



SIMONS ELECTRON
MICROSCOPY CENTER

NEW YORK STRUCTURAL BIOLOGY CENTER



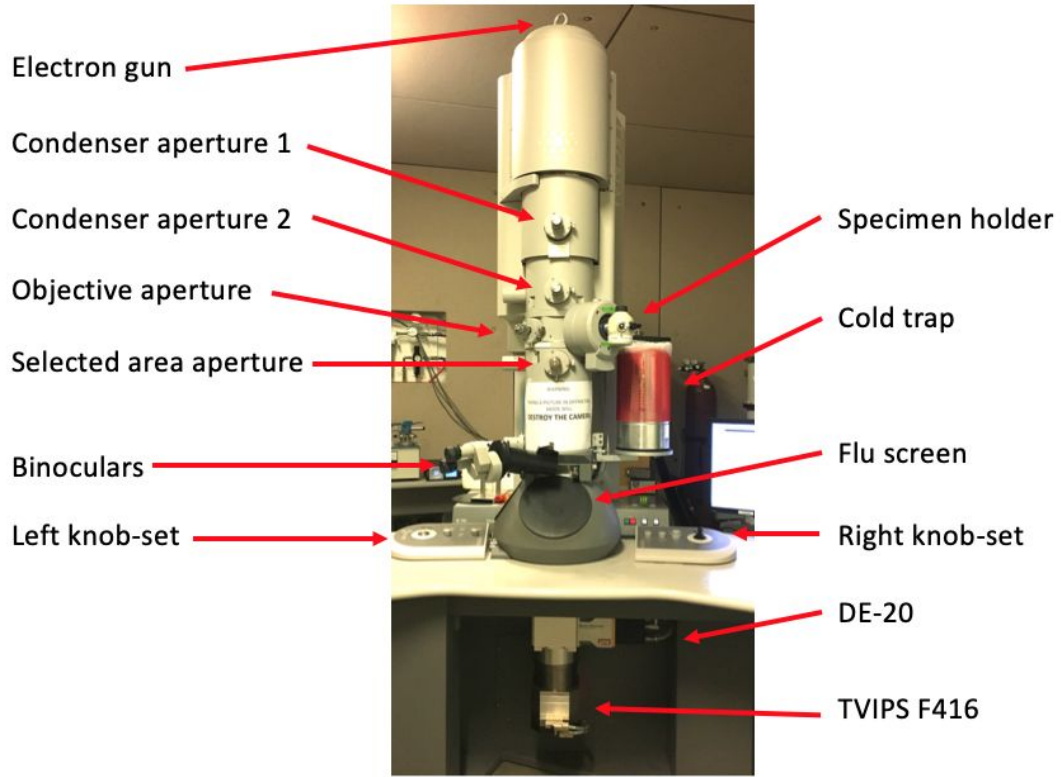
TF20 User Manual

**Simons Electron Microscopy Center
(SEMC) at the New York Structural
Biology Center (NYSBC)**

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F20 Information Sheet



Y cxgrgpi vj u"

: 2"mX"? "206398"α "

342"mX"? "202556; "α "

○ 422"mX"? "202472: "α "

○ 522"mX"? "2023; 8; "α "

Ngpu"("o ci pkecvqp'tcpi g"

NO "? "43Z" "4322Z"

○ O "? "3922Z" "5722Z"

○ UC"? "87.222Z" "4: 2.222Z"

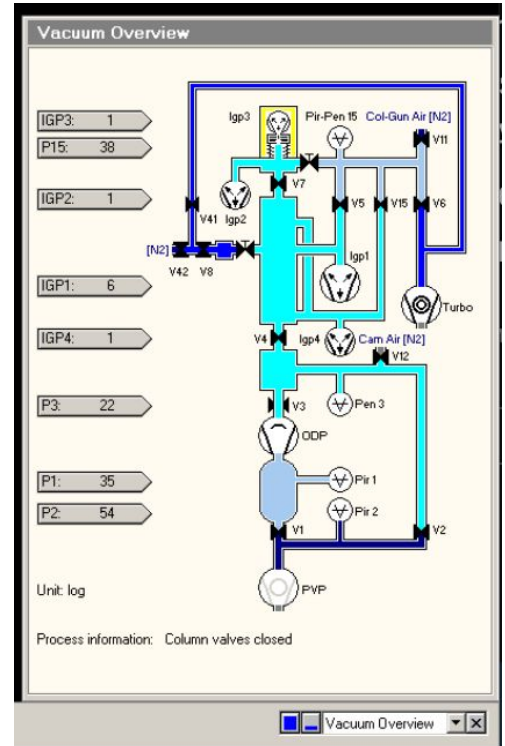
● Qdlgev&g'ngpu'Eu"? "408'o o "

● Cr gtwtg'uk gu"

<u>Aperture</u>	#1	#2	#3	#4
Condenser	72"wo "	92"wo "	322"wo "	372"wo "
Objective	62"wo "	92"wo "	92"wo "	322"wo "
Selected area	62"wo "	92"wo "	322"wo "	422"wo "

F20 User Guide (starting your session)

- 30 O cng'uwg'o letqueqr g'ku'kp'i qqf "eqpf kkpq"<
 - c0 J V'cpf "HGI "ctg"qp""
 - k0 Wpf gt "dUgwr ö'cr .dJ ki j "Vgpukpö"cpf "
 - öQr gtcvgö"ctg" { gmy "
 - d0 Eqnwo p'xcxgu'ctg'emqgf "
 - k0 Wpf gt "dUgwr ö'cd."dEqr0Xcxgu'Emqgf ö'ku"
 - { gmy "
 - e0 GO "eqnwo p'xcewo "ku'ucdrg"*K R3"? "8+""
 - f0 O letqueqr g'ghv'kp"UC"o ci 't'cpi g"
 - g0 Uci g'pgwtcrf'
 - k0 Wpf gt "dUgctej ö'cd."erlemöJ qrf gtö"dwwqp"vq"
 - | gtq"qw'vj g'Z.'l .'\' "cpf " "eqqt f kpcvqu'qh'vj g"
 - ucv g"
 - h0 Eqrf "tcr "crtgcf { "hknf"y kj "NP 4"*ecp'rcuv'htq"38"j qwtu="
 - tghknlgxgt { "3"/"4"j qwtu="
- 40 Nqi kp"v'rgi kqp'y qtmucv'kp'y kj "{ qwt "NF CR"ceeqwpv""
- 50 Vtcpuhtg'tet {q'j qrf gt'htqo "vj g'r wo r kpi 'ucv'kp"v'v'cpuhtg"
 - uncv'kp="eqqrif qy p"j qrf gt'cpf "kpuhtv" { qwt'uco r rg"
 - c0 Ugg'dF t { "Rwo r kpi "Ucv'kp"Wugt "I wkf g"ht "et { q"
 - j qrf gtuö'ht "f gvckrgf "kpuht wv'kpu"r ci g"37+"
 - 3+ tgugv'j qrf gt"
 - 4+ crj c"? "82Ä"
 - 5+ hnw'uetggp'qh'o letqueqr g'ku'f qy p"
 - 6+ qdlgev'xg'cr gtwt g'ku'qw"
 - 7+ wtdq'ku'qp"cpf "tgc f { "*" { gmy +"
 - 8+ uj lgrf "qh'et {q'j qrf gt'ku'emqgf "
 - 9+ cktmen'lr wo r "ko g"? "342u"
- 70 Chgt'kpuht'v'p.y ckl'ht "K R3"v'tgcej ">32"dghgtg'qr gplki "vj g'eqnwo p'xcxgu'cpf "uvt'v'kpi "{ qwt"
 - uguukp"
- 80 Ugrgev'vj g'eco gtc lces wku'kqp"v' r g'pggf gf "ht" { qwt'uguukp"<
 - c0 K' {qw'ctg'uetggp'kpi "o wnk'rg"et {q'i tkl'u'v'f c {."wug'vj g'H638"eco gtc"*dEt {q'Uetggp'kpi "
 - y kj "VXRÜö"i wkf g+
 - k0 Vj ku'eco gtc"j cu'rcuvgt"vj tqwi j r w'cpf "{ lgrf u'j ki j gt"eqpvt'cu'v'ko ci gu'kp"c'ukpi rg"
 - gZR quwtg"
 - k0 K' {qwt'i tkl'mqmu'i qqf ."{qw'ecp'uy kej "v'vj g'F G42"ht" f c'v'eqmgev'kqp"
 - d0 K' {qwr'ncp"v'eqmgev'f c'v'ht"4F 15F "cpcn {uku."wug'vj g'F G42"eco gtc"*dEt {q'F c'v"
 - Eqmgev'kqp"y kj "vj g'F G42ö"i wkf g+"



10 Vj ki'eco gtc'j cu'unqy gt'vj tqwi j r ww'dw'ecp'i kxg"{qw'j ki j gt'tguqmwkqp'f gvcnu"
y kj kp'o wnk r g'htco gu'qh'c'o qxlq

F20 User Guide (ending your session)

- 30 Chgt{"qwt'uetggplpi 'cpf lqt'f cvc'eqmgevqpp'ku'f qpg.'tgo qxg'vj g'et{q'j} qrf gt'htqo 'vj g'o letqueqr g"
 c0 Ugg'õEt{q'J} qrf gt'kpuqtvkqp'f gvtcevqpp'I wkf g'ht'f42õ'ht'f gckrgf 'kpuwvkvqpu"
- 40 Kf{qw'wugf 'vj g'F G42.'o cng'lwatg'vj g'eco gtc'ku'õtgvtcevqf õ'cpf "õy cto 'w õ"
- 50 Et{q'e{eng'vj g'o letqueqr g"
 c0 tgugv?'j} qrf gt"
 d0 eqnwo p'xcixgu'emqugf "
 e0 hw'uetggp'ku'f qy p"
 f0 qdlgevkg'cr gtwtg'ku'qww'
 g0 j k j 'o ci 'hgpugu'qp'*ugpf "ueqr g'q'GP IHC IHE'r t gugv=cp{vj kpi 'kp'vj g'UC'o ci 'tcpi g+"
 h0 Qpeg'wtdq'ku'f gmqy .'erlemõEt{q'E{ergõ'qp'o letqueqr g'RE"*462'o kpwgu+"
- 60 Tgo qxg'eqrf 'tcr 'htqo 'vj g'wcpf 'y j gp'K R3"? ; ; "
 c0 [qw'ecp'nggr 'vj g'tgo ckpki 'NP₄'kpukf g'vj g'eqrf 'tcr '*qih'vj g'eqku+'ht'vj g'pgzv'fc{ø'u'wugt"
- 70 Dcng'qw'vj g'et{q'j} qrf gt"
 c0 Ugg'õFt{"Rwo r kpi 'Ucvkqp'Wugt'I wkf g'*ht'et{q'j} qrf gt+õ'ht'f gckrgf 'kpuwvkvqpu"
- 80 Nqi "qhh'Ngi kpp'y qtmuvkvqpp"
- 90 Enqug'Ngi kpp'erkgpv'qp'dqvj 'eco gtc'cpf "o letqueqr g"
 : 0 Ergcpwr 'vj g'dgpej 'ur ceg'ht'vj g'pgzv'wugt"
 ; 0 Nqi "cp{ 'kuwgu'kpv'vj g'GO 'pqvgdqmqm'qt'pqvkh{ 'UGO E'uvchh'f kgevqf "
- " "

