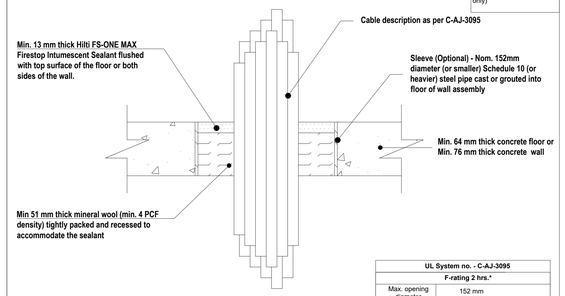
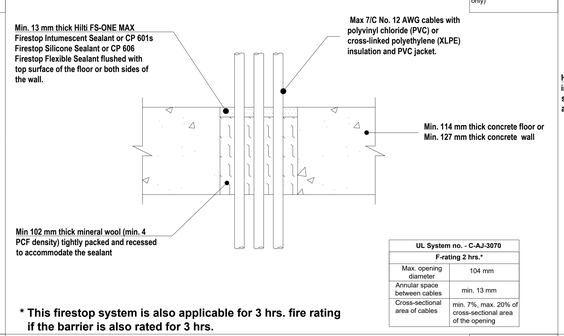
Not to scale (Representation only)




| UL System no. - C-AJ-3095 | |
|---|---|
| F-rating 2 hrs.* | |
| Max. opening diameter | 152 mm |
| Cross-sectional area of cables | min. 25%, max. 45% of cross-sectional area of the opening |

*** This firestop system is also applicable for 3 hrs. fire rating if the barrier is also rated for 3 hrs.**

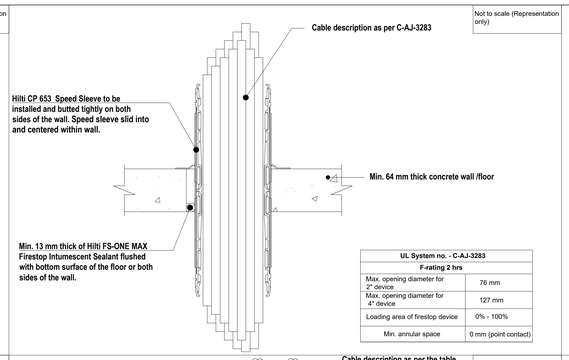
Not to scale (Representation only)




| UL System no. - C-AJ-3070 | |
|---|---|
| F-rating 2 hrs.* | |
| Max. opening diameter | 104 mm |
| Annular space between cables | min. 13 mm |
| Cross-sectional area of cables | min. 7%, max. 20% of cross-sectional area of the opening |

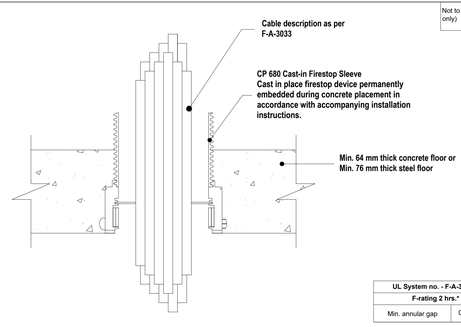
*** This firestop system is also applicable for 3 hrs. fire rating if the barrier is also rated for 3 hrs.**

Not to scale (Representation only)




| UL System no. - C-AJ-3283 | |
|---|---|
| F-rating 2 hrs | |
| Max. opening diameter for 2" device | 76 mm |
| Max. opening diameter for 4" device | 127 mm |
| Loading area of firestop device | 0% - 100% |
| Min. annular space | 0 mm (point contact) |

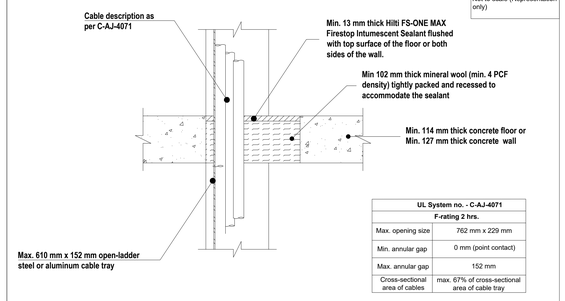
Not to scale (Representation only)




| UL System no. - F-A-3033 | |
|---|---|
| F-rating 2 hrs.* | |
| Min. annular gap | 0 mm |

