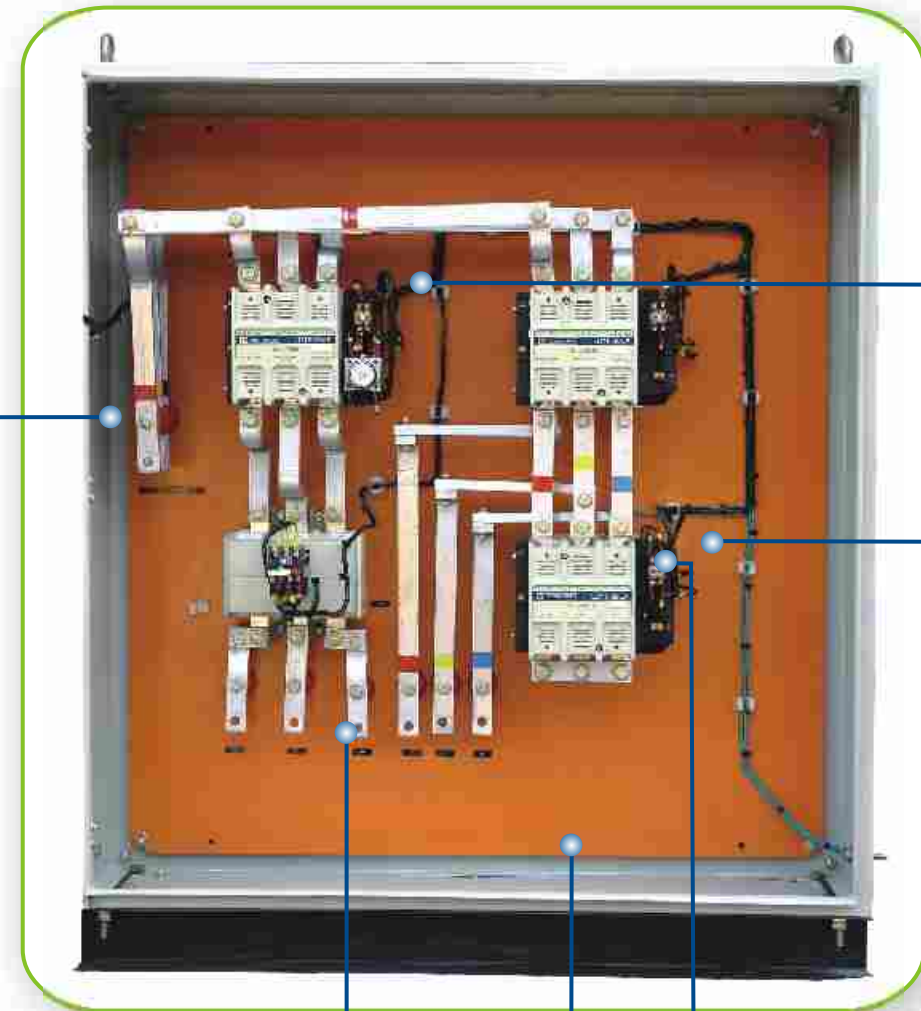


Layout of Star Delta Starter 100 HP to 300 HP



- Elegant & Specious Powder coated enclosure with removable cable gland plate & Mounting Channel at bottom.
- Starters components mounted on base plate, easily removable for maintenance, if required.
- Spacious & liberal product layout for maintenance ease
- Direct termination of cables with lugs on Bus-Bars for rating 100 to 300 HP.
- No-volt coil can be examined or replaced without disturbing power/control wiring

**DOL Starters upto 60 HP**  
Enclosure Size A, B & C  
OVER ALL DIMENSIONS / MOUNTING DIMENSIONS

ENCLO. SIZE	STARTER REFERENCE	HP RATING	A	B	C	D	E	F	G
'A' SIZE	BE1-D1735	0.50-7.50	130	118	214	134	123	60	51±21
'B' SIZE	BE1-D25-3235	12.0-20.0	147	135	252	162	156	85	51±27
'C' SIZE	BE1-D40-8035	30.0-60.0	172	160	299	165	201	105	44±27

