

Liv-ELIR d.o.o.

GRAFITNE ČETKICE

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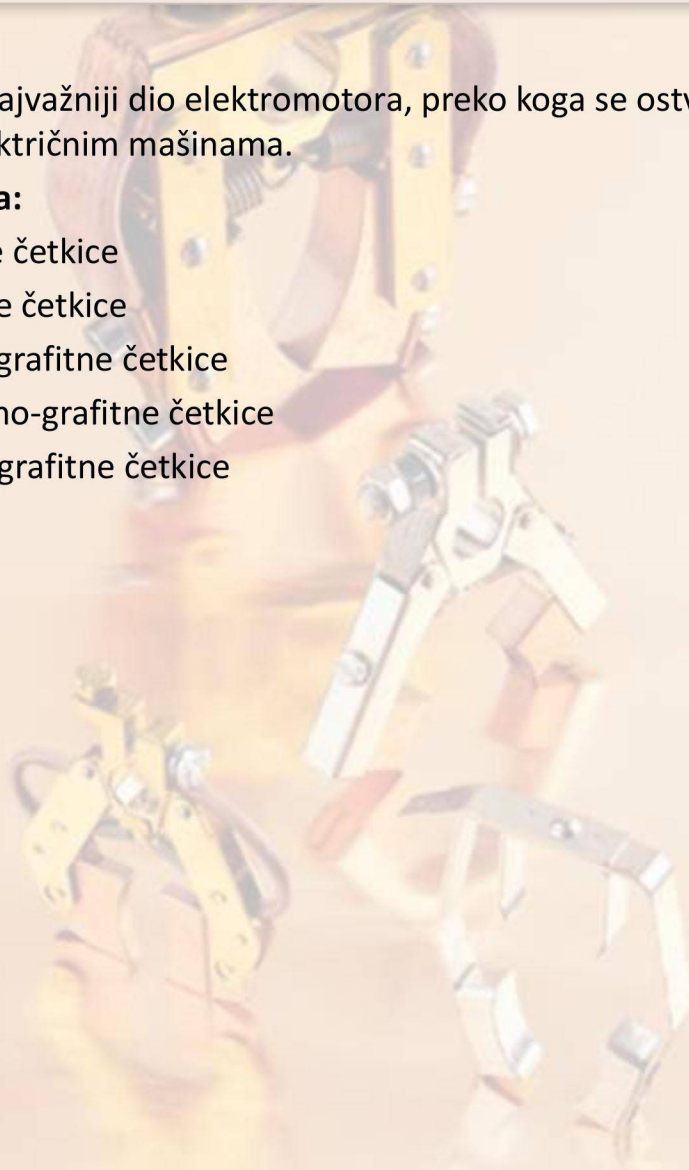
skype: esadsoftic1

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Četkice su najvažniji dio elektromotora, preko koga se ostvaruje klizni kontakt za prijenos električne struje na mnogim električnim mašinama.

Vrste četkica:

- Ugljene četkice
- Grafitne četkice
- Elektrografitne četkice
- Bakelitno-grafitne četkice
- Metalografitne četkice



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1. Ugljene četkice

Osnovne Karakteristike: velika tvrdoća, malo strujno opterećenje, dobra svojstva poliranja.

Područje primene: kolektori sa neudubljenom izolacijom, električni ručni aparati, mali kućni aparati, klizači (kontaktni oduzimači struje).

Tehnički uslovi: gustina struje do 7 A/cm², brzina obrtanja do 20 m/s.

2. Grafitne četkice

Osnovne karakteristike: mekane, elastične četkice koje vrlo efikasno amortizuju udarce i mehaničke vibracije, takođe imaju dobra svojstva poliranja.

Područje primjene: Sinhrona i asinhrona mašine sa čeličnim kliznim prstenovima za najveće brzine obrtanja.

Tehnički uslovi: gustina struje do 10A/cm², brzina obrtanja do 75m/s.

3. Elektrografitne četkice

Osnovne karakteristike: dobra električna i toplotna provodnost, dobra svojstva komutacije, koeficijent trenja je relativno mali, dobro podnosi preopterećenja.

Područje primjene: veoma široko područje primjene na svim stabilnim mašinama, vučnim motorima, kod velikih brzina obrtanja, pri malim-srednjim i visokim naponima, uz stalno ili promenljivo opterećenje.

Tehnički uslovi: gustina struje do 12 A/cm² (dozvoljeno opterećenje do 25 A/cm²), brzina obrtanja do 60 m/s.

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4. Bakelitno-grafitne četkice

Osnovne karakteristike: veliki električni otpor, velika mehanička čvrstoća, dobra svojstva poliranja ali i znatni toplotni gubitci.

Područje primjene: Male jednosmerne mašine.

Tehnički uslovi: gustina struje do 8A/cm², brzina obrtanja do 40m/s.

5. Metalografitne četkice

Osnovne karakteristike: u zavisnosti od sadržaja metala i grafita više ili manje je izražena visoka električna provodnost, mali koeficijent trenja, mali toplotni gubitci, teške ili čak vrlo teške četkice.

Područje primjene: jednosmerne mašine niskog ili čak vrlo niskog napona, asinhroni motori sa kliznim prstenovima, sinhronne mašine malih ili srednjih brzina sa bronzanim ili čeličnim prstenovima.

Tehnički uslovi: gustina struje do 30A/cm², brzina obrtanja do 40m/s.

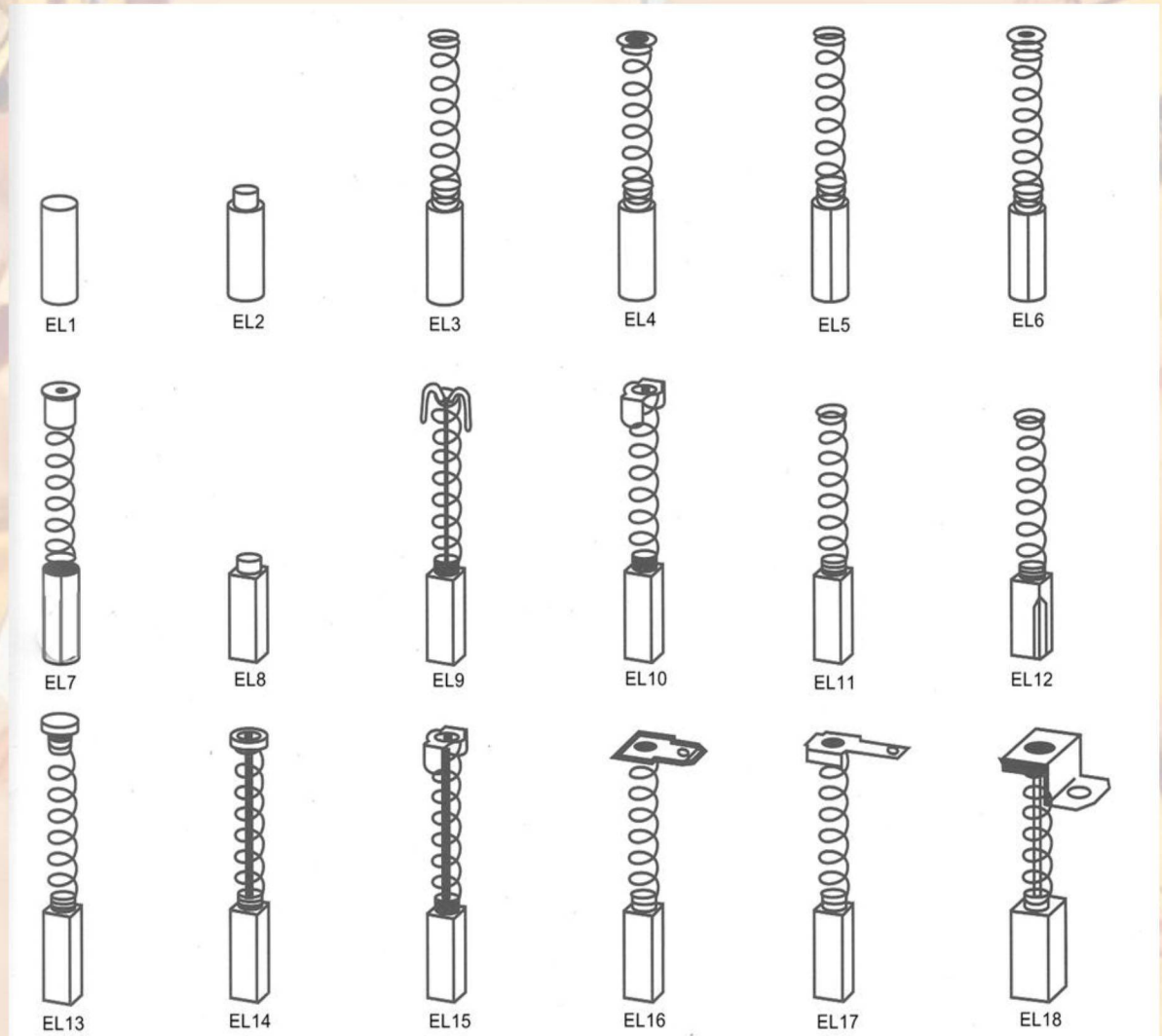
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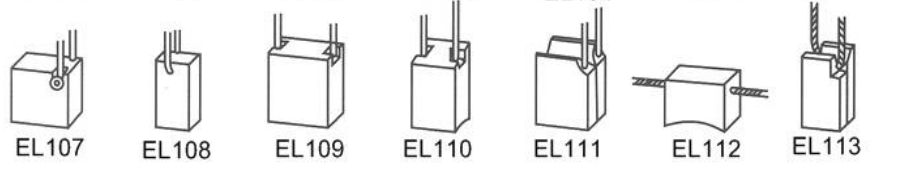
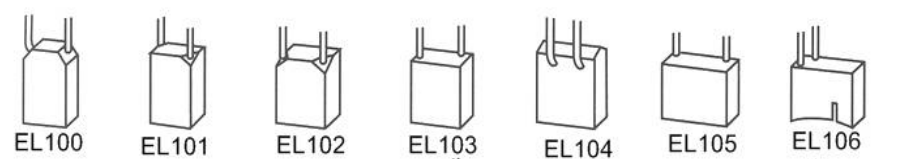
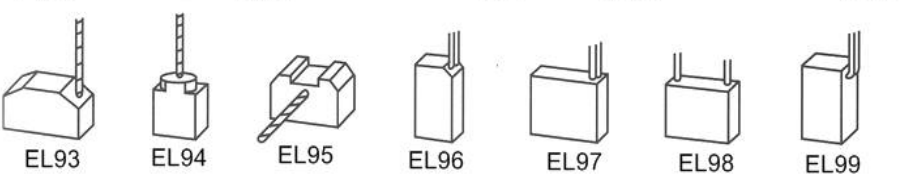
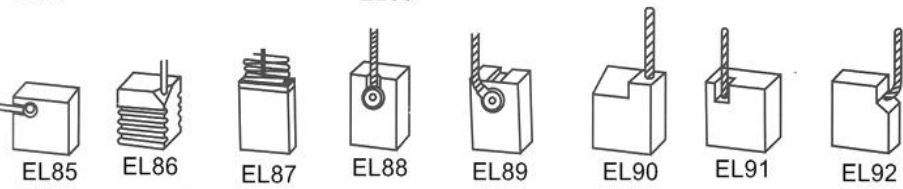
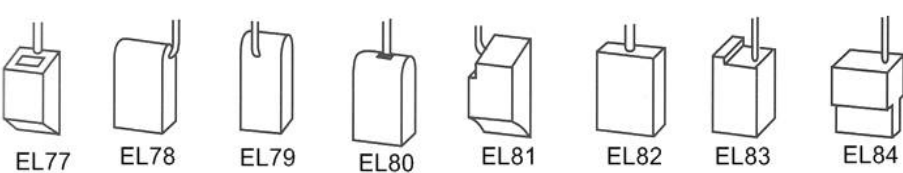
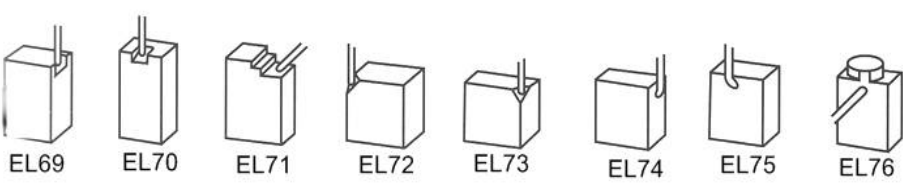
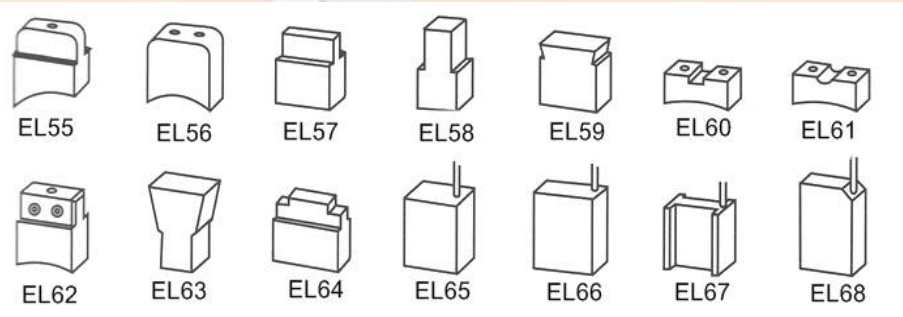
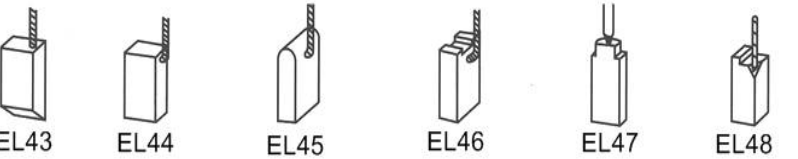
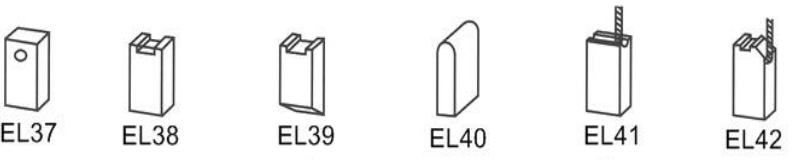
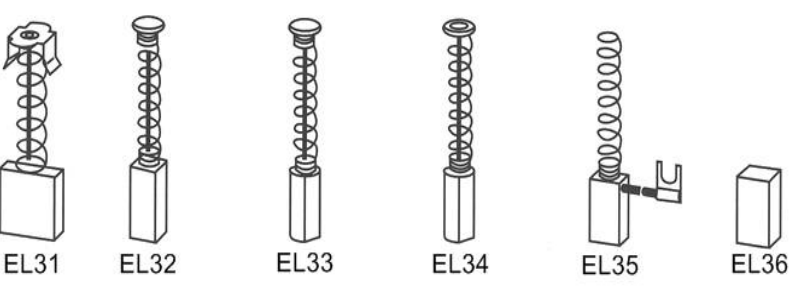
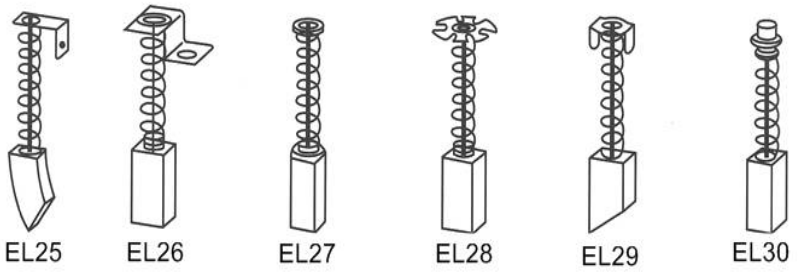
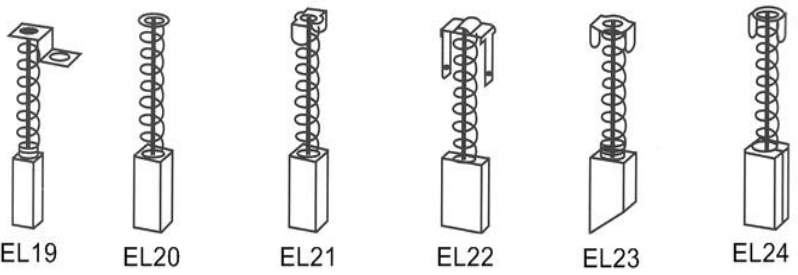
Neophodni podaci pri naručivanju četkica

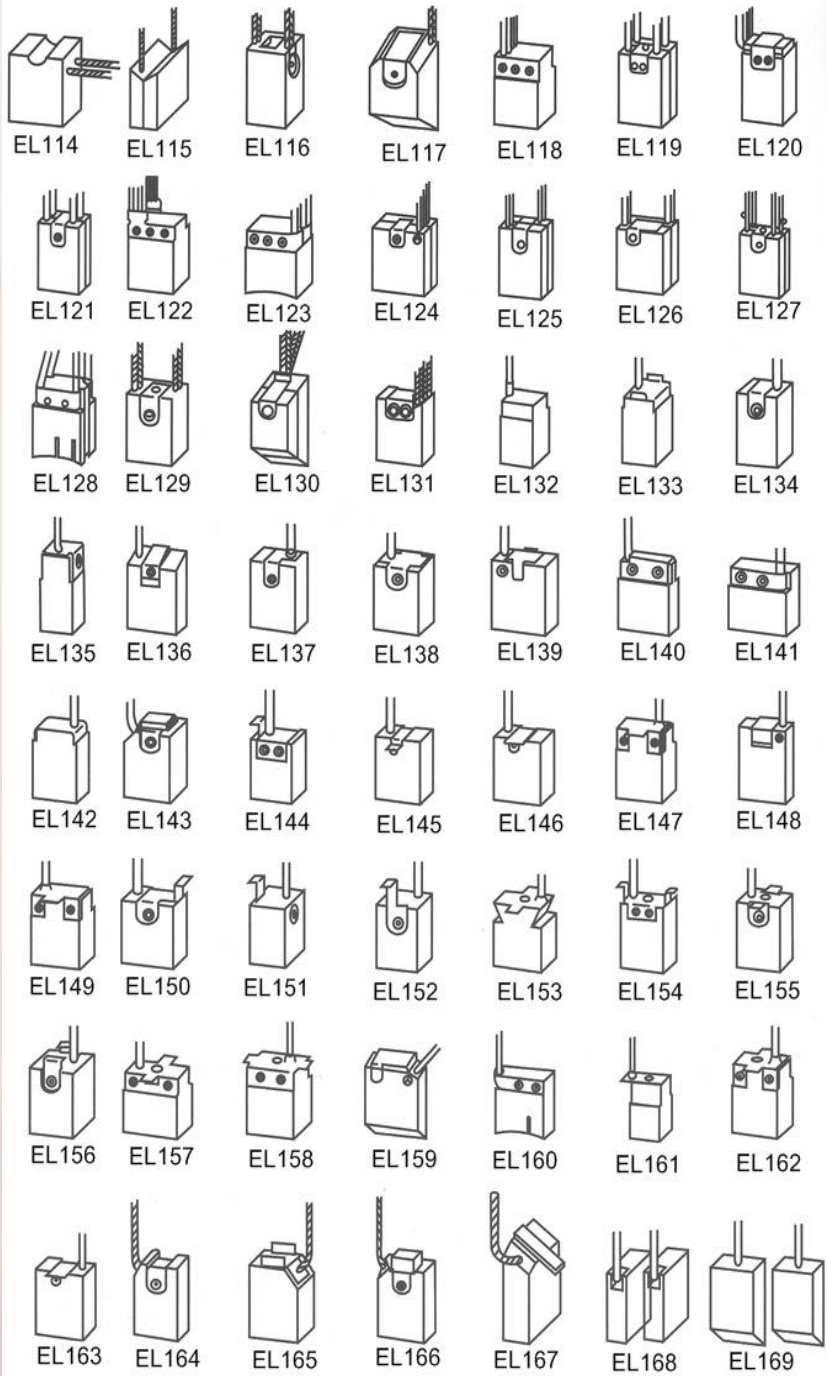
1. Kvalitet materijala tijela četkice (poslati uzorak istrošene četkice) ili pri naručivanju navesti kvalitet materijala koji se traži.
2. Osnovni oblik tijela četkice
3. Dimenzije tela četkice u (mm)
4. Dužina i presjek kabla [l (mm), S (mm²)]
5. Oblik i veličina otvora priključne papučice
6. Naglasiti eventualne nedostatke u radu četkice.
7. Posebne zahteve ukoliko je četkica specijalnog i karakterističnog oblika i izvođenja obavezno naznačiti i opisati.

