

## CATALOG SPOT WELDING MACHINES

Edition: March 2006



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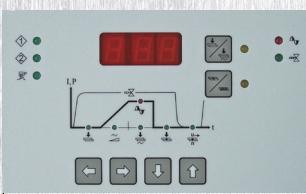
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## Note:

According to EN 50240 Product Standards for Resistance Welding, the operation of such units is only permitted with a mains interference filter in non-industrial electrical supplies inside the field of jurisdiction in the EC.

## FEATURES:

### Spot welding machines Series SF / SL 100



Multi-functional control unit with micro-processor and safety switching. Operation by standardized picture symbols (not dependant on the language)



Water-cooled, layered high-power transformer suitable for high performance and long duty cycle. Even in shift operation there are no thermal problems.



High value quality components  
"Made in Germany".



Robust machine framework with Dalex basic technology for light industrial applications.

**DALEX Spot welding machines**  
foot-operated versions, water-cooled

**SF 102 / 104**

**Spot welding machine**

standard throat depth 130 – 300 mm infinitely variable, vertical arm spacing 160 mm, electrode force max. 220 daN

complete with:  
welding control  
main power switch in accordance  
with VDE 0113  
3 m of power cable

**SF 102**

nominal output at 50% duty cycle: 8 kVA  
sec. short-circuit current: 9,1 kA



Picture: SF 104

Type

Order-No.

SF 102

SF 102

**SF 104**

nominal output at 50% duty cycle: 12 kVA  
sec. short-circuit current: 11,2 kA

SF 104

SF 104

1-time-synchronous welding control

operation modes:  
current timer:  
current:  
thyristor power stage

with/without welding current  
1 – 99 cycles

1 – 99 %

surcharge for:

mains filter for operation in non-industrial supplies\*

\*information according to operating instructions

The listed machines are suited for operation on 400 V,  
different voltages upon request.

**DALEX Spot welding machines**  
foot-operated versions, water-cooled

**SL 102 / 104**

**Spot welding machine**

standard throat depth 130 – 300 mm infinitely variable, vertical arm spacing 160 mm, electrode force max. 360 daN

complete with:  
welding control  
main power switch in accordance with VDE 0113  
3 m of power cable

**SL 102**

nominal output at 50% duty cycle: 8 kVA  
sec. short-circuit current: 9,1 kA



Picture: SL 104

Type

Order-No.

SL 102

SL 102

SL 104

SL 104

**SL 104**

nominal output at 50% duty cycle: 12 kVA  
sec. short-circuit current: 11,2 kA

5 timer synchronous welding control  
with 2 welding programs  
for operation with a thyristor power stage

surcharge for:

double foot pedal for operation mode  
„currentless contact“

surcharge for:

mains filter for operation in non-industrial supplies

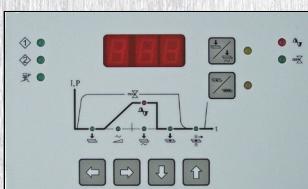
The listed machines are suited for operation on 400 V, different voltages upon request.

# FEATURES:

## Spot welding machines Series SF / SL 200 with AFS-Technology

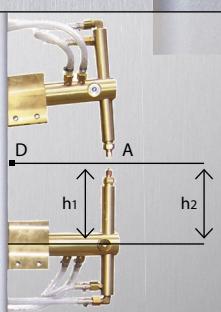


Easily adjustable gap limitation of the upper arm.



Multi-functional control unit with micro-processor and safety switching. Operation by standardized picture symbols (not dependant on the language)

**NEW**



$h_1 = h_2$ ; D = fulcrum  
A = working level

DALEX Anti Friction System (AFS)  
Through the displacement of the fulcrum of the upper arm on the working level of the lower arm, a friction-free application of the electrodes is guaranteed. Force and current are brought exactly onto the workpiece, the weld is secured.



Water-cooled, layered high-power transformer suitable for high performance and long duty cycle. Even in shift operation there are no thermal problems.



High value quality components  
“Made in Germany”.



Extremely rigid machine framework for electrode force up to 420 daN for welding stainless steel etc.

**DALEX Spot welding machines**  
foot-operated versions, water-cooled

SF 202 / 204 / 206

Spot welding machine

standard throat depth 130 – 500 mm infinitely variable, vertical arm spacing 250 mm, electrode force max. 360 daN

complete with:  
welding control  
main power switch in accordance  
with VDE 0113  
3 m of power cable

SF 202

nominal output at 50% duty cycle: 20 kVA  
sec. short-circuit current: 15 kA



Picture: SF 204

Type

Order-No.

SF 202

SF 202

SF 204

nominal output at 50% duty cycle: 30 kVA  
sec. short-circuit current: 20 kA

SF 204

SF 204

SF 206

nominal output at 50% duty cycle: 50 kVA  
sec. short-circuit current: 25 kA

SF 206

SF 206

1-time-Synchronous welding control

operation modes: with/without welding current  
current timer: 1 – 99 cycles  
current: 1 – 99 %  
thyristor power stage,

surcharge for:

mains filter for operation in non-industrial supplies

The listed machines are suited for operation on 400 V, different voltages upon request.

**DALEX Spot welding machines**  
pneumatically operated version, water-cooled

**SL 202 / 204 / 206**

**Spot welding machine**

with compressed air conditioner, standard throat depth 130 – 500 mm, infinitely variable, vertical arm spacing 250 mm, single stroke cylinder max. 50 mm electrode stroke, electrode force max. 420 daN

complete with:

welding control  
main power switch in accordance  
with VDE 0113  
3 m of power cable

**SL 202**

nominal output at 50% duty cycle: 20 kVA  
sec. short-circuit current: 15 kA



Picture: SL 204

Type

Order-No.

SL 202

SL 202

SL 204

SL 204

SL 206

SL 206

5 timer synchronous welding control

with 2 welding programs

for operation with a thyristor power stage

surcharge for:

5 timer synchronous welding control MPS 10  
with 8 welding programs  
for operation with a thyristor power stage

surcharge for:

double foot pedal for operation mode  
„currentless contact“  
throat depth 380 – 700 mm for SL 202  
throat depth 380 – 700 mm for SL 204  
throat depth 380 – 700 mm for SL 206