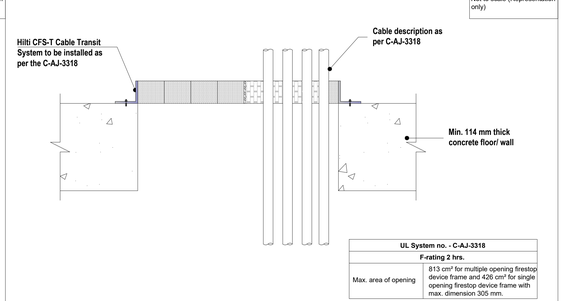
*** This firestop system is also applicable for 3 hrs. fire rating if the barrier is also rated for 3 hrs.**

Not to scale (Representation only)



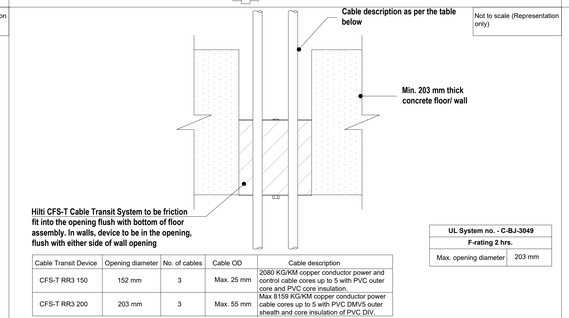

| UL System no. - C-AJ-4071 | |
|---|---|
| F-rating 2 hrs. | |
| Max. opening size | 762 mm x 229 mm |
| Min. annular gap | 0 mm (point contact) |
| Max. annular gap | 152 mm |
| Cross-sectional area of cables | max. 67% of cross-sectional area of cable tray |

Not to scale (Representation only)




| UL System no. - C-AJ-3318 | |
|---|---|
| F-rating 2 hrs. | |
| Max. area of opening | 813 cm² for multiple opening firestop device frame and 426 cm² for single opening firestop device frame with max. dimension 305 mm. |

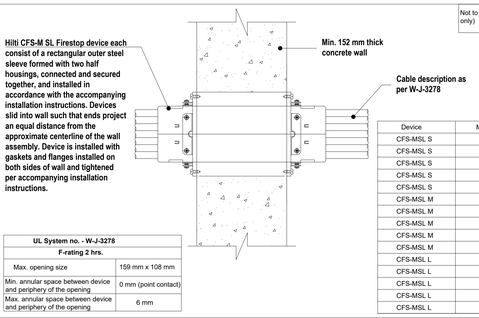
Not to scale (Representation only)




| Cable Transit Device | Opening diameter | No. of cables | Cable OD | Cable description |
|---|---|---|---|---|
| CFS-T RR3 150 | 152 mm | 3 | Max. 25 mm | 2080 KG/KM copper conductor power and control cable cores up to 5 with PVC outer core and PVC core insulation. |
| CFS-T RR3 200 | 203 mm | 3 | Max. 55 mm | Max 8159 KG/KM copper conductor power cable cores up to 5 with PVC DMV5 outer sheath and core insulation of PVC DIV. |

| UL System no. - C-BJ-3049 | |
|---|---|
| F-rating 2 hrs. | |
| Max. opening diameter | 203 mm |

