FASEK

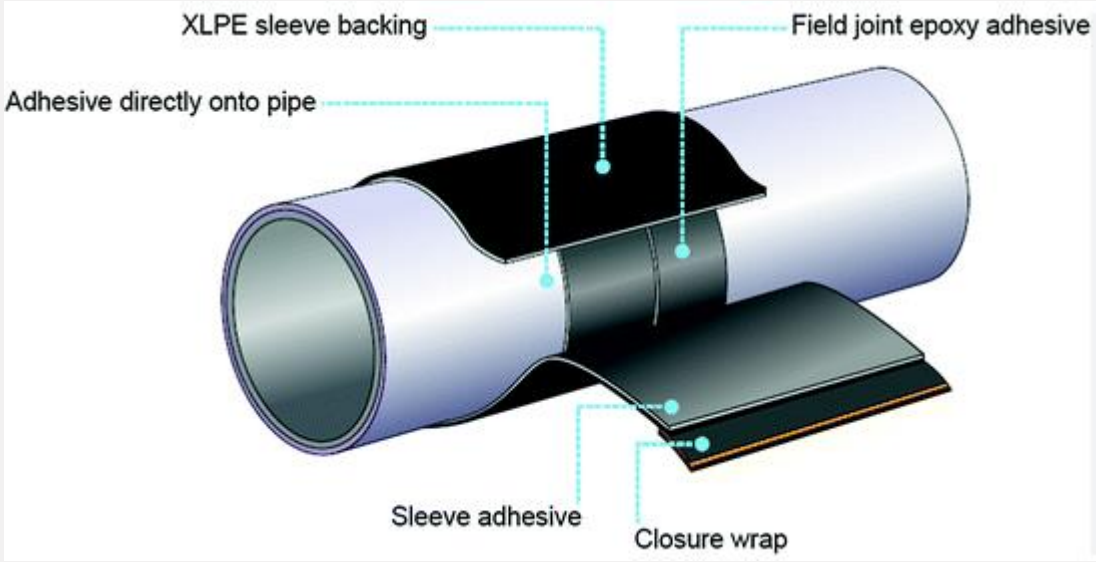
Suzana Zeljko

SEAL FOR LIFE – COVALENCE

ZAŠTITA NAGLAVNIH SPOJEVA DUKTILNIH CIJEVI I SPOJEVA ČELIČNIH CIJEVI TERMOSKUPLJAJUĆIM RUKAVCIMA

ŠTO SU TERMOSKUPLJAJUĆE OBUJMICE…?

zračenjem umreženi istegnuti poliolefinski omotač s memoriranim koeficijentom skupljanja
(pod djelovanjem topline)
+
adhesiv (viskoelastični mastic ili ko-polimer – ovisno o zahtjevima aplikacije)
+
preklopnik za učvršćenje obujmice



NAČIN / OBLIK ISPORUKE OBUJMICA

U ROLAMA

ILI

PREDFABRICIRANIM OBUJMICAMA ZA TOČNO ODREĐENI PROMJER CIJEVI

TROSLOJNE OBUJMICE / sustavi zaštite

Troslojni sustav sastoji se od:

1. dvokomponentnog tekućeg epoksidnog temeljnog premaza sa 100% suhe tvari i
2. termoskupljajućeg omotača izrađenog od ko-polimernog ljepila visoke čvrstoće na smicanje i
3. podloge od polietilena visoke gustoće umreženog zračenjem

Ovaj troslojni sustav replicira strukturu i performanse tvornički nanesenih troslojnih PE premaza

*- troslojni COVALENCE sustav **HTLP 60** i **HTLP 80** su jedina dva sustava koja prolaze ALYASKA test na smik (razvio SAIPEM)*

DVOSLOJNE OBUJMICE / sustavi zaštite

Dvoslojni sustav sastoji se od:

1. Viskoelastičnog adhesiva za brtvljenje s niskim predgrijavanjem i

2. Debelostijenog zračenjem umreženog polietilena visoke gustoće s PCI-em (**P**ermanent **C**hange **I**ndicator) – indikator pravilno predgrijane obujmice (pojavljuje se print po vanjskom dijelu omotača) – COVALENCE obujmice jedinstvene su po tome što daju indikaciju pravilnog predgrijavanja

Ovaj dvoslojni sustav idealan je za sustave velikih promjera s niskom temperaturom predgrijavanja

- imaju svojstvo samozacjeljivanja manjih oštećenja

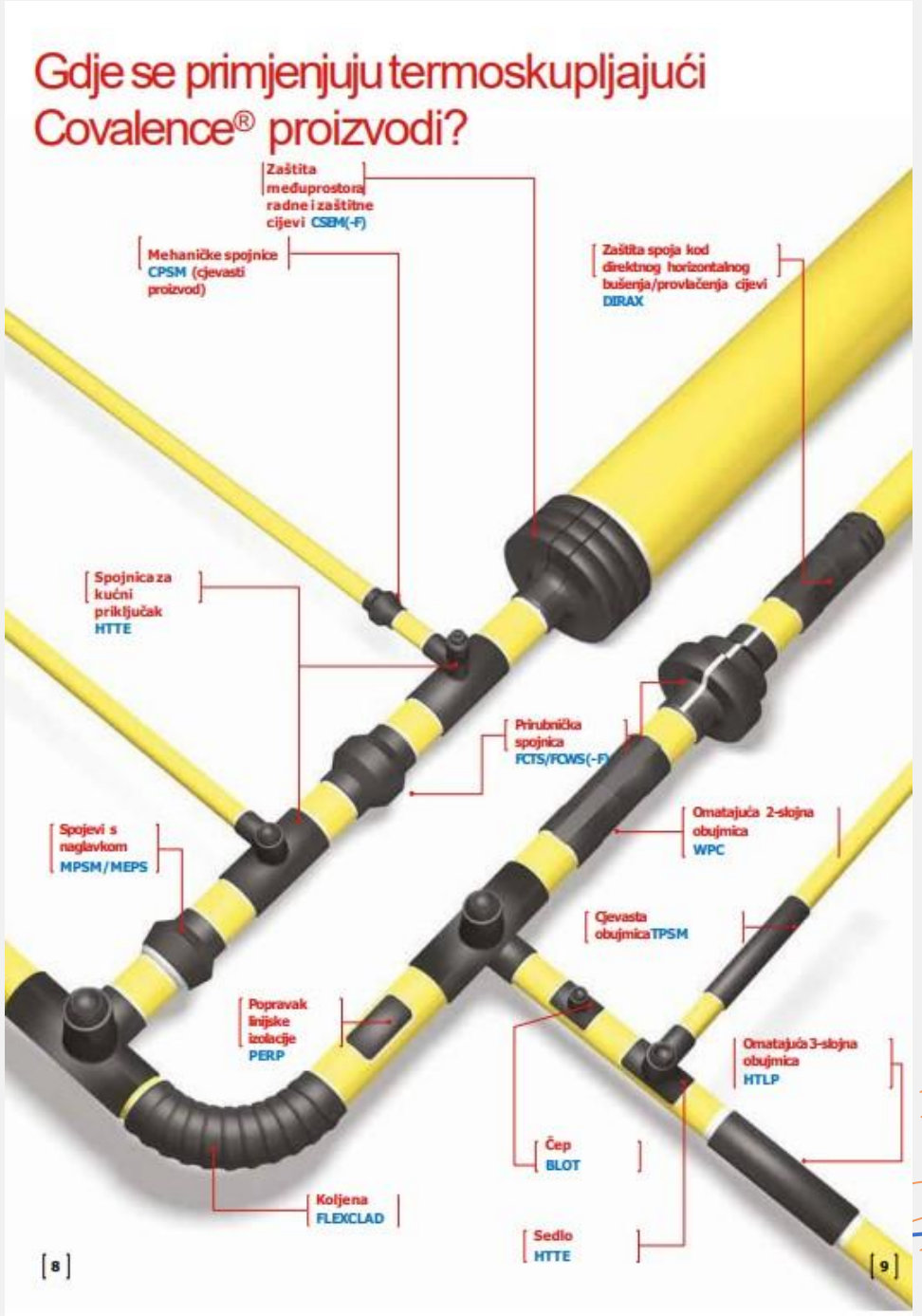
PRIMJENA TERMOSKUPLJAJUĆE COVALENCE IZOLACIJE