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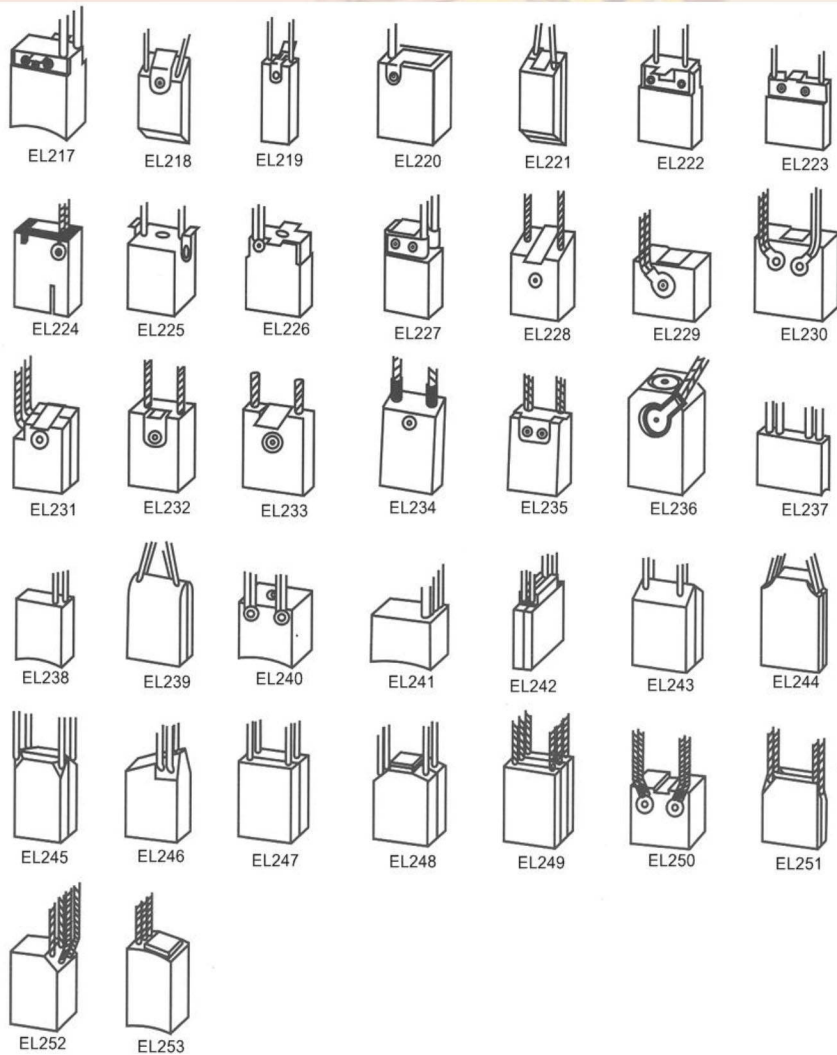
Osnovni oblici četkica



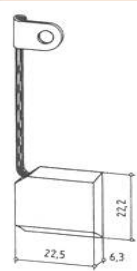




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Auto četkice



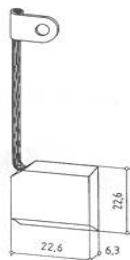
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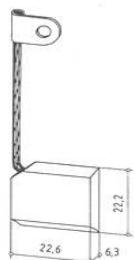
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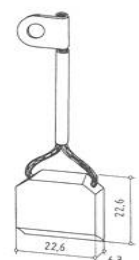
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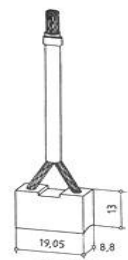
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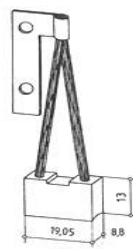
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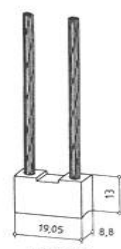
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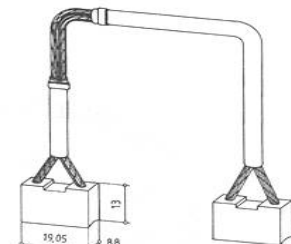
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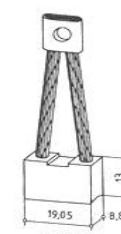
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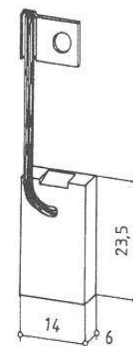
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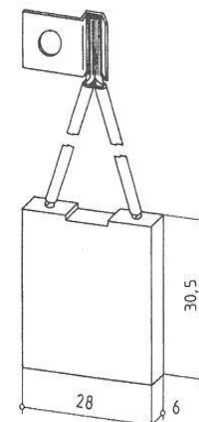
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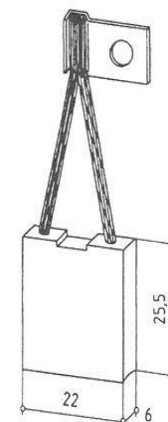
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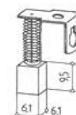
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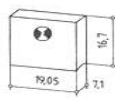
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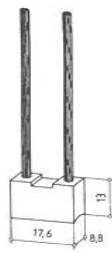
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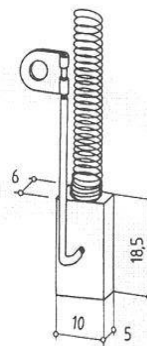
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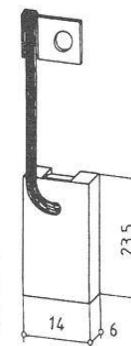
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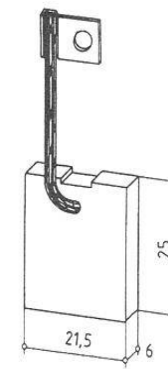
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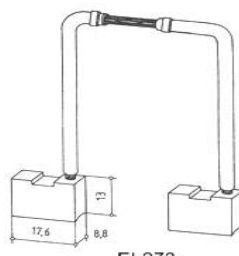
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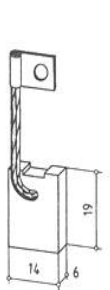
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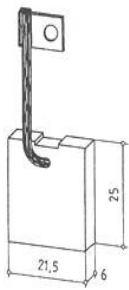
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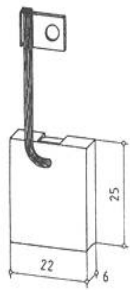
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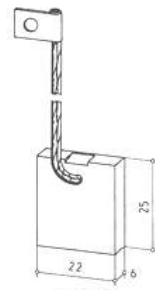
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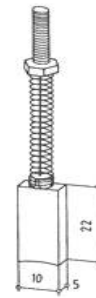
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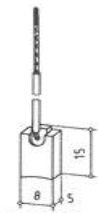
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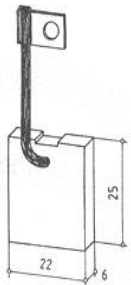
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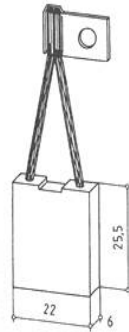
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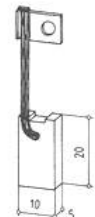
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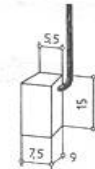
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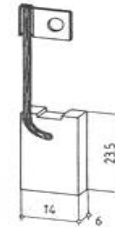
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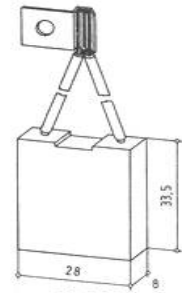
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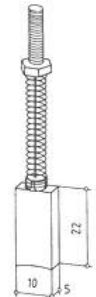
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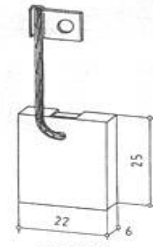
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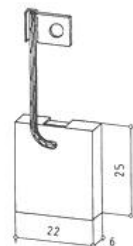
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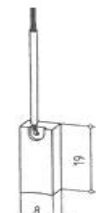
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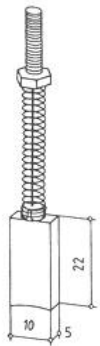
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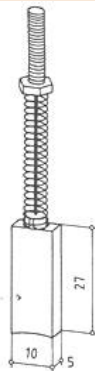
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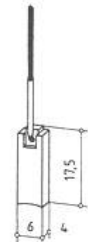
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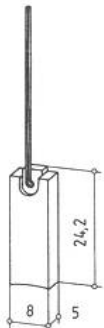
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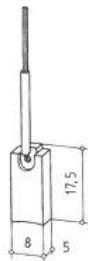
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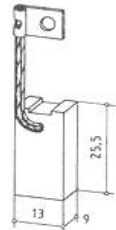
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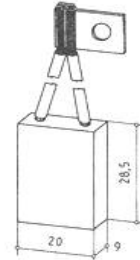
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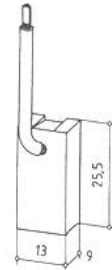
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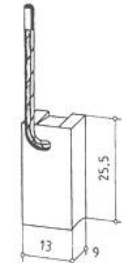
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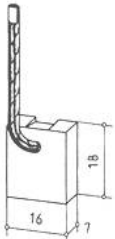
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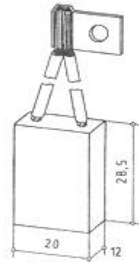
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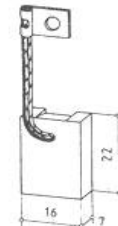
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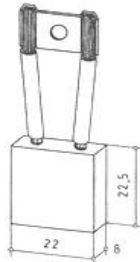
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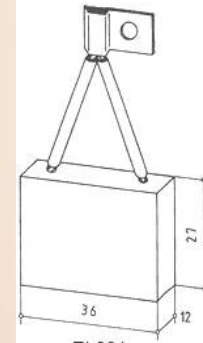
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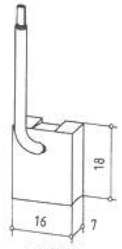
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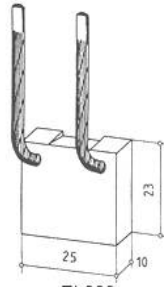
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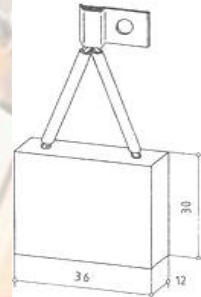
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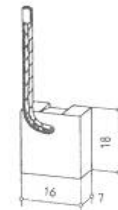
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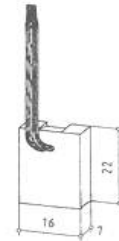
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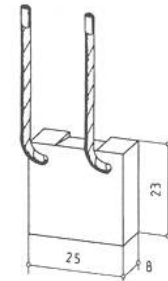
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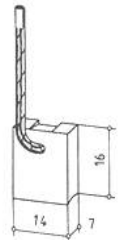
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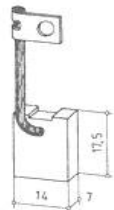
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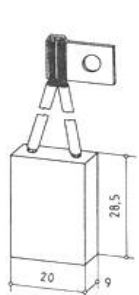
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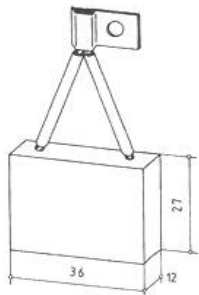
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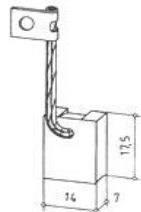
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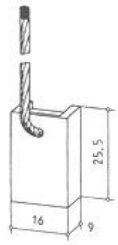
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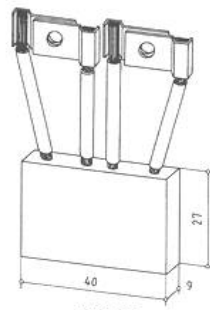
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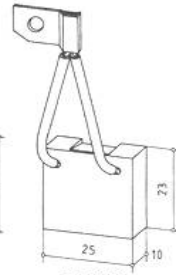
EL338



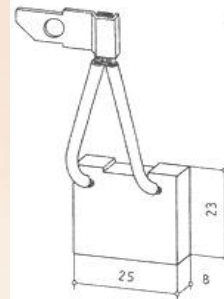
EL346



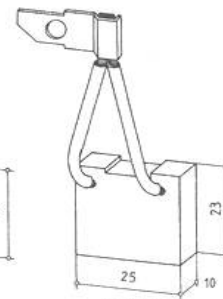
EL347



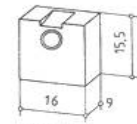
EL348



EL357



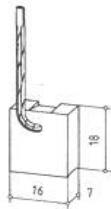
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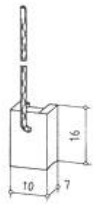
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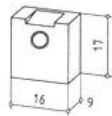
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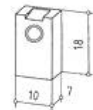
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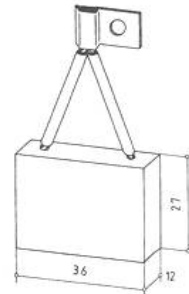
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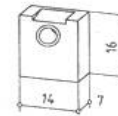
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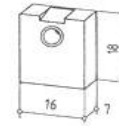
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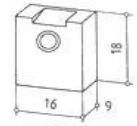
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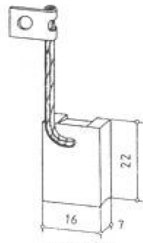
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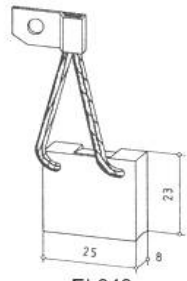
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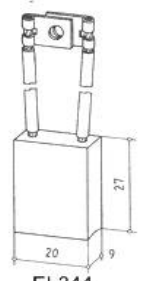
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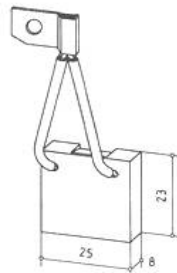
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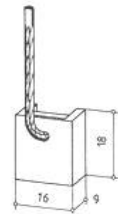
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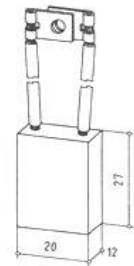
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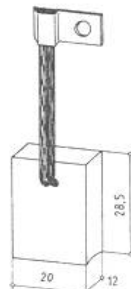
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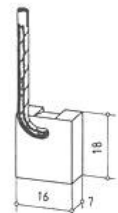
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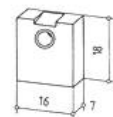
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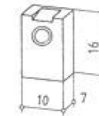
EL345



EL355



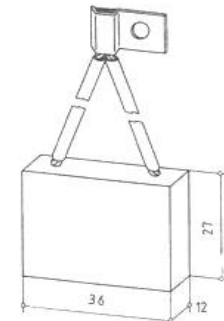
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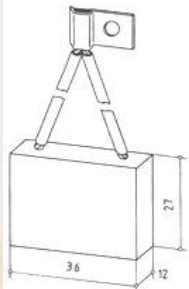
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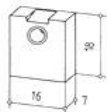
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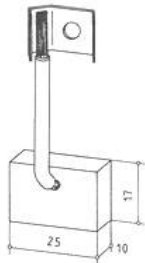
EL365



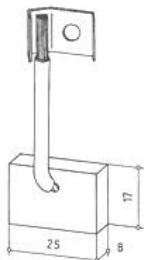
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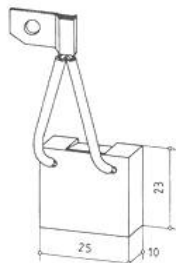
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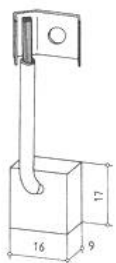
EL368



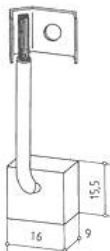
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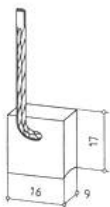
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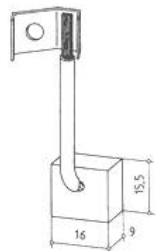
EL371



EL372



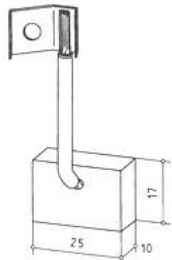
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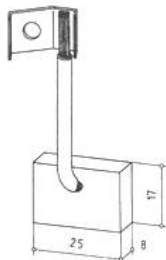
EL374



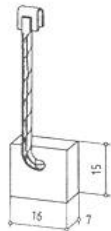
EL375



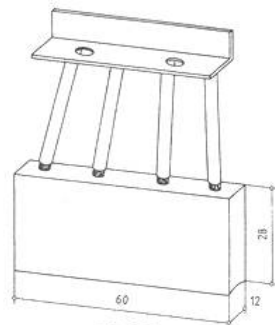
EL376



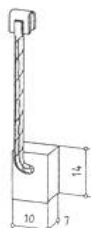
EL377



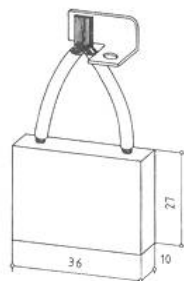
EL378



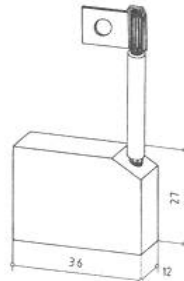
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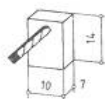
EL380



EL381



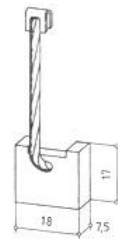
EL382



EL383



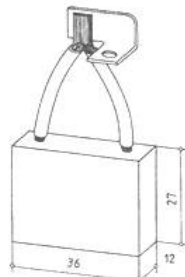
EL384



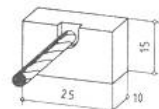
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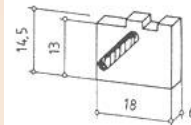
EL386



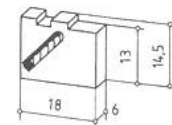
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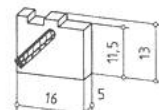
EL388