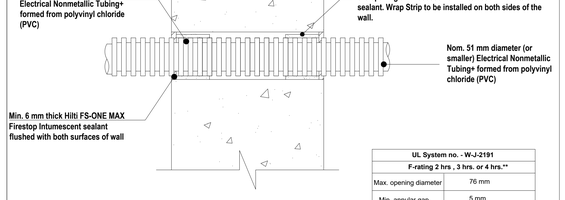
Not to scale (Representation only)




| UL System no. - W-J-3278 | |
|---|---|
| F-rating 2 hrs. | |
| Max. opening size | 159 mm x 108 mm |
| Min. annular space between device and periphery of the opening | 0 mm (point contact) |
| Max. annular space between device and periphery of the opening | 6 mm |

| Device | Max. cable fill |
|---|---|
| CFS-MSL S | 0% |
| CFS-MSL S | 1-25% |
| CFS-MSL S | 26-50% |
| CFS-MSL S | 51-75% |
| CFS-MSL S | 76-100% |
| CFS-MSL M | 0% |
| CFS-MSL M | 1-25% |
| CFS-MSL M | 26-50% |
| CFS-MSL M | 51-75% |
| CFS-MSL M | 76-100% |
| CFS-MSL L | 0% |
| CFS-MSL L | 1-25% |
| CFS-MSL L | 26-50% |
| CFS-MSL L | 51-75% |
| CFS-MSL L | 76-100% |

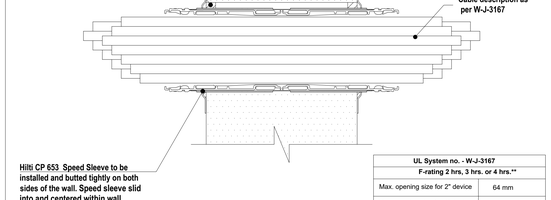
Not to scale (Representation only)




| UL System no. - W-J-2191 | |
|---|---|
| F-rating 2 hrs , 3 hrs. or 4 hrs.** | |
| Max. opening diameter | 76 mm |
| Min. annular gap | 5 mm |
| Max. annular gap | 11 mm |

**** This firestop system is also applicable for 2 hrs., 3 hrs. or 4 hrs. fire rating if the barrier is also rated for 2 hrs., 3 hrs. or 4 hrs. respectively**

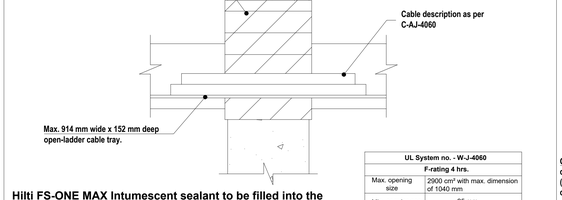
Not to scale (Representation only)




| UL System no. - W-J-3167 | |
|---|---|
| F-rating 2 hrs, 3 hrs. or 4 hrs.** | |
| Max. opening size for 2" device | 64 mm |
| Max. opening size for 4" device | 114 mm |
| Loading area of firestop device | 0% - 100% |
| Annular space between device and periphery | 0 mm (point contact) |

**** This firestop system is also applicable for 2 hrs., 3 hrs. or 4 hrs. fire rating if the barrier is also rated for 2 hrs., 3 hrs. or 4 hrs. respectively**

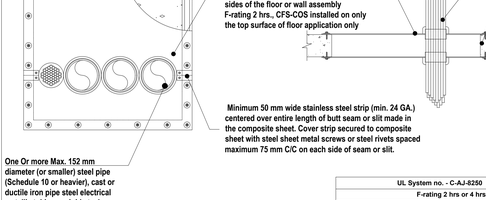
Not to scale (Representation only)




| UL System no. - W-J-4060 | |
|---|---|
| F-rating 4 hrs. | |
| Max. opening size | 2900 cm² with max. dimension of 1040 mm |
| Min. annular gap | 25 mm |
| Max. annular gap | 102 mm |
| Cross-sectional area of cables | max. 40% of cross-sectional area of cable tray |

