

CC newCHIC

Navodila za uporabo



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1 O TEM DOKUMENTU

1.1 Uporabljeni simboli

Navodila

- ★ predpogoj
- splošno navodilo
- M navodilo, ki se navezuje na ročno delo
- S navodilo, ki se navezuje na program
- ➡ rezultat

Dodatni simboli

-  navezovanje na drug del v tem priročniku
- List
-  dodatne informacije
-  pomembne informacije
-  informacije za bolj učinkovito delo

1.2 Varnostna opozorila



Tip in vir nevarnosti. Razlage in posledice, do katerih pride, če opozoril ne upoštevamo.

- Navodila, kako se izogniti nevarnostim.
-

V tem priročniku so sledeča opozorila:



DANGER opozarja na nevarno situacijo, ki vodi do resnih poškodb ali celo smrti.



WARNING opozarja na nevarno situacijo, ki lahko vodi do resnih poškodb ali celo smrti.



CAUTION opozarja na nevarno situacijo, ki lahko vodi do majhnih ali zmernih poškodb.

NOTICE

NOTICE opozarja na situacijo, ki lahko vodi do materialne škode izdelka ali okolja (ni povezana s telesnimi poškodbami).

2 VARNOSTNA NAVODILA IN PREDPISI

2.1 Splošna varnostna navodila



Nepravilno upravljanje stroja

- Pred namestitvijo in uporabo stroja si natančno preberite ta dokument.
- Če vam je uporaba stroja nejasna, ga ne uporabljajte in kontaktirajte Interdent.
- Poskrbite, da ima vsak uporabnik stroja dostop do tega dokumenta.
- Poučite vsakega uporabnika o pravilni in varni uporabi stroja.



Smrtno nevarno zaradi možnosti električnega šoka!

Če pridete v stik z električno nabitimi deli, lahko pride do električnega šoka. Voda občutno poveča nevarnost.



- Ne odstranjujte ohišja stroja.
- Z električno opremo naj delajo samo kvalificirani električarji.
- Kable napeljite tako, da jih ne bodo poškodovali ostri robovi.
- V sledečih primerih nemudoma prekinite povezavo stroja z električnim napajanjem in preprečite, da bi se stroj ponovno zagnal:
 - ko so priključki na stroju, cevi za komprimiran zrak ali električni kabli poškodovani
 - preden preverite ali napeljete električne kable
 - ko tekočina pušča
- Napak ne odpravljajte, kadar stroj obratuje.
- Zamenjajte poškodovane kable z originalnimi proizvajalčevimi nadomestnimi deli.
- Namestite zaščitno napravo zemeljskega stika na električni tokokrog stroja.
- Redno preverite, da posoda za tekočino in odtok ne puščata.
- Ne dotikajte se stroja, še posebej pa ne kablov, z mokrimi ali vlažnimi rokami.
- Ne dajajte električnih naprav pod stroj.
- Poskrbite, da v bližini stroja ni tekočin.



Bolezni dihal zaradi dela z nevarnimi materiali

Če med delom s strojem vdihnete nevarno snov, lahko pride do poškodb vaših dihalnih poti.

- Ne uporabljajte materialov, ki lahko med mokrim rezkanjem škodujejo vašemu zdravju.

Nevarnost za zdravje zaradi hladilnega maziva

Če uporabljate neprimerno hladilno mazivo, ali če ne veste, kako ga pravilno uporabiti, lahko škodujete svojemu zdravju.

- Uporabljajte samo maziva, ki jih priporoča Interdent.
- Pred uporabo maziva natančno preberite priložena navodila.
- Maziva in navodila shranite skupaj.

Nevarnost stiska in ureznin zaradi premikajočih se delov stroja

Zaradi premikajočih se osi in vretena lahko pride do udarnin in ureznin.

- Stroj upravljajte samo takrat, ko so njegova vrata zaprta in ko je aktiviran varnostni zaklep.
- Ključ za zasilno odpiranje shranite na mesto, do katerega imajo dostop samo pooblašene osebe.
- Varnostne naprave stroja ne smejo biti obidene ali izključene.
- Redno pregledujte, če je stroj poškodovan (še posebej je potrebno pregledati varnostne naprave).
- Če ni v tem dokumentu določeno drugače, naj popravilo poškodovanih varnostnih naprav opravi pooblašeno osebje.
- Uporabljajte izključno originalno proizvajalčevo opremo in nadomestne dele za stroj.
- Otrokom in živalim je potrebno onemogočiti dostop do stroja.
- Ne odstranjajte ohišja stroja.

»Administrator način«: Nevarnost poškodb zaradi okruškov

Če stroj upravljate v »Administrator načinu« z odprtimi vrati, se verjetnost poškodb precej poveča!

- Če vas Interdent ni pooblastil za delo v ostalih načinih, uporabljajte stroj izključno v »User« načinu.
- Četudi ste pooblašeni, upravljajte stroj v »Administrator načinu« z odprtimi vrati samo takrat, ko je to nujno potrebno.
- Med rotiranjem osi in strojno obdelavo ne segajte v delovni prostor (med uporabo »Administrator načina«).
- Ko stroj upravljate v »Administrator načinu«, morajo vsi, ki so v bližini stroja, nositi zaščitna očala.



Poškodbe sluha zaradi hrupa

- Če iz stroja prihaja nenavaden hrup, preverite pogoje, v katerih stroj obratuje. Prepričajte se, da je obdelovanec primerno vstavljen. Preverite tudi stanje orodja in materiala, ki ga uporabljate.
- Če se hrupu ne morete izogniti, nosite med delom zaščito za sluh.



Nevarnost poškodb zaradi opletajočih pnevmatskih delov pri odprtih priključkih

Zaradi hitro opletajočih pnevmatskih komponent lahko pride do poškodb.

- Preden napeljete pnevmatske cevi, zaprite ventil za dovod komprimiranega zraka.
- Preden preverite pnevmatske cevi in pnevmatske priključke, nastavite pritisk zraka na

najmanjšo vrednost.

- V primeru okvarjenih priključkov in poškodovanih pnevmatskih cevi prekinite povezavo stroja z dovodom za komprimiran zrak in mu preprečite, da bi se ponovno zagnal (izključite ga iz električnega napajanja).
- Če so priključki poškodovani ali okvarjeni, kontaktirajte Interdent.



CAUTION

Nevarnost zdrsa in padca

- Poskrbite, da bo delovno okolje čisto.
- Kabli naj bodo nameščeni tako, da se ob njih ni mogoče spotakniti.
- Razlito tekočino nemudoma obrišite.



Nevarnost ureznin in opeklin

Če se dotikate orodij ali ostrih robov obdelovancev, se lahko urežete. Če se dotikate vročega vretena ali ostalih pregrelih orodij, se lahko opečete.

- Ko s strojem, orodji in obdelovanci delate ročno, nosite zaščitne rokavice.

Omejena možnost za delo zaradi neprimerne osvetlitve

Nezadostna osvetlitev zmanjša vašo zmožnost za delo.

- Poskrbite, da bo vaše delovno okolje primerno osvetljeno.

Nevarnost poškodb zaradi pomanjkljivega vzdrževanja stroja

Če stroja ne vzdržujete tako, kot je predpisano, lahko pride do okvar, ki vodijo do poškodb.

- Oglejte si tabelo za vzdrževanje stroja, ki jo najdete v tem priročniku. Sledite korakom, kot je predpisano.

Posledice zaradi nenehne nepravilne drže

Sčasoma lahko nepravilna drža škodi vašemu zdravju.

- Poskrbite, da bo delovno mesto ergonomsko oblikovano.
- Sedež naj bo na primerni višini. Osvetljenost naj bo ravno pravšnja.

2.2 Predpisi

Če ne upoštevate sledečih predpisov, je garancija nična. Interdent ne prevzema odgovornosti za poškodbe, ki nastanejo zaradi neupoštevanja predpisov.

2.2.1 Predvidena uporaba stroja

Stroji CC CHIC so bili zasnovani za rezkanje na področju dentalne tehnologije.

- Obdelujte izključno materiale, ki jih lahko izberete v programu DentalCAM.
- Stroj uporabljajte le v komercialne namene.
- Pred pripravo dela je treba preveriti, če je v skladu z lokalnimi ali nacionalnimi predpisi ter ostalimi pooblaščenimi organizacijami (e.g. strokovna združenja, zdravstveni organi). Še posebej je potrebno preveriti, ali je material primeren in izdelek v skladu s predpisi. Niti nadzorni program niti CNC-stroj vas ne bosta opozorila o neskladju z zakonodajo, ampak bosta manipulirala v skladu z izbiro parametrov in materiali, ki jih je določil uporabnik.

- Prepričajte se, da so vse vrste predmetov in materiali, ki jih uporabljate pri delu, pooblašteni proizvodni materiali. Od odgovorne organizacije si morate pridobiti pooblastilo, če lokalni ali nacionalni predpisi tako zahtevajo (e.g. strokovna združenja, zdravstveni organi).
- Izdelujte zgolj predmete, ki jih lahko izberete v »import viewu« v programu DentalCAM. Kljub temu da lahko uvozite/izdelate tudi ostale predmete, niti razvojni program za proizvodnjo oprema niti CNC-stroj nista izdelana za obdelavo teh predmetov – zato se ju ne sme uporabljati v te namene.
- Ne izdelujte implantatov ali delov predmetov, oblikovanih za stik z implantati. Ti deli so sestavljeni iz dvodelnega abatmenta, ki ima ustrezno obliko za implantat. Ne spreminjajte oblike predfabriciranega abatmenta. Vedno preverite, če ima končni izdelek ustrezno obliko.

2.2.2 Upravljanje stroja s programom

CNC-stroj se upravlja s priloženimi aplikacijami.

- Uporabljajte izključno uradno izdane različice programa.
- Uporabljajte najnovejšo razpoložljivo različico programa.
- Pred namestitvijo ali upravljanjem stroja si preberite dokumentacijo za aplikacije.

2.2.3 Vzdrževanje in čiščenje

- Redno čistite in vzdržujte CNC-stroj, da vam bo le-ta dolgo služil.
- Opravljajte izključno vzdrževalna dela, opisana v tem priročniku. Če tega ne boste upoštevali, lahko škodujete sebi in stroju.

2.2.4 Visokofrekvenčno vreteno SFN 300P

- Ne uporabljajte nestabilnih orodij (rezkar z enim rezilom, dleto) pri visokih rotacijskih hitrostih. Vibracije močno obremenijo kroglične ležaje na vretenu, ki se lahko zaradi tega poškodujejo.
- Med delom v delovnem prostoru stroja ne pritiskajte na vreteno.

2.2.5 Delovanje stroja brez operaterjevega nadzora

Stroj lahko brez operaterjevega nadzora deluje le, če so upoštewane sledeče zahteve:

- nacionalni in lokalni zakoni to dovoljujejo
- delovni prostor in posoda za tekočino sta popolnoma očiščena
- nepooblaščen osebje nima dostopa do stroja
- uporabnik mora biti pripravljen ukrepati, če pride do puščanja tekočine
- stroj se nahaja v prostoru, ki ima vgrajen sistem za odkrivanje požara

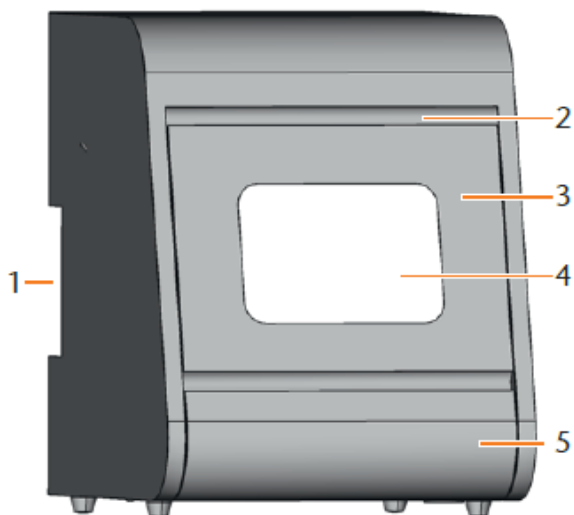
2.2.6 Prevažanje in hranitev

- Temperatura za hranitev in transport stroja mora biti med 10 °C in 35 °C,
- relativna vlažnost zraka max. 80 %, nekondenzirajoča,
- za razpakiranje in postavitve stroja sta potrebni dve osebi,
- teža stroja: pribl. 50 kg.
- Stroj je treba prevažati posamično (ne smemo nakopčiti in prevažati več strojev).
- Prevoz stroja do namestitvene lokacije je dovoljen izključno primerno usposobljenemu osebju.



- Stroj je potrebno prevažati v pokončnem položaju.
- Pred prevažanjem stroja je potrebno izprazniti posodo za tekočino.
- V primeru čezmorskega prevažanja zaščitite stroj pred korozijo.
- Za nošnjo stroja uporabite ročaje na levi in desni strani pod strojem.

3 OPIS STROJA



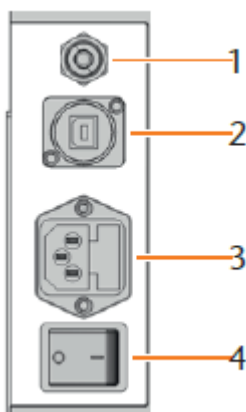
Slika 1: prednji del stroja CC CHIC

- [1] panel s priključki na zadnjem delu (Slika 2)
- [2] prijemalna reža za odpiranje sprednjega pokrova
- [3] vrata
- [4] okno, ki omogoča vpogled v delovni prostor
- [5] posoda za tekočino

Stroj CC CHIC omogoča obdelavo različnih materialov v obliki bloka. Izdelki, namenjeni zobozdravstvu, so visoke kvalitete. Orodja in obdelovanci so med obdelavo hlajeni s hladilno emulzijo (voda in posebno hladilno sredstvo)

Spisek materialov, ki jih lahko obdelujete s strojem CC CHIC, najdete v DentalCAM nadzornem programu.

3.1 Panel s priključki na zadnji strani



Slika 2: panel s priključki

- [1] pnevmatski priključek
- [2] USB-priključek
- [3] priključek za napajalni kabel 100–240 V AC, 50/60 Hz, vključno s cevno varovalko T6,3A L250V
- [4] glavno stikalo

3.2 Vrata

Vrata stroja se zaklenejo in varujejo uporabnika pred poškodbami.

⚠ CAUTION

Nevarnost poškodb med odpiranjem in zapiranjem vrat stroja

Med odpiranjem in zapiranjem vrat stroja morate paziti, da le-ta ne poškodujejo vaših prstov.

- Med odpiranjem vrat z eno roko primite za prijemalno režo. Z drugo roko se ne približujte

- stroju.
- Med zapiranjem potisnite vrata navzgor z eno roko. Z drugo roko se ne približujte stroju.

NOTICE

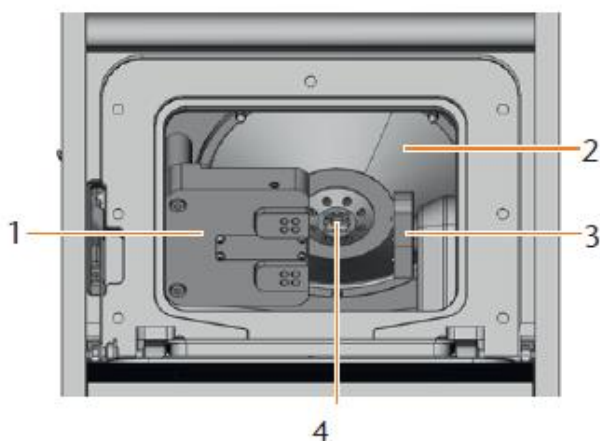
Poškodovanje stroja med odpiranjem vrat na silo

Ko se osi premikajo in ko CNC-stroj ni povezan z električnim napajanjem, so vrata zaprta. Če skušate vrata odpreti na silo, lahko stroj poškodujete.

- Nikoli ne odpirajte vrat na silo.
- Pred odpiranjem vrat priključite stroj v električno napajanje in ga vključite.
- Pred odpiranjem vrat stroja zaprite posodo za tekočino.
- Vrata odprete tako, da primete za prijemalno režo in povlečete vrata navzdol.
- Vrata zaprete tako, da položite roko pod odprta vrata in jih potisnete navzgor.

3.3 Delovni prostor

Obdelovanci se obdelujejo v delovnem prostoru stroja.



Slika 3: delovni prostor stroja CC CHIC

- [1] menjalnik orodij za do 8 orodij
- [2] zaščita motorja
- [3] držalo blokov in rotacijska os
- [4] vreteno z vpenjalnimi kleščami za pobiranje orodij

Osvetlitev delovnega prostora (različne barve)

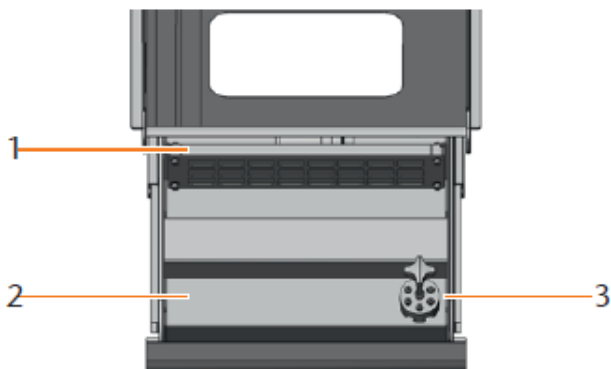
- ❗ Če je osvetlitev delovnega prostora nezadostna, poskrbite za dodatno osvetlitev.

CC CHIC osvetljuje delovni prostor v različnih barvah. Barva javlja stanje stroja. Kaj posamezna barva sporoča, si lahko ogledate v naslednji tabeli:

barva	stanje
zelena	stroj je pripravljen, vrata so zaprta
bela	stroj je pripravljen, vrata so odprta
modra	stroj opravlja delo
rdeča	stroj je zaznal okvaro

3.4 Posoda za tekočino

Posodo za tekočino je potrebno napolniti s hladilno emulzijo. Tekočina iz delovnega prostora priteče nazaj v posodo – zaradi tega je izguba tekočine med obdelovanjem minimalna. V posodo je nameščen filter, ki preprečuje vdor umazanije do črpalke.



Slika 4: posoda za tekočino stroja CC CHIC

- [1] filter
- [2] posoda za hladilno emulzijo
- [3] vijak za praznjenje posode

- Posodo za tekočino odpirajte izključno takrat, ko so vrata stroja zaprta.
- Posode za tekočino ne odpirajte, ko stroj obratuje.
- Ko odprete posodo, nemudoma pobrišite tekočino, ki je odtekla pod stroj.
- Posodo za tekočino vedno zaprite.

3.5 Nadzorni program in računalnik

Za upravljanje stroja potrebujete računalnik z operacijskim sistemom Windows® (“nadzorni računalnik“), ki je s strojem povezan preko USB-kabla.

Z računalnikom lahko delo nadzorujete v dveh korakih:

1. S programom DentalCAM lahko pripravite delo s predmeti, ki bi jih radi obdelali. DentalCAM že ima podatke o vseh materialih in pomembnih parametrih.
2. Delo lahko opravljate s CNC-programom DentalCNC. Ta aplikacija nudi dodaten nadzor nad strojem.



Če želite narediti 3D-modele predmeta, morate uporabljati drug računalnik s skenerjem in primernim programom (ni priloženo).

3.7 Povzročanje hrupa

Povzročanje hrupa je v veliki meri odvisno od materiala, ki ga uporabljate, in pogojev rezkanja.

- Če je stroj preglasen, spremenite pogoje, v katerih stroj rezka. Prepričajte se, da je obdelovanec dobro pritrtjen. Preverite stanje orodja in materiala.
- Če se hrupu ne morete izogniti, med obdelovanjem nosite zaščito za sluh.

Merjenje hrupa

Pogoji merjenja:

- obdelan material: VITABLOCS Mark II®
- orodje: novo
- razdalja do vira zvoka: 1 m
- merjenje glede na ISO 3746, inženirska metoda 3

Obratovalni pogoji	maksimalna A-normirana raven zvočnega pritiska
rezkanje	78 dB(A)
vse ostale okoliščine (menjava orodja,	<70 dB(A)

3.7 Tehnični podatki

Osnovni sistem

- dimenzije (Š/D/V): pribl. 360 x 450 x 470 mm
- teža: pribl. 50 kg
- priporočen pritisk zraka: 4.5 bar
- poraba komprimiranega zraka: pribl. 35 l/min
- štiriosni mehanizem; območje delovanja (x/y/z): 80 x 60 x 40 mm
- vgrajena posoda za hladilno emulzijo v obliki predala (skupaj s filtrom)
- celotno ohišje delovnega prostora; vrata z varnostnim stikalom in varnostnim zaklepom
- senzor pretoka za spremljanje kroženja tekočine v stroju
- osvetlitev delovnega prostora v različnih barvah, ki sporočajo stanje stroja

Rotacijske osi

- območje rotacije: +190 ° to -10 °
- vgrajeno držalo blokov (za 3 obdelovance)

Vreteno

- visokofrekvenčno vreteno (do 60.000 rotacij na minuto)
- nominalna moč pod neprekinjeno obremenitvijo (S1): 300 vatov
- maksimalna moč (Pmax): 600 vatov
- 4-kratni kroglični ležaj
- hibridni keramični kroglični ležaj
- pnevmatske vpenjalne klešče \varnothing 3 mm
- 8 šob
- čiščenje stožca in tesnjenje zraka

Menjalnik orodij

- avtomatski menjalnik orodij za 8 orodij na zamenljivih blokih
- max. dolžina orodja: 35 mm
- avtomatsko merjenje dolžine orodja in nadzorovanje morebitnega zloma orodja z merilnim gumbom
- nadzorovanje komprimiranega zraka za avtomatsko menjavo orodja

Hladilno mazivo

- razmerje mešanice z vodo: 1:20 (5% raztopina)
- pH-vrednost 9.5

4 NAMESTITEV STROJA

4.1 Dodana oprema

Razpakirajte stroj in preverite, da ste dobili sledečo opremo:






- [1] 1x CNC-stroj CC CHIC
- [2] 1x servisni set za vreteno
- [3] 1x napajalni kabel
- [4] 1x USB-kabel
- [5] 1x filtrirna enota za komprimiran zrak
- [6] 1x tulec z lističi za merjenje pH
- [7] 1x hladilno mazivo
- [8] 1x pnevmatska cev
- [9] 1x navorni ključ (1.8 Nm)
- [10] 2x ključ za zasilno odpiranje vrat stroja
- [11] 2x filter (1 nameščen, 1 nadomesten)
- [12] 1x set za kalibriranje: 1x mikrometer, 4x blok, 2x pin (že privit v disk), 1x orodje za kalibriranje
- [13] 1x merilni pin
- [14] 1 sveder 2.8 mm za pozicije na menjalniku orodij
- [15] 1x USB-ključ
- [16] 2x podložka za menjalnik orodij (nadomestna dela)

Ni na sliki:

- ta priročnik
- 1x dokumentacija za DentalCAM & DentalCNC
- 3x vijak za držalo blokov (nadomestni deli)
- 1x merilna posodica (250 ml)

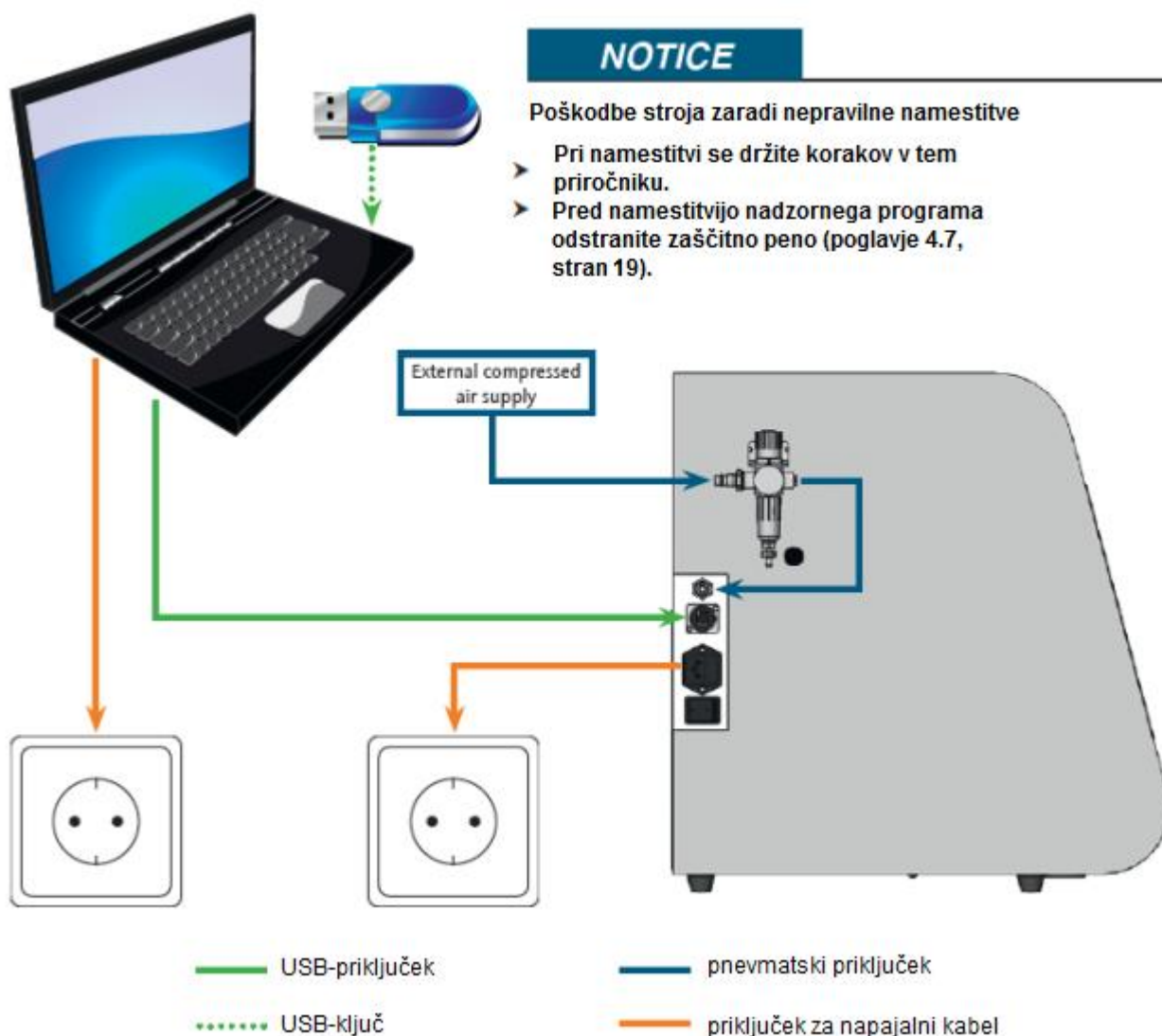
➤ Prosimo vas, da obdržite embalažo zaradi morebitnega pošiljanja stroja na servis.

4.2 Izbira prostora za namestitev stroja

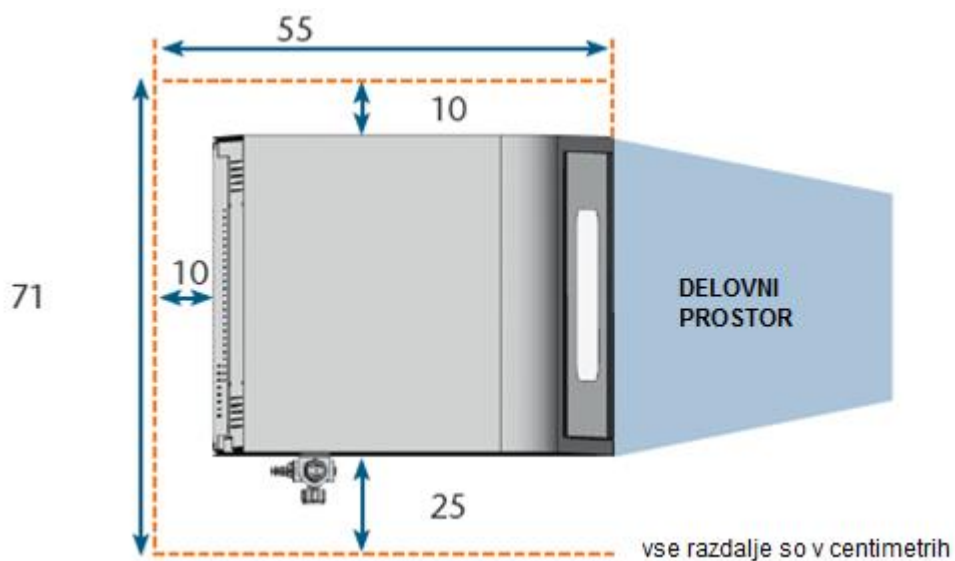
- Pri izbiri prostora za namestitev stroja upoštevajte sledeče zahteve:
 - ravna podlaga, ki lahko prenese težo stroja
 - idealna sobna temperatura za stroj je 18 °C–25 °C. Maksimalna sobna temperatura: 32 °C.
 - stroj mora biti v prostoru, kjer ni prahu
 - ustrezna vlažnost zraka max. 80 %, nekondenzirajoča
 - izmenična napetost z 100–240 V in 50–60 Hz
 - vstopni zračni tlak max. 8 barov
 -  dovod komprimiranega zraka, ki ustreza zahtevam stroja ( poglavje 3.7, stran 12)
 - dovolj prostora ob straneh stroja ( poglavje 4.3, stran 15)

4.3 Namestitev stroja (shema)

Priključki



Razdalje, ki jih je treba upoštevati



4.4 Namestitev pnevmatike

WARNING

Nevarnost poškodb zaradi puščanja komprimiranega zraka in opletajočih pnevmatskih cevi

Zaradi prekinjenih pnevmatskih povezav lahko pride do resnih poškodb.

- Prepričajte se, da med namestitvijo pnevmatskih cevi in filtrirne enote komprimiran zrak ni vključen,
- Po namestitvi pnevmatskih cevi in preden v cevi in priključke dovedete komprimiran zrak, se prepričajte, da cevi niso poškodovane in da so povezane z ustreznimi priključki.
- Komprimiranega zraka ne dovajajte v poškodovane cevi ali priključke.

NOTICE

Če je komprimiran zrak umazan, se lahko vreteno poškoduje.

Vstopni tlak mora biti v skladu z ISO 8573-1, suh in brez olja, saj je filtrirna enota zgolj pokazatelj umazanije v komprimiranem zraku.

Čistost zraka glede na ISO 8573-1

trdni delci	razred 3	stopnja filtriranja boljša kot 5 mikronov za trdne delce
vsebnost vode	razred 4	točka rosišča zraka pod max. tlakom +3 °C
vsebnost olja	razred 3	Maksimalna vsebnost olja 1 mg/m ³

- Prepričajte se, da komprimiran zrak izpolnjuje te zahteve.
- Za povezavo stroja z dovodom komprimiranega zraka uporabite priloženo filtrirno enoto.

Vreteno potrebuje komprimiran zrak za opravljanje sledečih nalog:

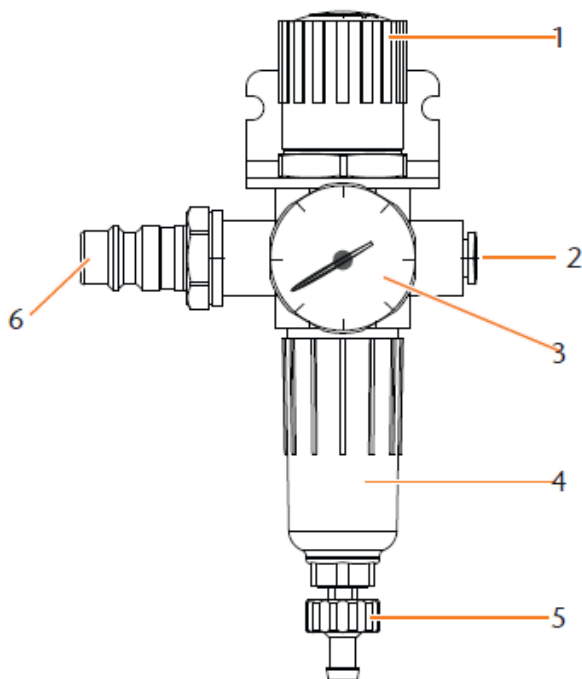
- Za odpiranje in zapiranje vpenjalnih klešč med menjavo orodij.
- Za ustvarjanje tesnjenja, ki preprečuje vdor tujkov v delovni prostor.

Poraba zraka:

- pribl. 35 l/min pri 4 barih
- pribl. 50 l/min pri 8 barih

4.4.1 Filtrirna enota

Preko filtrirne enote lahko CNC-stroj povežete z dovodom za komprimiran zrak. Enota omogoča reguliranje vstopnega tlaka.



Slika 5: filtrirna enota: reguliranje in spremljanje pritiska zraka

- [1] vrtljivi gumb za reguliranje tlaka
- [2] pnevmatski priključek za povezavo s strojem (ø 6 mm)
- [3] manometer za spremljanje izhodnega tlaka
- [4] separator vode
- [5] praznilni vijak
- [6] pnevmatski priključek za komprimiran zrak

4.4.2 Namestitev filtrirne enote na CNC-stroj

NOTICE

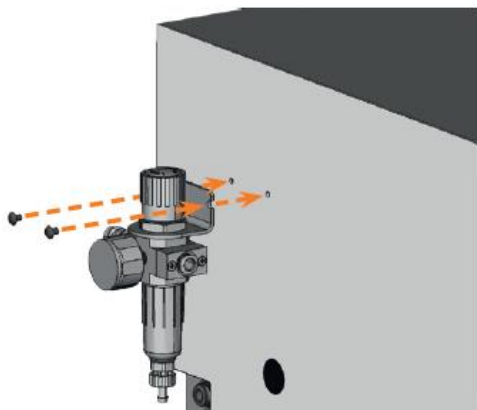
Okvara separatorja vode zaradi nepravilne namestitve filtrirne enote

Če filtrirna enota ni nameščena pokončno, separator vode ne bo deloval.

- Filtrirno enoto namestite v pokončnem položaju (☞ slika 5).

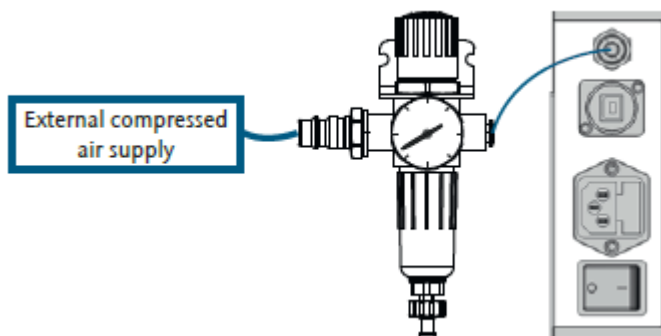
Na levi strani CNC-stroja sta dve izvrtini, ki ju lahko uporabite pri nameščanju filtrirne enote na stroj.

- M1. Iz izvrtin odstranite dva slepa vijaka.
- M2. S priloženimi vijaki s polkrožno glavo namestite filtrirno enoto v pokončni položaj.



