

Automatic Star Delta Starter 3TE7291-0A

For dependable service, it is of utmost importance that instructions given below are followed for selection, inspection, installation, commissioning, operation and maintenance.



ASD-11 Starter (Self reset)

Selection of Starter

- Refer Table A for recommended selection of 3TE72 starters.
Table A: kW/HP Rating, thermal overload relay range & fuse rating, Coil Voltage, Maximum full load current for different types of motors.

Installation, Operation & Maintenance Instructions

Please read and understand these instructions before installing, operating, or maintaining the equipment. Keep for future reference

	<p>Danger Hazardous voltage can cause death or serious injury. Disconnect power before working on equipment.</p>
	<p>Warning Automatic Motor Restart. Can cause death, serious injury or property damage. Do not use automatic reset mode when unexpected automatic restart of the motor can cause injury to persons or damage to equipment. Reliable functioning of the equipment is only ensured with certified components. Commissioning and maintenance by qualified personnel only.</p>
<p>NOTICE This product has been designed for environment A. Use of this product in environment B may cause unwanted electromagnetic disturbances in which case the user may require to take adequate mitigation measures.</p>	

IS/IEC 60947-4-1

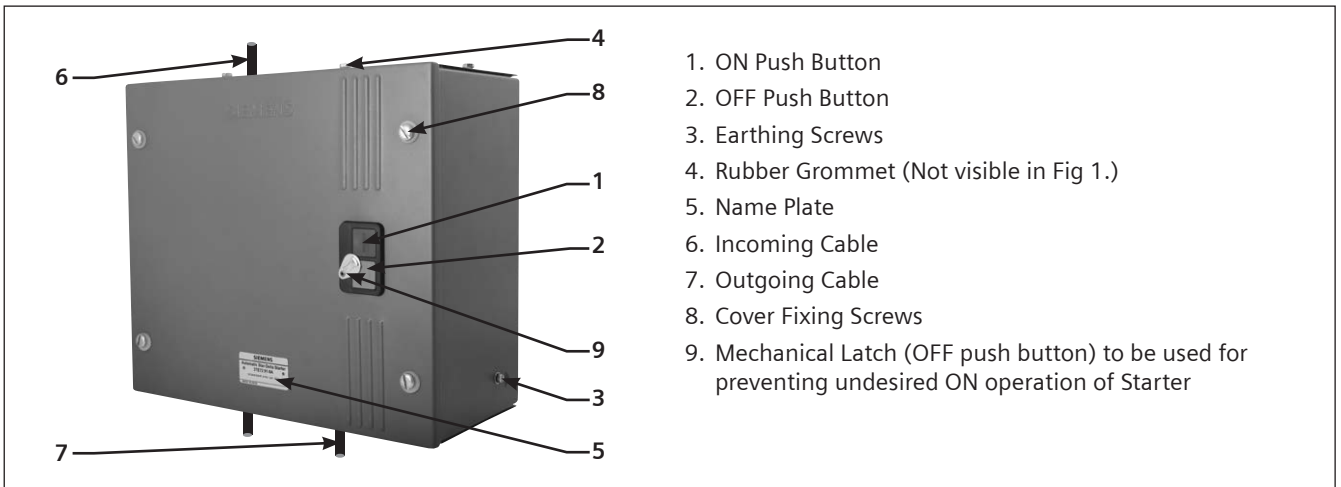


Fig. 1: ASD-11 Starter

Installation:

- Remove the front cover.
- Mount the starter on a vertical wall/ plate free from vibrations with proper nuts and bolts. Refer Fig. 8 for mounting dimensions and Fig. 4 for permissible mounting position.
- Remove the rubber grommets for the incoming and outgoing cable connections.
- Connect incoming and outgoing cables as follows (Refer Fig. 2 & 3):
 - Use proper cable glands to ensure dust proofing. For conduit entry use packed washers.
 - Select correct size of cables from Table-A
 - Connect line and motor leads exactly as per wiring diagram pasted inside the cover of the starter.
 - Terminate the incoming cable on terminal block.

- Connect outgoing cables on the Relay (K1) terminals and Delta contactor (Q3) terminals.