- transportni cjevovodni sustavi (plin, nafta, voda)

- distributivni sustavi (plin, voda)

- energetski vodovi

- toplovodi



KARAKTERISTIKE COVALENCE TERMOSKUPLJAJUĆIH OBUJMICA

Product properties			
Backing			
Property	*Test method*	*Typical value MPSM***	*Typical value MPSM/MEPS/HEPS*
Tensile strength at break	ASTM D-638		22.8 MPa
	EN 60684-2	≥13 MPa	
Elongation at break	ASTM D-638		600%
	EN 60684-2	≥ 350 %	
Hardness, Shore D	ASTM D-2240/ISO 868	50	57
Shrink force	ASTM D-638, 150° C (302°F)		40 psi
Dielectric strength	ASTM D-149 EN 60684-2	≥ 10 kV/mm	35 kV/mm
Moisture absorption	ASTM D-570	0.04%	0.04%
Adhesive			
Property	*Test method*	*Typical value*	
Softening point	ASTM E-28	134°C (273°F)	
Lap shear	EN 12068 @ 10 mm/min	> 0.1 N/mm²	
	ASTM D1002 @ 50 mm/min	50 psi	

Installed sleeve				
Property	*Test method*	*Typical value*		
		MPSM	*MEPS*	*HEPS*
Peel to steel	EN 12068 @ 10 mm/min	1.1 N/mm	1.1 N/mm	1.1 N/mm
Impact resistance	EN 12068, Class C	> 15 J	> 15 J	> 15 J
Indentation resistance	EN 12068, Class C30	> 0.6 mm*	> 0.6 mm*	> 0.6 mm*
Resistance to joint deflection and displacement	DIN 30672	Pass	Pass	Pass
Cathodic disbondment	EN 12068 30 days	4 mm radius	9 mm radius	9 mm radius
Longitudinal shrinkage	(Supplied length- Fully recovered length) / Supplied length	Min 45% (< DN300) Min 36% (> DN300)	Min 36%	Min 45%

RAZLOZI ZAŠTITE NAGLAVAKA CIJEVI

RAZLOZI ZAŠTITE NAGLAVAKA CIJEVI

1. **KOROZIJA NAGLAVKA CIJEVI**

2. **ZAŠTITA BRTVE NAGLAVKA OD KONTAKTA S OKOLIŠNIM UVJETIMA / TVARIMA** (OTOPLJENE TVARI U TLU, UMJETNA GNOJIVA, SOL, KISELINE, OSTALO) – **SPREČAVANJE PROPADANJA BRTVE**

“PREDRASUDE” O DUKTILNIM CIJEVIMA :

- ne korodiraju

- ne trebaju katodnu zaštitu

“duktil”

“The ductile iron used to manufacture the pipe is characterized by the spheroidal or nodular nature of the graphite within the iron.[2] Typically, the pipe is manufactured using centrifugal casting in metal or resin lined moulds.[3] Protective internal linings and external coatings are often applied to ductile iron pipes to inhibit corrosion: the standard internal lining is cement mortar and standard external coatings include bonded zinc, asphalt or water-based paint. In highly corrosive environments loose polyethylene sleeving (LPS) to encase the pipe may also be used.