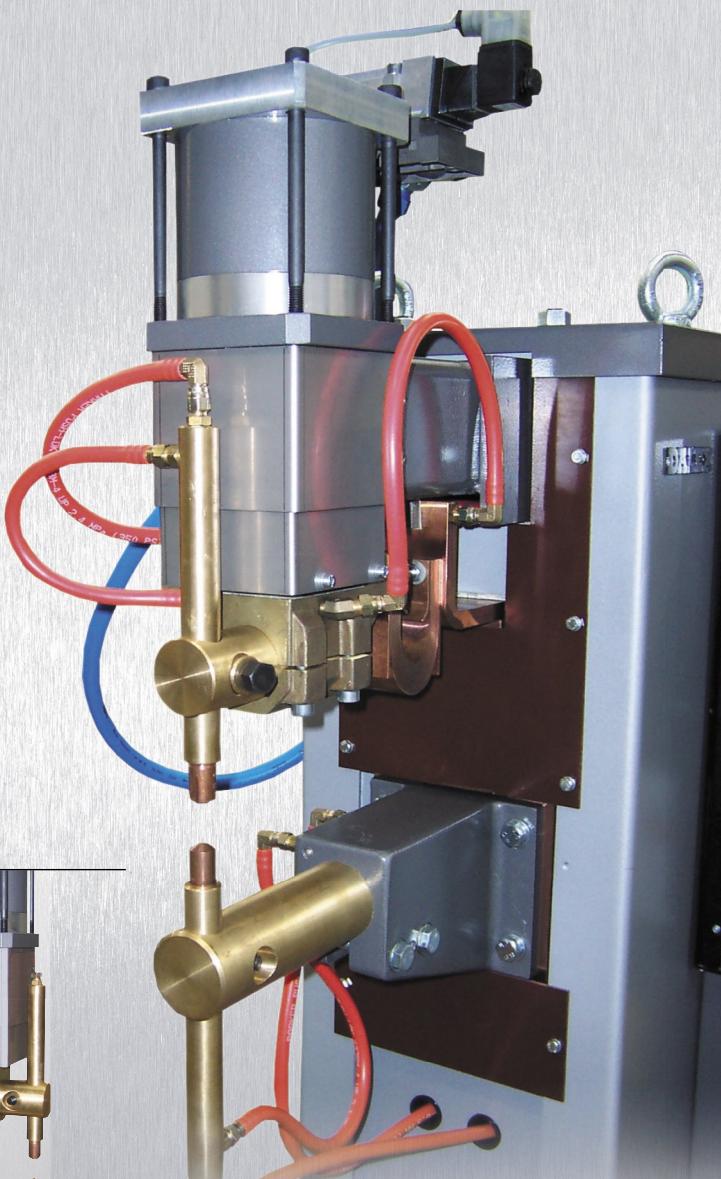
surcharge for:

mains filter for operation in non-industrial supplies

The listed machines are suited for operation on 400 V,  
different voltages upon request.

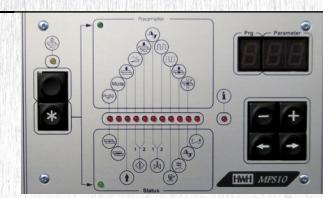
## FEATURES:

### Spot welding machine Series PL



Throat depth infinitely  
adjustable from 250 up to 580  
e.g. 450 – 750 mm and height  
adjustable arm gap.

Parallel guided electrode force  
system up to 600 daN.



Multifunction welding control  
with comfortable memory  
function for up to 8 material and  
component pairings.



Water-cooled, layered high-  
power transformer suitable for  
high performance and long duty  
cycle. Even in shift operation  
there are no thermal problems.

**DALEX Spot welding machines**  
pneumatically operated version, water-cooled

**PL 40 / 63**

**Spot welding machine**

Version A = spot weld fitting with foot pedal and front-mounted electrode support, watercircuit with fittings for external recooler

**basic equipment:**

throat depth 250 – 550 mm infinitely adjustable, vertical arm spacing 150 or 310 mm, electrode force 100 – 600 daN, single stroke cylinder max. stroke 65 mm

**complete with:**

add-on control cabinet and welding control main power switch in accordance with VDE 0113

**PL 40**

nominal output at 50% duty cycle: 40 kVA  
sec. short-circuit current: 26,2 kA



Picture: PL 63

Type

Order-No.

PL 40

PL 40

**PL 63**

nominal output at 50% duty cycle: 63 kVA  
sec. short-circuit current: 31,5 kA

PL 63

PL 63

**5 timer synchronous welding control**

with 8 welding programs

for operation with a thyristor power stage

**surcharge for:**

double foot pedal for operation mode  
„currentless contact“  
(not available in connection with double stroke cylinder)

throat depth 450 – 750 mm

flow control unit

**optional:**

with double stroke cylinder  
electrode force 100- 600 daN  
stroke 45 + 20 mm

**surcharge for:**

mains filter for operation in non-industrial supplies

The listed machines are suited for operation on 400 V, different voltages upon request.

**DALEX Spot welding machines**  
pneumatically operated version, water-cooled

**PL 80 / 100**

**Spot welding machine**

Version A = spot weld fitting with foot pedal and front-mounted electrode support, watercircuit with fittings for external recooler

basic equipment:

throat depth 350 – 650 mm infinitely adjustable, vertical arm spacing 160 or 360 mm, single stroke cylinder max. stroke 90 mm, electrode force 100 – 600 daN

complete with:

add-on control cabinet  
and welding control

main power switch in accordance with VDE 0113

**PL 80**

nominal output at 50% duty cycle: 80 kVA  
sec. short-circuit current: 35 kA

**PL 100**

nominal output at 50% duty cycle: 100 kVA  
sec. short-circuit current: 41,5 kA

5 timer synchronous welding control

with 8 welding programs

for operation with a thyristor power stage

surcharge for:

double foot pedal for operation mode

"currentless contact"

(not available in connection with double stroke cylinder)

flow control unit

optional:

with double stroke cylinder

electrode force 100 – 600 daN

stroke 65 + 20 mm

surcharge for:

mains filter for operation in non-industrial supplies

The listed machines are suited for operation on 400 V, different voltages upon request.



Picture: PL 100

Type

Order-No.

PL 80

PL 80

PL 100

PL 100

## DALEX Spot welding guns for car body repairs

Type	Order-No.	(without electrode arms)
A 3112	A3112.11079.1	
A 3119	A 3119.15064.1	
A 3139 S3	A3139S3.15068.1	
A 3139 S2	A3139S2.15067.1	

### A 3112 Spot welding gun manually operated, air-cooled

with double stroke mechanism and short-stroke push-to-lock bolt: short-stroke 25 mm, long stroke 57 mm, with electrode force switch and secondary transformer for the current control

nominal output at 50 % duty cycle: 2,4 kVA  
sec. short-circuit current: 8,5 kA  
electrode force: 180 daN  
vertical arm spacing: 120 mm  
suitable control units: RS 15 Z 16 or Variospot 3.3



Picture: A 3112

### A 3119 Spot welding gun manually operated, water-cooled

with double stroke mechanism and short-stroke push-to-lock bolt: short stroke 25 mm, long stroke 57 mm, with electrode force switch and secondary transformer for current control

nominal output at 50% duty cycle: 8,0 kVA  
sec. short-circuit current: 9,5 kA  
electrode force: 180 daN  
vertical arm spacing: 120 mm  
welding performance: sheet steel 3+3 mm  
suitable control units: RS 15 Z 16 or Variospot 3.3  
compatible water recooling unit: Cool1  
compatible spring balancer: D4/17



Picture: A 3119

### A 3139 S3 Spot welding gun air operated, water-cooled

with double stroke mechanism:  
long stroke 52 mm, working stroke 27 mm

nominal output at 50 % duty cycle: 8 kVA  
sec. short-circuit current: 9,5 kA  
electrode force: 300 daN  
vertical arm spacing: 120 mm  
welding performance: sheet steel 3 + 3 mm  
suitable control units: RS 15 Z 16 or Variospot 3.3  
compatible water recooling unit: Cool1



Picture: A 3139 S3

Upon request:  
A 3139 S2 Spot welding gun

technical data similar to A 3139 S3  
however, with cardan joint  
suitable control units: RS 15 Z 16 or Variospot 3.3  
compatible water recooling unit: Cool1  
compatible spring balancer: D4/21 or D5/30