Tightening torque (N-cm):

kW Ratings	Incoming Terminals	Outgoing Terminals
7.5 – 11	80 – 140	80 – 140
15 – 18.5	150 – 210	100 – 150

- Connect the earthing conductor to terminals marked (earth) on the starter body with torque 80 to 140 N-cm.

The Starter is now ready for commissioning.

- Initially set the overload relay to 0.58 times the rated motor current.
- Set the timer dial to the nearest value of starting time available on motor name plate
- If it is not available then set the dial to approximately 6-8 secs.

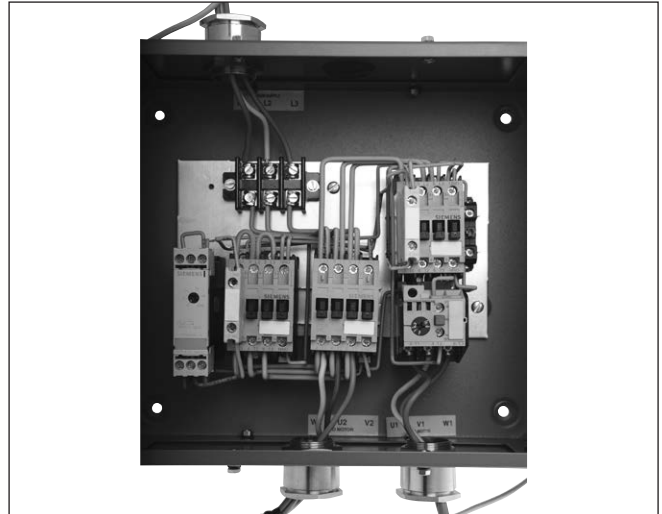


Fig. 2 & 3: Cable Connections

Commissioning: Read the note carefully before commissioning.

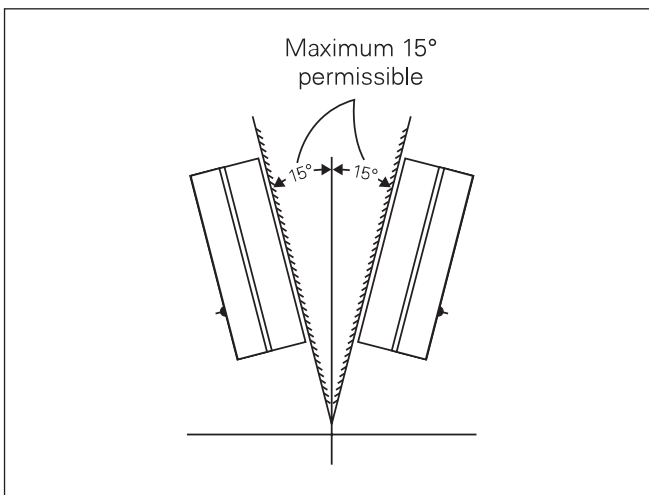


Fig. 4: Maximum permissible mounting position from vertical plane

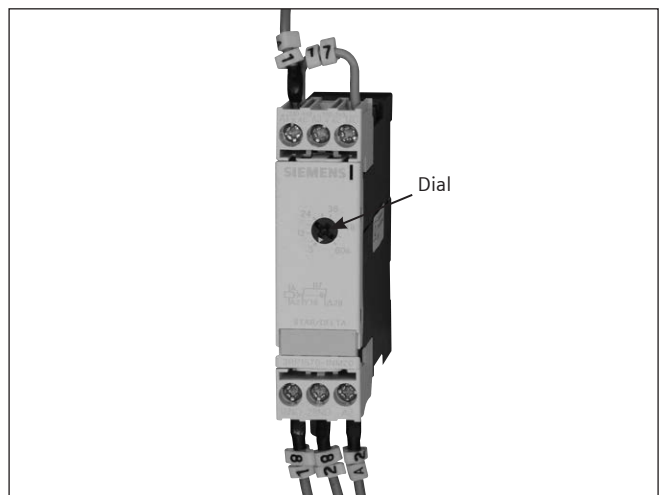


Fig. 5: Timer Adjustment

For exact setting of timer and overload relay, follow the instruction given below:

