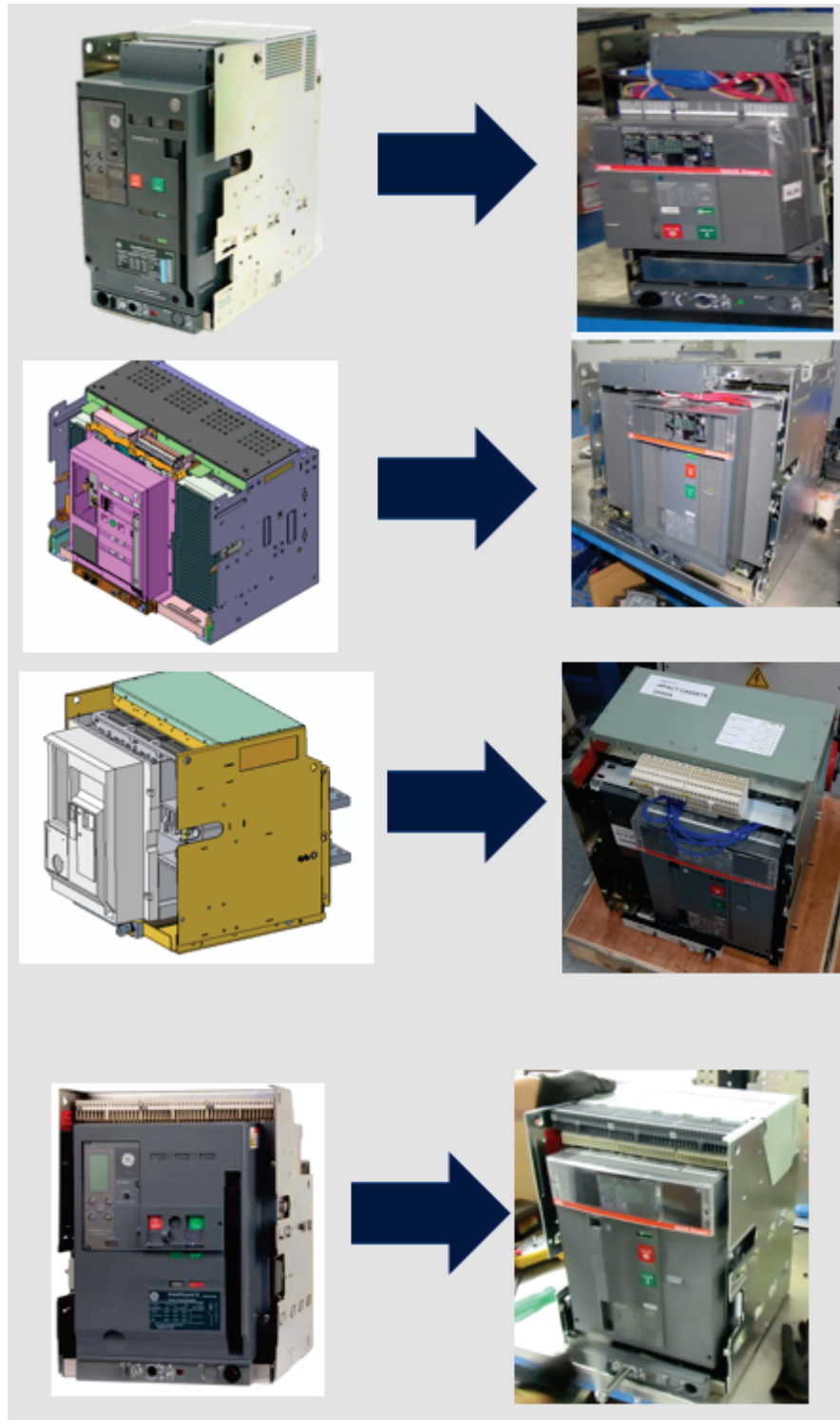


# PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGUARD G , MPACT & ENTELLIGUARD L FAMILY



## Introduction

The procedure described below must be used to assess the critical function quality checks and correct operation of Moving portion in the cassette(Fixed Portion).

DR KITS	QUALITY CHECK PARAMETER
	FIXED PORTION PARTS
ENTELLIGUARD T	RACKING TORQUE
ENTELLIGUARD G	
MPACT/MPACT PLUS	
ENTELLIGUARD L	
ENTELLIGUARD T	TRIP FREE FUNCTION
ENTELLIGUARD G	
MPACT/MPACT PLUS	
ENTELLIGUARD L	
ENTELLIGUARD T	CONTACT WELD
ENTELLIGUARD G	
MPACT/MPACT PLUS	
ENTELLIGUARD L	
ENTELLIGUARD T	CLUSTER ENGAGEMENT
ENTELLIGUARD G	
MPACT/MPACT PLUS	
ENTELLIGUARD L	

The kits described above can only operate correctly if the fixed part in which they are installed is in a good condition. Strictly perform the following inspections in order to assess the condition of the fixed parts.

	Rev. A			PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGUARD G FAMILY	
				Doc.N° 1SDH00XXXXX	Page N° 02/17

## IMPORTANT WARNING

Before taking any action to service this equipment it is compulsory to:

- open the circuit breaker and make sure that the control springs are not loaded;
- in the event of a withdrawable circuit breaker, take action with the circuit breaker withdrawn from the fixed part;
- when taking action on circuit breakers with a fixed design, or on the fixed parts of a withdrawable breaker, disconnect the supply to the power circuit and to the auxiliary circuits, and earth the terminals in a clearly visible manner, both on the power side and on the load side;
- make the equipment safe in accordance with current laws and standards.

These servicing procedures shall be handled only by qualified personnel with a thorough understanding of the equipment.

This procedure does not include instructions on safety or on maintenance and repair operations.

It is important to note that this procedure contains warnings and precautions against maintenance methods that could cause injury to people, damage to devices or that could make them unsafe. These warnings do not cover all the ways in which maintenance, even if not recommended by ABB, may be performed, or the possible dangerous consequences that may arise from such actions.

Anyone who uses procedures and tools for maintenance, whether it is recommended by ABB or not prescribed, must make sure that his/her own safety and that of the devices is not compromised by the method and by the service tools used.

Should the need arise to obtain further information or should particular problems arise, and the information in this procedure is not sufficiently clear, please contact the ABB Service representative.