**DOL Enclosure (Plastic)**  
Enclosure Size A & B  
OVER ALL DIMENSIONS / MOUNTING DIMENSION

STARTER REFERENCE	HP RATING	A	B	C	D	E	F
LE1D12-17-183	0.50-7.50	140	120	166	150	88	Ø14
LE1D253-323	12.0-20.0	155	135	185	165	101	Ø20

**Star Delta Starters upto 35 HP**  
OVER ALL DIMENSIONS/MOUNTING DIMENSIONS

**Reversing Starter upto 20 HP**  
Enclosure Size B  
OVER ALL DIMENSIONS/MOUNTING DIMENSIONS

All Drawings are in mm)

Technical specification indicated in the literature are subjected to change due to continuous development and improvement



**Star Delta Starter Rating 40 HP to 300HP**  
OVER ALL DIMENSIONS/MOUNTING DIMENSIONS

STARTER RATING	CONTACTOR RATING	A	B	C	D
40-80 HP #	LC1D40-80	600	400	200	NA
100-150 HP	LC1F115A/1150A	1000	800	300	75
180-300 HP	LC1F185A/330A	1000	950	300	75

Note :  
# Starters rating 40-80 HP shall be wall mounting type whereas rating 100-300HP are floor mounting type.

Motor Starters  
0.5 HP ~ 80.0 HP



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## TC Motor Starters

TC Motor Starters range includes Direct-on-Line Starters, Reversing Starters & Star Delta Starters, which have been re-engineered to meet application needs of Indian industries. They assure reliable protection to motors against Overload & Single Phasing, conforming to IS 13947-4-1.

### Product Range

#### DOL Motor Starters

- DOL Starter in sheet steel enclosure 0.5HP to 60HP
- DOL Starter in Plastic enclosure 0.5HP to 20HP
- Reversing DOL Starter in sheet steel enclosure 0.5HP to 20HP



#### Star Delta Motor Starters

- Semi automatic Star Delta Starter in sheet steel enclosure 4HP to 50HP
- Fully automatic Star Delta Starter in sheet steel enclosure 4HP to 300HP

### Features & Benefits

#### Motor Protection

Thermal Overload Relay fully protect electric motors against operational overload, single phasing & unbalanced voltages. It has 1 NO / NC, potential free contacts, which can be used for signalling or annunciation at different voltage than the control circuit voltage. The relays are ambient temperature compensated from (-) 40°C to 60°C. The Overload relay is of trip class 10. The relay type LR1-D have manual resetting provision to ensure that motor cannot be started unless the tripping cause has been investigated & removed. The relay type LR1D through Yellow Flag indication provides clear visible indication of overload tripping.

#### Contactors

Motor Starters have Power Contactors type LC1-D in DOL & Reversing Starters, whereas in Star Delta type LC1-D & LC1-F contactors are used. Air Break Contactors used in the Starters conform to IS 13947-4 & offers user friendly advantages:

- World Class Quality ..... Certification from UL, USA; CSA, Canada & CE Marking
- Contactors type LC1-D have E.E. Magnet geometry, provided with dampers & leaf spring to, ensure bounce free contacts, resulting in higher electrical & mechanical life.
- Wide band No-volt coils available for DOL Starters upto 20HP & Star Delta Starters upto 35HP.
- Contactor type LC1-D compact in size, are easily maintainable..... just remove two captive screws for coil replacement.
- Contactors type LC1-F series, used in Star Delta Starters rating 100HP & above, has unique contact wear indicator, which provides precise indication as to when contact require replacement. Coil can be replaced without disturbing power circuit. Thus, contactor type LC1-F saves maintenance down - time.



#### Easy Cable Terminations

Fully automatic Star Delta Starters upto 35HP been provided with add-on plug-in terminal blocks, which can be pre-wired & fitted on to the contactors or overload relays, making termination reliable & easy.

Whereas, Star Delta Starters above 40HP & have very spacious layout within enclosure having provision of adequate size terminal for accepting aluminium cable from bottom.



#### Enclosure

Elegant, Sturdy design deep drawn enclosure, powder coated for DOL Starters upto 60HP & Star Delta Starters upto 35HP. Whereas higher rating motor starters are housed in fabricated, powder coated enclosure. All Motor Starters in deep drawn sheet steel enclosures have IP55 protection class suitable for polluted industrial & dusty agriculture environment.