Slika 6: namestitev filtrirne enote na CNC-stroj

4.4.3 Namestitev pnevmatskih cevi na filtrirno enoto



Slika 7: namestitev filtrirne enote (shema)

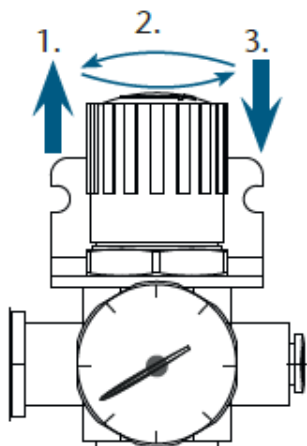
- M1. Izključite dovod komprimiranega zraka.
- M2. S priloženo pnevmatsko cevjo povežite desni pnevmatski priključek na filtrirni enoti [2] s pnevmatskim priključkom na stroju.
- M3. Dovod za komprimiran zrak povežite s standardnim pnevmatskim priključkom na filtrirni enoti [6].
- M4. Med namestitvijo bodite pozorni na morebitne poškodbe opreme. Komprimiran zrak ne sme uhajati skozi poškodovane cevi ali priključke!
- M5. Odprite dovod za komprimiran zrak.
- M6. Preverite vrednost pritiska zraka na manometru. [3]. Če vrednost ni med 4 in 8 bari, jo nastavite s pomočjo filtrirne enote. (☞ poglavje 4.4.4).

4.4.4 Nastavitev pritiska zraka s filtrirno enoto

Pritisk zraka je potrebno nastaviti v primeru, ko se na manometru pokaže vrednost, ki ni med 4 in 8 bari.

- ★ Filtrirna enota je povezana z dovodom za komprimiran zrak.

- M1. Povlecite vrtljiv gumb na vrhu filtrirne enote navzgor.
- M2. Obračajte gumb v zeleno smer, dokler ne bo vrednost tlaka med 4 in 8 bari (priporočeno: 4.5 barov)
 - z vrtenjem gumba proti plusu (+) boste povečali tlak
 - z vrtenjem gumba proti minusu (-) boste zmanjšali tlak
- M3. Pritisnite vrtljiv gumb navzdol.
 - Gumb je zaklenjen in pritisk zraka nastavljen.



Slika 8: nastavitev tlaka

4.5 Polnjenje posode s hladilno emulzijo

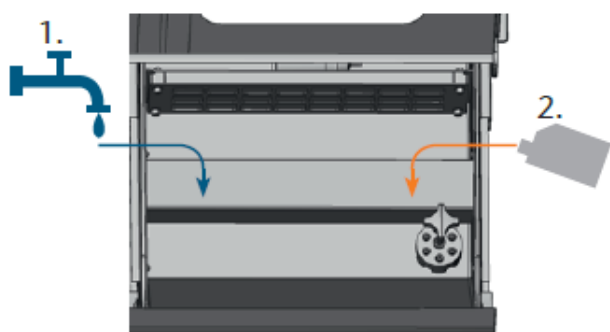
- M1. Če so vrata stroja odprta, jih zaprite.
- M2. Izvlecite posodo iz stroja.



Slika 9: izvlečenje posode iz stroja

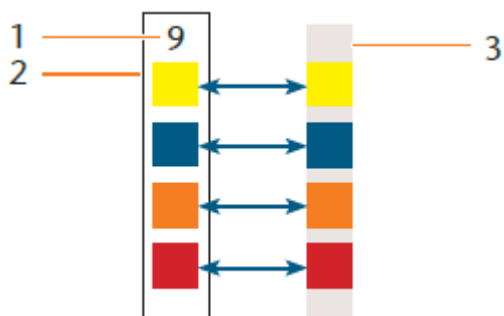
- M3. Napolnite posodo s štirimi litri vode iz pipe.
- M4. Dodajte 0.2 litra hladilnega maziva.

► Dobili ste 4.2-litrsko 5% emulzijo.



Slika 10: mešanje vode in hladilnega maziva.

- M5. Iz priloženega tulca vzemite listič za merjenje pH in ga za nekaj sekund potopite v emulzijo.
 - ❗ Tulec zaprite takoj po uporabi – lističi za merjenje pH lahko zaradi predolge izpostavljenosti vlažnosti zraka postanejo neuporabni.
- M6. Primerjajte štiri obarvane kvadratke na lističu s skalo na posodi. Poiščite ujemajočo skalo in ugotovili boste pH vrednost.



Slika 11: Primerjava pH skale s testnim lističem. Zaradi tehničnih razlogov lahko barve odstopajo.

- [1] določena pH vrednost (primer)
- [2] skala na posodi
- [3] testni listič za merjenje pH

- M7. Če je vrednost pH manjša od 9, v emulzijo dodajte 50 ml hladilnega maziva. Ponovite korake M5–M7, vendar največ dvakrat. Če je vrednost pH še vedno manjša od 9, zavrzite emulzijo (▣ poglavje 6.9, stran 37) in ponovno začnite s korakom M3.
- M8. Če je pH vrednost hladilne emulzije pravšnja, zaprite posodo za tekočino.

4.6 Vzpostavljanje električne povezave

NOTICE

Poškodovanje stroja zaradi napetostnega nihanja

Napetostna nihanja lahko zmotijo delovanje nadzorne enote in povzročijo okvaro sistema.

- Napajalni kabel stroja priklopite v omrežje preko lastne varovalke in poskrbite, da ni zraven priklopljena kakšna naprava, ki bi med delovanjem povzročila napetostno nihanje.

NOTICE

Poškodovanje stroja zaradi neodstranjene zaščitne pene

Če je takrat, ko priključite stroj v električno napajanje, vključen nadzorni računalnik, se začne stroj odzivati. V tem času lahko zaščitna pena, ki je nameščena ob dostavi, poškoduje mehanizem stroja.

- Ne priključite stroja v električno napajanje, če sta nameščena nadzorni računalnik in zaščitna pena.
- Če je zaščitna pena nameščena, izključite nadzorni računalnik iz stroja, preden le-tega vključite v električno napajanje.

M1. Vključite priložen napajalni kabel v ustrezen priključek na CNC-stroju.

M2. Napajalni kabel vstavite v vtičnico, ki je zaščitena s FID-stikalom.

4.7 Odstranjevanje zaščitne pene

Pred prvim upravljanjem stroja morate odstraniti zaščitno peno, ki preprečuje, da bi se vreteno med prevozom poškodovalo.

M1. Izključite USB-kabel, ki povezuje stroj z nadzornim računalnikom .

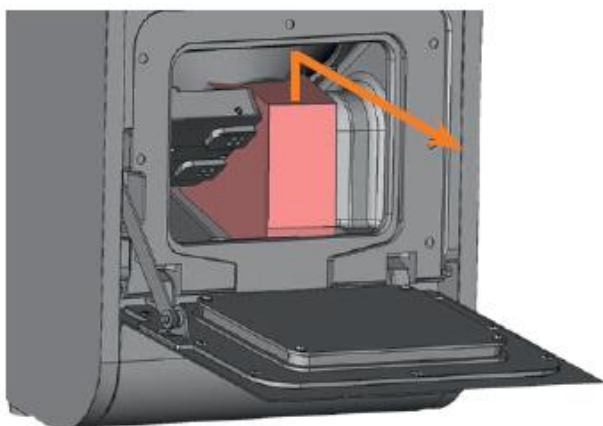
M2. Priklopite stroj v električno napajanje.

M3. Vključite stroj.

M4. Odprite vrata stroja.

M5. Zaščitno peno previdno povlecite navzgor in jo odstranite iz delovnega prostora.

M6. Obstaja možnost, da so se deli zaščitne pene odlomili, zato je potrebno delovni prostor očistiti.



Slika 12: odstranjevanje zaščitne pene

4.8 Priključitev nadzornega računalnika

❗ Zaščitno peno je pred priključitvijo nadzornega programa s strojem potrebno odstraniti (poglavje 4.7, stran 20).

★ Nadzorni računalnik je pripravljen na uporabo.

- M1. Zaženite računalnik.
- M2. Uporabite priložen USB-kabel za povezavo računalnika s CNC-strojem.
- M3. Vstavite USB-ključ v nadzorni računalnik.
- S4. Namestite najnovejšo razpoložljivo različico programov DentalCAM in DentalCNC za vaš stroj. Če želite izvedeti več, si preberite dokumentacijo, priloženo k programoma.

4.9 Testiranje stroja

Po prvi namestitvi ali ponovni namestitvi (npr. po transportu) je potrebno testirati osnovne funkcije stroja.

★ Namestili ste stroj, nadzorni računalnik in nadzorni program. Stroj je priključen na dovod za komprimiran zrak.

- M1. Vključite stroj.
 - Delovni prostor je osvetljen z belo barvo.
- S2. Zaženite program DentalCNC.
- S3. V nastavitvah aplikacije vnesite številko vrat USB (številko vrat vam lahko izpiše tudi program). Za več informacij si preberite priročnik za DentalCNC.

➤ Stroj se odzove. Delovni prostor se osvetli z zeleno barvo. Stroj je zdaj v *osnovnem položaju*.

- S4. Preklopite na »machine control view«.

- M5. Poskrbite, da je v posodi za tekočino dovolj hladilne emulzije.

NOTICE

Poškodovanje črpalke zaradi obratovanja brez hladilne tekočine

Če črpalka obratuje brez hladilne tekočine, se lahko motor pregreje in poškoduje.

- Preden aktivirate dovod tekočine v črpalko, preverite, ali je v posodi dovolj hladilne tekočine.
- Če v naslednjih nekaj trenutkih v delovni prostor ne začne teči emulzija, nemudoma izključite dovod tekočine v črpalko.
- Dokler dovod tekočine ne deluje, tako kot bi moral, ne uporabljajte stroja za mokro rezkanje.



- S6. Aktivirajte dovod tekočine s klikom na prikazano ikono.


➤ Tekočina je razpršena po delovnem prostoru.

- S7. Uporabite prikazovalna indikatorja za komprimiran zrak in pretok tekočine, da ugotovite, če so vrednosti ustrezne.


- Ikoni se obarvata modro, če sta vrednosti komprimiranega zraka in pretoka tekočine ustrezni.
Ikoni se obarvata črno, če sta vrednosti prenizki.




Slika 13: zgoraj: prikazovalni indikator za komprimiran zrak
spodaj: prikazovalni indikator za pretok tekočine

- S8.  Premaknite vreteno v položaj za ročno menjavo orodja s klikom na prikazano ikono.

- Vreteno se skozi delovni prostor premika s konstantno hitrostjo.

- S9.  Premaknite vreteno nazaj v osnovni položaj s klikom na prikazano ikono.

- Vreteno se v osnovni položaj premakne s konstantno hitrostjo.

- S10.  S klikom na prikazano ikono izključite dovod tekočine.
- Tekočina v delovni prostor ne prši več.

M11. Odprite in zaprite vrata stroja.

- Vrata stroja je mogoče odpreti brez težav.

M12. Če postopek ni potekal, kot je opisano zgoraj, preverite sledeče (glede na napako):

- USB-priključek in gonilnik za USB (glej poglavje 4.8 & dokumentacija za nadzorni program)
- dovod komprimiranega zraka (poglavje 4.4)
- tekočino v posodi za tekočino (poglavje 4.5)

M13. Če težave ne morete odpraviti, kontaktirajte Interdent.

5 UPRAVLJANJE STROJA

5.1 Vključitev stroja

- ★ Stroj je nameščen in povezan z dovodom za komprimiran zrak. Vrata stroja so zaprta.

M1. Vključite stroj in nadzorni računalnik.

- Delovni prostor je osvetljen z belo barvo.

S2. Zaženite program DentalCNC.

- Stroj se odzove. Delovni prostor se nato osvetli zeleno. Stroj je pripravljen na uporabo.

5.2 Pregled nad postopki dela

NOTICE

Poškodovanje stroja zaradi uporabe poškodovanih orodij ali obdelovancev

Če so orodja ali obdelovanci poškodovani, se lahko deli med obdelavo odkrušijo in poškodujejo stroj.

- Pred delom se prepričajte, da so orodja in obdelovanci nepoškodovani.

Opravljanje dela s strojem CC CHIC poteka tako:

1. Izberite obdelovance in vrste dela v programu DentalCAM.
2. Vstavite orodja v stroj.
3. Vstavite obdelovance v stroj.
4. Opravite delo s programom DentalCNC.

Delo z nadzornim programom je po korakih opisano v dokumentaciji nadzornega programa. V nadaljevanju je opisano, kako opravljati ročno delo s CNC-strojem.


5.3 Vstavljanje / menjava orodij

NOTICE

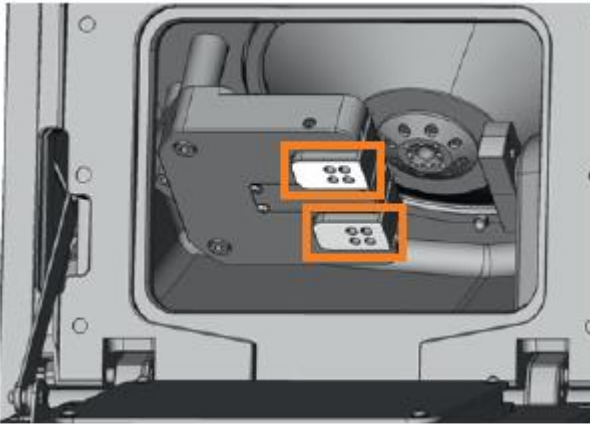
Poškodbe vretena ali pozicij na menjalniku orodij zaradi uporabe neprimerne orodja

Neprimerno orodje lahko poškoduje vpenjalne klešče ali pozicije na menjalniku orodij.

- Uporabljajte izključno orodja z dovolj posnetim stebлом.
- Namestite segerjev obroček, ki deluje kot varovalo. Namestite izključno obročke, ki ustrezajo standardu DIN 471-A3.
- V vpenjalne klešče je dovoljeno vstaviti izključno orodja, katerih premer (na najdebelejšem delu) ne presega 3 mm.
- V menjalnik orodij ne dajajte orodij, ki imajo premer rezilnega roba večji od 2.6 mm.

 Predlagamo, da uporabljate originalna orodja, saj so izdelana posebej za opravljanje tega dela.

V menjalnik orodij lahko vstavite do 8 orodij. Stroj jih lahko med obdelavo avtomatsko menjuje. 8 pozicij za orodja se nahaja na dveh odstranljivih blokih v notranjosti stroja CC CHIC.



Slika 14: držali orodij v delovnem prostoru stroja
zgoraj: držalo orodij A
spodaj: držalo orodij B

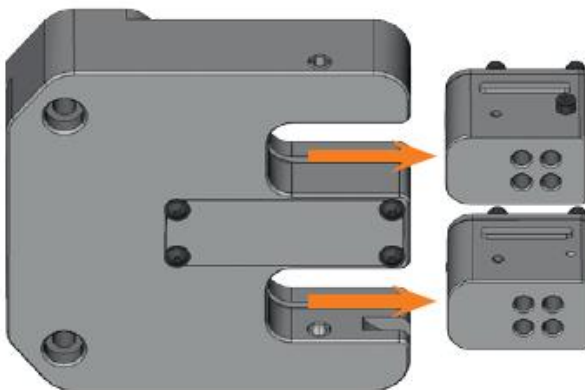
Orodje lahko v menjalnik orodij vstavite na dva

načina:

- Preko vretena – Orodje vstavite v vpenjalne klešče. Vreteno to orodje kasneje odloži v menjalnik orodij. Ta funkcija je opisana v dokumentaciji nadzornega programa.
- Orodje lahko v menjalnik orodij vstavite ročno (opisano spodaj).

Orodje lahko vstavite ročno:

- ★ Stroj je osnovnem položaju. V držalu blokov ni obdelovancev. Nobeno orodje ni vstavljeno v vpenjalne klešče.



M1. Odprite vrata stroja in odstranite držali orodij na desni strani.

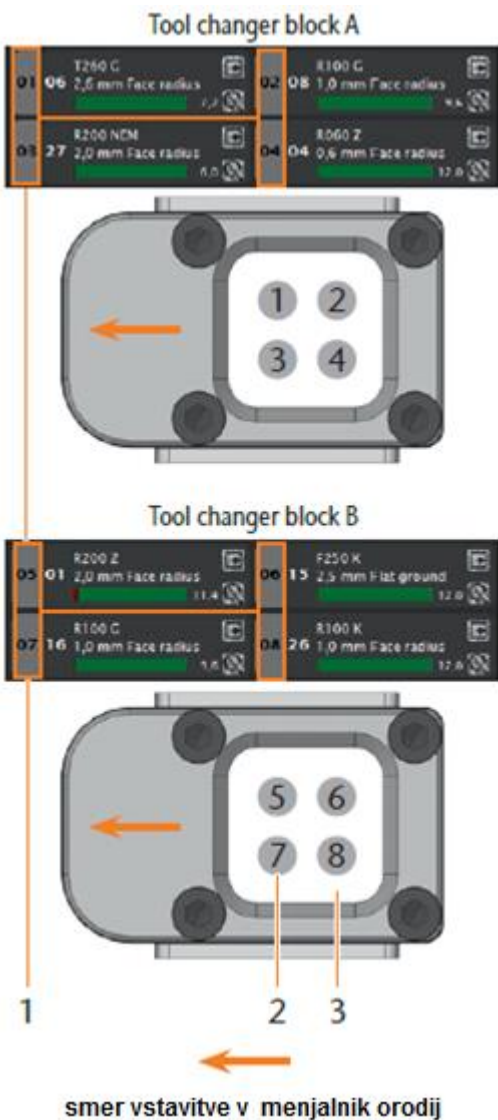
Slika 15: odstranitev držal orodij

- S2. Zaženite DentalCNC. Odprite »administration view«.
- S3. Izberite nabor orodij, ki jih želite vstaviti v stroj, ali kreirajte svoj nabor (npr. za naslednjo obdelavo).

M4. Vstavite orodja na predvidena mesta na zgornjo stran držal:

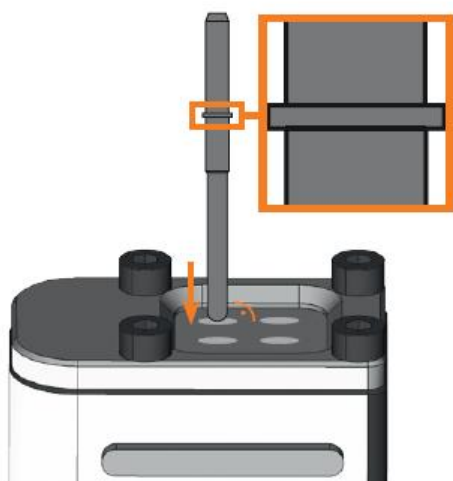
- Orodja morajo biti v menjalniku orodij na istih mestih, kot je to predvideno v programu DentalCNC (☞ Slika 16).
- Orodja vstavite direktno v predvidena mesta (vstavite jih tako, da se obroček dotakne gume) (☞ Slika 17).

- ❗ Vsa vstavljena orodja morajo biti na enakih mestih, kot je to predvideno v programu DentalCNC. Če se ne ujemajo, lahko pride do poškodb na obdelovancu.



Slika 16: primerjava CNC-programa in držal orodij

- [1] predvidene pozicije orodij v programu DentalCNC
- [2] pozicije orodij na držalu
- [3] podložka



Slika 17: vstavljanje orodja direktno na predvideno mesto; obroček na orodju povečan

NOTICE

Poškodovanje menjalnika orodij ali držal orodij zaradi napačnega vstavljanja ali vstavljanja na silo

Vsako držalo orodij se prilega točno določenemu mestu na menjalniku orodij. Mehanska zaščita držal preprečuje uporabniku, da bi jih vstavil na napačno mesto.

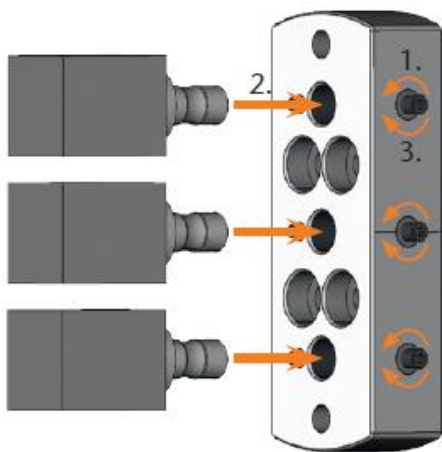
- Držalo vstavite izključno tja, od koder ste ga odstranili.
 - Ne vstavljajte držal v menjalnik orodij na silo.
- M5. Ponovno vstavite držali v menjalnik orodij in se prepričajte, da sta dobro pritrjeni.
- Sedaj lahko izvedete ustrezno obdelavo glede na vstavljena orodja.

5.4 Vstavljanje in odstranjevanje obdelovancev

V eni obdelavi lahko stroj obdela do 3 obdelovancev.

❗ **Obdelovanci morajo biti enakega tipa (material in dimenzije).**

- M1. Odprite vrata CNC-stroja.
- M2. Popustite vijake držala za obdelovance z izvijačem s šesterokotno glavo in odstranite nameščene obdelovance. Vijakov vam ni potrebno odvit do konca.
- M3. Vstavite vpenjalne osi bloka v odprtine držala za obdelovance in blok potisnite, dokler ne sede.
- M4. Privijte bloke z vijaki, ki ste jih popustili v koraku M2. Uporabite priložen moment ključ (1.8 Nm) in privijajte, dokler ključ ne zdrsne.



Slika 18: vstavljanje blokov

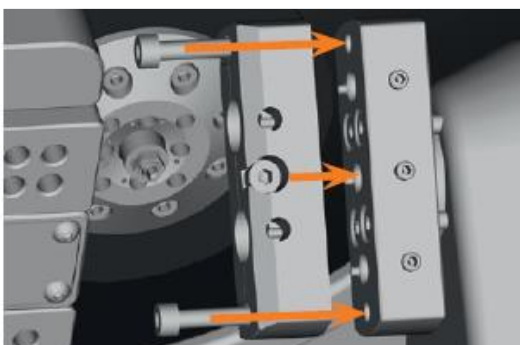
5.5 Namestitev nosilca za abatmente

Z opsijskim nosilcem za abatmente lahko vaš CNC-stroj obdeluje abatmente s predfabriciranimi pričvrstitvami.

❗ **Nosilec za abatmente lahko dobite na Interdentu.**

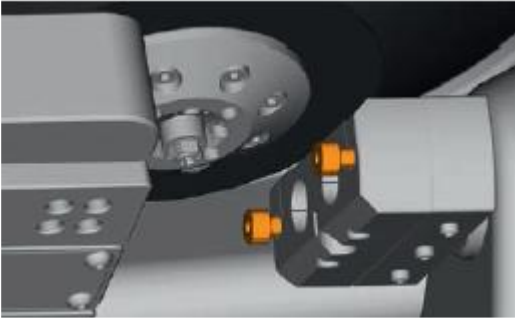
- ★ Stroj je v osnovnem položaju. V držalu za obdelovance ni obdelovancev. V vpenjalnih kleščah ni orodja.

- M1. Odprite vrata CNC-stroja.
- M2. Izključite CNC-stroj.
- Zdaj lahko ročno obračate držalo za obdelovance.
- M3. Obrnite držalo za obdelovance v pokončni položaj. (Slika 19).
- M4. Nosilec za abatmente vstavite v držalo za obdelovance. Ročno privijte dolge vijake.



Slika 19: privijanje nosilca za abatmente

- M5. Obrnite držalo za obdelovance v smeri urinega kazalca (do konca).
- M6. Privijte 2 vijaka s priloženim ključem.



Slika 20: privijanje nosilca za abatmente

- M7. Zaprite vrata stroja.
- M8. Zaženite stroj.

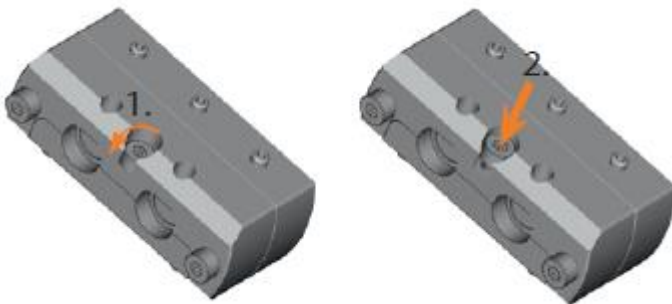
5.6 Odstranitev nosilca za abatmente

- M1. Odstranite obdelovance iz nosilca za abatmente.
- M2. Odvijte vijake na držalu in ga odstranite (Slika 20).

5.7 Vstavljanje in odstranjevanje PreFace abatmentov

- ★ Namestili ste nosilec za abatmente (poglavje 5.5).

- M1. Popustite vijak na PreFace nosilcu za abatmente z izvijačem s šesterokotno glavo. Vijakov vam ni potrebno popolnoma odviti.
- M2. Previdno potisnite popuščen vijak v nosilec.
 - Obdelovanec je sproščen.



Slika 21: odpiranje PreFace nosilca za abatmente.

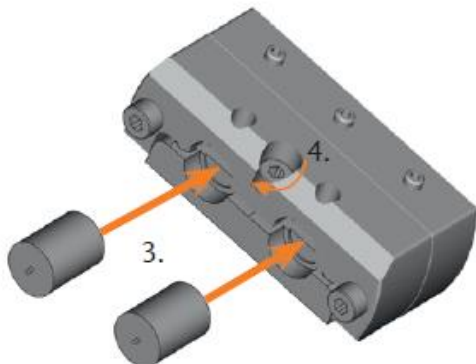
NOTICE

Slabi rezultati rezkanja zaradi nepravilnega skeniranja predfabriciranih abatmentov

Če so obdelovanci vlažni ali umazani, jih CNC-stroj ne more pravilno skenirati. Izdelki postanejo neuporabni.

- Preden vstavite predfabricirane abatmente, obrišite zaščito motorja.
- Pred obdelavo obdelovance očistite s suho gladko krpo.

- M3. Potisnite obdelovance v PreFace držalo, dokler ne sedejo.
 M4. Ponovno privijte vijak PreFace nosilca za abatmente.
 ➤ Obdelovanci so pritrjeni.



Slika 22: vstavljanje PreFace abatmentov

5.8 Izvajanje obdelave

- M1. Pred pripravo obdelave se prepričajte, da so izpolnjene sledeče zahteve:
- Obdelavo, ki jo želite opraviti, ste pripravili v programu DentalCAM in jo prenesli v program DentalCNC.
 - Vsa potrebna orodja so v programu DentalCNC označena za obdelavo.
 - Vsa potrebna orodja za obdelavo so na ustreznih mestih v menjalniku orodij.
 - Vstavljeni so obdelovanci iz ustreznega materiala.
 - Posoda za tekočino je napolnjena z zadostno količino emulzije.
 - ❗ **Ne premikajte stroja med njegovim obratovanjem, saj se lahko izdelki poškodujejo.**
- M2. Zaprite vrata stroja in posodo za tekočino.
 S3. Začnite z delom v programu DentalCNC.
 ➤ CNC-stroj prične z delom. Delovni prostor se osvetli z modro barvo.

5.9 Prekinitev obdelave



S klikom na prikazano ikono ustavite obdelavo. Ikona je prikazana samo med obdelavo.

5.10 Prekinitev ali zaustavitev obdelave

Prekinitev lahko nastopi zaradi nezadostne količine komprimiranega zraka ali vakuuma v obdelovalnem prostoru. Obdelava se avtomatsko nadaljuje, ko je napaka odpravljena.

Obdelava je prekinjena v naslednjih primerih:

- v primeru okvare stroja
- v primeru zloma orodja
- v primeru izpada električne energije

Če je bila obdelava prekinjena, jo morate ponovno pognati v programu DentalCNC.

5.10.1 Kako ukrepati v primeru prekinitve delovanja

Če je delovanje stroja prekinjeno, se v programu DentalCNC prikaže ustrezno sporočilo.

- M1. Če program DentalCNC javi, da komprimiranega zraka ni dovolj, preverite sledeče:
- manometer na filtrirni enoti
 - nameščenost pnevmatskih cevi
 - kompresor
- M2. Če DentalCNC javi, da je pretok emulzije prenizek, preverite, ali je v posodi za tekočino dovolj emulzije.

 [Več informacij boste našli v poglavju o odpravljanju težav \(poglavje 8, stran 46\)](#)

5.10.2 Kako ukrepati v primeru okvare stroja

Ko notranja nadzorna enota odkrije okvaro stroja, se delovni prostor osvetli z rdečo barvo. V programu DentalCNC se izpiše obvestilo in koda napake.

- M1. Izključite stroj iz električnega napajanja in mu preprečite, da bi se ponovno zagnal.
- M2. Zapišite si obvestilo in kodo napake, ki se izpišeta v programu DentalCNC.
- M3. Kontaktirajte Interdent. Zapisano obvestilo in kodo napake imejte pri roki.
- M4. Obdelovanec lahko iz delovnega prostora odstranite tako, da vrata stroja odprete z zasilnim ključem (poglavje 5.10.4, stran 29).

5.10.3 Kako ukrepati v primeru uničenja orodja

Če se orodje med obdelavo uniči, stroj tega takoj ne prepozna – vreteno nadaljuje z delom vse do naslednje menjave orodja. Stroj preneha z delom šele takrat, ko se izvrši merjenje uničenega orodja (v programu DentalCNC se izpiše ustrezno obvestilo).

Orodje se lahko uniči:

- če je poškodovano ali obrabljeno,
- če je bilo vstavljeno v napačno mesto na menjalniku orodij ali če je bilo vstavljeno ročno ob napačnem času.
- če skupek obdelav ni bil dovolj dobro prilagojen obdelovalnemu materialu.

- M1. Odprite vrata stroja.
- M2. Odstranite vse dele uničenega orodja iz delovnega prostora.
- M3. Če je vreteno vzelo orodje iz menjalnika orodij, preverite, ali je vstavljeno v pravilno mesto. Vstavite nadomestno orodje v ustrezno mesto na menjalniku orodij (poglavje 5.3).
- M4. Če ste orodje v vpenjalne klešče vstavili ročno, preverite, ali se uničeno orodje ujema s tistim, ki ste ga določili v programu DentalCNC. Imejte pripravljeno nadomestno orodje.
- M5. Zaprite vrata stroja in ponovno zaženite obdelavo.

 [Če se orodje večkrat uniči, si preberite poglavje o odpravljanju težav \(poglavje 8, stran 46\)](#)

5.10.4 Kako ukrepati v primeru izpada električne energije

Dokler je stroj izključen, so vrata zaklenjena.

- Če pride do kratkega izpada električne energije, stroj ponovno vključite in sledite navodilom na zaslonu.
- Če pride do daljšega izpada električne energije ali do okvare stroja, odklenite vrata s priloženim zasilnim ključem.

5.11 Zasilno odpiranje vrat stroja

- Ključ za zasilno odpiranje vrat stroja uporabite izključno takrat, ko obdelovanca iz delovnega prostora ne morete odstraniti na drug način (uporaba je dovoljena le v primeru, ko so vrata stroja zaklenjena).

WARNING

Nevarnost poškodb zaradi odprtih vrat stroja med obdelovanjem

Če se varnostni zaklep po zasilnem odprtju ne reaktivira, je možno s strojem delati, medtem ko so vrata odprta – v tem primeru uporabnik stroja ni zaščiten.

- Ko končate z delom v delovnem prostoru, nemudoma aktivirajte varnostni zaklep.
- Nikoli ne delajte s strojem, ko so vrata odprta.
- Stroj z zasilnim ključem odpirajte le, če ste za to pooblaščen.
- Ključ za zasilno odpiranje stroja shranite na mesto, do katerega imajo dostop izključno pooblaščen osebe.
- Vedno, ko vrata stroja odprete z zasilnim ključem, to sporočite Interdentu.

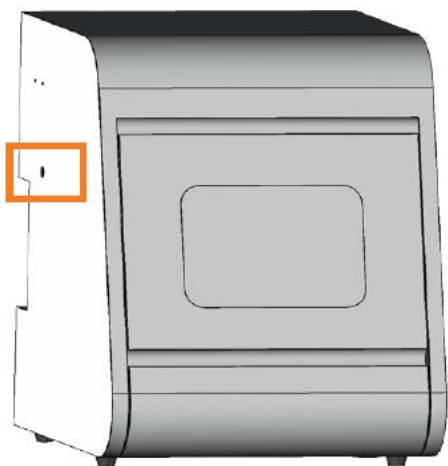
CAUTION

Nevarnost ureznin zaradi dotikanja rotirajočega orodja

V primeru, da med obdelavo pride do izpada električne energije ali okvare stroja, vreteno, vključno z vstavljenim orodjem, ne preneha z rotiranjem. Če se dotaknete rotirajočega orodja, se boste poškodovali.

- Preden uporabite zasilni ključ za odpiranje vrat, počakajte, da se vreteno ustavi.

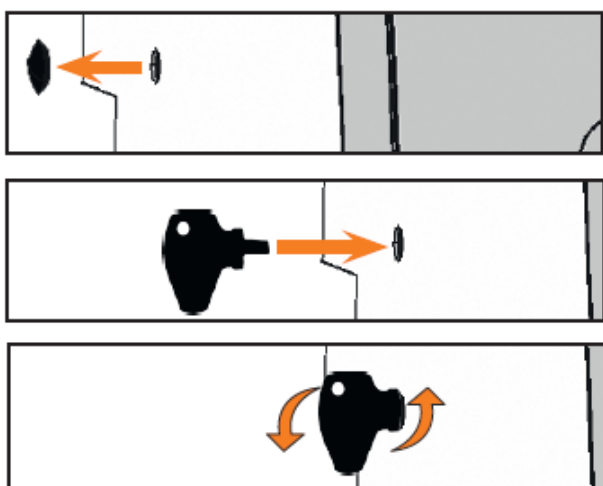
Odprtina za zasilno odpiranje vrat je na levi strani stroja.



Slika 23: odprtina za zasilno odpiranje stroja

- M1. Z glavnim stikalom izključite stroj in prekinite povezavo stroja z električnim napajanjem in komprimiranim zrakom.
- M2. Odstranite zaščitno kapico z odprtine za zasilno odpiranje stroja, ki je na levi strani ohišja (Slika 24, zgoraj).
- M3. V odprtino vstavite zasilni ključ (Slika 24, sredina).
- M4. Deaktivirajte varnostni zaklep. To storite tako, da ključ zavrtite za 90° v nasprotni smeri urinega kazalca (Slika 24, spodaj). Zdaj lahko odprete vrata stroja.
- M5. V delovnem prostoru stroja postorite vse, kar je potrebno.
- M6. Zaprite vrata stroja.
- M7. Ponovno aktivirajte varnostni zaklep. To storite tako, da ključ zavrtite za 90° v smeri urinega kazalca (Slika 24, spodaj).
- M8. Prepričajte se, da so vrata stroja zaklenjena.

► Če je vrata stroja še vedno možno odpreti, ponovite korake M6–M8.



Slika 24: uporaba ključa za zasilno odpiranje vrat stroja
 Zgoraj: Odstranite kapico.
 Sredina: Vstavite ključ.
 Spodaj: Zavrtite ključ.

- M9. Zaščitno kapico namestite nazaj na odprtino za zasilno odpiranje stroja.