Cryo Screening with Tietz TVIPS F416

"

Vj g'VXRRU'ku'c'EO QU*eqo r rgo gpvct { 'b gvcn/qzkl g/ugo leqpf wevqt+'38'o gi cr kzgr'eco gtc'y kj 'c'72"
Itco gluge'tgcf qw*6mlz'6m0K'uku'dgmj 'y g'eqnwo p'qh'y g'o letqueqr g.'dgmj 'y g'F G42'eco gtc*'y wu."
y g'F G42'o wu'dg'tgvtcevgf 'q'dg'cdrg'v'wug'y g'VXRRU+0K'ku'c'tqdwu'eco gtc'y cv'j cu'i qqf 'UPT '*i qqf "
eqpvtcu'v'j cv'ku'wugf 'r tko ct'kf 'hqt'uetggpki 'i t'kf u'0K'ku'j qwugf 'lp'c'xcewwo 'j qwulpi 'ugr ctcvg'htqo 'y g'GO "
xcewwo 'cpf 'ku'p'qv'tgvtcevdrg'cpf 'cny c { u'eqqrgf 0F ctm'cpf 'i c'kp'tghgt'pegu'ctg'vcngp'kpl'tgs wgpw' '*qpeg"
r gt'o qp'y +0K'ku'eqpvtqmgf 'wulpi '6GO/O gpw6'uqhy ctg.'y j lej 'ku'hqwpf 'qp'y g'6eco gtc6'o qpkqt'lp"
o qpkqt'lp' w'6F XK460Uwi i guvgf 'b ci u'hqt'GP IHC IHE'? '84.222z=J N'? '7222z=US '? '3922z0

"

O EN'ugt'xgt '*qp'o letqueqr g'eqo r wgt+'o wu'dg'qp'lp'qtf gt'v'wtp'qp'GO O GP W6 '*uqhy ctg'hqt 'H638+'
*qp'eco gtc'eqo r wgt+0K'H638'eqo r wgt'tguvct'vgf . 'hqi kp'cu'wv'gt'xkuqt0

"

30 Chgt 'uvgr '8'qh'6H42'Wugt 'I wlf g6000'

40 Qr gp'Ngi kpp'erkp'v'qp'eco gtc'(' 'o letqueqr g'eqo r wgt "

c0 VXRRU'eco gtc'eqpvtqn'qp'o qpkqt'lp' w'F XK4 "

50 Qr gp'Ngi kpp'r tqi tco 'qp'hgi kpp'RE "

c0 k'v'gto kpcn'v'r g'dgvcrgi kpp "

60 Ugwr 'Ngi kpp'uguukpp'ugw'ki u<

c0 Ugrge'v'6et'gcv'p'gy 'uguukpp6' "6pgz'6"

d0 Ugrge'v'j qnf gt '*Gnc'qt 'VH42/et { q/j qnf gtaCO K4+ "

e0 k'v'uguukpp'f' guet'k'v'kpp.'v'r g'kphqto cv'kpp'cdq'w'u'co r r'g' "6pgz'6"

k0 O cng'wv'g'y g'v'vct'v'uguukpp'pco g'y kj "6H42/6"

f0 Ugrge'v'r tq'lgv' "6pgz'6"

g0 K6 ci g'f'kt'gevt { '*wug'f'ghc'w'm '6li r h'ul'gi kpp'hw'gtp'co g6+ "

h0 Eqpp'ge'v'q'erkp'w?' 'v'42/h638'(' 'v'42/f 5; 6" "6pgz'6"

i0 E4'u'k' g'? 'tghgt'v'j g'y j kg'dqctf " "6h'k'uj 6"

70 Qpeg'Ngi kpp'j cu'v'vct'vgf 'vr . 'qr gp'y g'6cr r r'k'ec'v'kpp6"

c0 C'r r'k'ec'v'kpp' "Twp" 'O UKV4 '*56+ "

k0 Ueqr g'? 'v'42/f 5; 6"

k0 Eco gtc'? 'v'42/h638"

k0 O c'kp'? 'v'42'rgi kpp'" "

d0 6Twp6"

80 W'r'ncf "{ qwt'r'tgugw"

c0 Rtgug'v'o cpci gt" "6ko r qtv'r'tgugw'htqo 'cp'q'j gt'uguukpp6'*, 'k'eqp+ "

k0 VGO "? 'v'gep'ck=F ki kcn'Eco gtc'? 'V'kgv' 'H638' '*h' { qwf'q'p'q'v'ugg'c'eco gtc' "

cx'k'cdrg.'t'guvct'v'dq'j 'erkp'w'qp'GO 'cpf 'eco gtc'eqo r wgtu+ "

d0 6H'p'f 6'r'tgugw'htqo 'r'cu'v'42'f'c { u=ugrge'v'f'guk'gf 'r'tgugv'w'w'w'cm' { 'htqo 'y j g'o qu'v't'gegp'v'w'g't+ "

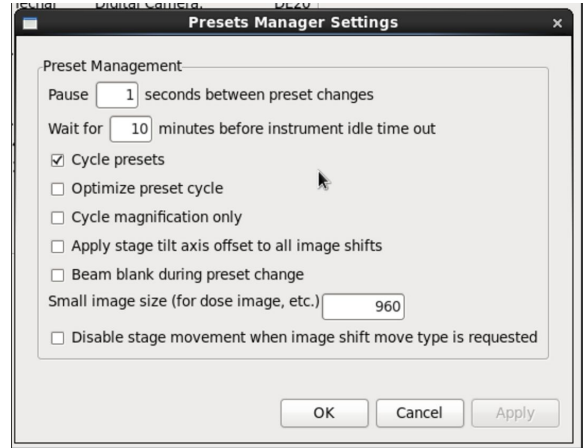
e0 J ki j r'ki j v'cm'v'j g'r'tgugw' *I T. 'US . 'J N. 'HC. 'HE. 'GP + 'cpf '6ko r qt'v6 " "6f'q'pg6"

k0 Uwi i guvgf 'o ci u'hqt'GP IHC IHE'? '84.222z=J N'? '7222z=US '? '3922z "

f0 Em'ug'y k'p'f'qy "

90 6E { erg6'r'tgugw'v'q'o k'p'ko k' g'j { uvgt'guk'lp'v'j g'dgco "

c0 Wpf gt'ör t'gugv'o cpci gtö'pqf g.'ugrgev'öugw'kpi uö"
 dwwqp"cpf "ej gen'ij g'öe{eng'r t'gugv'ö"qr v'kqp"*ugg"
 ko ci g+ "
 d0 Ugpf "ueqr g'v'q'GP "r t'gugv'32Z "
 : 0 Qr gp'uj k'gr "qh'et{q} qnf gt'y j gp"K R3">37={qw'b c{ "ugg"
 c"urki j v'kpetgcug'kp'r t'guuwtg."dww'uj qwf "ugwrg'y kj kp"c"
 hgy "ugeqpf u"
 ; 0 Qr gp'eqnw p"xcrk'gu'y j gp"K R">32"
 320 Egpvgt'r t'gugv'dgco "



c0 O qxg'v'us wctg'qh'pqp/kpvtg'uv'*us wctg'y kj "
 ectdqp'y cv' {qw'f qp'ö'o kp'f "dwt'kpi + "
 d0 Egpvgt "öus wctgö'r t'gugv'dgco "
 k0 Ugpf "ueqr g'v'q'öus wctgö'r t'gugv"
 k0 Nqy gt'i tggp'uetggp"
 k0 Egpvgt "dgco "w'kpi 'rghv'tcendcm"
 kx0 Qr gp'yj g'öGf kö"dqz"cpf "erlen'öcr r n' "dgco "uj k'w'ltqo "ueqr gö"
 e0 Egpvgt "öj qrgö'r t'gugv'dgco "
 k0 Ugpf "ueqr g'v'q'öj qrgö'r t'gugv"
 k0 Nqy gt'i tggp'uetggp"
 k0 Egpvgt "dgco "w'kpi 'rghv'tcendcm"
 kx0 Qr gp'yj g'öGf kö"dqz"cpf "erlen'öcr r n' "dgco "uj k'w'ltqo "ueqr gö"
 f0 Egpvgt "cpf "cf l'wuv'k'v'g'puk'v' "qh'HC IHE IGP "r t'gugv'dgco "
 k0 Ugpf "ueqr g'v'q'öGP ö'r t'gugv"
 k0 Nqy gt'i tggp'uetggp"
 k0 Hqt "vj g'GP "r t'gugv' "cf l'wuv'dgco "k'v'g'puk'v' "v'q'¢207'uge" "k'w'v'g' "uetggp"qp' "hw' "uetggp+ "
 y kj "c"dgco "f l'co g'vgt "vj cv'ku'cdqw'307Z "vj g'uk' g'qh'vj g'ugeqpf "ekt'erg"
 30 Hqt "vj g'HC IHE "r t'gugv' {qw'ecp'o cng'vj ku'dgco "c"dk' dtki j vgt'cpf "uo cmgt"
 kx0 Qr gp'yj g'öGf kö"dqz"cpf "cr r n' "k'v'g'puk'v' "öhtqo "ueqr gö"cpf "dgco "uj k'w'öhtqo "
 ueqr gö"
 x0 Tgr gc'v'ht "HC"cpf "HE"r t'gugv"
 330 I gv'gwegp'tle'j g'ki j v'qh' {qw'i t'kf "
 c0 Qp'c "us wctg'qh'pqp/kpvtg'uv'ö"
 d0 ö' ahqew'ö'pqf g "uko w'v'g'v'cti gv' "leqp+ "
 e0 Tgeqo o gp'f gf / "t'geqtf "vj g'gwegp'tle'j g'ki j v'x'c'w'g' =k'ku'w'ughw'v'q'j c'x'g'cp'kf gc'qh'y j cv'vj g"
 gwegp'tle'j g'ki j v'qh' {qw'i t'kf "ku."gur gekcm' "cu' {qw'pcxki cvg'ctqwpf "f w'kpi "f cv'eqm'ge'v'kqp=
 Vj g'gwegp'tle'j g'ki j v'uj qwf "uc' { "t'gr'v'k'x'gn' "uko k'rc. " - 1/72 "wo 0Vj ku'o gcpu' {qw'i t'kf "ku"
 h'ckn' "h'rc'0K" {qw'gwegp'tle'j g'ki j v'x'ct'k'gu'o wej "o q'tg'vj cp'vj cv' {qw'i t'kf "ku'dgp'vly t'k'p'm'gf 0"
 340 Eqm'gev'c'v'ru'qh' {qw'i t'kf "vj ku'ku'c'ugt'k'gu'qh'iny "o ci "ko ci gu'vj cv'ctg'v'k'ej gf "v'qi g'vj gt'v'q'i k'x'g' {qw'
 c'y j qrg'x'k'gy "qh' {qw'i t'kf =¢32"o k'p'w'gu+ "
 c0 Wpf gt'vj g'öi t'kf av'cti g'k'pi ö'pqf g."erlen'öugw'kpi uö"dwwqp"*w'r r gt' "rghv'j cpf "uk'f g'+cpf "k'pr w'
 {qw'i t'kf "f'guetk'v'kqp"
 k0 Tcf k'wu' "2022; o " "20 o o "
 d0 Er'len'ö'ec'r'e'w'v'g'c'v'ru'ö'"