## Selection Chart

### DOL Motor Starters in Sheet Steel Enclosures

Max. Motor Rating at 415V, 3 phase 50 Hz		Overload Relay Range (Amps)	Contactor Code / Rating	Starter Catalogue Reference	Recommended Back-up HRC Fuse Rating	
kW	HP				(aM)	(gI)
0.37	0.50	0.63 to 1.00	LC1D17/16A	BE1-D1735■305	2	4
0.55	0.75	1.00 to 1.60	LC1D17/16A	BE1-D1735■306	2	4
1.10	1.50	1.60 to 2.50	LC1D17/16A	BE1-D1735■307	4	6
1.50	2.00	2.50 to 4.00	LC1D17/16A	BE1-D1735■308	6	10
2.20	3.00	4.00 to 6.00	LC1D17/16A	BE1-D1735■310	8	16
3.70	5.00	5.50 to 8.00	LC1D17/16A	BE1-D1735■312	12	20
4.00	5.50	7.00 to 10.0	LC1D17/16A	BE1-D1735■314	12	20
5.50	7.50	10.0 to 13.0	LC1D17/16A	BE1-D1735■316	16	25
9.0	12.0	13.0 to 18.0	LC1D25/25A	BE1-D2535■321	20	32
11.0	15.0	18.0 to 25.0	LC1D25/25A	BE1-D2535■322	25	50
15.0	20.0	23.0 to 32.0	LC1D32/32A	BE1-D3235■353	40	63
22.0	30.0	30.0 to 40.0	LC1D40/40A	BE1-D4035■355	63	-
25.0	35.0	38.0 to 50.0	LC1D50/50A	BE1-D5035■357	63	-
30.0	40.0	48.0 to 57.0	LC1D63/63A	BE1-D6335■359	63	-
37.0	50.0	57.0 to 66.0	LC1D63/63A	BE1-D6335■361	80	-
45.0	60.0	66.0 to 80.0	LC1D80/80A	BE1-D8035■363	80	-

### DOL Motor Starters in Plastic Enclosures

Max. Motor Rating at 415V, 3 phase 50 Hz		Overload Relay Range (Amps)	Contactor Code / Rating	Starter Catalogue Reference	Recommended Back-up HRC Fuse Rating	
kW	HP				(aM)	(gI)
0.37	0.50	0.63 to 1.00	LC1D17/16A	LE1-D173■305	2	4
0.55	0.75	1.00 to 1.60	LC1D17/16A	LE1-D173■306	2	4
1.10	1.50	1.60 to 2.50	LC1D17/16A	LE1-D173■307	4	6
1.50	2.00	2.50 to 4.00	LC1D17/16A	LE1-D173■308	6	10
2.20	3.00	4.00 to 6.00	LC1D17/16A	LE1-D173■310	8	16
3.70	5.00	5.50 to 8.00	LC1D17/16A	LE1-D173■312	12	20
4.00	5.50	7.00 to 10.0	LC1D17/16A	LE1-D173■314	12	20
5.50	7.50	10.0 to 13.0	LC1D17/16A	LE1-D173■316	16	25
9.0	12.0	13.0 to 18.0	LC1D25/25A	LE1-D253■321	20	32
11.0	15.0	18.0 to 25.0	LC1D25/25A	LE1-D253■322	25	50
15.0	20.0	23.0 to 32.0	LC1D32/32A	LE1-D323■353	40	63

### Coil Voltage Codes (Standard) for DOL/Reversing Starters

Motor Starter	Voltage*	
	240VAC#	415VAC
BE1-D / LE1-D	U	N

#### How to order :

(i) Complete the code by replacing the blue square ■ by the letter(s) corresponding to the Coil Voltage selected.

(ii) DOL Starters should be selected based on the FLC of Pump/Motor & Coil Voltage required.

\*DOL Motor Starter are available only in the above Standard Coil Voltages.