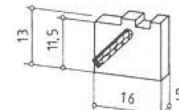
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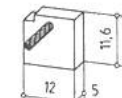
EL390



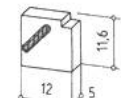
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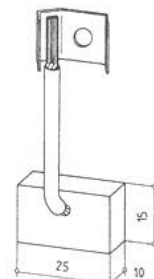
EL392



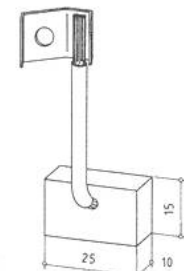
EL393



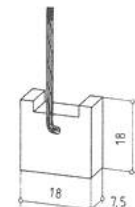
EL394



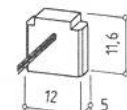
EL395



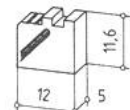
EL396



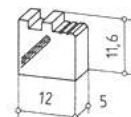
EL397



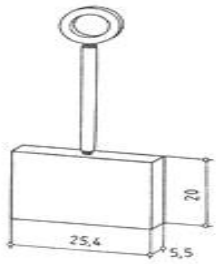
EL398



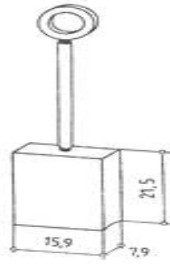
EL399



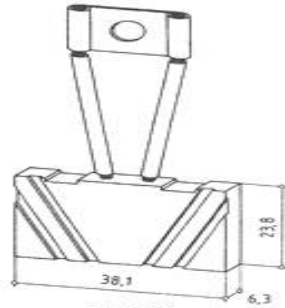
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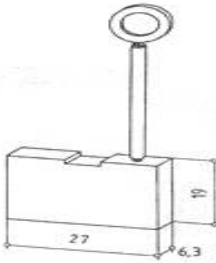
EL401



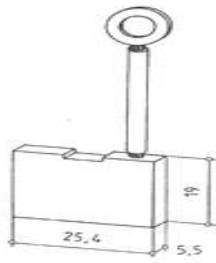
EL402



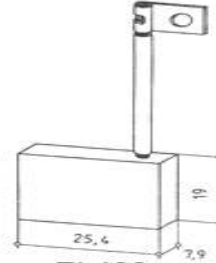
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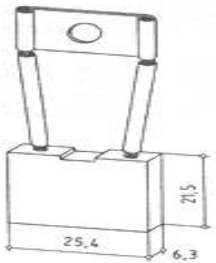
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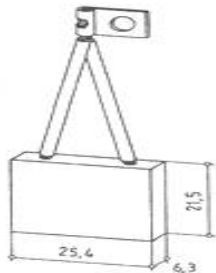
EL405



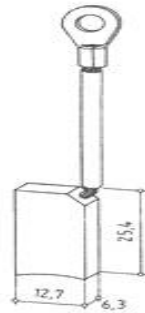
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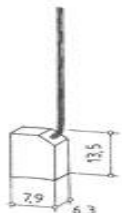
EL407



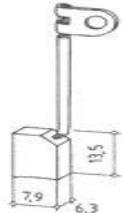
EL408



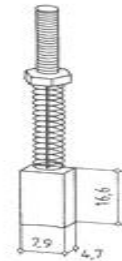
EL409



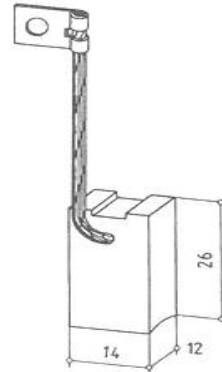
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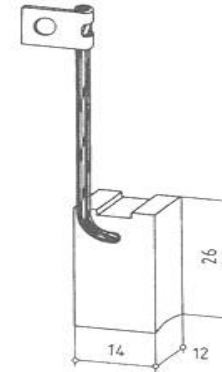
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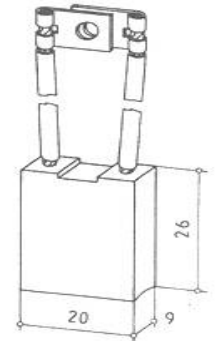
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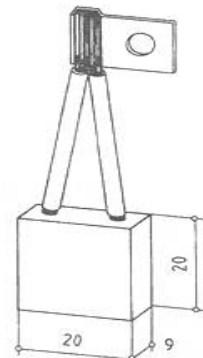
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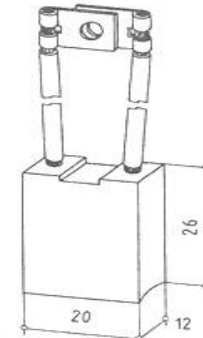
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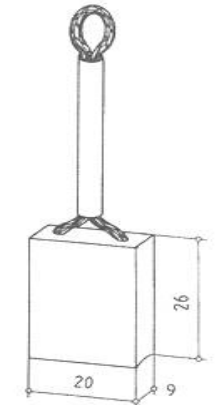
EL415



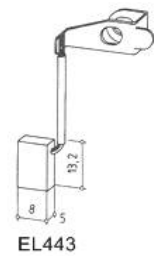
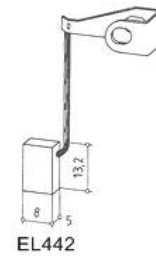
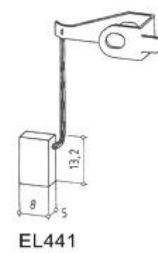
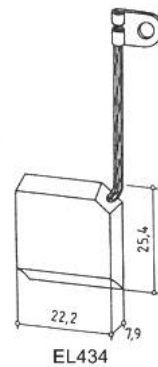
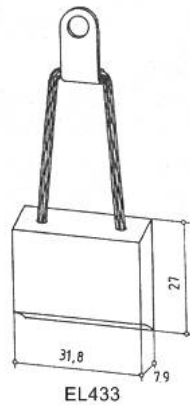
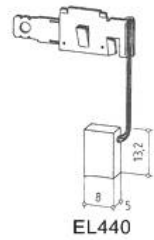
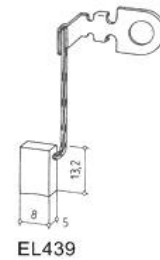
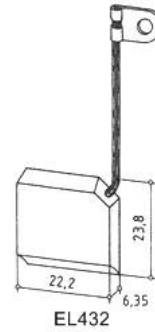
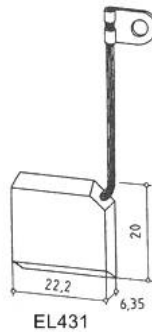
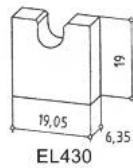
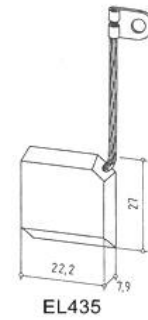
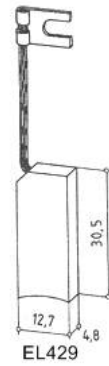
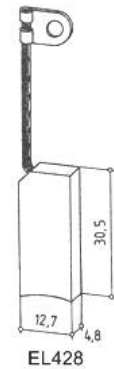
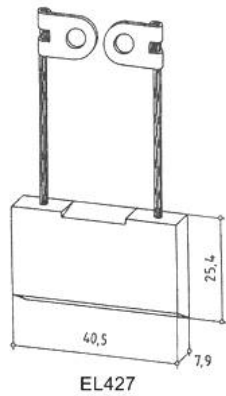
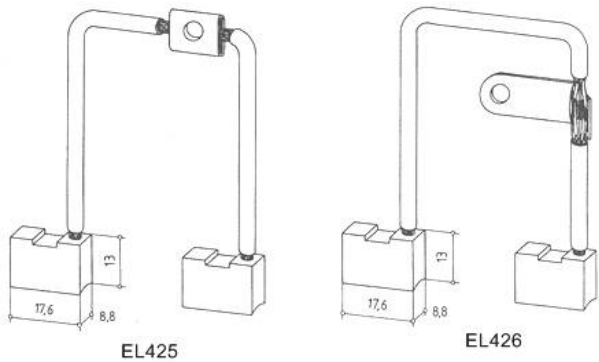
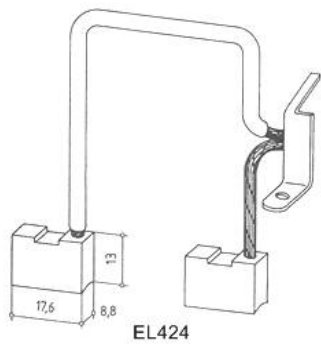
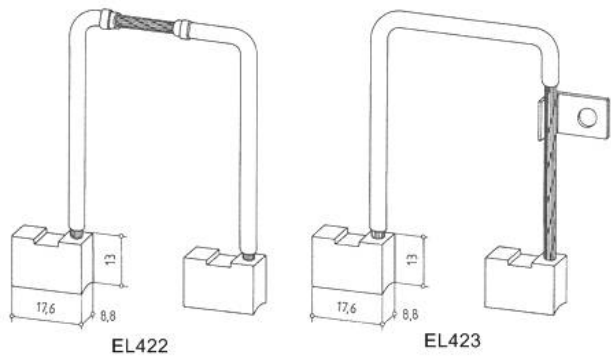
EL416

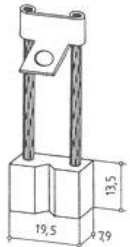


EL417

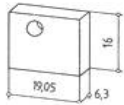


EL418

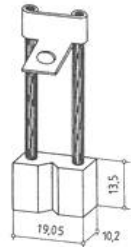




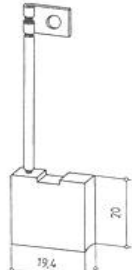
EL444



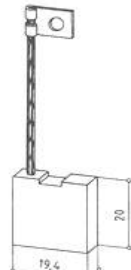
EL445



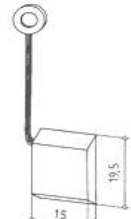
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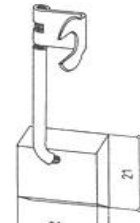
EL456



EL457



EL458



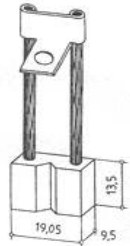
EL468



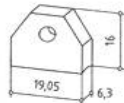
EL469



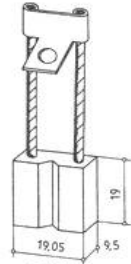
EL470



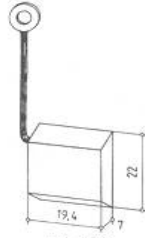
EL447



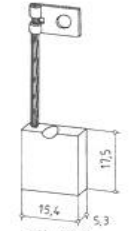
EL448



EL449



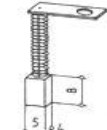
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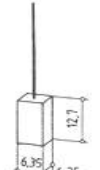
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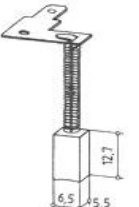
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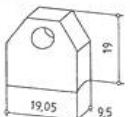
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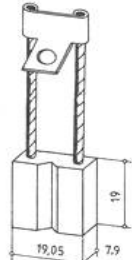
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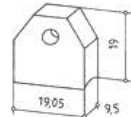
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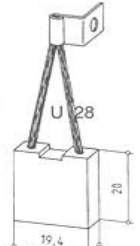
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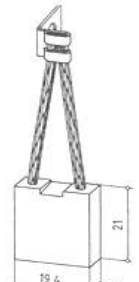
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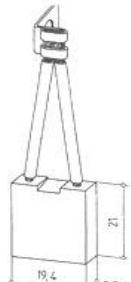
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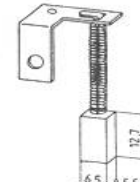
EL462



EL463



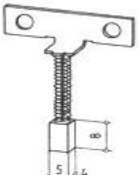
EL464



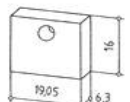
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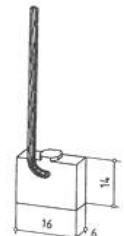
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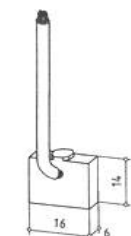
EL476



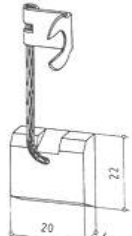
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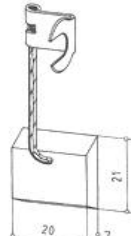
EL454



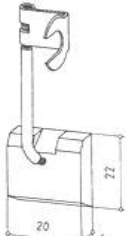
EL455



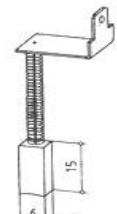
EL465



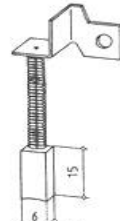
EL466



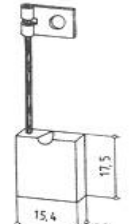
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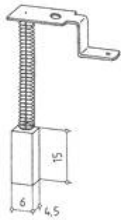
EL477



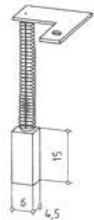
EL478



EL479



EL480



EL481



EL482



EL483



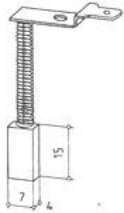
EL484



EL485



EL486



EL487



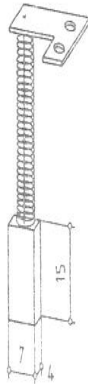
EL488



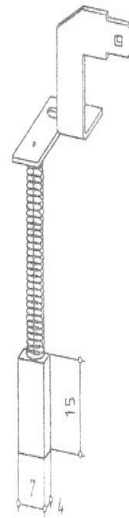
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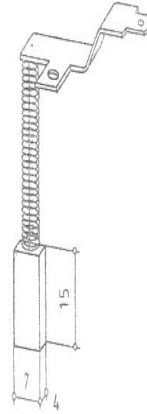
EL490



EL491



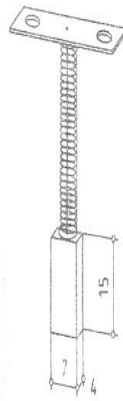
EL492



EL493



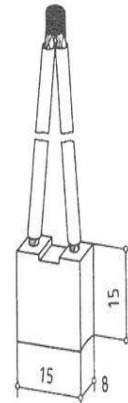
EL494



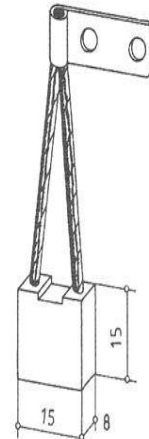
EL495



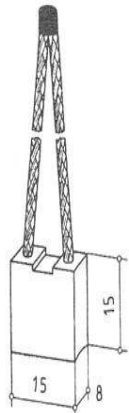
EL496



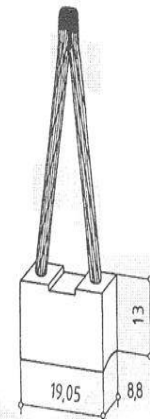
EL497



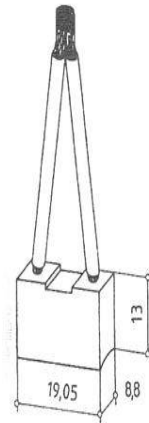
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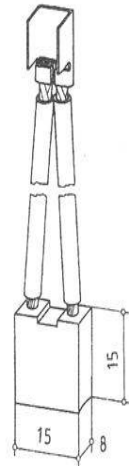
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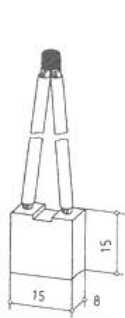
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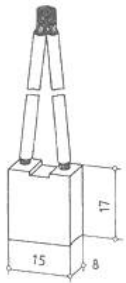
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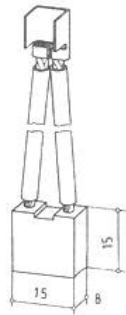
EL502



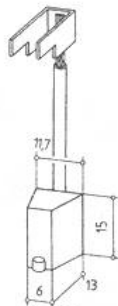
EL503



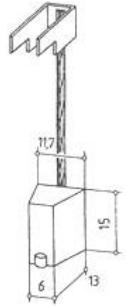
EL504



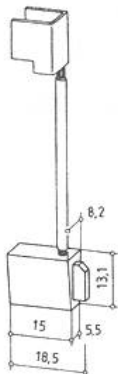
EL506



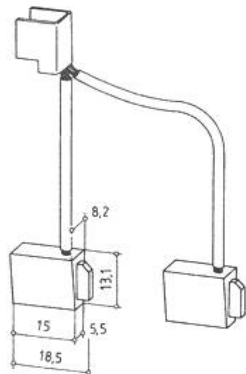
EL507



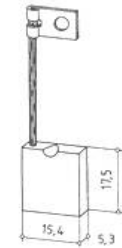
EL508



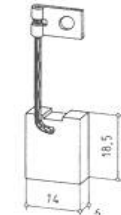
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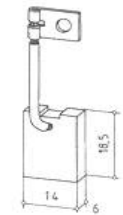
EL510



