Data sheet DS/EC-EN Rev. I_02_2015

# EC
# Level Measurement Accessory

Measurement made easy

## External Chamber
## K-TEK Products

## Measurement made easy



### Features

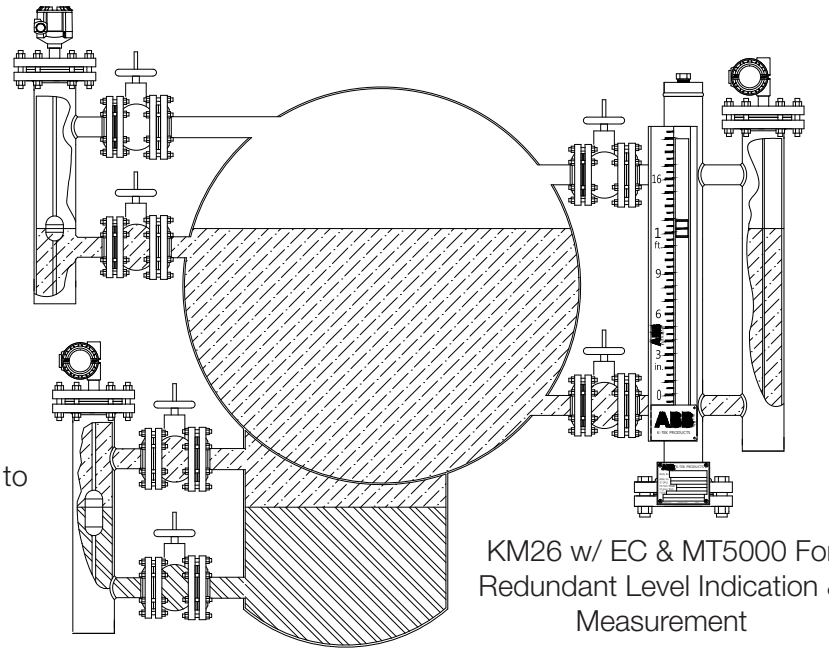
- Provides for easy isolation from process vessel
- Use with magnetostrictive and guided wave radar transmitters to replace conventional displacer type transmitters and controllers
- Use with MS50 for externally caged float switch
- Designed to ASME B31.1, B31.3 as applicable
- Certification to NACE MR0175 or MR0103 available

Power and productivity
for a better world™

## Sample Applications

EC w/ MS50 for High Level Alarm

EC w/ AT100 for Liquid to Liquid Interface Level Measurement



KM26 w/ EC & MT5000 For Redundant Level Indication & Measurement

## Ordering Information

### EC.a.b.c.d.e.f.g.h.i.j.k.l.m - *list additional required ordering codes separated by periods*

**.a Chamber Material**

| | |
|---|---|
| CST | Carbon Steel |
| LCS | Low Temperature Carbon Steel |
| SS4 | 304 / 304L Stainless Steel |
| SS6 | 316 / 316L Stainless Steel |

**.b Chamber Size (Chamber ID must be a minimum of 1" larger than the float OD; when float is used.)**

| | |
|---|---|
| 20 | 2.0 in. NPS (MT5000 Transmitter Only) |
| 25 | 2.5 in. NPS (Chamber size must be a minimum of 1.0 in. (25 mm) greater than Float outside diameter when float is used) |
| 30 | 3.0 in. NPS (Chamber size must be a minimum of 1.0 in. (25 mm) greater than Float outside diameter when float is used) |
| 40 | 4.0 in. NPS (Chamber size must be a minimum of 1.0 in. (25 mm) greater than Float outside diameter when float is used) |

**.c Chamber Pipe Schedule (Wall Thickness)**

| | |
|---|---|
| 10 | Schedule 10[1] |
| 40 | Schedule 40 |
| 80 | Schedule 80 |

**.d Top Connection**

| | |
|---|---|
| G | Slip-On Flange |
| B1 | Blind Flange with Mating Slip-On Flange with FNPT |
| F | Weld Neck Flange |
| D1 | Blind Flange with Mating Weld Neck Flange with FNPT |
| W1 | Welded Flat Pipe Cap with FNPT |