A 3112      A3112.11079.1

A 3119      A 3119.15064.1

A 3139 S3      A3139S3.15068.1

A 3139 S2      A3139S2.15067.1

**DALEX Spot welding guns**  
air operated, water-cooled

Type	Order-No.	
		(without electrode arms)
Model 1 with manual control valve and electrode force switch		
<b>3238 Spot welding gun</b>  with double stroke cylinder: long stroke 75 mm, pre-stroke 50 mm, work-stroke with stroke adjustment 0-25 mm	 Picture: 3238	3238      3238_4.11070.1
nominal output at 50 % duty cycle: 16 kVA sec. short-circuit current: 13,5 kA electrode force: 270 daN vertical arm spacing: 130 mm welding performance: sheet steel 3 + 3 mm max. 4 + 4 mm suitable control units: RS 15 Z 32 compatible water recooling unit: Cool 1 compatible spring balancer: D5 / 45		
Model 2 with 5/2-way solenoid valve		
<b>3228 Spot welding gun</b>  with double stroke cylinder: long stroke 75 mm, pre-stroke 50 mm, work-stroke with stroke adjustment 0-25 mm	 Picture: 3228	3228      3228_4.11069.1
nominal output at 50 % duty cycle: 16 kVA sec. short-circuit current: 13,5 kA electrode force: 270 daN vertical arm spacing: 130 mm welding performance: sheet steel 3 + 3 mm max. 4 + 4 mm suitable control units: add-on control cabinet B200 + welding control insert MPS 10 compatible water recooling unit: Cool 1 compatible spring balancer: D5 / 45		
<b>3328-6 Spot welding gun</b>  series-equipped with gyroscopic safety suspension, with double stroke cylinder long stroke 51 mm, pre-stroke 33 mm, working stroke with 0-18 mm	 Picture: 3328-6	3328-6      3328_6.11106.1_1
nominal output at 50 % duty cycle: 25 kVA sec. short-circuit current: 22,5 kA electrode force: 600 daN vertical arm spacing: 118 mm welding performance: sheet steel 4 + 4 mm suitable control units: add-on control cabinet B200 + welding control insert MPS 10 compatible water recooling unit: Cool 1 compatible spring balancer: - for throat depth 170 + 350 mm      D5/60 500 – 800 mm      D5/75		
* added price for arm gap 248 mm		

**DALEX Spot welding guns**  
air operated, water-cooled

Type	Order-No.	
		(without electrode arms)
<p><b>3329 Spot welding gun</b></p> <p>with double stroke cylinder: long stroke 60 mm, pre-stroke 40 mm, work-stroke with stroke adjustment 0 – 20 mm</p> <p>nominal output at 50 % duty cycle: 25 kVA sec. short-circuit current: 17 kA electrode force: 440 daN vertical arm spacing: 140 mm welding performance: sheet steel 3 + 3 mm max. 4 + 4 mm suitable control unit: add-on control cabinet B 200 + welding control insert MPS 10 compatible water recooling unit: Cool 1 compatible spring balancer: D5/60</p>	3329	3329.16474.1

**C-Gun with 5/2-way-solenoid-valve**

3346, 3348, 3349  
Spot welding gun

choice of single stroke cylinder and adjustment  
stroke 5 – 45 mm (3346, 3349) or double stroke  
cylinder: electrode stroke max. 70 mm (3348)



Picture: 3329



Picture: 3348

nominal output at 50 % duty cycle:	3346	22 kVA	
	3348	25 kVA	
	3349	35 kVA	
sec. short-circuit current:	3346	17 kA	
	3348	18,2 kA	
	3349	26,3 kA	
electrode force:		360 daN	
vertical arm spacing:		100 mm	
welding performance:		sheet steel 3 + 3 mm max. 4 + 4 mm	
suitable control unit:		add-on control cabinet B 200 + welding control insert MPS 10	
compatible water recooling unit		Cool 1	
compatible spring balancer:	3346	D5/45	3346_4.11073.1
	3348	D5/60	3348_4.11074.1
	3349	D5/75	3349.16480.1

**DALEX RZ 906**  
**Repair spot welder**

Type	Order-No.	

**Repair spot welder RZ 906**

Spot welding with quality control:  
 special programmes for coated metal or sheet metal  
 with rest adhesive an vanish



Picture: RZ906

**Technical Data RZ 906**

Rating power at 100 % d. c.: 20 kVA  
 Short-circuit current: 12 kA  
 Electrode force max.: 380 daN

Basics: mobile welding unit with integrated welding controller, inverter, cooler, middle frequency transformer, bar, balancer, spotter with bulge hammer and accessories.

C-gun with monitoring of welding quality  
 optional with:

C-bow transverse incl. set of electrodes, air cooled

RZ906.16496.1

150 mm C-bow incl. set of electrodes, water cooled

RZ906.97102.3

350 mm C-bow incl. set of electrodes, water cooled

RZ906.97103.3

500 mm C-bow incl. set of electrodes, water cooled

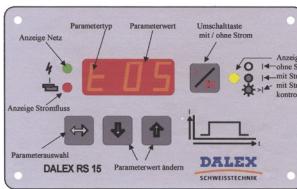
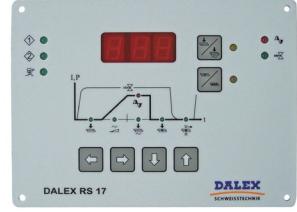
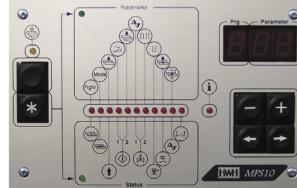
RZ906.97104.3

X-gun with monitoring of welding quality  
 and standard arms (window 92mm x 110mm),  
 water cooled

RZ906.97105.3

RZ906.16494.1

**DALEX**  
Welding controls

Type	Order-No.	
for SF machines		
<p>current setting for phase shift, digital parameter input</p> <p><b>RS 15</b></p> <p>1 timer synchronous welding control</p> <p>operating modes: with / without current current: 1 – 99 % current time: 1 – 99 cycles</p>  <p>Picture: RS 15</p>		
<p>for SL machines</p> <p>current setting via phase shift (solenoid valve voltage 24 V)</p> <p>upslope 0 – 15 cycles parameter setting via arrow keys</p> <p><b>RS 17</b></p> <p>5 timer synchronous welding control with 2 welding programs</p> <p>operating modes: single (EP) / series (SP) squeeze time, Hold time, off time and cool time: each 1 – 99 cycles current time: 0,5 – 9,5; 10 – 99 cycles welding current: 0 – 99 % impulses: 1 – 99 upslope time: 0,5 – 9,5; 10 – 15 cycles</p>  <p>Picture: RS 17</p>		
<p>for PL machines</p> <p>current setting via phase shift (solenoid valve voltage 24 V)</p> <p>upslope 0 – 15 cycles parameter setting via arrow keys</p> <p><b>MPS 10</b></p> <p>5 timer synchronous welding control with 8 welding programs</p> <p>operating modes: single (EP) / series (SP) squeeze time, Hold time, off time and cool time: each 1 – 99 cycles current time: 0,5 – 9,5; 10 – 99 cycles welding current: 0 – 99 % impulses: 1 – 99 upslope time: 0,5 – 9,5; 10 – 15 cycles</p>  <p>Picture: MPS 10</p>		

**DALEX Welding control and Sheet Steel processing unit**

for Spot welding guns  
A 3112 / A 3119

A 3139 S2 / A 3139 S3

RS 15 Z 16 Control unit

for Spot welding gun  
3238

RS 15 Z 32 Control unit

1-timer-thyristor control unit, current: 1-99 %,  
current time: 1-99 cycles, current control via secondary  
transformer with main power switch in accordance with VDE 0113



Picture: RS 15 Z 16

Type

Order-No.