6 VZDRŽEVANJE IN ČIŠČENJE STROJA

6.1 Nadomestni deli

CNC-stroj je skupaj z ostalo dodatno opremo v garanciji 24 mesecev ali 2000 obratovalnih ur (odvisno od tega, kaj nastopi prej). Garancija krije napake proizvoda in materialov le v primeru, da se ob uporabi stroja upoštevajo predpisi in priložena dokumentacija.




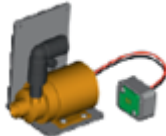

Garancija krije tudi nadomestne dele, v kolikor gre za skrite napake. Deli, navedeni v tabeli spodaj, se lahko v času garancije poškodujejo zaradi funkcije, ki jo opravljajo – v tem primeru garancija ne velja. V spodnji tabeli lahko vidimo povprečno dobo uporabnosti teh delov. Te vrednosti vam bodo pomagale tako pri ugotavljanju stroškov delovanja kot pri planiranju zaloge nadomestnih delov. V pomoč vam bodo tudi pri načrtovanju vzdrževanja in servisiranja.

6.2 Tabela vzdrževanja

Postopek	Priporočeni interval	Postopek/pripomočki	Ilustracija nadomestnega dela
Čiščenje delovnega prostora in merilnega gumba (poglavje 6.4, stran 33)	1x dnevno oz. pogosteje, če je delovni prostor umazan	mokri sesalnik, krtača, vlažna krpa; ne uporabljajte komprimiranega zraka	
Čiščenje vpenjalnih klešč (poglavje 6.5, stran 34)	1x tedensko; v primeru rotacijskih nepravilnosti; v primeru slabih rezultatov rezkanja	servisni set za vreteno	
Preverjanje cevi, kablov in priključkov (poglavje 6.6, stran 36)	1x tedensko	vizualni pregled	
Menjava tekočine, čiščenje posode za tekočino in filtra (poglavje 6.9, stran 37)	10–20 obratovalnih ur*	krpa, hladilno mazivo, lističi za merjenje pH, vedro	
Čiščenje ohišja (poglavje 6.11, stran 39)	po vaši oceni	krpa, voda; če je potrebno, blago čistilo	
Filtrirna enota: a) preverjanje, ali je enota očiščena b) čiščenje/menjava filtra (poglavje 6.12, stran 39)	a) vsak dan b) ko je umazanija vidna oz. vsaki 2 leti*	Nov filter (če je potreben)	
Menjava glavne varovalke (poglavje 6.13, stran 40)	v primeru okvarjene varovalke	nadomestna varovalka tipa T6, 3A L250V	
Kalibriranje osi (poglavje 6.14, stran 41)	če je potrebno	kalibracijsko/testno telo, mikrometer	
Pregled serviserja (poglavje 6.3, stran 33)	po 2000 obratovalnih urah ali vsaki 2 leti*		

* Ta priporočila naj vam služijo kot smernice. Te vrednosti se lahko spreminjajo (odvisno od uporabljenega materiala in očiščenosti stroja)

Nadomestni deli

Zamenjava filtra (poglavje 6.9, stran 37)	100 obratovalnih ur*	nov filter	
Zamenjava podložk na menjalniku orodij (poglavje 6.15, stran 44)	500 obratovalnih ur*	nadomestne podložke, orodje za vrtnje pozicij za orodja na menjalnik orodij, izvijač	
Zamenjava vpenjalnih klešč	1000 obratovalnih ur*		
Zamenjava črpalke (poglavje 6.10, stran 30)	1000 obratovalnih ur*		
Zamenjava ležajev na vretenu (to naj opravi serviser)	2000 obratovalnih ur* ali vsaki 2 leti*	opravi serviser	

* Ta priporočila naj vam služijo kot smernice. Te vrednosti se lahko spreminjajo (odvisno od uporabljenega materiala in očiščenosti stroja)

6.3 Pregledovanje stroja

Predlagamo, da serviser redno pregleduje stroj

- Prav tako poskrbite, da bo pregled izvršen med vsakim popravilom stroja.

6.4 Čiščenje delovnega prostora in merilnega gumba

NOTICE

Poškodovanje linearnih vodil ali vretena med čiščenjem s komprimiranim zrakom

Ko čistite delovni prostor s komprimiranim zrakom, lahko okruški poškodujejo linearna vodila ali ležaje na vretenu.

- Notranjost stroja čistite izključno z mokrim sesalnikom, krtačo ali krpo. Nikakor ne čistite notranjosti s komprimiranim zrakom.

M1. Imejte pripravljeno:

- mokri sesalnik
- vlažna krpa
- blago čistilo (opcijsko)
- mokra krtača

M2. Vključite stroj.

S3. Zaženite program DentalCNC.



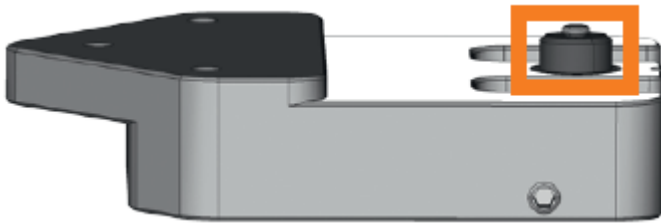
S4. S klikom na prikazano ikono aktivirajte nadpritisk.

- Delovni prostor je pod nadpritiskom, kar lahko slišite.

M5. Odprite vrata stroja.

M6. Z mokrim sesalnikom posesajte grobo umazanijo v delovnem prostoru.

- M7. Z vlažno krpo temeljito očistite notranjost stroja. Če je potrebno, uporabite blago čistilo.
- M8. Temeljito očistite držalo za obdelovance, vse vijake, pine in vpenjalne mehanizme. Pobrišite prah v odprtinah.
- M9. S krtačo očistite merilni gumb med blokoma menjalnika orodij.



Slika 25: merilni gumb na vrhu menjalnika orodij (označen z oranžno)

- M10. Zaprite vrata stroja.
- S11. S klikom na upodobljeno ikono izključite nadpritisk.
 - ▀ Zvok, ki ga je povzročal nadpritisk, izgine.

6.5 Čiščenje vpenjalnih klešč

NOTICE

Poškodovanje visokofrekvenčnega vretena med čiščenjem s komprimiranim zrakom

Če čistite vpenjalne klešče s komprimiranim zrakom, se lahko poškodujejo ležaji na vretenu.

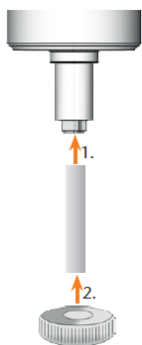
- vpenjalne klešče čistite samo s primernim servisnim setom.



Slika 26: servisni set za visokofrekvenčno vreteno

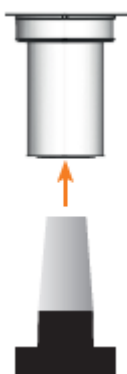
- [1] mazivo
- [2] ščetka za čiščenje
- [3] nastavek za privijanje
- [4] čistilni stožec

- M1. Zaprite vrata stroja.
- S2. odprite vpenjalne klešče z »Release tool« funkcijo v DentalCNC-ju in odstranite orodje z vretena, če je potrebno.
- M3. Odprite vrata in z vretena odstranite orodje, če je to potrebno.
- M4. Z eno roko vstavite merilni pin v vpenjalne klešče. Držite ga. Z drugo roko vstavite nastavek za privijanje na vreteno.



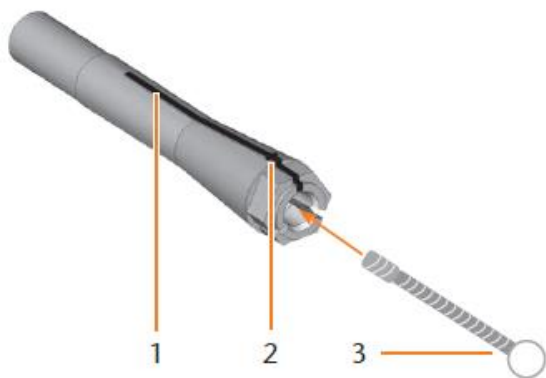
Slika 27: odvijanje vpenjalnih klešč

- M5. Odvijte vpenjalne klešče z nastavkom za privijanje.
- M6. Odstranite merilni pin iz vpenjalnih klešč. Skupaj z nastavkom za privijanje ga dajte na stran, tako da bo na dosegu roke.
- M7. Očistite notranji stožec visokofrekvenčnega vretena s servisnim setom za čistilni stožec.



Slika 28: čiščenje notranjega stožca visokofrekvenčnega vretena

- M8. Očistite vpenjalne klešče s ščetko za čiščenje iz servisnega seta. Poskrbite, da med čiščenjem 3 prijemala v vpenjalnih kleščah ne izpadejo.



Slika 29: čiščenje vpenjalnih klešč

- [1] podolžna reža
- [2] prijemalo
- [3] ščetka za čiščenje

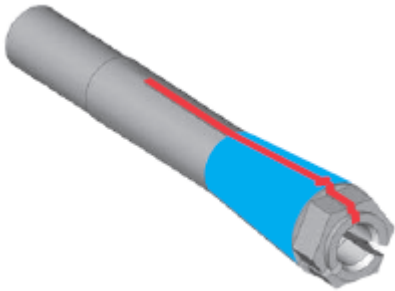
NOTICE

Poškodovanje vretena zaradi uporabe napačnega ali napačno nanesenega maziva

Če uporabljate mazivo, ki ni primerno za vreteno, se lahko le-to poškoduje. Če mazivo pride v podolžne reže vpenjalnih klešč, se lahko vreteno prav tako poškoduje.

- Poskrbite, da mazivo ne pride v podolžne reže vpenjalnih klešč.
- Uporabite majhno količino maziva (v velikosti glave bucike).
- Uporabljajte izključno mazivo iz servisnega seta.

- M9. Nanesite majhno količino maziva na kazalec. Naneseno mazivo razmažite s palcem.
- M10. Nanesite mazivo na obe strani vpenjalnih klešč.



Slika 30: Namažite površino, označeno z modro barvo; reža, ki je ne smete namazati, je označena z rdečo.

- M11. Z eno roko vstavite merilni pin v vpenjalne klešče. Držite ga. Z drugo roko vzemite nastavek za privijanje in vpenjalne klešče tesno privijte v vreteno.
 - ❗ **Nastavek za privijanje je treba zavrteti do konca, saj s tem poskrbimo, da so vpenjalne klešče pravilno pritrjene v vreteno. Če to ne storimo, lahko pride do rotacijskih nepopolnosti in posledično do slabših rezultatov pri obdelovanju.**

- M12. Odstranite merilni pin iz vpenjalnih klešč. Shranite ga na primerno mesto skupaj z ostalimi komponentami servisnega seta.
- M13. Zaprite vrata stroja.

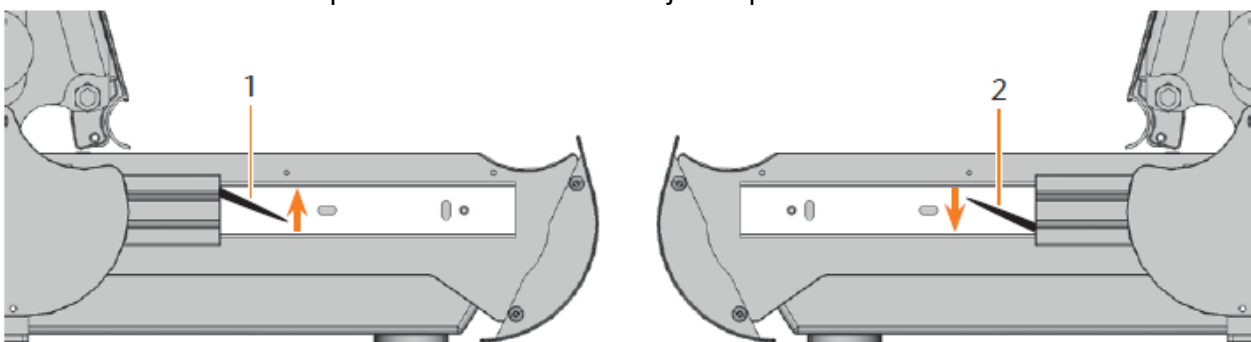
6.6 Preverjanje cevi, kablov in priključkov

- M1. Izključite stroj iz vira za električno napajanje in dovoda za komprimiran zrak.
- M2. Preverite cevi in kable, ki so nameščeni na stroju.
- M3. Če odkrijete poškodbe na ceveh in kablilih, preprečite stroju, da bi se ponovno zagnal. Zamenjajte jih z originalnimi nadomestnimi deli. Kontaktirajte Interdent.
- M4. Preverite, da so vsi priključki na stroju čvrsto pritrjeni.
- M5. Poskrbite, da so cevi in kable čvrsto priključeni na stroj. Če ugotovite, da je kateri izmed priključkov poškodovan, preprečite stroju, da bi se ponovno zagnal. Kontaktirajte Interdent.

6.7 Odstranitev posode za tekočino iz stroja

Posodo za tekočino lahko popolnoma odstranite iz stroja (npr. ko ga želite temeljito očistiti ali vanj zlit hladilno emulzijo). Posodo je potrebno odstraniti tudi takrat, ko menjujete črpalko.

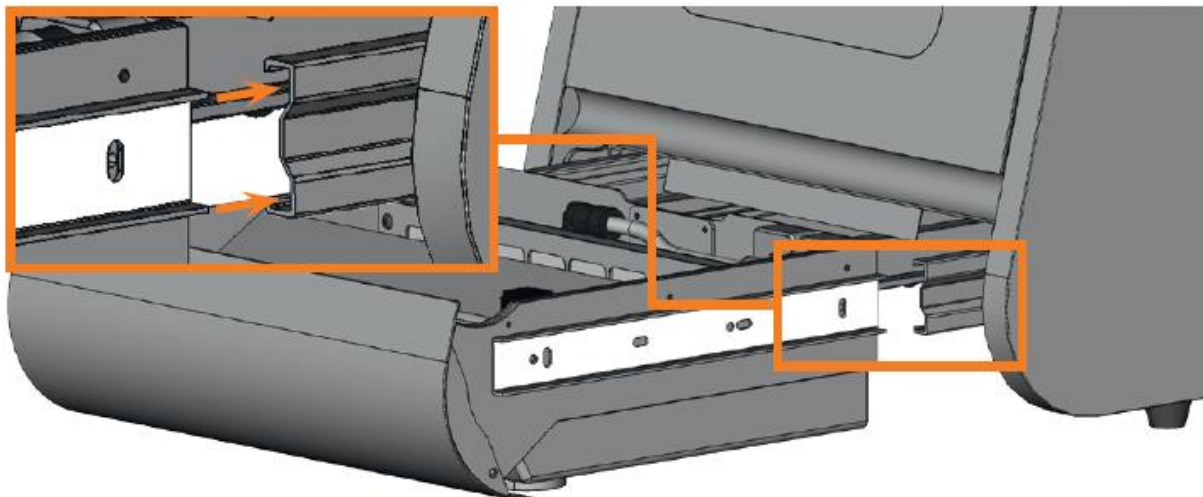
- M1. Zaprite vrata stroja.
- M2. Odprite posodo za tekočino. Izvlecite jo do konca.
- M3. Izvlecite zaporni vzvod na levi strani stroja navzgor. Zadržite ga v tej poziciji.
- M4. Potisnite zaporni vzvod na desni strani stroja navzdol. Zadržite ga v tej poziciji.
- M5. Previdno izvlecite posodo za tekočino iz stroja in izpustite vzvoda.



Slika 31: zaporna vzvoda na straneh posode za tekočino

- [1] Zaporni vzvod na levi strani
- [2] Zaporni vzvod na desni strani

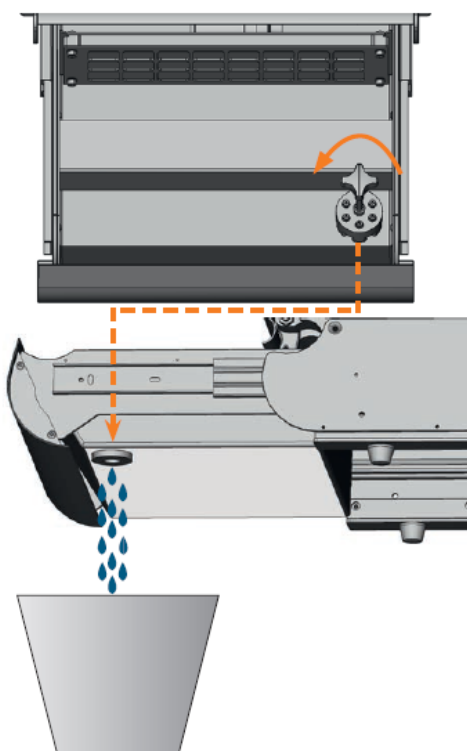
6.8 Ponovno vstavljanje posode za tekočino



Slika 32: vstavljanje posode za tekočino v stroj

- M1. Zaprite vrata stroja.
- M2. Vstavite vodila na levi in desni strani posode za tekočino na vodila v CNC-stroju. Posodo previdno potisnite nazaj v stroj.

6.9 Menjava tekočine / čiščenje posode za tekočino



- M1. Imejte pripravljeno:
 - posoda za zbiranje tekočine
 - krpo za čiščenje
 - mokri sesalnik, če je potrebno
- M2. Zaprite vrata stroja.
- M3. Izključite stroj.
- M4. Odprite posodo za tekočino.
- M5. Posoda za zbiranje tekočine (vedro) postavite pod odtok posode za tekočino.
- M6. Zavrtite vijak za praznjenje posode v nasprotni smeri urinega kazalca do konca.

Slika 33: praznjenje emulzije

Emulzija je odstranjena.

❗ Za uničenje emulzije si preberite ustrezno poglavje (☞ poglavje 7.1, stran 45).

NOTICE

Puščanje vode zaradi umazanije v odtoku

Če je odtok umazan, posoda za tekočino pušča.

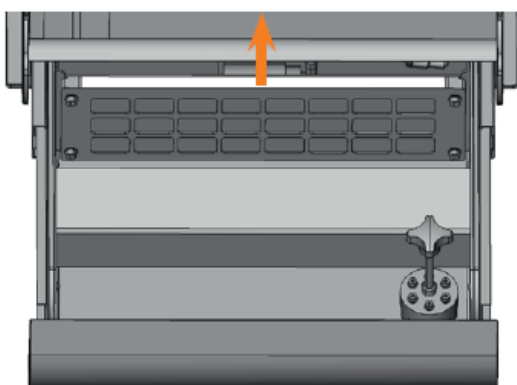
- Vedno, ko odprete odtok, preverite, ali je tesnilo umazano.
- Preden zaprete odtok, očistite tesnilo.

M7. Vijak za praznjenje posode zavrtite v smeri urinega kazalca do konca.

- Odtok je zaprt.

M8. S krpo temeljito očistite posodo za tekočino.

M9. Iz držala izvlecite filter (povlecite ga navzgor)



Slika 34: Izvlecite filter iz držala.

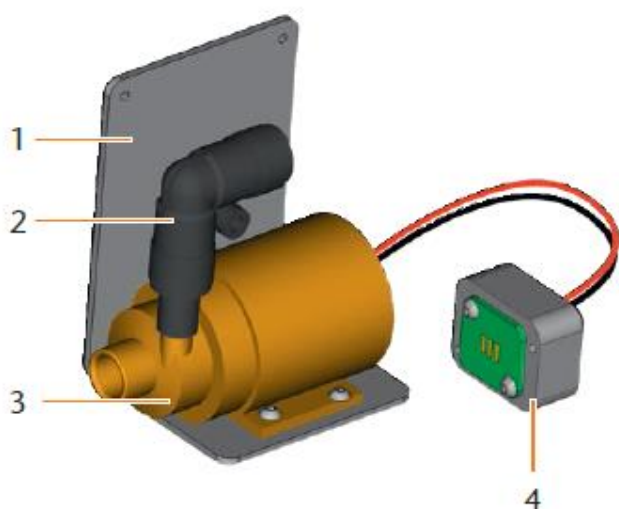
M10. Če želite filter še naprej uporabljati, ga očistite.

M11. Odstranite umazanijo iz posode – če je potrebno, uporabite mokri sesalnik.

M12. V držalo vstavite očiščen ali nov filter.

M13. Posodo napolnite z vodo in hladilnim mazivom tako, kot je to opisano v ustreznem poglavju (☞ poglavje 4.5, stran 19).

M14. Zaprite posodo za tekočino.



6.10 Menjava črpalke

Slika 35: nadomestni del – črpalka

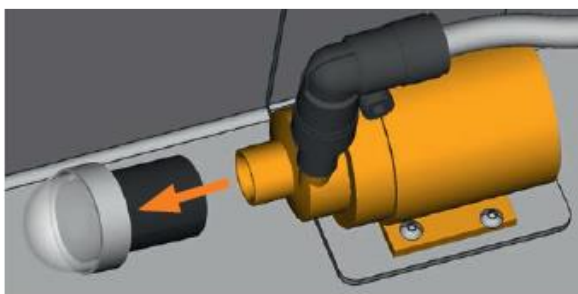
- [1] kotna plošča
- [2] kotni nastavek, pritrjen na črpalko
- [3] črpalka
- [4] priključek

M1. Popolnoma odstranite posodo za tekočino (poglavje 6.7, ☞ stran 36).

M2. Posodo izpraznite in temeljito očistite (poglavje 6.9).

M3. Dajte jo na ravno in trdno podlago, kjer je dovolj osvetlitve.

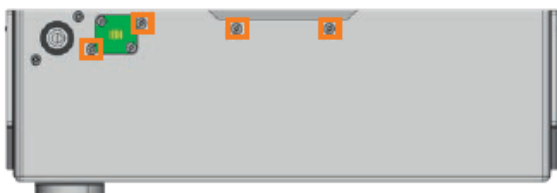
M4. Iz okvarjene črpalke izvlecite filter.



Slika 36: odstranitev filtra iz črpalke

M5. Očistite filter in ga vstavite v novo črpalko (potisnite ga do konca)

M6. Odvijte 4 vijake na kotni plošči in priključku na zadnji strani posode za tekočino.



Slika 37: zadnja stran posode za tekočino

M7. Izvlecite cev za tekočino iz kotnega nastavka na črpalke in pustite, da odvečna voda odteče v posodo za tekočino.

M8. Odstranite črpalko, vključno s kotno ploščo in priključkom.

M9. Vstavite cev za tekočino v kotni nastavek na novi črpalke.

M10. S štirimi vijaki privijte kotno ploščo nove črpalke na zadnjo stran posode za tekočino.

6.11 Čiščenje ohišja

NOTICE

Poškodovanje ohišja zaradi uporabe neprimerne čistila

Če za čiščenje ohišja stroja uporabljate neprimerno čistilo, se lahko površina poškoduje.

- Preprečiti je potrebno stik lakirane površine z alkaličnimi ali jedkimi substancami (še posebej je površina občutljiva na kovinski prah).
- Prosimo vas, da med čiščenjem pazite na oznake in nalepke na stroju, saj so zelo občutljive na drgnjenje in močne detergente.
- Če se stroj ne da očistiti drugače kot s posebnim čistilom, priporočamo, da čistilo najprej nanesete na skrit del ohišja (in počakate, kako se površina nanj odzove).

M1. Čiščenje prašno lakiranih površin naj se najprej izvede z mehko suho krpo.

M2. Če se umazanije s krpo ne da očistiti, krpo navlažite in – če je potrebno – uporabite pH-ustrezno čistilo.

6.12 Preverjanje filtrirne enote

NOTICE

Poškodovanje stroja zaradi umazanega komprimiranega zraka

Komprimiran zrak, ki glede na standard ISO 8573-1 ne izpolnjuje zahtev za čistost zraka, lahko poškoduje stroj (☞ stran 16).

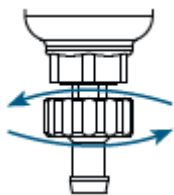
- Vsak dan preverite, da v separatorju vode ni umazanije.

- Stroja ne uporabljajte, če je v separatorju umazanija.

6.12.1 Preverjanje, ali je v separatorju vode kondenzat

Kondenzat v separatorju je navadno znak, da komprimiran zrak ni dovolj suh.

- M1. Preverite, če se je v separatorju vode nakopičila umazanija.
 - Če je v separatorju umazanija, izključite stroj in sledite navodilom:
- M2. Preverite dovod za komprimiran zrak in se prepričajte, da zrak izpolnjuje zahteve za čistost zraka (glede na standard ISO 8573-1) (☞ poglavje 4.4.1, stran 17). Ne uporabljajte stroja, dokler komprimiran zrak ne izpolnjuje teh zahtev!
- M3. Z vrtenjem praznilnega vijaka v nasprotni smeri urinega kazalca izpraznite separator vode.
 - Zaradi tlaka bo izpihnilo kondenzat.
- M4. Praznilni vijak privijte nazaj (vrtite ga v smeri urinega kazalca).



Slika 38: odpiranje / zapiranje praznilnega vijaka na filtrirni enoti

6.12.2 Menjava / čiščenje umazanega filtrirnega vložka

Če se nakopiči umazanija, je potrebno filtrirni vložek v separatorju vode menjati ali očistiti.

- ❗ **Močno umazan filter lahko povzroči izgubo pritiska zraka.**

Če komprimirani zrak izpolnjuje standarde ISO 8573-1, filtrirnega vložka ponavadi ni treba zamenjati.

- V primeru umazanosti filtrirnega vložka vas prosimo, da preverite čistost komprimiranega zraka. (☞ stran 16).

Menjava ali čiščenje filtrirnega vložka potekata tako:

- M 1. Ločite stroj od dovoda za komprimiran zrak.
- M 2. Odvijte posodico separatorja vode.
- M 3. Odvijte vijak filtra pod filtrirnim vstavkom.
- M 4. Izvlecite filtrirni vložek in ga očistite, če je potrebno.

- ❗ **Nov filtrirni vložek lahko dobite kot nadomestni del na Interdentu.**

- M5. Vstavite nov ali očiščen filtrirni vložek. Separator vode znova sestavite.

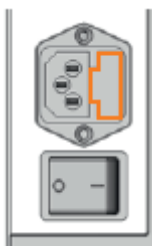
6.13 Menjava glavne varovalke

Pri zamenjavi uporabite izključno cevno varovalko tipa T6.3A L250V.

Notranji napajalnik stroja CC CHIC ima glavno varovalko, ki je dostopna od zunaj in jo je mogoče zamenjati.

- ❗ **Novo glavno varovalko je mogoče dobiti kot rezervni del na Interdentu.**

- M1. Z glavnim stikalom izključite stroj in prekinite povezavo stroja z električnim napajanjem in komprimiranim zrakom.
- M2. Izključite napajalni kabel.
- M3. Odstranite pokrov varovalke.



Slika 39: pokrov varovalke (označen z oranžno)

- M4. Odstranite varovalko in jo nadomestite z novo varovalko tipa T6,3A L250V. Če nimate pripravljene nadomestne varovalke, jo vzemite iz desne strani pokrova za varovalko in ga dajte v levo stran pokrova varovalke.
- M5. Namestite pokrov varovalke nazaj.

6.14 Kalibriranje osi

NOTICE

Poslabšanje rezultatov rezkanja zaradi nepravilne kalibracije

Ko dobite stroj, je že kalibriran. V kolikor ste z rezultati rezkanja zadovoljni, vam ni potrebno opravljati dodatne kalibracije. Kalibracija vzame veliko časa in lahko, če ni opravljena pravilno, še dodatno poslabša rezultate rezkanja.

- Če so rezultati vaše obdelave nenatančni, najprej spremenite pogoje rezkanja: Preverite pritrjenost obdelovanca, stanje orodja in materiala, ki ga uporabljate.
- Preden kalibrirate stroj, kontaktirajte Interdent.
- Ko med kalibracijo merite in vnašate podatke, bodite zelo previdni. Če ste v dvomih, prenehajte s kalibracijo.

i V priložnem priročniku za nadzorni program so vse potrebne informacije za kalibriranje stroja. V tem priročniku najdete zgolj podatke, ki se nanašajo na stroj CC CHIC.

Namestitev kalibracijskega / testnega telesa v CNC-stroj

Skupaj s strojem CC CHIC dobite set za kalibriranje, ki zajema sledeče dele:

- Kalibracijske bloke, ki se uporabljajo za rezkanje kalibracijskih/testnih teles.
- Pine za pričvrstitev blokov na držalo za obdelovance.
- Orodje za rezkanje testnih teles.
- Mikrometer za merjenje natančnosti rezkanja.

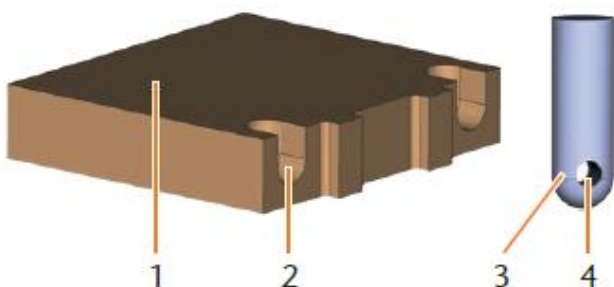


Fig. 40: blok in pin iz seta za kalibriranje

- [1] blok
- [2] reža za pin
- [3] pin za namestitev bloka v držalo blokov
- [4] odprtina za vijak, s katerim pričvrstimo pin

- Ob dostavi so v enega izmed blokov že priviti pini. Ta blok uporabite najprej in – v tem primeru – izpustite prva dva koraka.

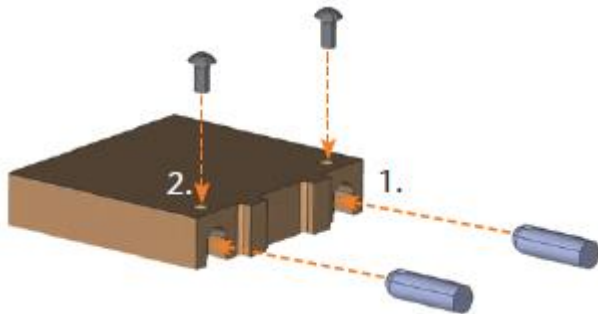
NOTICE

Zlom orodja ali neustrezni rezultati zaradi popuščenih vijakov

Če obdelovanec ni ustrezno pričvrščen v držalo, lahko pride do neustreznih rezultatov pri merjenju ali zloma orodja pri kalibraciji.

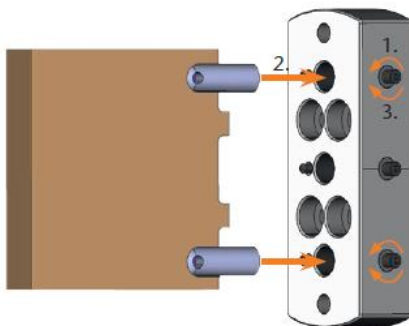
- Pine tesno privijte v bloke.
- ★ Bloke tesno privijte v držalo blokov.
- ★ Stroj je v osnovnem položaju. V držalu blokov ni blokov.

- M1. Vstavite pine v reže [2] na bloku. Prepričajte se, da so odprtine za vijake [4] po vstavitvi vidne.
- M2. V odprtine na pinih vstavite vijake in jih tesno privijte v blok.



Slika 41: vstavljanje pinov in privijanje le-teh v blok

- M3. S pomočjo pinov vstavite blok v držalo v delovnem prostoru stroja.



Slika 42: vstavljanje bloka iz seta za kalibriranje v držalo blokov

- S4. Opravite rezkanje testnega telesa tako, kot je opisano v priročniku za nadzorni program.

- ❗ Kalibracijsko/testno orodje se vedno rezka suho – to ne pomeni, da stroj ne deluje pravilno.

- M5. Odstranite testno telo in orodje za kalibriranje iz stroja.
- M6. Odvijte vijake in odstranite pine iz bloka. Shranite pine, vijake in orodje za kalibriranje za nadaljnjo uporabo.
- M7. Razlomite blok in ga izmerite (spodaj). Sledite korakom v priročniku za CNC-program.

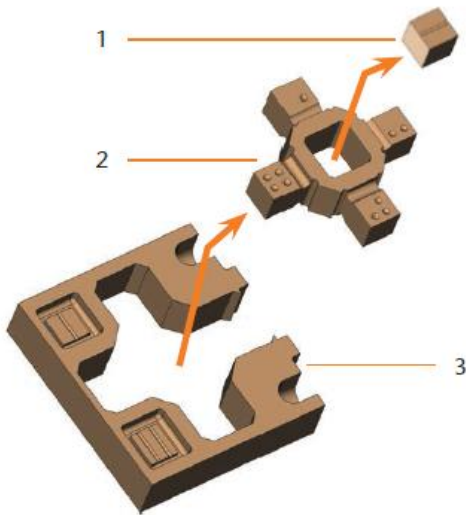
Zlom in merjenje kalibracijskega/testnega telesa

Po rezkanju zгледа testno telo tako:



Slika 43: testno telo za CC CHIC po rezkanju

M Razlomite blok na 3 dele (spodaj) tako, da notranji del oz. kocko s palcem potisnete navzven:



Slika 44: deli kalibracijskega/testnega telesa

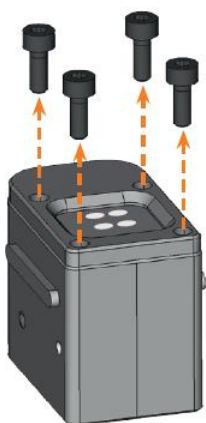
- [1] Kocka na sredini
- [2] Notranji del bloka
- [3] Okvir bloka

6.15 Menjava podložk na menjalniku orodij

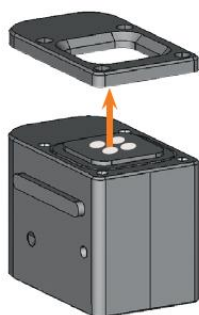
Ko se podložke obrabijo, jih je potrebno zamenjati. Po zamenjavi morate s CNC-strojem v nove podložke izvrtati pozicije za orodja.

- Skupaj s CNC-strojem dobite nadomestne podložke in napravo za vrtanje.
 - Podložke in napravo za vrtanje je mogoče dobiti na Interdentu.
 - Tudi držala orodij lahko dobite na Interdentu.
- Ko se lotite menjave, zamenjajte podložko pri obeh držalih – tudi če je obrabljena samo ena. Stroj bo pozicije za orodja vedno izvrtal v obe podložki.
- ❗ V priročniku za nadzorni program je natančno opisano, kako izvrtati podložki. Spodaj so navodila, kako ju zamenjati.

- M1. Pripravite nadomestni podložki.
- M2. Odprite vrata stroja.
- M3. Izvlecite eno od držal iz menjalnika orodij. Odstranite vsa orodja.
- M4. Odvijte štiri vijake na zgornji strani držala in odstranite pokrov.



Slika 45: Odvijanje vijakov



Slika 46: odstranitev pokrova

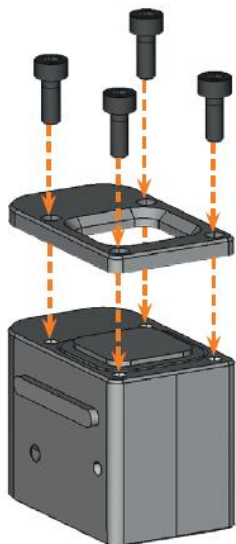
- M5. Odstranite obrabljeno podložko in jo zamenjajte z novo.



