

# **MUSC2703**

DYfZcfa UbWY @UVcfUhcfm6

HYfa 'Hk c''##'&\$%-

## 7ci fgY 8YHJ] g

7 fYX]hDc]bhg'('

Gi a a UfmcZh\Y 7ci fgY

Gi VYWh5fYU. ? ge[U BWdXad\_ S` UW! ? ge[U 7` eW\_ T W

±b'th]g'dfUWf]WU``Wci fgY'mci 'k]```YI hYbX'mci f'UXj UbWYX']bghfi a YbhU`žj cWU``cf`Wca dcg]h]cb'g\_]``g'k]h\'cbY! hc!cbY'gi ddcfh'Zfca 'U'gdYW]U`]ghhi hcfž'UbX'WcbhYI hi U`]gY'th\Y'Udd`]WUh]cb'cZh\cgY'g\_]``g'th\fci [\

## 5ggYgga Ybh

Q: YfY 'mci 'WJb'ci h']bY'UbmfY'Yj Ubh']bZcfa Ut]cb'th\Uhik Ug'bch']bWi XYX']b'5  $\neq$  G'Vi ha Umdfcj Y'\Y'dZ\''Zcf mci f'ghi XYbhg'': cf'Yl Ua d'Yž'mci 'a ][ \hdfcj ]XY'XYtU]'g'cb'th\Y'fYZYfYbW]b[ 'gmghYa ž'`]b\_g'hc'dfYj ]ci g ghi XYbhYl Ya d'Ufg'cf'th\Y'XYg][ bUhYX'k YY\_']b'th\Y'Wci fgY'th\Uhimci 'k ]`'X]gW gg'th\Y'UggYgga Ybh'Uh'Yb[ th\"  $\neq$  dcftUbh'mž'th\]g'gYWf]cb']g'Ub'UfYU'Zcf fgY'th\Uhimci 'k ]`'\X|g\" h\"

 $\textbf{8YHJ} \texttt{`g.'7} \texttt{ f]h} \texttt{[ei Yg'k ]```VY'gi Va ]h} \texttt{YX'UWf} \texttt{cgg'H} \texttt{\textit{$\%$}'H\&'UbX'H' "'''H\backslash YgY'k ]```VY'fY`UhYX'hc'a UghYfWUggYg} \texttt{$\%$} \texttt{(a. 1)} \texttt{(b. 1)}$ 

GhUfhXUhY. Bch5dd`]WUV`Y

@Yb[h\. &) a ]bi hYg

8 YHJ] g. :: cf'dYfZcfa UbWrghi XYbhgžYl Ua ]bUh]cbg'k ]``VY ii bXYfHU\_Yb']b'H' "'Ghi XYbhg'k ]``dfYgYbh'U &) !a ]bi hY'dfc[fUa a Y']bWi X]b[') 'a ]bi hYg'cZhYWkb]WU`k cf\_žXYj ]gYX']b'bY[ch]Uh]cb'k ]h\h'Y]f'gdYWJU`]gh hi hcfg'hc'gi ]hh\Y]f'dYfgcbU``]bhYfYghg'UbX'hfUYWcf]Yg"''Ghi XYbhg']XYbhJZm]b['Ug'Unn'gdYWJU`]ghg'k ]``dfYgYbh hYWkb]WU`k cf\_'Zfca 'h\Y'Unn'gm`UVi g'XYj ]gYX'Zcf'h\]g'Wci fgY"'H\Y'Yl Ua ]bUh]cb'k ]``U`gc']bWi XY'U'g\cfhg][\hfYUX]b['hYghZcf'U``ghi XYbhg"'H\Y'Yl Ua ]bUh]cb'k ]``'U`gc']bWi XY'U'g\cfhg][\hfYUX]b['hYghZcf'U``ghi XYbhg"'H\Y'Yl Ua ]bUh]cb'k ]``'U`gc']bWi XY'U'g\cfhg][\hfYUX]b['hYghZcf'U``ghi XYbhg"'H\Y'Yl Ua ]bUh]cb'k ]``'U`gc']bWi XY'U'g\cfhg][\hfYUX]b['hYghZcf'U``ghi XYbhg\*dcfhZcf'U``ghi XYbhg\*dcfhZcf'U``\ghi XYbhg\*dcfhZcf'U``XVY'gi Va ]hYXž'U'cb['k]h\fY\dcfx]b[g'cZU``k cf\_gž'UbX'cbY'cZh\YfY\dfX]b[g'a i ghVY'cZU']j Y'dYfZcfa UbWY"'H\]g'k ]``VY'h\Y'Z]bU``UggYgga YbhHUg\_'Zcf'Wca dcgYfg": YYXVUW\_. K f]hYb'fYdcfhcb'dflWhJWD'Yl Ua 'UbX'Wca dcg]h]cb'dcfhZc`]c"