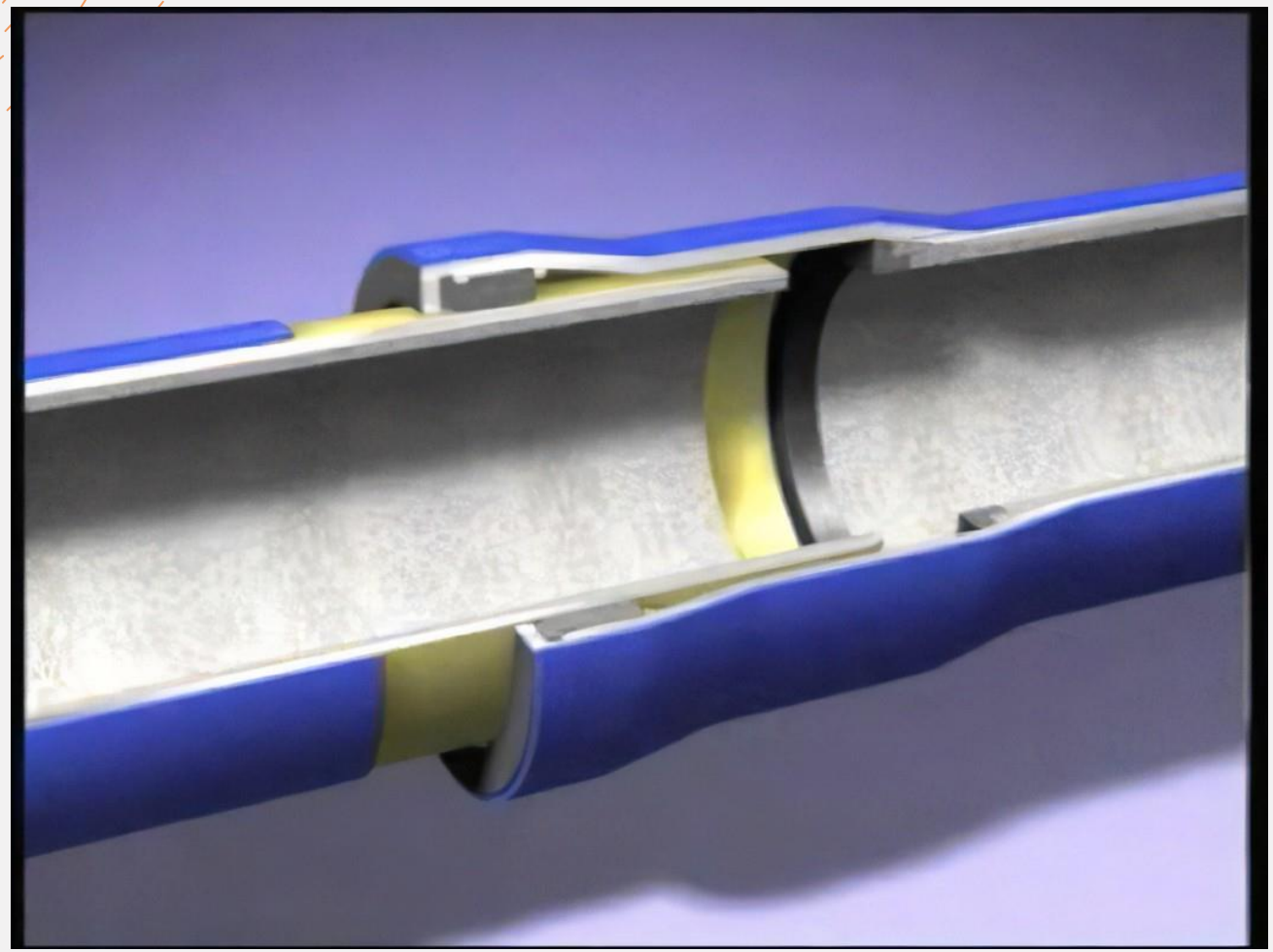
Life expectancy of unprotected ductile iron pipes depends on the corrosiveness of soil present and tends to be shorter where soil is highly corrosive.[4] However, a lifespan in excess of 100 years has been estimated for ductile iron pipelines installed using "evolved laying practices", including use of properly installed LPS (polyethylene encasement).[5][6] Studies of ductile iron pipe's environmental impact have differing findings regarding emissions and energy consumed. Ductile iron pipe manufactured in the US has been certified as a sustainable product by the Institute for Market Transformation to Sustainability.[7][8]”

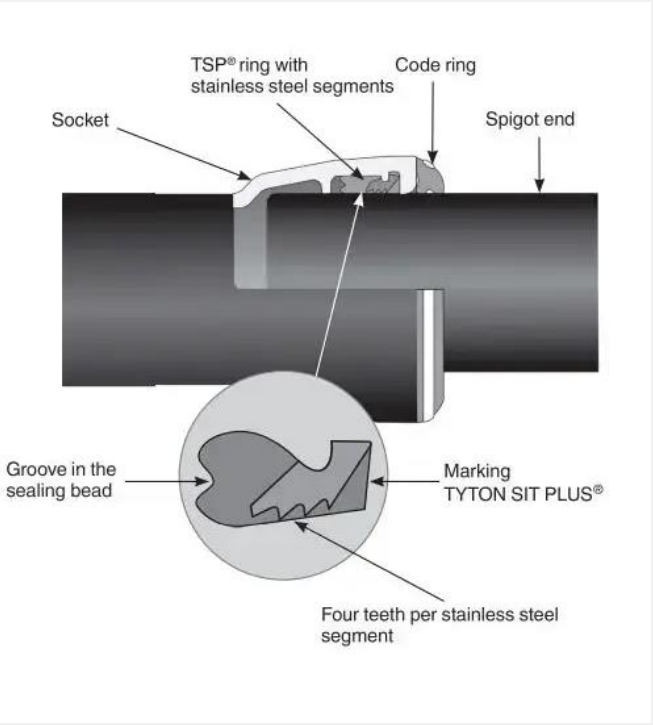
DONOŠENJE ODLUKE O ANTIKOROZIVNOJ ZAŠTITI DUKTILNIH CIJEVI – (prema DDM-u (Design Decision Model)-

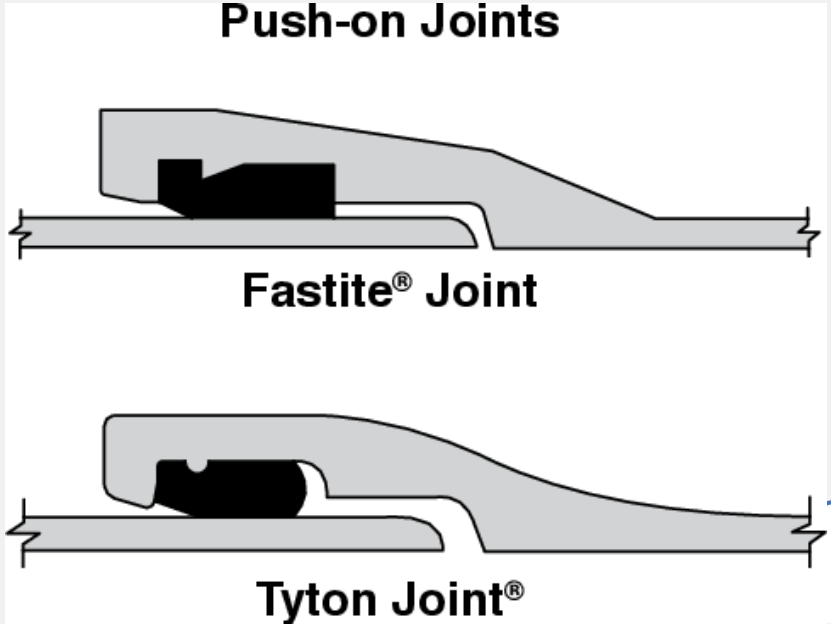
- model razvila DIPRA (DUCTILE IRON PIPE RESEARCH ASSOCIATION)