Slika 47: nova podložka (na levi, brez lukenj) zamenja staro (na desni, z luknjami)

- M6. Namestite pokrov nazaj na držalo in privijte vijake, ki ste jih odvili v koraku M3 (Slika 48).
- M7. Vstavite držalo nazaj v menjalnik orodij.
- M8. Ponovite korake M3–M7 za drugo držalo.
- M9. Zaprite vrata stroja.

S10. Zvrtajte luknje v novi podložki.



Slika 48: sestavljanje držala orodij

7 UNIČENJE

7.1 Uničenje hladilne emulzije

- Izdelek ne vsebuje PCB ali drugih kloroparafinov.
 - Številčna oznaka odpadka: 120109, emulzije in raztopine brez vsebnosti halogenov.
 - Dokazno breme: da.
- Ne zlivajte nove ali uporabljene hladilne emulzije v zemljo, vodo ali kanalizacijo.
 - Če želite emulzijo uničiti, se obrnite na podjetje, ki je pooblaščen za uničenje emulzije.
 - Hranite referenčni vzorec produkta vsaj 6 mesecev po uničenju.
 - Pri uničenju emulzije upoštevajte nacionalne in lokalne predpise.

7.2 Uničenje CNC-stroja

Uničenje stroja Interdent opravi brezplačno. Kupec/uporabnik krije stroške za demontažo, transport in pakiranje stroja.

- Preden pošljete stroj na uničenje, kontaktirajte Interdent.
- Če se boste stroj uničili sami, upoštevajte nacionalne in lokalne predpise

8 ODPRAVLJANJE NAPAK



Življenjska nevarnost zaradi nepravilnega odpravljanja napak

Če napake odpravljate na nepravilen način, se lahko smrtno poškodujete (nevarnost predstavljajo: električni kabli, premikajoči se vreteno in osi, popuščeni pnevmatski deli in cevi itd.) Poleg tega, da izpostavljate sebe, lahko poškodujete tudi stroj.

- Ne odstranjajte ohišja stroja.
- Preden preverite ali napeljete pnevmatske cevi, zaprite ventil za dovod komprimiranega zraka.
- Preden preverite in napeljete električne kable ali priključke za napajanje, izključite stroj iz električnega napajanja in mu preprečite, da bi se ponovno zagnal.
- Ne skušajte odpravljati napak, medtem ko stroj obratuje.
- Med odpravljanjem napak stroja nosite zaščitne rokavice.
- Če napake ne znate odpraviti ali če niste prepričani, kako izvesti določene korake med odpravljanjem napake, kontaktirajte Interdent.

Dodatni simboli v tem poglavju

- ❓ Težava / vprašanje
- 💬 Rešitev / odgovor

Pogosto zastavljena vprašanja (FAQ)

❓ Ne morem odpreti vrat stroja.

💬 Ali stroj obratuje? Med premikanjem osi so vrata stroja zaklenjena.

M Počakajte, da se delovni prostor osvetli z zeleno barvo. To je znak, da je stroj opravil z delom.

❗ Če stroj ni priključen v električno napajanje, so vrata zaklenjena.

💬 Je prišlo do izpada električne energije?

M Če je prišlo do kratkega izpada električne energije, ponovno zaženite stroj. Če gre za daljši izpad električne energije, uporabite zasilni ključ za odpiranje vrat stroja.

📄 poglavje 5.10.4, stran 29

💬 Je v prostoru, kjer nameravate oz. ste namestili stroj, električna energija na voljo?

M1. Če še niste odstranili zaščitne pene iz delovnega prostora stroja, izključite stroj iz nadzornega računalnika.

M2. Priključite stroj v električno napajanje in ga zaženite z glavnim stikalom.

M3. Če se delovni prostor ne osvetli, preverite, ali je napajalni kabel pravilno vključen v stroj. Prepričajte se, da je stroj priključen v električno napajanje.

M4. Poskušajte vključiti stroj v drugo vtičnico.

📄 poglavje 4.6, stran 20

❓ Stroj se ne odziva, kljub temu da sem namestil/-a vse komponente in zagnal/a program DentalCNC.

💬 So vrata stroja odprta? Dokler so vrata odprta, stroj ne bo pričel z obratovanjem.

M Zaprite vrata stroja.

💬 Je USB-kabel ustrezno priključen?

M Preverite, če je USB-kabel nepoškodovan in pravilno priključen. Predlagamo, da uporabite priložen kabel.

- 💬 So v programu DentalCNC izbrana ustrezna vrata (port number)? Če niso, se aplikacija ne bo povezala s strojem.

S1. Zaženite program DentalCNC.

S2. Priporočamo, da aplikacija v nastavitvah programa sama izbere ustrezna vrata.

🔗 poglavje 4.8, stran 21

S3. Če aplikacija ne more določiti ustreznih vrat, jih vnesite ročno.

🔗 Priročnik za nadzorni program

❓ **Stroj ne obratuje, čeprav v programu DentalCNC piše, da je povezava med nadzornim računalnikom in strojem vzpostavljena.**

💬 So vrata stroja odprta? Če so, se osi ne bodo začele premikati.

M Zaprite vrata stroja.

🔗 poglavje 3.2, stran 10

❓ **Rezultati rezkanja niso zadovoljivi / orodja se nenehno lomijo**

💬 So orodja v menjalniku orodij vstavljena na enake pozicije, kot je to predvideno v programu? Če ne, stroj med obratovanjem uporablja napačna orodja.

S1. Odprite »job execution view« v programu DentalCNC.

S2. Primerjajte pozicije orodij v aplikaciji s pozicijami orodij na menjalniku orodij.

M3. Napačna orodja v menjalniku orodij zamenjajte z ustreznimi.

🔗 poglavje 5.3, stran 23

💬 Je obdelovanec ustrezno pričvrščen?

M Prepričajte se, da vijaki, pini in stiskalni mehanizmi čvrsto držijo obdelovanec.

🔗 poglavje 5.4, stran 26

💬 So podložke na menjalniku orodij obrabljene?

M Nadomestite jih z novimi.

🔗 poglavje 6.15, stran 44

💬 Je na vijakih, pinih in stiskalnih mehanizmih ter v odprtinah, v katere so pritrjeni, prah?

M Navedene dele temeljito očistite.

🔗 poglavje 6.4, stran 33

💬 So orodja obrabljena?

M Preverite stanje orodij v menjalniku orodij in obrabljena zamenjajte z novimi. Prav tako v programu DentalCNC preverite njihovo dobo uporabnosti.

💬 Ali so obročki na orodjih pričvrščeni v utor stebela orodja?

M Preverite vsa orodja in potisnite obročke, ki so se premaknili, nazaj v utor.

💬 Se parametri predvidene obdelave v DentalCAMu ujemajo s parametri obdelovanca?

M Poskrbite, da so parametri, navedeni spodaj, enaki v programu in na obdelovancu.

Prepričajte se, da so primerni za rezkanje, ki ga želite izvesti:

- tip materiala

- dimenzije materiala
- označbe (tipi) posameznih obdelovancev

🗨️ Ali uporabljate najnovejšo razpoložljivo različico nadzornega programa za CC CHIC?

📌 V novih različicah so pomembne optimizacije.

S Posodobite aplikacije s klikom na upodobljeno ikono. Alternativa: kontaktirajte Interdent.

🗨️ So STL-datoteke ustrezne?

S1. Preden uvozite STL-datoteke v nadzorni program, preverite njihovo ustreznost. Posebej preverite podatke o debelini stene in celotni debelini.

S2. Če je potrebno, prilagodite nastavitve skenerja in aplikacije za skeniranje.

🗨️ Ali so prikazovalni indikatorji posameznih objektov pravilno nastavljeni?

S Ko nastavljate prikazovalne indikatorje, sledite ustreznim navodilom v priročniku za program DentalCAM.

🗨️ Je merilni gumb umazan? Če je, so meritve lahko napačne.

M Očistite merilni gumb s krtačo.

📄 poglavje 6.4, stran 33

🗨️ So vpenjalne klešče umazane? So dovolj pričvrščene v vreteno?

M1. Očistite vpenjalne klešče s priloženim servisnim setom.

M2. Ko vpenjalne klešče vstavite vreteno, jih dobro pričvrstite.

📄 poglavje 6.5, stran 34

🗨️ Ste malo pred tem, ko so je pojavila napaka, kalibrirali stroj? Je nedavno prišlo do težav, povezanih z menjavo orodij v stroju?

M Kontaktirajte Interdent.

🗨️ Ste vpenjalne klešče zamenjali v predlaganem intervalu?

M V vzdrževalni tabeli preverite predlagan interval za zamenjavo vpenjalnih klešč.

📄 poglavje 6.2, stran 32

❓ **Program DentalCNC prekinja obratovanje stroja in javlja, da je pretok prenizek.**

📌 DentalCNC bo nadaljeval z delom, ko bo pretok ustrezen.

🗨️ Je v posodi za tekočino dovolj tekočine?

M Če je potrebno, v tekočino dolijte ustrezno mero hladilne emulzije.

📄 poglavje 4.5, stran 19

🗨️ Je črpalka okvarjena?

M Zamenjajte črpalko z nadomestno (originalno).

📄 poglavje 6.10, stran 38

❓ **Program DentalCNC prekinja obratovanje stroja in javlja, da je pritisk zraka prenizek.**

📌 DentalCNC bo nadaljeval z delom, ko bo vrednost pritiska zraka ustrezna.

🗨️ Je filtrirna enota pravilno nameščena?

M Nastavite pritisk zraka na filtrirni enoti (vrednost mora biti med 4 in 6 bari, priporočeno: 4.5 barov)

☞ poglavje 4.4.4, stran 18

💬 Ali napako povzroča dovod za komprimiran zrak?

M1. Zaprite ventil za dovod komprimiranega zraka.

M2. Preverite, če so vse pnevmatske cevi ustrezno priključene in nepoškodovane.

M3. Preverite, če je kompresor vključen in ustrezno nastavljen.

M4. Prepričajte se, da so vsi ventili, s katerimi uravnavamo dovod komprimiranega zraka v stroj, odprti.

💬 Ali je vrednost zraka, ki se izpisuje na filtrirni enoti, nekonstantna? Se zaradi tega obdelava nenehno prekinja?

M1. Preverite, ali lahko vaš kompresor neprekinjeno proizvaja vsaj 4 bare tlaka pri porabi 35 l/min.

📘 Vsak kompresor ni narejen za komercialno rabo z dentalnimi stroji.

M2. Če je potrebno, zamenjajte kompresor s takšnim, ki ustreza zahtevam zgoraj.

☞ poglavje 4.4, stran 16

❓ Zamenjal sem podložke na menjalniku orodij – na novih podložkah ni izvrtin.

💬 Na priloženih podložkah ni izvrtin. Zvrtati jih je potrebno s CNC-strojem.

S S programom DentalCNC izvrtajte pozicije za orodja v podložke.

☞ poglavje 6.15, stran 44

9 IZJAVA O SKLADNOSTI

IZJAVA O SKLADNOSTI DECLARATION OF CONFORMITY

Interdent d.o.o., Opekarniška cesta 26, SI -3000 Celje s polno odgovornostjo izjavljamo, da je izdelek, naveden v tej izjavi skladen z navedenimi EU smernicami

We Interdent d.o.o., Opekarniška cesta 26, SI – 3000 Celje declare that products below are in accordance with EU directives

- **Naziv izdelka: CNC rezkalni stroj**
- **Name of the product: CNC milling unit**
- **Tip: CC CHIC**
- **Type: CC CHIC**

Upoštevane EU smernice:

EU directives:

- 2006/42/EC, smernice za izgradnjo strojev – *directive for machine construction*
- 2014/30/EC, EMC združljivost – *EMC compatibility*

Testne metode po standardih:

Test methods according standards:

- EN 614-1:2006+A1:2009
- EN ISO 12100:2010
- EN 13128:2001+A2:2009
- EN ISO13849-1:2008
- EN ISO 13849-2:2012
- EN 61326-1:2013
- EN 61326-2:2013
- EN 61000-3-2:2006 + A1:2009+A2:2009
- EN61000-3-3:2013
- EN 60204-1:2006

Proizvod je varen za uporabo v standardnih pogojih. Vsaka sprememba proizvoda, ki ni odobrena s strani proizvajalca, razveljavlja to izjavo.

Product is safe in standard conditions. Any change of the product that is not approved by producer, repeals this declaration.

Mesto in datum izdaje: Celje dne 03.02.2017

Place and date of issue: Celje, 03.02.2017

Odgovorna oseba:

Responsible person:

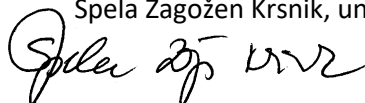
Igor Grudnik, inž. elektr.



Direktor:

Director:

Špela Zagožen Krsnik, univ. dipl. oec



10 GARANCIJA

Naprava: rezkalni stroj CC CHIC

Serijska številka:

Datum namestitve:

Namestitev in povezavo je izvršil:

(Podjetje, ime)

Naše podjetje, Interdent d.o.o., zagotavlja brezhibno delovanje zgoraj navedenega stroja za obdobje 12 mesecev od časa nakupa. V tem času podjetje na svoje stroške odpravi okvare, ki se pojavijo med pravilno rabo stroja.

Pogoji za garancijo:

- Namestitev in priključitev mora izvesti kvalificiran strokovnjak, ki ga pooblasti proizvajalec.
- Stroj je treba upravljati tako, kot to zahtevajo navodila.
- Garancija ne krije škode, ki nastane med transportom zaradi neprimerne vzdrževanja stroja. Tudi mehanske škode in škode, ki nastane zaradi motenj v omrežju, garancija ne krije.
- Garancija je nična v primeru uporabe neoriginalnih nadomestnih delov. Stroj ne sme modificirati ali popravljati nepooblaščen oseba – škode, ki pri tem nastane, garancija ne krije.
- Če pride do okvare, nas pokličite na telefonsko številko (03) 42-56-206. Lahko nas kontaktirate tudi preko e-maila: servis@interdent.cc.

CC newCHIC Instructions for use



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1. About this document

This document is designed and released for the following groups/individuals:

- End users of the manufacturing software and dental machines
- Authorized resellers
- Authorized service technicians

1.1 Used symbols

Instructions

» Single or general instruction

1. Numbered action step

✓ Result

Additional symbols

🔗 Cross reference

■ List (first level)

— List (second level)

1. Numbered image labels

✓ Correct or Do this

✗ Incorrect or Do not let this happen or Don't do this

💡 Information to make work more efficient

⚠ Important information without any danger for people or objects

ℹ Additional information

1.2 Structure of safety notes

SIGNAL WORD

Type and source of hazards

Further explanations and consequences when ignoring the hazard.

» Instructions to avoid the hazard.

The following signal words may be used:

 **DANGER**

DANGER indicates a hazardous situation which will result in death or serious injury.

 **WARNING**

WARNING indicates a hazardous situation which can result in death or serious injury.

 **CAUTION**

CAUTION indicates a hazardous situation which can result in minor or moderate injury.

NOTICE

NOTICE indicates a situation which can lead to physical damage of the product or in the surrounding areas.

2. General safety instructions



DANGER

Incorrect operation of the machine

- Before installing, maintaining and operating the machine, read all documents provided with the machine.
- If it is unclear how to operate the machine in any way, do not use the machine and contact customer service.
- Ensure that every user has access to the operating instructions.
- Instruct every user on safe and proper machine handling.

Danger to life due to an electric shock



If you come into contact with electrically charged parts, you can suffer from an electrical shock. Water increases the risk significantly.

- » Do not remove the housing of the machine.
- » Only have qualified electricians work on any electric equipment.
- » Ensure that an operational Residual Current Device / Ground Fault Circuit Interrupter is installed on the electric circuit of the machine.
- » Run power cables so that they cannot be damaged by sharp edges.
- » Before switching on the machine, check power cables for damage.
- » Before unplugging the power cable, switch off the machine at the main power switch.



- » In the following cases, disconnect the machine from the electrical source immediately and prevent it from being restarted:

- When machine connections or electric cables are Damaged
- When water is leaking
- Before you check or run electric cables
 - » Replace damaged cables with original manufacturer's spare parts.
 - » Never perform any troubleshooting while the machine is operating.
 - » Only have authorized service technicians repair the machine.

- » Do not touch the machine and especially the cables with wet or damp hands.
- » Check the environment of the machine and all accessible internal areas daily for leaked liquid and remove any liquids near or in the machine immediately.
- » Never put any machines or devices which are powered by electricity under the machine.
- » Do not put any objects onto the machine.



WARNING

Respiratory diseases when processing harmful materials

If you inhale harmful materials during their processing, your respiratory tracts may be damaged.

- » Avoid materials which damage your health.

Crushing hazard and risk of cutting injuries through moving machine parts

Through the moving axes and the rotating spindle, you can suffer bruises and cuts.

- » Only use the machine when the working chamber door is completely closed and undamaged during machining.
- » Do not circumvent or deactivate safety devices of the machine.
- » Check the machine regularly for damage, especially the safety devices.
- » Have damaged safety devices repaired by customer service only.
- » Use only original manufacturer's equipment and original spare parts in the machine.
- » Keep children and animals away from the machine.
- » Do not remove the housing of the machine.

Service Mode: Risk of cutting injuries and bruises as well as hazards through ejected debris

If you operate the machine in any "Service Mode" with the working chamber door open, the risk of injury is increased significantly.

- » Operate the machine in "User" mode only unless you have been authorized by the machine's manufacturer to use other modes.
- » Even if you are an authorized user, use the "Service Modes" only when necessary.
- » While in any "Service Mode": Do not reach into the working chamber while the axes are moving or during machining.





- » While in any “Service Mode”: Everyone within reach of the machine must wear protective eye wear.

Hearing damage due to loud noise

If you are regularly exposed to loud machining noise, you may suffer from hearing loss and tinnitus.



- » If loud noise cannot be avoided, wear ear protection during machining.



CAUTION

Risk of injuries when opening or closing the working chamber door

When you open or close the working chamber door, the moving working chamber door may crush your fingers. Objects on the machine may fall and cause injuries or damage.

- » While the door is moving, keep both hands away from the machine.
- » Do not place objects on the machine.

Trip, fall and slipping hazards



- » Run cables in such a way that persons cannot trip over them.



- » Keep the working environment and installation site clean.

Risk of cutting injuries and burns

If you touch tools or sharp edges on blanks or the machine, you may suffer from cuts. If you touch the hot spindle body or hot tools, you may suffer from burns.

- » Wear gloves when you perform manual work at the machine or with blanks / tools.

Reduced ability to act with insufficient lighting

In case of an insufficient lighting your judgment and/or your precision may be reduced.

- » Ensure that the lighting in your working environment is sufficient.

Risk of injury in case of malfunctions caused by insufficient maintenance

If you do not maintain the machine as required, malfunctions may occur which can lead to injuries.

- » Take note of the intervals and conditions mentioned in the maintenance table in the operating instructions. Carry out the respective maintenance tasks accordingly.

Health risks through constant mispositioning if your working environment is not sufficiently ergonomic

Over the long run, an improper or one-sided positioning can be a risk to your health.

- » Set up an ergonomic work environment.
- » Ensure the seat height and monitor position is ideal and the lighting is sufficient.

3. Operating regulations

If you violate the following regulations, you may lose your entitlement to benefits.

NOTICE

Machine damage if you violate these regulations

If you violate the following regulations, your machine may get damaged and / or cause damage in the surrounding area(s).

- » Thoroughly follow all instructions and information in this section.

3.1 Intended use

The machine and the manufacturing software have been designed for the commercial creation of dental objects by specially trained persons. The objects require additional work before their use on patients.

- » Only process materials that you can select in the manufacturing software.
- » Only use the machine and manufacturing software in a commercial environment.
- » Before creating jobs, verify if the objects being prepared may be utilized at the place of use according to local and / or national regulations or other authorized organizations or entities (e.g. professional associations, health authorities). In particular, verify if the material is approved for the machined object type and if the object type is designed in accordance with applicable regulations. Neither the manufacturing software nor the machine will inform you about possible regulatory infringements, but will execute jobs in accordance with the preferences and materials set by the user.
- » Verify that each object type and each material in your jobs are authorized manufacturing materials. If mandated by local or national regulations, obtain relevant authorization from the responsible organizations or entities (e.g. professional associations, health authorities).
- » Only manufacture objects which correspond to the object types that you can select in the manufacturing software. While you can import / manufacture any other objects as well, neither the manufacturing software nor the machine are designed for these other objects and should not be used in this way.

- » Do not manufacture implants or parts of objects that are designed to have contact with implants. These parts include parts of two-part abutments which contain the connection geometry for the implant. Do not manipulate the connection geometry of prefabricated abutments (“prefab abutments”) and you must always check finished objects for accurate connection geometries (i.e. that connection geometries of finished jobs have not been damaged).

3.2 Controlling the machine through software

You control the machine through specially designed applications which are supplied with the machine.

- » Always use the latest program version that officially supports your machine.
- » Before installing or operating the machine, read the documentation for the applications.
- » Ensure that your CAM computer meets all system requirements.

3.3 Maintenance and cleaning

Maintenance and cleaning are part of standard machine usage.

- » Clean and maintain the machine as required. Only then can the machine reach a long service life.

3.4 Spindle

The spindle of your machine is a high-precision instrument.

- » Do not use unbalanced tools at high rotational speeds. Such an imbalance puts a great strain on the spindle’s ball bearings, which can cause the bearings to be damaged.
- » When working in the working chamber, do not apply manual pressure against the spindle.

3.5 Unattended operation

If the machine runs unattended, the risk of material damage is increased.

- » Only allow unattended operation of the machine to occur if the following conditions are met:
 - The national and local laws allow it.
 - The working chamber of the machine is completely clean.
 - Unauthorized users cannot access the machine.
 - The room in which the machine is located has an automatic fire detection system.

3.6 Transportation and storage



WARNING

Injuries caused by unsafe transportation

If you transport the machine unsafely, the machine may slip and cause injuries.



- » Always transport unpacked machines individually and do not stack them.
- » Ensure that only trained personnel transport the machine to and from the installation site.
- » Ensure that the housing of the machine is completely closed.
- » Always transport the machine in an upright position.
- » Transport and position the machine with 2 people.
- » Before carrying an unpacked machine, install the carrying aid that was provided with the machine and ensure that all components are properly fixed. Do not use a different carrying aid.



- » Grab unpacked machines only at the handles of the carrying aid. Do not tilt the machine when carrying it.



The supplement about the carrying aid and transport lock is delivered with the machine.

- » Ensure that the following conditions are met during the whole transport and / or storage period:
 - **Ambient temperature: between 10 °C and 32 °C (50 °F and 90 °F)**
 - **Relative air moisture: max. 80 %, noncondensing**

Preparing transportation or storage

Before transporting or storing your machine, the following preparations are necessary:

1. Remove all blanks from the working chamber.
2. Remove the tool magazine from the working chamber.
3. Rinse the cooling liquid system.
4. Drain and clean the cooling liquid tank.
5. Clean the working chamber.
6. Install the transport lock. For this, follow the corresponding steps on the supplement in reverse order.

7. Ensure that the housing of the machine is completely closed.
8. Shut down the machine via the touchscreen.
9. Switch off the machine at the main power switch.
10. Disassemble the machine components by following the installation instructions in reverse order.
11. If you need to carry the machine, install the carrying aid. For this, follow the corresponding steps on the supplement in reverse order.
12. In case of overseas transport, take proper measures against corrosion.

Repackaging

To repack the machine after preparing its transportation or storage, the following steps are necessary:

1. If possible, use the original packaging. If the original packaging is not available, use a packaging of similar size and quality.



Original packaging is available from customer service.

2. Pack the machine and its accessories securely.
3. Protect the packaging against slipping. If machines are properly packed and protected against slipping, they may be stacked.

4. Machine overview

With your CC newCHIC you can process blanks of different materials to create high quality objects for the dental sector. You can find a list of the materials which you can process with the machine in the manufacturing software.

The machine is designed for wet machining. During wet machining, the tools and blanks are constantly being cooled by cooling liquid.

4.1 Front side of the machine



FIG. 1 – FRONT SIDE OF THE MACHINE

1. Working chamber door
2. Touchscreen for controlling the machine
3. View window to the working chamber
4. Multi-purpose drawer

4.2 Rear side of the machine

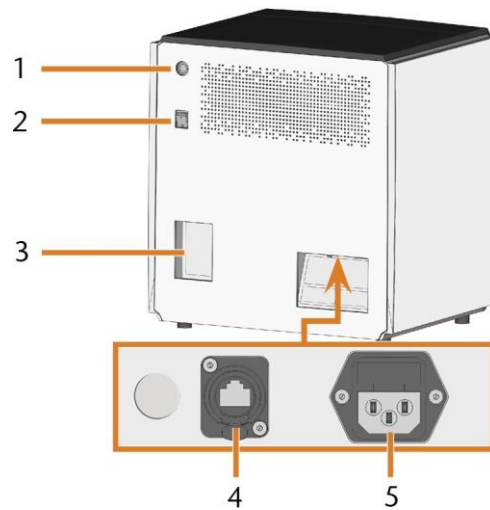


FIG. 2 – REAR SIDE OF THE MACHINE

1. Start button
2. Main power switch
3. CAM computer panel
4. Network port (Ethernet RJ-45)
5. Power connection

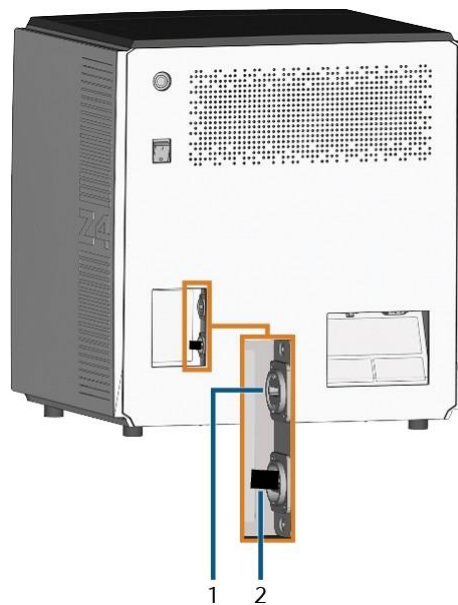


FIG. 3 – CAM COMPUTER PANEL

1. HDMI 1.4b port
2. USB 2.0 port with WiFi device

4.3 Touchscreen

The screen in the working chamber door of your machine responds to touch. You can use it to operate the machine by selecting icons on the user interface and to receive information about jobs, tools and the machine status.



FIG. 4 – A SECTION OF THE USER INTERFACE

4.4 Working chamber door

The working chamber door locks the working chamber and protects the user from injuries during operation. The working chamber door is operated by electricity. You can open and close the door via the touchscreen or with DentalCNC. You cannot open the door when the machine is switched off or while the axes are moving.

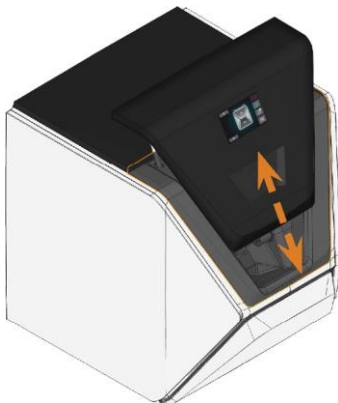


FIG. 5 – WORKING CHAMBER DOOR

4.5 Working chamber

You can mount blanks and insert tools into the working chamber. This is where the blanks are processed.

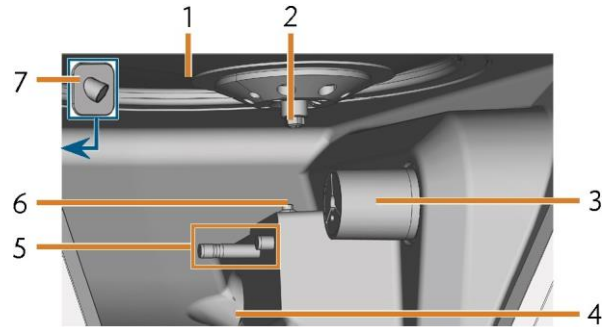


FIG. 6 – WORKING CHAMBER

1. Bellow/Nozzle plate
2. Spindle with collet chuck for picking up tools
3. Blank holder (with collet chuck); Rotational axis A
4. Outlet for the cooling liquid
5. Tool magazine holder
6. Measuring key
7. Webcam

Colors of the working chamber lighting

! If the working chamber lighting is insufficient, provide additional lighting.

The machine illuminates the working chamber in different colors. The color will change depending on the state of the machine. You will find the colors and respective machine status in the following table:

Color	Status
White	The machine is ready for operation. You can open the working chamber door.
Blue	The machine is operating. The working chamber door is locked.
Red	A machine malfunction has occurred. The working chamber door is locked.

4.6 Multi-purpose drawer

The multi-purpose drawer contains the cooling liquid tank and up to 5 tool magazines. You can unlock the multi-purpose drawer via the touchscreen and then pull it out manually.

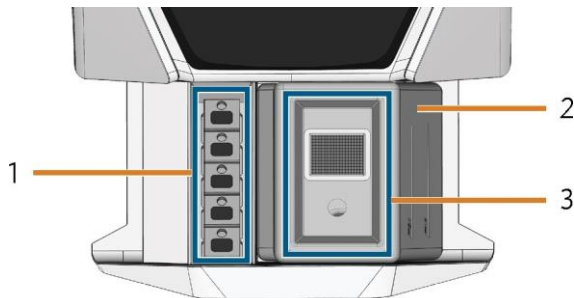


FIG. 7 – MULTI-PURPOSE DRAWER

1. Space for tool magazines
2. Cooling liquid tank
3. Cover of the cooling liquid tank with strainer basket

4.7 Required computer hardware & software

This machine is designed for an integrated CAD / CAM workflow which allows you to manufacture restorations with the following components:

- The touchscreen of the machine
- A machine internal CAM computer running DentalCAM & DentalCNC ("manufacturing software")
- An external CAD computer* running a supported CAD application*

*not provided

You can use the touchscreen for standard operation and basic maintenance.

If you do not use an integrated CAD / CAM workflow, you will need to access Windows® on the CAM computer during standard operation to directly work with DentalCAM & DentalCNC.

4.8 Sound emission

The actual sound emission of the machine varies heavily depending on the manufacturing material and the machining conditions.

- » If the machine is exceptionally loud, check the following operating conditions:
 - Cleanliness of the blank holder
 - Condition of the tools
 - Quality of the blanks
- » If loud noise cannot be avoided, wear ear protection during machining.

4.9 Sound measurement

Measuring conditions:

- Processed material: VITA Suprinity (block, PC 14)
- Tool status: new
- Measured value: sound pressure level (distance: 1 m)
- Measurement according to ISO 3746, survey method 3

Established sound emission:

Operating condition	A-weighted sound pressure level	A-weighted sound power level
Processing	81.8 dB(A)	92.3 dB(A)
All other operating conditions (tool change, movement of the axes etc.)	<70 dB(A)	–

4.10 Location of the identification plate & serial number

The identification plate of the machine contains identifying information such as the serial number. You can find the identification plate and machine serial number at the following location:

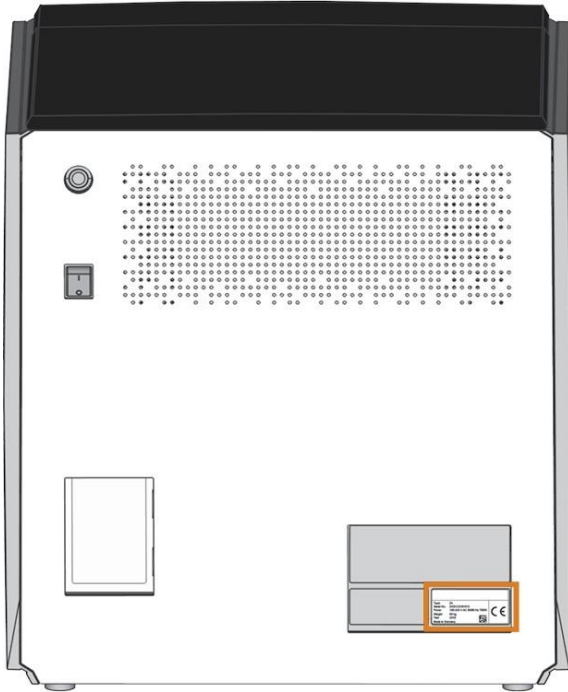


FIG. 8 – LOCATION OF THE IDENTIFICATION PLATE (MARKED ORANGE)



FIG. 9 – SERIAL NUMBER ON THE IDENTIFICATION PLATE (MARKED ORANGE)

4.11 Technical data

Base system

- Dimensions: (W/D/H):
Footprint: approx. 400 x 305 mm
Housing fully closed: approx. 471 x 522 x 507 mm
Housing fully open: approx. 471 x 737 x 608 mm
- Weight: approx. 66 kg
- 4-axis mechanism
- Rotational axis A: +190° to -10°
- Working chamber
Complete housing of the working chamber
Working chamber lighting with different colors to indicate the machine state
Webcam for video transmissions to customer service
- Integrated compressed air production

Spindle SFZ 170P

- Asynchronous spindle rotating up to 100,000 rpm
- Nominal power under continuous operation (S1): 170 W
- Nominal power under uninterrupted periodic operation (S6): 220 W
- Peak power (P_{max}): 340 W
- Hybrid ceramic ball bearing
- 2-fold bearing
- Pneumatic collet chuck \varnothing 3 mm
- Sealing air

Standard blank holder

- For mounting blocks with round shafts
- Maximum number of blocks per job: 1
- Maximum block dimensions: 40 x 20 x 20 mm (L/D/H)
- Supports designated abutment holders

Tool magazine

- Removable (5 provided)
- Maximum tools in magazine: 6
- Maximum tool length: 35 mm
- Automatic tool change with compressed air monitoring
- Automatic tool length measurement and tool breakage monitoring via a measuring key
- Material allocation through color code
- Automatic tool magazine recognition

Cooling liquid system for wet machining

- Cooling liquid: Drinking water
- Integrated cooling liquid tank
Maximum amount of cooling liquid: 2 l
Integrated filter
Removable
Dishwasher-safe
- Flow sensor for monitoring the flow of the cooling liquid

Connections

- Power connection: 100 – 240 V AC, 50/60 Hz including glass fuse T6,3A L250V
- Network port
RJ-45
Speed: 10BASE/100BASE-TX/1000BASE-T (Auto-sensing)

Internal CAM computer

- Processor:
Intel® Atom™ E3950
4 cores
1.60 – 2.00 GHz
- RAM: 8 GB DDR3L-SDRAM
- Graphic:
GPU: Intel® HD Graphics 505
Display Interface: HDMI 1.4b up to 3840 x 2160 at 30 Hz1
- LAN: Intel® I211 GbE LAN controllers (RJ-45)2
- Audio: not available
- USB 2.0 interface with WiFi device1
1 wired to the CAM computer panel of the machine
2 wired to the connection panel of the machine

WiFi

- Standards: IEEE 802.11 ac
- Data rate:
802.11 ac: downlink up to 867 Mbps, uplink up to 867 Mbps (20/40 MHz)
802.11 a/b/g/n/ac: downlink up to 300 Mbps, uplink up to 300 Mbps (20/40 MHz)
- Encryption:
64-bit WEP
128-bit WEP
WPA2-PSK
WPA-PSK
- Operating frequency: 2.4 GHz/5 GHz

5. Installing the machine

5.1 Checking the scope of delivery

» Unpack the machine and ensure that you have received the following items:



1. 1 x Machine CC newCHIC
2. 1 x Cleaning brush
3. 5 x Tool magazine inserts
4. 1 x Power cable
5. 1 x Ethernet network cable (type: straight)
6. 1 x Spindle service set
7. 1 x Interdental brush (for cleaning the nozzle plate)
8. 1 x Blank holder service set
9. 1 x Tube of collet chuck grease (for spindle, blank holder, tool magazine holder)
10. 5 x Tool magazines (in the drawer)
11. 1 x Measuring pin
12. 1 x Drill bit for tool positions (2.8 mm)
13. 1 x Calibration set: 1 micrometer, 5 blanks for manufacturing test and calibration specimen
14. 1 x Microfiber cloth
15. 1 x View window wiper
16. 1 x Container with activated carbon pellets
17. 1 x Fine filter
18. 3 x Fixing screw for the collet chuck of the blank holder
19. 5 x Tool magazine caps

Not depicted:

- This document
- 1 x Carrying aid for transporting the machine
- 1 x Transport lock in the working chamber
- 1 x Supplement about removing the carrying aid and transport lock
- 1 x Transport protection cover in the multi-purpose drawer
- 1 x Allen key for the tool magazine release screw
- 1 x Allen key for the holder of the view window wiper

- » Store the measuring pin and the calibration set safely near the machine. Customer service will need them for maintenance.
- » Keep the packaging of the machine, the carrying aid and the transport lock for future transports.

