

Introduction of Products

NEW TYPE FUJI SINGLE PHASE INDUCTION MOTORS

Demand of single phase induction motors has remarkably increased recently. This phenomena is chiefly based upon the wonderful development of the home electrification, for instance, electric washers, fans, pumps and so forth, and also on the popularization of agricultural electrification. Accordingly motors having excellent characteristics beyond comparison with those made a few years ago have been manufactured.

Condenser start type single phase induction motors have come to be used popularly on account of the improvement and progress of a-c electrolytic condensers, and have taken up in the Japanese Industrial Standard. This phenomena seems to suggest a course for the future progress of single phase induction motors

The tendency of making three phase induction motors small in size and light in weight is similarly observed as in the case of single phase induction motor. It is a pertinent problem to improve single phase induction motors to be powerful enough to operate fully even at the end of distributing line with small size and light weight. The Company is now manufacturing single phase induction motors having so excellent performance to take the lead of the electric field as a result of various improvements.

Single phase induction motors are classified according to the starting system as follows; ① split phase start type, ② repulsion start type, ③ condenser start type. Regarding every class, the Company has standard types of various outputs. The Company's new standard single phase induction motors are introduced as follows.

I. SPLIT PHASE START TYPE SINGLE PHASE INDUCTION MOTORS

Split phase start type single phase induction motors are the ones which have been most universally used for a long time and have undergone the most marked improvement. Simple construction, good operating performance, easy handling and maintenance with inexpensive costs are their strongest talking points. It generally considered that the starting torque of this type of motor is poor, but the products of the Company have a starting torque above 200 % and are available for genaral purposes through the progress of design technique. Only a weak point that the starting current is large considering the

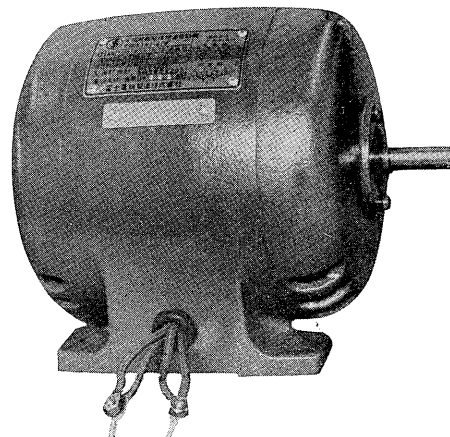


Fig. 1. 0.1 kW split phase start single phase motor BRE181-4

starting torque, and the rating is permitted up to 0.2 kW the maximum according to the J.I.S.

As standard products of this type, the Company is manufacturing following two kinds: Output 0.1 kW (BRE181-4) and 0.2 kW (BRE 262-4).

FEATURES

1) Small size and elegant appearance

The Company has adopted an enclosed ventilated drip-proof type having smart appearance and compact construction according to the international trend of reducing the size of induction motors.

2) Excellent torque characteristics

This type of induction motors are manufactured in consideration of the improvement of the starting and operating characteristics so that they will fully stand the case when there is considerably large voltage drop.

3) Low temperature rise and long life

Temperature rise is much lower than the value specified in the standards and long life is guaranteed through new cooling system.

4) Adoption of epochal insulating material

Increase of insulation resistance and extension of life have been realized through adoption of new insulation system using "Mylar" as principal material for the slot insulation and of strictly selected P.V.F. wire for the stator coil.

5) Oiling-free bearing

With adoption of enclosed type bearing containing

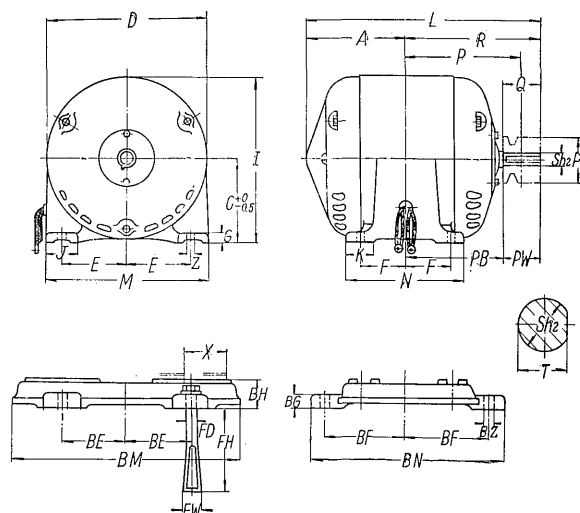


Fig. 2. Outline dimensions of split phase start motor

TYPE BRE	M O T O R														PULLEY			
	A	C	D	E	F	G	I	J	K	L	M	N	R	Z	P	PB	PD	PW
181	100	80	156	57.5	50	10	185	35	35	220	148	126	120	12	110	90	50	40
262	105	90	172	70	50	10	178	35	30	250	175	130	145	9	125	105	50	40