When the switchgear is left unattended, even momentarily, the buyer, installer or end user is responsible for ensuring that the hazard signs are positioned correctly, and that all access and control devices are locked securely. All the information contained in this procedure is based on the latest version of the product documentation available at the time of printing. We reserve the right to modify it at any time and without notice.

	Rev. A			PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGUARD G FAMILY	
				Doc.N° 1SDH00XXXXX	Page N° 03/17

## RACKING TORQUE TABLE LIMITS

ENTELLIGUARD G_CASSETTE	EMAX2_DR_MP	RACKING TORQUE
ENTELLIGUARD T_3P	EMAX2 1.2 3P	<=20 N-M
ENTELLIGUARD T_4P	EMAX2 1.2 4P	<=20 N-M
ENTELLIGUARD G_FR1_3P_1600A	EMAX2 2.2 3P	<=20 N-M
ENTELLIGUARD G_FR1_4P_1600A	EMAX2 2.2 4P	<=20 N-M
ENTELLIGUARD G_FR1_3P_2500A	EMAX2 2.2 3P	<=20 N-M
ENTELLIGUARD G_FR1_4P_2500A	EMAX2 2.2 4P	<=20 N-M
ENTELLIGUARD G_FR2_3P_3200A_4000A	EMAX2 2.2 3P	<=20 N-M
ENTELLIGUARD G_FR2_4P_3200A_4000A	EMAX2 2.2 4P	<=25 N-M
MPACT_FR1_3P_1600A	EMAX2 2.2 3P	<=20 N-M
MPACT_FR1_4P_1600A	EMAX2 2.2 4P	<=20 N-M
MPACT_FR1_3P_2500A	EMAX2 2.2 3P	<=20 N-M
MPACT_FR1_4P_2500A	EMAX2 2.2 4P	<=20 N-M
MPACT_FR2_3P_3200A_4000A	EMAX2 2.2 3P	<=20 N-M
MPACT_FR2_4P_3200A_4000A	EMAX2 2.2 4P	<=25 N-M
ENTELLIGUARD L_FR1_3P_1600A	EMAX2 2.2 3P	<=20 N-M
ENTELLIGUARD L_FR1_4P_1600A	EMAX2 2.2 4P	<=20 N-M
ENTELLIGUARD L_FR1_3P_2500A	EMAX2 2.2 3P	<=20 N-M
ENTELLIGUARD L_FR1_4P_2500A	EMAX2 2.2 4P	<=20 N-M
ENTELLIGUARD L_FR2_3P_3200A_4000A	EMAX2 2.2 3P	<=20 N-M
ENTELLIGUARD L_FR2_4P_3200A_4000A	EMAX2 2.2 4P	<=25 N-M



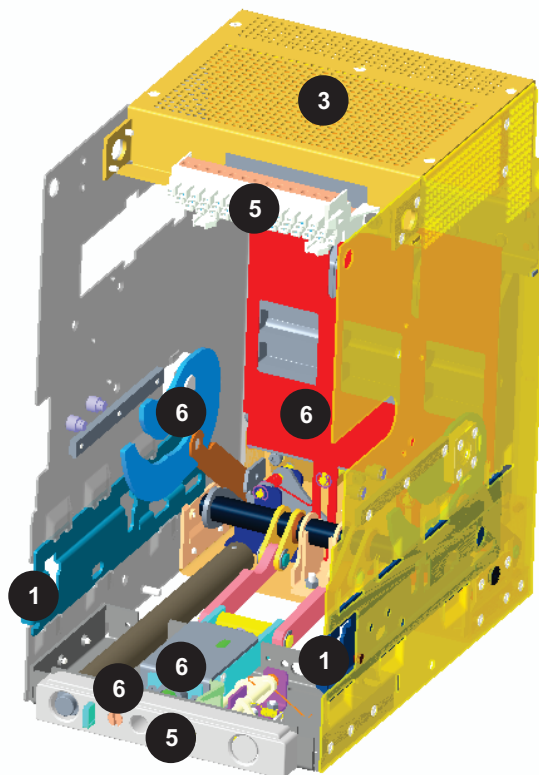
# Entelliguard T FIXED PART

## NOTE

Need to perform the checks described below on Existing fixed part ,Before starting the ASM of Direct replacement cassette, Please refer to the procedure to assemble all parts related to(1SDH002090A1001) and follow the instructions as per mentioned Instruction sheet document.

Make sure that the previous class of protection remains unchanged. If not, it must be restored.

- 1..Visually check the rails are in proper condition and no part of it is damaged. Check if they move smoothly or not, apply grease if necessary.
2. Make sure that there is no dust or carbon residue due to circuit breaker operations as they significantly reduce the insulation clearance.
3. Check the protective coating of the materials are not damaged, e.g. paint coating on the plates and silver-plating of conductive parts. Remove traces of oxidation with fine grain sand paper
4. Make sure that the screws on the fixed part are properly tightened, e.g, the screw that join the fixed part to the switchboard, the ones that fasten the terminals of the fixed part to the switchboard bars and earthing plates.
5. Check the non metallic secondary disconnect part and Front panel are not damaged and no crack is there.
6. Make sure all the moving parts on the bottom of fixed part are properly moving and not getting stuck(Racking system, CAMS, Front Panel shutter Screw. Apply grease if necessary.
7. Make sure that all indications are working correctly.