Before switching ON recheck all external connections

- Star-Delta Timer setting for ASD-11:
 - First start the motor by pressing the 'ON' button shown in Fig. 1
 - Measure the time taken by the motor to nearly reach rated speed or steady state current condition (indicated when the motor reaches a steady hum).
 - Stop the motor. Set the timer to this measured value by rotating the dial shown in Fig. 5.
- Overload relay setting:
 - For closer protection set the overload relay to actual phase current as measured by an ammeter.
 - Overload relay characteristics shown in Fig. 6 can be used to estimate the average tripping time at different multiples of set current.
 - In the absence of an ammeter, use the procedure given below:

- Start the motor and let it run for 30 mins. Then gradually reduce the relay settings till it trips. Set the relay at a slightly higher value than this setting.
- Restart the motor after some time. If the relay does not trip then consider it to be properly set. If the relay trips, set at a little higher value than before and recheck.
- Fix the front cover with Torque of 100 to 130 N-cm.

Caution

- During commissioning or maintenance always ensure that the main supply is disconnected by switching off the main switch.
- In the case of ASD starters under no circumstances should the relay be set higher than the phase current i.e. 0.58 times the rated current on the motor name plate.
- If the relay trips even when set at rated motor current, the suitability of the starter/relay for the particular application should be checked with the nearest Siemens office.

Operating Characteristics:

The given characteristics (Fig. 6) are average values of all ranges and sizes of bimetal relays and are mainly intended to indicate the inverse time current characteristics of the

same. The tripping times of the same. The tripping times shown are for relays starting from the cold state. At operating temperatures (heated at rated current) these are reduced to about 25% of the value obtained from the characteristics.