5.2 Choosing the installation site

The installation site must meet the following criteria:

- Firm and even surface, must be able to carry the weight of the machine (66 kg)
- Minimum required space: 620 x 620 x 650 mm (W/D/H)
- Ambient temperature: between 10 °C and 32 °C (50 °F and 90 °F)
- Ideal ambient temperature: between 18 °C and 25 °C (64 °F and 77 °F)
- Relative air moisture: max. 80 %, non-condensing
- Machine location must be dust-free
- Alternating current source with 100 – 240 V AC, 50/60 Hz
- An operational Residual Current Device / Ground Fault Circuit Interrupter on the electric circuit of the machine
- Access to the internet and local computer network via cable / WiFi

Distances to maintain

NOTICE

Damaging of the machine if safety distances are not maintained

If you do not maintain the safety distances, the movable parts of the housing can collide with obstacles when being opened and get damaged. If the ventilation openings are covered, the machine may overheat and get severely damaged.

» Ensure that the following safety distances are always maintained.

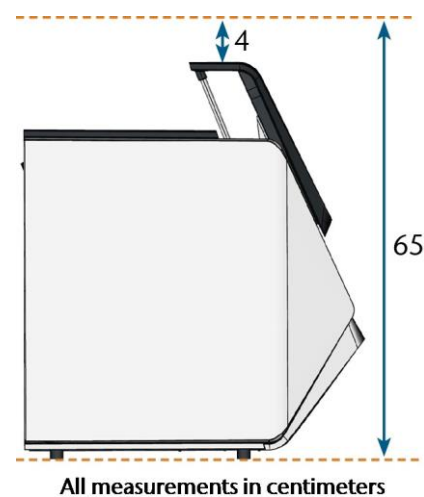
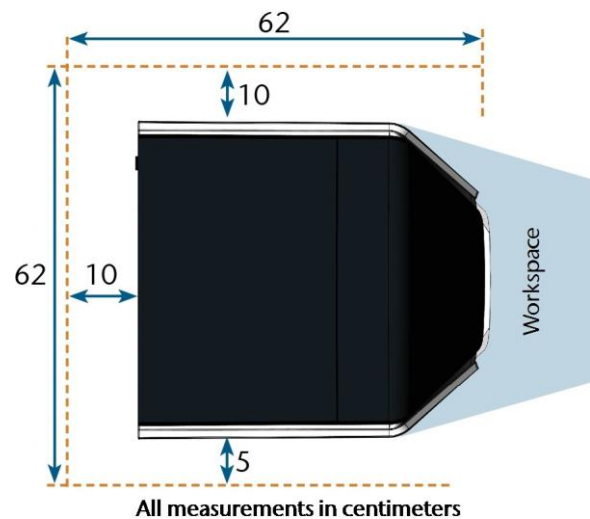
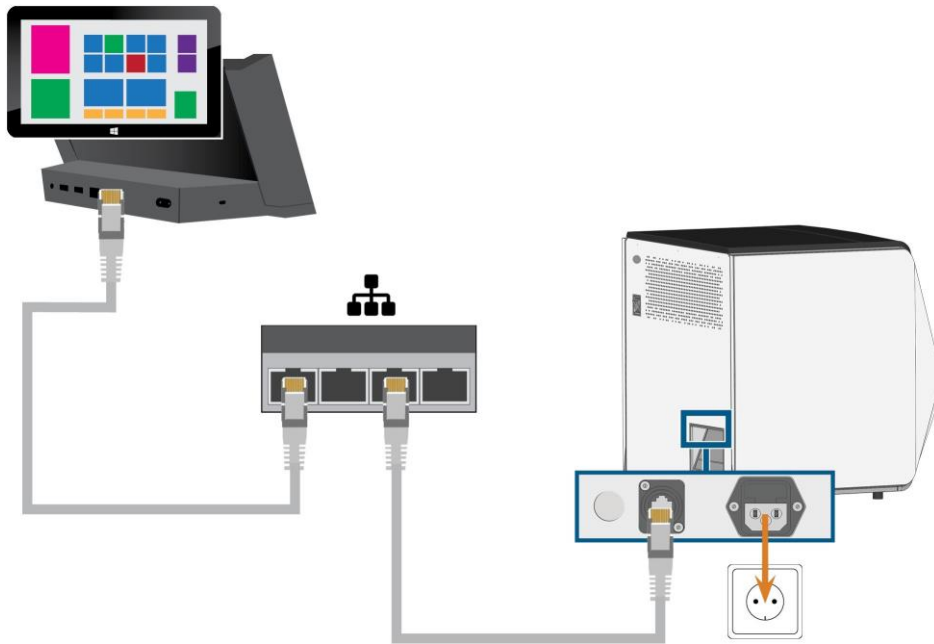


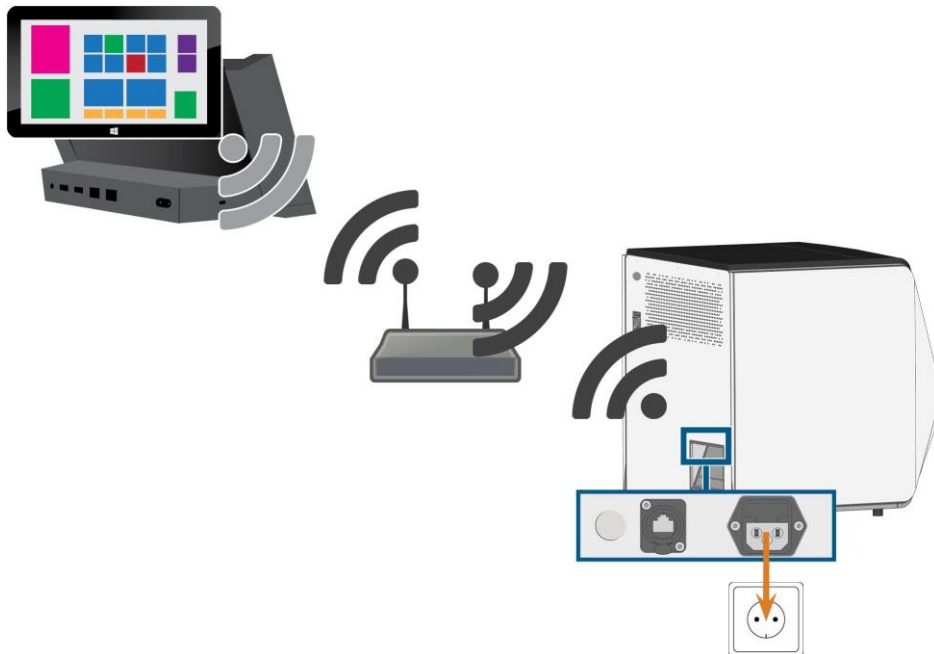
FIG. 10 – DISTANCES TO MAINTAIN

5.3 Machine installation (schema)

Wired connection



5.4 WiFi connection



5.5 Establishing the electric connection

NOTICE

Damaging of the machine through heavy voltage fluctuations

Heavy voltage fluctuations can disrupt the control unit and can cause system failures.

- » Plug the machine's power cable in a dedicated current circuit or ensure that no devices are connected that can cause heavy voltage fluctuation when switched on.
- » If heavy voltage fluctuations cannot be avoided, install a suitable device which protects the machine from heavy voltage fluctuations.

NOTICE

Short-circuit hazard when the machine is too cold

If the machine is transported from a cold environment into a warmer environment, a short circuit may occur caused by condensate.


- » Before switching on the machine after transportation, ensure the following:
 - The ambient air has the allowed temperature.
 - The machine has the same temperature as the ambient air. This will take at least 1 hour.
 - The machine is completely dry.

The machine requires a continuous power supply for proper operation.

1. Plug the provided power cable into the power connection at the connection panel of the machine.
2. If power failures occur regularly at the installation location or if there are frequent voltage fluctuations, install an online Uninterruptible Power Supply (UPS).
 - ❗ If a power failure occurs during job execution, the tool may break and the blank may be destroyed.
3. Insert the plug of the cable into a socket that is protected by a Residual Current Device / Ground Fault Circuit Interrupter.


5.6 Removing the transport lock

Before operating the machine for the first time, you must remove the transport lock. The transport lock prevents the spindle from getting damaged during transport.

1. Ensure the following:
 - The machine is connected to the electrical source.
2. Switch on the machine at the main power switch.
3. Press the start button.
 - ✓ The machine references.
4. Open the working chamber door by selecting the upper arrow of the depicted icon on the touchscreen. 
5. Switch off the machine at the main power switch.
 - ✓ You can now move the axes of the machine.
6. Remove the transport lock as shown in the supplement.

5.7 Checking the toolmagazines in the drawer

After you have removed the transport lock, you should open the multi-purpose drawer and check the tool magazines.

1. To unlock the multi-purpose drawer, select the lower arrow of the depicted  icon in the Home section of the touch-screen.
 - ✓ After a couple of seconds, the drawer will open.
2. Pull the drawer open.
3. Remove the transport protection cover from the tool magazines.
4. Verify that there are 5 tool magazines with different color codes in the drawer.
5. To close the multi-purpose drawer, push it until it locks back in place.
 - ✓ You will hear a clicking sound.

5.8 CAD computer & network integration

The CAD / CAM integration workflow is as follows:

1. Prepare the machine and the CAD computer
2. Access the CAM computer
3. (Optional) Set up WiFi access for the machine
4. Integrate the CAD and CAM/CNC software

NOTICE

Danger caused by default passwords and network intrusions

The default passwords mentioned in this public document allow everyone to access the corresponding devices via the network and / or the internet. This can lead to data theft, data corruption and damaging of the machine and other devices.

- » Have the network integration of the machine and other connected devices carried out by a qualified network and IT specialist.
- » Have the specialist change the default passwords after installation and secure your network against intrusion. Ensure that passwords are recorded and handed to you.
- » Ensure that the user camcomputer is automatically signed-in at Windows® startup. Otherwise, the machine will not be operational. You must re-enable the automatic sign-in when you change the password for this user.
- » Ensure that the user camcomputer has administrator privileges. Otherwise, the machine will not be operational.
- » Be aware that changing the passwords for the pre- defined user accounts may require a reconfiguration of the machine's network connection and the CAD/CAM integration.
- » For remote maintenance, you can use TeamViewer. Start the application via the icon on the desktop of the CAM computer.

Internal CAM computer

The machine is equipped with an internal CAM computer running the manufacturing software DentalCAM & DentalCNC. Manufacturing data is transferred as follows:

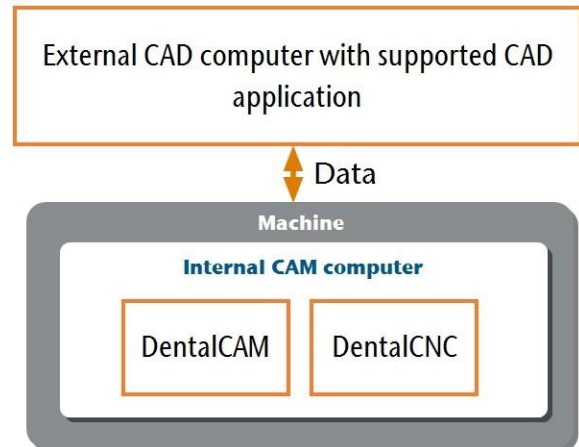


FIG. 11 – DIAGRAM: DATA TRANSFER IN CASE OF CAD / CAM INTEGRATION

Preparing the machine and CAD computer

Before you can set up the CAD / CAM integration, you need to prepare all hardware and software components.

1. Shut down the machine.
2. Install the CAD application on the CAD computer. Ensure that the CAD application is licensed to use the CC newCHIC for manufacturing.
3. Ensure that the CAD computer is configured for network connectivity. This includes WiFi access if desired.
4. To connect the machine to a wired network, connect the machine and the CAD computer to the local network with Ethernet cables. Do not directly connect the CAD computer to the machine.
 - ✓ If a DHCP server is available in the local network, the integrated CAM computer will automatically try to obtain a valid IP address.
5. To connect the machine to a WiFi network, prepare the machine as follows.
 - a. Connect the CAD computer to the Ethernet port of the machine with an Ethernet cable.
 - b. For the moment, deactivate WiFi access on your CAD computer. Otherwise, the CAD computer will not find the CAM computer.

6. If a local network is not available, connect the CAD computer to the Ethernet port of the machine with an Ethernet cable.
 7. Ensure that the internal CAM computer of the machine has access to the Internet.
 - If required, configure your network firewall accordingly.
 - If permanent Internet access cannot be guaranteed, ensure that the machine is connected to the Internet at least once per week.
- !** The machine requires Internet access for important updates.
8. Switch on the machine at the main power switch. Press the start button.
 9. Wait until the machine has referenced.

Accessing the CAM computer

NOTICE

Installing Microsoft® Office onto the CAM computer violates the Windows® License Agreements

The CAM computer runs Windows® 10 IoT Enterprise. If you install any version of Microsoft® Office onto the CAM computer, you will violate the Windows® License Agreement which may result in the following:

- **You may lose the right to use the pre-installed Windows® on the CAM computer. Without Windows®, the machine will not work.**
- **You may become subject to civil and criminal prosecution.**

» **Never** install any version of Microsoft® Office onto the CAM computer.

Once the machine is connected to the CAD computer and the network connection is established, the CAM computer can be accessed in 3 ways:

Access method	Access to CAM / CNC folder?	Access to Windows?
Remote Desktop application on the CAD computer	Yes	Yes
Connecting hardware to the machine	Yes	Yes
Windows® Explorer on the CAD computer	Yes	No

- Access via the Microsoft® Remote Desktop application allows you to use Windows® / DentalCAM & DentalCNC on the CAM computer without additional hardware.
- You can connect additional hardware to access the CAM computer to use Windows® / DentalCAM & DentalCNC
- Accessing the DentalCAM & DentalCNC installation folder via Windows® Explorer is usually only required for customer service.

Overview CAM computer access data

Following you find the access data for the internal CAM computer as a quick reference.

- Computer name: Serial number of the machine*
- IP address: None specified, DHCP activated

* Location of the identification plate & serial number – on page 13

Administrator user with auto sign-in at Windows® startup:

- User: camcomputer
- Password: camcomputer

Standard user for accessing the DentalCAM & DentalCNC installation folder, which is shared by default:

- User: cnctransfer
- Password: cnctransfer

! When you disconnect from the CAM computer, never sign-out or shut down the CAM computer. If you do, the machine will not be operational until you restart it.

Accessing Windows® on the CAM computer using a Remote Desktop connection

Microsoft® Remote Desktop allows you to work with the CAM computer from another computer as if you were using the CAM computer directly.

1. Start the Remote Desktop Connection desktop application. Do not start the Windows® store app Remote Desktop

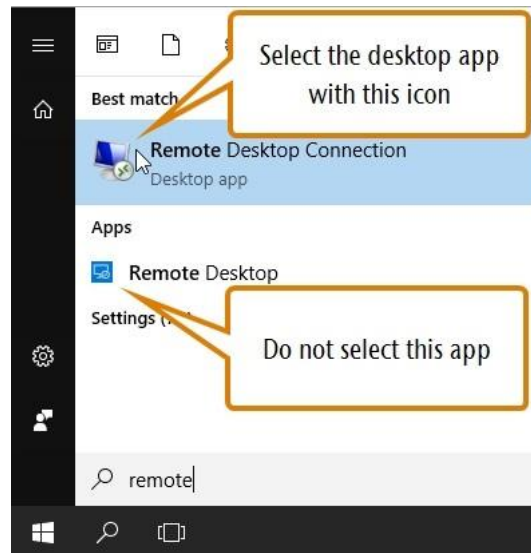


FIG. 12 – STARTING THE REMOTE DES KTOP CONNECTION APPLICATION

- ✓ The Remote Desktop Connection window opens.



FIG. 13 – THE REMOTE DES KTOP CONNECTION APPLICATION

2. Enter the following into the Computer combo box: Machine serial number
Example: Z4ID212345678
3. Select [Connect].

✓ You are prompted to enter the login credentials.

4. Enter the following login credentials:

- User: camcomputer
- Password: camcomputer

If a different default user name displays that you cannot change, do the following:

- a. Select More choices.
 - ✓ Additional options display.
- b. Select Use a different account.
 - ✓ You can enter the user name given above.

5. Select [OK].

✓ The desktop of the CAM computer displays in the remote desktop application window. Through it you can access files and start applications on the CAM computer.

Accessing the CAM computer via hardware

You can directly connect a monitor and / or USB device to the CAM computer.

Use the ports of the CAM computer panel for this:

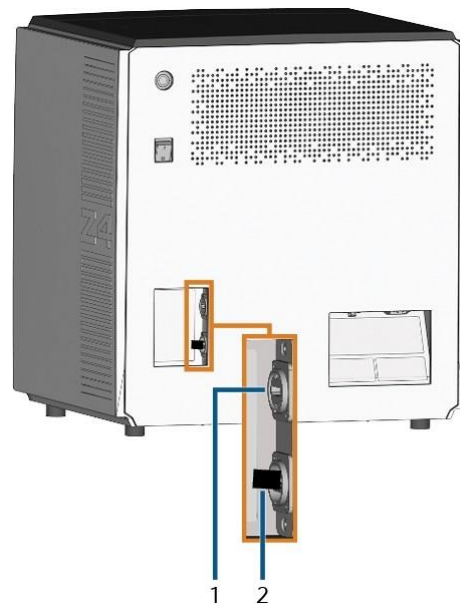


FIG. 14 – CAM COMPUTER PANEL

1. HDMI 1.4b port
2. USB 2.0 port with WiFi device

You can connect hardware to the internal CAM computer as follows:

1. Connect the monitor to the HDMI connector of the machine. If your monitor isn't equipped with an HDMI cable, use an adapter.

! Do not connect a laptop / tablet or similar to the HDMI port; only connect a monitor to the port.

2. If you want to install USB devices to the CAM computer, do as follows:
 - a. Remove the WiFi device from the USB port.
 - b. (Optional) Connect a USB hub to the USB port.
 - c. Connect the desired USB devices to the USB port or USB hub.

! You must reconnect the WiFi device to the USB port after removing the other devices.

3. Activate the interface of the CAM computer with the connected input device (e. g. mouse, keyboard, touch display).
 - ✓ You are prompted to enter the login credentials.
4. Enter the following login credentials:
 - **User: camcomputer**
 - **Password: camcomputer**
5. Press <ENTER>.
 - ✓ The desktop of the CAM computer displays on the connected display. You can access files and start applications on the CAM computer.

Accessing the DentalCAM & DentalCNC installation folder

You can access the DentalCAM & DentalCNC installation folder via Windows® Explorer as follows:

1. Start Windows® Explorer on the CAD computer.
 - ✓ In the folder and device list in the left column, the CAM computer name displays under the Network node. The name is identical to the serial number of the machine (Location of the identification plate & serial number – on page 13).



FIG. 15 – THE CAM COMPUTER NAME DISPLAYS IN WINDOWS® EXPLORER

2. If there is no entry for the CAM computer, check whether the CAD computer is correctly integrated into the same network as the CAM computer.
3. Select the entry for the CAM computer.
 - ✓ You are prompted to enter the login credentials.
4. Enter the following login credentials:
 - User: cnctransfer
 - Password: cnctransfer
5. Activate the Save login credentials option.
6. Access the files on the CAM computer as you would with any other device.

Configuring the WiFi connection

The machine uses a pre-installed WiFi device to connect to your access point.

1. **Ensure the following:**
 - Your WiFi access point is operational.
 - You have fully prepared your CAD computer and the machine as described above (Preparing the machine and CAD computer– on page 19).

2. Access the CAM computer via the Remote Desktop application or direct hardware connection.
3. Configure Windows® on the CAM computer for WiFi connectivity:
 - a. Open the Windows® network settings.
 - b. Activate WiFi for the corresponding adapter.
 - c. Select a WiFi network which can be accessed by the CAD and the CAM computer.
 - d. Configure the WiFi connection as required.
4. If you used the Remote Desktop application to configure the CAM computer, do the following:
 - a. Reactivate WiFi access on your CAD computer.
 - b. Remove the Ethernet cable that connects your CAD computer with the machine.



Integrating the CAD with the CAM / CNC software

The integration details depend on the used CAD application. In addition, you must prepare the internal CAM computer accordingly.

i In the following, we assume that your computers are not part of a Windows® domain. If they are, you need to take this into consideration when following the instructions.

Preparing the CAM computer

The following instructions apply independently of the used CAD application.

1. Access Windows® on the CAM computer.
2. Switch to DentalCNC.
3. Open the DentalCNC Application settings. For this, select the following icon in the main icon bar: 
4. Open the Machine data view. For this, select the following icon in the lower icon bar: 

5. Locate the CAD/CAM integration unlocked for label. To the right of this label, you will find a list of the supported CAD applications.

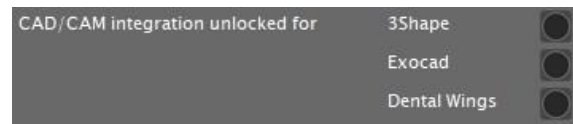



FIG. 16 – THE OPTIONS FOR UNLOCKING THE CAD / CAM INTEGRATIONS

6. Have the unlock code that you received for your CAD application readily available. If the unlock code is missing, contact customer service of the machine.
7. Activate the option for the desired CAD application.
 - ✓ A window opens. You are prompted to enter the unlock code for the selected CAD application.
8. Enter the unlock code and press <ENTER>.
 - ✓ current window closes. If the code was valid, the integration for the selected CAD application is unlocked.
9. Open the General settings. For this, select the following icon in the lower icon bar: 

10. Activate the CAD/CAM integration activated option.
11. Activate the Integrated CAM computer option.
12. If you want to change the language of the DentalCNC user interface and the touchscreen of the machine from English to another language, do the following:
 - a. Select the desired language from the Language drop-down list.
 - b. Quit and restart DentalCNC.

TRIOS Design Studio

This CAD application uses the standard DentalCAM folder for sending objects to the machine.

Integration overview:

1. Map a new network drive on the CAD computer to the DentalCAM installation folder on the internal CAM computer.
The required user account and network sharing settings have already been configured on the CAM computer.
2. Store the network drive letter in TRIOS Design Studio.

The integration in detail:

1. Access the CAD computer.
2. Access the DentalCAM & DentalCNC installation folder (Accessing the DentalCAM & DentalCNC installation folder – on page 23).

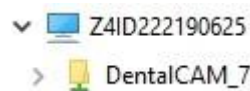


FIG. 17 – THE INSTALLATION FOLDER DISPLAYING IN WINDOWS® EXPLORER

3. Right-click onto the installation folder. From the context menu, select Map network drive.
 - ✓ The Map network drive window opens.
4. (Optional) From the Drive drop-down list, select the desired drive letter for the new network drive.
5. Record the drive letter for the network drive.
6. Activate the Reconnect at sign-in option.
7. Select [Finish].
 - ✓ You have mapped the folder to a network drive.
8. Open TRIOS Design Studio.
9. In the menu bar, select More. In the drop-down menu, select the Settings icon (Fig. 18 – on the next page).

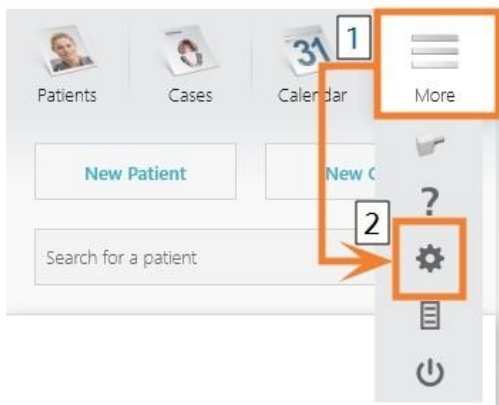


FIG. 18 – OPENING THE SETTINGS IN TRIOS DESIGN STUDIO

✓ The settings menu displays.

10. In the settings menu, open the CAM sub-menu.

11. In the sub-menu, select General.



FIG. 19 – OPENING THE CAM SETTINGS IN TRIOS DESIGN STUDIO

✓ The general CAM settings display on the right side.

12. Locate the Installed machines section.

a. Check if the CC newCHIC is already listed in this section.

b. If the CC newCHIC is already listed, select [Remove]. Confirm your choice.

13. Locate the Supported mills and printers section.

✓ The CC newCHIC must be listed in this section. If it isn't, you may need to obtain a license from 3shape for the CC newCHIC.

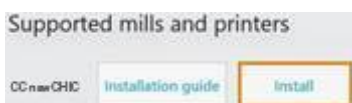


FIG. 20 – THE SUPPORTED MILLS AND PRINTERS SECTION IN TRIOS DESIGN STUDIO

14. In the line for the CC newCHIC, select [Install]. Confirm your choice.

✓ The Connecting to your CC newCHIC window opens.

15. Select [Select CAM folder].

✓ file browser opens.

16. In the file browser, select the network drive to which you mapped the installation folder.

! Do not select the CNCTransfer folder within the installation folder.

17. Select [Select folder].

✓ The file browser closes. The CC newCHIC is now listed in the Installed machines section.

18. In the line for the CC newCHIC, select [Test].

✓ If the CAM folder is set correctly, Success displays to the right of the [Test] button.

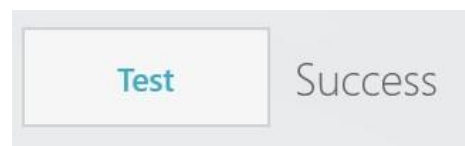


FIG. 21 – THE CC NEWCHIC HAS BEEN SUCCESSFULLY ADDED TO TRIOS DESIGN STUDIO

19. Save your changes in TRIOS Design Studio. Restart the application.

exocad ChairsideCAD

This CAD application uses a designated shared data folder on the CAM computer for sending jobs to the machine. The folder is already created and shared at delivery.

Folder path on the CAM computer:

C:\CADshare\DentalNestingObjToMDW

C: is the local hard drive on the CAD computer. After integration, the CADshare folder will be accessible from the CAD computer via a network drive.

Integration overview:

1. Download the integration script from the following internet address to the CAD computer:
2. dentalportal.info/downloads
3. Run the script on the CAD computer. Enter the required information.
4. Store the path to the shared data folder on the CAM computer in DentalCNC.
5. Store the path to the shared data folder on the CAD computer in exocad ChairsideCAD.

The integration in detail:

Configuring the CAD computer

1. Access the *CAD computer*.
2. Open an internet browser.
3. Enter the following address into the address bar:
dentalportal.info/downloads
4. Scroll down until you reach the Z series section.
5. Download the CAD/CAM integration script to the CAD computer.
 - ✓ The script is stored on the CAD computer inside a ZIP file.
6. Unpack the ZIP file (e.g. to the Desktop).
 - ✓ The script file is stored under the following name:
Install_CADshare.bat
7. Run the script. Run the script.
 - ✓ A window opens. The script prompts you to enter the machine serial number.
8. Enter the machine serial number. Press <ENTER>. *Location of the identification plate & serial number – on page 13*

- ✓ The following happens:
 - a. A network drive is mapped to the shared data folder on the CAM computer.






For this, the first available drive letter on the CAD computer is used.

Example: If Z is the first available drive letter, you will be able to access the shared data folder on the CAM computer by opening the Z: drive on the CAD computer.

- b. The login credentials for the network share and remote desktop access are stored on the CAD computer.
9. Record the drive letter for the network drive.
 - ! You will need this drive letter later.
 10. Press any key.

- ✓ The current window closes. The script has finished.

Setting up DentalCNC

1. Access the CAM computer.
2. Switch to DentalCNC.
3. Open the DentalCNC Application settings. For this, select the following icon in the main icon bar: 
4. Open the General settings. For this, select the following icon in the lower icon bar: 
5. Check if the following folder path displays under the CAD/CAM integration: Data transfer folder label:
C:\CADshare\DentalNestingObjToMDW
If it doesn't, do the following:
 - a. To store the data transfer folder in DentalCNC, select the depicted icon to the right of the CAD/CAM integration: Data transfer folder label. 
 - ✓ A window for selecting the folder opens.
 - b. From the drop-down list, select the drive letter c:.
 - c. Select the following folder:
CADshare\DentalNestingObjToMDW 
 - d. Select the depicted icon. 
- ✓ The selected folder displays below the CAD/CAM integration: Data transfer folder label.

Setting up exocad ChairsideCAD

1. In Windows® Explorer, open the exocad ChairsideCAD folder.
2. Change into the config folder.
3. Open the following file with a text editor: settings-chairside.xml
4. Inside the file, find the following expression (“tag”):
<NestingInterop2TemporaryFolder>
Directly behind the expression, you will find the exocad output path.
5. Replace the output path with the letter of the network drive that you recorded followed by a colon (:).

Example: You recorded the drive letter Z. The expression in the XML file must be (without line breaks):
<NestingInterop2TemporaryFolder> Z:
</NestingInterop2TemporaryFolder>
6. Save and close the XML file.

Dental Wings Chairside CAD

This CAD application uses a designated shared data folder on the CAM computer for sending jobs to the machine. The folder is already created and shared at delivery.

Folder path on the CAM computer:

C:\CADshare\DentalNestingObjToMDW

C: is the local hard drive on the CAD computer. After integration, the CADshare folder will be accessible from the CAD computer via a network drive.

Integration overview:

1. Download the integration script from the following internet address to the CAD computer:
2. dentalportal.info/downloads
3. Run the script on the CAD computer. Enter the required information.
4. Store the path to the shared data folder on the CAM computer in DentalCNC.
5. Store the path to the shared data folder on the CAD computer in Dental Wings Chairside CAD.

The integration in detail:

Configuring the CAD computer

1. Access the *CAD computer*.
2. Open an internet browser.
3. Enter the following address into the address bar:
dentalportal.info/downloads
4. Scroll down until you reach the Zseries section.
5. Download the CAD/CAM integration script to the CAD computer.
- ✓ The script is stored on the CAD computer inside a ZIP file.
6. Unpack the ZIP file (e.g. to the Desktop).
- ✓ The script file is stored under the following name:
Install_CADshare.bat
7. Run the script.
- ✓ A window opens. The script prompts you to enter the machine serial number.
8. Enter the machine serial number. Press <ENTER>. *Location of the identification plate & serial number* – on page 13

- ✓ The following happens:
 - a. A network drive is mapped to the shared data folder on the CAM computer.

For this, the first available drive letter on the CAD computer is used.

Example: If Z is the first available drive letter, you will be able to access the shared data folder on the CAM computer by opening the Z: drive on the CAD computer.



- b. The login credentials for the network share and remote desktop access are stored on the CAD computer.
9. Record the drive letter for the network drive.

! You will need this drive letter later.

10. Press any key.


- ✓ The current window closes. The script has finished.

Setting up DentalCNC

1. Access the CAM computer.
2. Switch to DentalCNC.
3. Open the DentalCNC Application settings. For this, select the following icon in the main icon bar: 
4. Open the General settings. For this, select the following icon in the lower icon bar: 
5. Check if the following folder path displays under the CAD/CAM integration: Data transfer folder label:


C:\CADshare\DentalNestingObjToMDW

If it doesn't, do the following:

- a. To store the data transfer folder in DentalCNC, select the depicted icon to the right of the CAD/CAM integration: Data transfer folder label. 


- ✓ A window for selecting the folder opens.

- b. From the drop-down list, select the drive letter c:.

- c. Select the following folder:
CADshare\DentalNestingObjToMDW 
- d. Select the depicted icon.

- ✓ The selected folder displays below the CAD/CAM integration: Data transfer folder label.

Setting up Dental Wings Chairside CAD

1. On the CAD computer, open Dental Wings Chair- side CAD.
2. Open the settings by selecting the depicted icon in the left column. 
3. Select Preferences.

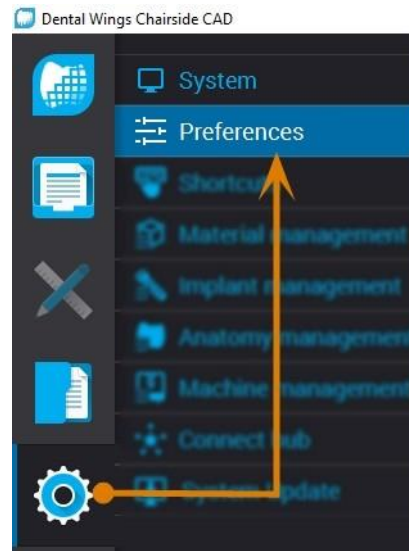


FIG. 22 – OPENING THE SETTINGS IN DENTAL WINGS CHAIRSIDE CAD

4. Open the Milling menu.
5. Enter the network path to the shared data folder into the CC newCHIC Output directory input field.
 - a. Select [...].
 - b. Access the mapped network drive by selecting the drive letter that you recorded.
 - c. On the network drive, select the following folder:
DentalNestingObjToMDW
Example: If Z is the network drive letter, the network path is:
Z:\DentalNestingObjToMDW

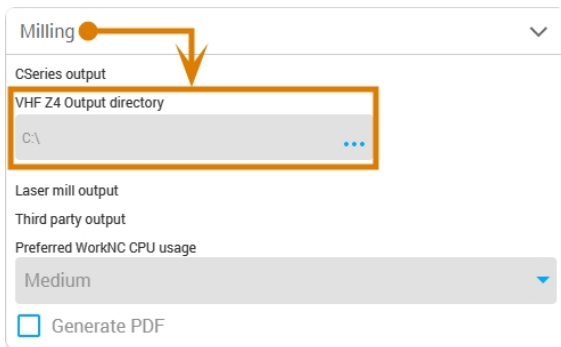


FIG. 23 – SPECIFYING THE OUTPUT PATH IN DENTAL WINGS CHAIRSIDE CAD

6. Save your changes.

- ✓ From now on, Dental Wings Chairside CAD automatically suggests exporting dental objects into the specified folder.