1. **Ph tla**
2. **elektrootpornost/provodljivost tla**
3. **REDOX potencijal** (redukcija–oksidacija ili oksidacija–redukcija) je vrsta kemijske reakcije u kojoj se mijenjaju oksidacijska stanja supstrata)
4. **sulfidi**
5. **kloridi**
6. **opasnost od bimetalne korozije**
7. **ostali poznati korozivni faktori**

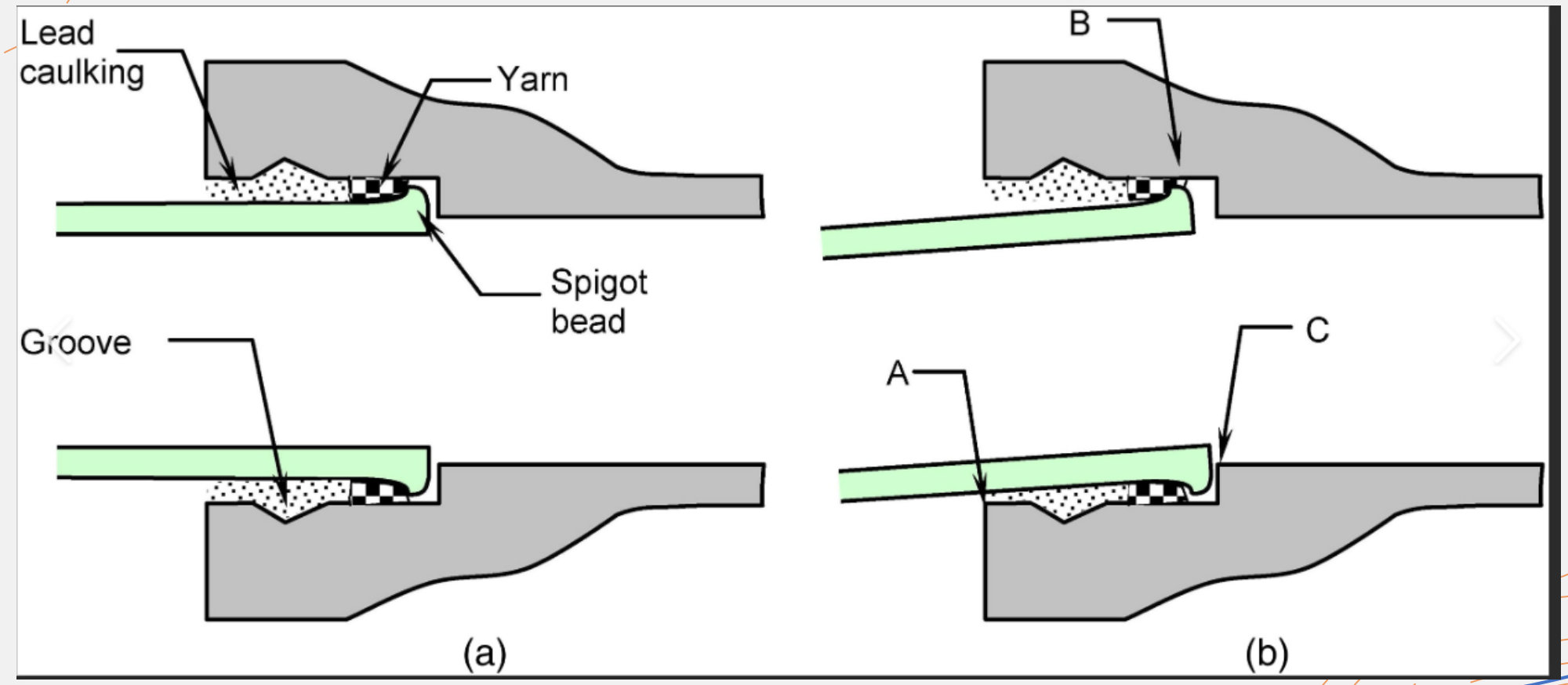
VRSTE SPOJEVA DUKTILNIH CIJEVI







MOGUĆE NEPRAVILNOSTI NA SPOJEVIMA



SIMULACIJA STVARNIH UVJETA – na modelu

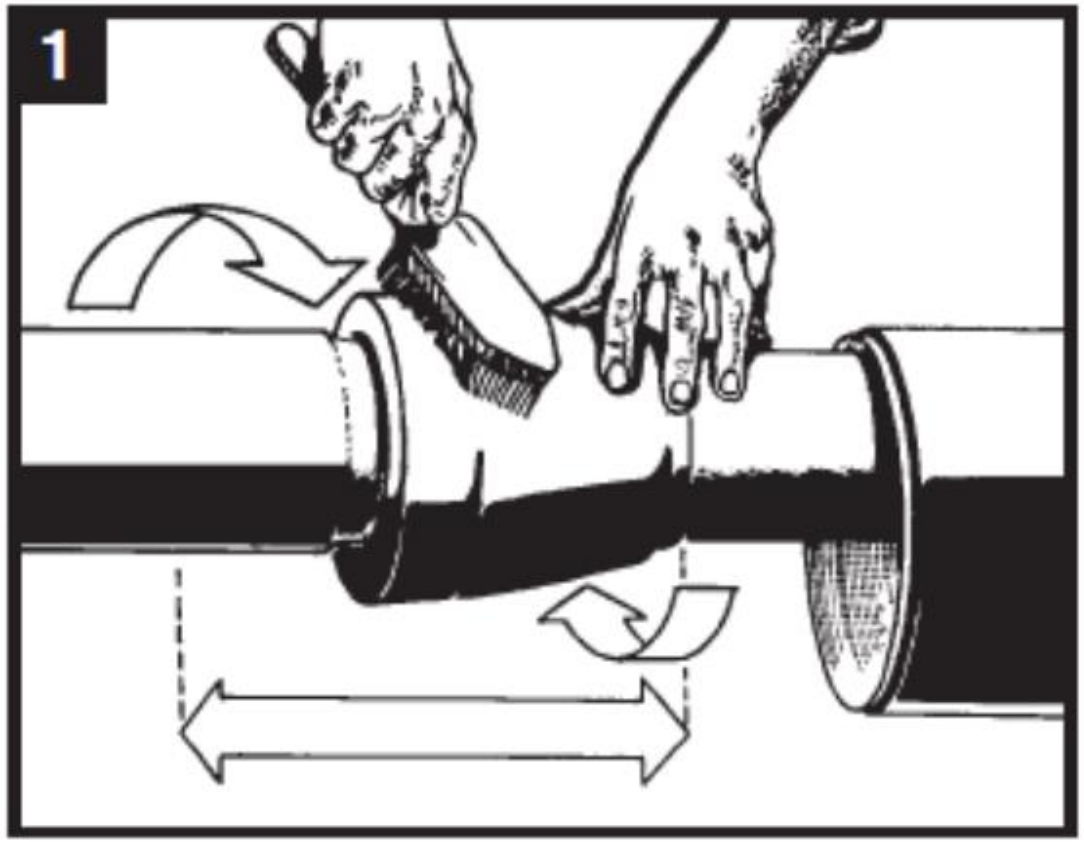
Instalirana (u ovom slučaju **MPSM**) obujmica podnosi:

- **kutni otklon do 5°** i

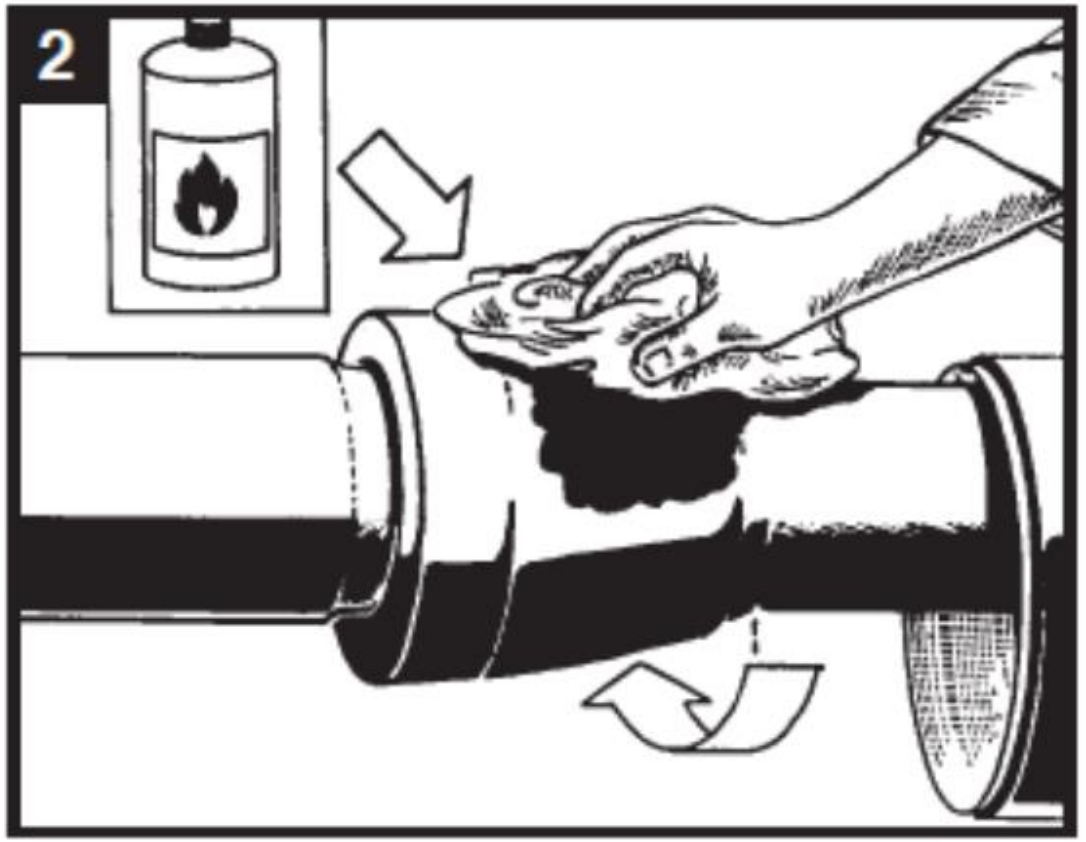
- **bočno izvlačenje (aksijalni pomak) do 30 mm**