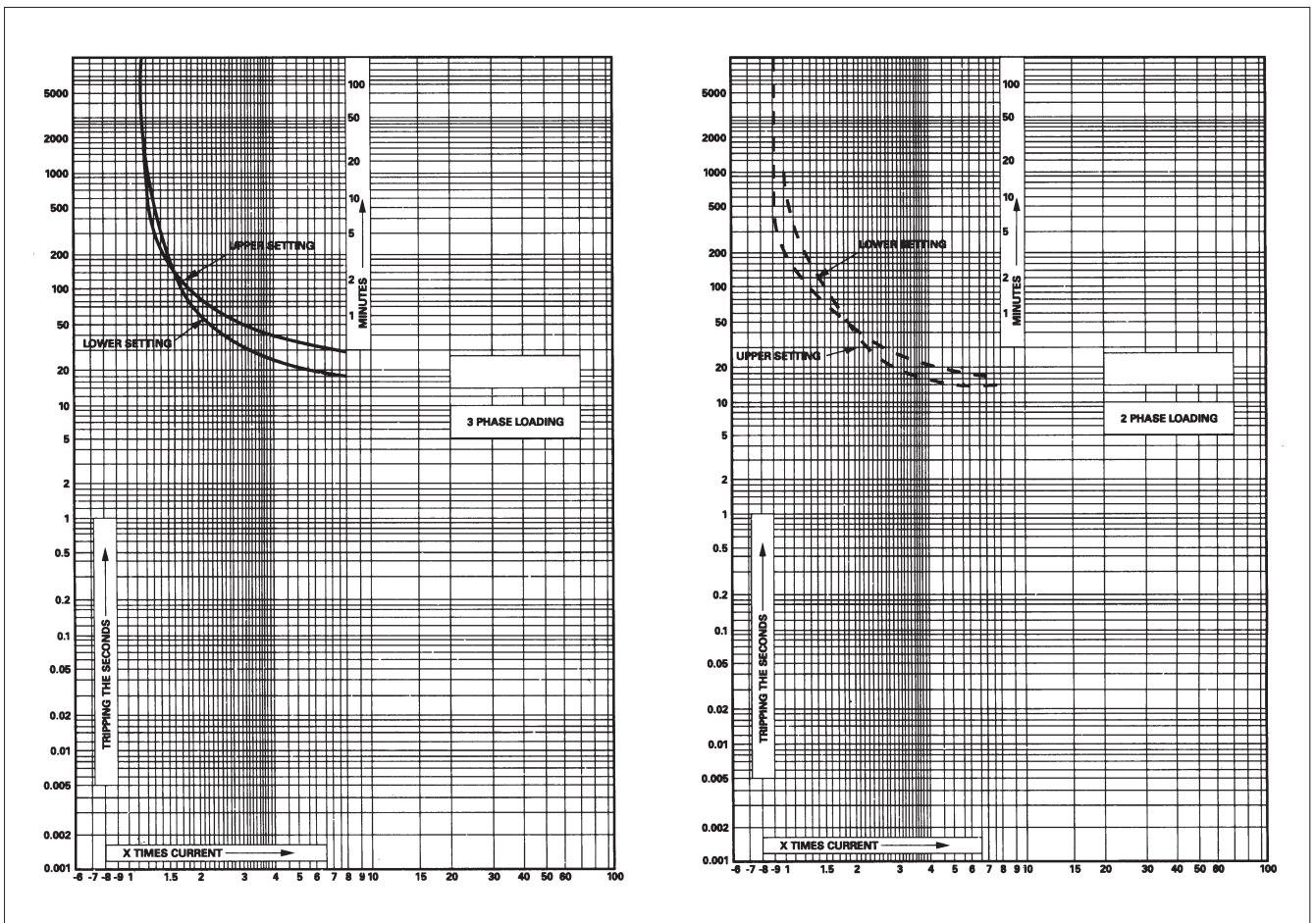


Fig. 6: Operating characteristics of 3UW51/52 relays

Operation:

- Rotate the Latch away from OFF push button
- For starting the motor, press Green push button marked 'I' (Fig. 1)
- For stopping the motor press Red push button marked 'O' (Fig. 1)
- This is in 'Self-Reset' mode. In this mode even, if the relay trips on overload, it will be automatically reset in a maximum of 4 minutes. The motor can be restarted only after the relay is reset.

Maintenance:

- Switch off the starter and disconnect the main supply by switching the main switch before doing any maintenance.
- Keep the interior dust free.
- Re-tighten the terminal screws from time to time.
- No maintenance is needed for overload relay. Please do not open the relay.
- Replace the contactors / contacts of the contactors if they were severely pitted or when only 40% of the original contact tips remains.

- Replacement of Overload Relay (Refer Fig. 7):

– Removal

1. Disconnect the wires connected to the relay terminals.
2. Slightly loosen the outgoing terminal screws of the line contactor.
3. Follow instructions given in Fig. 7 for removal of relay.

– Re-fixing

1. Select & take the overload relay of same range.
2. Connect the relay terminals (L1, L2, L3) to (T1, T2, T3) of Q1 Line contactor.
3. Refer Fig. 7 for details.

Care should be taken to fix the relay terminals & relay to contactor in the exact position shown in Fig. 7

4. Ensure that relay hook is engaged at contactor housing slot at base.
5. Tighten the contactor terminal screws.
6. Re-connect the disconnected wires and check connections by referring to the wiring diagram.

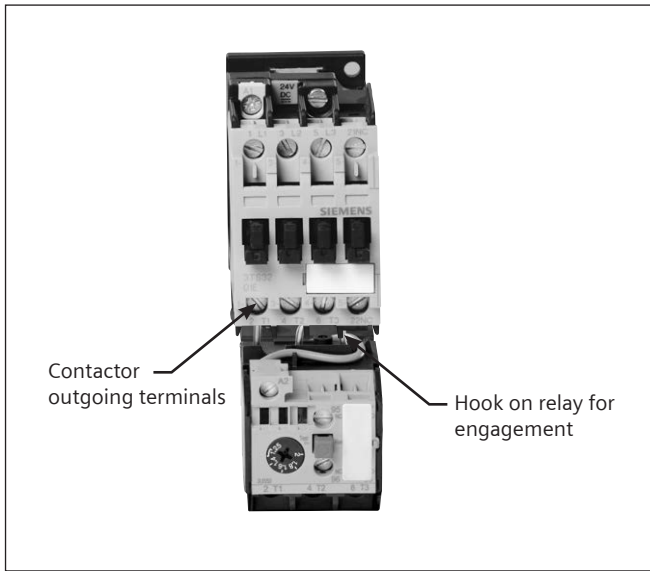
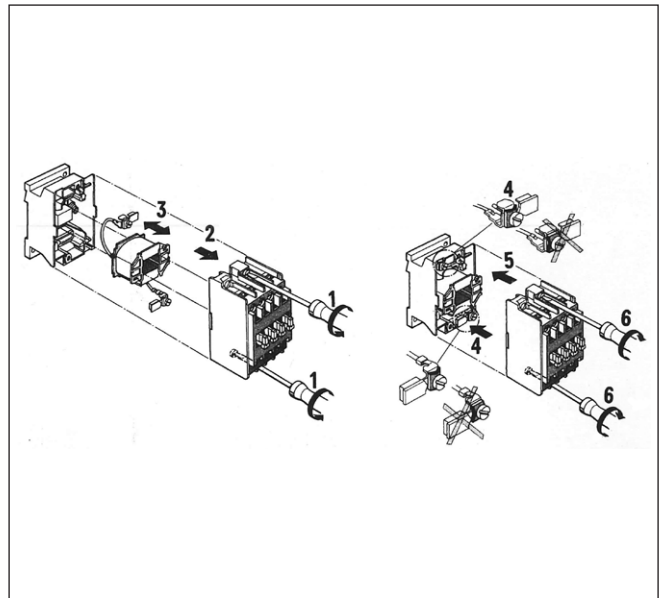