RS 15 Z 16

RS\_15\_Z\_16

RS 15 Z 32

RS\_15\_Z\_32

for Spot welding guns  
A 3112 / A 3119

A 3139 S2 / A 3139 S3

Control unit with  
Sheet steel processing unit

Type Variospot 3.3, technical equipment as RS 15,  
in addition equipped with selector switch for  
operating DALEX spot welding guns or poke gun  
electrode with secondary welding cable, 1600 mm long,  
with accessory case and exchangeable electrodes for  
shrinking, welding-on of pins, bolts, disks, nails and  
wire electrodes, dinging hammer.



Picture: Variospot 3.3

Variospot 3.3

VARIOSPOT\_3\_3

for Spot welding guns  
3228  
3328-6  
3329  
3346 / 3348 / 3349

Add-on control cabinet B 200  
welding control insert MPS 10

with plug connection  
for connection on to DALEX spot welding guns

fitted with:  
main switch according to VDE 0113  
3 m mains connection cable

8 welding programs for  
operation with thyristor power stage

- digital current and time adjustment
- up-slope and impulse function
- voltage drop compensation  
(automatic acknowledgement of frequency 50/60 Hz)
- parameter input via keyboard
- status indication via LED's
- international operating symbols
- interlocking and stepping contact



Picture: Add-on control cabinet B 200

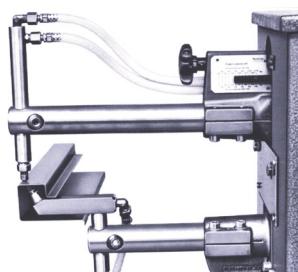
MPS 10  
MPS 10  
MPS 10

S\_78.96832.1\_5  
S\_78.96832.1  
S\_78.96832.1\_7

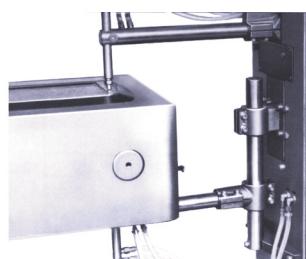
3328-6  
3228 / 3329 / 3346 / 3348  
3349

**DALEX**  
**Optional equipment and**  
**Swivelling fittings**

Type	Order-No.	
for SF 102 / 104; SL 102 / 104		
Electrode arm, complete 32 mm Ø, 300 mm mit 1B20, straight	Z_6.51411.3	
Electrode arm, complete 32 mm Ø, 300 mm, mit 1C20, inclined	Z_6.51278.3	
Vice Electrode 16 ES 8, clamping range 3-8 mm Ø	Z_5.51480.3	
Standard electrode arm, 32 mm Ø, 300 mm, complete with electrode holder SF 8.51209.3	SF8.51208.3	
Electrode holder, standard, 16 mm Ø, 140 mm, mit 1 A20	SF8.51209.3	
for SF / SL 202 / 204 / 206		
short electrode holder 25 mm (, 50 mm, with 2R1/1A20	50_Z_2.51816.3	
long electrode holder 25 mm (, 300 mm, with 2R1/1A20	300_Z_2.51816.3	
standard electrode holder 25 mm (, 180 mm, with 2R1/1A20	SL16.51307.3	
bar electrode holder, electrode surface 20 x 100 mm	Type 25 BE 100	100_Z_3.53239.3
pendulum electrode holder, electrode surface 20 x 85 mm	Type 25 BE 85	85_Z_3.53233.3
angular electrode holder, straight	Type 25 WE 100 G	Z_4.52717.3
angular electrode holder, angled	Type 25 WE 100 S	822_9206.1
vice electrode clamping range 5 – 15 mm Ø	Type 25 ES 15	Z_5.51713.3
tube arm, complete, 45 mm, 500 mm with 2B30, straight		Z_6.52579.3
tube arm, complete, 45 mm, 500 mm with 2C25, angled		Z_6.52581.3
tube arm, complete, 45 mm, 700 mm with 2B30, straight		Z_6.52580.3
tube arm, complete, 45 mm, 700 mm with 2C25, angled		Z_6.52582.3
SL 202 / 204 / 206		
Spot welding machine		
fittings made of 140 mm or 300 - 500 mm		
throat depth 300 mm	Z_29.51513.3	
throat depth 500 mm	Z_29.51514.3	
throat depth 700 mm	Z_29.51515.3	



Angled electrode holder  
 Spot welding tight steel profiles  
 made possible with the angled  
 electrode holder – choice of ang-  
 led or straight electrode seat.



Swivel fitting  
 Welding in hard to reach areas:  
 the electrode holder on the swi-  
 vel fitting can be adjusted axially;  
 the lower electrode arm adjusted  
 radially and additionally in the  
 height.

DALEX  
Accessoires

DALEX Accessoires	Type	Order-No.
<b>for PL 40 / 63</b>		
standard electrode holder	E25/2/180	180_Z_2.51105.3
short electrode holder	E25/2/63	63_Z_2.51105.3
long electrode holder	E25/2/300	300_Z_2.51105.3
angular electrode holder, straight max. electrode force 280 daN	25 WE 100 G	Z_4.52717.3
angular electrode holder, angled max. electrode force 280 daN	25 WE 100 S	822_9206.1
pendulum electrode holder	25 PE 85	85_Z_3.53233.3
bar electrode holder	25 BE 100	100_Z_3.53239.3
vice electrode	25 ES 15	Z_5_51713.3
standard electrode arm, bottom 250 – 550 mm throat depth		PL40_2.13954.0
standard electrode arm, bottom 450 – 750 mm throat depth		PL40_2.13955.0
tube arm, straight 250 – 550 mm		Z_6.52812.3
tube arm, straight 450 – 750 mm		Z_6.52813.3
tube arm, angled 250 – 550 mm		Z_6.52814.3
tube arm, angled 450 – 750 mm		Z_6.52815.3
<b>for PL 80 / 100</b>		
standard electrode holder, top	E 30/2/170	170_Z_2.51818.3
standard electrode holder, bottom	E 30/2/240	240_Z_2.51818.3
short electrode holder	E 30/2/75	75_Z_2.51818.3
long electrode holder	E 30/2/400	400_Z_2.51818.3
angular electrode holder, straight max. electrode force 300 daN	30 WE 100 G	Z_4.53093.3
angular electrode holder, angled max. electrode force 300 daN	30 WE 100 S	Z_4.53029.3
pendulum electrode holder	2 PE 85	85_Z_3.53236.3
bar electrode holder	30 BE 100	100_Z_3.53240.3
vice electrode	30 ES 15	Z_5_51714.3
standard electrode arm, bottom 350 – 650 mm throat depth		PL80_2.13987.0
tube arm, straight 350 – 650 mm		Z_6.52816.3
tube arm, angled 350 – 650 mm		Z_6.52817.3

**DALEX**  
**Accessoires**

**for SF / SL**

compressed air hose with textile inlay, oil-resistant, NG 8	per m	029_3132.0
threaded hose clamp for NG 8	pc.	029_3580.0
high pressure water hose with textile inlay, NG 8	per m	029_3128.0
air servicing oil	0,5 l can	2405095

**for PL**

high pressure water hose NG 20 3/4"	per m	029_4436.0
threaded hose clamp for NG 20	pc.	029_3572.0
compressed air hose NG 10 3/8"	per m	029_3133.0
threaded hose clamp for NG 10	pc.	029_3581.0
threaded hose clamp for NG 10	0,5 l can	2405095

**for Spot welding gun  
A 3112**

suspension strap with clamps	A3111_95585.3
special electrode material DA 12 mm Ø	RD_12.0_QUAL_1A
special extension cord 3 x 4 m <sup>2</sup> , with trip line, plug and coupler socket 5 m long	5_S_59.96985.3
square tube V 20 N for electrode arms	per m
base for stationary operation incl. foot-operated lever	3111.14999.0
for cleaning spot welding electrodes:	
ratchet for crowned surfaces	X_35540
polishing block no. 120	X_SCHLEIFFIX_120