Hi fb]hb gYhb[. H\]g ]g bchU Hi fb]hb Ugg][ ba Ybh

## 5 hhyb XUb WY F Yei ]fYa Ybhg

5 HY b X U b W Y U h h Y A c b X U m g h X]c W U g g Y g 'U b X '9 b g Y a V Y 'f Y \ Y U f g U 'g ']g 'a U b X U h c f m ]b 'h \ ]g 'W c i f g Y "

 $Ghi XYbhg'a i ghiUhhYbX'Uh'`YUghi('cZh\Y'-'a UghYfWUggYg'UWfcgg'h\Y'h\fYY'hYfa g'')$ 

## 7ci fgY'GWXYXi `Y

#### J]Yk Wugg'ha Yhuv'y

## H]a YHJV`Y

| HmdY        | 7 cbhYbh  |
|-------------|---|
| Gh X]c      |   |
|             | A cbXUmgž\$\$!%\$.'\$`cf`%%\$\$`!`%&.'\$`]b`GhiX]c<br>''(`UVWcfX]b[`hc`mcif`ckb`h]a YhUV`Y  |
|             | H\]g^]g^U^g_]^g!VUgYX^WcifgY"^5^haYhUV^Y^Zcf^]b! WUgg^]bZcfaU^^f]"Y"^bch*UggYggYXEdYfZcfaUbWYg^k]^<br>VY^diV^]g\YX^cb^AccX`Y^Xif]b[^C!kYY_" H\YgY^dfUW]WY^dYfZcfaUbWYg^UfY^X]gh]bWhZfca^h\Y<br>UggYggaYbhdYfZcfaUbWYg^k\]W\k]^^VY^\Y^X^Uhh\Y<br>YbX^cZhYfa"         |
|             | H\Y`gYWcbX`Wca dcbYbhcZh\Y`A cbXUmgh X]c`WUggYg`k]```VY`]b!WUgg`X]gW gg]cb`UbXdfUWf]WY`dfYgYbhUh]cbg`fY`Uh]b[`hc`h\Y`A]`YghcbYg`cZ\DZcfaYX`Aig]WjUbg\]d`UbX`9ZZYWhj Y`DfUWf]WYžUbXfY`Uh]b[`hc`h\Y`fYdYfhc]fY`k\]W`YUWX`gh XYbh]ggh Xm]b[`k]h\`h\Y]f`gh X]c`hYUWXYf" |
|             | 6f]b[ 'gWcfYg'UbX']bghfi a Ybhg'hc'YUWX'ghi X]c'WUgg"   |
| @YVVni fY   | : f]XUm'%) .\$\$!%+.\$\$'Gh X]c'' ' (   |
|             | A UghYfWUggʻbcʻ(žk]h\BY`Uʻ6fckbʻfl?<br>GcibXUfh]ghž@UdhcdʻcfWkYghfUŁ  |
|             | \hd.#kkk"bY`UVfckb"Vca#   |
|             | \hdg.##ZYa U`Y`UdhcdcfWXYghfU"k cfXdfYgg"Wca #  |
|             |   |
| < ca Yk cf_ | EiYYbfgi6]fth\XUm <c`]xum! bc`wugg'hcxum<="" td=""></c`]xum!>   |
| Gh X]c      | A cbXUmgž\$\$!%\$.'\$`cf`%%\$\$`!`%&.'\$`]b`Gh`X]c<br>''(`UWWcfX]b[`hc`mcif`ckb'h]a YhUV`Y  |
|             | Gh X]c  @YWh fY  < ca Yk cf_  |