! Do not manually change the folder or else the CAM computer will not find the jobs.

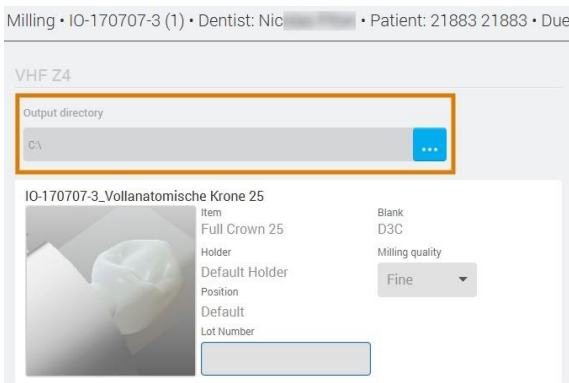


FIG. 24 – IN THE MARKED INPUT FIELD, THE SPECIFIED FOLDER WILL DISPLAY AT THE END OF A WORKFLOW

6. Operation: Preparing jobs

Before you can machine blanks, you need to prepare the machine. The corresponding jobs must have been transferred to the machine so that they display on the touchscreen.

NOTICE

Damaging of the internal CAM computer

If you switch off the machine or disconnect it from the electrical source while the Windows® operating system on the internal CAM computer is shutting down or updating, the CAM computer may get damaged. Without the CAM computer, the machine will not be operational.

Updates may occur when you switch on the machine and when you shut it down via the touchscreen. In case of a major Windows® update, the update process may take several hours.

- » Always shut down the machine via the touchscreen before switching it off at the main power switch or disconnecting it from the electrical source.
- » Always wait until the machine has completely shut down before pressing the main power switch or disconnecting the machine from the electrical source.
- » When you switch on the machine, always wait until the machine is fully operational. Do not switch it off or disconnect it from the electrical source while it is starting up.

6.1 Starting the machine

NOTICE

Short-circuit hazard when the machine is too cold

If the machine is transported from a cold environment into a warmer environment, a short circuit may occur caused by condensate.

- » Before switching on the machine after transportation, ensure the following:
 - The ambient air has the allowed temperature.
 - The machine has the same temperature as the ambient air. This will take at least 1 hour.
 - The machine is completely dry.

1. Ensure that the machine is properly installed.
 2. Switch on the machine at the main power switch.
 3. Press the start button.
- ✓ The machine indicates on the touchscreen that it is starting up.



FIG. 25 – THE MACHINE IS STARTING UP

4. Wait until the machine has started up. This usually takes up to 2 minutes, but can take significantly longer in case of a Windows® update.
 - ✓ The following happens:
 - a. The touchscreen indicates that the internal CAM computer is connecting to the touchscreen.

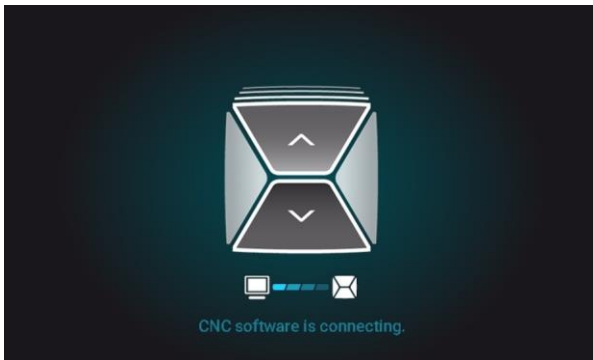


FIG. 26 – THE INTERNAL CAM COMPUTER IS CONNECTING TO THE TOUCHSCREEN

- b. After a few seconds, the connection is established.
- c. The machine references.
- d. The working chamber is illuminated in white

! The machine will not reference if the working chamber door is open.

- 5. If the working chamber door is open, confirm the respective dialog on the touchscreen to close the door.
 - ✓ After the machine has referenced, the Home section displays on the touchscreen.

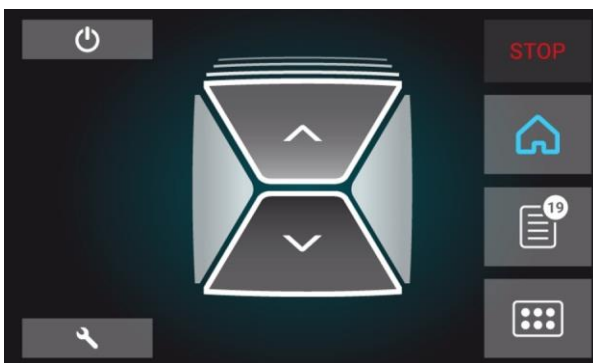


FIG. 27 – THE TOUCHSCREEN AFTER REFERENCING

If the touchscreen displays that there is a tool in the collet chuck which needs to be removed:
Starting the machine with a tool in the collet chuck – see below

If the touchscreen displays that a software update is available: Updating the software and firmware – on page 68

6.2 Starting the machine with a tool in the collet chuck

Under some circumstances like a power outage, there can be a tool in the collet chuck of the spindle when you start the machine. You need to remove the tool from the collet chuck before you can use the machine.



CAUTION

Danger of cuts and burns when touching tools with your bare hands

If you handle tools on the cutting surface, you may be injured. As the tool may be very hot, you may also suffer from skin burns.

- » Only touch tools at their shank.
- » When handling tools, wear protective gloves.

NOTICE

Machine damage if you do not remove the tool

If the tool remains in the spindle after you have confirmed the message, it will collide with machine parts such as the measuring key and severely damage them.

- » Always follow the instructions below when you start the machine with a tool in the collet chuck.

1. Start the machine.
 - ✓ The touchscreen displays that there is a tool in the collet chuck. The working chamber door opens.
2. Hold the tool in the collet chuck in place.
3. Confirm the current message.
 - ✓ The following happens:
 - a. The collet chuck opens.
 - b. The current dialog window closes.
 - c. A dialog window opens.
4. Remove the tool from the collet chuck.

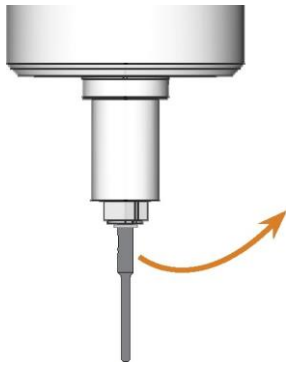


FIG. 28 – REMOVING THE TOOL FROM THE COLLET CHUCK

5. Confirm the current message.
 - ✓ The working chamber door closes. The machine is ready for operation.

6.3 Shutting down the machine




DANGER

Danger of an electric shock if unplugging the power cable before switching off the machine

If you unplug the power cable while the main power switch is still in “ON” position, residual voltage in the power cable may cause you to suffer from an electric shock.

- » Before unplugging the power cable, switch off the machine at the main power switch.

You can shut down the machine when it is not processing.

1. Select the depicted icon in the Home section of the touchscreen. 
- ✓ The machine shuts down.
2. Wait until the touchscreen is switched off and the machine has completely shut down.
- ✓ You can restart the machine by pressing the start button of the machine.
3. (Optional) Switch off the machine at the main power switch.
- ✓ The machine is no longer powered.
Information on restarting it: Starting the machine – on page 31.

6.4 If there is no connection to the CAM computer

If the connection to DentalCNC on the CAM computer gets lost or cannot be established at startup, the touchscreen displays the following image:

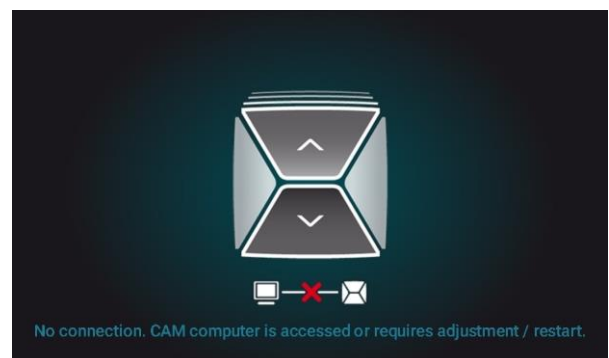


FIG. 29 – THE TOUCHSCREEN INDICATING THAT THERE IS NO CONNECTION TO DENTALCNC

The connection to DentalCNC may fail for the following reasons:

- The start of DentalCNC is delayed because of Windows® updates.
- The CAM computer encountered a hardware / software problem.
- The CAM computer is not correctly configured.

To (re-)establish the connection, you can do the following:

1. Try to access the CAM computer via a remote desktop connection (Accessing Windows® on the CAM computer using a Remote Desktop connection – on page 21).
2. If you cannot establish a remote desktop connection, access the CAM computer by connecting additional hardware to it (Accessing the CAM computer via hardware – on page 22).
3. Check if Windows® is installing updates. In this case, wait until the updates have been installed.
4. If DentalCNC is no longer running properly, restart Windows®.
- ✓ DentalCNC should automatically launch shortly after Windows® startup and establish the connection to the machine.
5. If Windows® is no longer running properly, do the following:
 - a. Switch off the machine at the main power switch.
 - b. Wait 10 seconds.
 - c. Switch on the machine at the main power switch.
6. If Windows® and DentalCNC seem to be running fine, check if the network configuration and CAD / CAM integration is set up according to the installation instructions (CAD computer & network integration – on page 19).
7. If the problem persists, contact customer service.

6.5 Opening & closing the working chamber door

NOTICE

Damaging of the machine by operating the working chamber door inappropriately

The working chamber door is operated by electricity. If you manually open or close the working chamber door, you can damage the machine.


- » Manually open or close the working chamber door only in case of an emergency.
- » Before you manually open or close the working chamber door, read the respective information in the chapter [Operation: Executing jobs.](#)
- » To open or close the working chamber door, select the upper arrow of the depicted icon on the touchscreen. 



FIG. 30 – OPENING & CLOSING THE WORKING CHAMBER DOOR

6.6 Opening & closing the multipurpose drawer

NOTICE

Damaging of the machine by operating the multipurpose drawer inappropriately

If you open the multi-purpose drawer by force, if you do not maintain it properly or if you do not remove leaked cooling liquid, the machine may get damaged.

- » Before you pull out the multi-purpose drawer, unlock it.
- » Check regularly if the area below the cooling liquid tank is dry and remove leaked cooling liquid immediately.

1. To unlock the multi-purpose drawer, select the lower arrow of the depicted icon in the Home section of the touch-screen.



- ✓ After a couple of seconds, the drawer will open.
2. Pull the drawer open.



FIG. 31 – OPENING THE MULTI-PURPOSE DRAWER

3. To close the multi-purpose drawer, push it until it locks back in place.

- ✓ You will hear a clicking sound.

6.7 The user interface on the touch-screen

With the touchscreen, you can operate the main functions of the machine:

- Controlling basic machine functions
- Managing and executing jobs
- Viewing the progress of the current job
- Managing tools
- Handling maintenance tasks

i Functions of the user interface may be added or changed via software and firmware updates. If some functions are not available on your machine, you may need to update DentalCAM & DentalCNC and / or the firmware (Updating the software and firmware – on page 68).

» Visit dentalportal.info for information on new or updated features.

The sections of the touchscreen

The user interface is divided into the 3 main sections Home, Jobs and Tools which you can select via a menu at the right display border.

» To open the Home section, select the depicted icon.



» To open the Jobs section, select the depicted icon.



» To open the Tools section, select the depicted icon.



The Home section of the touchscreen

The Home section has 2 modes which display depending on whether the machine is processing or not.

Mode 1 displays when the machine is not processing:

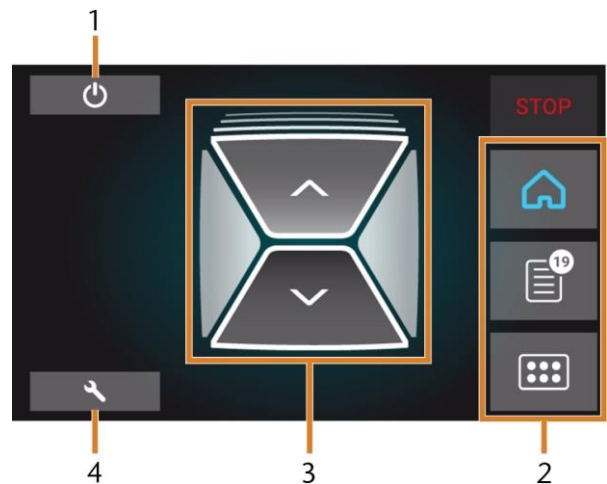


FIG. 32 – HOME SECTION IN MODE 1

1. Icon for shutting down the machine
2. Menu for selecting the individual user interface sections
3. Icons for operating the working chamber door and multi-purpose drawer
4. Icon for opening the Maintenance section

Mode 2 displays during processing:

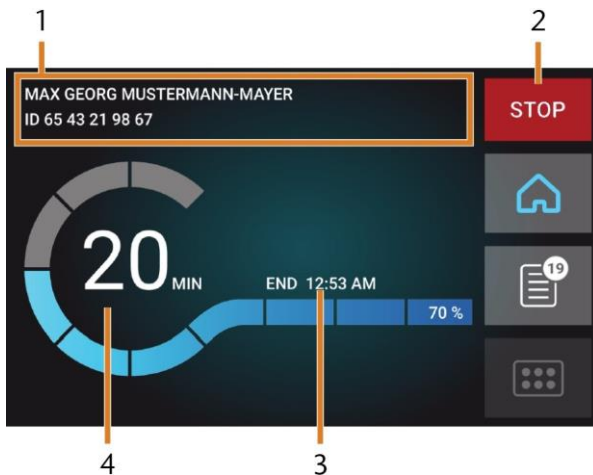


FIG. 33 – HOME SECTION IN MODE 2

1. Job details and patient information
2. Icon for aborting the job
3. Job end time
4. Prospective remaining job duration

i The remaining job duration is an estimation based on a self-learning function.

The Jobs section of the touchscreen

In the Jobs section, you can view details of the available jobs. You can use this view to prepare and start machining. You can delete jobs that you do not need anymore.

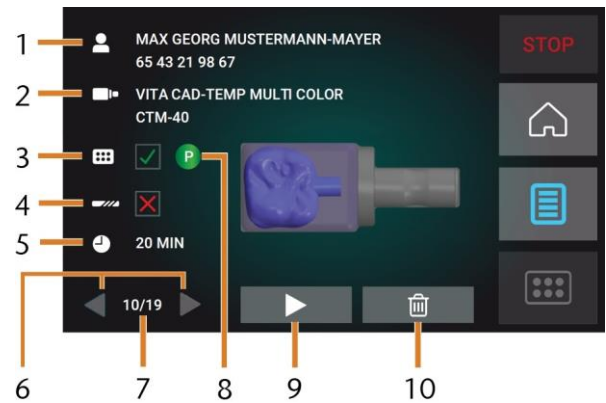


FIG. 34 – JOBS SECTION

1. Job details and patient information
2. Required blank type
3. Check box for the required tool magazine
4. Check box for the tool life values
5. Prospective job duration
6. Arrows to browse through the available jobs
7. Number of current job / number of available jobs
8. Color code of the required tool magazine
9. Icon for starting the current job
10. Icon for deleting the current job

The Tools section of the user interface

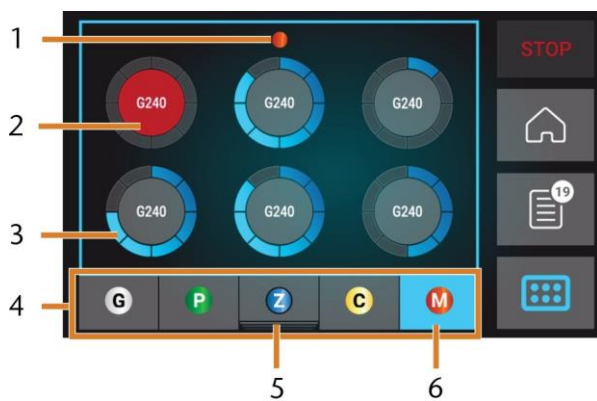


FIG. 35 – TOOLS SECTION

1. Color code of the currently selected tool magazine
2. Tool with expired tool life (red circle)
3. Tool life value indicator (blue outer circle)
4. Menu for selecting the tool magazine
5. Marking for the tool magazine currently inserted in the working chamber
6. Marking for the tool magazine currently shown on the touchscreen

6.8 Exchanging the cooling liquid and cleaning the tank

NOTICE

Damages caused by wet machining with unsuitable cooling liquid

Wet machining without suitable cooling liquid can damage the machine, tools and blanks.

- » Before you execute a job, ensure that the cooling liquid is clean and the liquid level is sufficient.
- » Only use cooling liquid that meets the requirements listed below.
- » Exchange used cooling liquid according to the maintenance table. Clean the cooling liquid tank before refilling it.
- » If you use a cleaning agent to clean the tank, ensure that no residues of it remain in the tank.

The machine needs cooling liquid that meets the following requirements:

- Drinking water
- No added chlorine
- No distilled water
- No carbonated water

Without sufficient cooling liquid in the tank, wet machining is not possible. The machine regularly reminds you via the touchscreen to exchange the cooling liquid. You can find the appropriate interval in the maintenance table. Of course, you can exchange the cooling liquid at any time.

You need to exchange the cooling liquid in the following cases:

- The liquid level lies below the min mark.
- The change interval in the maintenance table has been exceeded.
- The cooling liquid is soiled.

Every time you exchange the cooling liquid, you must also clean the tank.

Before every job, you also have to check the strainer basket and empty it if required.

Emptying the strainer basket

You can empty the strainer basket into a collecting container as follows:

1. Lift the cover off the tank.
2. Remove the strainer basket by pushing it out of the cover from below.

3. Tap out the strainer basket into the collecting container. You can use water or compressed air to further clean the strainer basket.

- ✓ The strainer basket is completely void of machining residues.

Exchanging or filling in the cooling liquid

You can fill in or exchange the cooling liquid as follows:

1. To exchange the liquid and clean the cooling liquid tank, have the following items readily available:
 - Collecting container that can hold approx. 10 l
 - Cleaning brush
 - Water for cleaning the cooling liquid tank
2. Ensure that sufficient cooling liquid is available.
3. Close the working chamber door.
4. Open the multi-purpose drawer.
5. Grab the cooling liquid tank at the positions marked in the following figure. Pull it out of the drawer in the direction indicated by the arrow (see below).

- ⚠ When you tilt the cooling liquid tank, the cover will not prevent the cooling liquid from leaking.

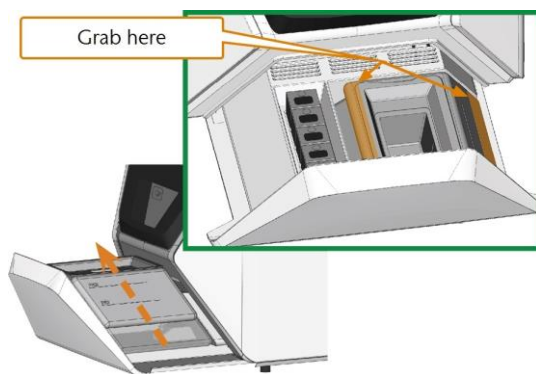


FIG. 36 – REMOVING THE COOLING LIQUID TANK FROM THE MULTI-PURPOSE DRAWER

- ⓘ Information on the disposal of cooling liquid and machining residues: Disposal – on page 71

6. Lift the cover off the tank.

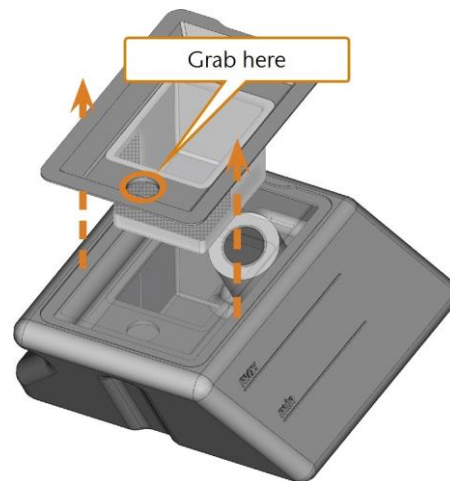


FIG. 37 – REMOVING THE COVER FROM THE COOLING LIQUID TANK

7. If there is cooling liquid in the tank:
 - a. Pour the cooling liquid into the collecting container.
 - b. Remove the strainer basket by pushing it out of the cover from below.
 - c. Tap out the strainer basket into the collecting container. You can use water or compressed air to further clean the strainer basket.
 - ✓ The strainer basket is completely void of machining residues.
 - d. Rinse the filter in the cooling liquid tank under running water.
 - ⓘ If necessary, you can disassemble the cooling liquid filter to clean it thoroughly (*Exchanging the carbon filter – on page 63*).
 - e. Thoroughly clean the tank with the cleaning brush. Pour the cleaning water into the collecting container.
 - f. If you have used a cleaning agent, ensure that no residues of it remain in the cooling liquid tank.
 - ✓ The cooling liquid tank is completely void of liquid, machining and cleaning agent residues.
8. Fill the cooling liquid tank with cooling liquid until it reaches the max mark.
9. Insert the strainer basket into the tank cover and put the cover onto the tank.

10. Remove dirt and foreign bodies from the coupling of the cooling liquid tank and the counterpart in the machine.

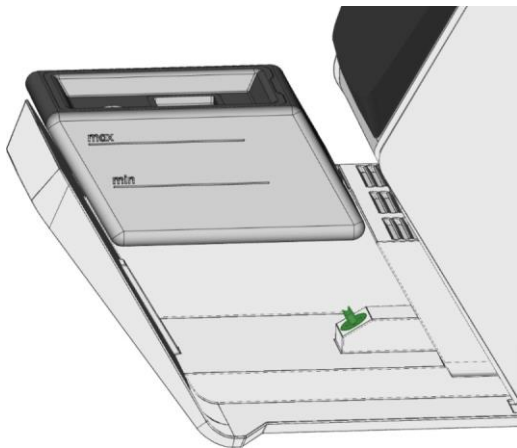
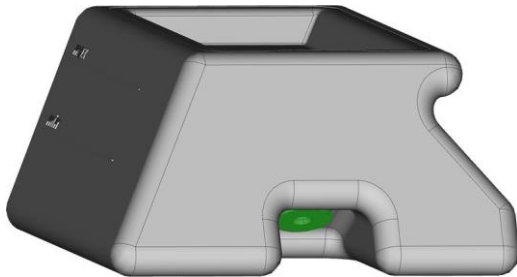


FIG. 38 – THE COUPLING OF THE TANK AND ITS COUNTERPART (COLORED GREEN)

11. Insert the cooling liquid tank with the help of the guide rail into the multi-purpose drawer.



FIG. 39 – INSERTING THE COOLING LIQUID TANK INTO THE DRAWER (GUIDE RAIL COLORED ORANGE)

12. Push the tank into its end position until it is properly attached to the machine.

- ✓ The cooling liquid tank is connected to the cooling

13. Close the multi-purpose drawer.

6.8 Managing tools

NOTICE

Damaging of the spindle or the tool positions if you use improper tools

Improper tools can damage the collet chuck of the spindle and / or the tool positions.

- » Only use tools with a sufficiently large chamfer at the tool shank.
- » Install a retaining ring as a stop ring according to DIN 471-A3.
- » Only insert tools with a maximum diameter of 3 mm at the thickest part into the collet chuck.
- » Only insert tools with a maximum cutting-edge diameter of 2.6 mm into the tool magazine.



We recommend original tools as they are designed especially for the designated jobs.

The machine uses exchangeable tool magazines that can hold up to 6 tools each.



FIG. 40 – A TOOL MAGAZINE

For each job you need to mount the appropriate magazine into the working chamber.

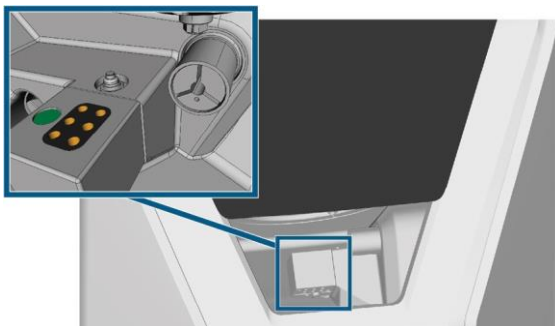


FIG. 41 – TOOL MAGAZINE WHICH IS MOUNTED TO THE TOOL MAGAZINE HOLDER; TOOL POSITIONS MARKED ORANGE

You can store magazines that are currently not needed in the multi-purpose drawer.






A sensor recognizes the tool magazine which is currently mounted into the working chamber. The touchscreen displays the required magazine for each job and whether

it is mounted into the working chamber. The machine can change tools automatically during machining so that it executes jobs without your interference.

- i** If tool magazine inserts are worn, you should replace them. (Replacing the tool magazine inserts – on page 65)

Color codes of the tool magazines

The tool magazines have color codes for the individual materials. In the following table you find an overview:

Color code	Material	Letter
 Green	Wax and plastics (PMMA)	P
 Yellow	Composites	C
 Blue	Zirconia	Z
 Red	Non-precious metals (Cobalt chrome / Titanium)	M
 White	Glass ceramics	G

6.9 Inserting and exchanging tools

You need to insert or exchange tools in the following cases:

- Upon first use of the machine
- After replacing a tool magazine (in case of loss or damage)
- After exchanging tool magazine inserts due to wear
- When the tool life of a tool has expired
- When tools are damaged or worn

- i** When you select a job in the Jobs section, a check box indicates whether you need to replace tools before machining.

You can use the Tools section of the touchscreen for managing tools:

- To check the tool life values.
- To check which tool magazine positions the individual tools are assigned to.

i The maximum tool life values that you can actually achieve with your tools depend on many factors, such as the quality of the tools, the quality of the blanks, how well the machine is maintained and cleaned etc. Therefore, the tool life values that your machine is shipped with are default values. Due to a self-learning function, they will become more precise over time.

1. To open the Tools section, select the depicted icon.



✓ The Tools section displays. One of the magazines is selected and the corresponding information displays.

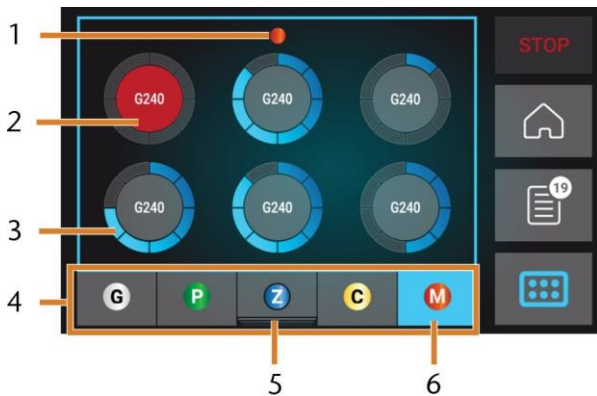


FIG. 42 – TOOLS SECTION

1. Color code of the currently selected tool magazine
2. Tool with expired tool life (red circle)
3. Tool life value indicator (blue outer circle)
4. Menu for selecting the tool magazine
5. Marking for the tool magazine currently inserted in the working chamber
6. Marking for the tool magazine currently shown on the touchscreen

2. Select the desired tool magazine from the menu at the bottom display border.

✓ The tools of the corresponding tool magazine display as circles.

a. In the middle of each circle, the tool match code displays.

- b. Tools with expired tool life values display in red.
- c. Each circle is assigned to a specific position of the corresponding magazine.

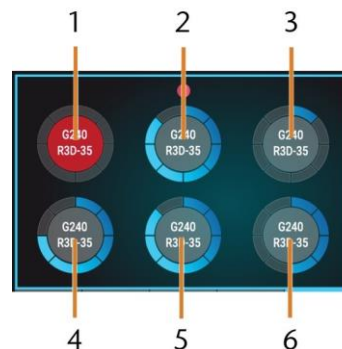
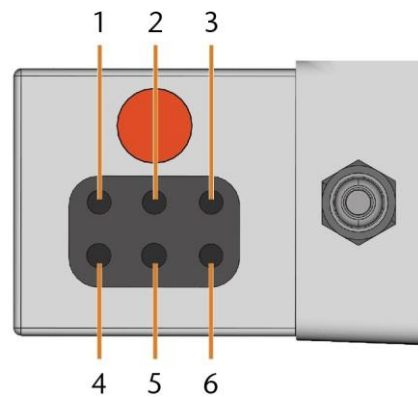


FIG. 43 – TOP: TOOL POSITION 1 – 6 IN THE TOOL MAGAZINE
BOTTOM: TOOL POSITIONS 1 – 6 ON THE TOUCHSCREEN

3. If tool life values have expired, remove the corresponding tools from the tool magazine.
4. Insert the new tools:

a. Ensure that the positions of the tools in the tool magazine match the tool positions on the touchscreen.

b. Insert the tools straight into the tool positions with the cutting edge pointing downwards. Push them in until the ring touches the rubber.

! If the positions of the tools in the tool magazine do not match the tool positions on the touchscreen, the machine will use the wrong tool(s) during job execution and the job result will become unusable.



FIG. 44 – INSERTING TOOLS INTO THE TOOL POSITIONS

5. After replacing a tool, reset the tool life value. For this, select the corresponding element on the touchscreen.
6. Plug the tool magazine back onto the tool magazine holder if required.

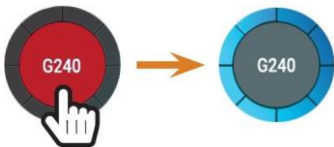


FIG. 45 – RESETTING THE TOOL LIFE VALUES

- ✓ The tool life value of the tool is reset. The circle displays in blue.

6.10 Mounting & exchanging tool magazines

NOTICE

Damage of the tool magazines and tool magazine holder

If you tilt tool magazines while mounting them, or if tool magazines or the tool magazine holder are not clean, the magazines will not slide smoothly onto the holder. If you mount or remove tool magazines by force, you can damage the tool magazine and the tool magazine holder.

- » Always keep the tool magazine holder and the holes in the tool magazines clean.
- » Grease the tool magazine holder according to the maintenance table.
- » Plug tool magazines straightly onto the holder. If necessary, remove the tool magazine and reposition it.

You exchange tool magazines by pulling them off and plugging them on the tool magazine holder.

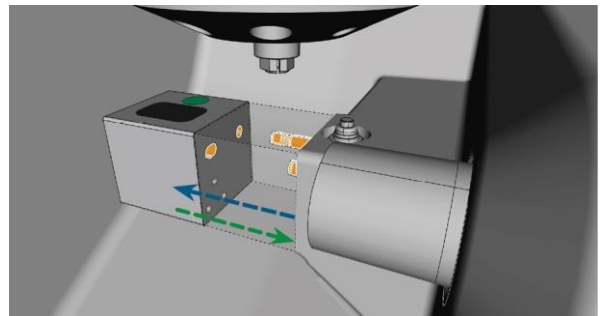


FIG. 46 – EXCHANGING THE TOOL MAGAZINE (TOOL MAGAZINE HOLDER AND HOLES IN THE TOOL MAGAZINE MARKED ORANGE)

In case a tool magazine got stuck on the holder, use the screw on the backside of the tool magazine:

1. Use the screw as follows:
 - a. Pick up a flat blunt tool (e. g. a slot screw driver)
 - b. Use the tool to remove the protective cap of the screw and put it aside within reach.
 - c. Using the provided allen key, turn the screw to the right.
- ✓ The tool magazine moves backwards and is released.

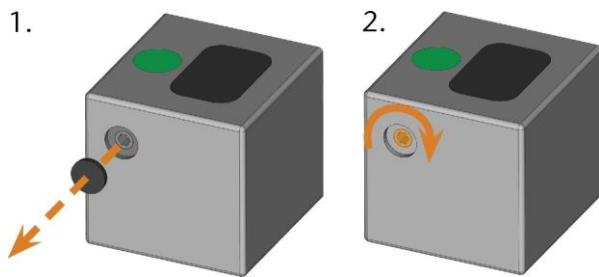


FIG. 47 – REMOVING THE PROTECTIVE CAP (LEFT) AND USING THE SCREW

2. Remove the tool magazine from the working chamber.
3. To reset the screw, do the following:
 - a. Using the provided allen key, turn the screw to the left into its original position.
 - b. Cover the screw opening with the protective cap.

✓ The screw is reset and the tool magazine is ready to be mounted again.

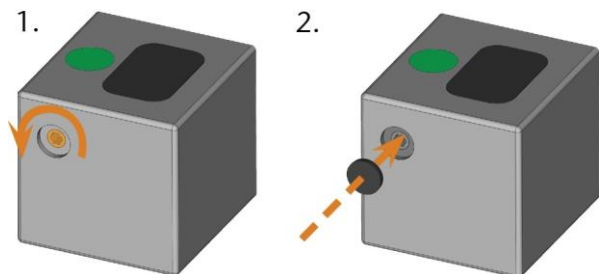



FIG. 48 – RESETTING THE SCREW (LEFT) AND PLACING THE PROTECTIVE CAP

You can use the touchscreen to choose the right tool magazine for the next job:

1. To open the Jobs section, select the  depicted icon.

✓ The Jobs section displays. The details of the next queued job display.

2. If necessary, switch to the desired job by using the left and right arrow in the left bottom corner of the touchscreen.

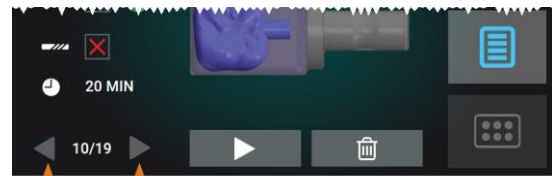


FIG. 49 – THE ARROWS TO SWITCH BETWEEN JOBS

✓ The touchscreen displays the required tool magazine and if it is mounted into the working chamber.

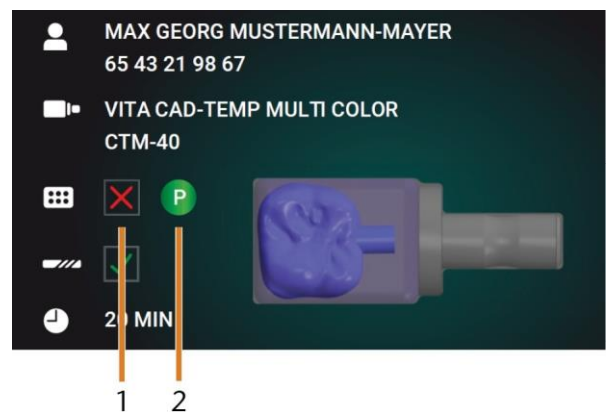




FIG. 50 – THE TOOL MAGAZINE DETAILS IN THE JOBS SECTION

1. Check box to indicate if the required tool magazine is mounted:
 -  means not mounted
 -  means mounted
2. The color code and letter of the required tool magazine (Color codes of the tool magazines – on page 41)
3. If an incorrect tool magazine is mounted, remove this magazine by pulling it off the tool magazine holder (Fig. 46 – on the previous page, blue arrow).
4. To mount the required tool magazine, identify it by comparing the color code:

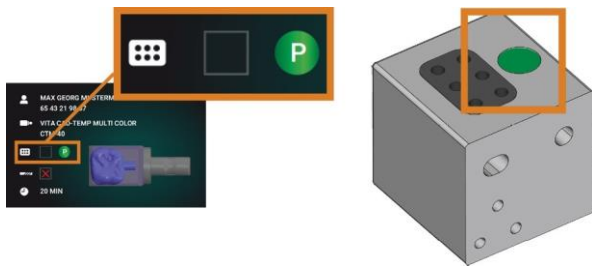


FIG. 51 – THE COLOR CODE ON THE TOUCHSCREEN (LEFT) AND ON THE TOOL MAGAZINE ARE IDENTICAL

5. Ensure that the contact surfaces of the tool magazine holder and the tool magazine are clean.

! You can only execute jobs when the machine recognizes the required tool magazine.