**for Spot welding guns  
3228 / 3238**

compressed air hose with textile inlay, oil-resistant NG 10	per m	029_3133.0
threaded hose clamp NG 6 and NG 8		029_3580.0
high pressure water hose with textile inlay NG 8	per m	029_3128.0
air servicing	0,5 l can	2405095
air servicing unit NG 10		Z_18.53101.3

**DALEX**  
Accessories

for Spot welding gun  
3328-6

compressed air hose with textile inlay  
oil-resistant NG 10 per m

029\_3133.0

threaded hose clamp NG 10

029\_3581.0

high pressure water hose with  
textile inlay NG 8 per m

029\_3128.0

air servicing oil 0,5 l can

2405095

air servicing unit

Z\_18.53101.3

sliding piece\* St. 50

SZ.77141.1

\*necessary for electrode arms with  
800 mm throat

Electrode tips:

For the spot welding gun 3328-6 you can use electrode tip with seat no. 8 (Type No., those that begin with the number 8).

for Spot welding guns  
3329 / 3346 / 3348 / 3349

compressed air hose with textile inlay,  
oil-resistant NG 10 per m

029\_3133.0

threaded hose clamp  
NG 6 and NG 8

029\_3580.0

threaded hose clamp  
NG 10 and NG 13

029\_3581.0

high pressure water hose with  
textile inlay NG 8 per m

029\_3128.0

air servicing oil 0,5 l can

2405095

air servicing unit NG 10  
for 3346/3348/3329

Z\_18.53101.3

air servicing unit NG 13  
for 3349

Z\_18.53102.3

intermediate piece for arm gap 270 mm  
for 3329

3326\_3.51154.3

electrode holder compl.  
25 mm Ø with 2 A 30, 290 mm for 3329

3326.51975.3

\*sliding piece for 3329 St. 50

SZ.77141.1

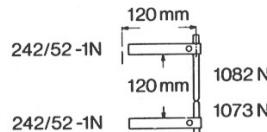
\*necessary for electrode arms with long throats

**DALEX**  
Electrode arms

for Spot welding gun A 3112  
made of drawn, tough-pitch copper,  
complete with spot welding electrodes made  
of 12 mm Ø DA material and clamping piece

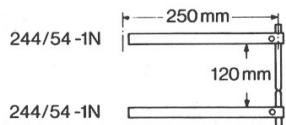
standard electrode arms, complete

throat depth 120 mm



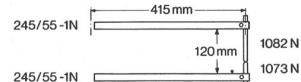
Type	Order-No.	
242/52 N	upper 3111.96805.3 lower 3111.96806.3	30,50 29,50

throat depth 250 mm



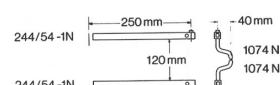
244/54 N	upper 3111.96907.3 lower 3111.96908.3	45,50 44,50
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throat depth 415 mm

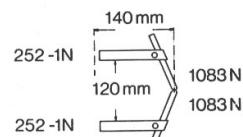


245/55 N	upper 3111.96909.3 lower 3111.96910.3	59,50 54,50
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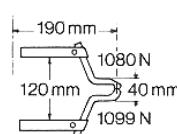
electrode arms for car body repairs  
complete



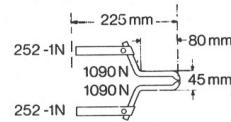
244/1074 N	upper 3111.96911.3 lower 3111.96911.3	55,- 55,-
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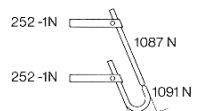
252 N	upper 3111.96912.3 lower 3111.96912.3	35,- 35,-
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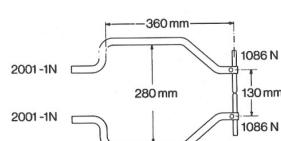
252/1080-99 N	upper 3111.96916.3 lower 3111.96917.3	48,50 43,50
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252/1090 N	upper 3111.96913.3 lower 3111.96913.3	44,50 44,50
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252/1091-87 N	upper 3111.96914.3 lower 3111.96915.3	38,50 46,50
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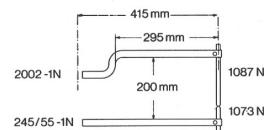


2001 N	upper 3111.96918.3 lower 3111.96918.3	74,- 74,-
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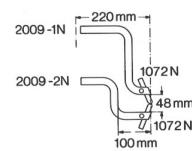
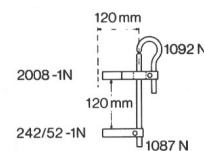
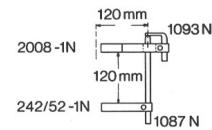
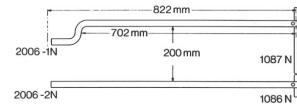
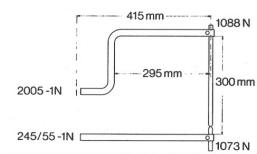
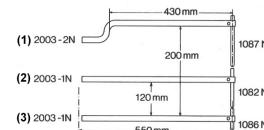
**DALEX**  
Electrode arms

for Spot welding gun A 3112  
made of drawn, tough-pitch copper,  
complete with spot welding electrodes made  
of 12 mm Ø DA material and clamping piece

2003 N 3-parts  
top arm straight  
and curved

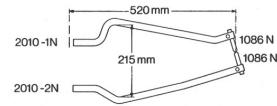
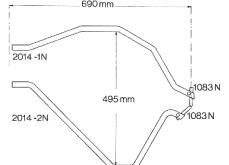
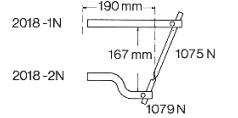
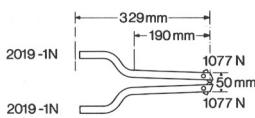
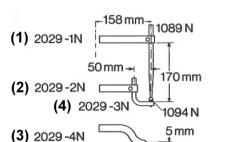
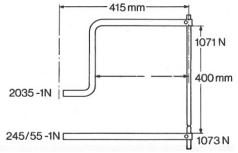


Type	Order-No.
2002 N	upper 3111.96919.3 lower 3111.96910.3
2003 N (1) 2003-2 N / 1087 N (2) 2003-1 N / 1082 N (3) 2003-1N / 1086 N	upper 3111.96922.3 upper 3111.96923.3 upper 3111.96924.3
2005 N	upper 3111.96927.3 upper 3111.96910.3
2006 N	upper 3111.96928.3 lower 3111.96929.3
2008 N	upper 3111.96930.3 lower 3111.96931.3
2008/1092 N	upper 3111.96932.3 lower 3111.96931.3
2009 N	upper 3111.96933.3 lower 3111.96934.3



**DALEX**  
Electrode arms

for Spot welding gun A 3112  
made of drawn, tough-pitch copper,  
complete with spot welding electrodes made  
of 12 mm Ø DA material and clamping piece

Type	Order-No.	
2010 N	upper 3111.96935.3 lower 3111.96936.3	
2014 N	upper 3111.96937.3 lower 3111.96938.3	
2018 N	upper 3111.96939.3 lower 3111.96940.3	
2019 N	upper 3111.96941.3 lower 3111.96941.3	
<u>2029 N</u> (1) 2029-1 / 1089 N (2) 2029-2 N+3 (3) 2029-3 N / 1094 (4) 2029-4 N 5 mm	upper 3111.96942.3 lower 3111.96943.3 lower 3111.96825.3 angle 3111.11876.0	
2035 N	upper 3111.96944.3 lower 3111.96910.3	