| K YY_'(.'&('>i bY'!'&,<br>>i bY    | Gh X]c        | A cbXUmgž'\$\$!%\$.'\$'cf'%%\$\$'!'%&.'\$']b'Gh'X]c''('UWWcfX]b['hc'mcif'ckb'h]a YhUV'Y   |
|------------------------------------|---------------|---|
| K YY_`).`%`>i `m'!`) `>i `m        | Gh X]c        | A cbXUmgž'\$\$!%\$.'\$'cf'%%\$\$'!'%&.'\$']b'Gh'X]c''('UWWcfX]b['hc'mcif'ckb'h]a YhUV'Y   |
|                                    | @YWhifY       | A UghYfWUgg   |
|                                    |               | : f]XUm'%) .\$\$!%+.\$\$'Gh X]c''' (  |
|                                    |               | A UghYfWUgg bc') žk ]h\@]]gU'DU``UbX]fj ]c`]bŁ  |
| K YY_'*.', '>  `m'! '‰'>  `r       | m < ca Yk cf_ | DfUWJWYK YY_  |
| K_YY_`+.`%) `>  `m'! '%- `>        |               | A cbXUmgž\$\$!%\$.'\$'cf'%%\$\$'!'%&.'\$']b'Gh'X]c'' ('UWWcfX]b['hc'mcif'ckb'h]a YhUV'Y   |
| K¶cYY <u>Y</u> ∷jb&&&°>1i`m1i!&&*≫ | immGH X]c     | A cbXUmgž\$\$!%\$.'\$'cf'%%\$\$'!'&.'\$']b'GhiX]c''('UVWcfX]b['hc'mcif'ckb'h]a YhUV'Y     |
|                                    |               | DYfZcfa UbWY DfYgYblUlfjcb 5gggYgga Yblg  |
| K YY_''&-'> `m!'&<br>5  [ gh       | Gh X]c        | A cbXUmgž\$\$!%\$.'\$'cf'%%\$\$'!'%&.'\$']b'Gh'X]c''' ('UVWcfX]b['hc'mcif'ckb'h]a YhUV'Y  |
|                                    |               | DYfZcfa UbWY DfYgYblUhjcb 5gggYgga Yblg   |
| K YY_'%\$.')                       | Gh X]c        | A cbXUmgž\$\$!%\$.'\$'cf'%%\$\$'!'%&.'\$']b'Gh X]c'' ('UVWcfX]b['hc'mci f'ck b'h]a YhUV'Y |
|                                    |               | DYfZcfa UbWY DfYgYblUljcb 5ggYgga Yblg  |
|                                    | @YWhi fY      | : f]XUm'%) .\$\$!%+.\$\$'Gh X]c'' ' (   |
|                                    |               | GYf]ci gʻ: i b  |
|                                    |               | A UghYfWUgg#YWn fY'k ]h\'A ]_Y'B  |
|                                    |               |   |
|                                    |               |   |
|                                    |               |   |

F Ygci fWYg

DfYgWf]VYX F Ygci fWYg

< i XgcbžF "'f% - +k" E fa W f[\_ W fZWZ[efack a XfW\_ ba dgTSfa" 7 Ua Vf]X[ Y . 7 Ua Vf]X[ Y . 1 b]j Yfg]hmDfYgg"</pre>

 $\pm 0$ [ `]gž"="f&\$\$\* \text{\final}" F Z W b \Wo\text{\data} d\_ S` U W a X b a b g \(^S d\_ g = [U\text{\final} \text{\text{Ufb}} \ U a \text{\text{\final}} \) [ Incl. '5 g \ [ U H Y \text{\final} \text{\final} \text{\text{\final}} \]

?fUa Yfž'>"'f%,, t"'>[efW fa fZW\_ge[U"'BYk 'Mcf\_.'GW\]fa Yf"

@Uk gcbž'7"/ '7 fcggž'>"'f9Xg"Ł"'f% - ) Ł"'FZW5S\_ Td[VYWUa\_ bS` [a` fa fZWU'Sd[`Wf"'7 Ua Vf]X[ Y. '7 Ua Vf]X[ Y I b]j Yfg]hmDfYgg"

