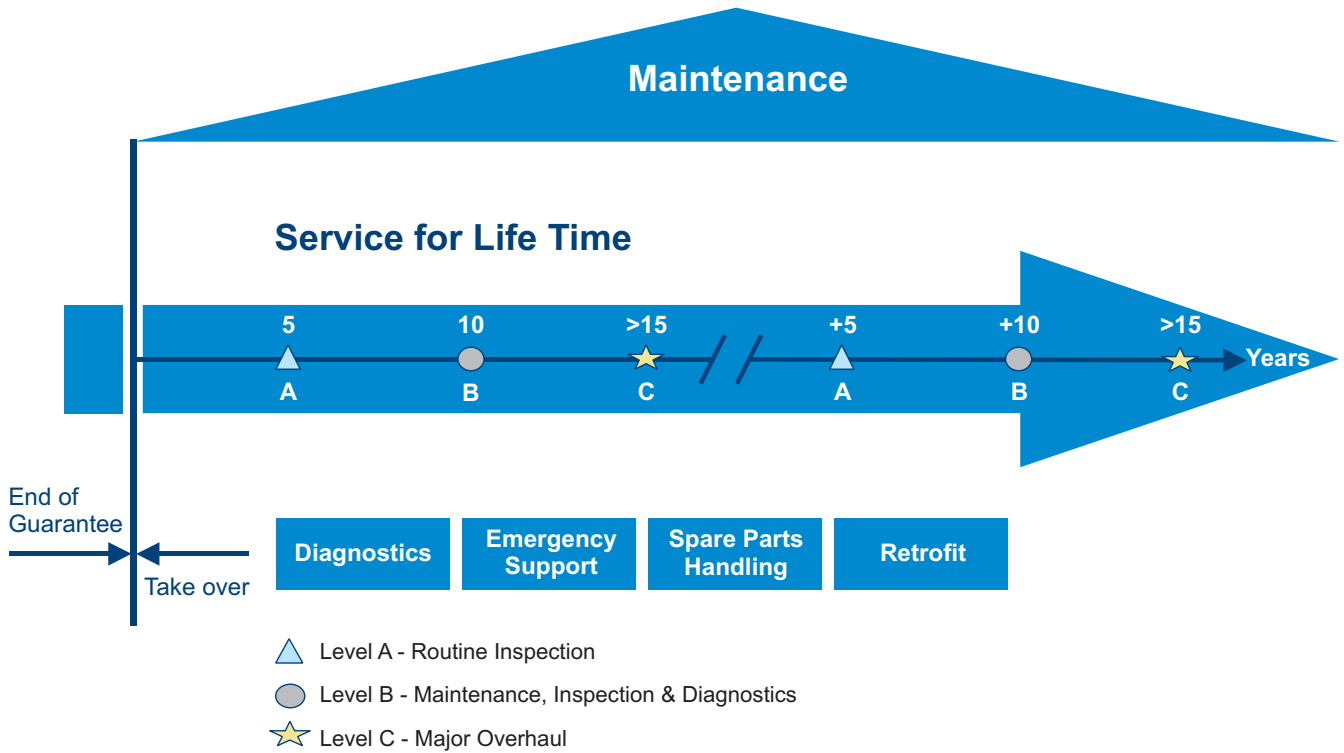


# Service High Voltage Products

## LTB – Live Tank Circuit Breakers



The aim in maintenance is to prevent and eliminate failures as quickly and safely as possible – at the lowest feasible cost. We can assist you in making the right investment decisions by inspecting and measuring the true condition of your equipment. When needed and possible, it will be upgraded with state-of-the-art components to comply with new technical, economical and ecological standards.

Total Life Cycle approach means following a 3-level maintenance schedule in order to minimize the total maintenance cost of the substation. We look out for the best interests of our customers all the way through the life of the high voltage switchgear installations.

The table in the next pages gives an overview of the portfolio of available services for Live Tank Breakers.