EL511



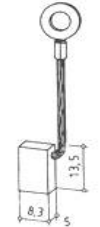
EL512



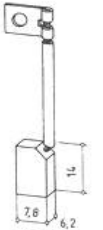
EL513



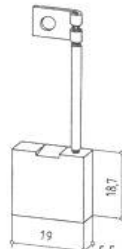
EL523



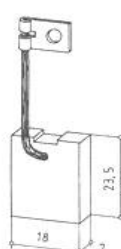
EL524



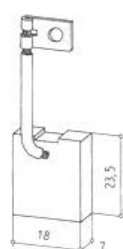
EL525



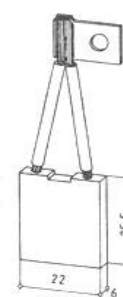
EL514



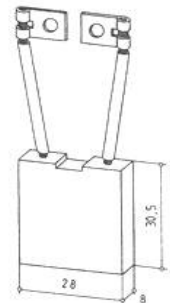
EL515



EL516



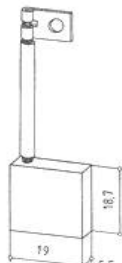
EL526



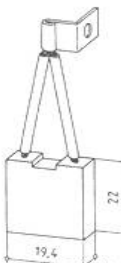
EL527



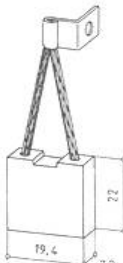
EL528



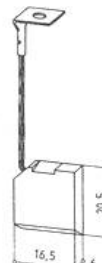
EL517



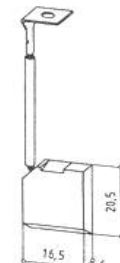
EL518



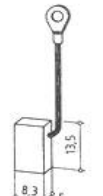
EL519



EL529



EL530



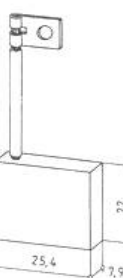
EL531



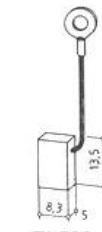
EL520



EL521



EL522



EL532



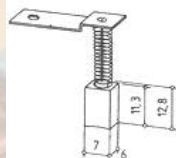
EL533



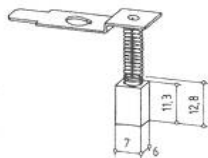
EL534



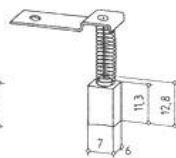
EL535



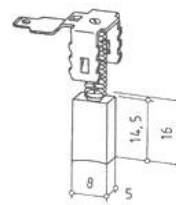
EL544



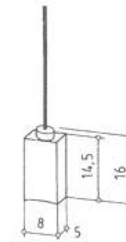
EL545



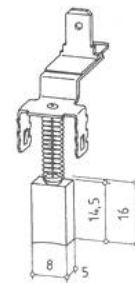
EL546



EL556



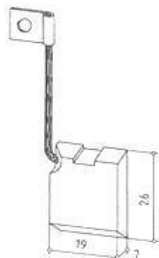
EL557



EL558



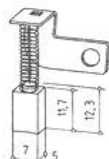
EL536



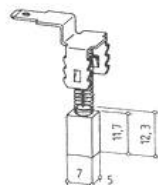
EL537



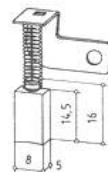
EL538



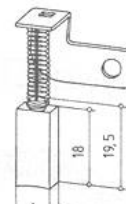
EL547



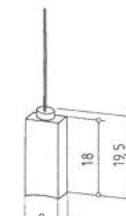
EL548



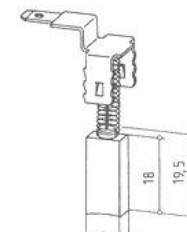
EL549



EL559



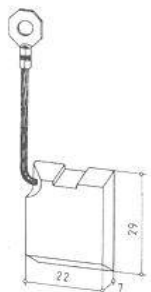
EL560



EL561



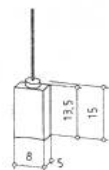
EL539



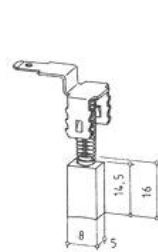
EL540



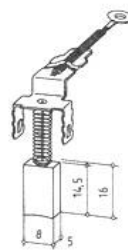
EL541



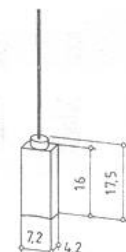
EL550



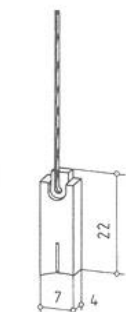
EL551



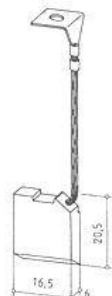
EL552



EL562



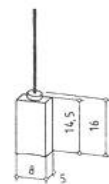
EL563



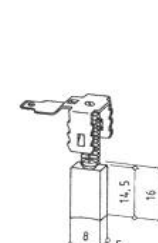
EL542



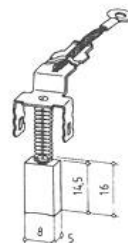
EL543



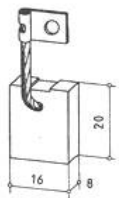
EL553



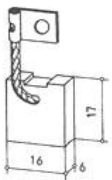
EL554



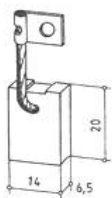
EL555



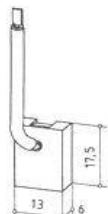
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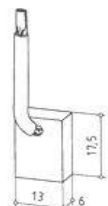
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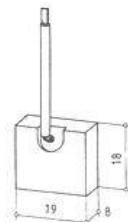
EL566



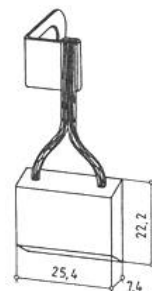
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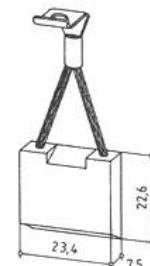
EL577



EL578



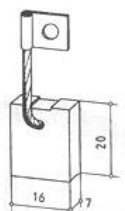
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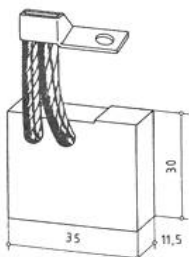
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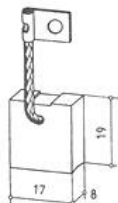
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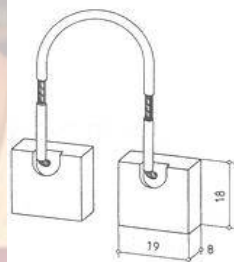
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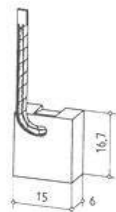
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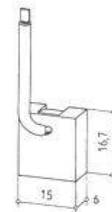
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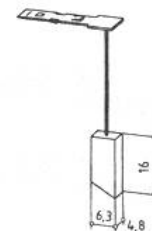
EL579



EL580



EL581



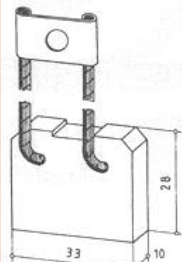
EL590



EL591



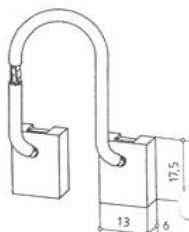
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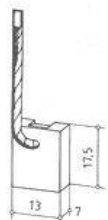
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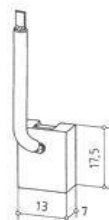
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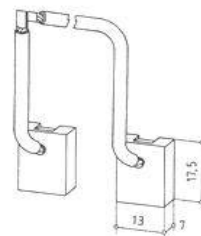
EL572



EL582



EL583



EL584



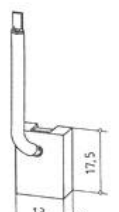
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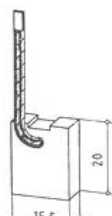
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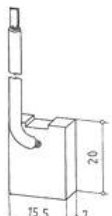
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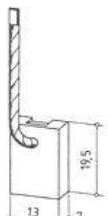
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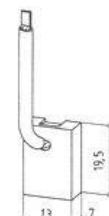
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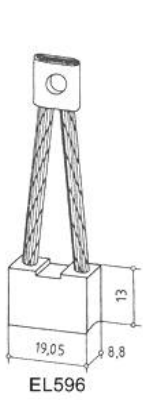
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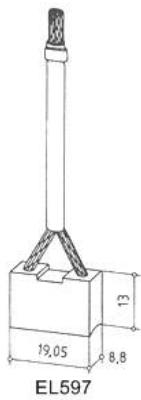
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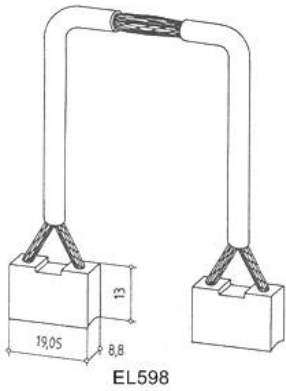
EL586



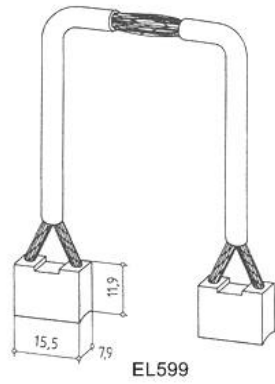
EL596



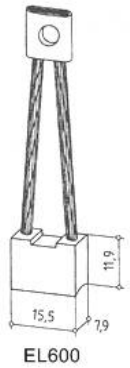
EL597



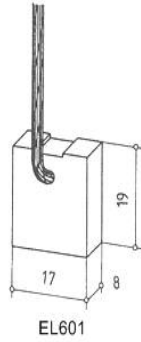
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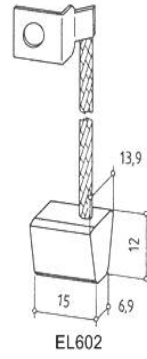
EL599



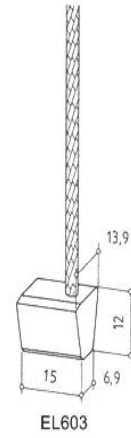
EL600



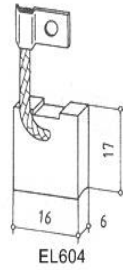
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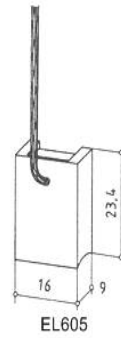
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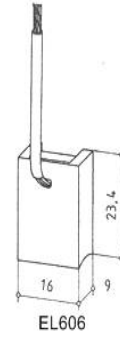
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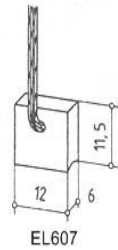
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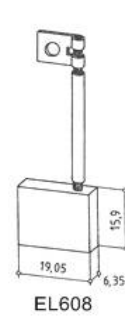
EL605



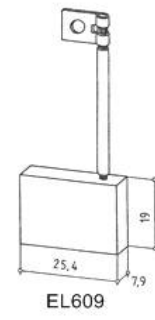
EL606



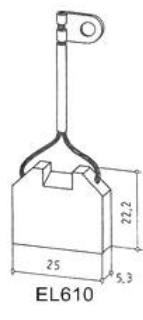
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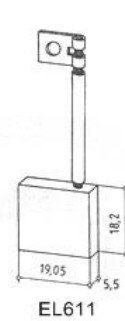
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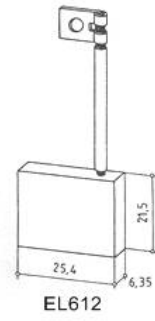
EL609



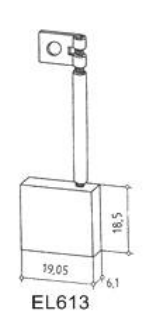
EL610



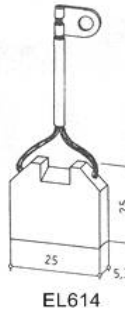
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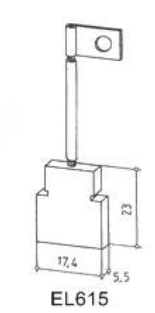
EL612



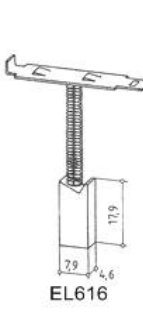
EL613



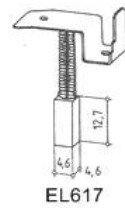
EL614



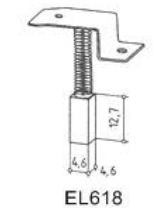
EL615



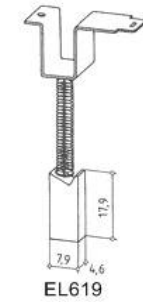
EL616



EL617



EL618



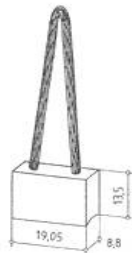
EL619



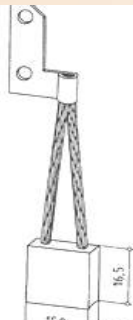
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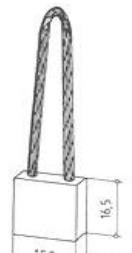
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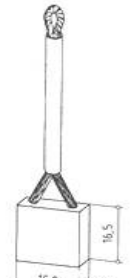
EL622



EL630



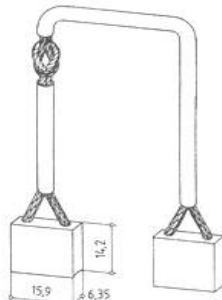
EL631



EL632



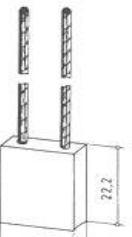
EL623



EL624



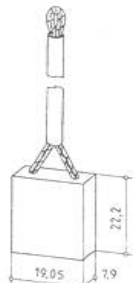
EL633



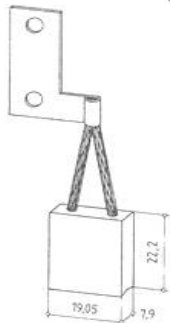
EL634



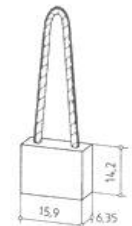
EL635



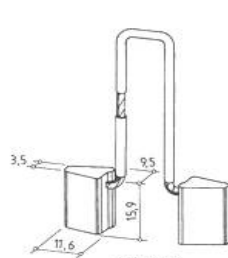
EL625



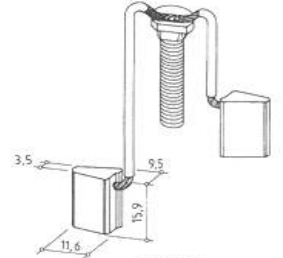
EL626



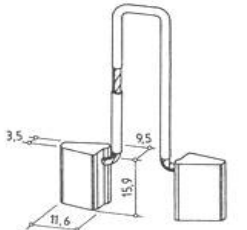
EL627



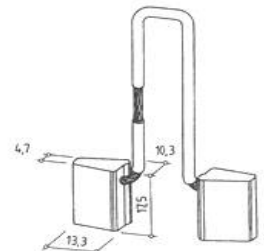
EL636



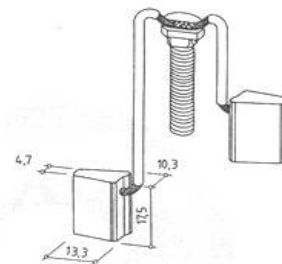
EL637



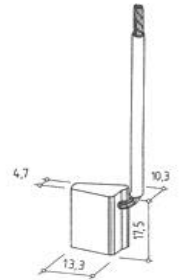
EL639



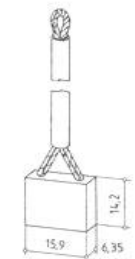
EL640



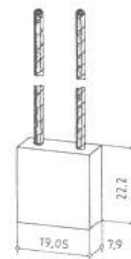
EL641



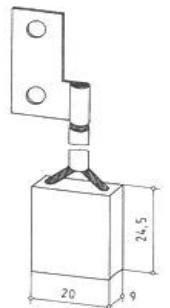
EL642



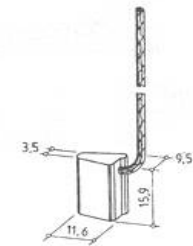
EL628



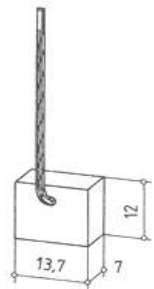
EL629



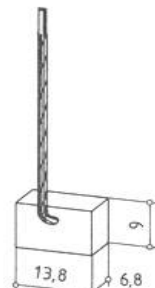
EL638



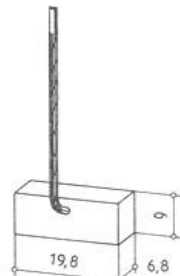
EL643



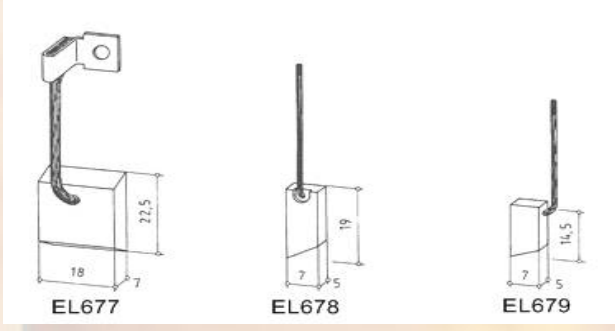
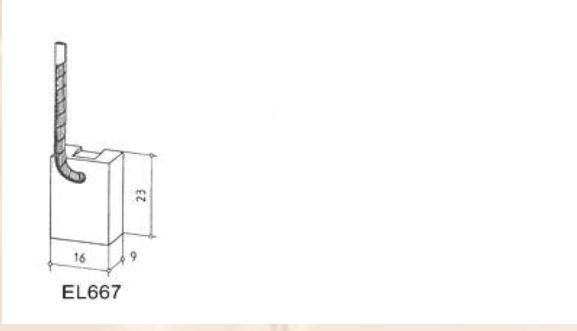
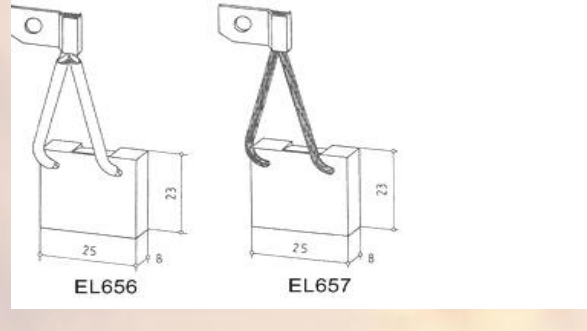
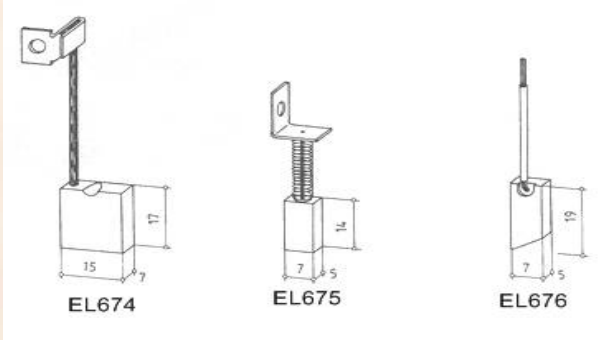
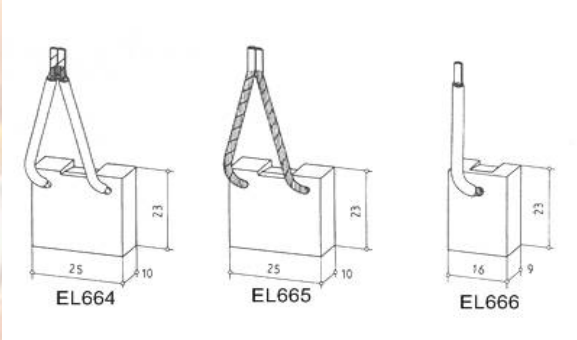
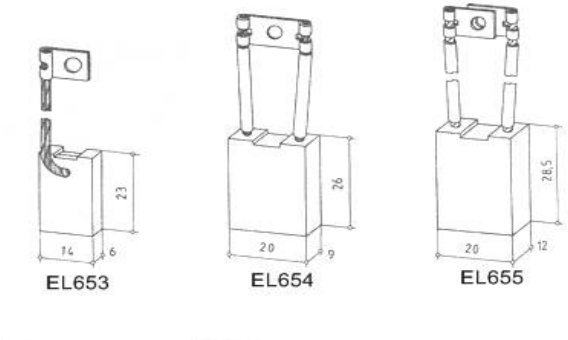
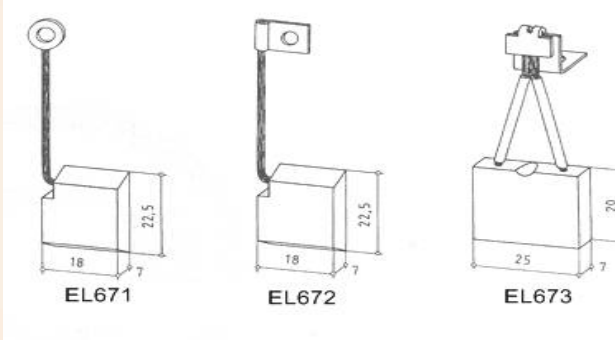
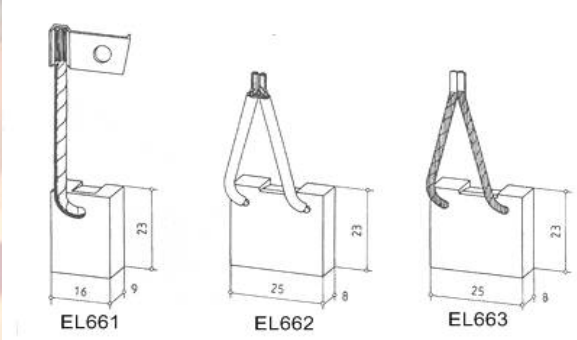
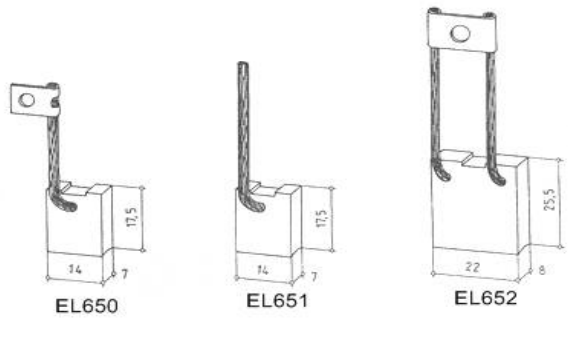
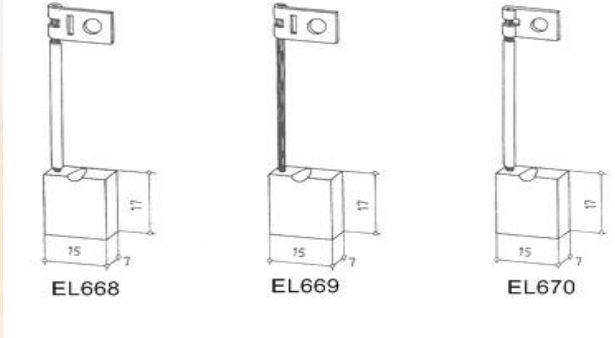
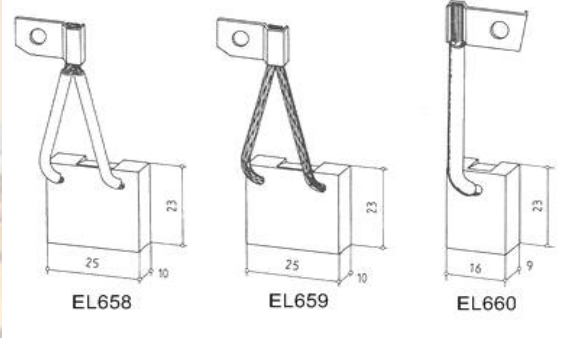
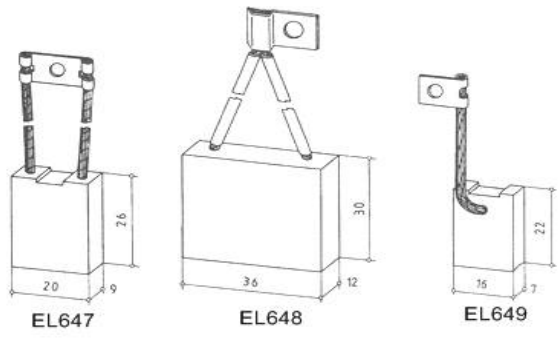
EL644