@Y\a Ubbž@"ff% () \text{L"FZW[`fWbdMfSf[a` aXea`Ye"BYk 'Mcf\_.'8cjYf"

@Y| ]bYžA "'f%, - L"'FZW<SII B[S` a 4aa] žBYk 'Mcf\_. 'G\Yf'A i g]W7 c"

@c $\underline{W}$ k ccXž'5"< "'f% , - Ł"'A YX]WU''dfcV'Ya g'cZa i g]WJUbg"'FZW@Wi - 7` Y'\$` V <agd \$^aX? WV[U[` WI %\$" I \$\$#Z\$\$) ž

 $A \ UfW. UbH < UmWcl \ \check{z}G"9"\check{z}/\ `K \ ] `gcb\check{z}'; \ "9"`fW- \&L"`DYfgcbU`] miUbX`glfYgg`]b`dYfZcfa \ ]b[`Uff]glg"`BWdea` S'[fkS`V [`V[h[VgS^V[XWdW] UWež'% \ \check{z}'%$%1%$", "$ 

A cnUffrige"f%+) \*L'3 FdWSf[eWa` fZW8g` VS\_ W fS^Bd[`U[b We a XH[a f]` B Sk[` Y HfUbg`UhYX UbX fYdi V`]g\YX C I ZcfX UbX B Yk \ Mcf\_. C I ZcfX I b]j Yfg]hmDfYgg'% (, \ UbX %)%

A i g[fUj YžA "/ 'G\Yfa Ubž6" f&\$\$' Ł" B WbAd\_ [`Y 4cSZ\_ e" '7 Ua Vf]X[Y. '7 Ua Vf]X[Y' I b]j Yfg]hmDfYgg"

BYi a Ubbž: "'fl%--' Ł"'BWdXad\_S` UWbdSUf[UWe aXfZWeWhW fWW fZ S` V W[YZfWW fZUW fgd[WežBYk 'Mcf\_. GW]fa Yf"

D]bcž8"'f%, \$t"'FZWU'Sq`WfS`VU'Sq`Wfb'Sk[`Y"'@cbXcb.'AUWa]``Ub"

DchYfž>"f9X"L"f&\$\$\$L"FZW5S\_TqVYWUa\_bS`[a` fa e[`Y[`Y"7Ua Vf]X[Y.7Ua Vf]X[Y.1 b]j Yfg]hnDfYgg"

 $E i Ubmž'>"-A` B'Sk[`YfZW8'gfWf%+) \& LHfUbg"'9Xk UfX'FY]`mHfUbg`UhYX'UbX'fYdf]bhYXž'BYk 'Mcf_.'H\Y : fYY'DfYgg'% ** \\$ 

 $F ]b_{\tilde{z}} > "fPX"L" f&$\$) L"? ge[US^bWdXad_S`UW, E fgV[We [ _ ge[US^[ fWdbdWfSf[a` \tilde{z}'7 Ua Vf]X[ Y. '7 U$ 

FcgYbž7"f&\$\$&L"4WWZahW Reb[S`aea`SfSe, SeZadfUa\_bS`[a`žBYk'<UjYb.MJYTb]jYfg]miDfYgg"

GWXYb\_Yfz"<Y]bf]WX 'f%-' ' L'8[hWYdSbZ[US`SkeWezFYdiV]g\YX'BYk 'Mcf\_, '8cjYf'DiV']WUh]cbg' 'f%-\*-L"

GYUlrobž8ci [`Ug"fl/6-, ' L"FZWSdfea`Y, S dNeWSdJZ S`V [`Xad\_Sf[a` Yg[VW'BYk 'Mcf\_.; Uf'UbX"

 $Ghck Y``žF"'flb- + $L'''H[a \uparrow fWUZ` [cgWS` V bWdAd\_S` UWbdSUf[UW[ fZW'SfWW[YZfWW fZ S` V WSdk` [ WfWW fZ UW fgd[Wež 7 Ua Vf]X[ Y. '7 Ua Vf]X[ Y I b]j Yfg]lmiDfYgg"$ 