# LTB Service Portfolio

Equipment				Service	Standard Overhaul Material	Spare Parts and Components	Contact Material	Special tools	Supervision Manpower
CB type	Voltage Level [kV]	Drive type	Medium type						
FR	145 - 420	SG1	Minimum Oil	Yes	Limited	Limited	Limited	Limited	Yes
FS	72.5 - 420	SG1	Minimum Oil	Yes	Limited	Limited	Limited	Limited	Yes
FT	123 - 420	SG1	Minimum Oil	Yes	Limited	Limited	Limited	Limited	Yes
TOFQ	170	KR1 / KR2 / OP6	Minimum Oil	No	No	No	No	No	No
TR	72.5	KTR	Minimum Oil	Yes	Limited	Limited	Limited	Limited	Yes
TRE	72.5	KTR	Minimum Oil	Yes	Limited	Limited	Limited	Limited	Yes
TRI	72.5	KTR	Minimum Oil	Yes	Limited	Limited	Limited	Limited	Yes
TF	72.5	KTR	Minimum Oil	Yes	Limited	Limited	Limited	Limited	Yes
TI	72.5	KTR	Minimum Oil	Yes	Limited	Limited	Limited	Limited	Yes
TR	170	HTRF / SG1	Minimum Oil	Yes	Limited	Limited	Limited	Limited	Yes
DC(V)F	72.5 - 420	N.A.	Air Blast	Limited	No	Limited	No	No	No
DCGF	- 380	N.A.	Air Blast	Limited	No	Limited	No	No	No
DH(V)F	72.5 - 420	N.A.	Air Blast	Limited	No	Limited	No	No	No
DK(V)F	123 - 525	N.A.	Air Blast	No	No	No	No	No	No
DM(V)F	72.5 - 765	N.A.	Air Blast	No	No	No	No	No	No
DL(V)F	72.5 - 600	N.A.	Air Blast	Yes	Yes *1)	Yes	Yes	Yes	Limited
DL(V)FK	72.5 - 800	High pressure	Air Blast	Yes	Yes *1)	Yes	Yes	Yes	Limited
ELF / ELI	72.5 - 550	R-Drive / PKA / Rapp.	SF <sub>6</sub>	Yes	Yes *2)	Yes	Yes	Yes	Yes
ELF SF	72.5 - 145	AHMA / HKA	SF <sub>6</sub>	Yes	Yes	Yes	Yes	Yes	Yes
ELF SL	100 - 800	AHMA / PKA / HKA	SF <sub>6</sub>	Yes	Yes	Yes	Yes	Yes	Yes
ELF b	170	CE-Drive	SF <sub>6</sub>	Yes	Yes *2)	Yes	Yes	Yes	Yes
ELF SP	100 - 800	AHMA	SF <sub>6</sub>	Yes	Yes	Yes	Yes	Yes	Yes
ELF SD (16 2/3 Hz)	170	HMB 1.8	SF <sub>6</sub>	Yes	Yes	Yes	Yes	Yes	Yes
EDI / EDF SK	72.5	FSA / AHMA 1	SF <sub>6</sub>	Yes	Limited	Limited	Yes	Limited	Limited
EDF SV	72.5 - 170	FSA / AHMA 1	SF <sub>6</sub>	Yes	Limited	Limited	Yes	Limited	Limited
ACI	72.5	AHMA 1 / HMB 1.4	SF <sub>6</sub>	Yes	Yes	Yes	Yes	Yes	Yes
ELG / EDG (ENK)	72.5	CE-Drive	SF <sub>6</sub>	Yes	Limited	Yes	Yes	Yes	Limited

Limited: Please take contact with our responsible sales. No proactive approach towards end customer.  
 No: No more activities  
 N.A.: Not applicable

\*1) Lucifer Magnetic Valves limited available  
 \*2) Some drive spare parts are limited available

# LTB Service Portfolio

General technical support	Problem analysis, recommend actions, Troubleshooting	Upgrading, Upgrade	Diagnosis Condition Assessment	Training	Service			
					Medium type	Drive type	Voltage Level [kV]	Equipment CB type
Yes	Yes	No	No	No	Minimum Oil	SG1	145 - 420	FR
Yes	Yes	No	No	No	Minimum Oil	SG1	72.5 - 420	FS
Yes	Yes	No	No	No	Minimum Oil	SG1	123 - 420	FT
No	No	No	No	No	Minimum Oil	KR1 / KR2 / OP6	170	TOFQ
Yes	Limited	No	No	No	Minimum Oil	KTR	72.5	TR
Yes	Limited	No	No	No	Minimum Oil	KTR	72.5	TRE
Yes	Limited	No	No	No	Minimum Oil	KTR	72.5	TRI
Yes	Limited	No	No	No	Minimum Oil	KTR	72.5	TF
Yes	Limited	No	No	No	Minimum Oil	KTR	72.5	TI
Yes	Limited	No	No	No	Minimum Oil	HTRF / SG1	170	TR
Limited	No	No	No	No	Air Blast	N.A.	72.5 - 420	DC(V)F
Limited	No	No	No	No	Air Blast	N.A.	- 380	DCGF
Limited	No	No	No	No	Air Blast	N.A.	72.5 - 420	DH(V)F
No	No	No	No	No	Air Blast	N.A.	123 - 525	DK(V)F
No	No	No	No	No	Air Blast	N.A.	72.5 - 765	DM(V)F
Yes	Limited	Limited	No	No	Air Blast	N.A.	72.5 - 600	DL(V)F
Yes	Limited	Limited	No	No	Air Blast	High pressure	72.5 - 800	DL(V)FK
Yes	Yes	Limited	Yes	On the job	SF <sub>6</sub>	R-Drive / PKA / Rapp.	72.5 - 550	ELF / ELI
Yes	Yes	Limited	Yes	On the job	SF <sub>6</sub>	AHMA / HKA	72.5 - 145	ELF SF
Yes	Yes	Limited	Yes	On the job	SF <sub>6</sub>	AHMA / PKA / HKA	100 - 800	ELF SL
Yes	Yes	No	Yes	On the job	SF <sub>6</sub>	CE-Drive	170	ELF b
Yes	Yes	Yes	Yes	On the job	SF <sub>6</sub>	AHMA	100 - 800	ELF SP
Yes	Yes	No	Yes	On the job	SF <sub>6</sub>	HMB 1.8	170	ELF SD (16 2/3 Hz)
Yes	Yes	No	Yes	No	SF <sub>6</sub>	FSA / AHMA 1	72.5	EDI / EDF SK
Yes	Yes	No	Yes	No	SF <sub>6</sub>	FSA / AHMA 1	72.5 - 170	EDF SV
Yes	Yes	Yes	Yes	On the job	SF <sub>6</sub>	AHMA 1 / HMB 1.4	72.5	ACI
Yes	Yes	No	Yes	No	SF <sub>6</sub>	CE-Drive	72.5	ELG / EDG (ENK)

Limited: Please take contact with our responsible sales. No proactive approach towards end customer.  
 No: No more activities  
 N.A.: Not applicable

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