OSIM ANTIKOROZIVNE ZAŠTITE, PREDSTAVLJA I MEHANIČKO UČVRŠĆENJE SPOJA

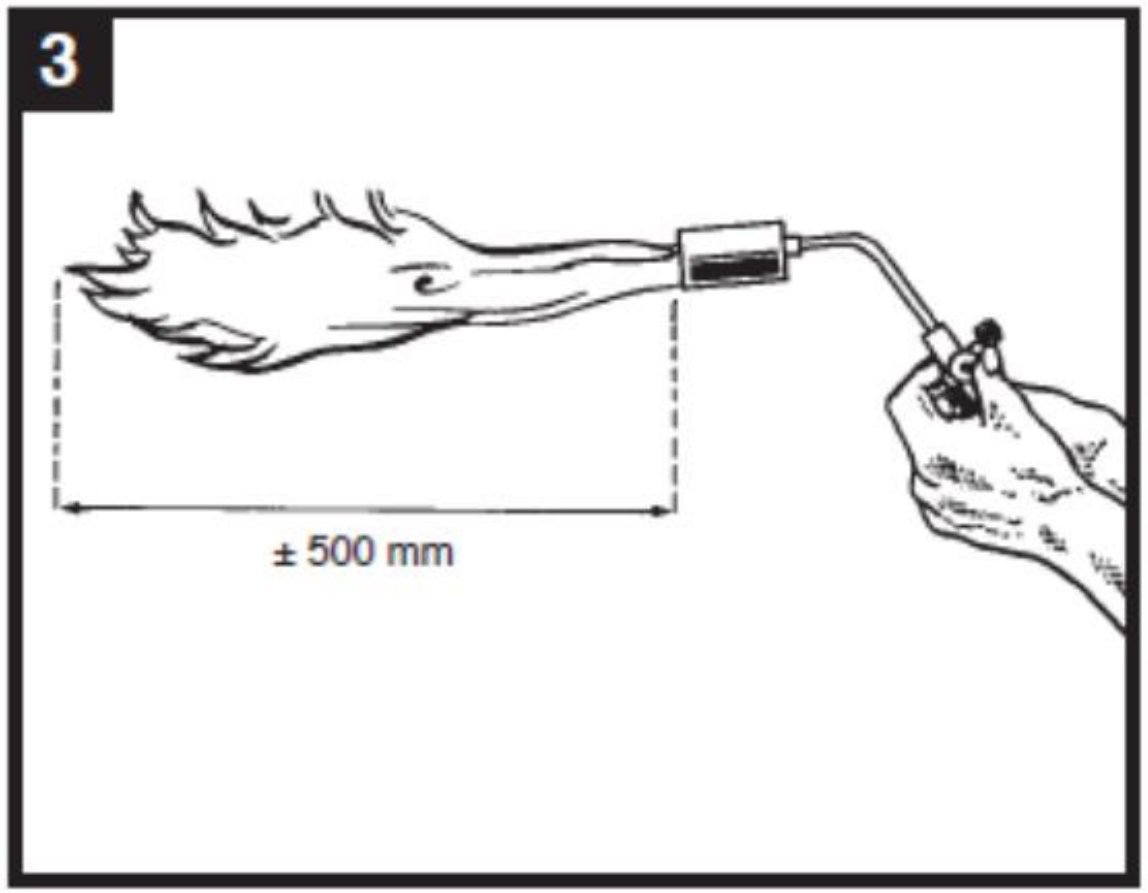
INSTALACIJA TERMOSKUPLJAJUĆIH OBUJMICA

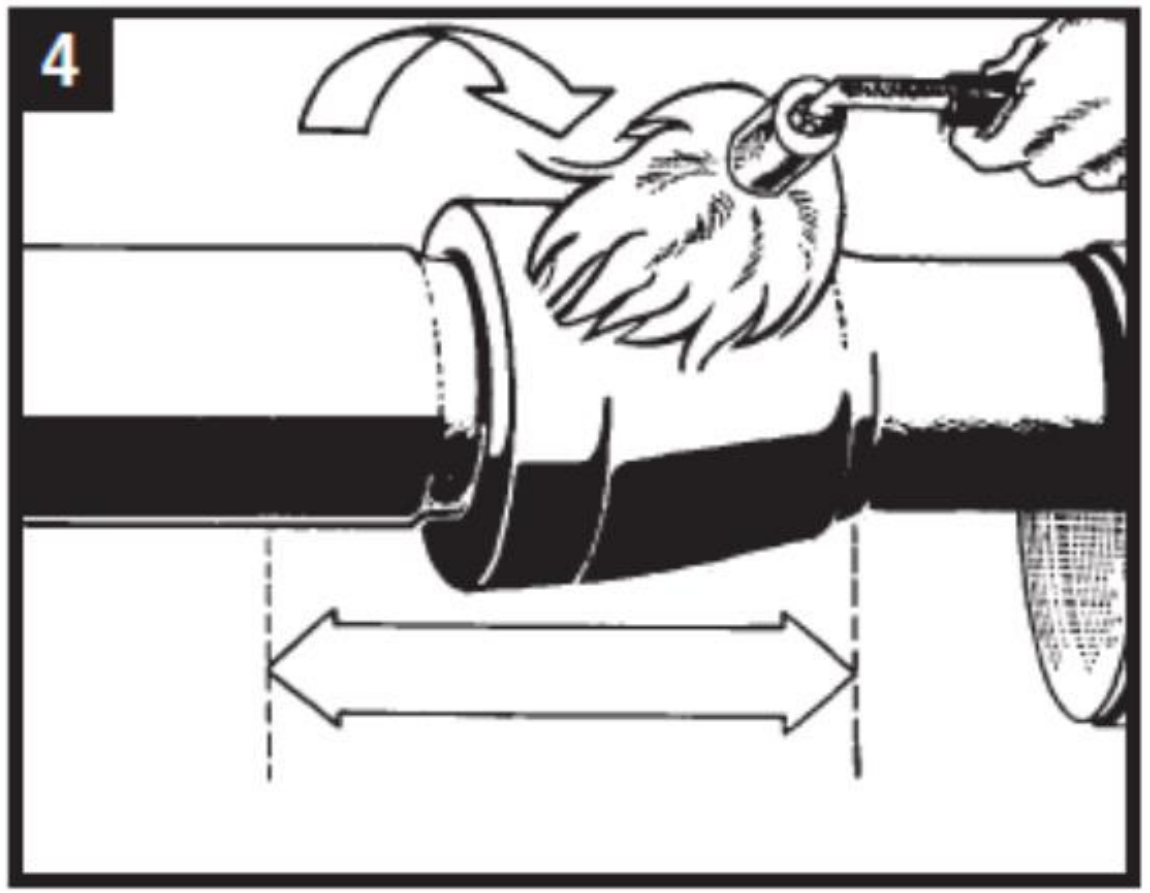


Čišćenje površine (St3; Sa2,5)