k0 P qv/"cv'j ku'r qkpv"{ qw'j cxg's wgwgf 'wr 'c'pwo dgt'qh'gZR quwtg'vcti gu'hqt'rgi kpp"
vq'ces wkt g0T ghgt 'vq'öNgi kpp lCr r kpp'Wugt 'I wkf gö'vq'xkgy 'o ketqi tcr j u'cpf "
cpcnf | g'f cxc0'

420 Wpf gt "öJ qrgö'pqf g."ugrge'vövqi i rg's wgwgf'vko gqwö'uq'vj cv'eqnwo p'xcrk gu'y kn'emqug"qpeg'gZR quwtg"
s wgw'ku'f qpg'eqmge'vpi "

430 Vq"eqmge'v'c'pgy 'us wctg."tgr gc'v'ugr u'39"/'3; "wp'vkt'f{ qw'ctg'f qpg'eqmge'vpi 'f cxc0'

440 Qpeg"{ qw'ctg'f qpg'hqt 'vj g'f c{.'tgc'f "öF20 User Guide (ending your session)"

Cryo Data Collection with the DE20

Vj g'F'G/42"eco gtc'u{ungo 'ku'c'f'k'ge'v'f'g'v'g'v'k'q'p'f'g'x'leg"*F'F'F'+'o'c'p'w'c'w'w't'g'f' 'd'{'F'k'ge'v'G'g'v'g'v'q'p'0'K'j'cu'
j'k'j' 'uki'p'c'n'v'q/p'q'k'ug't'c'v'k'q"*U'P'T'+y'k'j' 'e'q'p'k'v'g'p'v'r'g't'h'q't'o'c'p'eg"e't'c'q'u'u'c'm'i'r'c'v'k'n'l't'g's'w'g'p'e'k'u'c'p'f' "V'G'O' "
o'c'i'p'k'h'e'c'v'k'q'u'0'o'q'x'k'g'"o'q'f'g'o'r't'q'x'g'u'j'k'j' /ur'g'g'f' 'c'es'w'k'u'k'k'q'p'q'h'c'"e'q'p'v'k'p'w'q'w'u'w't'g'c'o' 'q'h'i't'c'o'g'u"*54' 'h't'c'o'g'u'
r'g't' 'u'g'e"o'c'z.'"w'p'd'k'p'p'g'f' 'h'w'm' 'h't'c'o'g'+y'k'j' 'p'g'c't'n'f' "322' " 'f'w'w'{'e'{'e'g'g'p'q'f'g'c'f' 'v'k'o'g'd'g'w'y'g'g'p' 'h't'c'o'g'u'0'k'p'e't'g'c'u'g'f' "
f'c'v'c's'w'c'r'k'f' 'e'q'o'r'c't'g'f' 'v'q' 'V'X'K'R'U'v'j' 't'w'f' 't'k'm' 'e'q't't'g'e'v'k'q'p'.'r'g't'/'r'c't'v'k'g'g' "o'q'v'k'q'p' 'e'q't't'g'e'v'k'q'p'.'t'c'f'k'c'v'k'q'p' 'f'c'o'c'i'g' "
e'q'o'r'g'p'u'c'v'k'q'p'.'r'q'u'v'c'es'w'k'u'k'k'q'p'g'z'r'q'u'w't'g' 'u'g'w'k'p'i' . 'g'v'e'0'K'j'c'u'c'7'm'z' '6'n'l'h'g'r'f' 'q'h'x'k'g'y' "*"7342'z'5: 62'+y'k'j' "c"
806wo' 'r'k'z'g'n'r'k'ej' 0'K'k'u' 'h'w'm'f' 't'g'v't'c'e'v'd'g'g' 'c'p'f' 'p'g'g'f' 'u'v'q' 'd'g' "b'o'c'p'w'c'm'f' 't'g'v't'c'e'v'g'f' 'c'p'f' 'y'c't'o'g'f' 'y'j'g'p' 'p'q'v'k'p' 'w'ug.' "
c'p'f' 'k'p'ug't'v'g'f' 'c'p'f' 'e'q'q'r'g'f' 'y'j'g'p' 'k'p' 'w'ug'0'V'j'g' 'v'g'o'r'g't'c'w't'g' 'e'j'c'p'i'g'u' "o'c'n'g' 'k'v'u'q' 'v'j'c'v' 'v'j'g'eco'g't'c' 'p'g'g'f' 'u'c' 'p'g'y' "
f'c't'm'c'p'f' 'i'c'k'p' 't'g'h'g't'g'p'eg' 'y'k'j' 'g'c'ej' 'p'g'y' 'u'g'u'k'q'p'0'V'j'g' 'F'G'42' 'k'u' 'u'g'p'uk'k'x'g' 'v'q' 'u't'c'{' 'h'i'j' 'v' 'q'r'g't'c'v'g' 'y'k'j' 'y'k'p'f'q'y' "
e'q'x'g't'g'f' 'c'p'f' 'h'i'j' 'w' 'q'h'h'0' 'U'w'i' 'i'g'u'v'g'f' 'o'c'i' 'u' 'h'q't' 'G'P' 'I'H'c' 'I'H'E'?" '72.222z.' 'u'r'q'v'uk'g'5.'5: 62'z'7342.' 'd'k'p'3=J'N'?"
7222z.' 'u'r'q'v'uk'g'5.'; 82'z'; 82.' 'd'k'p'6=US'?" '772z.' 'u'r'q'v'uk'g'7.'; 82'z'; 82.' 'd'k'p'6=I' T'?" ; 9z.' 'u'r'q'v'uk'g'7.'; 82'
z'; 82' 'd'k'p'60'
"

F'q'ug' 'u'j'q'w'f' 'd'g'408'/'404' 'g'g'v'g't'q'p'u'l'r'k'z'g'n'l't'c'o'g' 'b'p'q' "o'q't'g' 'v'j'c'p'407' 'q'v'j'g't'y'k'ug' 'e'r'k'r'k'p'i' 'y'k'n'i'q'e'w't'+0'C'v'
4; .222Z' 'v'j'k'u' 'e'q't't'g'ur'q'p'f' 'u'v'q' 'c'67' 'g'g'v'g't'q'p'u'l'r' 'h'q't' 'c'4' 'u'g'e'q'p'f' 'g'z'r'q'u'w't'g' "*"3076' 'r'k'z'g'm'0'
"

- 30 Ch'g't' 'u'v'g'r' '8' 'q'h' 'd'H42' 'W'ug't' 'I' 'w'k'f'g'o'000'
- 40 Q'r'g'p' 'F'G42' 'u'q'h'y'c't'g' 'v'q' 'k'p'ug't'v'c'p'f' 'e'q'q'n'f'q'y'p' 'e'c'o'g't'c' "*"P'Q'V'G'/'e'c'p' 'q'p'n'f' 'q'r'g'p' 'O' 'k'e't'q'O' 'c'p'c'i'g't' 'q't' "
 - N'g'i'k'p'q'p' 'e'n'k'g'p'v'l'ug't'x'g't' 'c'v' 'q'p'g' 'v'k'o'g'="F'G/42' 'e'c'o'g't'c' 'e'q'p't'q'n'f'q'p' "o'q'p'k'q't' 'k'p'r'w'F'X'K3' "
 - c0 E'n'q'ug' 'N'g'i'k'p'q'p' 'e'n'k'g'p'v'q'p' 'e'c'o'g't'c' 'e'q'o'r'w'g't' "
 - d0 Q'r'g'p' "o'DE server GUI (OLD)" o' "q'p' 'e'c'o'g't'c' 'e'q'o'r'w'g't' "*"j'k'u'r' 't'q'i' 't'c'o' 'k'u' 'r'i' 'i' {'=y'c'k'52' 'u'g'e'+ "
 - e0 o'E'q'q'n'f'q'y'p'o' "c'p'f' "o'g'z'v'g'p'f'o' "e'c'o'g't'c' "*"y'j'g'p' 'p'q'v'k'p' 'w'ug.' 'F'G42' 'u'j'q'w'f' 'd'g' 't'g't'c'e'v'g'f' 'c'p'f' "
 - y'c't'o'g'f' =k'v'c'ng'u'c'7' "b'o'k'p' 'v'q' 'e'q'q'n'f'q'y'p' 'e'c'o'g't'c' "
 - f0 O'c'n'g' 'u'w't'g' 'v'j'c'v' {'q'w' 'd'f'q' 'p'q'v'c'w'q'c'x'g'o' "
 - 50 Q'r'g'p' 'N'g'i'k'p'q'p' 'e'n'k'g'p'v'q'p' 'e'c'o'g't'c' 'e'q'o'r'w'g't' "
 - 60 Q'r'g'p' 'N'g'i'k'p'q'p' 'e'n'k'g'p'v'q'p' "o'k'e't'q'ue'q'r'g' 'e'q'o'r'w'g't' "
 - 70 Q'r'g'p' 'N'g'i'k'p'q'p' 'r' 't'q'i' 't'c'o' 'q'p' "b'o'c'k'p' 'e'q'o'r'w'g't' "*"V'H42'N'g'i'k'p'q'p'+ "
 - c0 k'p' 'v'g't'o' 'k'p'c'n' 'v' 'r'g' 'd'g'c'v'g'i'k'p'q'p' "
 - 80 U'g'w'r' 'N'g'i'k'p'q'p' 'u'g'u'k'q'p' 'u'g'w'k'p'i' u- "
 - c0 U'g'r'g'e'v' 'o'e't'g'c'v'g' 'p'g'y' 'u'g'u'k'q'p'o' " "o'p'g'z'v'o' "
 - d0 U'g'r'g'e'v'j' 'q'n'f'g't' "*"V'H42'/'e't' {'q'/'j' 'q'n'f'g't'a' 'C'O'K4+ "
 - e0 k'p' 'u'g'u'k'q'p' 'f' 'g'u'e't'k'r' 'v'k'q'p'.' 'v' 'r'g' 'l'p'h'q't'o' 'c'v'k'q'p' "c'd'q'w' 'u'c'o'r' 'r'g' " "o'p'g'z'v'o' "
 - f0 U'g'r'g'e'v' 'r' 't'q'l'g'e'v' " "o'p'g'z'v'o' "
 - g0 K'o'c'i'g'f' 'k'g'e'v'q't' {' "*"w'ug'f' 'g'h'c'w'm' "o' 'l'i' 'r' 'h'u'l'g'i'k'p'q'p' 'l'w'ug't'p'c'o'g'o'+ "
 - h0 E'q'p'p'g'e'v' 'v'q' 'e'n'k'g'p'w'?' 'v'h42/'h638' (' 'v'h42' 'r'g'i'k'p'q'p' " "o'p'g'z'v'o' "
 - i0 E4' 'u'k'g'?" 't'g'h'g't' 'v'q' 'v'j'g' 'y'j'k'g' 'd'q'c't'f' " "o'h'k'p'k'uj' 'o' "
 - 90 Q'p'eg' 'N'g'i'k'p'q'p' 'j'c'u' 'u'v'c't'v'g'f' 'w'r' . 'q'r'g'p' 'v'j'g' 'o'c'r' 'r' 'd'k'c'v'k'q'p'o' "
 - c0 T'w'p' " 'C'r'r' 'd'k'c'v'k'q'p' " 'O'U'K'V4' "*"505+ "
 - k0 U'e'q'r'g'?" 'v'h42/'f5; 6' "
 - k0 E'c'o'g't'c'?" 'v'h42/'f'g42' "
 - k0 O'c'k'p'?" 'V'H42'N'g'i'k'p'q'p' " "o't'w'p'o' "

