

TFRS MS Combined Cleaning Kit




Nominal voltages up to 36 kV / 15 ... 60 Hz

LIVE CLEANING EQUIPMENT



Based on DIN VDE 0681 Part 1 and DIN VDE 0682 Part 621
Universal gear coupling acc. to EN/IEC 60832
(DIN VDE 0682 Part 211)

- Not for use in wet weather 
- For indoor and outdoor installations
- Combined kit for dry and damp cleaning under live conditions
- Transparent intake tubes for enhanced safety
- Specially adapted operating heads for intensive cleaning
- Universal gear coupling for replacing and adjusting the angle of operating heads
- Rigid and flexible plug-in operating heads allow fast and easy replacement of the sponges



Dry and damp cleaning of a transformer under live conditions using the TFRS MS combined cleaning kit.

Application

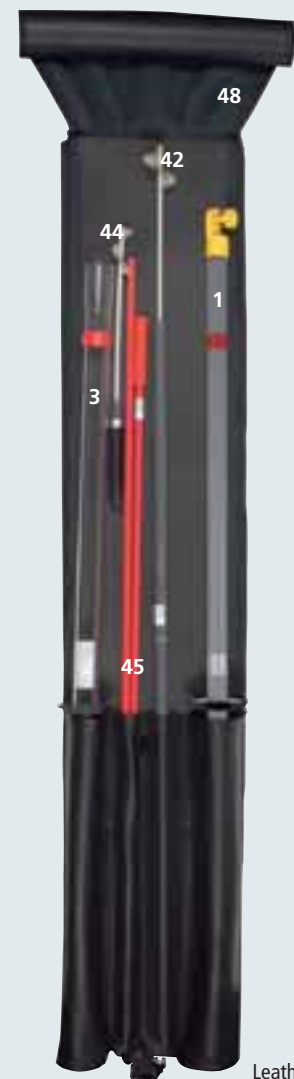
Dry cleaning work is performed with operating heads that are used to clean or brush dirty parts of the installation while simultaneously sucking the dirt away. Loose layers of dust and cobwebs are easily cleaned with little effort. Oily and tough pollutant layers are removed by damp cleaning using sponges and special insulating cleaning liquids.

Requirements

TFRS MS allows maintenance work to be done under supervision of a qualified electrician at voltages from 1 to 36 kV according to EN 50110-1 "Operation of electrical installations – Minimum Requirements", observing clauses 6.3.1 to 6.3.12. In Germany apply sections BGV A3 and BGR A3 of the national accident prevention regulations (UVV) "Elektrische Anlagen und Betriebsmittel" [Electrical installations and equipment] issued by the German Employer's Liability Association for Precision and Electrical Engineering (BGFE).

A TFRS MS Combined Cleaning Kit

Pos.	Qty.	Type	Description	Part No.
Standard Equipment – Leather bag				
1	1	IS 36 ZK STK 1300	Insulating rod with handle, and plug-in coupling, single-part	785 325
3	1	SRH 1180 MS	Intake tube with handle	785 120
42	1	RB 50 MS	Cleaning brush, for individual kit parts	785 210
44	1	RB 20 NS	Cleaning brush, for individual kit parts Ø25 mm	785 585
45	1	AS MS	Locking rod	785 109
48	1	KLT 140 28	Storage bag	785 952