**DALEX**  
**Electrode tips**  
**for air-cooled spot welding guns**

Type	Order-No.	
1071 N	3111.11808.0	
1072 N	3111.11819.0	
1073 N	3111.11814.0	
1074 N	3111.11716.0	
1075 N	3111.11817.0	
1076 N	3111.11812.0	
1077 N	3111.11818.0	
1079 N	3111.11821.0	
1080 N	3111.11822.0	
1082 N	3111.11809.0	
1083 N	3111.11816.0	
1086 N	3111.11810.0	
1087 N	3111.11811.0	
1088 N	3111.11813.0	
1089 N	3111.11825.0	
1090 N	3111.11704.0	
1091 N	3111.11826.0	
1092 N	3111.11827.0	
1093 N	3111.11699.0	
1094 N	3111.11828.0	
1099 N	3111.11831.0	

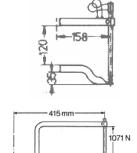
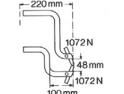
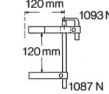
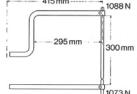
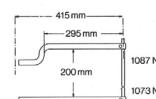
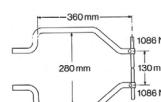
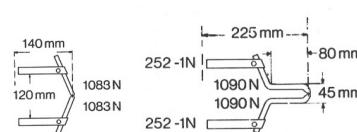
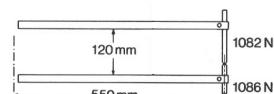
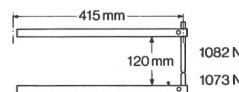
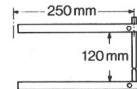
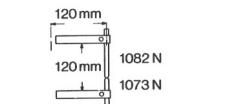
**DALEX**  
Electrode arms

for Spot welding guns A 3119 / A 3139  
model A  
made from extruded section of electrolyte hard copper  
or extruded section of copper-chrome-alloy,  
compl. water-cooled

Type	Order-No.	
o-242-1 K u-242-1 K V20/6/120 s V20/6/120 g	upper 3116.51652.3 lower 3116.51653.3 3116.51384.3 120_3116.96440.3	
o-244/54-1 K u-244/54-1 K V20/6/250 s	upper 3116.51654.3 lower 3116.51655.3 3116.51386.3	
o-245/55-1 K u-245/55-1 K V20/6/415 s	upper 3116.51656.3 lower 3116.51657.3 3116.51387.3	
o-2003-1 K u-2003-1 K V20/6/550 s	upper 3116.51658.3 lower 3116.51659.3 3116.51388.3	
252 K	3116.51660.3	
2001 K	3116.51661.3	
2002 K 245/55-1 K	upper 3116.51662.3 lower 3116.51657.3	
2005 K 245/55-1 K	upper 3116.51663.3 lower 3116.51657.3	
2008 K u-242-1 K	upper 3116.51669.3 lower 3116.51670.3	
2009-1 K 2009-2 K	upper 3116.51671.3 lower 3116.51672.3	
2029-1 K 2029-4 K	upper 3116.51683.3 lower 3116.51399.3	
2035 K u-245/55-1 K	upper 3116.51668.3 lower 3116.51657.3	

**DALEX**  
Electrode arms

for Spot welding guns A 3119 / A 3139  
model B  
made from extruded section of electrolyte  
hard copper or extruded section of  
copper-chrome-alloy, only electrode arms  
water-cooled, electrode tip not cooled



Type	Order-No.	
o-242-1 KuE u-242-1 KuE	upper 3119.96953.3 lower 3119.96954.3	
o-244/54-1 KuE u-244/54-1 KuE	upper 3119.96956.3 lower 3119.96957.3	
o-245/55-1 KuE u-245/55-1 KuE	upper 3119.96959.3 lower 3119.96960.3	
o-2003-1 KuE u-2003-1 KuE	upper 3119.96962.3 lower 3119.96963.3	
252 KuE	3119.96965.3	
252/1090 KuE	3119.96967.3	
2001 KuE	3119.96969.3	
o-2002-1 KuE u-245/55-1 KuE	upper 3119.96971.3 lower 3119.96960.3	
o-2005-1 KuE u-245/55-1 KuE	upper 3119.96973.3 lower 3119.96960.3	
2008-1 KuE u-242-1 KuE	upper 3116.51669.3 lower 3119.96975.3	
o-2009-1 KuE u-2009-1 KuE	upper 3119.96977.3 lower 3119.96978.3	
o-2029-1 KuE 2029-4 K	upper 3119.96980.3 lower 3116.51399.3	
o-2035-1 KuE u-245/55-1 KuE	upper 3119.96982.3 lower 3119.96960.3	

**DALEX**  
**Electrode arms**

for Spot welding guns 3228 und 3238

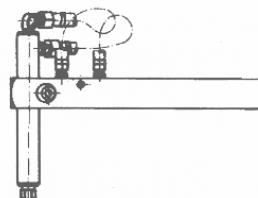
upper electrode arms  
compl. with electrode holder,  
clamping pieces and electrode tips

straight:

throat depth 170 mm 30/20/170 g

throat depth 350 mm 30/20/350 g

throat depth 500 mm 30/20/500 g



3218.52605.3

3218.52606.3

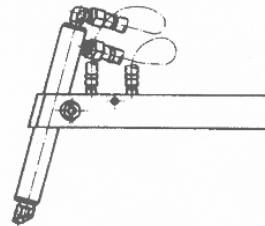
3218.52607.3

Inclined:

throat depth 170 mm 30/20/170 s

throat depth 350 mm 30/20/350 s

throat depth 500 mm 30/20/500 s



3218.52610.3

3218.52611.3

3218.52612.3

lower electrode arms  
compl. with electrode tips

straight:

throat depth 170 mm 30/1/170 g

throat depth 350 mm 30/1/350 g

throat depth 500 mm 30/1/500 g



3218.52615.3

3218.52616.3

3218.52617.3

inclined:

throat depth 170 mm 30/1/170 s

throat depth 350 mm 30/1/350 s

throat depth 500 mm 30/1/500 s



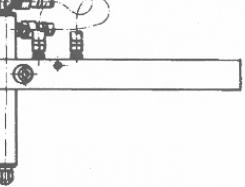
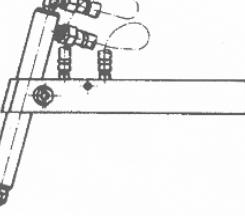
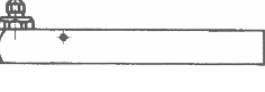
3218.52620.3

3218.52621.3

3218.52622.3

## DALEX

### Square electrode arms

	Type	Order-No.
<b>DALEX</b> <b>Square electrode arms</b>		
<b>for Spot welding gun 3328-6</b> <b>torsionally stiff, small deflection</b> <b>electron beam welded head piece</b>		
<b><u>upper</u> electrode arms</b> compl. with electrode holder, clamping pieces and electrode tips		
<b>straight:</b>		
throat depth 170 mm E 34/25/170 g		3328_5.53055.3
throat depth 350 mm E 34/25/350 g		3328_5.53056.3
throat depth 500 mm E 34/25/500 g		3328_5.53057.3
throat depth 650 mm E 34/25/650 g		3328_5.53058.3
throat depth 800 mm E 34/25/800 g		3328_5.53059.3
		
