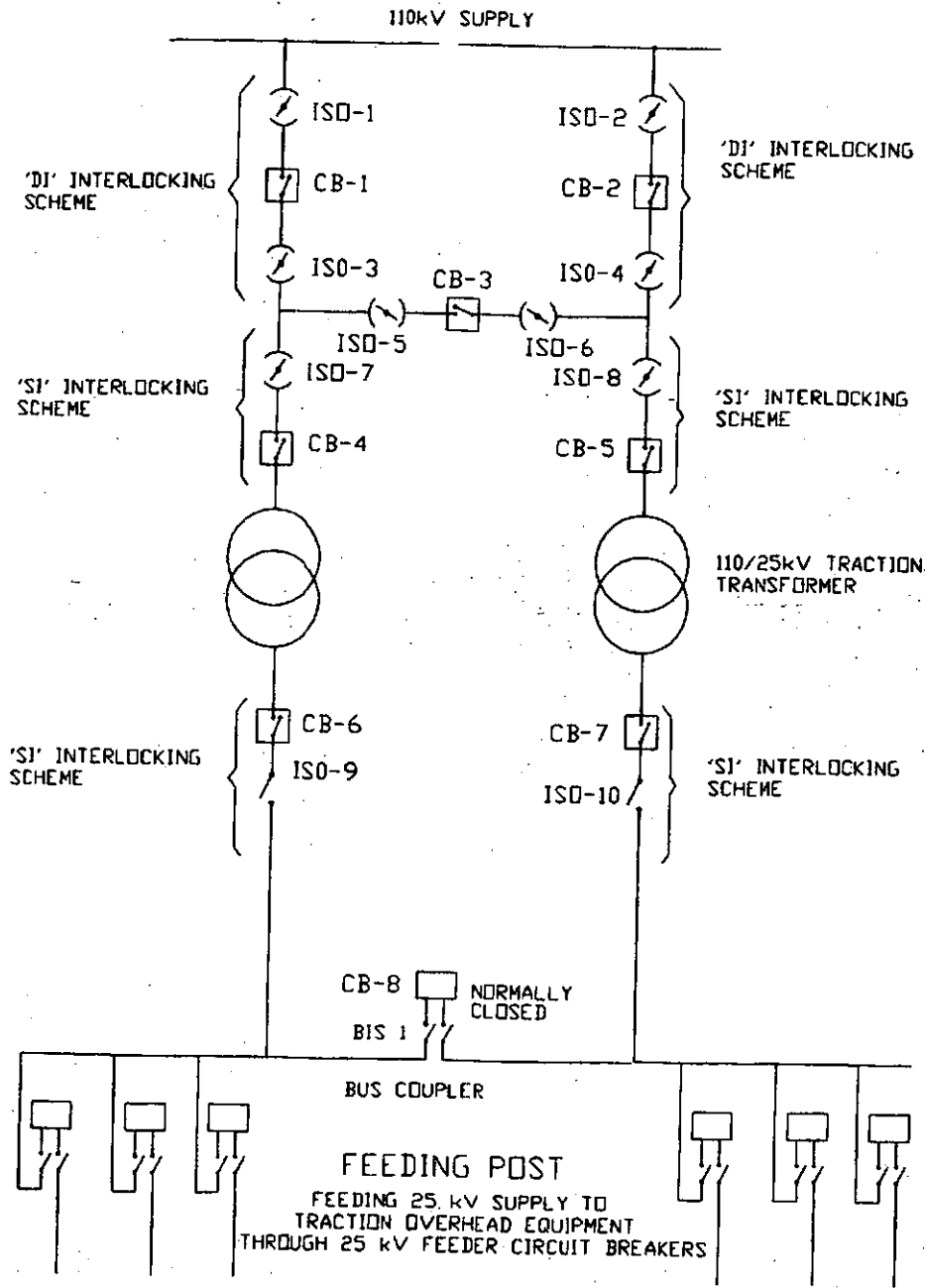


**Guideline Operating Procedures of TSSs in Mumbai Area.**

(Ref. Interlocking Scheme by RDSO drawing  
no. TI/DRG/PSI/INTERLOCK/RDSO/00001/05/0)

1. Normally, both incoming line circuit breakers CB 1 & 2 shall remain closed and 110 KV bus coupling circuit breakers CB- 3 will be in open position.
  2. Power supply to traction over head equipments shall be fed through any one of two transformers by closing its respective HV and LV transformer Circuit Breakers. At a time, only one transformer will be in service. Other transformer, not on load, can be kept as
    - a. Hot standby, by closing its HV side transformer Circuit Breaker and keeping LV transformer Circuit Breaker open.
- OR**
- b. Dead, by keeping both HV & LV transformer Circuit Breaks in open position. However, each transformer shall feed load periodically at regular intervals.
3. Bus coupler is provided on 25 kV side with Circuit Breaker CB - 8. This shall normally be closed for feeding the OHE in either side of IOL from any of the transformers.
  4. In case of outage of one feeder and transformer on other bay at a particular time, power supply can be restored through healthy transformer from other feeder by operation of 110 KV bus coupler Circuit Breaker CB - 3.
  5. **Extension of 25 KV supply in case of outage of one complete TSS.**
    - a) In the event of failure of any TSS, supply from adjoining TSS may be extended up to the IOL of failed TSS by closing the bridging CB at the SP on either side of failed TSS. Bus coupler CB no. 8 at the failed TSS shall be kept in open position along with LV transformer CB 6 & 7 at the failed TSS in open position. However, this will necessitate lower panto / raise panto of the trains in front of failed TSS, if it is not provided with neutral sections.
    - b) Otherwise, supply may be extended over complete zone of failed TSS from any of the adjoining TSS i.e. from SP to SP. Bus coupler CB no. 8 at the failed TSS shall be kept in close position along with LV transformer CB 6 & 7 at the failed TSS in open position. In this case no lower panto / raise panto is required, however the OHE voltage and load has to be closely monitored.
  6. **For paralleling of nominated Traction Sub Stations**
    - a) Energize the OHEs of concerned TSS zone up to SP locations and then close the bridging CBs at SP location.
    - b) Energize the OHE of one TSS zone. Extend the supply by closing bridging CB at SP and feeder CB & bus coupler CB at the next TSS. Then close LV transformer Circuit Breaker at other Traction Sub Station to make parallel operation of the two TSSs.