Leather bag

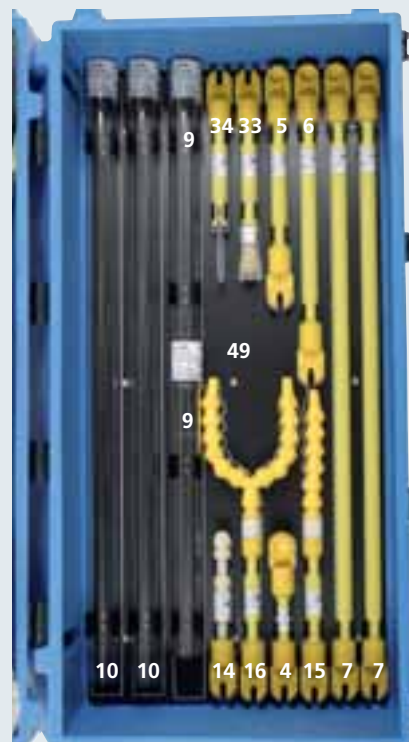
LIVE CLEANING EQUIPMENT

Type	Model	Part No.
------	-------	----------

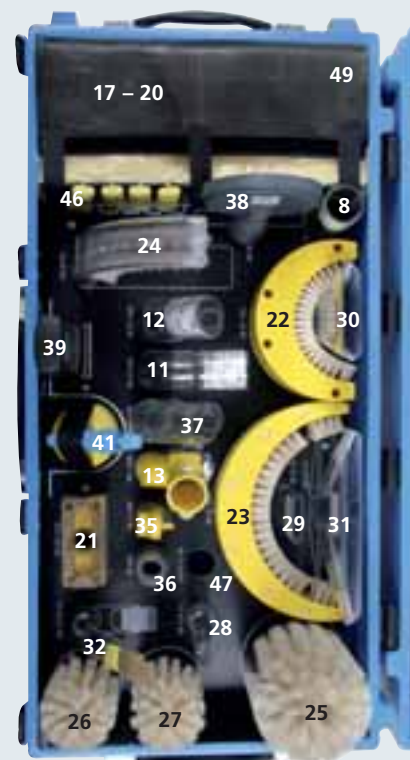
A TFRS MS Combined Cleaning Kit

Pos.	Qty.	Type	Description	Part No.
Standard Equipment – Case Cover				
4	1	ISV 220 ZK MS	Extension, 220 mm	785 316
5	1	ISV 320 ZK MS	Extension, 320 mm	785 317
6	1	ISV 420 ZK MS	Extension, 420 mm	785 318
7	2	ISV 820 ZK MS	Extension, 820 mm	785 319
9	2	SRV 400 MS	Extension, 400 mm	785 122
10	2	SRV 800 MS	Extension, 800 mm	785 123
14	1	AK RS S ZK MS	Operating head, rigid	785 324
15	1	AK RS ZK MS	Single operating head, flexible	785 322
16	1	AK RS 2 ZK MS	Dual operating head, flexible	785 323
33	1	RP 15 ZK MS	Round brush	785 321
34	1	S 30 ZK MS	Scraper	785 320
Standard Equipment – Case Bottom				
8	1	SRV 200 MS	Extension, 200 mm	785 121
11	1	SRW 90 MS	Angled intake tube 90°	785 131
12	1	SRW 135 MS	Angled intake tube 135°	785 132
13	1	SRW V MS	Angled intake tube, lockable	785 130
17	10	RS 1544 MS	Rectangular cleaning sponge	785 274
18	5	RS 1574 MS	Rectangular cleaning sponge	785 275
19	5	RS 15104 Z MS	Rectangular cleaning sponge, serrated	785 279
20	5	RSD 15104 Z MS	Triangular cleaning sponge, serrated	785 280
21	1	REB 1095 MS	Rectangular brush	785 160
22	1	HRB 120 MS	Half-round brush 120	785 140
23	1	HRB 190 MS	Half-round brush 190	785 150
24	1	BB 245 MS	Arc brush	785 151
25	1	STB 120 MS	Tubular brush, 250 mm	785 170
26	1	STB 80 MS	Tubular brush, cylindrical bristles	785 171
27	1	STB 80 K MS	Tubular brush, conical bristles	785 172
28	1	FD 35 S MS	Flat cleaning head 35	785 551
29	1	FD 60 MS	Cleaning head 60	785 220
30	1	FD 110 MS	Cleaning head 110	785 221
31	1	FD 210 MS	Cleaning head 210	785 223
32	1	FD 35 W P MS	Flat cleaning head with brush	785 552
35	1	AKA TF MS	Operating head adapter	785 259
36	1	SRA MS	Intake tube adapter	785 212
37	1	SSA W D	Intake hose adapter	785 200
38	1	ISP 135 ZK MS	Insulated mirror	785 190
39	1	DHTM T 615	Digital hygrometer/thermometer	785 181
41	1	SF FRF MS	Spray bottle	785 953
46	4	EP 25 L MS	Spare brush	785 224
47	1	RSI ...	Reducing insert (not included in delivery)	—
49	1	KKL TFRS MS	GRP case, blue	785 951

Case cover



Case bottom



TFRS MS	Contents, GRP case and leather bag included	785 950
---------	---	----------------

Customised kits are available on request.