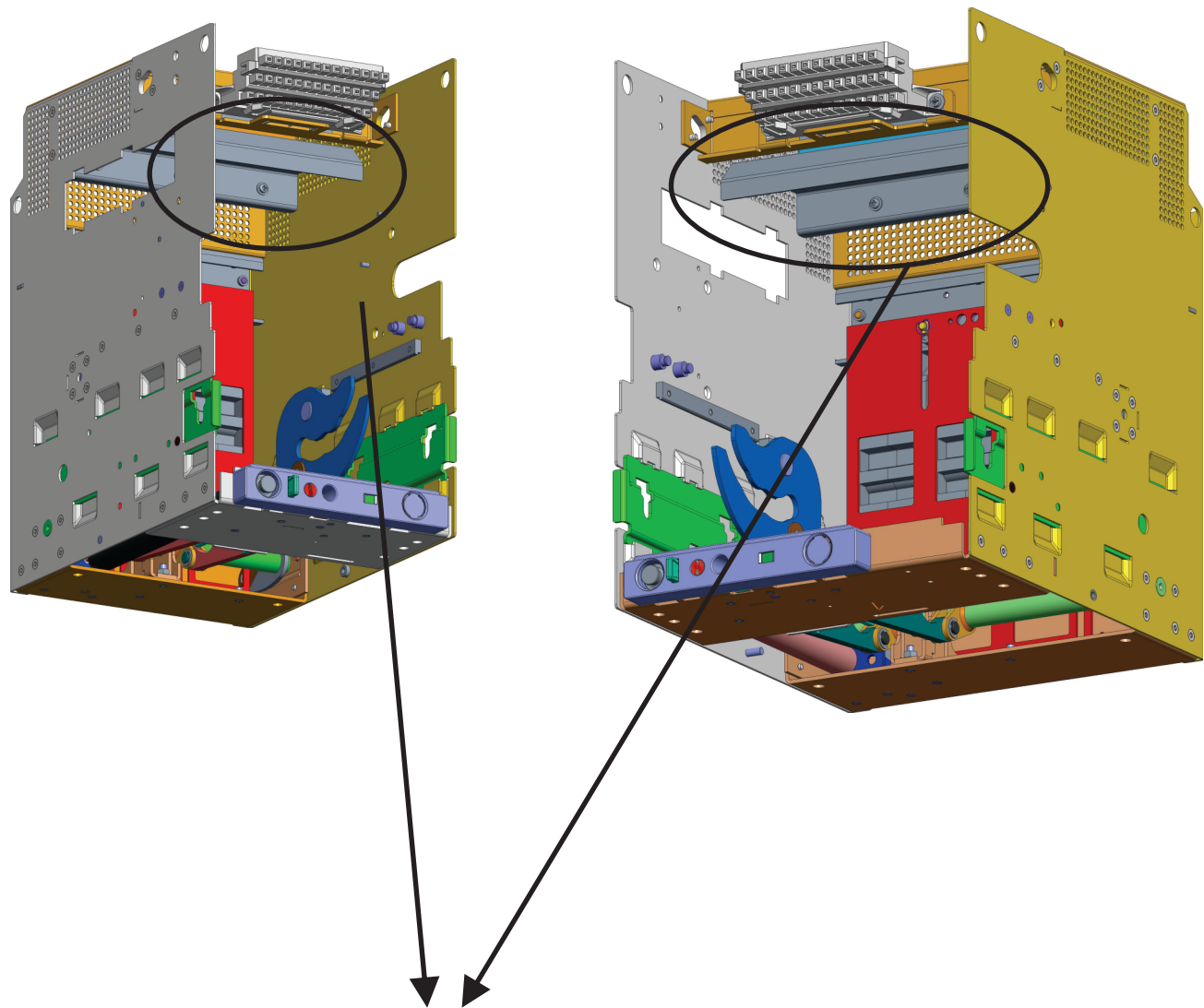


	Rev. A			PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGUARD G FAMILY	Page N° 05/17
				Doc.N° 1SDH00XXXXX	

# Entelliguard T FIXED PART

## NOTE

Before continuing with the checks described below, please refer to the procedure to assemble all parts related to Cradle – (1SDH002090A1001) and follow the instructions as per mentioned Instruction sheet document.



Visual Check gas Deflectors components to be assembled as per DR kit instruction sheet

	Rev. A			PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGUARD G FAMILY	Page N° 06/17
				Doc.N° 1SDH00XXXXX	

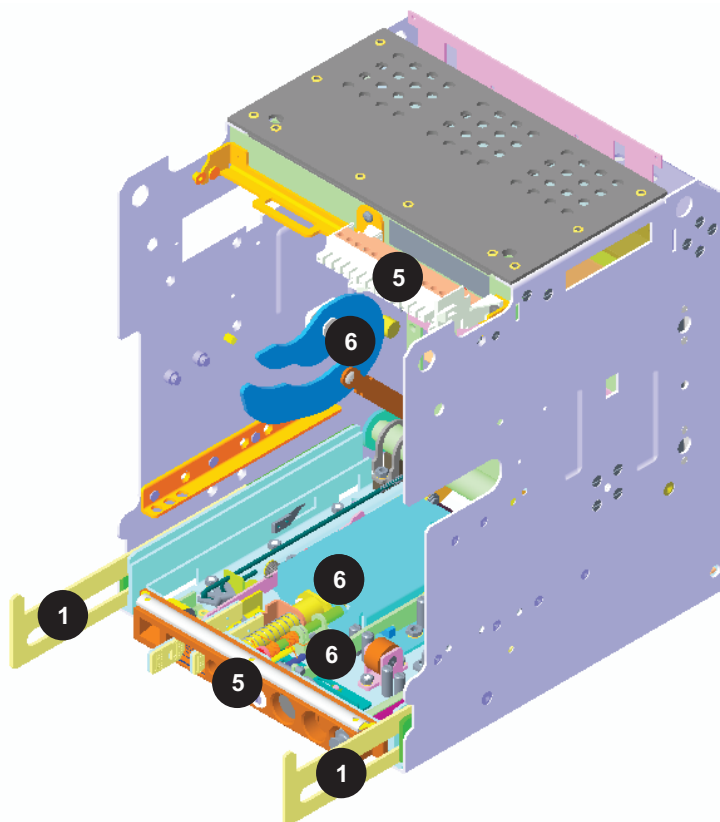
# ENTELLIGAUARD G FIXED PART

## NOTE

Need to perform the checks described below on Existing fixed part ,Before starting the ASM of Direct replacement cassette, Please refer to the procedure to assemble all parts related to(1SDH002091A1001) and follow the instructions as per mentioned Instruction sheet document.

Make sure that the previous class of protection remains unchanged. If not, it must be restored.