<b>inclined:</b>		
throat depth 350 mm E 34/25/350 s		3328_5.53060.3
throat depth 500 mm E 34/25/500 s		3328_5.53061.3
throat depth 650 mm E 34/25/650 s		3328_5.53062.3
throat depth 800 mm E 34/25/800 s		3328_5.53063.3
		
<b><u>lower</u> electrode arms</b> compl. with electrode tips		
<b>straight:</b>		
throat depth 170 mm E 34/8/170 g		3328_5.53045.3
throat depth 350 mm E 34/8/350 g		3328_5.53046.3
throat depth 500 mm E 34/8/500 g		3328_5.53047.3
throat depth 650 mm E 34/8/650 g		3328_5.53048.3
throat depth 800 mm E 34/8/800 g		3328_5.53049.3
		
<b>inclined:</b>		
throat depth 170 mm E 34/8/170 s		3328_5.53050.3
throat depth 350 mm E 34/8/350 s		3328_5.53051.3
throat depth 500 mm E 34/8/500 s		3328_5.53052.3
throat depth 650 mm E 34/8/650 s		3328_5.53053.3
throat depth 800 mm E 34/8/800 s		3328_5.53054.3
		

**DALEX**  
Square electrode arms

for Spot welding gun 3329

upper electrode arms  
compl. with electrode-holder,  
clamping pieces and electrode tips

straight:

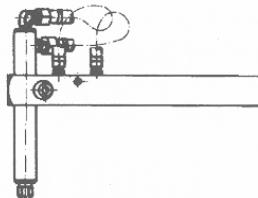
throat depth 170 mm 34/25/170 g

throat depth 350 mm 34/25/350 g

throat depth 500 mm 34/25/500 g

throat depth 650 mm 34/25/650 g

throat depth 800 mm 34/25/800 g



3326.52500.3

3326.52501.3

3326.52502.3

3326.52503.3

3326.52504.3

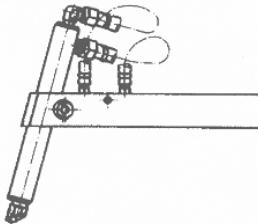
inclined:

throat depth 350 mm 34/24/350 s

throat depth 500 mm 34/25/500 s

throat depth 650 mm 34/25/650 s

throat depth 800 mm 34/25/800 s



3326.52505.3

3326.52506.3

3326.52507.3

3326.52508.3

lower electrode arms  
compl. with electrode tips

straight:

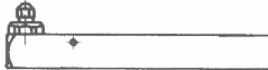
throat depth 170 mm 34/2/170 g

throat depth 350 mm 34/2/350 g

throat depth 500 mm 34/2/500 g

throat depth 650 mm 34/2/650 g

throat depth 800 mm 34/2/800 g



3326.52509.3

3326.52510.3

3326.52511.3

3326.52512.3

3326.52513.3

inclined:

throat depth 170 mm 34/2/170 s

throat depth 350 mm 34/2/350 s

throat depth 500 mm 34/2/500 s

throat depth 650 mm 34/2/650 s

throat depth 800 mm 34/2/800 s



3326.52514.3

3326.52515.3

3326.52516.3

3326.52517.3

3326.52518.3

**DALEX**  
**Electrode arms**  
**C-type electrode arms, compl. with electrode tips**

for Spot welding guns 3346 and 3349

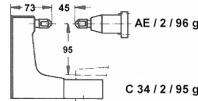
lower electrode arms  
with flange-on electrode holder

straight:

throat depth 95 mm

C 34/2/95 g

AE 2/96 g



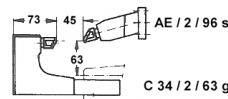
3346.51403.3

3346.51401.3

throat depth 63 mm

C 34/2/63 g

AE 2/96 s



3346.51404.3

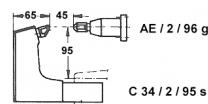
3346.51402.3

inclined:

throat depth 95 mm

C 34/2/95 s

AE 2/96 g



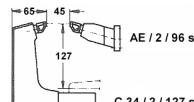
3346.51405.3

3346.51401.3

throat depth 127 mm

C 34/2/127 s

AE 2/96 s



3346.51406.3

3346.51402.3

for Spot welding gun 3348

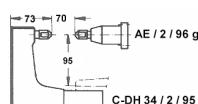
lower electrode arms  
with flange-on electrode holder

straight:

throat depth 95 mm

C-DH 34/2/95 g

AE 2/96 g



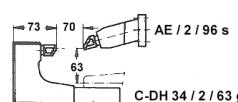
3348.96630.3

3346.51401.3

throat depth 63 mm

C-DH 34/2/63 g

AE 2/96 s



3348.96631.3

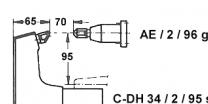
3346.51402.3

inclined:

throat depth 95 mm

C-DH/34/2/95 s

AE 2/96 g



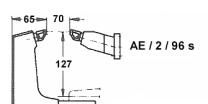
3348.96632.3

3346.51401.3

throat depth 127 mm

C-DH 34/2/127 s

AE 2/96 s

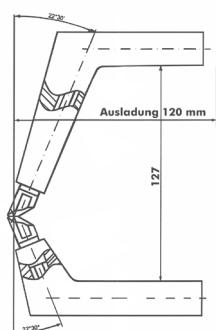


3348.96633.3

3346.51402.3

**DALEX**  
**Electrode arms**  
**special – electrode arms**

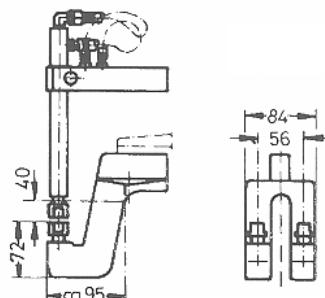
for Spot welding guns A 3119 / A 3139



77962

for Spot welding gun 3329

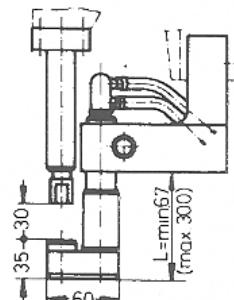
for welding of concrete-reinforcing steel  
 insertion depth = dimension L 40 mm



3326.52019.3

for Spot welding guns 3346 und 3349

for welding of concrete-reinforcing steel  
 insertion depth = dimension L 40 mm  
 for larger insertion depth possible up to  
 max. 300 mm – further 50 mm each



3346.51808.3

**DALEX**  
**Electrode tips**  
for water-cooled spot welding guns and machines

Sitz	Type	Order-No.	
1	1 A 20	WN.09351.1	
	1 A 30	WN.09352.1	
	1 A 60	WN.09353.1	
2	2 A 20	WN.09355.1	
	2 A 30	WN.09356.1	
	2 A 50	WN.09357.1	
	2 A 80	WN.09358.1	
3	3 A 35	WN.09361.1	
	3 A 70	WN.09362.1	
6	6 Av 15	WN.09731.1	
	6 Av 25	WN.09732.1	
	6 Av 40	WN.09733.1	
7	7 A 20	WN.09371.1	
	7 A 30	WN.09372.1	
	7 A 60	WN.09373.1	
8	8 A 25	WN.09375.1	
	8 A 35	WN.09376.1	
	8 A 50	WN.09377.1	
1	1 B 20	WN.09401.1	
	1 B 30	WN.09402.1	
	1 B 60	WN.09403.1	
2	2 B 30	WN.09406.1	
	2 B 50	WN.09407.1	
	2 B 80	WN.09408.1	
3	3 B 35	WN.09411.1	
	3 B 70	WN.09412.1	
6	6 Bv15	WN.09736.1	
	6 Bv25	WN.09737.1	
7	7 B 20	WN.09421.1	
	7 B 30	WN.09422.1	
	7 B 60	WN.09423.1	
8	8 B 25	WN.09424.1	
	8 B 35	WN.09426.1	
	8 B 50	WN.09427.1	
1	1 C 20	WN.09451.1	
2	2 C 25	WN.09454.1	
3	3 C 30	WN.09457.1	
6	6 Cv 15	WN.09741.1	
7	7 C 20	WN.09463.1	
8	8 C 25	WN.09466.1	