**.e Side Vent Connection; These can also be Flanged Connections, which could be the same as the side connections.**

| | |
|---|---|
| N0 | Branch Nipple for Socket Welding (Flat) |
| N2E | Branch Nipple for Butt Welding, Connected to Chamber via Extruded Outlet[1] |
| N2 | Branch Nipple for Butt Welding |
| N3E | MNPT Branch Nipple for Butt Welding, Connected to Chamber via Extruded Outlet[1] |
| N3 | MNPT Branch Nipple for Butt Welding |
| C0E | FNPT Half Coupling Connected to Chamber via Extruded Outlet[1] |
| C0 | FNPT Coupling |
| X | None |

## EC.a.b.c.d.e.f.g.h.i.j.k.l.m - *list additional required ordering codes separated by periods*

### .f Side Connection 1

| | |
|---|---|
| C0 | FNPT Coupling |
| C0E | FNPT Half Coupling Connected to Chamber via Extruded Outlet[1] |
| C1 | Socket Weld Half Coupling |
| FE | Weld Neck Flange connected to Chamber via Extruded Outlet[1] |
| F0 | Weld Neck Flange with Pipe Saddle |
| F0E | Weld Neck Flange connected to Chamber via Extruded Outlet with Pipe between Chamber and Weld Neck Flange[1] |
| F1 | Weld Neck Flange with Weld-O-Let (Minimum Schedule 40 Chamber) |
| F3 | Weld Neck Flange with Concentric Reducer |
| F3E | Weld Neck Flange with Concentric Reducer Connected to Chamber via Extruded Outlet[1] |
| GE | Slip-On Flange Connected to Chamber via Extruded Outlet[1] |
| G0 | Slip-On Flange with Pipe Nipple |
| G1 | Slip-On Flange with Weld-O-Let and Pipe Nipple (Minimum Schedule 40 Chamber) |
| G3 | Slip-On Flange with Concentric Reducer and Pipe Nipple |
| G3E | Slip-On Flange with Concentric Reducer and Pipe Nipple Connected via Extruded Outlet[1] |
| N0 | Branch Nipple for Socket Welding (Flat) |
| N2 | Branch Nipple for Butt Welding |
| N2E | Branch Nipple for Butt Welding, Connected to Chamber via Extruded Outlet[1] |
| N3 | MNPT Branch Nipple |
| N3E | MNPT Branch Nipple, Connected to Chamber via Extruded Outlet[1] |
| X | None |

### .g Side Connection 2

| | |
|---|---|
| C0 | FNPT Coupling |
| C0E | FNPT Half Coupling Connected to Chamber via Extruded Outlet[1] |
| C1 | Socket Weld Half Coupling |
| FE | Weld Neck Flange connected to Chamber via Extruded Outlet[1] |
| F0 | Weld Neck Flange with Pipe Saddle |
| F0E | Weld Neck Flange connected to Chamber via Extruded Outlet with Pipe between Chamber and Weld Neck Flange[1] |
| F1 | Weld Neck Flange with Weld-O-Let (Minimum Schedule 40 Chamber) |
| F3 | Weld Neck Flange with Concentric Reducer |
| F3E | Weld Neck Flange with Concentric Reducer Connected to Chamber via Extruded Outlet[1] |
| GE | Slip-On Flange Connected to Chamber via Extruded Outlet[1] |
| G0 | Slip-On Flange with Pipe Nipple |
| G1 | Slip-On Flange with Weld-O-Let and Pipe Nipple (Minimum Schedule 40 Chamber) |
| G3 | Slip-On Flange with Concentric Reducer and Pipe Nipple |
| G3E | Slip-On Flange with Concentric Reducer and Pipe Nipple Connected via Extruded Outlet[1] |
| N0 | Branch Nipple for Socket Welding (Flat) |
| N2 | Branch Nipple for Butt Welding |
| N2E | Branch Nipple for Butt Welding, Connected to Chamber via Extruded Outlet[1] |
| N3 | MNPT Branch Nipple |
| N3E | MNPT Branch Nipple, Connected to Chamber via Extruded Outlet[1] |
| X | None |