 $HUfi\ g\_]b\check{z}F\ ]W.UfX\check{z}f\%-)\ \&"FWJfS`V\ SUf,\ 7\,eeSke\ a`\ \_ge[US`V\ bWdAd\_S`UW\&CIZcfX."CIZcfX'I\ b]j\ Yfg]Im$ DfYgg"

 $\label{eq:higher_fitting} \mbox{Hi f$\underline{z}$8"; "'=$'$h[WdeUZgW'f\%-, \&k"'HfUbg"'F b'']$} \mbox{b$\dot{z}$ b$\dot{z}$ l$b]j$ Yfg]lm$ 

Gi Va ]gg]cb cZ5ggYgga YbhHUg\_g

Gi Va ]gg]cb cZ5ggYgga YbhHUg\_g

Hi fb]h]b Gi Va ]gg]cb

#mci YbWci bhYf'U'dfcV'Ya 'k \Yb'UthYa dr]b[ 'rc'gi Va ]hmci f'Ugg][ ba Ybht\fci [ \'Hi fb]r]bž'd'YUgY
hY'Yd\cbY'9I hYfbU''Gi ddcfhcb'-', ) '''' %cf'Ya U]''h\Ya 'cb'YI hYfbU'hY'hgi ddcfh4 i bgk "YXi "Ui '"'Gi ddcfh
\ci fg'UfY', .\$\$Ua '-'%\$.\$\$da 'cb'k YY\_XUmg'UbX'-.\$\$Ua '-').\$\$da 'cb'k YY\_YbXg'fl \*) 'XUmg'U'mYUft\"'=\maintention
UfY'i bUV'Y 'rc'gi Va ]hmci f'Ugg][ ba YbhXi Y'rc'U'ZJi 'hk ]h\'Hi fb]r]b'mci 'a Um'Udd'm\Zcf'Ub'YI hYbg]cb\ZVi hmci
a i ghfYhJ]b'mci f'r]\W\_Yhbi a VYf'\Zfca '9I hYfbU''Gi ddcfhfU'cb[ 'k ]h\'Ubmch\Yf'fY'Yj UbhXcW a Ybfg\L'rc
]bWi XY'Ug'Yj ]XYbW' 'rc'gi ddcfhmci f'YI hYbg]cb'Udd']\WJh]cb'''=\maintention
UfY'' bUYY''mfYWY']j Y'U'r]\W\_Yhbi a VYf\Zfvi h]Zmci 'hY'Yd\cbY'mci 'k ]'''bYYX'rc'gdYW]\ZfwJ''mUg\_'Zcf'cbY''
Hi fb]h]b'U'gc'dfcj ]XYg'i dXUhYg'cb'h\Y]f'gmghYa 'gfUh' g'cb'Hk]hYf"

; YbYfU``mž'UggYgga YbhiHug\_g'a i ghVY'gi Va ]hhYX'Y`YVWfcb]\W)``mj ]U'Y]h\Yf'Hi fb]hjb'cf'U'A ccX`Y Ugg][ ba Ybh'' =b']bgHJb\W'g'k \YfY'h\]g']g'bchdcgg]V`Yž']hk ]``'VY'gHJhYX'cb'mci f'\\circ i fgY'g'A ccX`Y'g]hY'k ]h\ U`hYfbUhj Y'gi Va ]gg]cb'XYHJ]`g''

cfi]bZcfa Uh]cbicbi\ckihcigi Va ]hUgg][ ba Ybhgicbi]bYij ]UiA ccXiY.i\hdg.#gh XYbh'i bgk "YXi "Ui #\ck! qi Va ]hUgq][ ba Ybha ccXiY

### 5 WUXYa ]W<cbYghmUbX D`U[ ]Uf]ga

D`U[]Uf]ga i]gii g]b[ih\Yik cfXgicfi]XYUgicZch\YfgiUbXidfYgYbh]b[ih\Ya iUgimci fick b"i±i\WbihU\_Yia Ubm Zcfa gžZfca iXYi]VYfUhYiW\YUh]b[ihciU\W]XYbhU`m\Wcdm]b[iZfca iUigci f\Wik ]h\ci hiU\w\_bck iYX[Ya Ybh'

IBGK [fcidgdu[]Uf]ga ]bhch\yzc``ck]b[ WUhY[cf]Yg.