6. Plug the tool magazine onto the tool magazine holder (Fig. 46 – on page 43, green arrow):

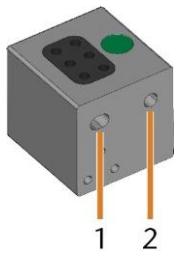


FIG. 52 – THE 2 HOLES IN A TOOL MAGAZINE

1. Larger front hole
2. Smaller rear hole

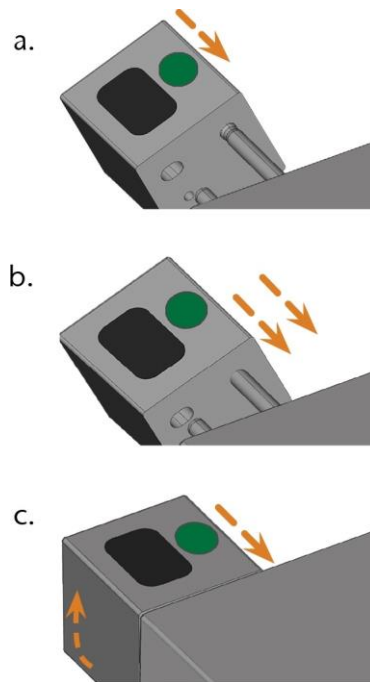


FIG. 53 – PLUGGING A TOOL MAGAZINE ONTO THE TOOL MAGAZINE HOLDER IN 3 STEPS

- a. Position the larger rear hole on the longer bolt of the tool magazine holder. Push it onto the bolt until you feel a resistance.
- b. Overcome the resistance by pushing the tool magazine harder onto the bolt.
- c. Align the smaller front hole with the shorter bolt of the tool magazine holder. Push the tool magazine onto the short bolt until it is properly seated on the tool magazine holder.

6.11 Mounting & removing blanks

The machine can process the following blanks:

- Blocks, max. size: 40x20x20 mm (L/D/H)
- Prefabricated abutments*

*requires extra equipment

i You can obtain extra equipment from customer service.

6.12 Mounting & removing blocks

You can mount blocks to the block holder where a collet chuck immobilizes them. The collet chuck opens and closes with the working chamber door.

1. Open the working chamber door.
 - ✓ The working chamber door is open. The collet chuck is open.
2. Pull the block out of the holder if any.
3. Check the collet chuck for dirt.
4. If necessary, clean the collet chuck (Cleaning the collet chuck of the blank holder – on page 60).
5. Place the required block in the collet chuck of the block holder: Align the groove of the block [1] with the positioning pin of the block holder [2].

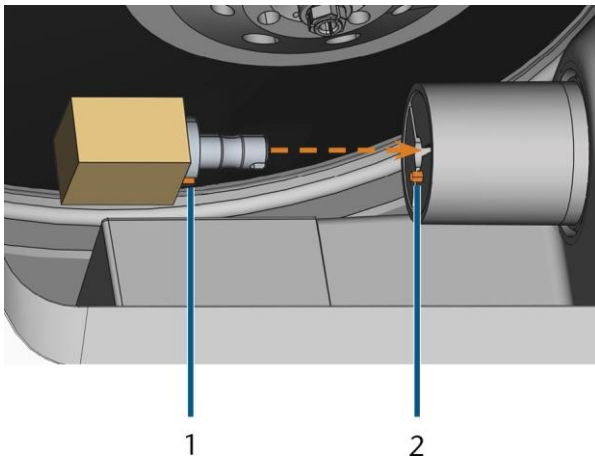


FIG. 54 – INSERTING THE BLOCK INTO THE BLOCK HOLDER (GROOVE AND POSITIONING PIN MARKED ORANGE)

1. Groove of the block
2. Positioning pin of the block

6. Push the block into the block holder until it clicks in. If the block does not click in, twist it until the positioning pin lies in the groove.

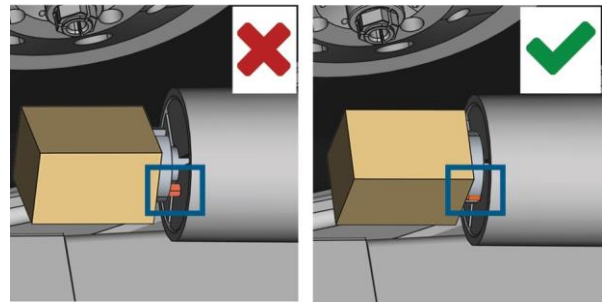


FIG. 55 – (A) BLOCK HAS ONLY PARTIAL CONTACT; (B) BASE SURFACE OF BLOCK HAS FULL CONTACT

7. Close the working chamber door.

- ✓ The working chamber door is closed. The collet chuck is closed. The block is mounted.

7. Operation: Executing jobs

7.1 Overview

NOTICE

Damaging of the machine when using damaged tools or blanks

If tools or blanks are damaged, parts can break off and damage the machine during job execution.

» Check the blanks and tools thoroughly for damage before every job execution.

When you have prepared your jobs and your machine, you can start machining. Machining is a fully automated process and only requires your attention in case of unexpected events.

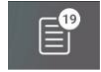
! Do not move the machine during job execution, otherwise the results may become imprecise.

1. Ensure the following:
 - You created a job on your CAD computer. It has been transferred to the machine.
 - The correct tool magazine is inserted into the working chamber.
 - All required tools are in the right positions in the tool magazine and are neither worn nor damaged.
 - The required blank is mounted.
 - There is enough cooling liquid in the cooling liquid tank.
2. Close the working chamber door.
3. Start machining via the touchscreen.

7.2 Starting jobs via the touchscreen

Following you find the workflow for selecting, checking and executing jobs.

1. To open the Jobs section, select the depicted icon.



- ✓ The Jobs section displays. The details of the next queued job display.

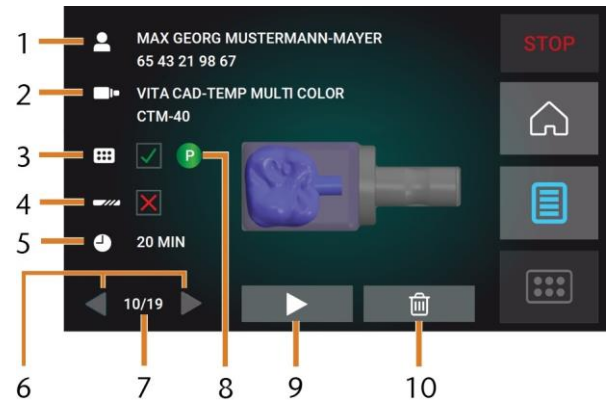


FIG. 56 – JOBS SECTION

1. Job details and patient information
 2. Required blank type
 3. Check box for the required tool magazine
 4. Check box for the tool life values
 5. Prospective job duration
 6. Arrows to browse through the available jobs
 7. Number of current job / number of available jobs
 8. Color code of the required tool magazine
 9. Icon for starting the current job
 10. Icon for deleting the current job
2. Use the arrows in the left bottom corner to select the desired job.

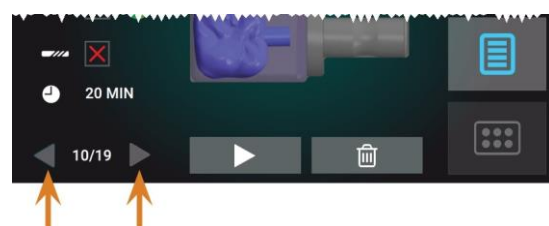


FIG. 57 – THE ARROWS TO SWITCH BETWEEN JOBS

3. Verify that the elements [2], [3], [4] display as required:

- a. Ensure that the mounted blank corresponds to [2],
- b. If **✗** displays in [3], mount the correct tool magazine,
- c. If **✗** displays in [4], replace all worn tools.

4. To start machining, select the depicted icon.



✓ The following happens:

- a. If required, the working chamber door closes.
- b. The machine starts processing.
- c. The working chamber is illuminated in blue.
- d. The remaining machining duration displays on the touchscreen.

i If you are prompted that a firmware update exists: Updating the firmware of the machine – on page 68

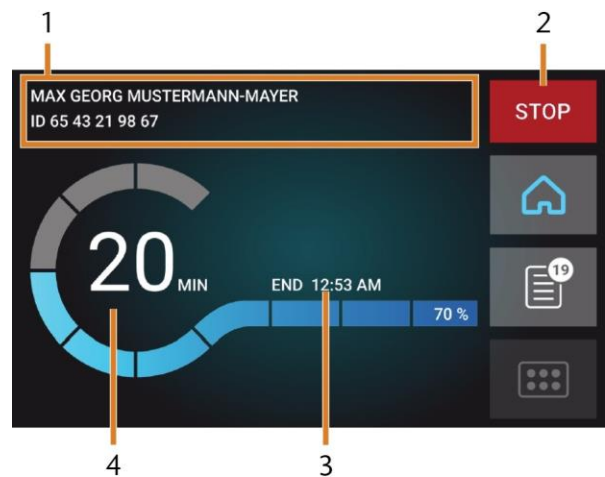


FIG. 58 – HOME SECTION IN MODE 2

1. Job details and patient information
2. Icon for aborting the job
3. Job end time
4. Prospective remaining job duration


i The remaining job duration is an estimation based on a self-learning function.

5. If using exocad ChairsideCAD, do not shut down your CAD computer or disconnect it from the network until machining has finished. Otherwise, you may have to restart your machine and the job.
6. Wait until the machine has finished.


✓ The working chamber door opens. The following dialog displays on the touchscreen.



FIG. 59 – THE DIALOG AFTER A JOB HAS BEEN FINISHED

7. Remove the blank from the working chamber and check whether the job has been executed correctly.
8. If you are satisfied, select the  depicted icon on the touchscreen.

- ✓ The job is marked as finished and no longer displays in the Jobs section.


 You can restore finished jobs with DentalCNC. Read the corresponding documentation for more details.

9. If you need to repeat the job, select the depicted icon on the touchscreen.



- ✓ The job continues to display in the Jobs section. You can restart it as required.

10. Leave the working chamber door open so that the working chamber can dry.

 After machining, air is blown into the working chamber for some time to help dry the working chamber, which causes air noise. This does not indicate that there is a malfunction.

7.3 Aborting machining

You can cancel machining at any time. You need to restart the job with a new blank. You cannot continue the job with the used blank because the machine will not recognize this blank and you will receive an error message.

1. To cancel machining, select the depicted icon.



- ✓ The machine prompts you to confirm the cancellation.

2. To confirm your choice, select the depicted icon.



- ✓ The spindle puts the tool which is currently in the collet chuck into the tool magazine. The working chamber door opens.

3. If the working chamber is wet, leave the working chamber door open so that the working chamber can dry.

7.4 Job interruptions and job abortions

A job will be *interrupted* in the following cases:


- The compressed air supply is not sufficient
- The cooling liquid flow rate is not sufficient

An interrupted job will normally be continued automatically after the error is corrected.

A job will be aborted in the following cases:

- In case of a machine malfunction
- In case of a tool breakage
- In case of a power failure

If a job was *aborted*, you have to restart it.

 You need to restart the job with a new blank. You cannot continue the job with the used blank because the machine will not recognize this blank and you will receive an error message.

How to proceed in case of a job interruption

If the job was interrupted, the touchscreen displays a corresponding message.

If the compressed air is insufficient

1. Wait a couple of seconds. This may already solve the problem.
2. Restart the machine.
3. If the problem persists, contact customer service.

If the cooling liquid flow rate is insufficient

1. Check if there is enough cooling liquid in the tank.
2. Check if the cooling liquid and the tank including the filter are clean.

How to proceed in case of a machine malfunction

A machine malfunction is recognized by the internal control unit in case of a critical event. The working chamber will be illuminated in red. The touchscreen displays the error message and error code that was sent by the control unit.

1. Record the error message and error code that is displayed.
2. Restart the machine and the CAM computer. If the problem persists, continue with the next step.
3. Disconnect the machine from the electrical source and prevent it from being restarted.
4. Contact customer service. Have the error message and error code readily available.
5. If you need to remove a blank from the working chamber, perform an emergency opening of the working chamber door.

How to proceed in case of a tool breakage

If a tool breaks during machining, the machine will not recognize this immediately. Instead, the spindle will continue to move with the broken tool. The tool breakage will be recognized upon the following events:


- The next regular tool change
- The next check for broken tools, if activated in the application settings of DentalCNC.


A tool breakage can be caused by the following:

- The tool was damaged or worn
- The tool was put into the wrong tool magazine position or was manually inserted into the spindle at the wrong time. As a consequence, it was not suitable for the processing step.
- The distribution of the objects in the blank (“nesting”) was not correct.

If a tool breaks, do the following:

1. Open the working chamber door.
2. Remove all parts of the broken tool from the working chamber and the collet chuck.
3. If the spindle picked up the tool from the tool magazine, check if the tool was inserted into the correct position. Insert a spare tool into the correct position in the tool magazine.
4. If you manually inserted the tool into the collet chuck, check if the broken tool corresponds to the tool type which you were prompted to insert. Have a correct spare tool ready.
5. Close the working chamber door. Restart the job.

 You need to restart the job with a new blank. You cannot continue the job with the used blank because the machine will not recognize this blank and you will receive an error message.

 If tools break regularly, you can find additional information in the troubleshooting section: [Troubleshooting – on page 72](#)

How to proceed in case of a power failure

As long as the machine is not powered, you do not have access to the working chamber. You also have no access to the drawer.

- » After a short power failure, restart the machine and the CAM computer.
- » If you need to access the working chamber in case of a longer power failure, perform an emergency opening of the working chamber door.
- » If you need to access to the multi-purpose drawer, perform an emergency opening of the drawer.

7.5 Emergency opening of the working chamber door



WARNING

Crushing hazard and cutting injuries if the working chamber door is open

If the working chamber door is open during machining, it will not protect users from bruises and cuts.

- » Do not open or close the working chamber door during machining.
- » Never operate the machine with the working chamber door open.
- » Perform the emergency opening only if you are authorized to do so and if you have received training on it.



CAUTION

Cutting injuries when touching a rotating tool

If a power failure or a machine malfunction occurs during machining, the spindle including the inserted tool keeps rotating. If you touch the rotating tool, you will suffer from cutting injuries.

- » Wait until the spindle has stopped rotating before performing an emergency opening.

NOTICE

Improper opening or closing of the working chamber door

To avoid damage, heed the following instructions when you manually open or close the working chamber door.

- » Disconnect the machine from the electrical source.
- » Prevent the working chamber door from twisting by pushing or pulling it with both hands.
- » Only apply as much force as needed to overcome the resistance.

You can perform an emergency opening as follows:

1. Switch off the machine at the main power switch.
Disconnect the machine from the electrical source.
 - ✓ You can manually open the working chamber door.

- !
- The working chamber door should move sluggishly, but evenly. If the movement is jerky or the working chamber door gets stuck, do not use excessive force.

2. Open the working chamber door by straightly and evenly pushing it upwards with both hands.
3. If the working chamber door can only be moved with very high effort, ensure that the guide rails at the back are clean.

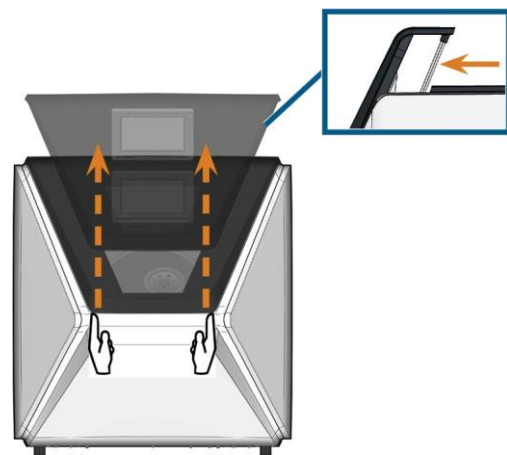


FIG. 60 – EMERGENCY OPENING OF THE WORKING CHAMBER DOOR AND CHECKING THE GUIDE RAILS

4. If the working chamber is wet, leave the working chamber door open so that the working chamber can dry.
5. Close the working chamber door by carefully pushing it downwards with both hands.

7.6 Removing the back-panel cover

You need to remove the back panel cover of the machine for an emergency release of the multi-purpose drawer.

You can remove the back panel cover as follows:

1. Switch off the machine at the main power switch.
2. Disconnect the machine from all lines.
3. Grab the bottom edge of the back-panel cover and pull it towards you as indicated by the arrows:



FIG. 61 – REMOVING THE BACK PANEL COVER

4. To re-install the back-panel cover, do the following:
5.
 - a. Align the top edge of the machine and the cover so that the start button and main power switch lie in the center of the respective openings.
 - b. Push the cover against the machine housing.

✓ The cover is held in place by magnets.

7.7 Emergency opening of the multi-purpose drawer

In case of a longer power failure, you can manually open the multi-purpose drawer as follows:

1. Remove the back-panel cover (Removing the back-panel cover – see above).
2. Insert a screwdriver with 5 cm minimum length into the depicted opening at the backside of the machine.

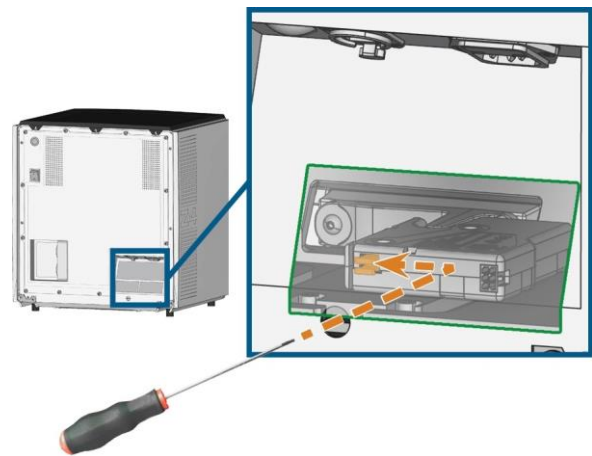


FIG. 62 – EMERGENCY RELEASE OF THE MULTI-PURPOSE DRAWER

3. Push the screw driver in the upper right direction until you encounter a resistance.
4. Use the screwdriver to push the lever for the emergency release to the left until the mechanism is unlocked.
5. Install the back-panel cover.

8. Maintenance and do- it-yourself

Some day-to-day basic maintenance and preventive maintenance is essential to keep the machine mechanics and electric components in good condition for proper machining results.

It is your responsibility to make sure that preventive maintenance, as well as basic maintenance, is performed.

You are the only one who can ensure that your machine receives the proper maintenance care. You are a vital link in the maintenance chain.

Basic maintenance

Basic maintenance includes tasks which are part of everyday operation. You are responsible to ensure that these tasks are carried out according to the maintenance table. You only need minimal manual skills for these tasks and most required tools are provided with the machine.

Maintenance section

For your convenience, the machine lists all basic maintenance tasks in the Maintenance section on the touch- screen. In the Maintenance section, you can see when the individual tasks are due.

When you have marked a maintenance task as complete, its time interval is reset and the list is updated accordingly.

Preventive maintenance

Preventive maintenance for this machine has to be scheduled every 2 years, or after 1,000 operating hours at the latest.

» To schedule preventive maintenance, contact customer service.

Where to get service?

Customer service is your main contact for all service related questions. They will provide you with spare parts, maintenance tips and they will perform preventive maintenance for you on request.

» When your machine is delivered or installed, ask the service technician for contact details for the customer service team. We also recommend scheduling the first preventive maintenance appointment at this point to ensure your machine gets proper maintenance.

Definition of wear parts

The machine and the extra equipment are warranted for a period of 24 months or 2,000 operating hours, whatever comes first. The warranty covers defects in materials or fabrication as long as the regulations for using the machine in all documents are followed.

Of course, the warranty also covers wear parts as long as their failure cannot be attributed to the function-related abrasion. The wear parts that are mentioned in the maintenance table can already wear down within the warranty period due to their normal function. The average useful life of the wear parts can be seen in the maintenance table.

Use these values to determine operating costs, to plan your spare part stock as well as to create individual maintenance and service plans.

Maintenance table



page 69

8.1 Using the maintenance section

For your convenience, the machine lists all basic maintenance tasks in the Maintenance section on the touch-screen. In the Maintenance section, you can see when the individual tasks are due.

When you have marked a maintenance task as complete, its time interval is reset and the list is updated accordingly.

You can open the maintenance section as follows:

1. To open the Home section, select the  depicted icon.
2. To open the Maintenance section, select the  depicted icon.

- ✓ The Maintenance section displays. The touch-screen lists all required maintenance tasks in order of their urgency.

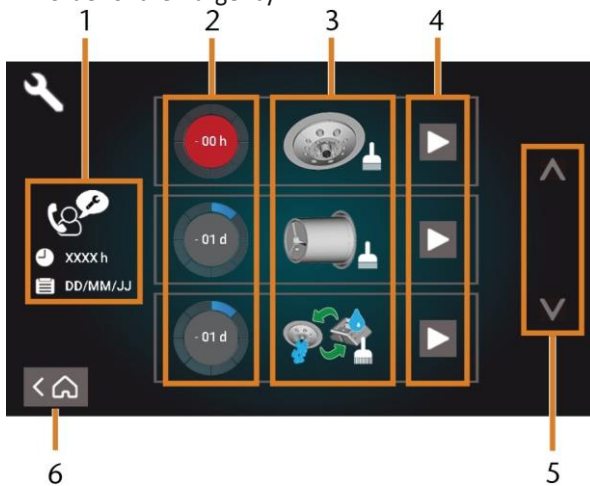


FIG. 63 – THE MAINTENANCE SECTION WITH THE LIST OF MAINTENANCE TASKS

1. Preventive maintenance: remaining operating hours / due date
2. Circles showing the urgency of the task
3. Illustrations depicting the individual tasks
4. Start icons to begin the individual tasks
5. Arrows to scroll through the list
6. Icon to go back to the Home section

In the center of the screen the list with all maintenance tasks displays. The higher a task is listed, the more urgent it is.

» Use the circles in the first column to determine how much time remains until the task is due:

- The numbers in the circles show how many operating hours (h) or days (d) are left before the task must be performed.
- The number of blue segments decreases over time.
- If a circle is red, the corresponding task is due.

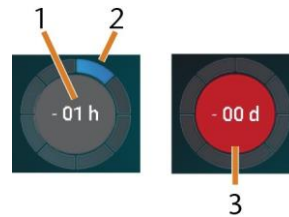

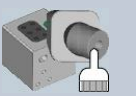

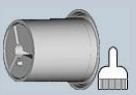


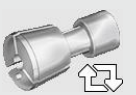
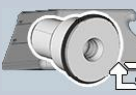




FIG. 64 – CIRCLES INDICATING WHEN A TASK IS DUE

1. The remaining time (here: 1 operating hour)
2. Only 1 segment remains because the task is due soon
3. The red circle indicates that this task is due

List of all maintenance tasks

The following maintenance tasks and illustrations can display on the touchscreen:

Illustration	Task
	Daily cleaning (working chamber, cooling liquid tank)
	Weekly cleaning (webcam, tool magazines and holder)
	Cleaning the spindle collet chuck
	Cleaning the blank holder collet chuck
	Rinsing the cooling liquid system (rinsing, exchanging the carbon filter)
	Exchanging the view window wiper
	Exchanging the blank holder collet chuck
	Exchanging the cooling liquid coupling
	Preventive maintenance ¹
	Internetconnection(Backup/Update) ²


¹ Only customer service can complete this task and reset the time interval.


² This task only appears if the machine is not regularly connected to the internet. The task is completed automatically as soon as a connection is established.

Performing maintenance tasks

The Maintenance section contains interactive on-screen guides for every maintenance task. To perform the maintenance tasks, you need to use the respective guide. With the guides you can do the following:

- Read the basic steps required to perform individual maintenance tasks.
- Execute necessary machine functions for individual tasks.
- Mark individual tasks as complete.

 The on-screen guides do not replace the detailed information in this manual. Here you can find additional instructions and safety information.

» To start a maintenance task, select the depicted icon for the respective entry in the Maintenance section. 

✓ The corresponding on-screen guide opens. It has several pages which will guide you through the maintenance task.

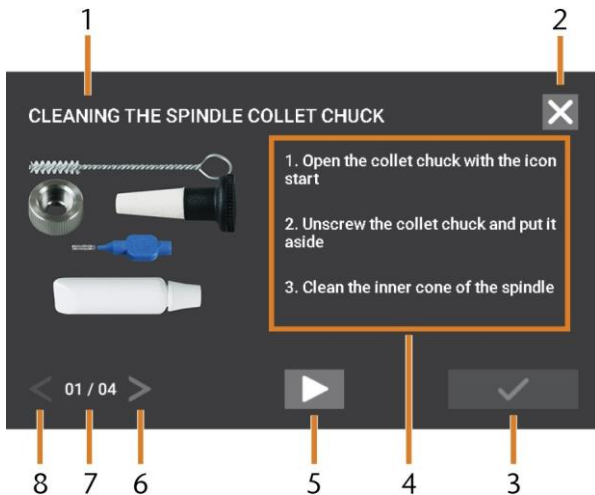


FIG. 65 – INTERACTIVE ON-SCREEN GUIDE FOR MAINTENANCE TASK

1. Title of the on-screen guide
2. Icon to close the guide without marking the task as complete
3. Icon to mark the task as complete
4. Numbered instructions
5. Icon for a required machine operation (e. g. open col- let chuck – only for some tasks)
6. Go to next page
7. Current and maximum page of the guide
8. Go to previous page


You can use the on-screen guides as follows:

1. Select the arrows [6/8] to navigate through the guide.
2. Follow the instructions [4] on every page of the guide.
3. Perform the maintenance task as required.
4. If the depicted icon displays, select it to execute the required machine function for the maintenance task.



- ✓ The icon changes its color as depicted and the machine function is executed.



5. To mark the task as complete, select the depicted icon. 
6. To close the guide without marking the task as complete, select the depicted icon.

Leaving the Maintenance section

To close the Maintenance section, do as follows:

1. Ensure that the list with maintenance tasks displays.
2. To go back to the Home section, select the depicted icon.


8.2 Cleaning the working chamber

Cleaning the working chamber includes the following components:

- Measuring key
- Blank holder
- View window
- Webcam
- Tool magazines
- Tool magazine holder

These components have different maintenance intervals according to the maintenance table. Therefore, you should perform a daily and a weekly cleaning of the working chamber and clean the components which need cleaning.

» When performing the weekly cleaning, also perform the daily cleaning.


 We recommend cleaning the working chamber after all other required maintenance tasks.

NOTICE

Damaging of the linear guides or the spindle when cleaning with compressed air or ultrasound

If you clean the working chamber with compressed air or ultrasound, material chips can reach the linear guides or the spindle bearings.

» Never clean the working chamber with compressed air or ultrasound.

 Do not pour additional water into the working chamber. The cooling liquid tank may overflow.

1. Have ready:
 - A wet cloth
 - A mild cleaning agent (optional)
 - Cleaning brush for the blank holder
 - A wet brush for the measuring key
2. Open the working chamber door.
3. Clean all surfaces and cracks in the working chamber thoroughly with a wet cloth. Use a mild cleaning agent if necessary.
4. Clean the measuring key with the wet brush.

Performing the weekly cleaning

1. Have ready: The cleaning brush for the blank holder.
2. Remove the tool magazine from the working chamber. Clean it with the cloth and the brush.
3. Open the multi-purpose drawer. Clean the other tool magazines.
4. Clean the blank holder with its respective brush.

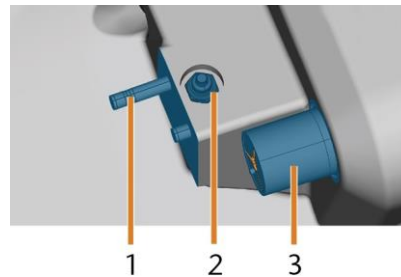


FIG. 67 – TOOL MAGAZINE HOLDER, MEASURING KEY, BLOCK HOLDER (IN BLUE)

1. Tool magazine holder
 2. Measuring key
 3. Blank holder
5. Screw the protective cap off the webcam and clean the inside of the cap with a dry cloth.

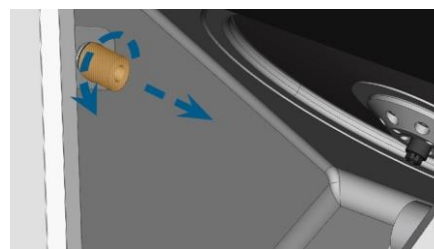


FIG. 68 – SCREWING THE PROTECTIVE CAP OFF THE WEBCAM

6. Clean the webcam with a wet cloth. Screw on the protective cap.
7. Clean the tool magazine holder thoroughly.
8. Apply a bit of collet grease to the bolts of the tool magazine holder.
9. To apply the collet grease to the holes of all tool magazines, mount all tool magazines once.

8.3 Cleaning the collet chuck

i The grease for the collet chuck of the spindle and for the collet chuck of the blank holder is the same item.

NOTICE

Damaging of the spindle when cleaning with compressed air or ultrasound

If you clean the collet chuck with compressed air or ultrasound, the spindle bearings can be damaged.

» Clean the collet chuck only with the appropriate service set.

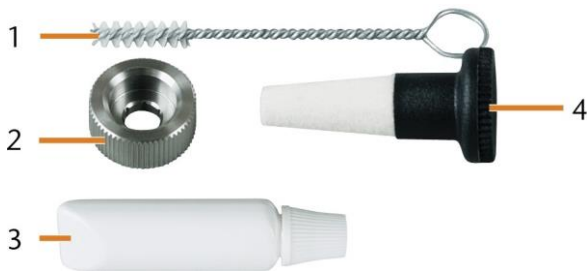


FIG. 69 – SPINDLE SERVICE SET

1. Cleaning brush
2. Knurled nut
3. Tube of collet chuck grease
4. Cleaning cone

To clean the collet chuck, do the following:

1. Have the spindle service set ready.
2. Start the maintenance by selecting the corresponding entry in the Maintenance section on the touchscreen.
 - ✓ The following happens:
 - a. The on-screen quick guide displays.
 - b. The working chamber door opens.
3. Open the collet chuck using the quick guide.
4. Put the knurled nut to the spindle with one hand. With the other hand insert the measuring pin into the collet chuck and keep holding it.

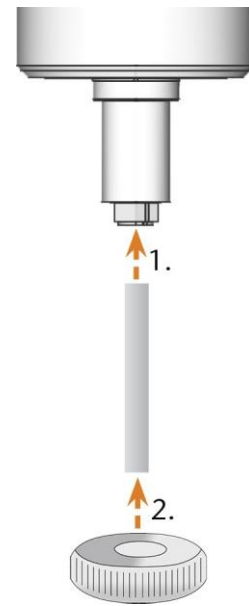


FIG. 70 – UNSCREWING THE COLLET CHUCK

5. Loosen the collet chuck with the knurled nut. Unscrew the collet chuck with your hand or with the knurled nut.
6. Remove the measuring pin from the collet chuck. Then put it aside within reach together with the knurled nut.
7. Clean the inner cone of the spindle with the cleaning cone of the service set.

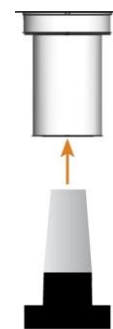


FIG. 71 – CLEANING THE INNER CONE OF THE SPINDLE

8. Clean the collet chuck with the brush of the service set.

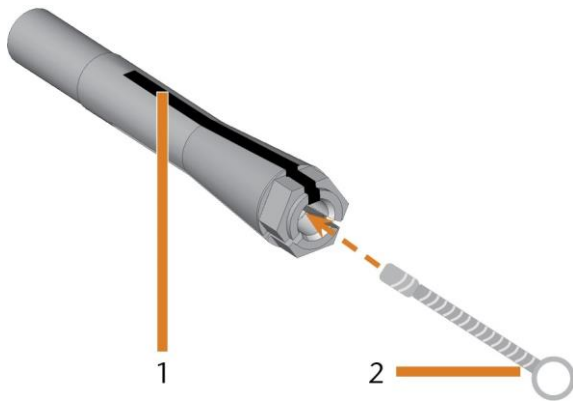


FIG. 72 – CLEANING THE COLLET CHUCK

1. Longitudinal slot
2. Cleaning brush

NOTICE

Damaging of the spindle when using the wrong grease or applying the grease incorrectly

If you use unsuitable grease or if grease gets into the longitudinal slots of the collet chuck, the machine may get damaged.

- » Ensure that no grease gets into the longitudinal slots of the collet chuck.
- » Only use a very small, about pinhead size amount of the grease.
- » Only use the provided grease of the service set.

9. Put a small amount of the collet grease on the index finger and smear it with the thumb.
10. Apply the smeared collet grease to the flanks of the collet chuck.

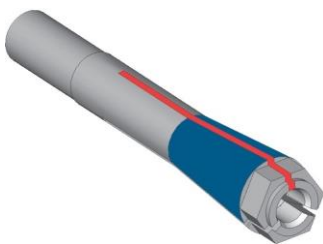


FIG. 73 – GREASING THE COLLET CHUCK; SURFACE IN WHICH GREASE IS TO BE APPLIED IS MARKED IN BLUE; SLOT THAT MAY NOT BE GREASED IS MARKED IN RED

11. Insert the measuring pin into the collet chuck with one hand and keep holding it. Screw the collet chuck with the knurled nut in your other hand tightly into the spindle.


! Turn the knurled nut as far as you can so that the collet chuck is properly seated in the spindle. Otherwise rotational imperfections can occur during operation which will worsen your processing results

12. Remove the measuring pin from the collet chuck and store it together with the other components of the spindle service set.
13. Clean the nozzle plate.

8.4 Cleaning the nozzle plate

You should clean the nozzle plate every time you clean the collet chuck.

1. Have the interdental brush ready.
2. Open the working chamber door.
3. Clean the ring of 8 holes in the inner area of the nozzle plate. For this, move the interdental brush up and down.

 If necessary, apply some water with a cleaning agent and let it sit for some minutes.