## EC.a.b.c.d.e.f.g.h.i.j.k.l.m - *list additional required ordering codes separated by periods*

**.h Botton Connection**

| | |
|---|---|
| B2 | Blind Flange with Mating Slip-On Flange with Plug |
| B5 | Blind Flange with Mating Slip-On Flange with Nipple, for Socket Welding (Flat) |
| B7 | Blind Flange with Mating Slip-On Flange with Nipple, MNPT |
| B9S | Blind Flange with Mating Slip-On Flange with Pipe Nipple and Slip-On Flange |
| B9W | Blind Flange with Mating Slip-On Flange with Pipe Nipple and Weld Neck Flange |
| D2 | Blind Flange with Mating Weld Neck Flange with Plug |
| D5 | Blind Flange with Mating Weld Neck Flange with Nipple, for Socket Welding (Flat) |
| D7 | Blind Flange with Mating Weld Neck Flange with Nipple, MNPT |
| D9S | Blind Flange with Mating Weld Neck Flange with Pipe Nipple and Slip-On Flange |
| D9W | Blind Flange with Mating Weld Neck Flange with Pipe Nipple and Weld Neck Flange |
| G | Slip-On Flange with Float Stop Spring |
| F | Weld Neck Flange with Float Stop Spring |
| T3 | T0 with Socket Weld Half Coupling |
| T4P | T0 with FNPT Half Coupling and Plug |
| T5 | T0 with Pipe Nipple, for Socket Welding (Flat) |
| T7 | T0 with Pipe Nipple, MNPT |
| T9S | T0 with Pipe Nipple and Slip-On Flange[1] |
| T9W | T0 with Pipe Nipple and Weld Neck Flange |
| W2 | Welded Flat Pipe Cap with Plug[1] |
| W3 | W0 with Socket Weld Half Coupling[1] |
| W5 | Welded Flat Pipe Cap with Nipple, for Socket Welding (Flat)[1] |
| W7 | Welded Flat Pipe Cap with Nipple, MNPT[1] |
| W9S | Welded Flat Pipe Cap with Pipe Nipple and Slip-On Flange[1] |
| W9W | Welded Flat Pipe Cap with Pipe Nipple and Weld Neck Flange[1] |

**.i Top Connection Size/Rating/Type**
*see Table[1]

**.j Side Vent Connection Size/Rating/Type**
*see Table[1]

**.k Side Process Connection Size/Rating/Type**
*see Table[1]

**.l Side Process Connection Size/Rating/Type**
*see Table[1]

**.m Bottom Connection Size/Rating/Type**
*see Table[1]

Note: 1. Not an option with Carbon Steel or Low Temperature Carbon Steel chambers.