Single Parts of TFRS MS Combined Cleaning Kit



Standard Equipment – Leather Bag

LIVE CLEANING EQUIPMENT

Artificial Leather Bag, empty

With zip and shoulder strap



Type	Colour	Dimensions	Position	Part No.
KLT 140 28	●	1400 x 280 mm	48	785 952

Insulating Rod with Handle and Plug-In Coupling

Single-part unit



Type	Diameter	Dimensions	Position	Part No.
IS 36 ZK STK 1300	30 mm	1300 mm	1	785 325

Intake Tube with Handle

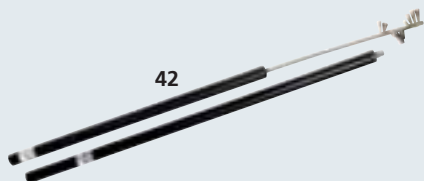
For use as operating tube with handle, handguard, insulating part, red ring and extension



Type	Diameter	Dimensions	Position	Part No.
SRH 1180 MS	40 mm	1180, insulating part 525 mm	3	785 120

Cleaning Brush

For individual kit parts Ø40 mm, modular



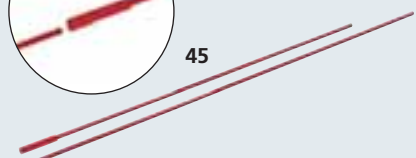
Type	Diameter	Dimensions	Position	Part No.
RB 50 MS	45 mm	1430 mm	42	785 210

Cleaning Brush

For individual kit parts Ø25 mm



Type	Diameter	Dimensions	Position	Part No.
RB 20 NS	30 mm	330 mm	44	785 585



Locking Rod

Modular, for use as visible working limit

Type	Dimensions	Position	Part No.
AS MS	2200 mm	45	785 109



Single Parts of TFRS MS Combined Cleaning Kit

LIVE CLEANING EQUIPMENT

Standard Equipment – Case

GRP Case, empty

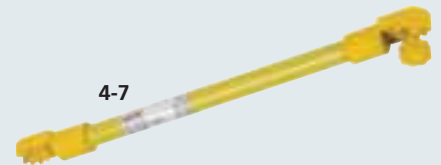
With retaining clips and printed top and bottom insert

Type	Colour	Dimensions	Position	Part No.
KKL TFRS MS	●	850 x 410 x 400 mm	49	785 951



Extension

Type	Diameter	Dimensions	Position	Part No.
ISV 220 ZK MS	20 mm	220 mm	4	785 316
ISV 320 ZK MS	20 mm	320 mm	5	785 317
ISV 420 ZK MS	20 mm	420 mm	6	785 318
ISV 820 ZK MS	20 mm	820 mm	7	785 319



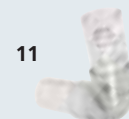
Extension

Type	Diameter	Dimensions	Position	Part No.
SRV 200 MS	40 mm	200 mm	8	785 121
SRV 400 MS	40 mm	400 mm	9	785 122
SRV 800 MS	40 mm	800 mm	10	785 123



Angled Intake Tube, 90°

Type	Diameter	Dimensions	Position	Part No.
SRW 90 MS	40 mm	120 mm	11	785 131



Angled Intake Tube, 135°

Type	Diameter	Dimensions	Position	Part No.
SRW 135 MS	40 mm	100 mm	12	785 132



Angled Intake Tube

Lockable, adjustable due to 15° gearing, for positioning the cleaning heads

Type	Diameter	Dimensions	Position	Part No.
SRW V MS	40 mm	160 mm	13	785 130



Single Parts of TFRS MS Combined Cleaning Kit



Standard Equipment – Case

LIVE CLEANING EQUIPMENT

Rigid Operating Head

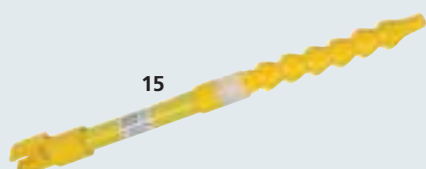
For attaching the cleaning sponges



Type	Diameter	Dimensions	Position	Part No.
AK RS S ZK MS	20 mm	200 mm	14	785 324

Single Operating Head

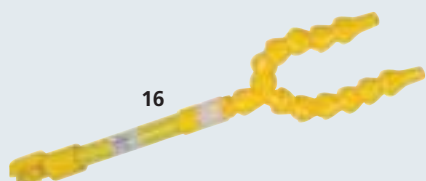
Flexible, for attaching the cleaning sponges



Type	Diameter	Dimensions	Position	Part No.
AK RS ZK MS	20 mm	400 mm	15	785 322

Dual Operating Head

Flexible, for attaching the cleaning sponges



Type	Diameter	Dimensions	Position	Part No.
AK RS 2 ZK MS	20 mm	415 mm	16	785 323

Rectangular Cleaning Sponge



Type	Dimensions	PU	Position	Part No.
RS 1544 MS	150 x 40 x 40 mm	5 pc(s).	17	785 274

Rectangular Cleaning Sponge



Type	Dimensions	PU	Position	Part No.
RS 1574 MS	150 x 70 x 40 mm	5 pc(s).	18	785 275