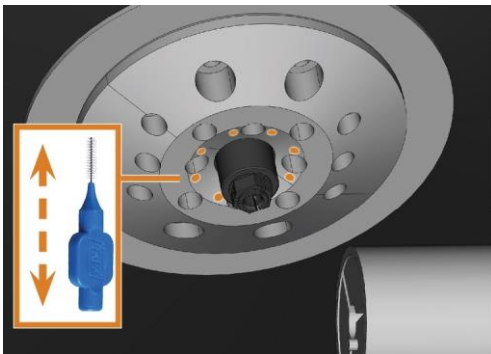



FIG. 74 – CLEANING THE NOZZLE PLATE; NOZZLES MARKED ORANGE

8.5 Cleaning the collet chuck of the blank holder

 The grease for the collet chuck of the spindle and for the collet chuck of the blank holder is the same item.

1. Have ready:
 - Blank holderservice set
 - Collet chuckgrease

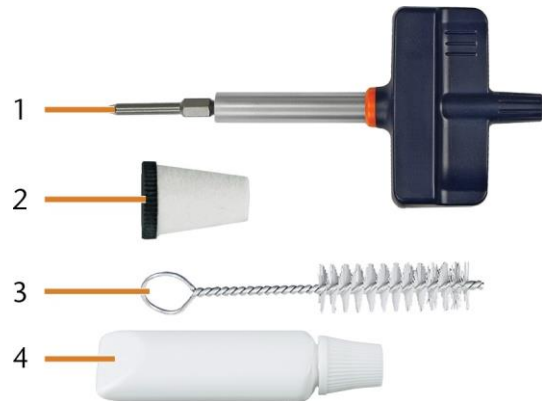


FIG. 75 – BLANK HOLDER SERVICE SET

1. Torquescrewdriver (1.8 Nm)
2. Cleaning cone
3. Cleaning brush
4. Tube of collet chuckgrease

NOTICE

Damaging of the block holder when using the wrong torque screwdriver

If you use a torque screwdriver other than the one included in the scope of delivery, the block holder can be damaged.

- » Use only the provided torque screwdriver.
- » Ensure that you apply a maximum torque of 1.8 Nm.

2. Open the working chamber door.
3. Insert the bit of the torque screwdriver into the collet chuck and hold it in place.
4. Put the torque screwdriver on the bit and unscrew the screw by twisting the torque screwdriver.

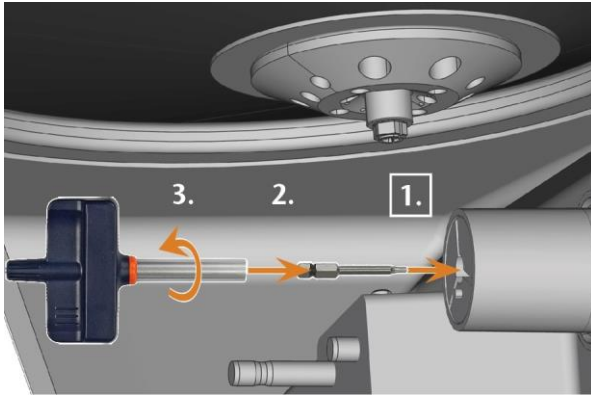


FIG. 76 – LOOSENING THE SCREW OF THE BLANK HOLDER COLLET CHUCK

5. Remove the collet chuck and the screw from the blank holder. Put both items aside within reach.

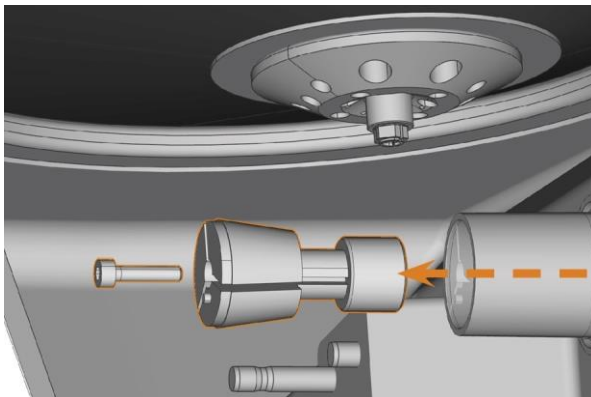


FIG. 77 – REMOVING THE COLLET CHUCK FROM THE BLANK HOLDER

6. Clean the collet chuck with the brush of the service set.
7. Clean the collet chuck with the brush of the service set.

Damaging of the collet chuck when using the wrong grease or applying the grease incorrectly

If you use unsuitable grease or if grease gets into the longitudinal slots of the collet chuck, the machine may get damaged.

- » Ensure that no grease gets into the longitudinal slots of the collet chuck.
- » Only use a very small, about pinhead size amount of the grease.
- » Only use the provided grease of the service set.

9. Clean the outside of the collet chuck.
10. Grease the collet chuck. Apply the grease only to the conical surface of the collet chuck.

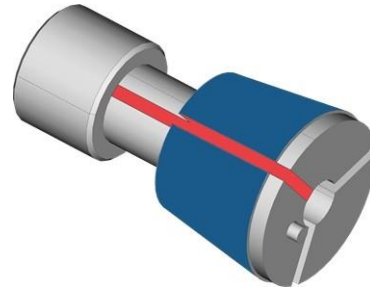


FIG. 78 – GREASING THE COLLET CHUCK; SURFACE IN WHICH GREASE IS TO BE APPLIED IS MARKED IN BLUE; SLOT THAT MAY NOT BE GREASED IS MARKED IN RED

11. Push the collet chuck into the blank holder as far as you can. Twist the collet chuck until it snaps in place and is properly seated. Depending on the position you may need to twist it up to 360°.

8. Clean the collet

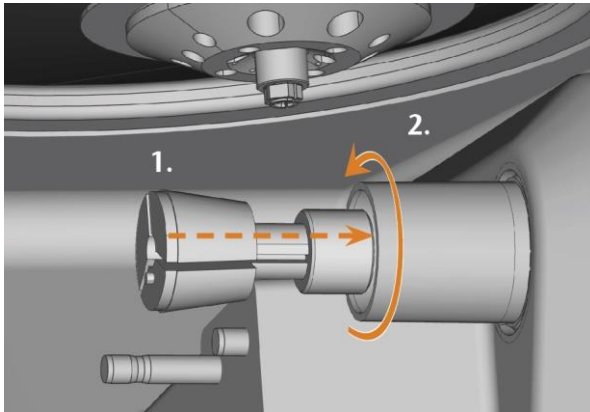


FIG. 79 – INSERTING THE COLLET CHUCK INTO THE BLANK HOLDER

12. Check the condition of the fixing screw and replace it by a spare screw if necessary.
13. Insert the screw into the collet chuck with the torque screwdriver and screw it down.

8.6 Rinsing the cooling liquid circuit

To remove foreign bodies from the cooling liquid system of your machine, you need to rinse the system.

1. Start the rinsing program by selecting the corresponding entry in the Maintenance section on the touchscreen.
 - ✓ The following happens:
 - a. The on-screen guide displays.
 - b. The multi-purpose drawer opens.
2. Empty and clean the cooling liquid tank.
3. Refill the tank.
4. Close the multi-purpose drawer.
5. To start rinsing, confirm the dialog.
 - ✓ The rinsing program runs automatically.
6. Wait until the rinsing program has ended.
7. Exchange the carbon filter.

8.7 Exchanging the carbon filter

The cooling liquid tank of your machine is equipped with a cooling liquid filter that consists of different filter components, including the carbon filter. The carbon filter contains activated carbon pellets that you need to exchange regularly.

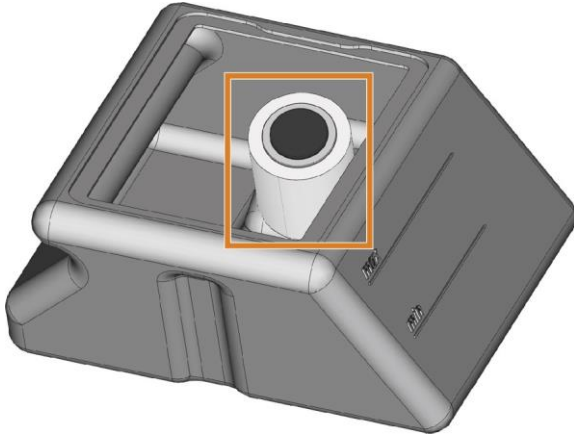


FIG. 80 – COOLING LIQUID FILTER IN THE TANK

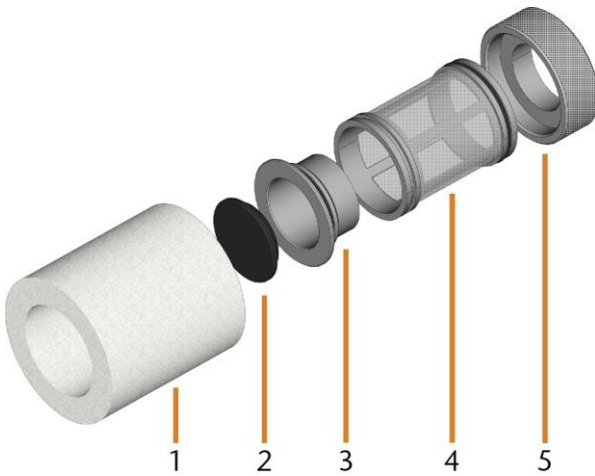


FIG. 81 – THE COMPONENTS OF THE COOLING LIQUID FILTER

1. Fine filter
2. Carbon filter cap
3. Carbon filter
4. Mesh filter
5. Filter socket

To exchange the activated carbon pellets in the filter, do the following:

1. Empty and clean the cooling liquid tank.

2. Remove the fine filter by stretching the top end a bit and straightly pulling it off the filter with both hands.

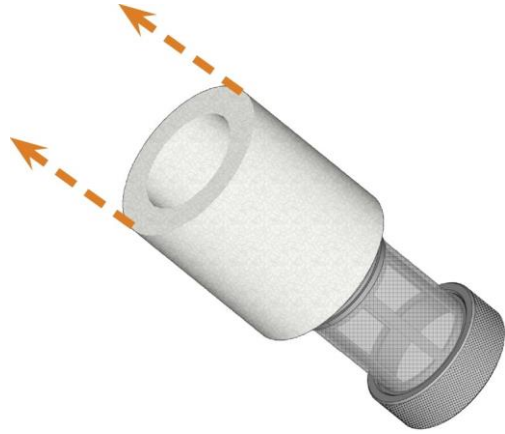


FIG. 82 – REMOVING THE FINE FILTER

3. Clean the fine filter under running water. If the fine filter is too soiled for proper cleaning, replace it with a new one when reassembling the filter.
4. Remove the carbon filter by straightly pulling it off the filter.

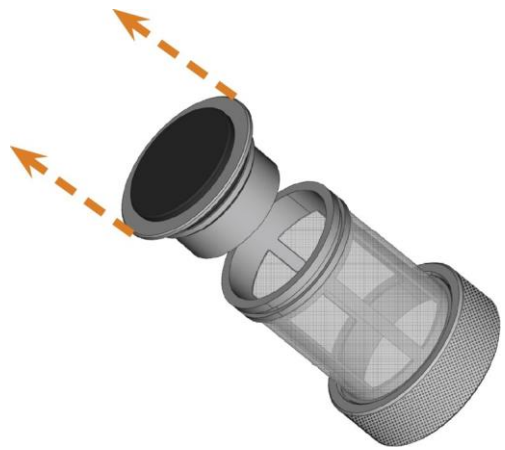


FIG. 83 – REMOVING THE CARBON FILTER

! If you tilt the filter or move it abruptly in the next step, you may spill the activated carbon pellets.

5. Carefully lift the carbon filter cap with your fingernail or a flat blunt tool and pull it off the carbon filter.



FIG. 84 – OPENING THE CARBON FILTER

6. Empty the filter and dispose of the activated carbon pellets.
7. Clean the carbon filter and dry it with a cloth.
8. Fill new activated carbon pellets into the carbon filter.

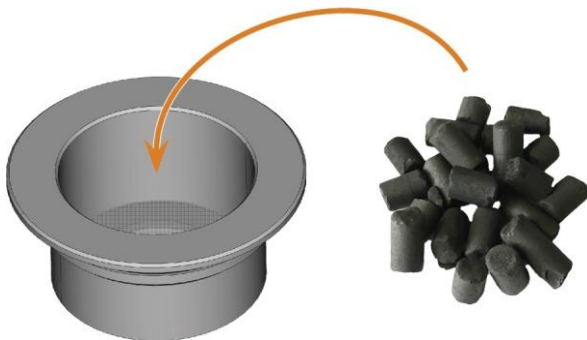


FIG. 85 – REPLACING THE ACTIVATED CARBON PELLETS

9. Firmly close the carbon filter with the cap.
10. If the filter mesh is soiled, pull it off the cooling liquid filter and rinse it under running water.
11. Reassemble the cooling liquid filter. Make sure that the fine filter covers the complete filter.
12. Fill new cooling liquid into the tank.

8.8 Cleaning the housing

NOTICE

Damaging of the housing when using an unsuitable cleaning agent

If you use an unsuitable cleaning agent and/or cleaning tool for cleaning the machine housing, the surface or the adhesive foil can get damaged.

- » To avoid scratches, only use a microfiber cloth to clean the housing.
- » Take care of the adhesive symbols so that they do not peel off. The adhesive foil is especially sensitive to rubbing and strong cleaning agents.
- » If the usage of a special cleaning agent is necessary to eliminate certain dirt, we recommend checking the suitability of the cleaning agent at a hidden place of the part first.

1. Clean the surface with a dry microfiber cloth.
2. If some dirt cannot be removed this way, moisten the cloth. Use a pH neutral cleaning agent if necessary.

Exchanging the main fuse

The internal power supply of the machine has a main fuse that is accessible from the outside and can be replaced if necessary.

- » As a replacement fuse, only use a fuse of the following type: T6,3A L250V

i A new main fuse is available as spare part from customer service.

1. Switch off the machine at the main power switch.
2. Remove the power cord from the connection panel.
3. Remove the cover of the fuse.

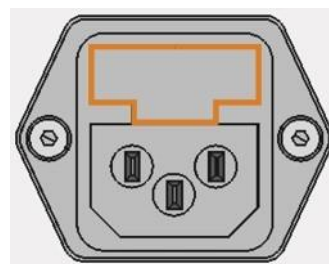


FIG. 86 – COVER OF THE FUSE (MARKED ORANGE)

4. Remove the defective fuse and replace it with a new fuse.
5. If you do not have a replacement fuse ready, take the replacement fuse from the right side of the fuse cover and put it into the left side of the fuse cover.
6. Remount the fuse cover.

8.9 Calibrating the axes

NOTICE

Deterioration of machining results caused by an incorrect calibration

At delivery, your machine is already calibrated. As long as your machining results are accurate, a new calibration is not necessary. A calibration takes much time and will deteriorate the machining results if it is improperly executed.

- » In case of inaccurate machining results, try adjusting the machining conditions first: Check the fixation and quality of the blank and the state of the tool.
- » Before calibrating the machine, contact customer service.
- » Be very careful when measuring and entering data during calibration. When in doubt, abort the calibration.

By calibrating the machine with test and calibration specimens, it may be possible to improve the machining results. Customer service will assist you with this.

Your machine is delivered with a calibration set. Customer service will need this set for calibration. It contains the following parts:

- Calibration blanks which are used to mill calibration and test specimens
- A tool for milling the calibration or test specimens
- A micrometer for measuring the machining precision

8.10 Replacing the tool magazine inserts

When tool magazine inserts are worn, they should be replaced. New inserts are delivered without holes for the tools. The holes must be drilled into the inserts with the machine.

- Your machine comes with tool magazine inserts as spare parts and with the drill tool.
- Additional inserts and drill tools are available via customer service.

Customer service exchanges the tool magazine inserts during preventive maintenance. If required, you can exchange tool magazine inserts yourself and have customer service drill the holes into the inserts via remote maintenance.

You can replace tool magazine inserts as follows:

1. Contact customer service. They will assist you with drilling the holes into the new inserts. Otherwise, you won't be able to insert tools into the tool magazines.
 2. Remove all tools from the desired magazine.
 3. Remove the screws from the bottom of the tool magazine and put them aside.
 4. Firmly press against the tool magazine insert.
- ✓ The insert moves out of the magazine together with its retainer.

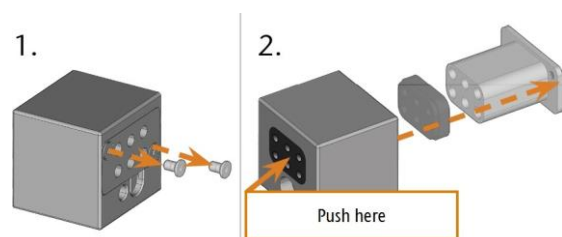


FIG. 87 – REMOVING AN INSERT FROM A TOOL MAGAZINE

5. Insert the new insert into the magazine together with its retainer. Position the insert with the smooth side pointing forwards so that it forms an even surface with the upper side of the tool magazine.
6. Insert the screws and screw them down.

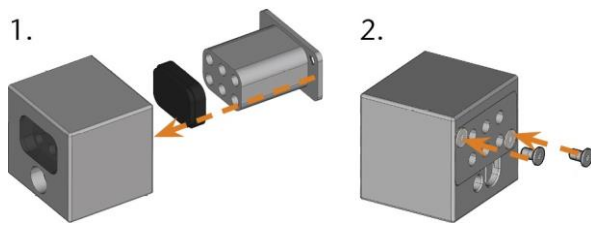


FIG. 88 – INSERTING AN INSERT INTO A TOOL MAGAZINE

7. Follow the instructions you receive from customer service and drill the tool positions in the new inserts.

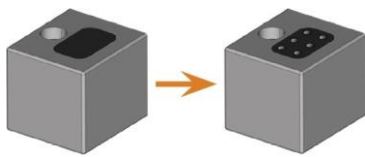


FIG. 89 – TOOL MAGAZINE BEFORE AND AFTER DRILLING THE TOOL POSITIONS

8. Insert the tools into the correct positions of the magazine.
9. Ensure that the correct tool magazine for the next job is mounted.

Exchanging the coupling of the cooling liquid tank

1. Empty the cooling liquid tank.
2. Unscrew the filter in the cooling liquid tank with your hand. Put the filter aside.



FIG. 90 – UNSCREWING THE FILTER IN THE COOLING LIQUID TANK

3. Push the coupling out of the tank.



FIG. 91 – PUSHING THE COUPLING OUT OF THE TANK

4. Thoroughly clean the cooling liquid tank. Especially clean the sealing surface around the opening for the coupling.

! If the surface around the opening for the coupling is soiled, the sealing ring on the coupling will not properly seal the tank and liquid will leak.

5. Insert the spare coupling into the designated opening as shown in the following figure.

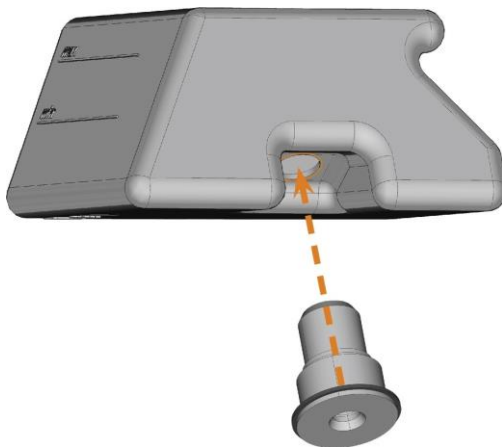


FIG. 92 – INSERTING THE SPARE COUPLING INTO THE COOLING LIQUID TANK

6. Screw down the filter onto the coupling with your hand. Do not tighten the filter completely yet.

! If you tighten the filter now, you may damage the new coupling when you attach the tank to the machine. As a result, the coupling will no longer be water tight.

7. Reinsert the cooling liquid tank until the tank is properly attached to the machine.
8. Pull the cooling liquid tank out of the machine again.
9. Tighten the filter completely.
10. Fill new cooling liquid into the tank.

8.11 Exchanging the view window wiper

The view window wiper removes liquid from the back of the view window when the working chamber door opens and closes. You need to exchange it according to the interval given in the maintenance table or when the wiping effect is too low.

The view window wiper is fixated by a two-part holder. You exchange the view window wiper as follows:

1. Open the working chamber door.
2. Unscrew the 3 screws (marked orange in the following figure) that attach the lower part of the holder to the upper part. Remove the lower part of the holder (marked blue in the figure).

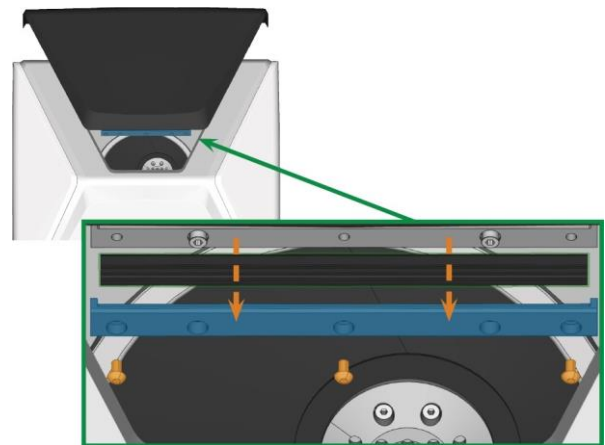


FIG. 93 – REMOVING THE VIEW WINDOW WIPER FROM THE MACHINE

3. Remove the view window wiper from the holder and dispose of it.
4. Clean the holder of the view window wiper with a wet cloth. Clean the part that you removed and the upper part in the machine.
5. Put the spare view window wiper into the lower part of the holder according to the following figure.

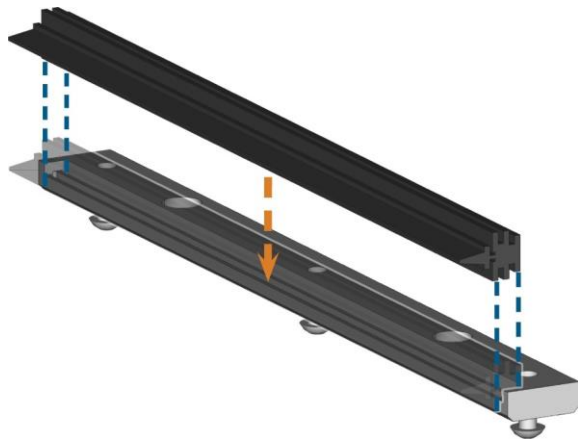


FIG. 94 – POSITIONING THE SPARE V IEW WINDOW WIPER

6. Place the lower part of the holder on the upper part in the machine with the wiper lying between the two parts. Hold it in place.
7. Screw down the holder with the 3 screws.

8.12 Updating the software and firmware

Updating the firmware of the machine

The firmware is the internal control software of your machine. New versions may introduce new functions and improve existing ones. New firmware versions come as part of new versions of DentalCNC.

NOTICE

Damaging of the control unit when a firmware update is interrupted

If the firmware update is interrupted, the control unit of the machine may become permanently damaged.

- » Only update the firmware if a permanent electrical supply of the machine and the computer is guaranteed.
- » Only update the firmware if the computer's operating system is stable and is free of malware.
- » Only update the firmware if the connection between the computer and the machine is stable. Always use a wired connection during the update.
- » Do not disconnect the machine or the computer from the electrical source nor switch off the machine or computer during a firmware update.
- » Do not close DentalCNC during a firmware update.

Only customer service can currently update the firmware.

- » If a firmware update is available, contact customer service.

Updating DentalCAM & DentalCNC

Only customer service can currently update the internal CAM computer.


- » If you require an update for DentalCAM & DentalCNC, contact customer service.

8.13 Maintenance table


Several times per day

Task	Recommended interval	Procedure / Parts	Tool illustration
Checking the cooling liquid	If the flow rate is insufficient	Visual check; exchange liquid if necessary	





Once per day

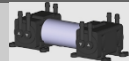


Task	Recommended interval	Procedure / Parts	Tool illustration
Exchanging the cooling liquid and cleaning the tank	3 operating hours After work	Brush, Water, Cooling liquid	
Daily cleaning of the working chamber	After work If soiled	Wet cloth	

Once per week


Task	Recommended interval	Procedure / Parts	Tool illustration
Updating the software and firmware	When an update is available		
Cleaning the housing		Microfiber cloth, Water, Mild cleaning agent (optional)	
Exchanging the main fuse		Replacement fuse T6,3A L250V	

Every 4 weeks





Wear part	Recommended interval	Procedure / Parts	Spare part illustration
View window wiper	200 operating hours*		
Tool magazine inserts	1,000 operating hours* Every 2 years*		
Collet chuck (Blank holder)	1,000 operating hours* Every 2 years*	Blank holder service set; remove and insert collet chuck as when cleaning it	
Coupling of the cooling liquid tank	1,000 operating hours* Every year*		

Wear part	Recommended interval	Procedure / Parts	Spare part illustration
Cooling liquid pump	1,000 operating hours*		
Spindle bearings (requires spindle exchange by customer service)	1,000 operating hours*	Blank holder service set; remove and insert collet chuck as when cleaning it	
Air intake filter	1,000 operating hours*		

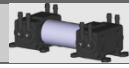


When necessary

Task	Recommended interval	Procedure / Parts	Tool illustration
Updating the software and firmware	When an update is available		
Cleaning the housing		Microfiber cloth, Water, Mild cleaning agent (optional)	
Exchanging the main fuse		Replacement fuse T6,3A L250V	

Wear parts that you can exchange yourself

Wear part	Recommended interval	Procedure / Parts	Spare part illustration
View window wiper	200 operating hours*		
Tool magazine inserts	1,000 operating hours* Every 2 years*		
Collet chuck (Blank holder)	1,000 operating hours* Every 2 years*	Blank holder service set; remove and insert collet chuck as when cleaning it	
Coupling of the cooling liquid tank	1,000 operating hours* Every year*		

Wear parts that customer service exchanges for you

Wear part	Recommended interval	Procedure / Parts	Spare part illustration
Cooling liquid pump	1,000 operating hours*		
Spindle bearings (requires spindle exchange by customer service)	1,000 operating hours*	Blank holder service set; remove and insert collet chuck as when cleaning it	
Air intake filter	1,000 operating hours*		

*These are recommendation guidelines. Depending on the processing material and how well the machine is cleaned, these values may differ.

9. Disposal

9.1 Disposing of the cooling liquid

When disposing of the cooling liquid / machining residues, obey the following regulations.

- » Avoid entry of hazardous machining residues into the soil, water or into sewers.
- » Obey the national and local laws of the disposal location in any case.
- » If necessary, have the cooling liquid and machining residues disposed of by an approved disposal company.
- » Keep a reference sample of the disposal product for at least 6 months.
- » If you dispose of the cooling liquid yourself, do as follows:
 - a. Completely filter the machining residues out of the used cooling liquid.
 - b. Dispose of the liquid via the sewers.
 - c. Dispose of the solid machining residues as described by the manufacturer of the material.

9.2 Disposing of the machine

The machine must not be disposed of with the residual waste.



We will dispose of the machine at no cost. The owner will bear the costs for disassembly, packaging and transport.

- » Before sending in the machine for disposal, contact customer service.
- » If you dispose the machine yourself, obey by the national and local laws of the disposal location.

9.3 Dismantling, transport and packaging

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10. Troubleshooting

In case something is not working as intended, take a look at the following troubleshooting guide.



NOTICE

Machine damage due to improper troubleshooting

In case of improper troubleshooting, your machine may get damaged.



- » If you are unsure of how to perform certain steps during troubleshooting or cannot solve the problems, abort the troubleshooting and contact customer service.

Additional symbols in this chapter


-  Question to narrow down the problem
-  Suggested solution

I cannot open the working chamber door


Is the machine operating?

-  While the axes are moving, you cannot open the working chamber door.
-  If applicable:
- » Wait until the machine has finished.

Has a power failure occurred at the installation site of the machine?

-  If applicable:
- » Depending on the duration of the power failure, restart the machine or perform an emergency opening.

Is electricity available at the installation site of the machine?

-  If applicable:
- 1. Connect the machine to the electrical source.
- 2. Switch on the machine at the main power switch.
- 3. If the working chamber lighting does not illuminate, check if the power cable is properly seated in the machine and is connected to the electrical source.
- 4. Try connecting the machine to a different socket.

Is the door blocked?

-  If applicable:

1. Check if the guide rails at the back of the


working chamber door are free from dirt.

2. Switch on the machine at the main power switch.
3. If the working chamber lighting does not illuminate, check if the power cable is properly seated in the machine and is connected to the electrical source.
4. If the machine is not powered, perform an emergency opening when necessary.


I have installed all components, started the software but the machine does not reference

Is the working chamber door open?


The machine does not reference with the working chamber door open.

-  If applicable:
- » Confirm the corresponding dialog on the touchscreen to close the door.

Is an Ethernet cable connected to the machine?


-  If applicable:
- » Check if the Ethernet cable is properly seated in the connector and is undamaged. If possible, use the provided cable.

Do you use WiFi?

-  If applicable:
- » Check if the access point is properly set up and operational.


Is the working chamber illuminated in red?

In this case a machine malfunction occurred.

-  If applicable:
- 1. Restart the machine.
- 2. If the working chamber continues to be illuminated in red, contact customer service.

My machine doesn't execute any jobs although it is connected to the computer

Is the drawer open?

-  If applicable:
- » Push the drawer into the machine until it snaps in place.

❓ **Is the wrong tool magazine mounted or didn't the machine recognize the magazine?**

💬 If applicable:

1. In the Jobs section of the touchscreen, check which tool magazine is required and if the machine has recognized it (green check mark in the check box).
2. If there is no green check mark, follow the instructions for inserting tool magazines.
3. If there is no green check mark although the correct tool magazine is mounted, clean the magazine and the tool magazine holder.

The machining results are not satisfactory and / or tools keep breaking

❓ **Do the tool positions in the Tools section correspond to the tools in the respective tool magazine?**

If not, the machine uses the wrong tools during job execution.

💬 How to check this:

1. Via the touchscreen, compare the tool positions in the Tools section with the tools in the corresponding tool magazine.
2. Replace the wrong tools in the tool magazine with the correct ones.

❓ **Is the blank properly mounted?**

💬 How to check this:

- » Remove the blank and remount it. The groove of blocks has to properly sit on the corresponding positioning pin.

❓ **Are bolts, fixing mechanisms, gaps and openings of the blank holder contaminated by processing dust?**

💬 If applicable:

- » Clean the mentioned components thoroughly.

❓ **Is the measuring key contaminated?**

💬 If applicable:

- » Clean the measuring key with a brush

❓ **Are the tools worn?**

💬 How to check this:

1. Visually inspect all tools.
2. Check the tool life values via the touchscreen.
3. Replace worn tools with new ones.

❓ **Do rings on the tools sit in the groove on the tool shank?**

How to check this:

Visually inspect all tools and push rings that have moved into the groove again.

❓ **Are the tool magazine inserts worn?**

💬 If applicable:

- » Replace the tool magazine inserts with new ones.

❓ **Do the parameters of the job in the software correspond to the parameters of the blank?**

💬 How to check this:

- » Make sure that the following parameters of the job and of the blank in the machine correspond to each other. Also make sure that they are suitable for the objects that you want to machine.

- Material type
- Blank dimensions
- Indications (types) of the individual objects

❓ **Are the object files of sufficient quality?**

💬 How to check this:

1. Check the quality of object files (STL files) in your CAD application or an STL viewer. Especially, consider the manufacturer information on wall thickness and border thickness.
2. If necessary, adjust the settings of your scanner and scan application.

❓ **Is the collet chuck of the spindle contaminated or is it loosely seated in the spindle?**

💬 If applicable:

1. Clean the collet chuck with the provided spindle service set.
2. When you insert the collet chuck into the spindle, make sure that it is properly seated.

❓ **Did you exchange the collet chuck at the recommended interval?**

💬 How to check this:

- » Verify the recommended interval for exchanging the collet chuck in the maintenance table. If necessary, exchange the collet chuck.

The machine displays that the flow rate is too low

**❓ Is cooling liquid lacking in the tank?
Is the cooling liquid soiled?**

💬 If applicable:

Clean the tank. Fill in clean cooling liquid.

**❓ Is the filter in the cooling liquid tank
clogged?**

💬 If applicable:

Clean the filter and the tank. Fill in clean cooling liquid.

**❓ Are the liquid nozzles in the working
chamber clogged?**

💬 If applicable:

Clean the nozzles with the interdental brush.

**❓ I have exchanged the tool magazine inserts and
now there are no holes for the tools anymore**

💬 Tool magazine inserts are delivered without drilled holes for tools. You drill them with the machine. Contact customer service.

11. DECLARATION OF CONFORMITY

Interdent d.o.o., Opekarniška cesta 26, SI -3000 Celje s polno odgovornostjo izjavljamo, da je izdelek, naveden v tej izjavi skladen z navedenimi EU smernicami

We Interdent d.o.o., Opekarniška cesta 26, SI – 3000 Celje declare that products below are in accordance with EU directives

- **Naziv izdelka: CNC rezkalni stroj**
- **Name of the product: CNC milling unit**
- **Tip: CC newCHIC**
- **Type: CC newCHIC**

Upoštevane EU smernice:

EU directives:

- 2006/42/EC, smernice za izgradnjo strojev – *directive for machine construction*
- 2014/30/EC, EMC združljivost – *EMC compatibility*

Testne metode po standardih:

Test methods according standards:

- | | |
|-------------------------|---------------------------------------|
| - EN 614-1:2006+A1:2009 | - EN 61326-1:2013 |
| - EN ISO 12100:2010 | - EN 61326-2:2013 |
| - EN 13128:2001+A2:2009 | - EN 61000-3-2:2006 + A1:2009+A2:2009 |
| - EN ISO13849-1:2008 | - EN61000-3-3:2013 |
| - EN ISO 13849-2:2012 | - EN 60204-1:2006 |

Proizvod je varen za uporabo v standardnih pogojih. Vsaka sprememba proizvoda, ki ni odobrena s strani proizvajalca, razveljavlja to izjavo.

Product is safe in standard conditions. Any change of the product that is not approved by producer, repeals this declaration.

Mesto in datum izdaje: Celje dne 03.02.2017

Place and date of issue: Celje, 03.02.2017

Odgovorna oseba:

Responsible person:

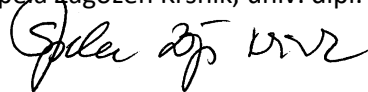
Igor Grudnik, inž. elektr.



Direktor:

Director:

Špela Zagožen Krsnik, univ. dipl. oec



12. WARRANTY

Device: dental milling machine CC newCHIC

Serial number:

Installation date:

Installation and connection carried out by:

(Company, Name)

Our company, INTERDENT d.o.o., guarantees a perfect operation of the above stated device for a period of 12 months from the date of its selling to the final customer. During this time the company will remedy at its own expense any faults encountered during a normal use of the said device.

Terms and conditions of warranty:

- The installation and connection must be carried out by a qualified professional authorised by the manufacturer.
- The device must be operated strictly according to the enclosed instructions.
- The warranty does not cover any damage incurred during transportation, resulting from inappropriate maintenance or handling, or deriving from disturbances in the power supply network, nor any mechanical damage.
- The warranty is invalid in the event that non-original spare parts have been used and that the device has been repaired, altered or modified by the customer or other unqualified, non-officially appointed person with the purpose of remedying a defect or malfunction.
- In the event of defect or malfunction contact us by phone at (03) 42-56-206 or by e-mail at servis@interdent.cc.