# Table 1

| Flanged Connections | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lapped Joint Flanges: | Slip on Flanges: | | | | Socket Weld Flanges: | Weld Neck Flanges: | | | |
| Size | Pressure Rating | | Raised Face | RTJ | Tongue & Groove | Male / Female | Raised Face | Raised Face | RTJ | Tongue & Groove | Male / Female |
| 1/2” | 150# | L51 | SR51 | SJ51 | ST51 | SM51 | SWR51 | WR51 | WJ51 | WT51 | WM51 |
| | 300# | L53 | SR53 | SJ53 | ST53 | SM53 | SWR53 | WR53 | WJ53 | WT53 | WM53 |
| | 600# | L56 | SR56 | SJ56 | ST56 | SM56 | SWR56 | WR56 | WJ56 | WT56 | WM56 |
| | 900# | L59 | SR59 | SJ59 | ST59 | SM59 | N/A | WR59 | WJ59 | WT59 | WM59 |
| | 1500# | L515 | SR515 | SJ515 | ST515 | SM515 | SWR515 | WR515 | WJ515 | WT515 | WM515 |
| | 2500# | L525 | N/A | N/A | N/A | N/A | N/A | WR525 | WJ525 | WT525 | WM525 |
| 3/4” | 150# | L71 | SR71 | SJ71 | ST71 | SM71 | SWR71 | WR71 | WJ71 | WT71 | WM71 |
| | 300# | L73 | SR73 | SJ73 | ST73 | SM73 | SWR73 | WR73 | WJ73 | WT73 | WM73 |
| | 600# | L76 | SR76 | SJ76 | ST76 | SM76 | SWR76 | WR76 | WJ76 | WT76 | WM76 |
| | 900# | L79 | SR79 | SJ79 | ST79 | SM79 | N/A | WR79 | WJ79 | WT79 | WM79 |
| | 1500# | L715 | SR715 | SJ715 | ST715 | SM715 | SWR715 | WR715 | WJ715 | WT715 | WM715 |
| | 2500# | L725 | N/A | N/A | N/A | N/A | N/A | WR725 | WJ725 | WT725 | WM725 |
| 1” | 150# | L11 | SR11 | SJ11 | ST11 | SM11 | SWR11 | WR11 | WJ11 | WT11 | WM11 |
| | 300# | L13 | SR13 | SJ13 | ST13 | SM13 | SWR13 | WR13 | WJ13 | WT13 | WM13 |
| | 600# | L16 | SR16 | SJ16 | ST16 | SM16 | SWR16 | WR16 | WJ16 | WT16 | WM16 |
| | 900# | L19 | SR19 | SJ19 | ST19 | SM19 | N/A | WR19 | WJ19 | WT19 | WM19 |
| | 1500# | L115 | SR115 | SJ115 | ST115 | SM115 | SWR115 | WR115 | WJ115 | WT115 | WM115 |
| | 2500# | L125 | N/A | N/A | N/A | N/A | N/A | WR125 | WJ125 | WT125 | WM125 |
| 1-1/2” | 150# | L151 | SR151 | SJ151 | ST151 | SM151 | SWR151 | WR151 | WJ151 | WT151 | WM151 |
| | 300# | L153 | SR153 | SJ153 | ST153 | SM153 | SWR153 | WR153 | WJ153 | WT153 | WM153 |
| | 600# | L156 | SR156 | SJ156 | ST156 | SM156 | SWR156 | WR156 | WJ156 | WT156 | WM156 |
| | 900# | L159 | SR159 | SJ159 | ST159 | SM159 | N/A | WR159 | WJ159 | WT159 | WM159 |
| | 1500# | L1515 | SR1515 | SJ1515 | ST1515 | SM1515 | SWR1515 | WR1515 | WJ1515 | WT1515 | WM1515 |
| | 2500# | N/A | N/A | N/A | N/A | N/A | N/A | WR1525 | WJ1525 | WT1525 | WM1525 |
| 2” | 150# | L21 | SR21 | SJ21 | ST21 | SM21 | SWR21 | WR21 | WJ21 | WT21 | WM21 |
| | 300# | L23 | SR23 | SJ23 | ST23 | SM23 | SWR23 | WR23 | WJ23 | WT23 | WM23 |
| | 600# | L26 | SR26 | SJ26 | ST26 | SM26 | SWR26 | WR26 | WJ26 | WT26 | WM26 |
| | 900# | L29 | SR29 | SJ29 | ST29 | SM29 | N/A | WR29 | WJ29 | WT29 | WM29 |
| | 1500# | L215 | SR215 | SJ215 | ST215 | SM215 | SWR215 | WR215 | WJ215 | WT215 | WM215 |
| | 2500# | N/A | N/A | N/A | N/A | N/A | N/A | WR225 | WJ225 | WT225 | WM225 |
| 2-1/2” | 150# | L251 | SR251 | SJ251 | ST251 | SM251 | SWR251 | WR251 | WJ251 | WT251 | WM251 |
| | 300# | L253 | SR253 | SJ253 | ST253 | SM253 | SWR253 | WR253 | WJ253 | WT253 | WM253 |
| | 600# | L256 | SR256 | SJ256 | ST256 | SM256 | SWR256 | WR256 | WJ256 | WT256 | WM256 |
| | 900# | L259 | SR259 | SJ259 | ST259 | SM259 | N/A | WR259 | WJ259 | WT259 | WM259 |
| | 1500# | L2515 | SR2515 | SJ2515 | ST2515 | SM2515 | SWR2515 | WR2515 | WJ2515 | WT2515 | WM2515 |
| | 2500# | L2525 | N/A | N/A | N/A | N/A | N/A | WR2525 | WJ2525 | WT2525 | WM2525 |
| 3” | 150# | L31 | SR31 | SJ31 | ST31 | SM31 | SWR31 | WR31 | WJ31 | WT31 | WM31 |
| | 300# | L33 | SR33 | SJ33 | ST33 | SM33 | SWR33 | WR33 | WJ33 | WT33 | WM33 |
| | 600# | L36 | SR36 | SJ36 | ST36 | SM36 | SWR36 | WR36 | WJ36 | WT36 | WM36 |
| | 900# | L39 | SR39 | SJ39 | ST39 | SM39 | N/A | WR39 | WJ39 | WT39 | WM39 |
| | 1500# | L315 | N/A | N/A | N/A | N/A | N/A | WR315 | WJ315 | WT315 | WM315 |
| | 2500# | L325 | N/A | N/A | N/A | N/A | N/A | WR325 | WJ325 | WT325 | WM325 |
| 4” | 150# | L41 | SR41 | SJ41 | ST41 | SM41 | N/A | WR41 | WJ41 | WT41 | WM41 |
| | 300# | L43 | SR43 | SJ43 | ST43 | SM43 | N/A | WR43 | WJ43 | WT43 | WM43 |
| | 600# | L46 | SR46 | SJ46 | ST46 | SM46 | N/A | WR46 | WJ46 | WT46 | WM46 |
| | 900# | L49 | SR49 | SJ49 | ST49 | SM49 | N/A | WR49 | WJ49 | WT49 | WM49 |
| | 1500# | L415 | SR415 | SJ415 | ST415 | SM415 | N/A | WR415 | WJ415 | WT415 | WM415 |
| | 2500# | L425 | N/A | N/A | N/A | N/A | N/A | WR425 | WJ425 | WT425 | WM425 |