TYPE BRE	SHAFT END				SLIDE BASE										FOUNDATION BOLT		
	Q	QR	S	T	TYPE	BE	BF	BG	BH	BM	BN	BZ	X	FD	FH	FW	
181	30	0.5	12	11	SB 19	60	90	15	30	226	210	12	40	⅜"	90	15	
262	40	0.5	14	13	SB 1	70	90	15	30	246	210	12	40	⅜"	90	15	

silicone grease, ahead of any other manufacturers, dust-proof effect is perfect and maintenance simple without any damage of bearing and trouble for replacing grease.

6) Changeability of direction of rotation

Direction of rotation can be easily altered by changing the connection of the lead wires.

7) Enclosed centrifugal switch

The construction of centrifugal switch for starting

is of an enclosed type so as to avoid entrance of dust, preventing accident and making the inspection easy.

II. REPULSION START TYPE SINGLE PHASE INDUCTION MOTORS

For the agricultural and home pump use, repulsion start type induction motors have mainly been used up to the present. It is the strongest point for this type that the starting torque so large as about 500% of the rated torque can be obtained with very small starting current.

In the case of 100 Volts single phase circuit which usually consists of electric wires of small size and is very long, a motor requiring large starting current is unable to have sufficient starting torque because of large voltage drop in the line. But the repulsion start type will operate satisfactorily in such a case.

The repulsion start type has some weaker points such as the construction is a little complicated because of having a commutator and brushes to the rotor, which require a little more trouble for handling and maintenance, and the cost is more expensive than the split phase starting type, but this type has

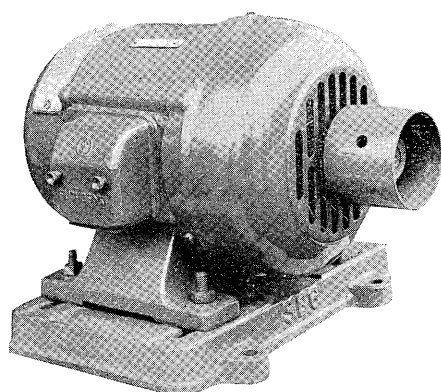


Fig. 3. 0.4 kW repulsion start single phase motor OERO 381-4

widely been used for the reason that the merits mentioned above can fully make up these weak points.

The Company is manufacturing the standard motors of following three kinds; Output 0.2 kW (OERO 282-4), 0.4 kW (OERO 381-4), and 0.75 kW (OERO 382-4).

FEATURES

1) Common use for 100 Volts and 200 Volts

Each motor is available at the voltage of both 100 V and 200 V, and also for the frequency of both 50 cycles and 60 cycles. The connection for each voltage is easily changeable at the terminal.

2) Easy changeability of the direction of rotation

Change of the direction of rotation can simply

be made by the shift of the brush holder. This is made possible by the special construction of the brushes devised by the Company for the convenience of users.

3) Excellent insulation and bearings

Insulation for winding and bearings have similar features to that of split phase start type, which are the pride of the Company.

4) Short circuit device of good characteristics

A short circuit device of the commutator is the fruits of many years studies by the Company. It operates exactly without wear and is highly reliable, easy to handle and maintain.

5) New brush construction

The Company is successful in the extension of effective length of the brush with the adoption of

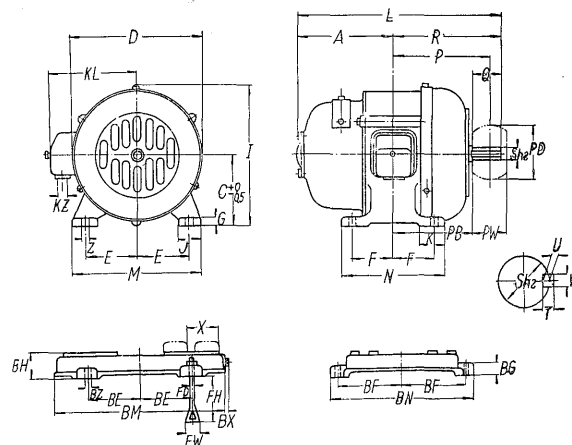


Fig. 4. Outline dimensions of repulsion start motor

TYPE OERO	MOTOR																PULLEY			
	A	C	D	E	F	G	I	J	K	KL	KZ	L	M	N	R	Z	P	PB	PD	PW
282	135	100	193	75	60	12	197	40	45	125	3/8"	290	185	150	155	9	135	115	50	40
381	158	120	220	95	70	16	235	45	50	147	3/8"	348	235	180	190	11	180	150	80	60
382	178	130	220	105	90	20	245	45	50	147	3/8"	388	255	220	210	11	200	170	80	60