: 0 W' m'c'f "{q'w'r t'g'u'g'u"

c0 R't'g'u'g'u'v'o c'p'c'i g't "öko r q't'v'r t'g'u'g'u'lt'q'o "c'p'q'y g't "u'g'u'k'q'p'ö"; "l'e'q'p'+"
 k0 VGO "? 'v'g'e'p'c'k'F ki k'c'n'E'c'o g'tc"? 'F G/42"

d0 öH'k'p'f'ö'r t'g'u'g'u'lt'q'o 'r c'u'v'42'f'c { u'ü'g'r'g'e'v'f'g'u'k't'g'f 'r t'g'u'g'v'*w'u'w'c'm' { 'lt'q'o 'j' g'o q'u'v't'g'e'g'e'p'v'w'u'g't'+"

e0 J ki j r'ki j v'c'm'j'g'r t'g'u'g'u' "I T. 'US . 'J N. 'HC. 'HE. 'GP +'c'p'f "öko r q't'v'o" "öf'q'p'g'ö"

f0 E'r'q'u'g'y k'p'f'q'y "

; 0 öE { e'r'g'ö'r t'g'u'g'u'v'q'o k'p'k'o k' g'j' { u'v'g't'g'u'k'u'k'p'v'j' g'd'g'c'o "

c0 W'p'f'g't "öR't'g'u'g'v'O c'p'c'i g't'ö'p'q'f'g. "u'g'r'g'e'v'ö'u'g'w'k'p'i u'ö"d'w'w'q'p" 'c'p'f 'e'j g'e'm'j'v' g'ö'e { e'r'g'r t'g'u'g'u'ö"
 C'P'F "öq'r v'k'o k' g'e { e'r'k'p'i ö'q'r v'k'q'p'"

320 Q'r g'p' 'uj k'g'r'f "q'h'et { q'j' q'r'f'g't' 'y j g'p' "K R3">37={ q'w'o c { "u'g'g'c' 'u'r'k'i j v'k'p'et'g'c'u'g' 'k'p' 'r t'g'u'w't'g. "d'w' 'uj q'w'f' "
 u'g'w'g' 'y k'j k'p' 'c' 'h'g'y "u'g'e'q'p'f' u'

330 Q'r g'p' "e'q'w'o p' "x'c'r'k'g'u' 'y j g'p' "K R">"320'

340 E'g'p'v'g't' 'r t'g'u'g'v'd'g'c'o u'

c0 U'g'p'f "u'c'i g'v'q' 'u's w'c't'g' 'q'h' 'p'q'p/ 'k'p'v'g't'g'u'v' "u's w'c't'g' 'y k'j "e'c't'd'q'p' 'v'j' c'v' { q'w'f' q'p'ö'v'o k'p'f 't'c'uj k'p'i +"
 k0 W'p'f'g't "ö'u's w'c't'g'a'v'c't'i g'v'k'p'i ö. "u'g'r'g'e'v'ö'c'e's w'k'u'k'k'q'p'ö'o q'w'g' 'c'p'f "u'g'r'g'e'v' 'u's w'c't'g' 'q'h' "
 p'q'p/ 'k'p'v'g't'g'u'v' "u'w'd'o k'v'c't'i g'v' "e'r'k'e'n'i' t'g'g'p' "ö'r r'c' { ö'd'w'w'q'p'+"

d0 Q'p'e'g' 'v'j g' 'u'c'i g' 'u'q'r u'o q'x'k'p'i . "e'j g'e'm'j'v' c'v'd'g'c'o "k'u' 'e'g'p'v'g't'g'f 'c'v'c'm'l'r t'g'u'g'u' "

k0 E'g'p'v'g't "ö'u's w'c't'g'ö'r t'g'u'g'v'd'g'c'o "

30 U'g'p'f "u'e'q'r g'v'q' "ö'u's w'c't'g'ö'r t'g'u'g'v' "

40 N'q'y g't' 'i' t'g'g'p' "u'e't'g'g'p' "

50 E'g'p'v'g't "d'g'c'o "w'k'p'i "r'g'h'v't'c'e'n'd'c'm' "

60 Q'r g'p' 'v'j g' "ö'G'f k'ö" 'd'q'z' 'c'p'f "e'r'k'e'n'i'ö'c'r r' n' "d'g'c'o "uj k'h'v'lt'q'o "u'e'q'r g'ö" "

k0 E'g'p'v'g't "ö'j q'r'g'ö'r t'g'u'g'v'd'g'c'o "

30 U'g'p'f "u'e'q'r g'v'q' "ö'j q'r'g'ö'r t'g'u'g'v' "

40 N'q'y g't' 'i' t'g'g'p' "u'e't'g'g'p' "

50 E'g'p'v'g't "d'g'c'o "w'k'p'i "r'g'h'v't'c'e'n'd'c'm' "

60 Q'r g'p' 'v'j g' "ö'G'f k'ö" 'd'q'z' 'c'p'f "e'r'k'e'n'i'ö'c'r r' n' "d'g'c'o "uj k'h'v'lt'q'o "u'e'q'r g'ö" "

k0 E'g'p'v'g't "c'p'f "c'f 'l'w'v'k'p'v'g'p'u'k'v' "q'h' 'H'C 'I'HE 'I'GP 'r t'g'u'g'v'd'g'c'o "

30 U'g'p'f "u'e'q'r g'v'q' "ö'G'P ö'r t'g'u'g'v' "

40 N'q'y g't' 'i' t'g'g'p' "u'e't'g'g'p' "

50 E'g'p'v'g't "d'g'c'o "w'k'p'i "r'g'h'v't'c'e'n'd'c'm' "

60 Q'r g'p' 'v'j g' "ö'G'f k'ö" 'd'q'z' 'c'p'f "c'r r' n' "d'g'c'o "uj k'h'v'ö'lt'q'o "u'e'q'r g'ö" "

70 C'r r' n' "v'j g' 'u'c'o g' 'd'g'c'o "uj k'h'v'ö'lt'q'o "u'e'q'r g'ö" 'h'q't "H'C" 'c'p'f "H'E" 'r t'g'u'g'v' "

350 I g'v'g'w'e'g'p't'k'e'j' g'k'i j v'q'h' { q'w' 'i' t'k'f' "

c0 U'g'p'f "u'e'q'r g'v'q' 'u's 'r t'g'u'g'v' "

d0 N'q'y g't' 'i' t'g'g'p' "u'e't'g'g'p' "T3" 'q'p' "n'p'q'd'u'g'v' "+"

e0 W'k'p'i "T'k'i j v' 'M'p'q'd'u'g'v' "t'c'e'n'd'c'm' "o q'x'g' 'u'c'i g' 'w'p'v'k'i' { q'w' 'u'g'g'c' "i' t'k'f' "u's w'c't'g' 'y k'j "w'p'k's w'g' "
 h'k'f' w'e'k'n' "e'g'p'v'g't' "v'j c'v' 'u's w'c't'g' 'q'p' 'v'j g' 'i' t'g'g'p' "u'e't'g'g'p' "

f0 ö\ a'h'q'e'w'ö'p'q'f'g "u'k'o w'r'e'v'g'v'c't'i g'v' "l'e'q'p'+"

g0 T'g'e'q'o o g'p'f'g'f / "t'g'e'q't'f "v'j g' "g'w'e'g'p't'k'e'j' g'k'i j v'x'c'n'w'g' "k'v'k'u'w'g'h'w'i'v'q'j' c'x'g' 'c'p' "k'f'g'c' "q'h' 'y j c'v' 'v'j g' "
 g'w'e'g'p't'k'e'j' g'k'i j v'q'h' { q'w' 'i' t'k'f' "k'u. "g'u'r g'e'k'c'm' { "c'u' { q'w' 'p'c'x'k'i c'v'g' "c't'q'w'p'f "f' w'k'p'i "f'c'v' "e'q'm'g'e'v'k'q'p'=" "
 *v'j g' "g'w'e'g'p't'k'e'j' g'k'i j v'uj q'w'f' "u'v'c' { "t'g'r'c'v'x'g'n' { "u'k'o k'r'c't. "- 1/"72" 'w'o "v'j k'u' 'o g'c'p'u' { q'w' 'i' t'k'f' "k'u"

h'k'n'f' 'h'c'v'='h'f' q'w' 'g'w'g'p't'k'e'j' g'k' j' v'x'c't'l'g'u'o' w'e'j' 'b'o' q't'g' 'v'j' c'p' 'v'j' c'v' '{ q'w' 'i' t'k'f' 'k'u' 'r' t'q'd'c'd'n'f' " d'g'p'v'ly' t'k'p'm'g'f' '+'