NOTES:
1. Extruded Outlets are full bore up to a maximum of 2” See Note 1, on page 7.
2. Flat face flanges can be supplied in lieu of raised face. Replace "R" notation with "F". (i.e. For a ½” 150# flat face Slip-On. . . SF51)
3. The items marked "N/A" are not availabe per ASME B16.5.

## Table 2

**Flanged Connections (Continued)**

| Weld-o-lets: | | | Sock-o-lets: | | | Thread-o-lets: | | |
|---|---|---|---|---|---|---|---|---|
| Size | Rating | Designation | Size | Rating | Designation | Size | Rating | Designation |
| 1/2” | SCH 40 | W054 | 1/2” | 3000# | S053 | 1/2” | 3000# | T053 |
| 3/4” | SCH 40 | W075 | 3/4” | 3000# | S073 | 3/4” | 3000# | T073 |
| 1” | SCH 40 | W104 | 1” | 3000# | S103 | 1” | 3000# | T103 |
| 1-1/2” | SCH 40 | W154 | 1-1/2” | 3000# | S153 | 1-1/2” | 3000# | T153 |
| 2” | SCH 40 | W204 | 2” | 3000# | S203 | 2” | 3000# | T203 |
| 1/2” | SCH 80 | W058 | 1/2” | 6000# | S056 | 1/2” | 6000# | T056 |
| 3/4” | SCH 80 | W078 | 3/4” | 6000# | S076 | 3/4” | 6000# | T076 |
| 1” | SCH 80 | W108 | 1” | 6000# | S106 | 1” | 6000# | T106 |
| 1-1/2” | SCH 80 | W158 | 1-1/2” | 6000# | S156 | 1-1/2” | 6000# | T156 |
| 2” | SCH 80 | W208 | 2” | 6000# | S206 | 2” | 6000# | T206 |
| 1/2” | SCH 160 | W051 | | | | | | |
| 3/4” | SCH 160 | W071 | | | | | | |
| 1” | SCH 160 | W101 | | | | | | |
| 1-1/2” | SCH 160 | W151 | | | | | | |
| 2” | SCH 160 | W201 | | | | | | |