## INTERLOCKING SCHEME- EXPLANATORY NOTES:

1. CB-1 AND CB-2 ARE 110 kV INCOMING LINE CIRCUIT BREAKERS AND CB-3 IS BUS COUPLER CIRCUIT BREAKER.
2. CB-4 AND CB-5 ARE 110kV SIDE TRANSFORMER CIRCUIT BREAKERS.
3. CB-6 AND CB-7 ARE 25kV SIDE TRANSFORMER CIRCUIT BREAKERS.
4. CB-8 IS 25kV CIRCUIT BREAKERS FOR BUS COUPLER.
5. ISO 1 2 3 4 7 8 9 & 10 ARE ASSOCIATED ISOLATORS
6. ISO 5 6 ARE 110 kV BUS COUPLER ISOLATORS.
7. BIS 1 IS 25 kV BIPOLE ISOLATOR FOR BUS COUPLER.
8. SI INTERLOCKING SCHEME REFERS TO CIRCUIT BREAKER INTERLOCKED WITH ONE ASSOCIATED ISOLATOR.
9. DI INTERLOCKING SCHEME REFERS TO CIRCUIT BREAKER INTERLOCKED WITH TWO ASSOCIATED ISOLATORS.
10. DI INTERLOCKING SCHEME IS TO BE PROVIDED ON 110 kV SIDE INCOMING LINE CIRCUIT BREAKERS CB-1 AND CB-2 & 110kV BUS COUPLER CB-3 AND INTERLOCKING OF CIRCUIT BREAKERS TO BE DONE WITH ASSOCIATED DOUBLE ISOLATORS.
11. SI INTERLOCKING SCHEME IS TO BE PROVIDED IN HV & LV SIDE TRANSFORMER CIRCUIT BREAKERS WHERE INTERLOCKING OF CIRCUIT BREAKER ARE TO BE ENSURED WITH SINGLE ASSOCIATED ISOLATORS.
12. SI INTERLOCKING SCHEME IS TO BE PROVIDED FOR BUS COUPLER. INTERLOCKING OF CIRCUIT BREAKER SHALL BE DONE WITH ASSOCIATED BIPOLE ISOLATOR.
13. SI INTERLOCKING SCHEME IS ALSO TO BE PROVIDED AT 25kV FEEDER CIRCUIT BREAKER INTERLOCKING SHALL BE DONE WITH RESPECTIVE ASSOCIATED BIPOLE ISOLATORS.
14. THE KEY CODES ADOPTED FOR BREAKERS TO BE INSTALLED AT A SUB-STATION SHALL BE NON INTERCHANGEABLE SO THAT NO MAL OPERATION IS POSSIBLE.
15. LOCK MEANT FOR MOUNTING ON ISOLATOR SHALL BE A BOLT TYPE LOCK
16. INTERLOCKING SCHEME PROVIDED WITH CIRCUIT BREAKER FOR ITS INTERLOCKING WITH ISOLATOR SHOULD BE SUCH THAT THE OPERATION OF ISOLATOR SHALL NOT BE POSSIBLE UNLESS THE CIRCUIT BREAKER IS LOCKED IN OPEN POSITION. OPERATION OF CIRCUIT BREAKERS SHALL NOT BE POSSIBLE UNLESS THE ASSOCIATED ISOLATORS ARE LOCKED IN EITHER CLOSE OR OPEN POSITION.
17. THE REQUIREMENT OF INTERLOCK FOR THE ARRANGEMENT SHOWN IN THE DRAWING SHALL BE
  - a) SI INTERLOCKING SCHEME - 05 SETS + ADDITIONAL FOR FEEDER CB'S
  - b) DI INTERLOCKING SCHEME - 03 SETS
18. PLEASE REFER GUIDE LINE OPERATING PROCEDURES FOR TSS OPERATION IN MUMBAI AREA (TI/IN/11 REV. 0)

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SCHEME OF INTERLOCKING ARRANGEMENT OF 25 KV CIRCUIT BREAKER AT TRACTION SUB STATION FOR MRVC	DTI - 1	
	ADE - 1	

REF:- ETI/PSI/5212 MOD B

CROSS REF:-

DATE	MOD.	NATURE OF MOD	INITIAL	R.D.S.O.			
				DATE	NAME	TI/DRG/PSI/INTERLOCK/RDSO/00001/05/0	
				DR	28-03-79		Sd/-
				TC	20-10-81	Sd/-	SCALE:- NTS
				CH	05-11-81	Sd/-	SUB-SCALE:-