360 E'q'm'g'e'v'c'w'u'q'h'f' q'w' 'i' t'k'f' '*j' k'u' 'k'u' 'c' 'u'g't'l'g'u' 'q'h' 'h'q'y' 'o' c'i' 'k'o' c'i' g'u' 'v'j' c'v' 'c't'g' 'u'k'e'j' g'f' 'v'q'i' g'v'j' g't' 'v'q' 'i' k'x'g' '{ q'w' ' c' 'y' j' q'g' 'x'k'g'y' 'q'h'f' q'w' 'i' t'k'f' '=ç'32' 'o' k'p'w'g'u' '+'

c0 W'p'f' g't' 'v'j' g' 'd'ï' t'k'f' a'c't'i' g'v'k'p'i' ö' 'p'q'f' g' 'e'k'e'm'i'd'u'g'w'k'p'i' u'ö' 'd'w'w'q'p' '*w' 'r' g't' 'h'g'h' 'j' c'p'f' 'u'k'f' g' '+' c'p'f' 'l'p'r' w'w' '{ q'w' 'i' t'k'f' 'f' g'u'e't'k'r' v'k'q'p' "

kü T'c'f' k'u' '? '2022; o' '? '20 o' o' "

d0 E'k'e'm'i'd'e'c'r'e'w'w'c'g' 'c'w'u'ö' "

e0 E'k'e'm'i'd'ö'r' r'e' { ö' 'v'q' 'e'q'm'g'e'v'c'w'u' "

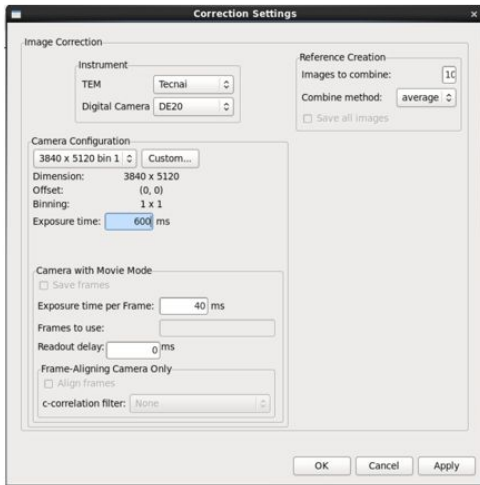
370 C'e's' w'k't'g' 'p'g'y' 'i' c'k'p' 't'g'h'e't'g'p'e'g'u' 'h'q't' 'v'j' g' 'G'P' 'r' t'g'u'g'v' '*q'x'g't' 'x'c'e'w'w'o' -0' 'H'q't' 'i' c'k'p'u' 'k'f' 'f' q'g'u' 'p'q'v'o' c'w'g't' 'k'i' ' q'd'l'g'e'v'k'x'g' 'c'r' g't' w't'g' 'k'u' 'l'p' 'q't' 'q'w'ö' "

c0 H'q't' 'f' c't'n'l' / 'e'q'u'g' 'e'q'u'w'o' p' 'x'c'k'g'u' " ö'e'q't't'g'e'v'k'q'p'ö' 'p'q'f' g' " ö'u'g'w'k'p'i' u'ö' " u'g'g' 'k'o' c'i' g' 'd'g'n'y' " " ö'f' c't'n'ö' 'c'p'f' "ö'd'q'v'j' 'e'j' c'p'p'g'n'ö' " 'c'e's' w'k't'g' '*{ q'w' 'u'j' q'w'f' 'u'g'g' 'd'r'e'm'i'l'k'o' c'i' g' '+'

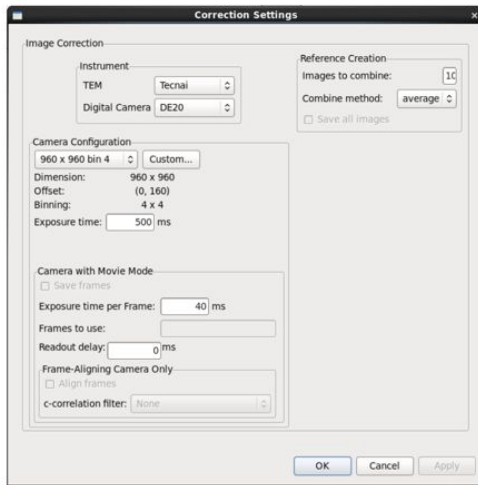
d0 H'q't' 'd't'k'i' j' v' / 'q'r' g'p' 'e'q'u'w'o' p' 'x'c'k'g'u' " 'h'k'p'f' 'g'o' r' v'f' 'u's' w'c't'g' " 'u'g'p'f' 'u'e'q'r' g' 'v'q' 'G'P' 'r' t'g'u'g'v' " " c'f' l'w'u'v' 'd't'k'i' j' v'p'g'u'u' 'v'q' '20' / 'u'g'e' 'q'p' 'u'o' c'm'i' 'u'e't'g'g'p' " 'u'g'g' 'k'o' c'i' g' 'd'g'n'y' " " ö'd't'k'i' j' v'ö' 'c'p'f' "ö'd'q'v'j' " 'e'j' c'p'p'g'n'ö' " 'c'e's' w'k't'g' '*{ q'w' 'u'j' q'w'f' 'u'g'g' 'k'o' c'i' g' 'q'h' 'v'j' g' 'e'c'o' g't'c' 'u'g'p'u'q't' '+'

e0 E'q'p'h'k'o' 'v'j' c'v'e'q't't'g'e'v'k'q'p' 'k'u' 'f' q'p'g' " ö'e'q't't'g'e'v'k'q'p'ö' 'c'p'f' "ö'd'q'v'j' 'e'j' c'p'p'g'n'ö' " 'c'e's' w'k't'g' '*{ q'w' ' u'j' q'w'f' 'u'g'g' 'c' 'h'c'v' 'k'o' c'i' g' "

f0 T'g'r' g'e'v' 'h'q't' 'H'c' . 'H'c' . 'J' 'N' . 'U' 'S' 'c'p'f' 'I' 'T' 'r' t'g'u'g'v' '*u'g'g' 'k'o' c'i' g' 'd'g'n'y' 'v'q' 'e'c'o' g't'c' 'u'g'w'k'p'i' u' "



Correction settings for EN preset



Correction settings for FA, FC, HL, SQ, and GR preset

380 U'g'v'w' 'k'ë'g' 'v'j' k'e'p'g'u'u' "

c0 I' q' 'v'q' 'x'c'e'w'w'o' 'c't'g'c' "

d0 U'g'p'f' 'u'e'q'r' g' 'v'q' 'G'P' 'r' t'g'u'g'v' '*o' c'n'g' 'u'w't'g' 'd'g'c'o' 'k'u' 'e'g'p'v'g't'g'f' '+'

e0 U'k'o' w'r'e'v'g' 'c't'i' g'v' 'k'p' 'g'z'r' q'u'w't'g' 'p'q'f' g' "

f0 T'g'e'q't'f' 'v'j' g' 'o' g'c'p' 'x'c'n'g' 'c'p'f' 'l'p'r' w'w' 'k'p'v'q' 'k'ë'g'a' 'v'j' k'e'p'g'u'u' 'p'q'f' g' '*w'p'f' g't' 'C'N'U' '+'

g0 C'N'U' 'e'q'g'h'h'e'k'p'v' '? '53; 'y' k'j' '322' 'w'o' 'q'd'l'g'e'v'k'x'g' 'c'r' g't' w't'g' 'k'p' "

h0 C'N'U' 'e'q'g'h'h'e'k'p'v' '? '469' 'y' k'j' '92' 'w'o' 'q'd'l'g'e'v'k'x'g' 'c'r' g't' w't'g' 'k'p' "

390 I' g'v' 'v'j' g' 'f' q'u'c'i' g' 'h'g' 'I'c⁴ '+' 'q'h' 'v'j' g' 'G'P' 'r' t'g'u'g'v' '*c't'i' g'v' '? '52' / '82' 'g' 'I'c⁴ '+'

3: 0 Kpugt'v'cpf 'egpvt'qdlgev'xg'cr gtwtg"

c0 Qxgt'c'l'wpm'us wctg.'ugpf'ueqr g'v'q'GP 'o ci "

d0 Nqy gt'i tggp'uetggp'cpf'ugpf'ueqr g'v'q'öF KHHFCEVIQP ö'o qf g'ki j v'hpqdugv"

 k0 Uj qwf'uegg'dt'ki j v'i tggp'uo cm'dgco 'qp'v'j g'i tggp'uetggp'y kj 'f'khwug'ectdqp"
 f'khwug'ectdqp'v'k'p' "ctqwpf 'k"

e0 Kpugt'v'qdlgev'xg'cr gtwtg'cpf'egpvt"

f0 Gzk'öF KHHFCEVIQP ö'o qf g"

g0 K'q'w'r'ncp'v'q'v'cm'g'c'dt'gcm'ugpf 'o letqueqr g'v'q'j ki j 'o ci "HC IHE IGP +v'q'wtp"qp'v'j g'j ki j "
 o ci 'ngpugu'cpf'eqmug'v'j g'eqmwo p'xcxgu"

3; 0[qw'ctg'pqy 'tgc'f { 'v'eqmgev'uqo g'ko ci gu#"

420 Kp'öUs wctga Vcti gv'kpi ö'ugrgev'3'us wctg'qh'kpvgt'guv"

c0 Wukpi "öces wuklqpö"o qwug.'ugrgev'v'j g'egpvt'qh'us wctg'qh'kpvgt'guv"

d0 Erlem'öUwdo k'vcti gvö"

e0 Erlem'öUwdo k's wgwgf 'vcti gwö"