| Pipe Nipples: | | | Plugs: | | | Threaded Couplings: | | | Socket Weld Couplings: | | | Female Threaded & Socket Weld Connection Designation | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | Rating | Desig-nation | Size | Rating | Desig-nation | Size | Rating | Desig-nation | Size | Rating | Desig-nation | Size | FNPT Designa-tion | FSW Desig-nation |
| 1/2” | SCH 40 | N054 | 1/2” | 3000# | P053 | 1/2” | 3000# | C053 | 1/2” | 3000# | SC053 | 1/2” | FN05 | SW05 |
| 3/4” | SCH 40 | N074 | 3/4” | 3000# | P073 | 3/4” | 3000# | C073 | 3/4” | 3000# | SC073 | 3/4” | FN07 | SW07 |
| 1” | SCH 40 | N104 | 1” | 3000# | P103 | 1” | 3000# | C103 | 1” | 3000# | SC103 | 1” | FN10 | SW10 |
| 1-1/2” | SCH 40 | N154 | 1-1/2” | 3000# | P153 | 1-1/2” | 3000# | C153 | 1-1/2” | 3000# | SC153 | 1-1/2” | FN15 | SW15 |
| 2” | SCH 40 | N204 | 2” | 3000# | P203 | 2” | 3000# | C203 | 2” | 3000# | SC203 | 2” | FN20 | SW20 |
| 1/2” | SCH 80 | N058 | 1/2” | 6000# | P056 | 1/2” | 6000# | C056 | 1/2” | 6000# | SC056 | | | |
| 3/4” | SCH 80 | N078 | 3/4” | 6000# | P076 | 3/4” | 6000# | C076 | 3/4” | 6000# | SC076 | | | |
| 1” | SCH 80 | N108 | 1” | 6000# | P106 | 1” | 6000# | C106 | 1” | 6000# | SC106 | | | |
| 1-1/2” | SCH 80 | N158 | 1-1/2” | 6000# | P156 | 1-1/2” | 6000# | C156 | 1-1/2” | 6000# | SC156 | | | |
| 2” | SCH 80 | N208 | 2” | 6000# | P206 | 2” | 6000# | C206 | 2” | 6000# | SC206 | | | |
| 1/2” | SCH | N051 | | | | | | | | | | | | |
| 3/4” | 160 | N071 | | | | | | | | | | | | |
| 1” | SCH | N101 | | | | | | | | | | | | |
| 1-1/2” | 160 | N151 | | | | | | | | | | | | |
| 2” | SCH | N201 | | | | | | | | | | | | |

## QUOTATION REQUEST:

Tel: (1) 225-673-6100 / 800-735-5835 Fax: (1) 225-673-2525 E-mail: quotes.ktek@us.abb.com

Rep. Firm _____ Contact _____
Phone # _____ Fax # _____
E-mail _____ Customer _____
Contact _____
Phone # _____ Fax # _____
E-mail _____

### Process Conditions:

Qty_____ EC Application for (circle one): Total Level Interface Level
Operating Sp. Gravity _____ Min. Sp. Gravity _____ Second Specific Gravity (Interface) _____
Dielectric Constant _____ Fluid(s) _____
Operating Temp_____ Max Temp _____ Operating Press_____ Max Press_____

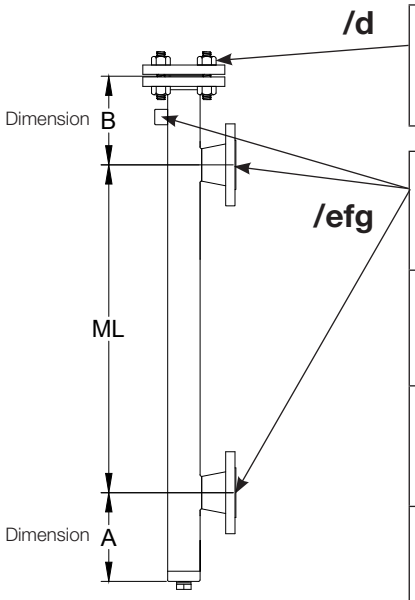
### Chamber Details:

Chamber Material _____ Flange Material _____
Top Connection Type _____ Size _____ Rating _____
Center to Center/Measuring Length _____ Vent/Drain Type & Size _____

### Accessories:

Furnish with (circle one) : AT100 MS50 KCAP400 MT5000 Other _____
Process Connection Type _____ Size _____ Rating _____

**Note:** When using Floats with a AT100 or MS50 in EC Chamber, there must be a minimum of 1" Clearance between the Float and the ID of the chamber being used.




**Top**

| B1 | D1 | F | G |
|---|---|---|---|

**Side**

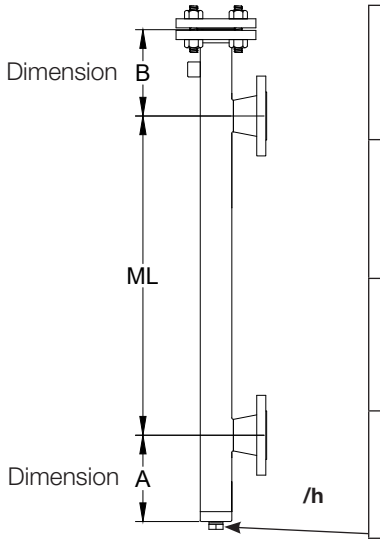
| C0 | C0E | C1 | FE | F0 | F0E |
|---|---|---|---|---|---|
| F1 | F3 | F3E | GE | G0 | G1 |
| G3 | G3E | N0 | N2 | N2E | N3 |
| N3E | X (No Connection) | | | | |