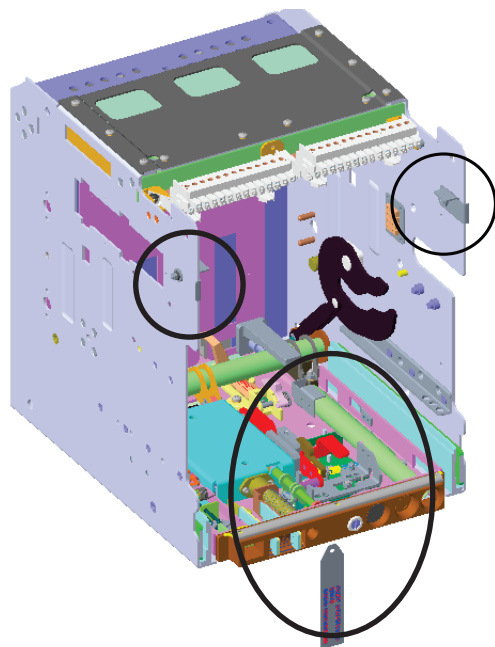
- 1..Visually check the rails are in proper condition and no part of it is damaged. Check if they move smoothly or not, apply grease if necessary.
2. Make sure that there is no dust or carbon residue due to circuit breaker operations as they significantly reduce the insulation clearance.
3. Check the protective coating of the materials are not damaged, e.g. paint coating on the plates and silver-plating of conductive parts. Remove traces of oxidation with fine grain sand paper
4. Make sure that the screws on the fixed part are properly tightened, e.g, the screw that join the fixed part to the switchboard, the ones that fasten the terminals of the fixed part to the switchboard bars and earthing plates.
5. Check the non metallic secondary disconnect part and Front panel are not damaged and no crack is there.
6. Make sure all the moving parts on the bottom of fixed part are properly moving and not getting stuck(Racking system, CAMS, Front Panel shutter Screw.Apply grease if necessary.
7. Make sure that all indications are working correctly.



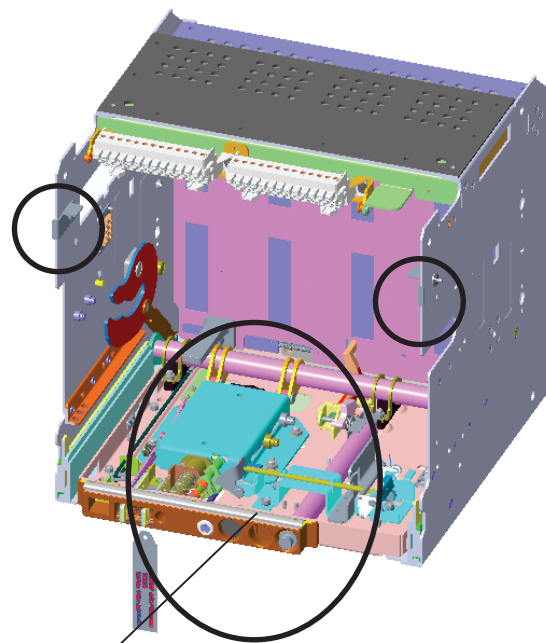
	Rev. A			PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGUARD G FAMILY	
				Doc.N° 1SDH00XXXXX	Page N° 07/17

# ENTELLIGAUARD G FIXED PART FR1 AND FR2

Fr1 3P

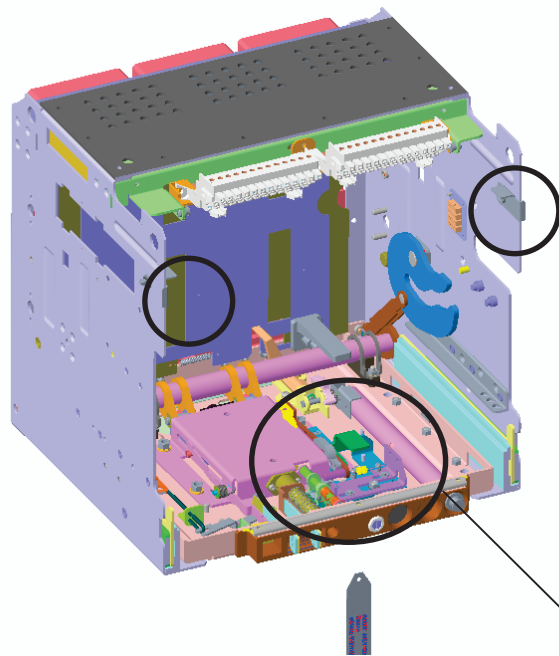


Fr1 4P

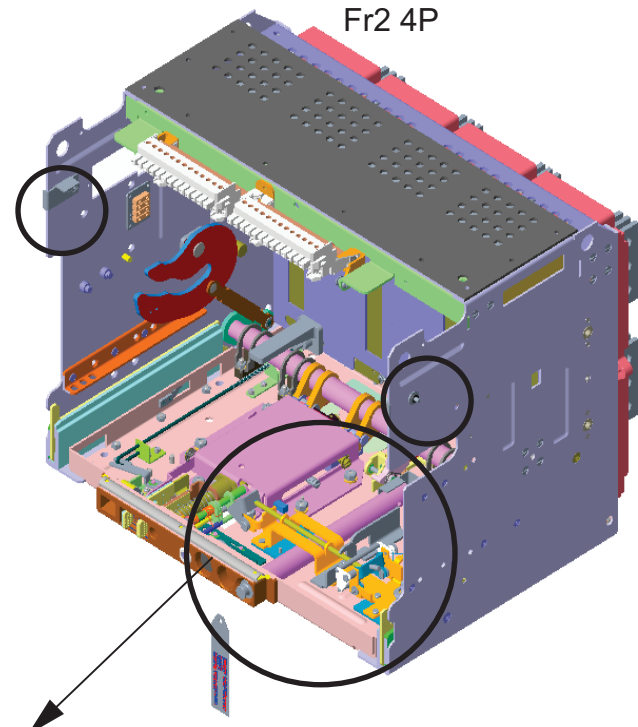


Visual Check Trip Free Assembly, Contact Weld assembly, anti insertion plates and associated components to be assembled as per DR kit drawing

Fr2 3P



Fr2 4P



Visual Check Trip Free Assembly, Contact Weld assembly, anti insertion plates and associated components to be assembled as per DR kit drawing

	Rev. A			PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGUARD G FAMILY	Page N° 08/17
				Doc.N° 1SDH00XXXXX	