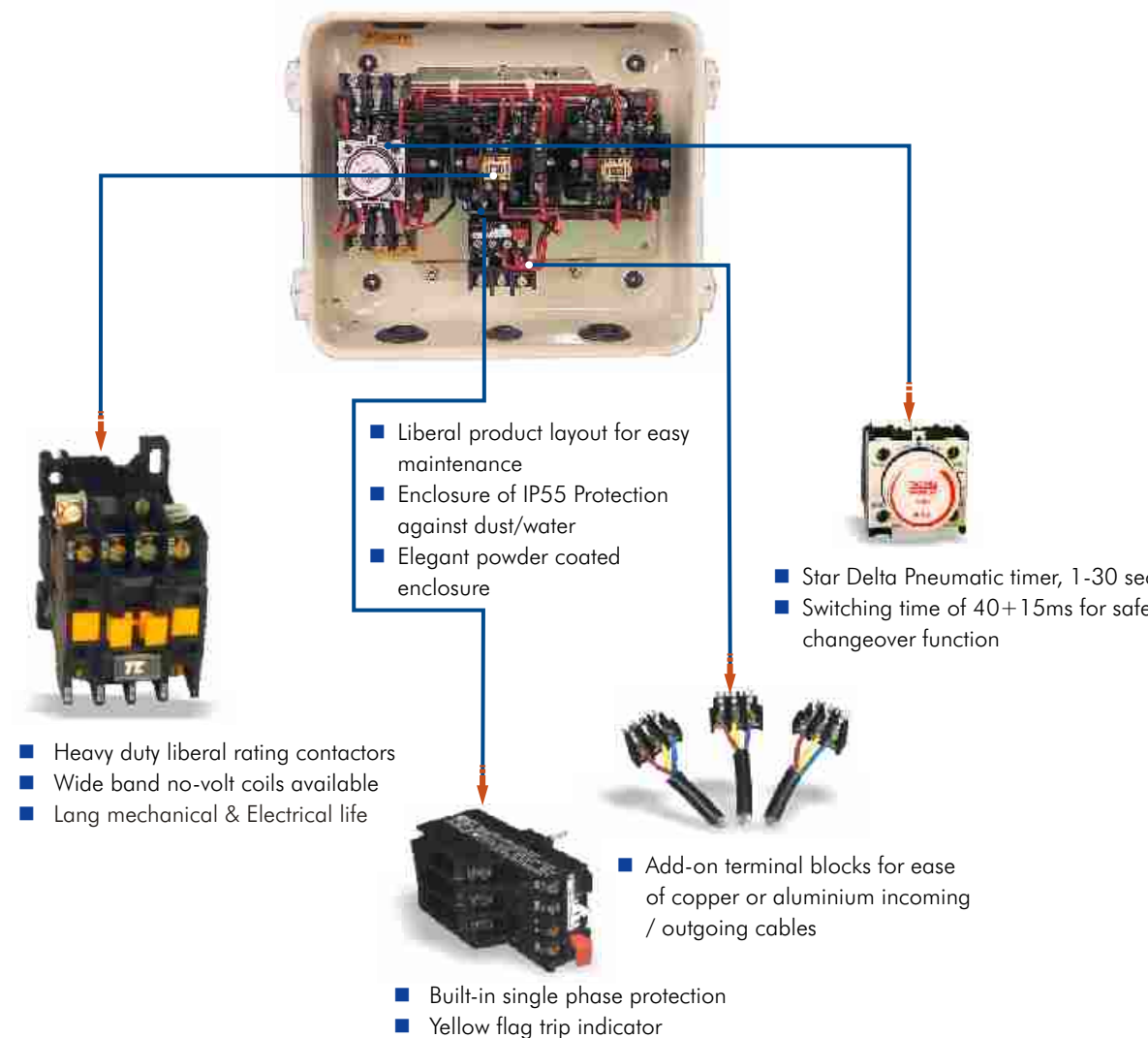
Note: Above Starter are available in 170-280VAC Coil (NW) code upto 32A contactors only.