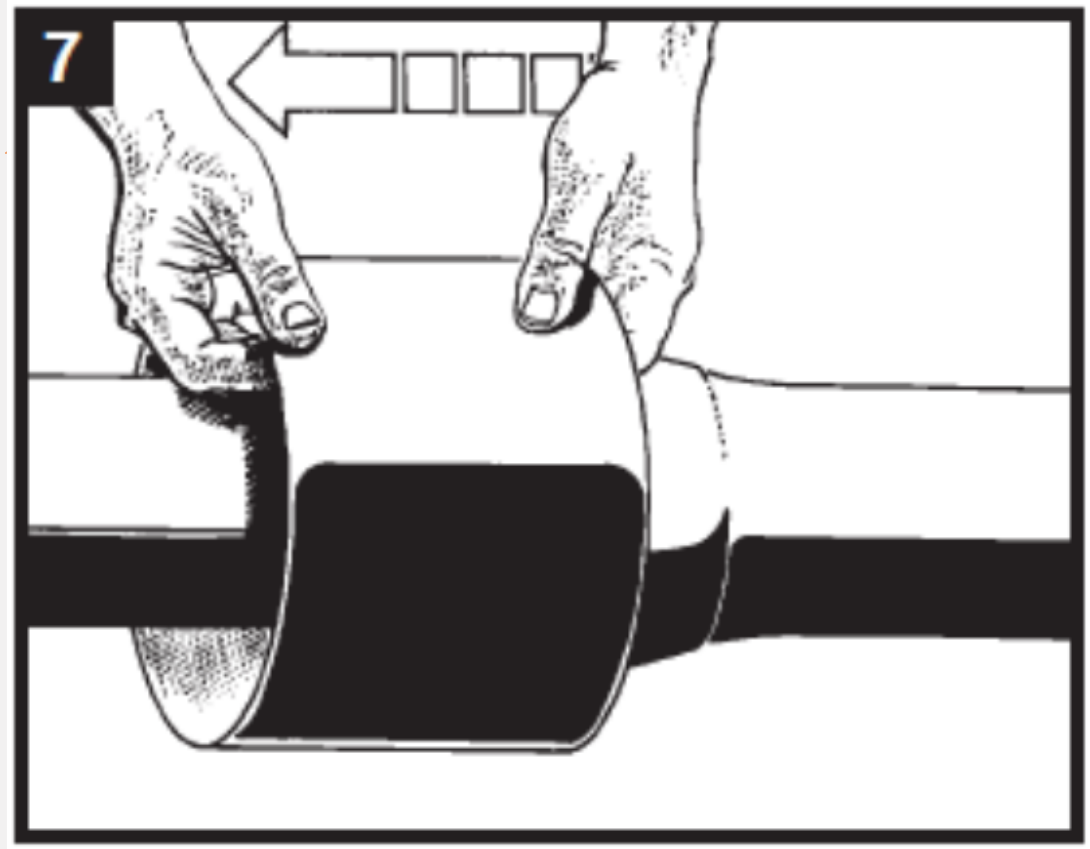


Odmašćivanje površine

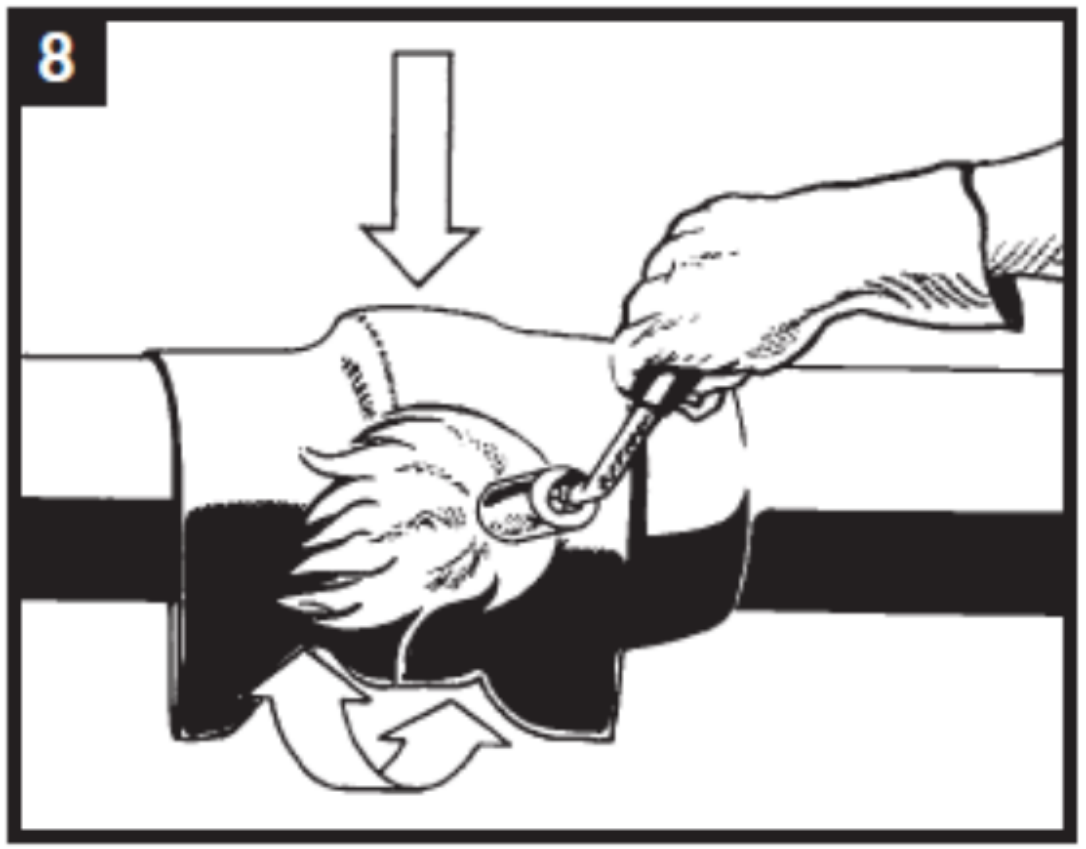




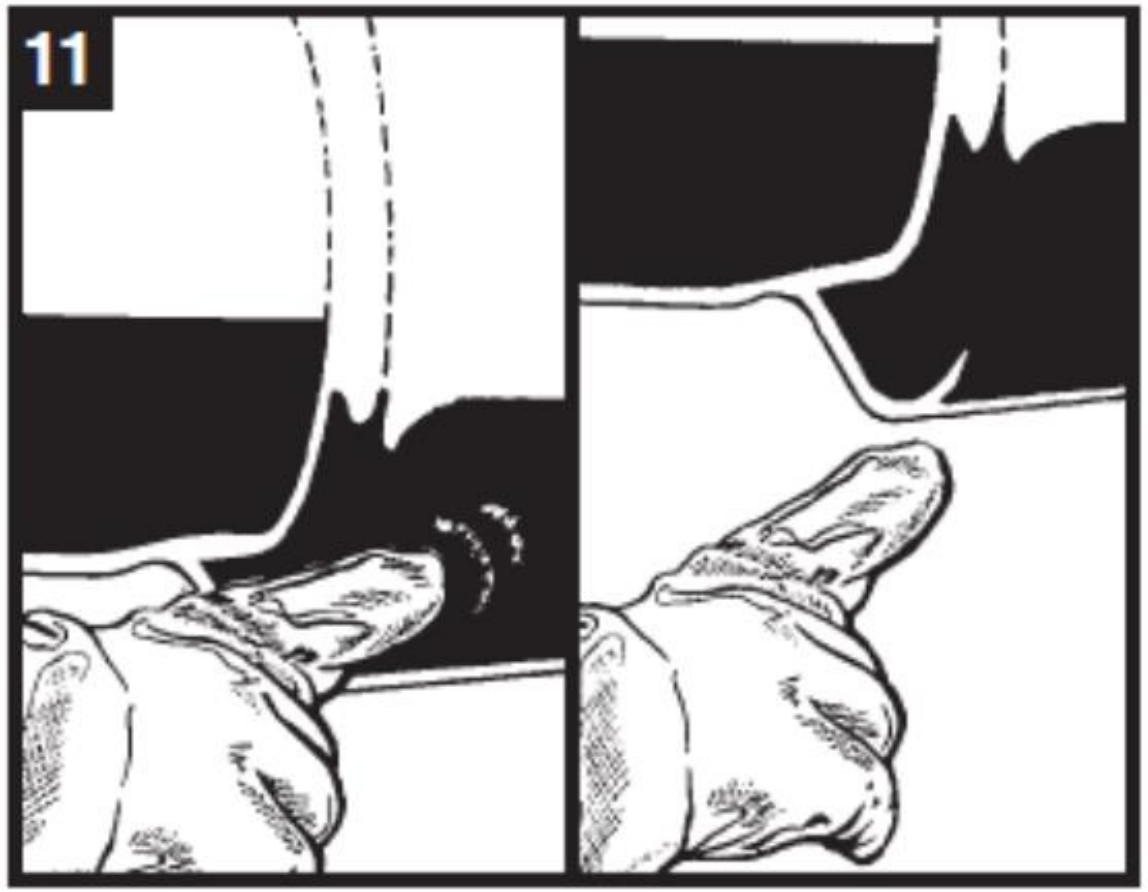
Predgrijavanje površine

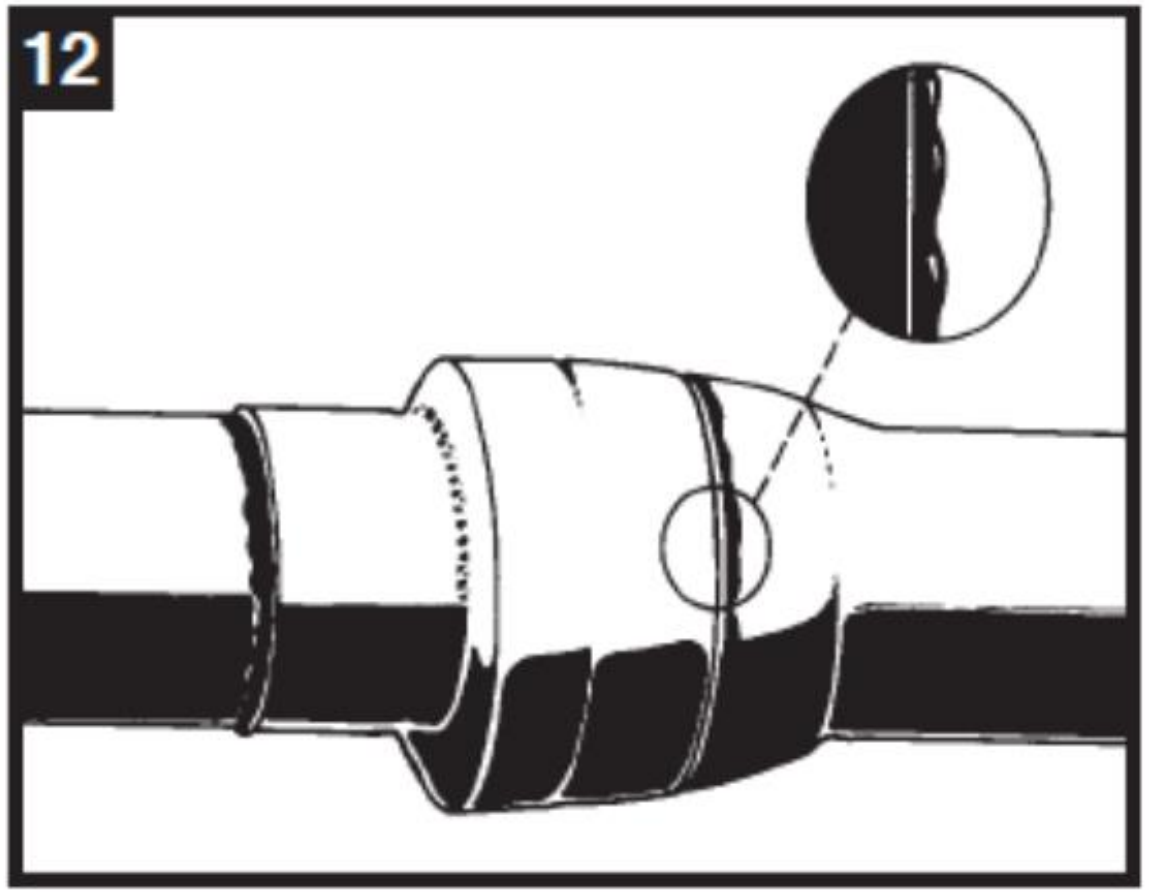


Namještanje obujmice prije zagrijavanja



Instalacija obujmice (zagrijavanje)





+ Provjera uspješnosti instalacije

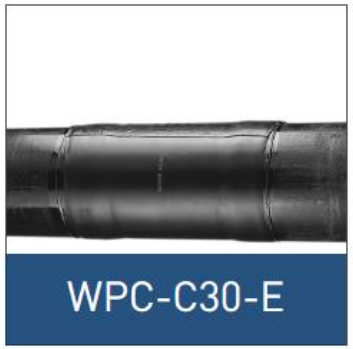
Pravilno instalirana obujmica

VRSTE COVALENCE OBUJMICA


CPSM / TPSM


Covalence® MPSM-C30-UNIV-300


FCTS

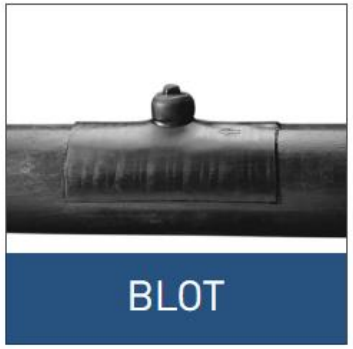

WPC-C30-E


MEPS-C30


FCWS-F


FLEXCLAD II


PERP


BLOT


HTTE


DIRAX

PRIMJERI PRIMJENE U PRAKSI