**A**



**B**



**C**



**DALEX**  
**Electrode tips**  
 for water-cooled spot welding guns and machines

	Sitz	Type	Order-No.	
<b>D</b>				
	1	1 D 20	WN.09551.1	
		1 D 30	WN.09552.1	
		1 D 60	WN.09553.1	
	2	2 D 30	WN.09556.1	
		2 D 50	WN.09557.1	
		2 D 80	WN.09558.1	
	3	3 D 35	WN.09561.1	
		3 D 70	WN.09562.1	
	7	7 D 20	WN.09571.1	
	8	8 D 25	WN.09575.1	
<b>E</b>				
	1	1 E 20	WN.09601.1	
		1 E 30	WN.09602.1	
		1 E 60	WN.09603.1	
	6	6 Ev 40	WN.09753.1	
	7	7 E 20	WN.09621.1	
		7 E 30	WN.09622.1	
		7 E 60	WN.09623.1	
<b>F</b>				
	1	1 F 35	WN.09514.1	
	2	2 F 50	WN.09511.1	
	7	7 F 35	WN.09515.1	
	8	8 F 50	WN.09512.1	
<b>G</b>				
	2	2 G 30	WN.09165.1	
<b>H</b>				
	1	1 H 80	X_1_H_80	
	2	2 H 80	WN.09527.1	
	3	3 H 80	WN.09528.1	
	8	8 H 80	WN.09529.1	

**DALEX Electrode tips**

**Standard caps and Electrode caps**

for water-cooled spot welding guns and machines

	Sitz	Type	Order-No.	
<b>J</b>	1 2 3 6 7 8	1 J 20 2 J 30 3 J 35 6 J 15 7 J 20 8 J 25	WN.09651.1 WN.09652.1 WN.09653.1 WN.09656.1 WN.09657.1 WN.09658.1	
<b>K</b>	1 2 6 7 8	1 K 35 2 K 35 6 K 32 7 K 32 8 K 32	WN.09301.1 WN.09302.1 WN.09310.1 WN.09311.1 WN.09312.1	
<b>L</b>	1 2	1 L 25 2 L 35	WN.09676.1 WN.09677.1	
<b>M</b>	1 2 3 8	1 M 20 1 M 30 1 M 60 2 M 30 2 M 50 2 M 80 3 M 35 8 M 25 8 M 50	WN.09701.1 WN.09702.1 WN.09703.1 WN.09706.1 WN.09707.1 WN.09708.1 WN.09711.1 WN.09725.1 WN.09727.1	
<b>N</b>	1 2 8	1 N 20 2 N 30 8 N 25	WN.09761.1 WN.09766.1 WN.09786.1	
standard caps	2 3 7 8	2 R 1 2 R 7 3 R 2 3 R 8 7 R 6 8 R 1 8 R 7	WN.09951.1 WN.09956.1 WN.09952.1 WN.09957.1 WN.09961.1 WN.09960.1 WN.09962.1	
<b>R</b>				

**DALEX Electrode shafts and  
Electrode key  
for water-cooled spot welding guns and machines**

	Sitz	Type	Order-No.	
	2	2 V2/42 2 V2/75	WN.09976.1 WN.09980.1	
	3	3 V2/45	WN.09977.1	
	8	8 V 8/35	WN.09978.1	
electrode caps	<b>KA</b> 	K 12 A 20	WN.09810.1	
	<b>KB</b> 	K 12 B 20	WN.09811.1	
	<b>KD</b> 	K 12 D 20	WN.09812.1	
	<b>KM</b> 	K 12 M 20	WN.09813.1	
	<b>KL</b> 	K 12 L 20	WN.09800.1	
electrode shafts	2	2 S 30 2 S 50 2 S 80	WN.09820.1 WN.09821.1 WN.09822.1	
	2	2 SL 30 2 SL 80	WN.09830.1 WN.09831.1	
electrode key			X_SCHLÜSSEL_53	
DALEX special key for loosening of spot welding electrodes up to 20 mm diamete				

**DALEX**  
Water recooling units

Cool

fully thermal cooling water recycler with cold water circulation,  
cooling water circulation and electric control

Cool 1  
for SF / SL / PL 40 und Spot welding guns

refrigerating power (kW): 1,35  
mains voltage (50 Hz ) V: 230  
compressor power (kW): 0,46  
water tank (l): 6  
mains power (kW): 0,7  
weight (kg): 42



Picture Cool 1

Type	Order-No.	
COOL 1	X_COOL1	

Cool 2  
for PL 63 und Spot welding guns

refrigerating power (kW): 1  
mains voltage (50 Hz ) V: 230  
compressor power (kW): 1  
water tank (l): 21  
mains power (kW): 1,34  
weight (kg): 85



Picture Cool 2

COOL 2	X_COOL2	
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Cool 3  
for PL 80 / 100

refrigerating power (kW): 2,7  
mains voltage (50 Hz ) V: 230  
compressor power (kW): 1,19  
water tank (l): 21  
mains power (kW): 1,5  
weight (kg): 85



Picture Cool 3

COOL 3	X_COOL3	
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**DALEX Spring balancers**  
carrying capacity 3 – 100 kg

carrying capacity 3 – 5 kg  
dead load 2,9 kg  
wire length 2000 mm



Type	Order-No.	
D 4/5	D_4_5	
D 4/7	D_4_7	
D 4/10	D_4_10	
D 4/14	D_4_14	
D 4/17	D_4_17	
D 4/21	D_4_21	

carrying capacity 4,5 – 7 kg  
dead load 3,1 kg  
wire length 2000 mm

carrying capacity 6 – 10 kg  
dead load 3,2 kg  
wire length 2000 mm

carrying capacity 9 – 14 kg  
dead load 3,4 kg  
wire length 2000 mm

carrying capacity 13 – 17 kg  
dead load 3,6 kg  
wire length 2000 mm

carrying capacity 16 – 21 kg  
dead load 3,8 kg  
wire length 2000 mm

carrying capacity 21 – 30 kg  
dead load 16,3 kg  
wire length 2000 mm

carrying capacity 31 – 45 kg  
dead load 18 kg  
wire length 2000 mm

carrying capacity 46 – 60 kg  
dead load 18,4 kg  
wire length 2000 mm

carrying capacity 61 – 75 kg  
dead load 19,8 kg  
wire length 2000 mm

carrying capacity 76 – 90 kg  
dead load 20,8 kg  
wire length 2000 mm

carrying capacity 91 – 100 kg  
dead load 21 kg  
wire length 2000 mm

spring balancer with a capacity  
above 100 kg upon request



D 5/30-1	D_5_30_1	
D 5/45-1	D_5_45_1	
D 5/60-1	D_5_60_1	
D 5/75-1	D_5_75_1	
D 5/90-1	D_5_90_1	
D 5/100-1	D_5.100_1	

Notes

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