## Reversing Starters in Sheet Steel Enclosures

Max. Motor Rating at 415V, 3 phase 50 Hz		Overload Relay Range (Amps)	Contactor Code / Rating	Starter Catalogue Reference	Recommended Back-up HRC Fuse Rating	
kW	HP				(aM)	(gI)
0.37	0.50	0.63 to 1.00	LC1D17/16A	BE2-D1735■305	2	4
0.55	0.75	1.00 to 1.60	LC1D17/16A	BE2-D1735■306	2	4
1.10	1.50	1.60 to 2.50	LC1D17/16A	BE2-D1735■307	4	6
1.50	2.00	2.50 to 4.00	LC1D17/16A	BE2-D1735■308	6	10
2.20	3.00	4.00 to 6.00	LC1D17/16A	BE2-D1735■310	8	16
3.70	5.00	5.50 to 8.00	LC1D17/16A	BE2-D1735■312	12	20
4.00	5.50	7.00 to 10.0	LC1D17/16A	BE2-D1735■314	12	20
5.50	7.50	10.0 to 13.0	LC1D17/16A	BE2-D1735■316	16	25
9.0	12.0	13.0 to 18.0	LC1D25/25A	BE2-D2535■321	20	32
11.0	15.0	18.0 to 25.0	LC1D25/25A	BE2-D2535■322	25	50
15.0	20.0	23.0 to 32.0	LC1D32/32A	BE2-D3235■353	40	63

### Maintenance Friendly Starters

Layout of Star Delta Starter's upto 35HP



## Star Delta Starters

### Features & Benefits

- Liberal choice of heavy duty contactors.
- Main Star & Delta Contactors of same rating.
- Pneumatic Star Delta Timer for reliable changeover function.
- Choice of Wide Band No Volt Coil upto 25 HP only.
- Plug-in terminal block for incoming and outgoing aluminium cables upto 35 HP.
- Specious product layout for maintenance ease & aluminium cable termination.
- Large enclosure with IP54 protection category for industrial applications.

### Selection Chart

#### Star Delta Starter

Max. Motor Rating at 415V, 3 phase 50 Hz		Overload Relay Range (Amps)	Contactor Code / Rating	Starter Catalogue Reference	Recommended Back-up HRC Fuse Rating	
kW	HP				(aM)	(gI)
3.0	4.0	2.5 to 4.0	LC1D17/16A	BE3-D1735■308	12	20
4.0	5.5	4.0 to 6.0	LC1D17/16A	BE3-D1735■310	12	20
5.5	7.5	5.5 to 8.0	LC1D17/16A	BE3-D1735■312	16	25
9.0	12.0	7.0 to 10.0	LC1D17/16A	BE3-D1735■314	20	32
11.0	15.0	10.0 to 13.0	LC1D17/16A	BE3-D1735■316	25	50
15.0	20.0	13.0 to 18.0	LC1D25/25A	BE3-D2535■321	32	63
18.0	25.0	18.0 to 25.0	LC1D25/25A	BE3-D2535■322	40	63
22.0	30.0	18.0 to 25.0	LC1D32/32A	BE3-D3235■322	40	63
25.0	35.0	23.0 to 32.0	LC1D32/32A	BE3-D3235■353	63	100
30.0	40.0	30.0 to 40.0	LC1D40/40A	BE3-D4035■355	63	100
37.0	50.0	30.0 to 40.0	LC1D50/50A	BE3-D5035■355	63	100
45.0	60.0	38.0 to 50.0	LC1D50/50A	BE3-D6335■357	80	-
51.0	70.0	48.0 to 57.0	LC1D63/63A	BE3-D6335■359	100	-
59.0	80.0	57.0 to 66.0	LC1D80/80A	BE3-D8035■361	125	-
75.0	100.0	66.0 to 80.0	LC1D115/115A	BE3-F115■363	160	-
90.0	125.0	65.0 to 105.0	LC1F115/115A	BE3-F115■105	200	-
110.0	150.0	80.0 to 125.0	LC1F150/150A	BE3-F150■125	200	-
132.0	180.0	100.0 to 160.0	LC1F185/185A	BE3-F185■160	250	-
160.0	220.0	125.0 to 200.0	LC1F185/185A	BE3-F185■200	315	-
200.0	270.0	160.0 to 250.0	LC1F265/265A	BE3-F265■250	400	-
220.0	300.0	200.0 to 315.0	LC1F330/330A	BE3-F330■315	500	-

### AC Coil Voltage Codes (Standard) for Star Delta

Motor Starter	Voltage		
	380	250-440#	415
BE3-D / BE2-D	Q	NW	N

How to order :  
(i) Complete the code by replacing the blue square ■ by the letter(s) corresponding to the Coil Voltage selected.

(ii) Star Delta starters should be selected based on the FLC of the Pump/Motor phase current (Motor FLC X 0.58) & Coil Voltage required.

\* Maximum operating limits of Coil Voltage.

# Wide Band Coil available for Star Delta Starters upto 25A only.