



JSL INDUSTRIES LTD.

Oil Immersed
Auto-transformer
Motor Starters



For High Starting
Torque Applications



ISO 9001 : 2015

Now
with **SHEET STEEL**
Enclosure

OIL IMMERSSED AUTO-TRANSFORMER MOTOR STARTERS

COMPLY THE REQUIREMENTS AS PER IS / IEC 60947-4-1 : 2012

'JSL' Oil Immersed Starters have carved a separate niche for themselves in the market for their unparalleled reliability, long trouble lower costs as compared to Air Break Starters. JSL's years of experience in the field of oil immersed starters provides it the cutting edge which has ensured a rising demand for these starters over the years.

Salient Features of these starters are :

1. Starters are as per IS/IEC: 60947-4-1 and are suitable for Type-2 co-ordination.
2. Starter enclosures are IP-53 protected.
3. Starters are enamel painted for weather resistance.
4. Designs are user friendly which facilitate easy inspection and replacement of contacts & coil.
5. Starters are suitable for under voltage protection below 40% if rated voltage.
6. The following advantages accrue on account of starters being oil immersed :
 - a) Damping effect of oil minimizes contact bounce which results in longer contact life.
 - b) Oil imparts lubrication to moving components which helps in minimizing wear & tear.
 - c) These are suitable for corrosive, humid, dusty / powdery & fluffy atmospheres.
7. Oil cooled auto-transformer, used in these starters, is a separate unit which facilitates easy maintenance.

Our standard auto-transformer starters have 3 voltage tapplings. Appropriate voltage tapping can be selected by the user as per the load conditions / starting torque requirements.

Starting torque & starting current reduce in proportion to the square of the starting voltage.

These starters employ KONDOR FOR ELECTRICAL CONNECTION SCHEME because of which there is no interruption of voltage (power) to motor even during transition from reduced voltage to full voltage-this is a closed transition scheme.

Oil Immersed Auto-transformer Starters are available in Fully automatic type.

These Starters have 3 contactor insert mounted on a Sheet Steel Fabricated Frame, along with a thermal overload relay & thermal timer. Timer provides electrical signal for changeover from reduced voltage to full voltage. Standard timer range is from 3 to 12 second.

**Timer with 5 to 20 seconds range is also available.*

Features :

- a) Parallel closed transition changeover.
- b) (1) Upto 100 HP - Floor stand (pedestal) construction; cable entry from the top (Refer fig 1 & 2)
(2) Above 100 HP upto 150 HP-Panel construction; cable entry provision both from top & bottom (Refer fig. 3)
- c) Push button Operation for ON-OFF.
- d) Provision for Remote control arrangement.

Note :

1. Standard accessories in panel design are Ammeter (96x96), Ammeter selector switch and ON, OFF & TRIP indicating lamps.
2. Standard floor stand design starters can be offered in panel of appropriate size at an additional cost.
3. All customer specified accessories like voltmeter, single phase preventers, water level guards, HRC fuses etc. can be fitted inside the panels at additional cost.
4. Contact our marketing offices for your specific requirements.

P3TA - Upto 40 HP
P1TA - Upto 150 HP

Details of main items used in these starters :

1. **Oil immersed contactors :**

All contactors used in these starters are type tested as per IS/IEC : 60947-4-1 for AC3 duty (Motor duty applications)
2. **Oil cooled Auto-transformers :**
 - a) Auto Transformers comply the requirements of IS/IEC : 60947-4-1. Designs have been varified at ERDA/CPRI.
 - b) Standard JSL auto-transformers (used in auto transformer starters) are
 1. Rated Voltage 415 V, 50 Hz
 2. Alluminium wire wound
 3. With voltage tapplings of 50%, 65% & 80%
 4. Stuitable for equally spaced 3 starts / hr of 15 seconds duration each.
 - c) Auto Transformer have 'E' class insulation & are impregnated in varnish for longer life.
 - d) Auto Transformer are provided with thermal cut out switch. It's contact is wired in the control circuit of the starter. It trips the starter if the oil temperature rises to between 95 & 100 degree centigrade. (absolute)
 - e) Oil level indicator is provided on the oil tank of the auto transformer.

Additional information on Auto transformers :

'JSL' can design & provide auto transformers for the following variable parameters at additional costs (if required) :

1. Rated voltage 440 V, 380 v or any other voltage.
2. Number of starts per hour from a minimum of 3 to a maximum of 12.
3. Higher Motor starting time.
4. Different % tapping voltages i.e. 40%, 60%, 80% or 60%, 70%, 80% or any other values.

5. Instead of three, four different tappings can also be given i.e. 40%, 50%, 60%, 70%.
6. Other HP rating or rated current.
7. Copper wire Wound.

Note :

- Aluminium wound auto-transformers are available only upto a maximum of 150 HP for 3 starts per hour of 15 seconds duration each.
- Performance wise, aluminium wound auto-transformers are absolutely equivalent to copper wound auto transformers.

Auto-transformers alone (not as a part of the starter) as a separate unit for motor starting application :

- a) 'JSL' can supply oil cooled auto transformers upto a maximum of 400 HP suitable for 3 starts per hour of 15 seconds duration each. Winding wire material for HP ratings above 150 is copper only.
- b) More than 3 starts per hour can be considered for ratings upto a maximum of 300 HP.
- c) 'JSL' can also provide air cooled auto transformers.

3. Thermal overload relays for motor protection :

In our standard starters, thermal overload relays are used for protection. The starters are not equipped to protect against short circuits. Fuses should be used in the incoming line for protection against short circuits.