7 cdm]b[.'i g]b['h\Y'gUa Y'cf'j Yfmg]a ]`Uf'k cfXg'hc'h\Y'cf][]bU`hYl h'cf']XYU'k ]h\ci h'UW\_bck `YX[]b['h\Y gci fW'cf'i g]b['ei chUh]cb'a Uf\_g"'H\]g'U`gc'Udd`]Yg'hc']a U[Ygž'Ufh'UbX'XYg][b'dfcYWhgž'Ug'k Y``'Ug dfYgYbhUh]cbg'k \YfY'gca YcbY'dfYgYbhg'Ubch\Yf'g']XYUg'cf'k cfXg'k ]h\ci h'WfYX]h'

⇒ Uddfcdf]UhY 'dUfUd\fUg]b[. '7\Ub[]b['U'ZYk'k cfXg'UbX'd\fUgYg'k\]Y 'a cghmfYhU]b]b['h\Y'cf][]bU`ghi Wh fY 'UbX#cf'dfc[fYgg]cb'cZ]XYUg'cZh\Y'cf][]bU`žUbX']bZcfa Uh]cb'k]h\ci hUW\_bck`YX[Ya Ybh'H\]g'U`gc Udd`]Yg']b'dfYgYbhUh]cbg'k\YfY'gca YcbY'dUfUd\fUgYg'Ubch\Yf'g']XYUg'cf'k cfXg'k]h\ci h'WfYX]h'UbX'hc d]YW]b['hc[Yh\Yf'ei chYg'UbX'dUfUd\fUgYg']bhc'U'bYk'k\c`Yžk]h\ci h'Uddfcdf]UhY'fYZYfYbW]b['"

7 c``i g]cb.'k cf\_jb['k]h\ch\Yfg'Vi hdUgg]b['cZZh\Y'k cf\_'Ug'U'dYfgcb'g']bX]j ]Xi U``k cf\_"'7 c``i g]cb'U`gc ]bWi XYg'dfcj ]X]b['mci f'k cf\_'hc'Ubch\Yf'ghi XYbhVYZcfY'h\Y'Xi Y'XUhYžcf'Zcf'h\Y'di fdcgY'cZh\Ya d`U[]Uf]g]b['UhiUbmh]a Yž'dUm]b['Ubch\Yf'dYfgcb'hc'dYfZcfa 'Ub'UWUXYa ]WhUg\_ž'ghYU']b['cf'UWei]f]b[ Ubch\Yf'dYfgcb'g'UWUXYa ]Wk cf\_'UbX'Wcdm]b[']hz'cZYf]b['hc'Wca d'YhY'Ubch\Yf'dYfgcb'g'k cf\_'cf'gYY\_]b[ dUma YbhZcf'Wca d'Yh]b['UWUXYa ]Wk cf\_"

±bUddfcdf]UhY`W]hUh]cb.`7]h]b[`gcifWrg`k\]W\`\UjY`bchVYYb`fYUXžk]h\cihUW\_bck`YX[]b[`h\Y`´gYWcbXUfm´gcifWrZfca`k\]W\`\_bck`YX[Y`cZh\Ya`\Ug`VYYb`cVhU]bYX"

8 i d`]\WUh]cb`ffgY`Zd`U[]\Uf]ga "Ł gi Va]\h]b[`mci f`ck b`k cf\_ž]b`k \c`Y`cf`]b`dUfhžk \YfY`]h\Ug`dfYj]ci g`m VYYb`dfYdUfYX`cf`gi Va]\hYX`Zcf`Ubch\Yf`UggYgga Ybhcf\Wci fgY`UhI BGK `cf`Ubch\Yf`i b]j Yfg]\m'

7 cffYWnfYZYfYbWlb[ 'dfUWnWyg.

• DUfUd\fug]b[ z'gi a a Uf]q]b[ z'YggUmk f]hb[ 'UbX'ha Y'a UbU[ Ya Ybh