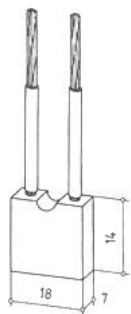


EL645

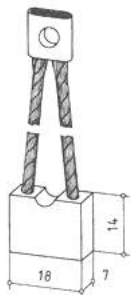


EL646

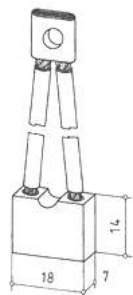




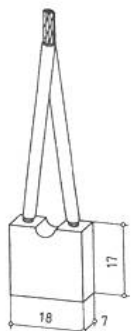
EL680



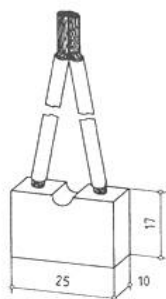
EL681



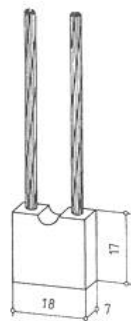
EL682



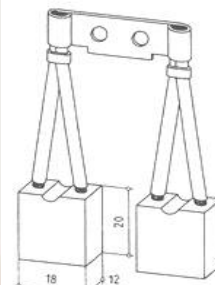
EL687



EL688



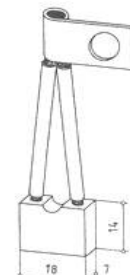
EL689



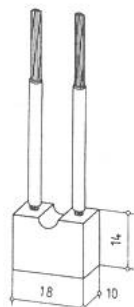
EL695



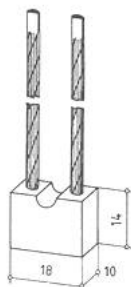
EL696



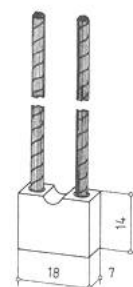
EL697



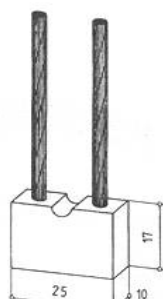
EL683



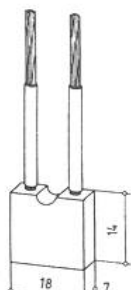
EL684



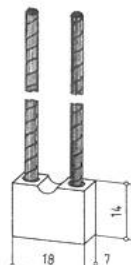
EL685



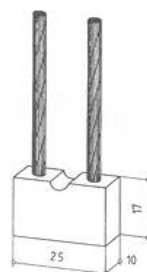
EL690



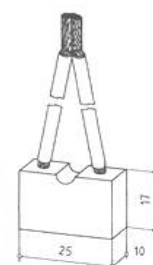
EL691



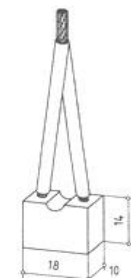
EL692



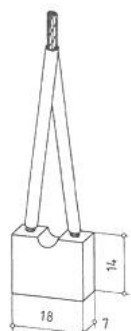
EL698



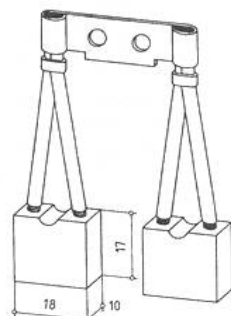
EL699



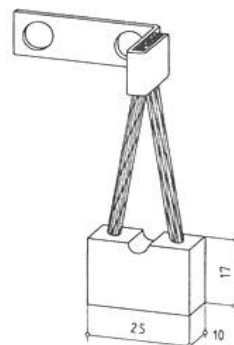
EL700



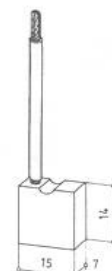
EL686



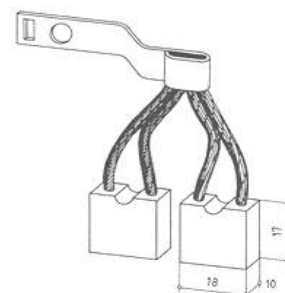
EL693



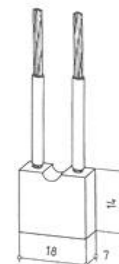
EL694



EL701



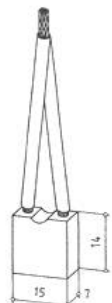
EL702



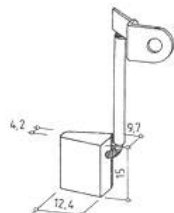
EL703



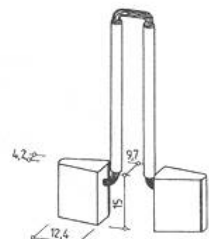
EL704



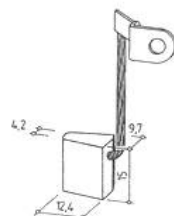
EL705



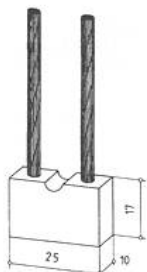
EL706



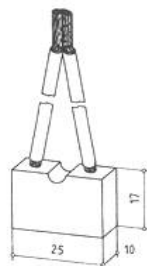
EL707



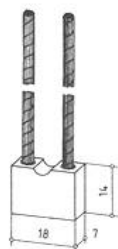
EL708



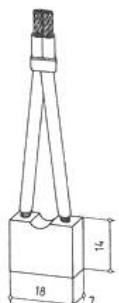
EL709



EL710



EL711



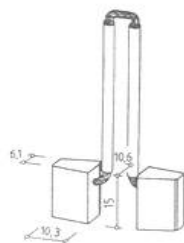
EL712



EL713



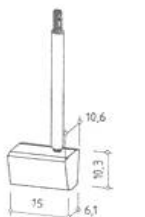
EL714



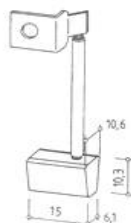
EL715



EL716



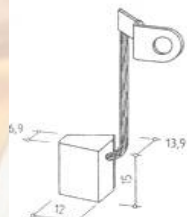
EL717



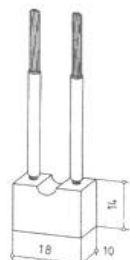
EL718



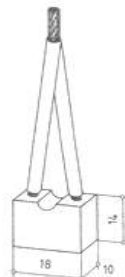
EL719



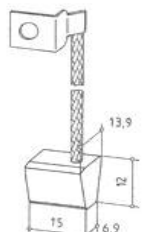
EL720



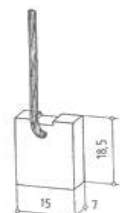
EL721



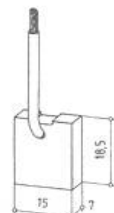
EL722



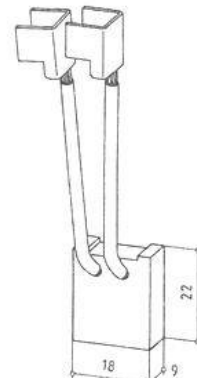
EL723



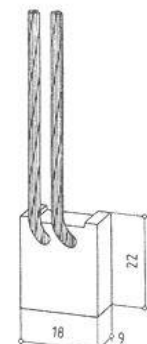
EL724



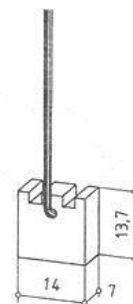
EL725



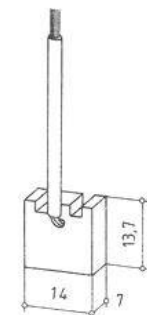
EL726



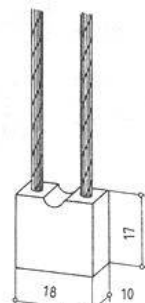
EL727



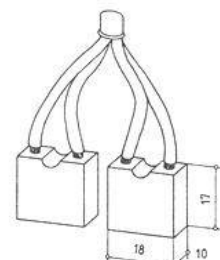
EL728



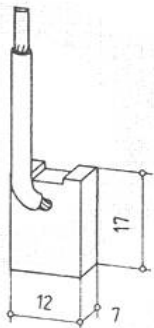
EL729



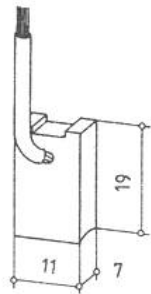
EL730



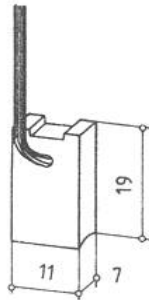
EL731



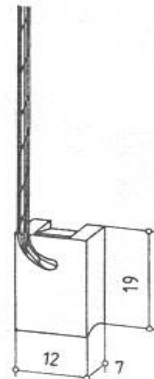
EL732



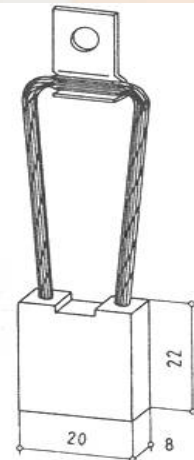
EL733



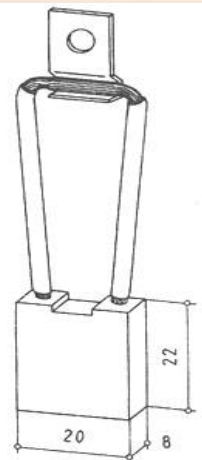
EL734



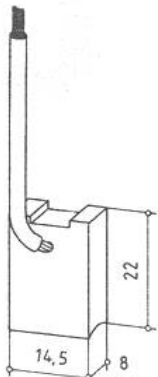
EL741



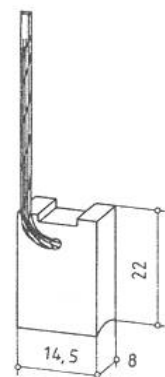
EL742



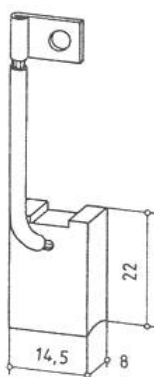
EL743



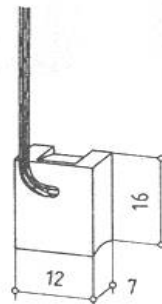
EL735



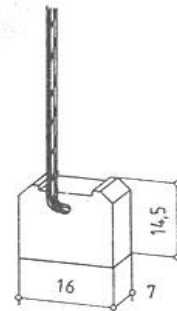
EL736



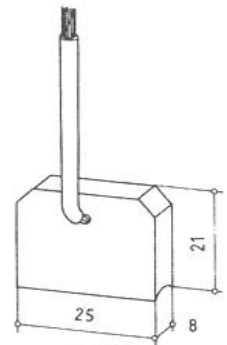
EL737



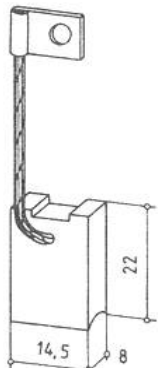
EL744



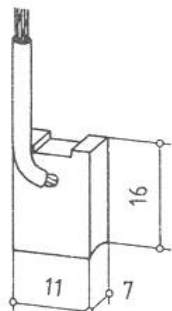
EL745



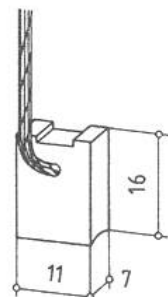
EL746



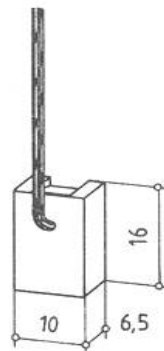
EL738



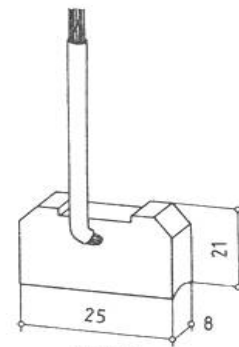
EL739



EL740



EL747



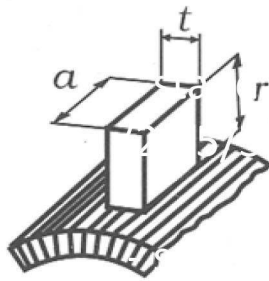
EL748

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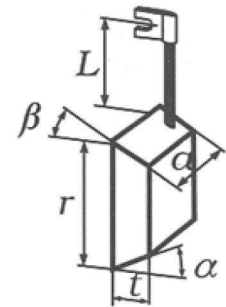
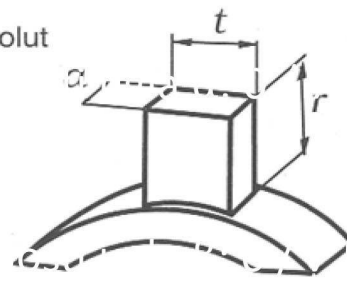
Osnovne dimenzije četkica

U zavisnosti od upotrebe četkice, za kolektor ili klizni prsten, osnovne dimenzije četkica se definišu kao na crtežu:

kolektor



klizni kolut



Uglovi α i β prikazani su na slici
standardne vrijednosti ugla α : 0 / 7,5 / 15 / 22,5/30/37,5.
standardne vrijednosti ugla β : 0 / 7,5 / 15/22,5/30/37,5/45.

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Dužina i presjek kabla: L (mm); S (mm²)

Dužina kabla mjeri se prema slici.

Standardne vrijednosti dužine kabla L (mm):

- 16/20/25/32/40/50/56/63/71 /80/90/ 100/112/125/140/160.

Standardne vrijednosti preseka kabla S (mm²):

- 0,25/0,35/0,5/0,75/1/1,5/2/2,5/3/4/6.

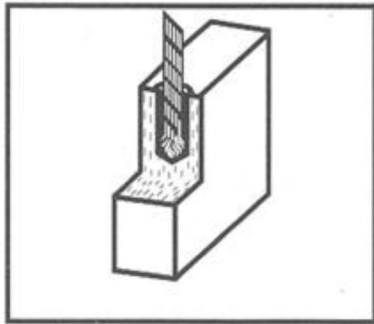
Izolacija preko kabla (ukoliko je potrebno) izvodi se od bužira (silikonska cijev).



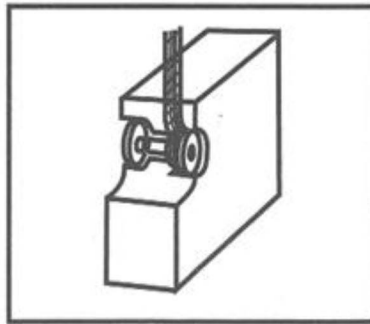
Liv-ELIR d.o.o.