430 Kp'öJ qrga Vcti gv'kpi ö'ugrgev'3'/'4't'gi kqpu'qh'j qrgu'qh'kpvgt'guv"

c0 Wukpi "öces wuklqpö"o qwug.'"ugrgev'v'j qrgu'qh'kpvgt'guv'v'j g'ectdqp.'"gxgt { '4z4'j qrgu"
 cy c { 'htqo 'gcej 'qj gt+"

d0 Wukpi "ömqewö"o qwug.'ugrgev'v'ct'g'qh'ectdqp'v'qy ctf u'v'j g'egpvt'qh'v'j g'j qrg'ct'gcu' { qw'
 ugrgev'v'j g'v'gr 'cdqxg'v'j ku'ku'y j gt'g'rgi kpp'v'y km'ces wkt'g'v'j g'gwepv'le'j g'ki j v'qh'v'j g'
 us wctg+"

e0 Erlem'öUwdo k'vcti gvö"

f0 Erlem'öUwdo k's wgwgf 'vcti gwö'y j gp' { qw'ctg'f'qpg'y kj 'gxgt { 'j qrg'vcti g'v' "

440 Kp'öGzr quwtga Vcti gv'kpi ö'ugrgev'g'zr quwtg'vcti guv"

c0 Wukpi "öces wuklqpö"o qwug.'"ugrgev'v'j g'egpvt'qh'v'j g'j qrgu'qh'kpvgt'guv.'qp'v'j g'leg'öUgrgev'
 w'v'q'ö'j qrgu'v'j cv'ct'g'eqmug'v'q'v'j g'egpvt'qh'v'j g'uetggp '*wug'öv'qi i ng'egpvt'etquuj ckt'ö'v'q'q'
 v'q'kpf 'y j gt'g'egpvt'ku'ö'Vj ku'gpw'v'v'j cv' { qw'f'q'pqv'eqmgev'ko ci gu'y kj 'c'hw'v'q'ko ci g'
 uj k'w'ö'

d0 Wukpi "ömqewö"o qwug.'ugrgev'v'ct'g'qh'ectdqp'v'qy ctf u'v'j g'egpvt'qh'v'j g'v'uci g'*wug'öv'qi i ng'
 egpvt'etquuj ckt'ö'v'q'q'v'q'kpf 'y j gt'g'egpvt'ku'ö'Vj ku'ku'y j gt'g'rgi kpp'v'y km'ces wkt'g"
 cwq/hqewukpi 'hqt'v'j g'g'zr quwtg'vcti gu'ugrgev'v'j g'v'gr 'cdqxg'ö'

e0 Erlem'öUwdo k'vcti gvö"

f0 Erlem'öUwdo k's wgwgf 'vcti gwö"

 k0 P qv'g'cv'v'j ku'r'qkpv' { qw'j cxg's wgwgf 'w'c'pwo dgt'qh'g'zr quwtg'vcti gu'v'q'v'rgi kpp'
 v'q'ces wkt'g'öT'ghgt'v'q'ö'Ngi kpp'ICr r kpp'Wugt'I wkf gö'v'q'xkgy 'o letqi tcr j u'cpf 'hqt"
 hw'v'j gt'kput'wv'kpu'ö'

450 Wpf gt'öJ qrgö'pqf g.'ugrgev'öv'qi i ng's wgw'v'ko gq'wö'uq'v'j cv'eqmwo p'xcxgu'y km'eqmug'qpeg'g'zr quwtg"
 s wgw'ku'f'qpg'eqmgev'kpi "

460 Vq'eqmgev'c'pgy 'us wctg.'tgr gc'v'v'gr u'42'/'44'w'v'k'v' { qw'ctg'f'qpg'eqmgev'kpi 'f'cv'c'ö'

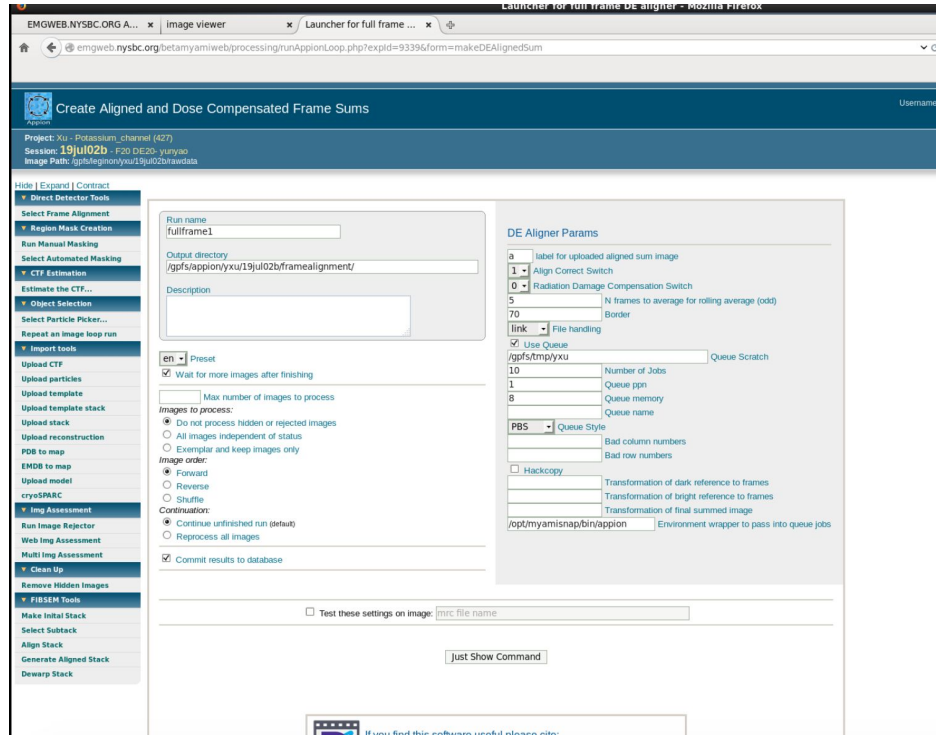
470 Uctv'htco g'crki po g'puv"

c0 Kp'go i y gd.'ugrgev'v'j g'r tqeguukpi 'kpm'*w'r gt'rg'v'ukf'g+"

d0 Nqi kp'y kj 'NFCR'kphq '*w'r gt't'ki j v'ukf'g+"

e0 Kp'öF kgev'F ggev'qt'Vqqmö" "öUgrgev'htco g'Crki po g'pö" "öHw'v'htco g'crki po g'p'v'htq"
 F kgev'G'gev'q'p'E'q'ö'Eco gtcö"

f0 Kpr w'vj g'hqmy kpi 'r ctco gvgtu0"



g0 UgrgevdLwuvUj qy 'Eqo o cpf ö"

h0 Eqr { 'yj g'eqo o cpf 'hpg"

i0 Kp'pgy 'uetggp.'v' r g'öuuj 'f g42htco gcrki po gpv'qt'öuuj 'l gwaö"

j0 Rcuvg'yj g'eqo o cpf 'htqo 'uvgr '47g"

480 UctvEVH'eqtgkwq'p'*chgt 'htuv'o qxlg'ku'f qpg'crki plpi +'

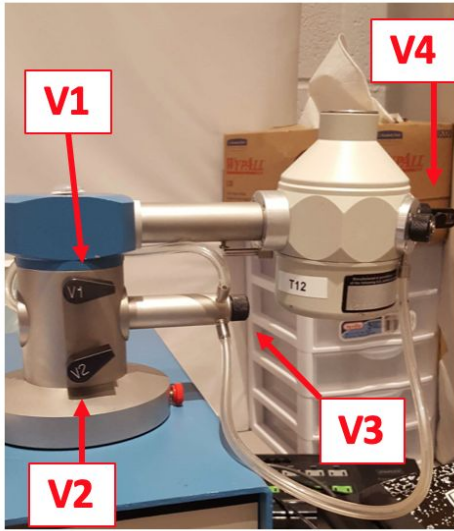
c0 EVH' "gukö cvg'yj g'EVH' "EVHHP F'x6"

d0 Fghcw'cm'lugw'kpi u'gzeqr v'r t'gugv'? "gp/c"

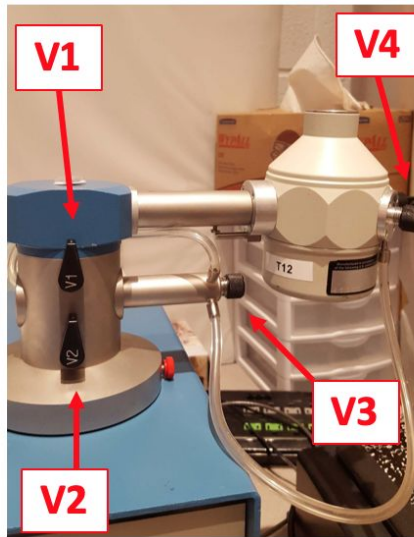
e0 Twp'qp'ugo e/j gcf 'h'qt'eqr { lr cuvg'kpv'go i dqz27+ "

490 K'f'qw'ctg'f'qpg'ht'vj g'f'c'í t'ghgt'v'ö" **F20 User Guide (ending your session)**"

Dry Pumping Station User Guide



All valves are closed



All valves are open

Do not overtighten the valves!
Finger-tight only!

P qto cnlucv'cv'v'j g"
dgi kppkpi "qh'v'j g'f c { <
"
X3"? "emugf "
X4."X5."("X6"? "qr gp"

Removing holder from dry pumping station:

- 30 Xcewwo 'uj qwf "dg'tgcf kpi "32⁵"v"32⁷"Rc0'
- 40 Tgo qxg'vgo r gtcwtg'eqpvtqr'eqtf "d { 'r wnkpi 'utcki j v'qwl'tqo "dcug'qh'r nwi 'Itqo 'v'j g'et { q'j qrf gt"
lceng'0F q'pqv'vy kv'qt'r wri'v'j g'y ktg#'
- 50 Emug"X6."v'j gp'emug"X50K'v'j gtg'ku'c'ugeqpf "j qrf gt'cwcej gf ."emug"X6'cpf "v'j gp"X5"qp'v'j cv'j qrf gt0'
- 60 Emug"X40X3'uj qwf "dg'emugf "crtgcf { ."dw'kh'pqv'v'j gp'emug"X3'rcu0'
- 70 Wpj qqnl'v' i qp'wdkpi 'Itqo 'et { q'j qrf gt'cpf 'tg/eqppgev'v'q'ukrgt'uvqr r kpi 'r nwi "dgi kpf "X3"("X4+0'
- 80 Vwtp'r wo r kpi 'ucv'kqp'qht0'Y ck'hqt'i tggp"o F R'ucwwo'cpf "oU{ ugo "Ucwwu'o'hki j v'v'q'wtp'qht0'
- 90 Wukpi "qpg'j cpf "v'ucv'kqp'g'v'j g'X3 IX4'o qf wqg.'i gpv'q' 'cr r n' 'hqt'eg'v'q'r wri'q'w'et { q'j qrf gt0'
c0 Vtcpuht'et { q'j qrf gt'ltqo 'r wo r kpi 'ucv'kqp'kp'v'et { q'v'cpuht'ucv'kqp0'
- : 0 Rrcg'drcn'ndrcpnkpi 'r nwi 'kp'v'qr gp'kpi 'y j gt'et { q'j qrf gt'y cu0