INSTALACIJA FCWS-F NA CIJEV DN150

Both FCWS-F as installed on DN150 flanges.

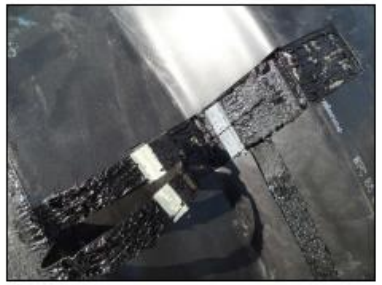
INSTALACIJA WPC65M NA CIJEV DN1400

View on DN1400 Bell & Spigot pipe joint

Covalence®
Heat Shrinkable Technology
SEALFORLIFE

WPC65M as applied

Pictures of Peel Tests and Window Cutting



ŠTO PRUŽA ZAŠTITA NAGLAVAKA CIJEVI TERMOSKUPLJAJUĆIM **COVALENCE** OBUJMICAMA?

- IZVRSNU ANTIKOROZIVNU ZAŠTITU
- MEHANIČKU ZAŠTITU OD UDARA I OTKLONA OD OSI
- ELEKTRONEPROBOJNOST >25 KV
- ZAŠTITU BRTVE SPOJA OD ISUŠIVANJA I KEMIJSKOG PROPADANJA USLIJED KONTAKTA S OKOLIŠEM

ZAHVALJUJEM NA PAŽNJI