

Engine starting system can be divided into three parts.

1. Engine cranking,
2. Engine Firing and
3. Engine holding.

1. Engine Cranking: Means CK1 & CK2 contactors closing and battery supply is feeding to main generator to work as a motor to crank the Diesel engine.

- a. Battery knife switch to be switched on.
- b. MB1 (Battery) breaker to be switched on.

Result: Battery discharging lamp (Auxiliary Generator failure) indication will glow.

- c. MB2 (Control) breaker to be switched on.

Result : Switch on all the lighting breakers and switches (except doom light and flasher light) , lamps will glow.

- d. .MFPB1 & MFPB2 to be switched "on" on both control stands.

Result: FPC contactor coil will be energized and with click sound contactor will close.

- e. If FPC contactor closed properly,

Result: CCE motor failure indication will glow.

- f. CCEM breaker to be switched on.

Result: CCE motor failure indication will goes off and CCEM starts working.

- g. FPB breaker to be switched on.

Result:

- i) Fuel pump motor will start and fuel oil pressure will build up to 3.8 kg/cm².
- ii) Engine starting lamp will glow.
In governor, stabilizing coil will energize with click sound.

- h. ECS to be kept in run position for 3 times.

Result: With low lube oil indication SR will energize and bell will ring.

- i. MUSD in both control stands must be in run condition.

- j. ECS must be in idle condition.
- k. Start button to be pressed (This will have two switches).

Result: (Switch no.1) : Through ESR-4 N/C interlock, through ECS RUN closed interlock, through start button, through P-22 power contactor N/C interlock, through S1 power contactor N/C interlock , CK1 contactor will pick up. Through CK1 closed bridge interlock, CK2 contactor will energize
When CK1 and CK2 contactors are closed, Generator will work as a motor and engine is going to crank.

- 2. **Firing** : Means stabilizing coil energizing, clutch coil energizing and stabilizing coil de-energizing.
 - a. Already stabilizing coil energized when FPB switched ON.
 - b. (Start Switch No.2) : Clutch coil will energize through LWS (if sufficient water is available).
 - c. When CK2 contactor picks up CK2 bridge interlock will open and makes stabilizing coil to de-energize.

Result: Fuel racks will move towards Fuel increasing and engine will get firing.

- 3. **Holding**: If engine starting lamp goes off, leave start button. Engine will run on its own then it is called Holding.
 - a) SAR will pick up whenever engine speed reaches more than 220 RPM.
 - b) OPS will pickup whenever lube oil pressure builds up 1.6 kg/cm²

Result: Clutch coil will get permanent supply and engine will hold.