRICATOR

Polycarbonate (plastic) bowls used on air line filters and lubricators represent a major safety hazard if not properly operated and maintained. We recommend that plastic bowls be protected with a bowl guard to confine fragments in case of bowl failure. All plastic bowls on equipment you manufacture for resale (OEM) should be protected to avoid liability lawsuits in case of accident.

All manufacturers of this type of equipment obtain their raw plastic from one of two sources - General Electric Co., or Mobay Chemical Co. The plastic has been developed over many years to be the safest that it has been possible to produce, but no plastic is completely impervious to the action of chemicals, heat, and high pressure. This sheet gives a summary of important characteristics of the polycarbonate plastic from which the bowls are made.

#### CHEMICAL PROPERTIES

It is resistant to water, organic and inorganic acids, mineral, animal, and vegetable oils, fats, and dilute acids. It is attacked by strongly alkaline materials such as ammonia. See partial list of materials in the table. It is partly soluble in chlorinated hydrocarbons, ketones, esters, benzene-toluene type chemicals and other materials. It is highly soluble in many liquids, such as acetone, gasoline, lacquer thinner, and other materials in the table. It has a tensile strength of 8,000 to 9,000 PSI, and so has a high impact resistance.

#### MATERIALS HARMFUL TO POLYCARBONATE BOWLS

This is only a short list of the many chemicals that affect polycarbonate. For information on a specific chemical, contact General Electric Co. or Mobay Chemical Co.

Acetic acid (conc.)	Cresol	Milk of Lime
Acetone	Ethyl ether	Nitric acid
Benzene	Ethylene dichloride	Nitrobenzene
Benzyl alcohol	Formic acid (conc.)	Phenol
Carbolic acid	Freon	Sodium sulfide
Carbon disulfide	Gasoline	Styrene
Carbon tetrachloride	Hydrochloric acid	Sulphuric acid
Caustic soda (5%)	Methyl alcohol	Toluene
Chloroform	Methylene chloride	Xylene

#### CAUTIONS

Do not use a plastic bowl where it will be subject to internal or ambient external temperatures higher than 1200F, or where air pressure exceeds 200 PSIG. Do not use near, or do not clean with such materials as acetone, alcohol, benzene, dioxane, ethyl acetate, lacquer thinners, toluene, chloride, carbon tetrachloride, alkalis, amines, ketones, esters, aromatic hydrocarbons, or any other of the items listed in the chart.

Do not allow rags or other things containing substances that may be harmful to polycarbonate to lie under, on top of, or near a polycarbonate bowl. Never paint a polycarbonate bowl.

Do not use on air that contains vapor or mist of a synthetic fire resistant fluid, nor on an air line served by a compressor that uses this fluid as a lubricant.

#### SUGGESTIONS

Inspect your plant and check your purchasing department and inventory list to detect the possible presence of materials which will attack polycarbonate plastic bowls and their location for storage and/or use in your plant.

Replace all polycarbonate bowls once a year unless they are protected by a metal bowl guard.

Purchase from the supplier of your plastic bowl equipment metal guards for all exposed bowls in your plant. On all new equipment purchased, make sure the filters and lubricators are equipped either with metal bowls or with bowl guards.

For all lubricators, use only non-detergent petroleum oil of very low viscosity, equivalent to SAE 5 or SAE 10. Do not use or add anti-freeze compounds to the lube oil. If bowls become dirty, clean only with a clean dry cloth.