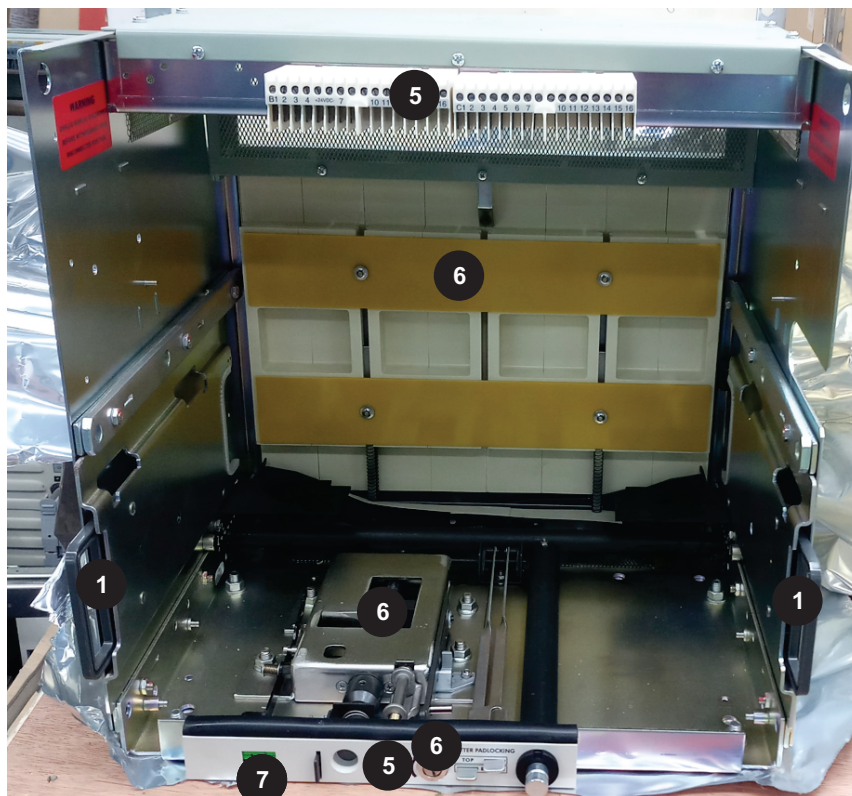
## MPACT/MPACT PLUS FIXED PART

### NOTE

Need to perform the checks described below on Existing fixed part ,Before starting the ASM of Direct replacement cassette, Please refer to the procedure to assemble all parts related to(1SDH002095A1001-MPACT/MPACT PLUS) and follow the instructions as per mentioned Instruction sheet document.

Make sure that the previous class of protection remains unchanged. If not, it must be restored.

- 1..Visually check the rails are in proper condition and no part of it is damaged. Check if they move smoothly or not, apply grease if necessary.
2. Make sure that there is no dust or carbon residue due to circuit breaker operations as they significantly reduce the insulation clearance.
3. Check the protective coating of the materials are not damaged, e.g. paint coating on the plates and silver-plating of conductive parts. Remove traces of oxidation with fine grain sand paper
4. Make sure that the screws on the fixed part are properly tightened, e.g, the screw that join the fixed part to the switchboard, the ones that fasten the terminals of the fixed part to the switchboard bars and earthing plates.
5. Check the non metallic secondary disconnect part and Front panel are not damaged and no crack is there.
6. Make sure all the moving parts on the bottom of fixed part are properly moving and not getting stuck(Racking system, CAMS, Front Panel shutter Screw. Apply grease if necessary.
7. Make sure that all indications are working correctly.



	Rev. A			PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGUARD G FAMILY	
				Doc.N° 1SDH00XXXXX	Page N° 09/17



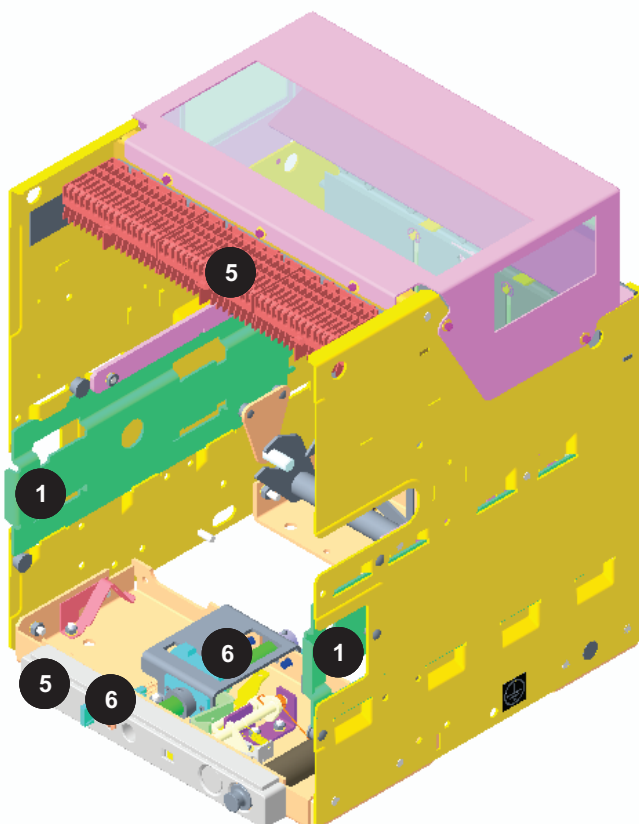
# ENTELLIGAUARD L FIXED PART

## NOTE

Need to perform the checks described below on Existing fixed part ,Before starting the ASM of Direct replacement cassette, Please refer to the procedure to assemble all parts related to(1SDH002096A1001-ENTELLIGUARD L) and follow the instructions as per mentioned Instruction sheet document.

Make sure that the previous class of protection remains unchanged. If not, it must be restored.

- 1..Visually check the rails are in proper condition and no part of it is damaged. Check if they move smoothly or not, apply grease if necessary.
2. Make sure that there is no dust or carbon residue due to circuit breaker operations as they significantly reduce the insulation clearance.
3. Check the protective coating of the materials are not damaged, e.g. paint coating on the plates and silver-plating of conductive parts. Remove traces of oxidation with fine grain sand paper
4. Make sure that the screws on the fixed part are properly tightened, e.g, the screw that join the fixed part to the switchboard, the ones that fasten the terminals of the fixed part to the switchboard bars and earthing plates.
5. Check the non metallic secondary disconnect part and Front panel are not damaged and no crack is there.
6. Make sure all the moving parts on the bottom of fixed part are properly moving and not getting stuck(Racking system, CAMS, Front Panel shutter Screw.Apply grease if necessary.
7. Make sure that all indications are working correctly.