Fig. 7: Contactor – Relay Connection



Replacement of coil

Table A: Automatic Star - Delta Starter Type Ref: 3TE7291-0A

Motor Output at 415V (kW/HP)	I(fl) 4 Pole Squirrel cage motor		Contactor Line	Contactor Delta	Contactor Star	Recommended Overload relay at 50°C		Recommended Fuse Switch		Recommended Cu Cable size (mm ²)	
	Line current (A)	Phase current (A)				Type - Code	Relay Range (A)	Type	Back up HRC fuse rating(A)	Incoming (from supply)	Outgoing (to motor)
7.5/10	16	9.2	3TS32 10-0A*08K	3TS32 01-0A*08K	3TS32 10-0A*08K	3UW51 02-1J	6.3-10	3KL812	20	2.5	1.5
9.3/12.5	19.5	11.2	3TS32 10-0A*08K	3TS32 01-0A*08K	3TS32 10-0A*08K	3UW51 02-1K	8-12.5	3KL812	25	4	2.5
11/15	23	13.2	3TS32 10-0A*08K	3TS32 01-0A*08K	3TS32 10-0A*08K	3UW51 02-2A	10-16	3KL812	25	4	2.5
15/20	32	18.4	3TS33 00-0A*08K	3TS33 00-0A*08K	3TS32 10-0A*08K	3UW52 02-2B	12.5-20	3KL812	50	10	4
18.5/25	38.5	22.2	3TS33 00-0A*08K	3TS33 00-0A*08K	3TS32 10-0A*08K	3UW52 02-2C	16-25	3KL812	50	10	4

* Code for operating coil voltage 50 Hz (Z6 for 200-400V, R0 for 415V)

Other Tables:

Star-Delta Timer:	
AC Input Voltage	MLFB
230V-400V	3RP15 76-1NP20 8K
380V-440V	3RP15 76-1NM20 8K

Other Tables:

Motor Output at 415V		Type ⁴⁾
kW	HP	(ASD Starter)
7.5	10	3TE72910AW74
9.3	12.5	3TE72910A.75
11	15	3TE72910A.77
15	20	3TE72910A.78
18.5	25	3TE72910A.79

⁴⁾ Enter code for operating coil voltage, 50 Hz (B for 200-400V, W for 415V)

Spares:		
Sr. No.	Description	Order No.
1	Contactor 3TS32 10..	Refer Table A
2	Contactor 3TS32 01..	Refer Table A
3	Contactor 3TS33 00..	Refer Table A
4	Relay 3UW51..	Refer Table A
5	Relay 3UW52..	Refer Table A
6	Coil for 200-400V	3TY7 403-0AZ6
7	Coil for 415V	3TY7 403-0AR0
8	1NO Contact Block	3SB5420-0B
9	Aux Block 1NO	3TX4010-2A
10	Aux Block 1NC	3TX4001-2A
10	'ON' & 'OFF' Push Button	#
# – contact sales		

Notes

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Dimensional Drawing
Automatic Star Delta Starter