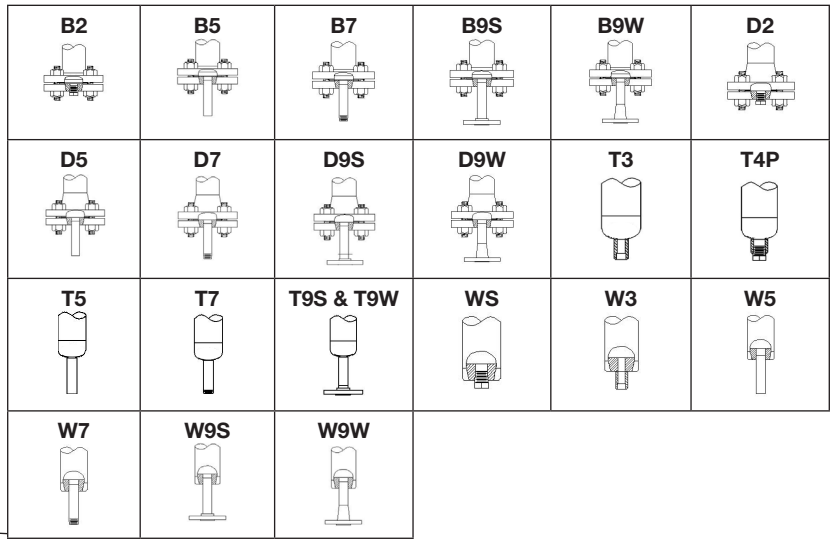
Notes:

1. Extruded outlet connections can be utilized as follows:

| | Chamber Schedule | Flange/Pipe Sizes | COUPLING SIZES |
|---|---|---|---|
| *Stainless Steel: | 10 | 1", 1-1/2" & 2" | 3/4", 1", 1 1/4" |
| *Stainless Steel: | 40 | 1-1/2" & 2" | 1 1/4" |

*Includes SS4 and SS6 material types. Welded or seamless chambers can be extruded.




Bottom

## Additional Ordering Codes

### Insulation:

| | |
|---|---|
| IH1 | High Temperature Insulation, Float Chamber Only, 0.5 in. thick, max 250°F (121°C) |
| IH1D | High Temperature Insulation, Float Chamber & Top / Bottom Flanges, 0.5 in. thick, max 250°F (121°C) |
| IH2 | High Temperature Insulation, Float Chamber Only; 1.0 in. thick max. 500°F (260°C) |
| IH2D | High Temperature Insulation, Float Chamber &Top / Bottom Flanges; 1.0 in. thick max. 500°F (260°C) |
| IH3 | High Temperature Insulation, Float Chamber Only, 2.0 in. thick, max 900°F (482°C) |
| IH3D | High Temperature Insulation, Float Chamber &Top / Bottom Flanges; 2.0 in. thick max. 900°F (482°C) |

### Valves:

| | |
|---|---|
| VV | Vent Valve (Specify valve manufacture and model) |
| DV | Drain Valve (Specify valve manufacture and model) |

### Code Stamps and Certificates

| | |
|---|---|
| CSU | ASME Code Stamp U*† (Per tag) |
| CSM | ASME Code Stamp UM*†(Per tag) |
| CSS | ASME Code Stamp S*†(Per tag) |
| CRN | Canadian Registration Number*† |
| CL | General Certificate of Compliance |

Note: The following services selected will not appear in the model # on engineering drawings or nameplates.

### Engineering Documents

| | |
|---|---|
| GD1 | Drawings for Approval - NOTE: Lead time will start after receipt of customer approved drawings |
| GD2 | Drawings for Record |
| GD3 | Certified as Built Drawings - NOTE: Lead time will start after receipt of Purchase Order |
| GD4 | Weld Map (Per Tag) |
| GD5 | Inspection and Test Plan |