Način spajanja vezice za tijelo četkice:

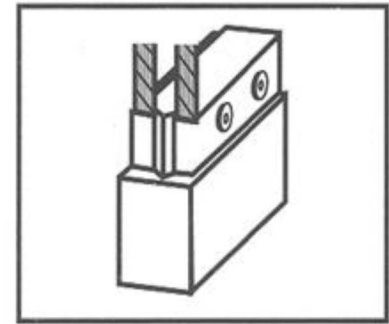
- štamfanje se vrši upresavanje specijalnih metalnih prahova
- nitovanje se koristi u slučajevima vrlo mekih četkica koje nemogu izdržati štamfanje
- spajanje armaturama se koristi u specijalnim uslovima



Štamfanje



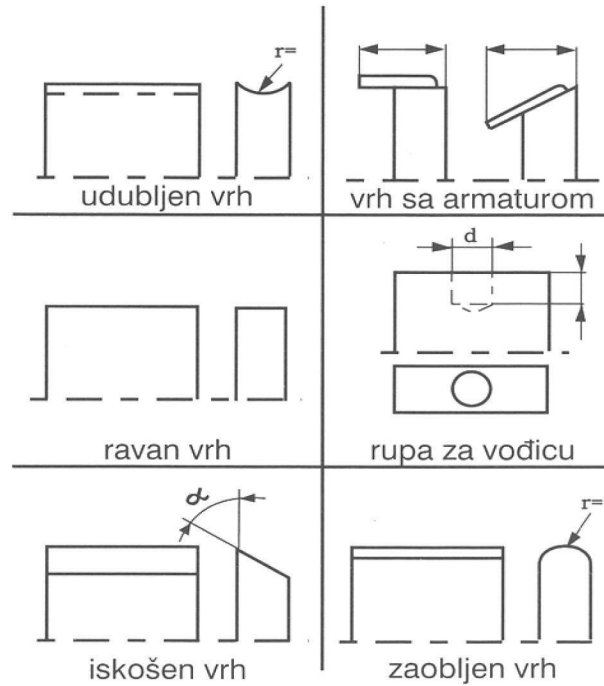
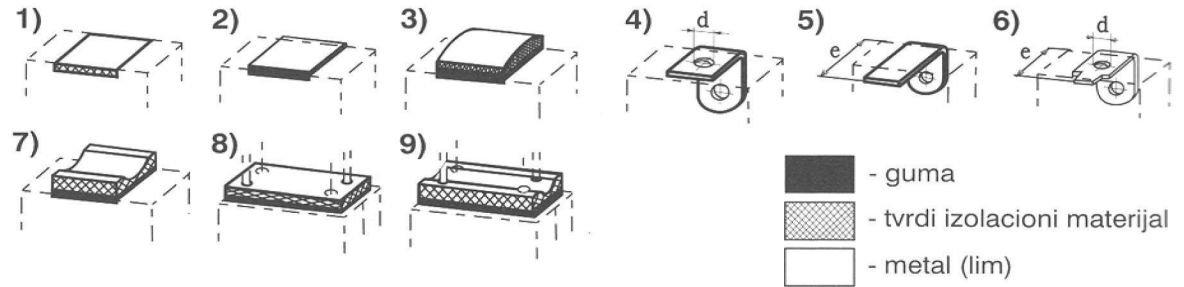
Nitovanje



Spajanje armaturom

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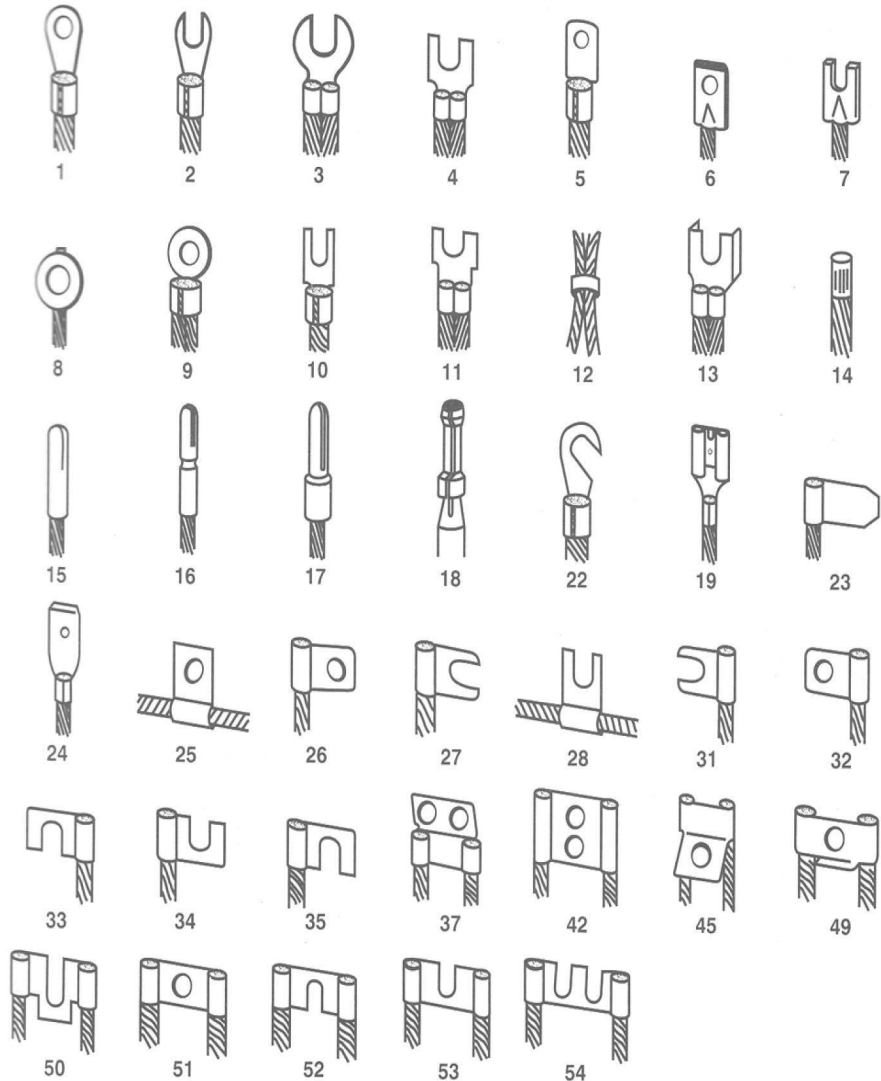
Vrh četkice



Liv-ELIR d.o.o.

Oblik i veličina otvora priključne papučice

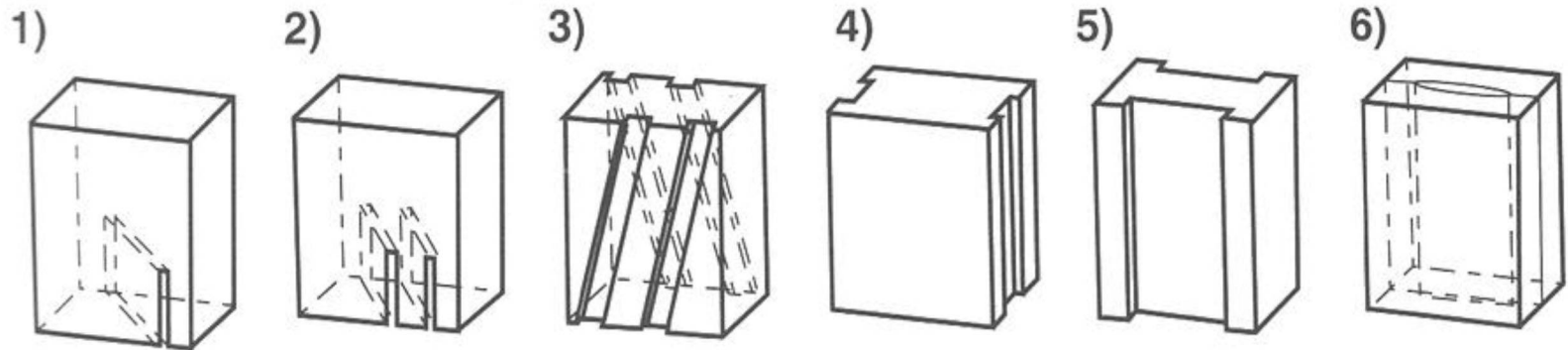
Standardne vrijednosti otvora
priključne papučice d (mm):
2,8/3,4 / 4,3/5,2/6,5/8,5/10,5.



Liv-ELIR d.o.o.

Posebne obrade kod izrade četkica:

Primjenjuju se radi boljeg rada četkica



Liv-ELIR d.o.o.

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Mob.: +387 61 730 993

Mob: +387 62 247 673

Mob: +387 62 232 065

Mail: direktor@elir.ba

web: www.elir.ba

skype: esadsoftic1

Držači četkica



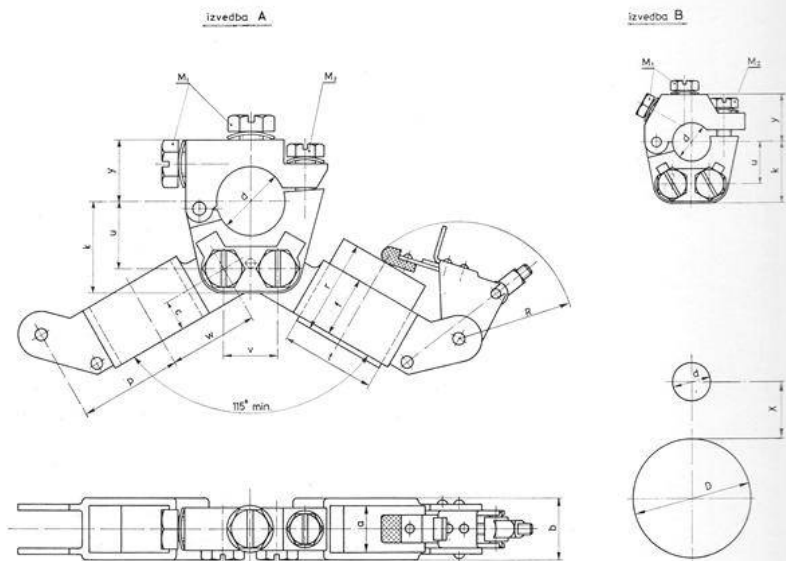
DRŽAČI ČETKICA

Na električnoj mašini neophodno je da su svi držači četkica u ispravnom stanju, šta je jedan od najosnovnijih uslova za dobar rad četkice u pogonu. Osnovna svojstva koja mora da poseduje držač četkica su sledeća:

- ormarići držača moraju biti mehanički čvrsti
- obrada držača mora biti precizna, šta naročito važi za unutrašnje površine ormarića držača
- pritisak na četkicu mora biti podešen tako da za svo vreme rada četkice bude u sto manjim granicama (vibracije u kućištu držača)
- opruge i ostali elementi koji obezbeđuju elastičnost u toku rada, kao i prigusenje vibracija, moraju biti tačno podešeni i u ispravnom stanju.

KLIZNOKOLUTNI DRŽAČ S PRIKLJUČKOM

TIP: DDK



Tipna oznaka držača	Dimenzije četkice			Izvedba																					
	t	a	r	d	b	c	f	k	p	u	v	w	y	R	M ₁	M ₂	M ₃								
DDK 16	16	8	32	16	15	8	20	25	31	17	17	21	26	20	34	M6	M6	A							
DDK 25	25	10		20	16	8		25	35		17	21							26	40	M8	M8	A		
DDK 251	25	12		25	21	12		26	35		24	32						50	M10	M8				A	
DDK 32	32	16	40	32	13	28	38	43	23	26	50	M8	M8	A											
DDK 3	32	20													25	25	38	28			28	28	38		38
DDK 40	40	20													32	38	38	38	38	38	38	38	M10	M8	A
DDK 4	40	32	32	38	38	38	38	38	38	38	M10	M8	A												

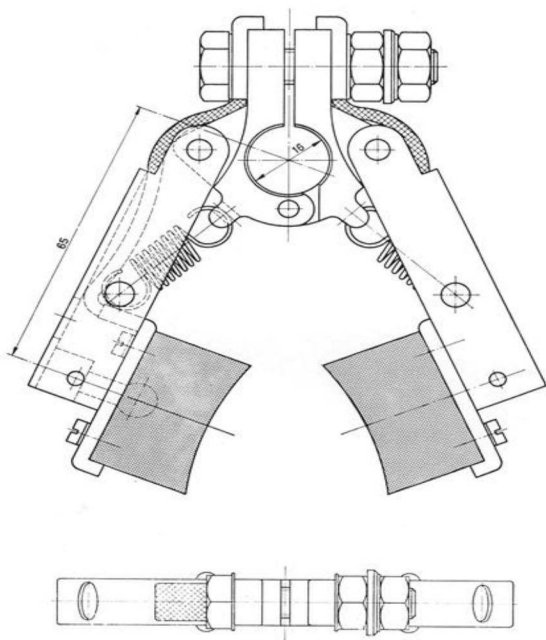
Tipna oznaka držača	Promjer kliznog koluta D							
	90	112	125	130	140	160	200	250
DDK 16	30'94	30'39	30'14	30'05	29'90	29'64	29'26	28'94
DDK 25	33'20	32'39	32'02	31'89	31'67	31'28	30'70	30'21
DDK 251			32'02	31'89	31'67	31'28	30'70	30'21
DDK 32			44'59		44'12	43'61	42'83	42'16
DDK 3						43'61	42'83	42'16
DDK 40						50'17	49'07	48'11
DDK 4								48'11

Ovaj tip držača ugrađuje se na svim mašinama sa kliznim prstenovima različitih snaga. Zbog svoje masivnosti primena ovog držača je moguća i u vrlo teškim uslovima rada. Zavrtnji koji inače drže krakove držača služe i za podešavanje ugla prema potrebi. Držač se izrađuje od livenog mesinga, pritisak opruge se može podešavati.

Liv-ELIR d.o.o.

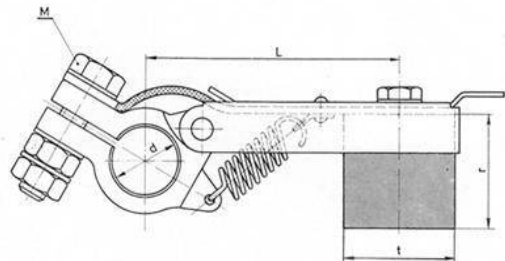
ZGLOBNI KLIZNOKOLUTNI DRŽAČI

TIP: KKDS

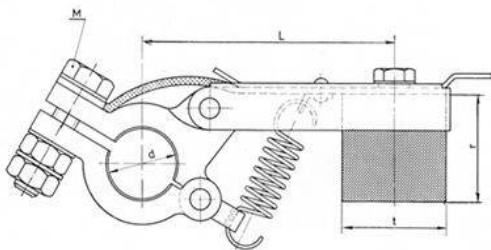
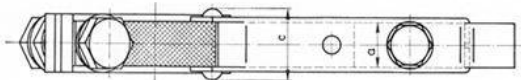


Ovaj tip držača može se primenjivati na svim mašinama sa prosječnom brzinom okretanja do 15 m/s.

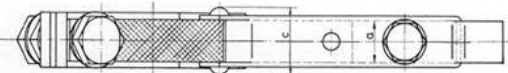
ZGLOBNI KLIZNOKOLUTNI DRŽAČI



TIP: KD

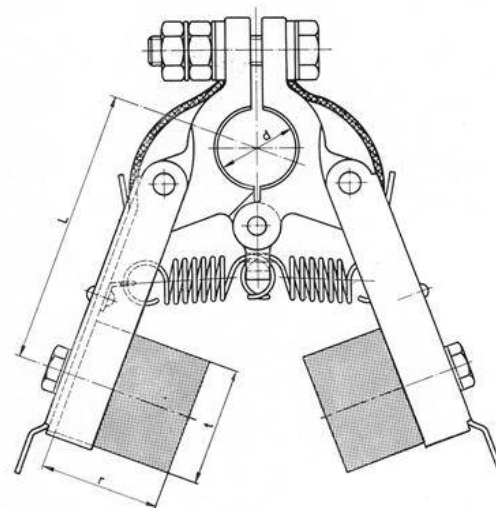


TIP: KDS

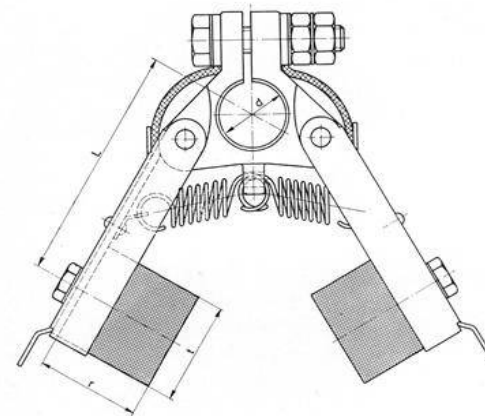
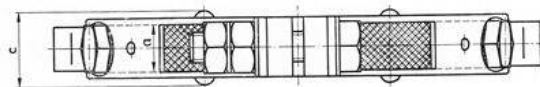


		Tipna oznaka držača: KD, KDS, KKD i KKDS															
Dimenz. četkice	t	16	20	25	16	20	25	20	25	32	40	25	32	40	25	32	40
	a	8			10			12,5			16			20			
	r	20	25		25			25	32	40		32	40		32	40	
	c	12,5			14,5			18			22			26			
M	M5			M6			M6			M8			M8				
d _{max}	10...13			10...16			13...20			17...25							
L	46	50		50	60	55	70	75	80	95	85	90	100	105	100	110	115
		60		60	70	65	80	85	90	110	100	110	120		125	140	125
	60	70	70	70	80	75	85	90	95	105	125	115	130	140	125	140	150

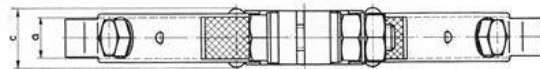
ZGLOBNI KLIZNOKOLUTNI DRŽAČI



TIP: KKD



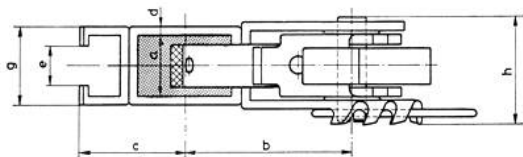
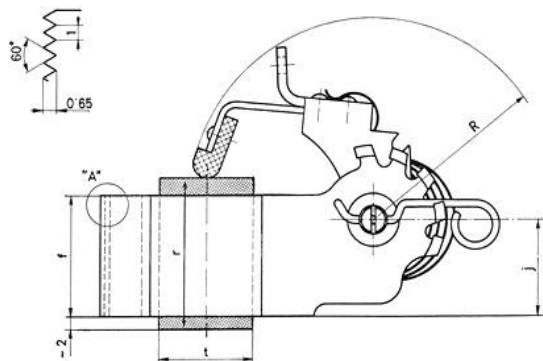
TIP: KKDS



KLIZNOKOLUTNI DRŽAČI

TIP: KDP

detalj "A"

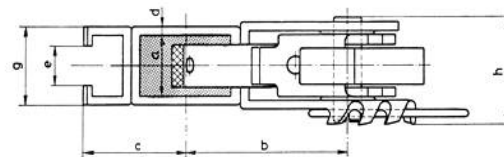
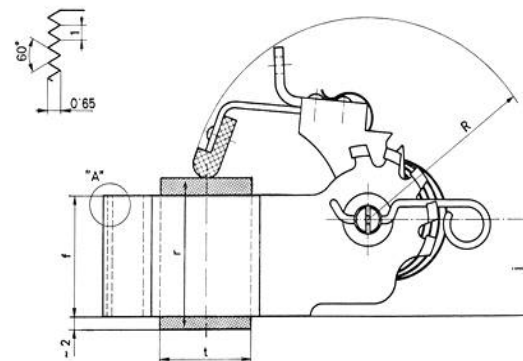


Tipna oznaka držača	Dimenzije četkice											
	t	a	r	b	c	d	e	f	g	h	j	R
KDP 161	16	10	25	29	18	1'5	6'6	20	13'5	18	16	33
KDP 1		12'5										
KDP 20	20	10	25	31	20	1'5	6'6	20	13'5	18	16	35
KDP 201		12'5										
KDP 2		16										
KDP 25	25	16	32	40	22'5	1'5	6'6	25	13'5	27	18	14
KDP 252		20										
KDP 321	32	16	40	45	29	2	8'6	25	18'5	27	18	49
KDP 322		20										
KDP 32		25										
KDP 40	40	16	40	49'5	33	2	8'6	25	18'5	27	18	53'5
KDP 402		20										

KLIZNOKOLUTNI DRŽAČI

TIP: KDP

detalj "A"