	Rev. A			PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGUARD G FAMILY	
				Doc.N° 1SDH00XXXXX	Page N° 10/17

# ENTELLIGAUARD L FIXED PART FR1

Secondary disconnect Assembly  
to be changed as per DR kit drawing

Contact Weld Assembly  
to be assembled as per DR kit drawing

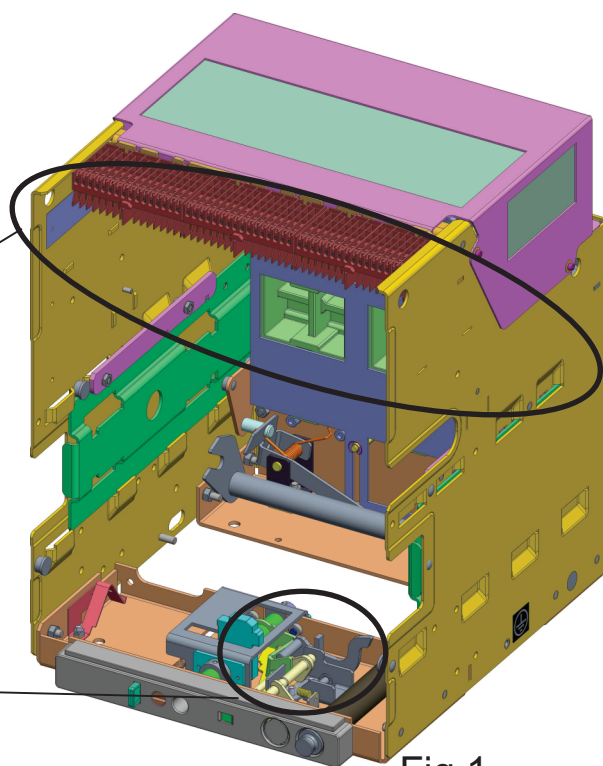


Fig.1  
3pole

Secondary disconnect Assembly  
to be changed as per DR kit  
drawing

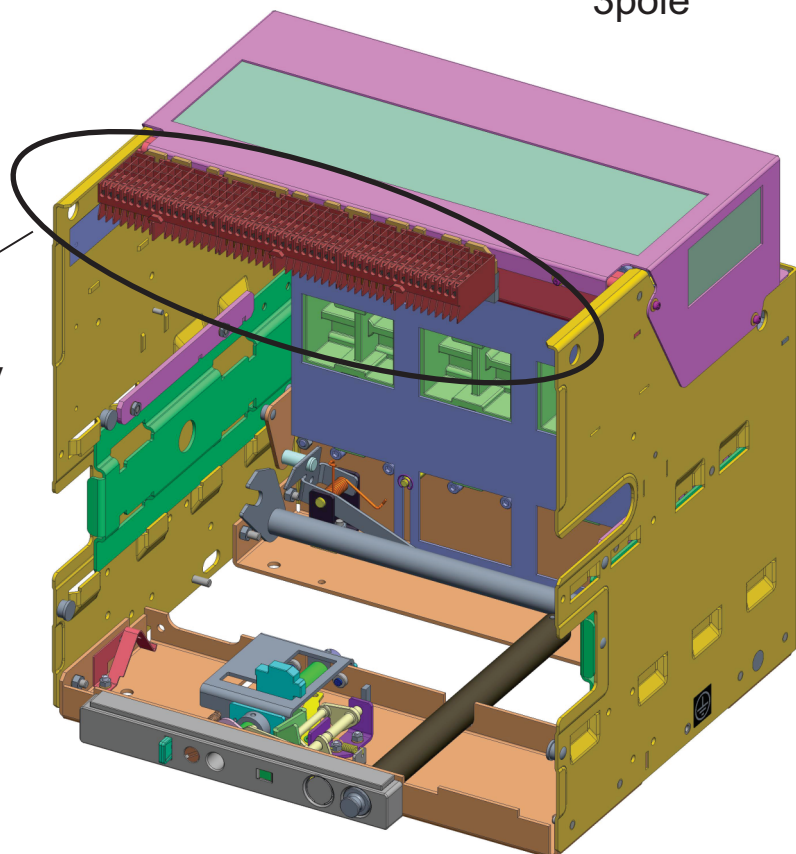


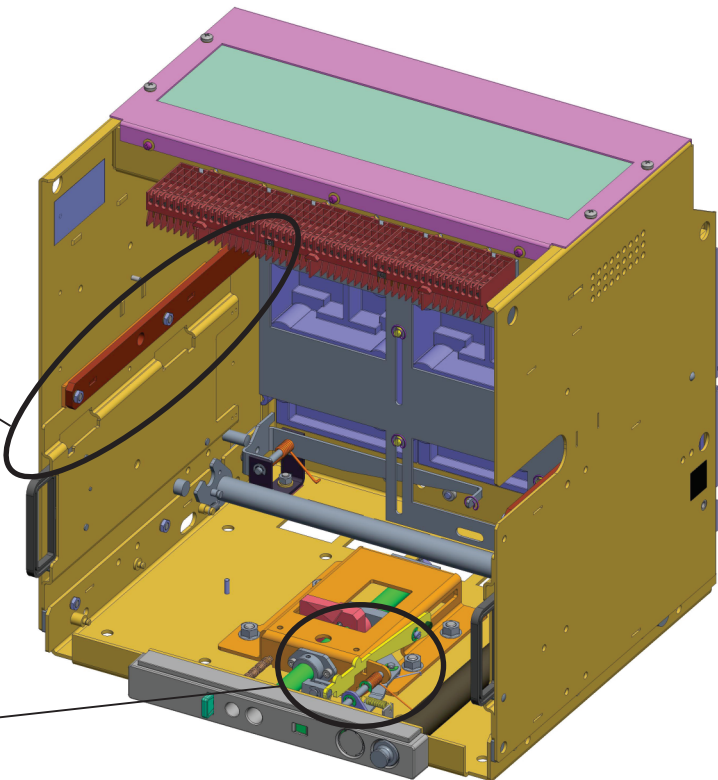
Fig.2  
4pole

	Rev. A			PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGUARD G FAMILY		
				Doc.N°	1SDH00XXXXX	Page N° 11/17