Rectangular Cleaning Sponge, serrated



Type	Dimensions	PU	Position	Part No.
RS 15104 Z MS	150 x 100 x 40 mm	5 pc(s).	19	785 279

Triangular Cleaning Sponge, serrated



Type	Dimensions	PU	Position	Part No.
RSD 15104 Z MS	150 x 100 x 40 mm	5 pc(s).	20	785 280

Rectangular Brush



Type	Diameter	Dimensions	Position	Part No.
REB 1095 MS	40 mm	105 x 90 x 50 mm	21	785 160

Half-round Brush

For cleaning insulators as well as horizontal and vertical openings. The brush can be attached to angled intake tube type SRW V MS that can be adjusted to lead the brush around the complete insulator.



Type	Diameter	Position	Part No.
HRB 120 MS	40 / 120 mm	22	785 140
HRB 190 MS	40 / 190 mm	23	785 150



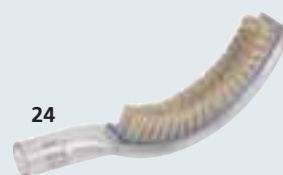
Single Parts of TFRS MS Combined Cleaning Kit

LIVE CLEANING EQUIPMENT

Standard Equipment – Case

Arc Brush

Type	Diameter	Dimensions	Position	Part No.
BB 245 MS	40 mm	390 mm	24	785 151



Tubular Brush

Type	Diameter	Dimensions	Position	Part No.
STB 120 MS	40 / 120 mm	250 mm	25	785 170



Tubular Brush

Cylindrical bristles

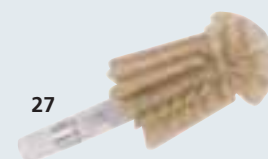
Type	Diameter	Dimensions	Position	Part No.
STB 80 MS	25 / 85 mm	240 mm	26	785 171



Tubular Brush

Conical bristles

Type	Diameter	Dimensions	Position	Part No.
STB 80 K MS	25 / 85 mm	240 mm	27	785 172



Flat Cleaning Head 35

Type	Diameter	Dimensions	Position	Part No.
FD 35 S MS	40 mm	35 mm	28	785 551



Cleaning Head 60

Width: 60 mm

Type	Diameter	Dimensions	Position	Part No.
FD 60 MS	40 mm	190 mm	29	785 220



Cleaning Head 110

Width: 110 mm

Type	Diameter	Dimensions	Position	Part No.
FD 110 MS	40 mm	260 mm	30	785 221



Cleaning Head 210

Width: 210 mm

Type	Diameter	Dimensions	Position	Part No.
FD 210 MS	40 mm	255 mm	31	785 223



Single Parts of TFRS MS Combined Cleaning Kit



Standard Equipment – Case

LIVE CLEANING EQUIPMENT



Flat Cleaning Head 35

Width: 35 mm, angled (30°), with detachable brush

Type	Diameter	Dimensions	Position	Part No.
FD 35 W P MS	40 mm	35 mm	32	785 552



Round Brush

Type	Diameter	Dimensions	Position	Part No.
RP 15 ZK MS	20 mm	270 mm	33	785 321



Scraper

Type	Diameter	Dimensions	Position	Part No.
S 30 ZK MS	20 mm	280 mm	34	785 320



Operating Head Adapter

Universal gear coupling / transparent tube Ø25 mm

Type	Diameter	Dimensions	Position	Part No.
AKA TF ZK MS	40 mm	125 mm	35	785 259



Intake Tube Adapter

For brushes and cleaning heads Ø25 mm

Type	Diameter	Dimensions	Position	Part No.
SRA MS	40 / 25 mm	100 mm	36	785 212



Intake Hose Adapter

Adjustable, angled (120°), with regulation of intake air, for use with intake hose system Ø35 mm

Type	Diameter	Position	Part No.
SSA W D	35 / 40 mm	37	785 200

Insulating Mirror

For visual inspection of hidden electrical components

Type	Diameter	Position	Part No.
ISP 135 ZK MS	40 / 135 mm	38	785 190



Digital Hygrometer/Thermometer

For verifying the climatic conditions that must be adhered to.
Measuring range 0° C ... +50° C, 5 ... 95% relative air humidity

Type	Dimensions	Position	Part No.
DHTM T 615	57 x 190 x 42 mm	39	785 181



Spray Bottle

For cleaning liquids

Type	Capacity	Position	Part No.
SF FRF MS	500 ml	41	785 953



Spare Brush

For flat cleaning heads type FD 39 WP MS

Type	Dimensions	PU	Position	Part No.
EP 25 L MS	40 mm	3 pc(s).	46	785 224