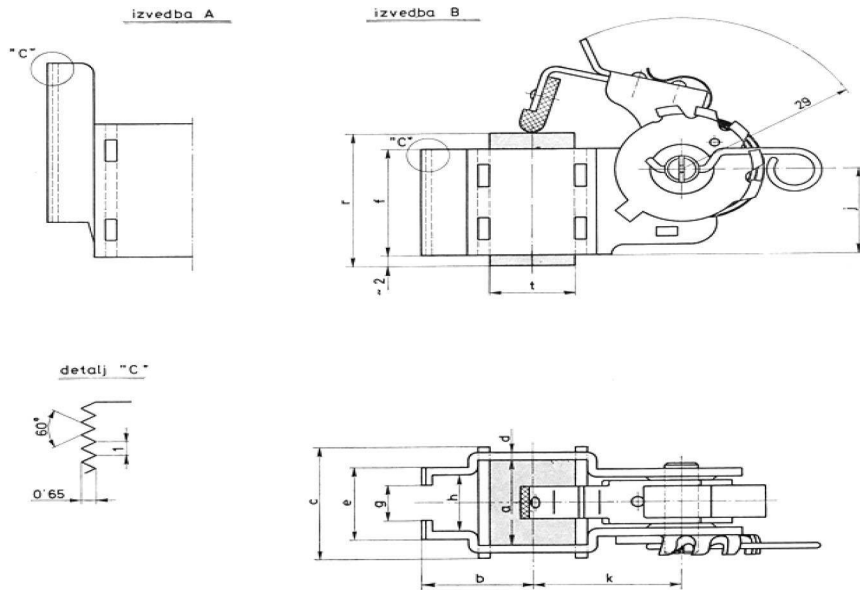


Tipna oznaka držača	Dimenzije četkice											
	t	a	r	b	c	d	e	f	g	h	j	R
KDP 161	16	10	25	29	18	1'5	6'6	20	13'5	18	16	33
KDP 1		12'5										
KDP 20	20	10	25	31	20	1'5	6'6	20	13'5	18	16	35
KDP 201		12'5										
KDP 2		16										
KDP 25	25	16	32	40	22'5	1'5	6'6	25	13'5	27	18	14
KDP 252		20										
KDP 321	32	16	40	45	29	2	8'6	25	18'5	27	18	49
KDP 322		20										
KDP 32		25										
KDP 40	40	16	40	49'5	33	2	8'6	25	18'5	27	18	53'5
KDP 402		20										

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RADIJALNI KOLEKTORSKI DRŽAČI

TIP: RD

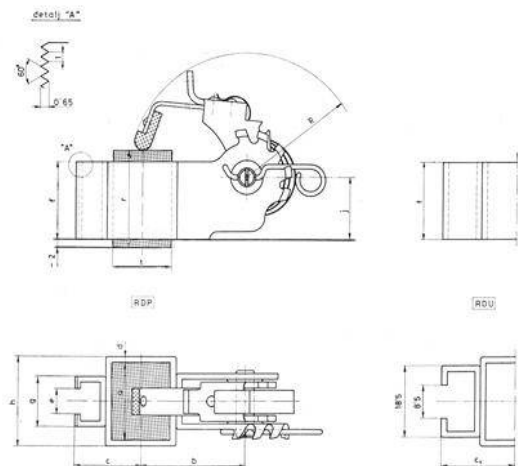


Tipna oznaka držača	Dimenzije četkice				b	c	d	e	f	g	h	j	k	Izvedba
	t	a	r											
RD 08	8	16	25	14	21				20			16	19'5	A
RD 12	12'5			16'3									21'8	
RD 10	10	25	32	15	30	1'5	13'5		6'6	10'5		20'5	30'3	B
RD 16	16			18									33'3	
RD 20	20			20									35'3	
RD 163	16	32	40	18	38	2	18'5		8'6	14'5			33'3	
RD 203	20			20									35'3	



RADIJALNI KOLEKTORSKI DRŽAČI

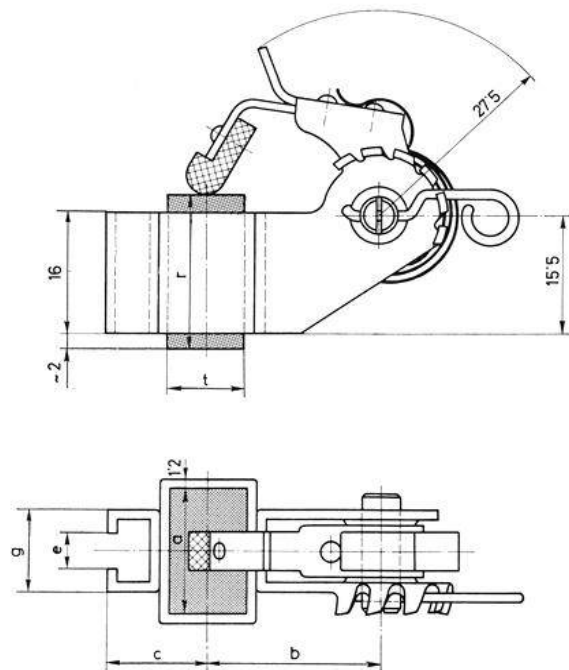
TIP: RDP i RDU



Tipna oznaka držača	Dimenzije četkice			Dimenzije držača										
	t	a	r	c	c ₁	b	d	e	f	g	h	j	R'	
RDP ili RDU	061	6'4	16	25	13'2	15'2	23'7	1'5	6'6	20	13'5	19	16	27'2
	081	8			14	16	24'5							28
	101	10			15	17	25'5							29
	121	12'5			16'25	18'25	26'8							30'3
	062	6'4	20	25	13'2	15'2	23'7	1'5	6'6	20	13'5	23	16	27'2
	082	8			14	16	24'5							28
	102	10			15	17	25'5							29
	122	12'5			16'25	18'25	26'8							30'3
	162	16	25	32	18	20	28'5	1'5	6'6	25	13'5	28	18	32
	082	8			14	16	24'5							28
	102	10			15	17	25'5							29
	122	12'5			16'22	18'25	26'8							30'3
	162	16	32	40	18	20	36'5	2	8'6	25	18'5	36	18	40
	202	20			20	22	38'5							42
	252	25			22'5	24'5	41							44'5
	083	8			17	16	33							36'5
	103	10	18	17	34	37'5								
	123	12'5	19'25	18'25	35'3	38'8								
	163	16	21	20	32	40'5								
	203	20	23	22	39	42'5								
253	25	25'5	24'5	41'5	45									

RADIJALNI KOLEKTORSKI DRŽAČI

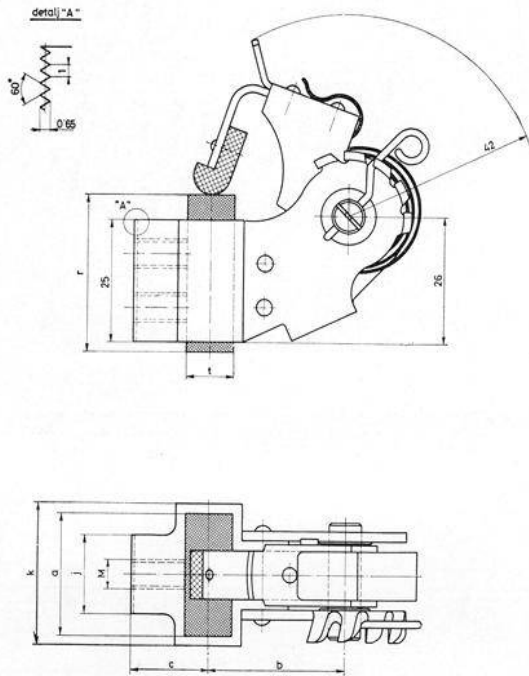
TIP: RDPM



Tipna oznaka držača	Dimenzije četkice			Dimenzije držača			
	t	a	r	b	c	e	g
RDPM 061	6'4	12'5	20	20'7	10'8	4'5	10'4
RDPM 081	8			21'5	12		
RDPM 101	10			22'5	13		
RDPM 061	6'4	16	20	20'7	10'8	4'5	10'4
RDPM 08	8			21'5	12		
RDPM 10	10			22'5	13		
RDPM 062	6'4	20	20	20'7	10'8	5'5	12'4
RDPM 082	8			21'5	12		
RDPM 102	10			22'5	13		

RADIJALNI KOLEKTORSKI DRŽAČI

TIP: RDL



Tipna oznaka držača	Dimenzije četkice			b	c	j	k	M
	t	a	r					
RDL 102	10	25	32	29	15	16	29	M6
RDL 162	16			32	18			
RDL 202	20			34	20			
RDL 163	16	32	40	32	18'5	20	36	M6
RDL 203	20			34	20'5			
RDL 253	25			36	23			

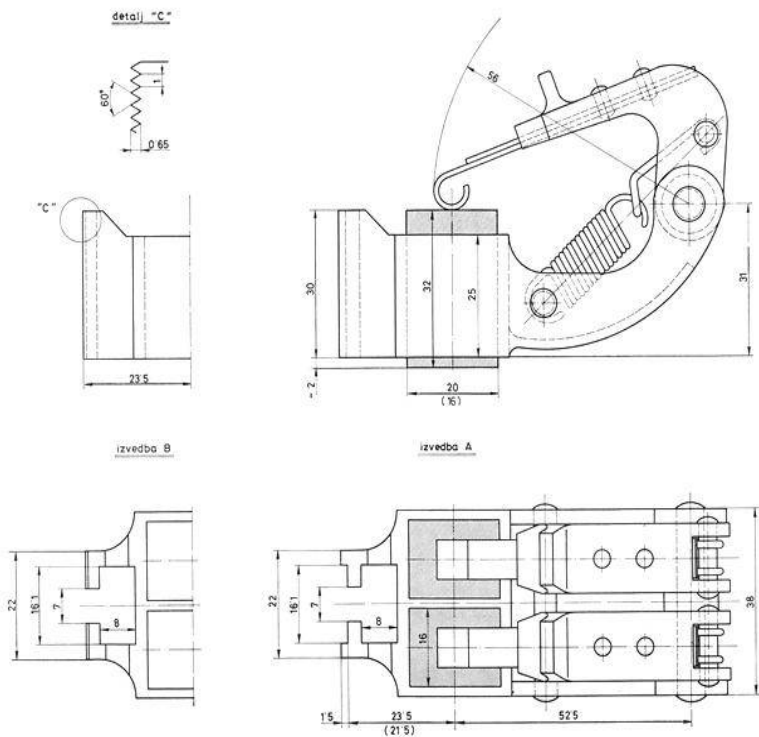
Radijalni kolektorski držači upotrebljavaju se kod jednosmernih mašina, malih i srednjih snaga sa promenljivim smerom okretanja, za brzine obrtanja od najmanjih do najvećih.

Pogodni su i za teže uslove rada.

Opruga je na jednom kraju izolovana i njen pritisak se može podešavati.

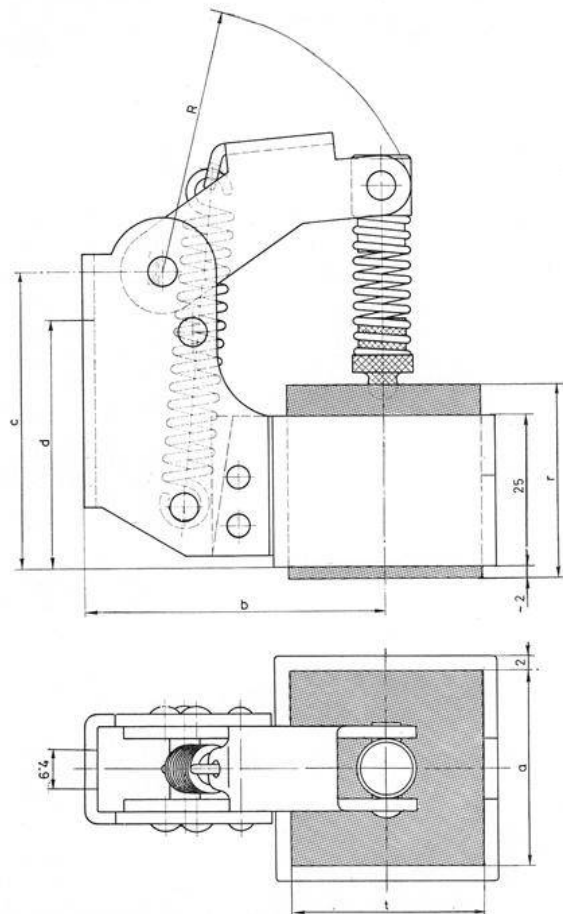
DRŽAČI ZA ELEKTROVUČU

TIP: RDL 2



SPECIJALNI RADIJALNI DRŽAČI

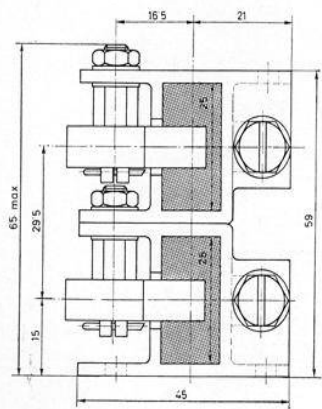
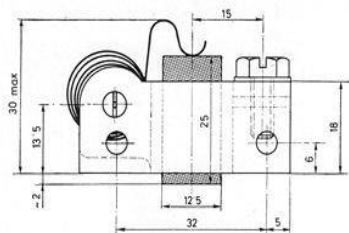
TIP: RDLK



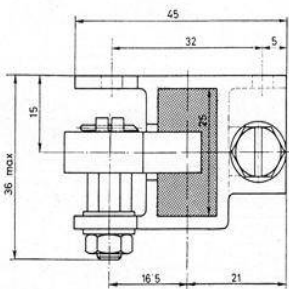
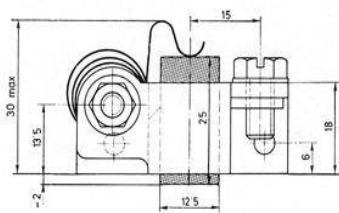
Tipna oznaka držača	Dimenzije četkice				c	d	R
	t	a	r	b			
RDLK 102	10	25	32	31	43	36	30
RDLK 122	12.5			(45)			
RDLK 162	16			34 (45)			
RDLK 202	20			(45)			
RDLK 253	25	30	32/40	48	49	41	43
RDLK 303	30			47.5			
RDLK 123	12.5	32	32/40	40 (45)	41 (45)	45	
RDLK 163	16			44 (45)			
RDLK 203	20			45 (45)			
RDLK 252	25			48 (47.5)			
RDLK 323	32			50		41	

PRIRUBNI DRŽAČI

TIP: PDD



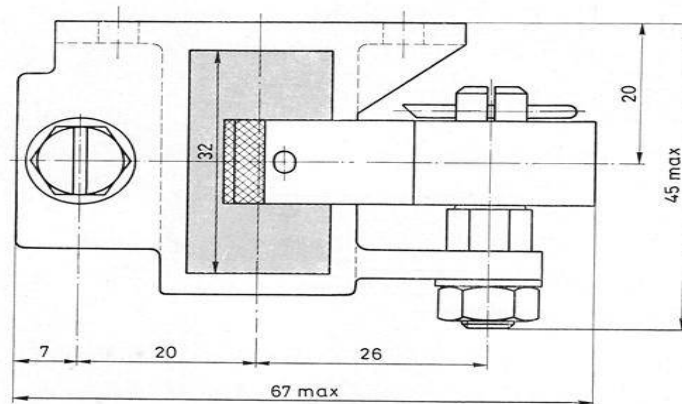
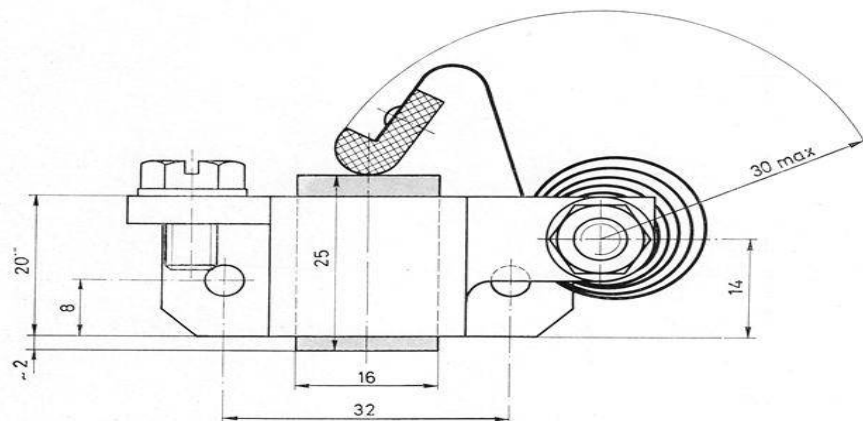
TIP: PD



Ovaj tip držača primenjuje se kod malih mašina radi uštede prostora.