TYPE OERO	SHAFT END						SLIDE BASE										FOUNDATION BOLT		
	Q	QR	S	T	U	W	TYPE	BE	BF	BG	BH	BM	BN	BX	BZ	X	FD	FH	FW
282	40	0.5	14	—	—	—	SB 2	75	100	15	30	270	230	—	12	60	3/8"	90	15
381	40	0.5	18	5	3	5	SB 6	75	110	10	40	320	250	6	12	65	3/8"	90	15
382	40	0.5	18	5	3	5	SB 17	105	130	10	45	340	290	6	12	70	3/8"	90	15

new brush construction.

6) Small size and strong torque

Though the size of this type is small and weight is light, it was designed and manufactured to have enough starting and running characteristics to fit the operation during the voltage drop.

7) Smart appearance and efficient cooling

With smart appearance and entirely enclosed fan-cooled type, low temperature rise and long life is assured.

III. CONDENSER START TYPE SINGLE PHASE INDUCTION MOTORS

The Company has been making effort to develop

condenser start type single phase induction motors since the prewar period. The motor of this type has been rapidly developed after the war according to the production of excellent electrolytic condenser.

The strongest point of the condenser start type induction motor is the excellent starting characteristics. Large starting torque is obtained with simple construction and easy handling and maintenance like the split phase start type, but the cost is considerably cheaper than repulsion start type.

Though the starting torque is less than that of the repulsion start type, it was specified above 250% in the Japanese Industrial Standards.

The motor produced by the Company have starting torque of 400% for 0.1 kW and 350% for 0.2 kW. They are sufficiently serviceable for the special purposes such as for home pumps, compressors and so forth. Moreover, they are suitable for general purposes, because their starting torque is larger and the starting current is smaller than that of the split phase start type.

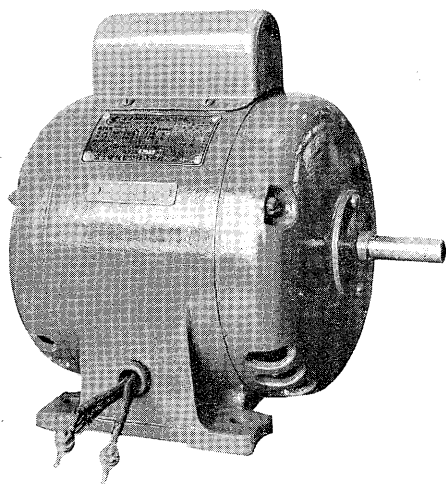


Fig. 5. 0.2 kW Condenser start single phase motor BREC 262-4

The recent tendency that the demands for the repulsion start type is gradually decreasing and the condenser start type has come into use is due to the foregoing reasons.

The Company is manufacturing following two kinds: Output 0.1 kW (SBREC 181-4, at present, for pump use only), and 0.2 kW (BREC 262-4).

FEATURES

1) Interchangeability with the split phase start type

This type is interchangeable with the split phase start type because of the similarity of dimensions for installation, besides being simple in construction like the split phase start type.

2) Excellent and reliable electrolytic condenser

A-c electrolytic condenser passed rigid tests is assured for long life and endurable for severe usage.

3) Excellent starting characteristics

This type is operable in wide fields where repulsion start motors were used, because the large starting torque and small starting current are available in spite of voltage drop.

4) Adaptability for pumps

The 0.1 kW condenser start type single phase induction motor used for Fuji Electric Company's Home Pumps is designed and manufactured to have especially strong rotating power for the purposes. It can run under the condition where the terminal voltage drops as low as 65 Volts because of its small starting current.

The above is the introduction of the features and outlines of the Company's new type standard single phase induction motors. The Company is also manufacturing other various kinds of electric motors suitable for any purposes, such as for home appliances covering electric fans, washers and so forth, and is ready to meet any demands of the customers.