### Radiographic Services - Per Tag

| | |
|---|---|
| CRA | Radiographic Examination on all Pressure containing Butt Welds / and all other pressure containing welds are Liquid Dye Penetrant Tested (Final Pass Only) |
| CRB | Radiographic Examination on all Pressure containing Butt Welds / and all other pressure containing welds are Liquid Dye Penetrant Tested (Root and Final Pass) |
| CRC | 10% Radiographic Examination on Pressure containing Butt Welds / 10% of other pressure containing welds are Liquid Dye Penetrant Tested (Final Pass Only) |
| CRD | 10% Radiographic Examination on Pressure containing Butt Welds / 10% of other pressure containing welds are Liquid Dye Penetrant Tested (Root and Final Pass) |
| CRE | Radiographic Examination on all Pressure containing Welds (Final Pass Only) |
| CRF | Radiographic Examination on all Pressure containing Welds (Root and Final Pass) |

### Liquid Dye Penetrant - Per Tag

| | |
|---|---|
| CNA | Liquid Dye Penetrant Examination on all Pressure containing Welds (Final Pass Only) |
| CNB | Liquid Dye Penetrant Examination on all Pressure containing Welds (Root and Final Pass) |
| CNC | Liquid Dye Penetrant Examination on 10% of all Pressure containing Welds (Final Pass Only) |
| CND | Liquid Dye Penetrant Examination on 10% of all Pressure containing Welds (Root and Final Pass) |

### Positive Material Identification

| | |
|---|---|
| CHC | Positive Material Identification with Carbon Content |
| CHD | Positive Material Identification without Carbon Content |

### Hydrostatic Examination

| | |
|---|---|
| CP1 | Hydrostatic Examination - (10 Minutes) |
| CP2 | Hydrostatic Examination with Chart Recording - (30 Minutes) |
| CP3 | Hydrostatic Examination with Chart Recording - (60 Minutes) |
| CP4 | Hydrostatic Examination with Chart Recording - (120 Minutes) |
| CPZ | Custom Hydrostatic Examination |

### Additional Services

| | |
|---|---|
| C2 | Material Monitoring with Inspection Certificate 3.1 acc. EN 10204 (MTR) |
| C3 | Material Monitoring with Inspection Certificate 3.2 acc. EN 10204 (MTR) |
| CH6 | Ultrasonic Testing - Thickness Testing |
| CHS | Ultrasonic Testing - Shearwave |
| CH5 | Magnetic Particle Inspection/Testing |
| STP | Painting with standard ABB K-TEK paint (carbon steel non-wetted surfaces only) |
| STS | Special painting or surface treatment per customer specification |
| CH7 | Post Weld Heat Treatment |
| CD1 | ABB Standard Manufacturer‘s Data Records Indexed (all requested testing, drawings, C2‘s, etc) as a single document and electronically transferred with no customer approvals required |
| CDZ | Special Manufacturer‘s Data Records, Indexed |
| GW1 | Equipment Weight Documention |
| CHV | Outside Hardness Testing (Outside Vendor) |

### Origin Documents

| | |
|---|---|
| GS1 | Certificate of Origin |
| GS2 | Certificate of Origin Notarized by Local Chamber of Commerce |
| GS3 | Certificate of Origin Legalized by Specific Country Chamber of Commerce - Lead Time may be Extended depending on Country |
| GS4 | Korean Foreign Trade certificate |
| GS5 | NAFTA Certificate |
| GS6 | EX-IM BANK Certificate (One per Tag) |
| GS7 | Approved Material List* |

### Certifications

| | |
|---|---|
| CK | Certificate of compliance for ANSI / ASME*† |
| CPE | Calibration Certificate of Hydrotest Equipment† |
| C7 | Helium leak test on pressure bearing parts |
| CHA | Intergranular Corrosion Destructive Test |
| CHB | Corrosive Test |
| CHF | Certificate of Surface Finish |
| CHP | Certificate of Passivation |
| CHE | Charpy Test |

### NACE

| | |
|---|---|
| CN1 | NACE (MR 0103) Hardness Certificate* (May require CHV) Consult Factory |
| CN3 | NACE (MR 0175 / ISO 15156) Hardness Certificate* (May require CHV) Consult Factory |

### Pressure Equipment Directive

| | |
|---|---|
| K6 | Pressure Equipment Directive Certificate of Compliance (SEP)*† |
| K8 | Pressure Equipment Directive Declaration of Conformity (Category I - IV)*† |

*Requires C2 or C3 in Additional Services
†Requires CP1, CP2, CP3, CP4 or CPZ in Hydrostatic Examination

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