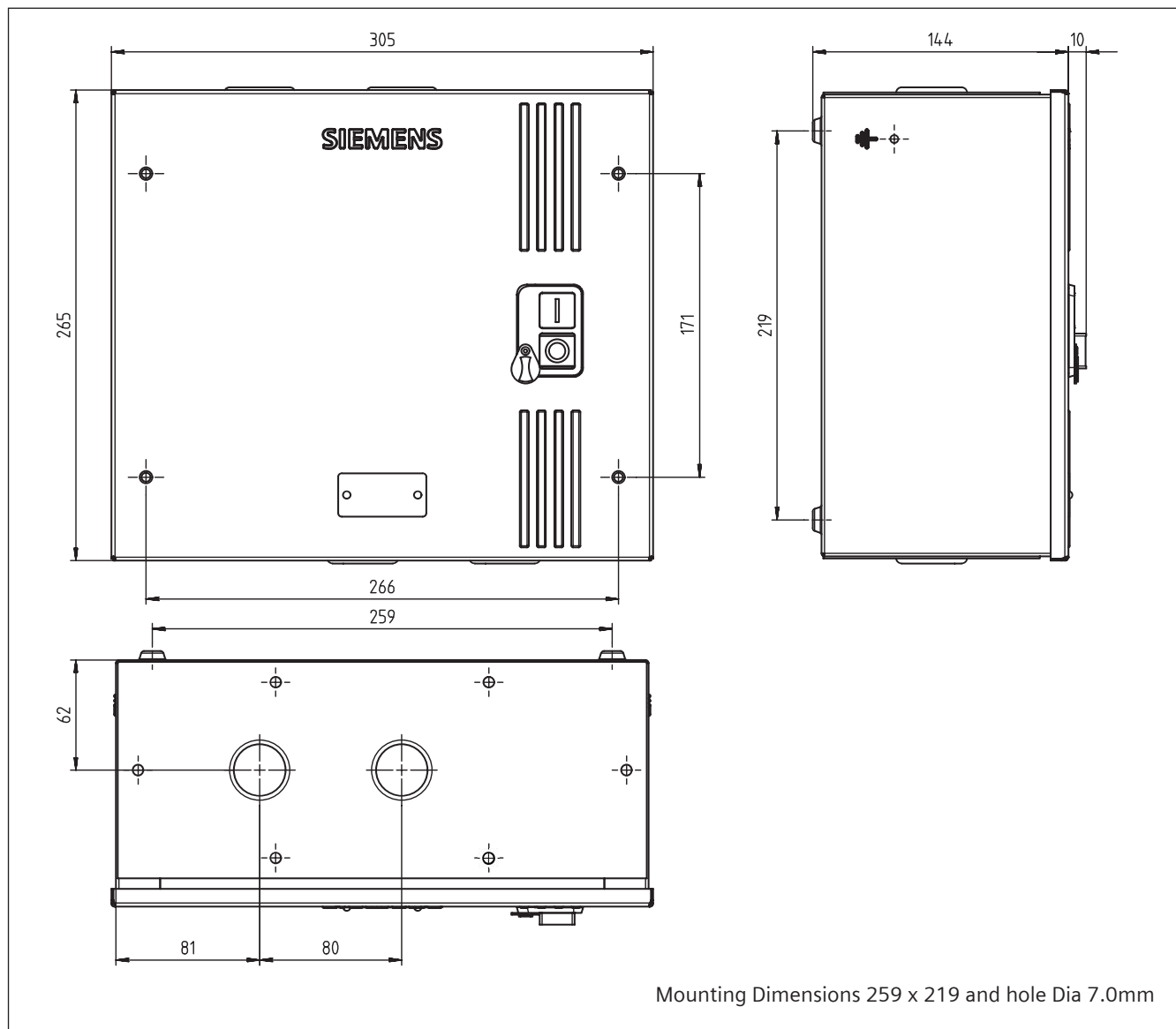


Fig. 8: Dimensional Details for 3TE72 91-0A**

Disposal

Siemens products are environment friendly, which predominantly consist of recyclable materials. For disposals we recommend disassembling and separation into following materials:
METALS: Segregate into Ferrous types for recycling through authorized dealer.

PLASTICS: Segregate as per material type for recycling through authorized dealer. Because of the long lifetime of Siemens Products the disposal guidelines may be replaced by other national regulations when taking the product out of service. The local customer care service is available at any time to answer disposal-related questions.