Inserting holder into dry pumping station and warming it up:

- 30 O cng'uwg'cni'xcrgu'qp'r wo r kpi 'ucv'kqp'ctg'emugf 0K'v'j gtg'ctg"4"j qrf gtu."o cng'uwg'v'j g'ugeqpf "
j qrf gt'j cu'X6'cpf "X5'emugf "k'v'j cv'qt'f gt+0'
- 40 Tgo qxg'drcpnkpi 'r nwi 'Itqo 'r wo r kpi 'ucv'kqp'"
- 50 Kpugt'v'eqnf "et { q'j qrf gt0'Kpxgt'v'j qrf gt'v'q'hckk'c'v'g'eqpf gpuc'kqp'tgo qxcit0"
- 60 Eqppgev'v'j g'r rcu'k'v' i qp'wdkpi "v'q'X6"qp'v'j g'et { q'j qrf gt0'
- 70 Vwtp'qp'r wo r kpi 'ucv'kqp0'Y ck'hqt'i tggp"o F R'ucwwo'cpf "oU{ ugo "Ucwwu'o'hki j v'v'q'wtp'qp"X3"
o kp+0"
- 80 Qr gp"X4."v'j gp"X3'cpf "y ck'w'p'v'k'x'cewwo 'ucv'kqp' gu0'
- 90 Eqppgev'et { q'j qrf gt'v'q'v'j g'v'go r gtcwtg'eqpvtqmg'cpf 'tw'p'v'j g'o'Y CTO WR'E[ENGö"X42"o kp+
c0 Y cto 'wr 'qp'v'j g'Guc'j qrf gt'vcngu'v'4"j t0Dgecvug'qh'v'j g'hqpi 'v'ko g'v'q'y cto 'wr .qpn' 'hnggr "
X3'cpf "X4"qr gp"X5'cpf "X6"qh'DQVJ "j qrf gtu'ENQUGF +f wtkpi 'v'j g'y cto wr 'e { eng0'

O cng'wmtg'vj cv'vj g'848'j qrf gt'j cu'c'i qf'xcewwo 0Hkpcmf . 'ugpf "o guuci g'kp'urcenlkp"
%GO I "ej cpggn'ōGnc'ku'y cto kpi "wr "pqy 0X3"cpf "X4"qr gp."X5"cpf "X6"qh'dqyj 'Gnc"cpf "
848"ctg'emugf 0848'j cu'c'i qf'xcewwo "cpf "uj qwf "dg'tgcf { "v'i q'htuv'vj kpi "kp'vj g"
o qtpkpi 0"

d0 [qw'ctg'f qpg'chgt'vj ku'wgr 0'

e0 K'y cto kpi "wr "vj g'848'j qrf gt.'r tqeggf "v'wgr ": 0'

: 0 Qpeg'y cto "wr "ku'f qpg.'emug"X30'

; 0 Qr gp"X5.'vj gp"qr gp"X6"qh'j qrf gt"%0'

320 Qr gp"X5.'vj gp"qr gp"X6"qh'j qrf gt"%40'

330 Qp'Hkfc{u."wct'vj g"ō\ GQNKVGE[ENGō'ht"4'j qwtu0'

"
"

*****If for any reason you cannot finish warming up the 626 and/or Elsa holder and open V3 and V4 to pump down the jacket of the holder by the end of your session, please send an email to emg@nysbc.org OR slack in #EMG channel:**

“626 and/or Elsa is still warming up right now. Only V1 and V2 are open, pumping down the tip only. Can someone from EMG please close V1 and then open V3 and V4 first thing in the morning to pump down the jacket of the holders?”

Elsa cryo holder manual (for EMG staff only)

"

, QP N['GO I 'UVCHH'uj qwr 'dg'j cpf rkp 'y g'Gnc'j qrf gt0Vj ku'kpenw gu'rqf kpi 'y g'uco r ng.'kpuqvkqpu."
cpf 'tgtcev'kpu0'Wugtu'uj qwr 'qpn{ 'dg'qr gtcv'kpi 'Ngi kqpp, "

"

- J ki j /tguqmwkqp"ecdrng"qpn{ 'pggf u'v'q'dg'cwecej gf 'f wtkpi 'y cto 'wr "qh'j qrf gt0Y cto 'wr "e{erg'vcngu"
e4'j qwtu0'
- J ki j /tguqmwkqp"ecdrng'uj qwr 'qpn{ 'dg'wugf "CV"VJ G'RWO RRP I "UVC VIQP 0F q'pqv'gzv'gpf 'y g'
ecdrng'cpf 'wug'k'c'v'y g'i gpgtcn'dgpej "k'dgeqo gu'c'v'kr "j c| ctf +0'
- 3Z 'r gt'o qpvj . 'y g'j qrf gt 'uj qwr 'dg'dcngf "qww'o wuv'wug'y g'y kengt 'ecdrng'v'q'f'q'y ku+0'

Chgt"cp"qxgtпки j v'eqmgev'kqp.'kh'{ qw'p'ggf "v'wug'y g'Gnc'j qrf gt'ci ckp"qp'f c{ "4<'

- **If you have time...** 'tgtcev'y g'j qrf gt'cpf 'twp'y cto 'wr "e{erg'vcngu"4'j qwtu="chgt'y cto 'wr "{qw'
ecp'y gp'wug'cu'pqto cni'
- **If you don't have time...** 'eqqnf qy p'y g'j qrf gt'kp'y g'ueqr g'y kj 'y g'j ki j /tguqmwkqp"eqtf "
cwecej gf . 'kp'et {q'v'cpuhgt'o qf g.'uq"{ qw'ecp'o gcuwg'y g'vgo r gtcwgt'qh'y g'vkr +=chgt'y g'vkr "
tgcej gu'v'392E. "{ qw'ecp'tgtcev'y g'j qrf gt'kp'v'c'eqrf "v'cpuhgt'ucv'kqp'cpf 'uy ke j "v'y g'i tkf "qh'
{ qw'ej qleg'*= {qw'y knf kuctf 'y g'ewtgpv'i tkf 'ukpeg'k'j cu'y cto gf 'wr 'kp'y g'eqmo p'cpf 'ku'
wpwucdrng'pqy +'
- **Otherwise...** 'Y cto 'wr 'y g'Gnc'cpf 'wug'y g'I cvcp'848'j qrf gt'kpuv'gcf 0

Cryo Holder Insertion/Retraction Guide for F20

, , , Et {q} qrf gt 'kpugt vkpu'qp 'vj g'H42' b c { 'qpnf 'dg'r gthqto gf 'd { 'UGO E 'uchf0P Q 'GZ EGRVKQP U0' , , , "

Cryo Holder insertion:

30 Dghqtg'kpugt vkpu'eqphko 'vj cv'K R3'? '8."eqnwo p'xcvkgu'emugf . 'j qrf gt 'ku' tgvv.'qdlge vkg'cr gt wtg'qww.'hmv'uetggp'f qy p.'ckmjenlf ghw'r wo r " vko g"? '342'uge.'wtdq'qp'cpf 'tgcf { '*dwwqp'y knidg'qtcpj g'y j kg' y cto kpi 'wr 'cpf '{ gmy 'y j gp'tgcf { +0'

40 Ugv'j qrf gt 'cr j c'xcvkg'cv//82'f gi tggu0I qpkqo gvg't'y knit'qvcv0'

50 0Rt g/r wo r 'ckmjen0'Vcngu'6'ugeqpf u0'

60 Rquklqp'uv' tqhqco 'dqz'dgmy 'i qpkqo gvg't'vq'ecvej 'NP 40'

70 Tgo qxg'j qrf gt 'htqo 'vj g'tcpuhgt'ucv'kp'cpf 'tqvcv'vj g'j qrf gt 'uq'vj cv' vj g'0j cv'0'qh'vj g'j qrf gt 'ku'cv'vj g'5'q0emjen'r quklqp0'k0 o gf kvgn' 'kpugt v' j qrf gt 'i qkpi 'utcki j v'kp'vj g'i qpkqo gvg't'y kj 'j qrf gt 'cv'5'q0emjen' r quklqp'wpv'vj qrf gt 'ecp'i q'pq'htv'j gt 'kp0'

c0 [qw'uj qwf 'ugg'vj g'ckmjen'r wo r 'vko g'lpk'cv'kp'vj g'Xcewwo " Qxgtxkgy 'y kpf qy "

80 Ugrgev'UV'Et {q'J qrf gt 0'cu'ur geko gp'j qrf gt "

90 Y ck'htq'4' o kpwg'ckmjen'r wo r 'vko g'vq'eqwp'v'f qy p0'

: 0 Chgt'ckmjen'r wo r 'vko g'eqo r rvg.'0t'gug'0'vj g'cr j c'xcvkg'Y K/J 'J CPF U'QP 'VJ G'F GY CT'QH' VJ G'J QNF GT' uq'vj cv'vj g'j qrf gt 'tgo ckpu'ucv'kpct { "

c0 Vj g'uci g'uj qwf 'tqvcv'dcen'v'2'f gi tggu'y j kg'vj g'j qrf gt 'vq' 'ku'vkn'cv'5'q0emjen' r quklqp0'

: 0 Urqy n' 'wtp'j qrf gt 'eqwpvg't/emqeny lug'vq'htqo 'vj g'5'q0emjen'v'q' vj g'34'q0emjen'r quklqp'y j kg'y cvej kpi 'K R3'

c0 K'f' qw'ugg'c'ur kng'kp'K R3.'uvr 'tqvcv'kp'cpf 'y ck'wpv'vj g'K R3'xcvkg'tgeqxgtu'c'v'rgcu'4'xcvkgu'f qy p'QT' wpv'vj g'ect'v'qp'f'kci tco 'kp'xcewwo 'qxgtxkgy 'ku'kp'vj g' e { cp't'gi kq'p'ugg'ko ci g'+

b. [qw't' qcn'uj qwf 'dg'vq'kpugt'v'vj g'j qrf gt 'htqo 'vj g'5'vq' 34'q0emjen'r quklqp'y kj kp'0 1 MINUTE. Vj g'htpi gt " vj g'kpugt'vkpu'vcngu.'vj g'i tgcvt'ej cpeg'f'q'w'j cxg'qh' etcuj kpi 'vj g'xcewwo 0"