Thermal overload relays are of 2 types :

- a) Upto 80 amps, the relays are *direct acting type*. Trip class of these relays as per Table II of IS/IEC : 60947-4-1 is 10A.
- b) Relay ranges 60 - 100A & above are *saturated current transformer operated relays*. Trip class of these relays as per Table II of IS/IEC : 60947-4-1 is 20 or 30.

ORDERING CODE :

Type :

Specify the type of starter as per the selection table.

Following suffixes should be added to the type of the starter to specify the user requirements completely :

- 1) Specify maximum setting of the required relay range.

- 2) Specify one of the following codes for coil voltage :

- A - 110 VAC
- B - 230 VAC
- C - 380 VAC
- D - 415 VAC
- E - Any other voltage (the value of the coil voltage is to be specified separately)

For Illustration, see the following example :

P3TA-40-80-C

The above code implies oil immersed fully automatic auto transformer starter for 40 HP with relay range 48-80A. Coil voltage 380 VAC & with auto reset relay.

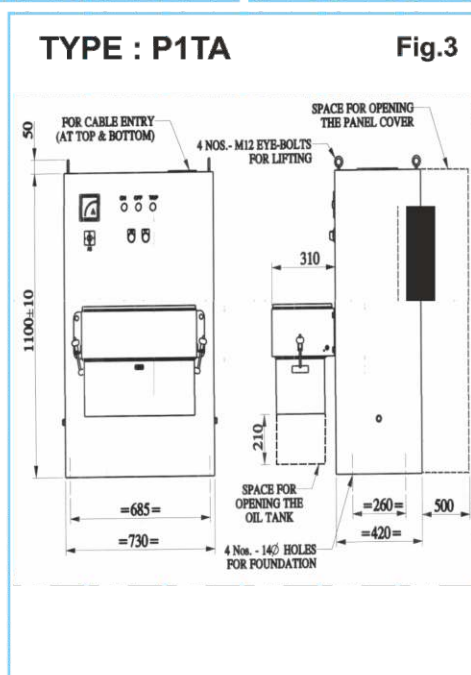
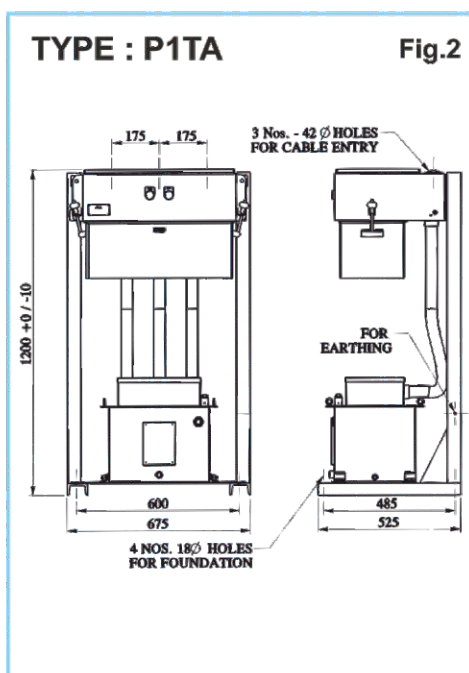
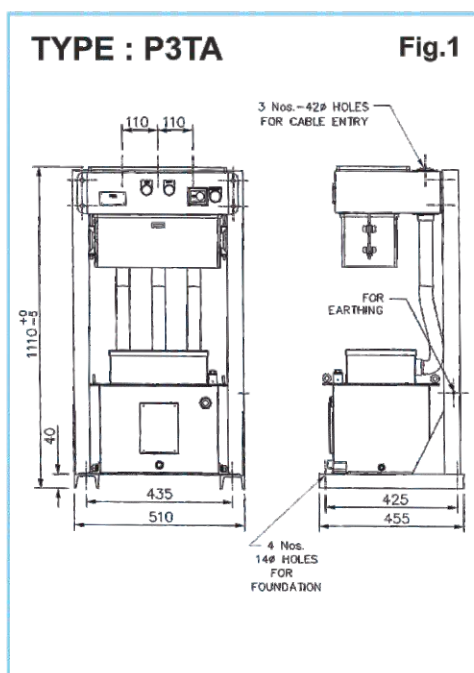
For specific requirements or any other query, please contact our marketing office or works.

SELECTION TABLE : OIL IMMersed AUTO-TRANSFORMER STARTERS

Type	Rating KW/HP	Full-load current in Amps.	Relay Range in Amps.	Recommended cable size in mm ²		Recomm - ended Back-up HRC Fuse Rating in Amps.	Quantity of Oil** required in litres
				Alluminium	Copper		
P3TA-20	15/20	25	18-30	10	6	50	26.5
P3TA-25	18.5/25	34	24-40/30-46	16	10	63	26.5
P3TA-30	22/30	39	40-60	16	10	63	26.5
P3TA-40*	30/40	55	48-80	25	16	100	26.5
P1TA-50*	37/50	66	48-80	35	25	100	34.5
P1TA-60	45/60	80	60-100	50	35	125	34.5
P1TA-75	55/75	95	90-150	70	35	200	34.5
P1TA-100	75/100	135	90-150	95	50	200	42.5
P1TA-125	90/125	165	120-200	150	95	250	42.5
P1TA-150	110/150	200	120-200	185	95	250	42.5

* ONLY MANUAL RESET AVAILABLE

** TOTAL QUANTITY OF OIL REQUIRED FOR BOTH i.e. AUTO-TRANSFORMER & OIL IMMersed STARTER



**FOR FURTHER ENQUIRIES
PLEASE CONTACT**

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In Keeping with the technological strides the world is making in the engineering field, we introduce changes in the design of our products. Hence, the products as actually supplied might have features varying herefrom.