ENTELLIGAUARD L & MPACT FIXED PART FR2

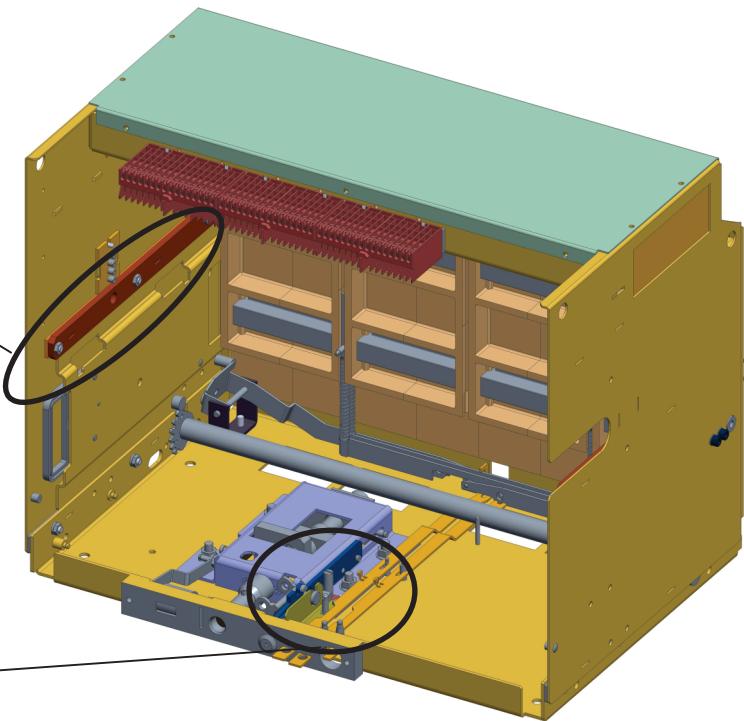
Outer and inner guide  
has to assembled as depicted  
in drawing / instruction sheet  
on both side.

Trip Free Lever Asembly



Outer and inner guide  
has to assembled as depicted  
in drawing / instruction sheet  
on both side.

Trip Free Lever Asembly



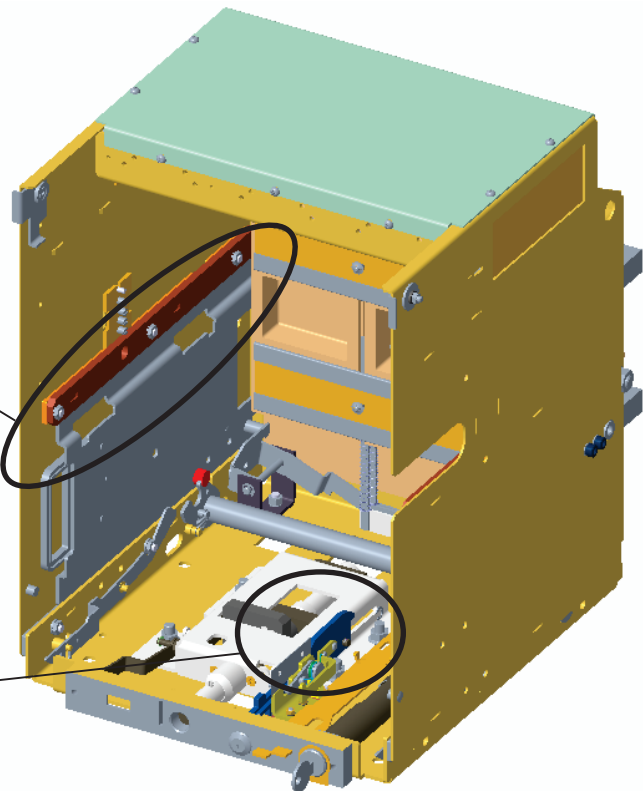
	Rev. A			PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGAUARD G FAMILY	
				Doc.N°	1SDH00XXXXX
					Page N° 12/17



# MPACT FIXED PART FR1

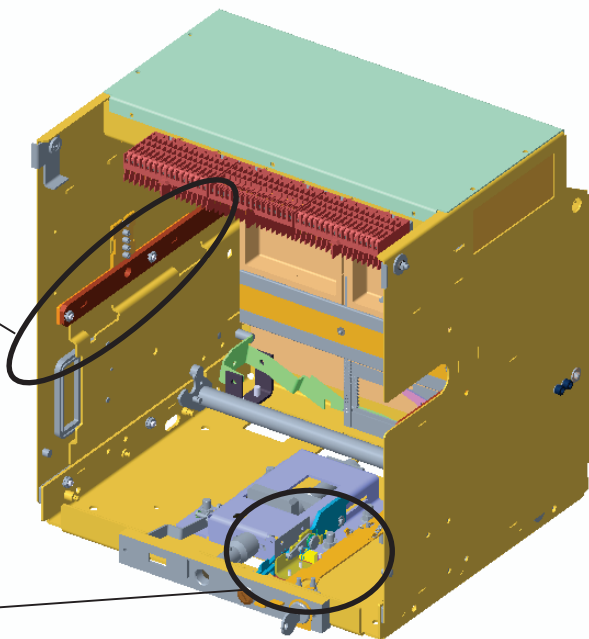
Outer and inner guide  
has to assembled as depicted  
in drawing / instruction sheet  
on both side.

Trip Free Lever Asembly



Outer and inner guide  
has to assembled as depicted  
in drawing / instruction sheet  
on both side.