PRIRUBNI DRŽAČI

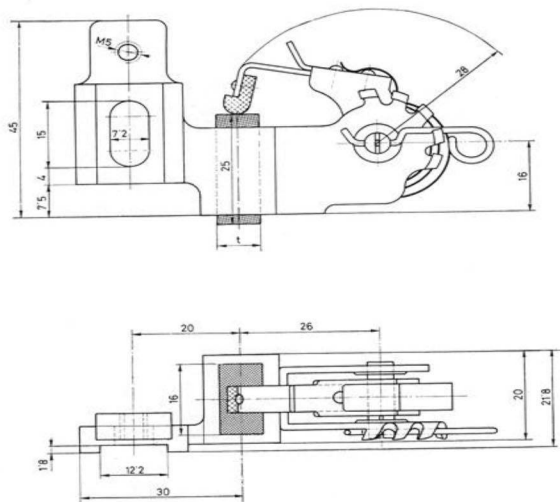
TIP: PD



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SPECIJALNI PRIRUBNI DRŽAC

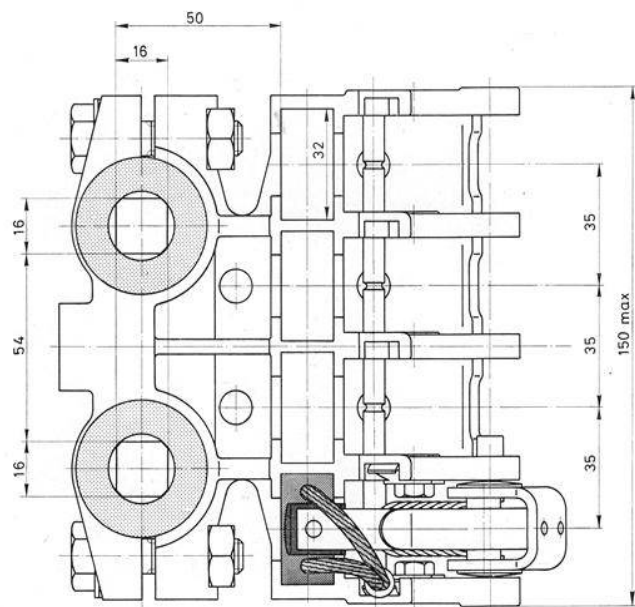
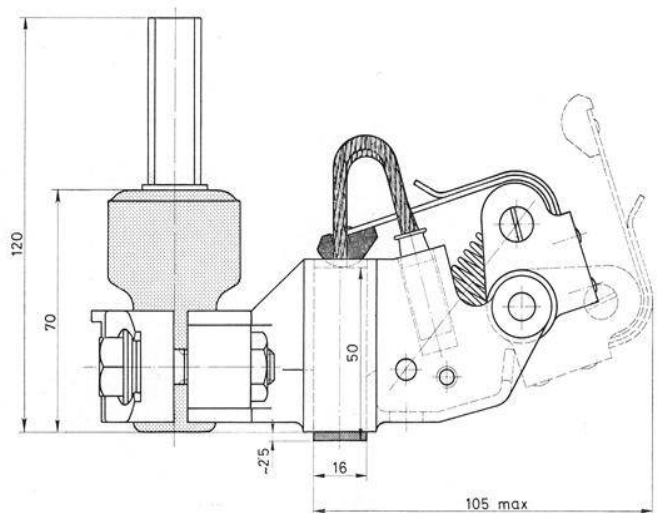
TIP: SRD



Tipna oznaka držača	t
SRD 160	8
SRD 161	10

DRŽAČI ZA ELEKTROVUČU

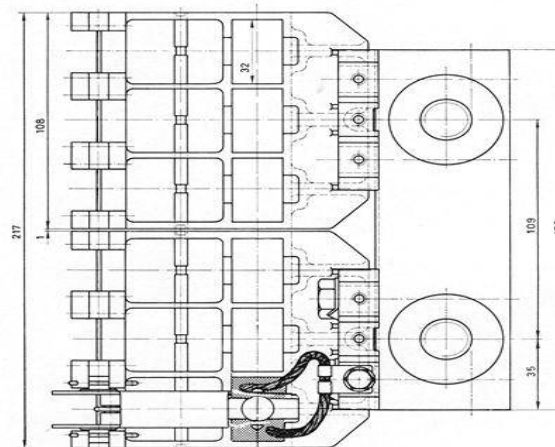
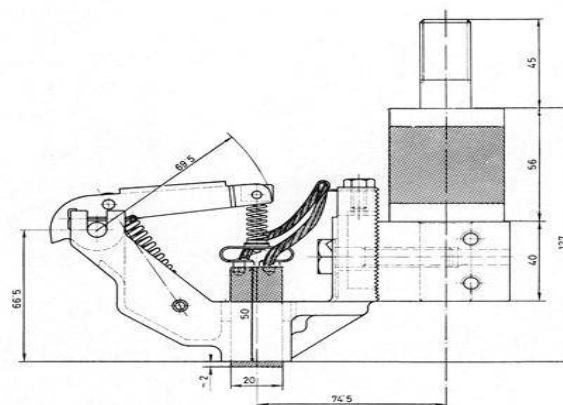
TIP: RDŽ



Ovi držači imaju primjenu u tramvajskim ali i u motorima slične namjene. Kućište je liveno od meninga ili bronce, izolator je ispitan na 3000V, pritiskivač se može zakačiti prilikom izmjene četkica, opruga se nemože podešavati

DRŽAČI ZA ELEKTROVUČU

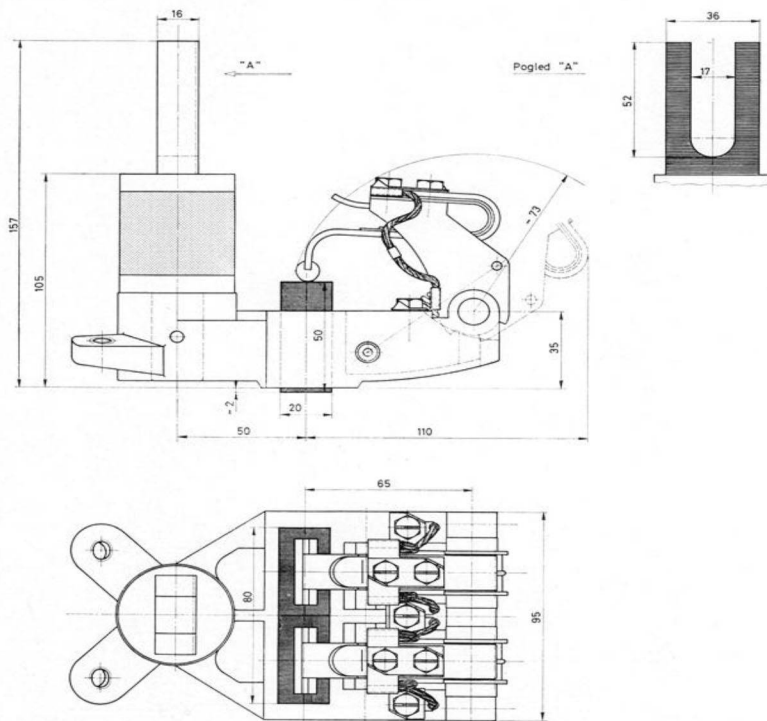
TIP: RDŽ



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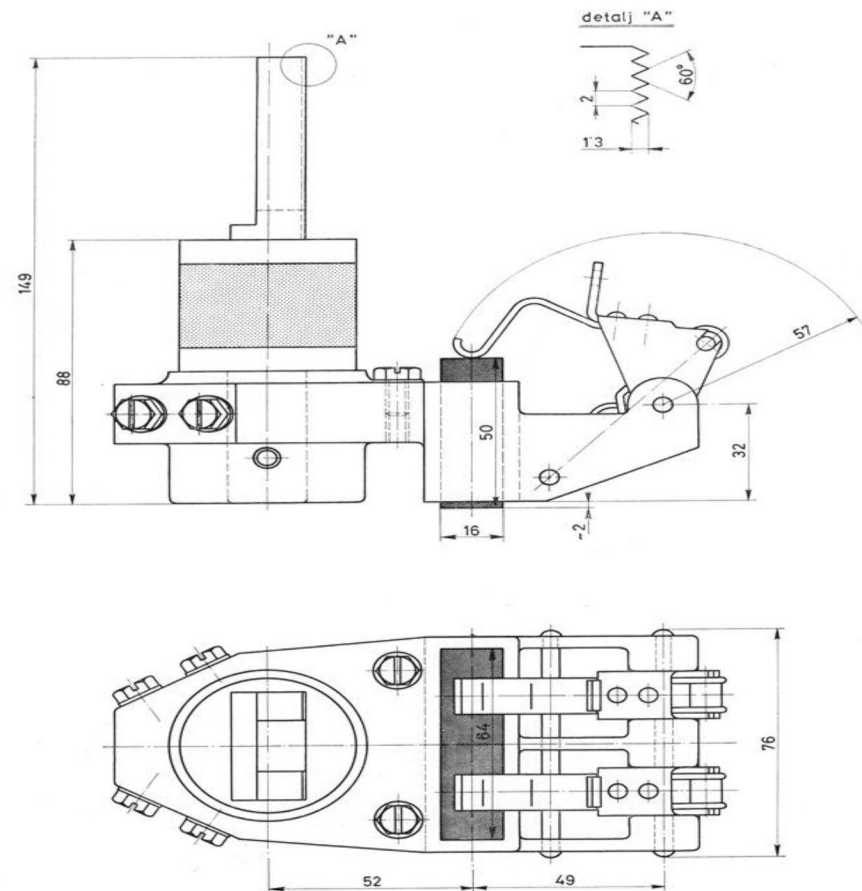
DRŽAČI ZA ELEKTROVUČU

TIP: RDZ



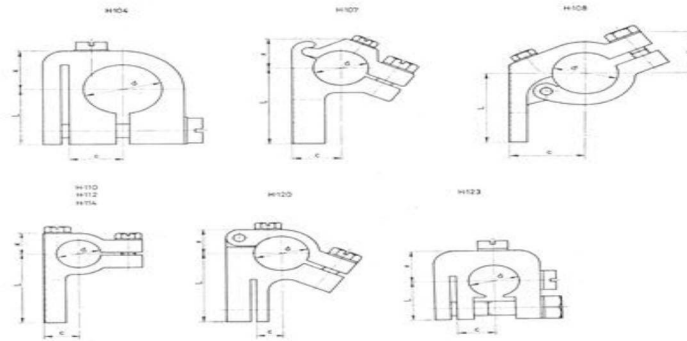
DRŽAČI ZA ELEKTROVUČU

TIP: RDZ

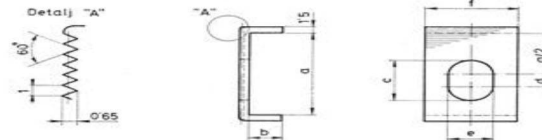


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HVATALJKE I MEĐULIMOVI ZA DRŽAČE



TIP HVATALJKE	d	c	x	L
H — 104	18	12	14	20
H — 10	16.....25	22'2	21	50
H — 108	22.....32	34'3	30	50.....70
H — 11	10.....13	12'2	10	23.....40
H — 112	10.....16	15'7	12	33'5
H — 114	14.....20	15'7	15	30.....55
H — 12	10.....20	10	14	40
H — 123	10.....13	8'5	11	14

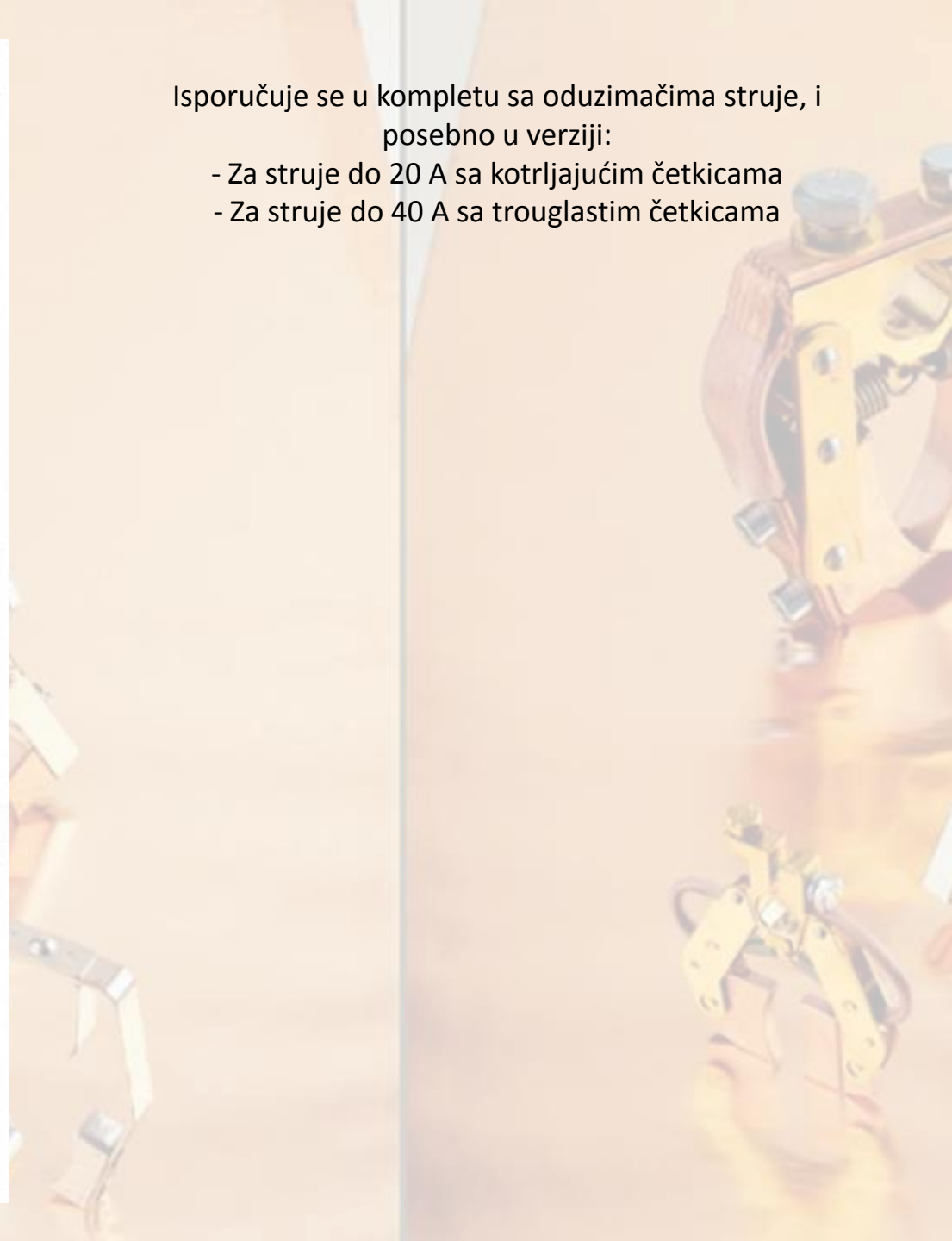
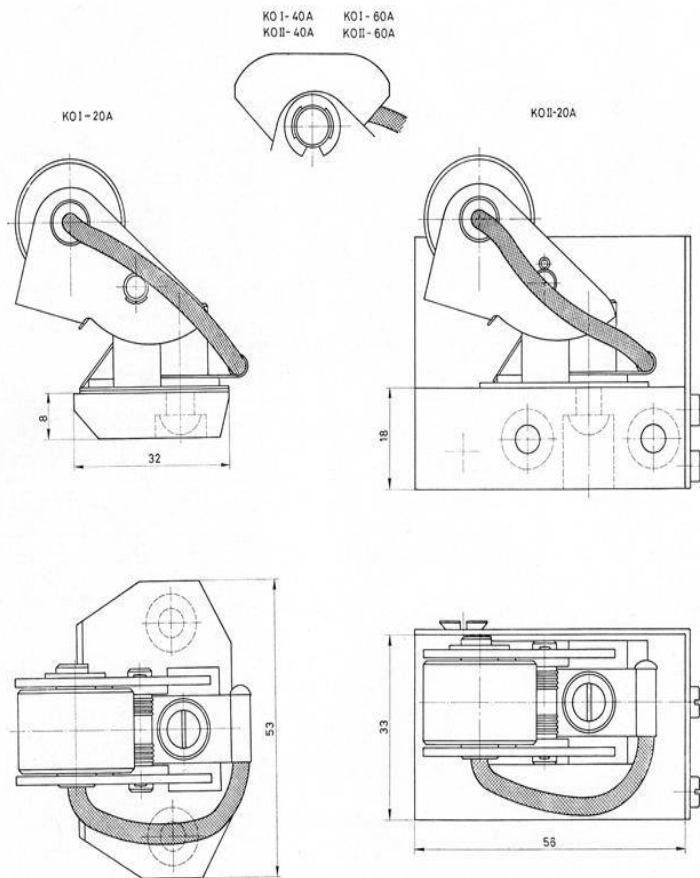


Oznaka međulima	a	b	c	d	e	f
ML 16	16	4	7'8	1'5	6'3	13
ML 20	20	5	10	3	7	14
ML 25	25					

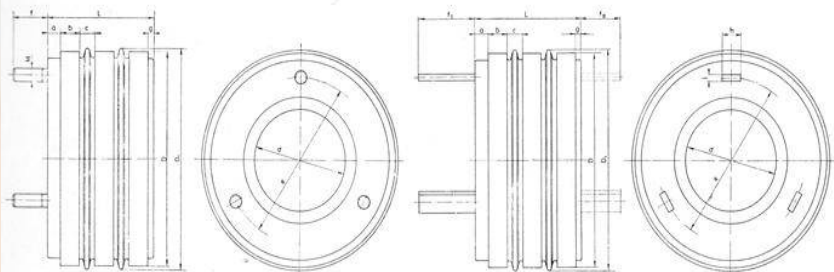
KONTAKTNI ODUZIMAČI

Isporučuje se u kompletu sa oduzimačima struje, i posebno u verziji:

- Za struje do 20 A sa kotrljajućim četkicama
- Za struje do 40 A sa trouglastim četkicama



KLIZNI KOLUTI



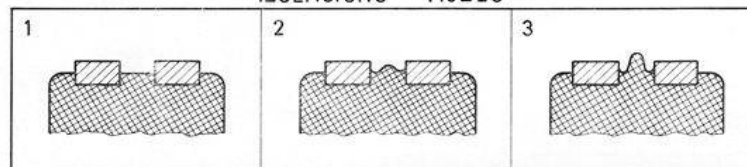
Oznaka kliznog koluta	D	D ₁	L	d	a	b	c	g	e	f	M	f ₁	f ₁₁	h	j
KK 3090-1043-060-232	94	88	60	43	9	10	8	5	64	23	M5				
KK 3090-1043-060-332		96													
KK 3112-1046-072-332	114	120	72	46	10	10	12	8	82	40	M8	45	10	2	
KK 3112-1046-072-336															
KK 3112-1055-072-332	116			55						33	M8				
KK 3125-1658-096-232	127	96	125	58	7	16	14	5	95	32	M8	60	16	2	
KK 3125-1658-088-236		88													
KK 3125-1665-096-232	130	96	65							28	M8				
KK 3130-1462-090-332	132	134	90	62	12	14	14	8	98	35	M8				
KK 2140-1670-074-237	141	138	74	70				14	124			10		14	2
KK 3140-1676-098-332	148	145	98	76,3	14	16	14	8	108	35	M8				
KK 3140-1678-098-332				78											
KK 3160-2562-125-238	163	161		62								70	52	20	5
KK 3160-2568-125-236				68											
KK 3160-2576-125-232	165	155	125	76,6	13	25	15	7	125	35	M10				
KK 3160-2576-125-332															
KK 3160-2585-125-236	163	161		85								70		20	5
KK 3160-2588-125-232	165	155		88						35	M10				
KK 3160-2588-125-332		164													
KK 3200-2578-140-236	203	201		78								85		20	5
KK 3200-2578-140-332		206													
KK 3200-2582-140-238	201			82						45	M16	95	62	20	5
KK 3200-2586-140-232	205	195	140	86	17	25	20	8	152	45	M16				
KK 3200-2586-140-332		206													
KK 3200-2500-140-236	203	201		100								85		20	5
KK 3200-2503-140-232	205	195		103						45	M16				
KK 3200-2503-140-332		206													
KK 3250-2508-140-336	253	260	140	108	17	25	20	8				75	45	25	8
KK 3250-2508-140-338															
KK 3250-4015-176-232	253	250	176	115	8	40	18	7	195	46	M16				
KK 3250-4015-176-332															
KK 3250-2520-140-336	253	260	140	120	17	25	20	8				75	45	25	8
KK 3250-2520-140-338															

KLIZNI KOLUTI

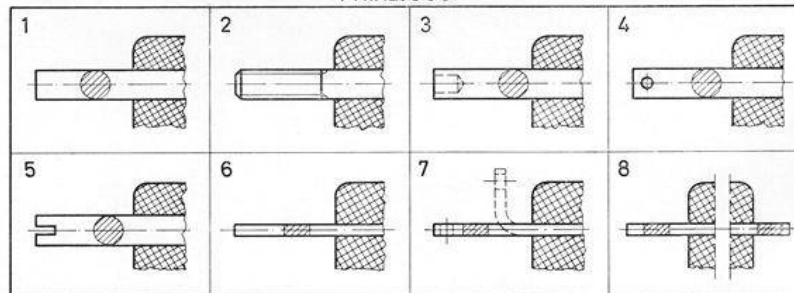
PRIMJER ZA NARUŽBU



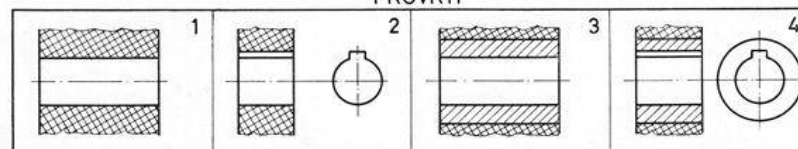
ISOLACIONO TIJELO



PRIKLJUČCI



PROVRTI



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