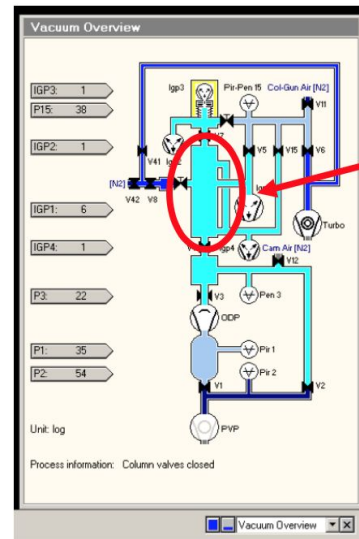
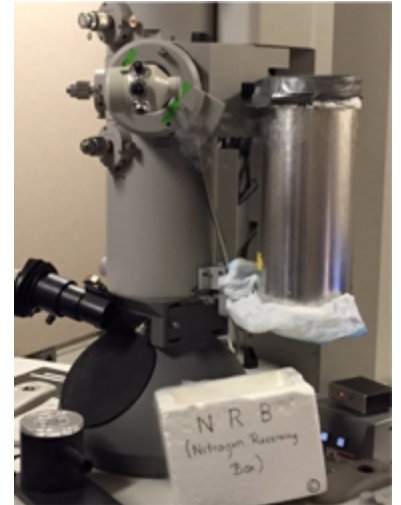
320 Qpeg'cv'vj g'34'q0emjen'r quklqp.'i gpv'f 'cr r n' 'tgulv'cpeg'qp'vj g' j qrf gt '0cy c' 'htqo 'vj g'eqnwo p'+cpf 'urqy n' 'rgv'vj g'xcewwo 'qh' vj g'ueqr g'r wv'vj g'j qrf gt 'kp0'

c0 I kxg'vj g'f gy ct 'c'urki j v'tqvcv'kpcn'li i rg'vq'gpuw't'g'vj g' j qrf gt 'ku'kpugt'v'f 'cm'vj g'y c { 'kp'v'vj g'eqnwo p0'

330 Vqr 'qhh'et {q'j qrf gt 'f gy ct 'y kj 'NP 4'qpeg'kpugt'v'f 0'

340 Gpuw't'g'v'cv'0j ki j 'Vgpuk'q'p'0'cpf '0qr g'vcv'0'ct'g'vkn'f' gmy '0'f'k'f' { qw'etcuj 'vj g'xcewwo A'Y knidg' i tg'f' 'h'xcewwo 'etcuj gf 0'

350 Vwtp'wtdq'r wo r 'qh0'



Cyan = good!

360 F q'pqv'qr gp'yj g'eqnwo p'xcxkgu'wpvki'K R3IEqnwo p">"320Kk'f qw'ctg'gxgt'lp'f qwdv'emqug'yj g'
eqnwo p'xcxkgu'cpf "eqpcev'cp"GO I 'uxchi'o go dgt'ko o gf kvgn' O'

Cryo Holder retraction:

- 30 Emqug'eqnwo p'xcxkgu.'tgugv'j qrf gt. 'qdlgev'kg'qww.'hw'uetggp'f qy p. 'et { q'uj kgrf "qh'j qrf gt'emqugf O'
- 40 I gpw'f "dtceg'ci ckpuv'yj g'r wtr ng'r r'cvg'qh'yj g'i qpkqo gvg't'cpf 'r wml'j qrf gt'dcem'wpvki's'uxqr u.'yj gp"
wtp'j qrf gt'emqeny kug'ua'yj cv'yj g'öj cvö'tqcvgu'htqo 'yj g'34"qøemem'vq'yj g'7"qøemem'ir qukskqp"
- 50 Rwnl'j qrf gt'uxcki j v'qww'qh'yj g'eqnwo pO'
- 60 Vtcpuht'j qrf gt'ko o gf kvgn'f "v'yj g'v'cpuht'uxv'kqpO'
- 70 K'xcewwo 'ur kngu'cpf "eqnwo p'r tguuwtg'etcuj gu.'eqpcev'cp"GO I 'uxchi'o go dgt'ko o gf kvgn' O'
- 80 Vwtp'wtdq'qp'vq'r tgr ctg'ht'p'gzv'kpugt'kqpO'

F20 Alignments

F20 alignments should be done by EMG staff ONLY!!

Crki po gpw'ecp'dg'f qpg'y kj 'tqqo 'lgo r gtcwtg*TV+j qrf gt'qt'et {q'j qrf gt.'dw'kf gcm' 'y kj 'c'i tkf'y kj " ectdqp'uwr r qt v'

, P qvg/'kh' {qwtg'eqphk' gpv'y cv'y g'crki po gpw'qp'y j g'HGI 'ctg'i qqf.'unkr 'i wp'crki po gpw'u'vgr u'3' ('4+' "

- 30 I wp'kx'öVwpgö" "öI wpö" "öI wp'Vknö+"
 - c0 J qrf gt'uj qwf 'dg'qww'qh'y g'r cvj 'qh'y g'dgco "cpf 'qdlge'kxg'cr gtwtg'qww"
 - d0 Hqewu'dgco "y kj 'kpgpuk' { "npqd+"
 - e0 Egpvt'dgco "dgco 'uj kh'vtcentcm'qp'gh'npqdugv+"
 - f0 Qr gp'dgco "kpgpuk' { "npqd+EY 'r cuv'etquuxgt "r cuv'ugeqpf 'ekteng'+cpf "wug'O HZ'cpf 'l " vq'i gv'y g'dtki j vguv'dgco "ny guv" gZR quwtg'ko g+"
 - k0 Uc { 'cy c' { 'tqo 'gf i g'qh'HGI "
 - g0 Eqpf gpug'cpf 'egpvt'y j g'dgco "tcentcm"
 - h0 Qr gp'dgco 'w 'q'y j g'TK J V'uq'y cv'kx' l wuv'r cuv'ugeqpf 'ekteng"
 - i0 Egpvt'eqpf gpugt '4'cr gtwtg'ko ci g" +"
 - j0 Erken'p'gzv.'tgr gcv'u'vgr u'd/g"
- 40 I wp'Uj kh'öVwpgö" "öI wpö" "öI wp'Uj knö+"
 - c0 Eqpf gpug'dgco . 'y j gp'egpvt'dgco "wukpi " O HZ'cpf 'l "
 - d0 Tgr gcv'ht'pgz v'u'vgr "
- 50 Ur qv'uk' g'f gr gpf gpv'i wp'uj kh'öVwpgö" "öI wpö" "öUr qv'uk' g/f gr gpf gpv'I wp'Uj knö+"
 - c0 Uko krt 'q'u'vgr "K'Hqewu'dgco "cpf 'egpvt'wukpi 'O HZ'cpf 'l 'ht'cm'ur qv'uk' gu"
- 60 Eqpf gpugt'Cu'ki o cv'kuo "öVwpgö'cd" "öUki o cv'qtö'k'pugv" "öEqpf gpugtö+"
 - c0 J ki j 'o ci ."ç322nZ"
 - d0 Wug'O HZ'cpf 'l 'q'b cng'uwtg'dgco "qr gpu'cpf 'enqugu'ektewrtn' { 'cpf 'eqpepvt'kcm' { 'qxgt" dqy 'uk' gu'qh'etquuxgt"
 - e0 Erken'öP qpgö'y j gp'f qpg"
- 70 Gwegpvt'le'j gki j v'cpf 'h'qewu"
 - c0 J qrf gt'uj qwf 'pqy 'dg'r megf 'dcenil'p'q'y j g'r cvj 'qh'y g'dgco 0'
 - d0 k'rgi k'pqp.'ö\ /h'qewu'p'qf g" 'uko w'v'g'v'cti gv'qt'f'q'y ku'o cpwcm' { 'd' { 'h'my kpi 'u'vgr u'd'/" g'dgny +"
 - e0 H'pf 'c'r k'geg'qh'f'k'v'y cv'ku'rcti g'g'cuk' { 'x'kudrg'cv'ny 'o ci ."ç7m"
 - f0 öUci g'dgco ö'cd" "öUci g4ö'h'r qw" "öY qddrgtö0'Wug'ö\ 'czkuö"- 1/'tki j v'hpqd/ugv+'q" cf l wuv'uci g' / j gki j v'wp'k'hcw'g'qp'uetggp'u'vgr u'o q'xkpi "cdqww'/3: 2'wo 'ht'TV'j qrf gt=" /52'wo 'ht'et {q'j qrf gt=0'
 - g0 Tqwi j 'h'qewu'd' { 'r t'gukpi "öGwegpvt'le'h'qewu'qp'tki j v'hpqd/ugv'



This is a side view of the objective aperture, but adjustments to condenser aperture 2 is the same

Troubleshooting**HT should be brought up by EMG staff ONLY!!**

- 30 K'ij g'eqnwo p'xcewwo 'etcuj gu'cpf 'J V'cpf 'HGI 'wtp'qh00'
- c0 P qvkh{ 'GO 'uchh'
 - d0 Y ck/hqt "VO R'tqmaw'vq'tgeqxt '*9'o kpwgu+"
 - e0 Y ck/hqt'eqnwo p'r tguwt g'vq'tgeqxt '*R R'>"52+*52/"82"o kpwgu+"
 - f0 O cpwcm{ 'ugv'J V'vq': 2"mX"
 - g0 ErkeniöJ Vö"vq'wtp"qp"
 - l0 Y ck/vm'o gcwtf 'J V'ku': 2"mX'*4"o kpwgu+"
 - h0 ErkeniöQr gtcvö"vq'wtp'HGI "qp"*4"o kpwgu+"
 - l0 Go kuukqp'uj qwf "dg">"32"WC=chgt"cp{ 'kpetgcug'lp"J V'y ck/c'hgy "o kpwgu'hqt "
 - go kuukqp"vq'tgeqxt'cpf "ucdkk g"
 - i 0 : 2" "422"mX."32"mX"uvgr u"
 - l0 Htgg'j ki j "vgpukqp"? "vtwg"
 - kl0 32.222"gX'uvgr u"
 - kk0 UgrgeV'@'
 - lx0 Cv422"mX."uj qwf "tgc f"8"WC"go kuukqp"*wpf gt"J V+'HGI "?'66"WC"
 - j 0 O cng'wutg'HGI "ku'qr gtcvki "cv'6272"X"*o c{ "pggf "vq'ugrgeV'j g" "dwwqp"vq'tghtgij "kv+"

"