Trip Free Lever Asembly

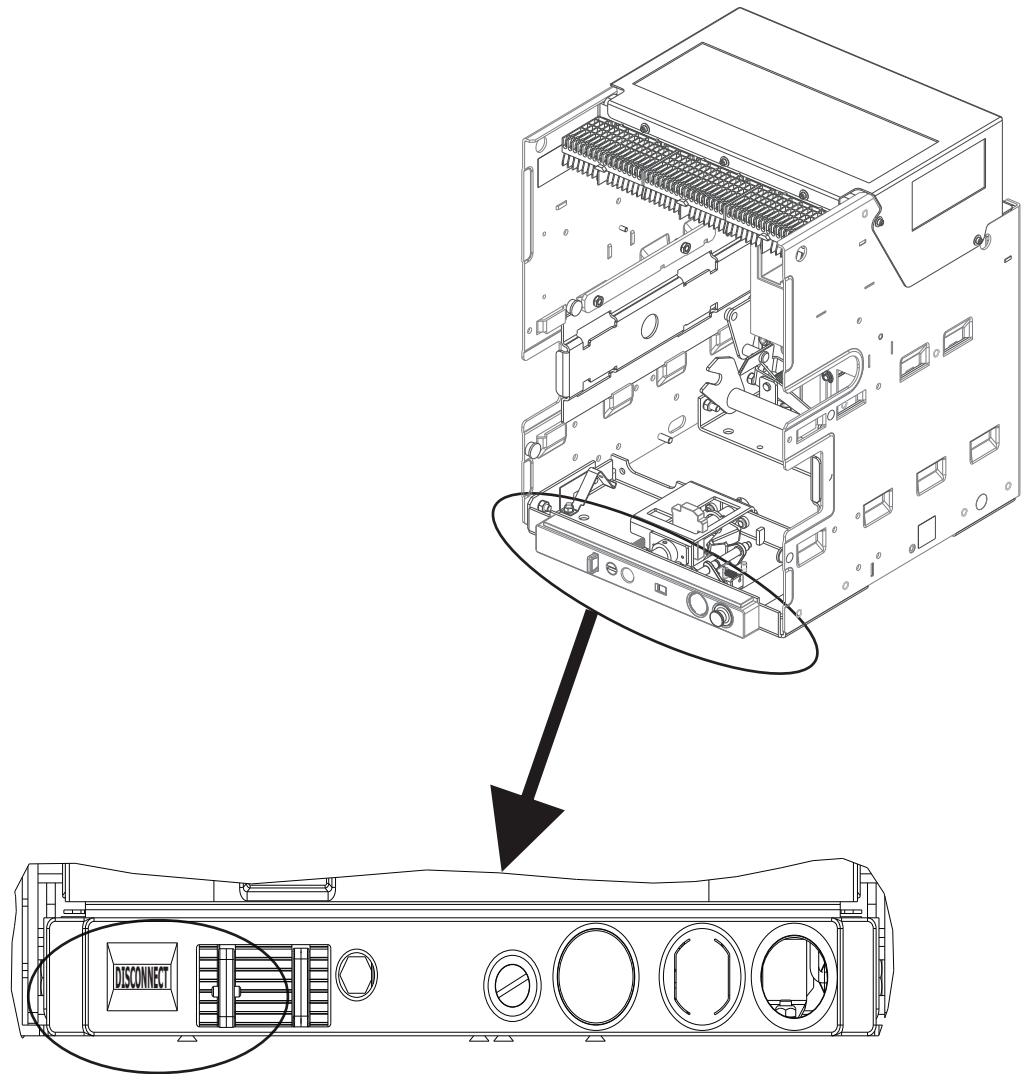


	Rev. A			PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGUARD G FAMILY	
				Doc.N° 1SDH00XXXXX	Page N° 13/17

## CHECKS BEFORE LOADING THE BREAKER

### 1.VISUAL CHECK ON FIXED PORTION BEFORE LOADING THE BREAKER

A. Ensure that the front display panel of the cassette shows disconnected position as shown below



2.Visually check presence and proper mounting of all the parts and assemblies in the fixed portion as per instruction sheet.

	Rev. A			PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGUARD G FAMILY	
				Doc.N° 1SDH00XXXXX	Page N° 14/17

## CHECKS BEFORE LOADING THE BREAKER

### 2. CHECK THE TERMINALS ALIGNMENT AS PER DRAWING / INSTRUCTION SHEET.

Before rack-in check whether all the terminals mounted on the breaker are aligned properly as instructed in the drawing or the instruction sheet.

### 3. RACK-IN HANDLE NOT INSERTED BEFORE AND DURING LOADING THE BREAKER.

Must ensure that the racking handle is not inserted before and during loading the breaker. Handle should only be inserted when the breaker is pushed inside the cassette to dead end condition.

### 4. GREASE APPLICATION.

Visual check of grease application on cluster fingers of moving portion.

	Rev. A			PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGUARD G FAMILY	
				Doc.N° 1SDH00XXXXX	Page N° 15/17

## CHECKS DURING RACK-IN OF BREAKER

### NOTE :

To check the functionality of trip free & Contact weld features  
need to follow the corresponding DR instruction sheet & ASM VIDEOS

### 1. TRIP FREE WORKING (RACKING HANDLE INSERETED)

During rack-in and racking handle inside, charge the breaker and try to put breaker to ON condition. It should not be possible to ON the breaker

### 2. TRIP FREE WORKING IN BETWEEN DISCONNECTED AND TEST (RACKING HANDLE NOT INSERETED)

In between disconnected and test condition, take the handle out and charge the breaker. Put breaker to ON condition. Now try to put the handle inside.

The breaker should trip before the racking handle is inserted in case of,  
Entelligaurd G (all frames), Entelligaurd L (frame 1-3pole).

It should not be possible to insert the handle in case of Entelligaurd L (frame 1-4P, frame 2-3&4P)

It should not be possible to insert the handle in case of MPACT/MPACT PLUS  
(frame 1-3&4P, frame 2-3&4P)

It should not be possible to insert the handle in case of Entelligaurd T 3P & 4P

### 3. TRIP FREE WORKING IN BETWEEN TEST AND CONNECTED

In between disconnected and connected condition, charge the breaker. try to put breaker to ON condition,  
It should not be possible to ON the breaker in any circumstances.

	Rev. A			PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGUARD G FAMILY	
				Doc.N° 1SDH00XXXXX	Page N° 16/17

## CHECKS AFTER RACK-IN OF BREAKER

### 1. TRIP FREE WORKING (RACKING HANDLE INSERTED)

Once the breaker is completely racked-in and the racking handle is inside, charge the breaker and try to put the breaker to ON condition. It should not be possible to ON the breaker. Breaker will only be put to ON condition when handle is taken out

### 2. CONTACT WELD WORKING

Once the breaker is completely racked-in (connected position), take out the handle and charge the breaker. Put the breaker to ON condition and try to insert the racking handle. It should not be possible to insert the handle. Handle can only be inserted when breaker is in OFF condition.

## CLUSTER ENGAGEMENT CHECK

1.Rack the breaker till it reaches to end of racking screw rotations.

2.Once the breaker is completely racked-in cluster engagement must be checked visually and three ON-OFF operation must be taken.

	Rev. A			PROCEDURE FOR QUALITY CHECKS OF DR IEC ENTELLIGUARD G FAMILY	
				Doc.N° 1SDH00XXXXX	Page N° 17/17