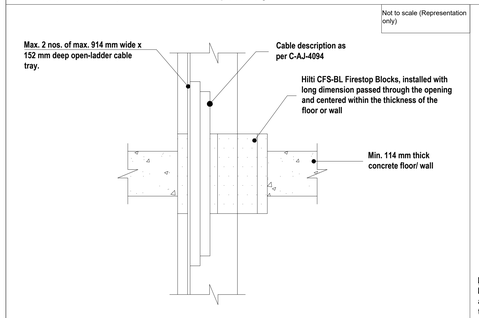
**Hilti FS-ONE MAX Intumescent sealant to be filled into the interstices of cables,between cables and cable tray, between CFS-BL Firestop Blocks and in obvious opening between blocks, between CFS-BL Firestop Blocks and the periphery of the opening to the max extent possible on both surfaces of wall**

Not to scale (Representation only)




| UL System no. - C-AJ-8250 | |
|---|---|
| F-rating 2 hrs or 4 hrs. | |
| Max. area of opening | 5806 cm² with max. dimension of 762 mm |
| Annular gap between pentrant and periphery | 25 mm |
| Annular gap between pipes or conduits, pipes or conduit and cables, and between pipes or conduits. | 25 mm |

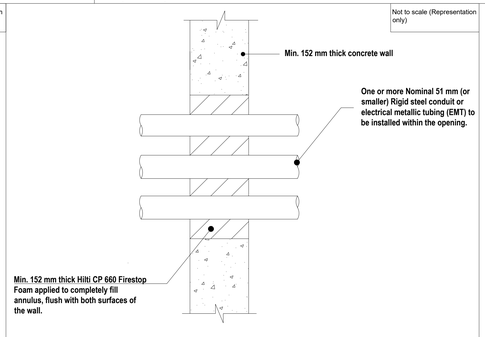
Not to scale (Representation only)




**Hilti FS-ONE MAX Intumescent sealant to be filled into the interstices of cables,between cables and cable tray, between CFS-BL Firestop Blocks and in obvious opening between blocks, between CFS-BL Firestop Blocks and the periphery of the opening to the max extent possible on both surfaces of wall or top surface of the floor**

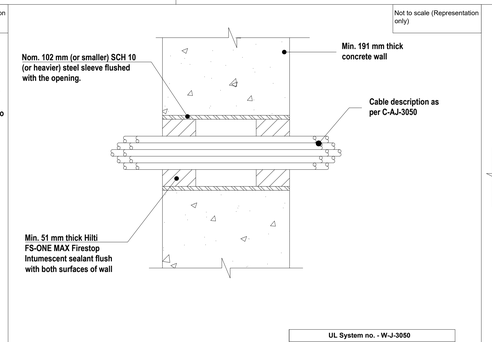
| UL System no. - C-AJ-4094 | |
|---|---|
| F-rating 2 hrs. | |
| Max. area of opening | 2322 cm² with max dimension of 1016 mm² |
| Min. annular space | 0 mm |
| Max. annular space | 57 mm |
| Cross-sectional area of cables | max. 40% of cross-sectional area of cable tray |

Not to scale (Representation only)

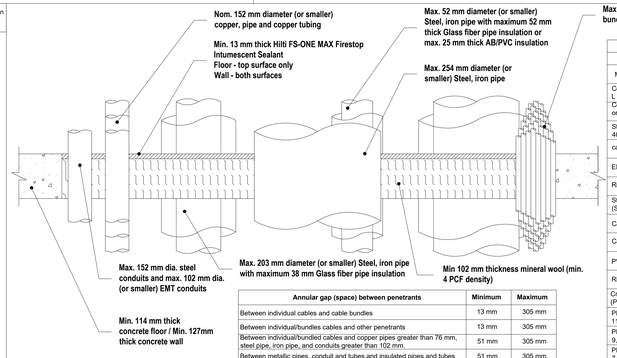



| UL System no. - W-J-1327 | |
|---|---|
| F-rating 2 hrs. | |
| Max.area of opening | 2323 cm² with max. dimension of 622 mm |
| Annular space between conduits or tubing | min. 0 mm, max. 51 mm |
| Min. annular gap between conduit and periphery | 13 mm |
| Max. annular gap between conduit and periphery | 51 mm |

Not to scale (Representation only)




| UL System no. - W-J-3050 | |
|---|---|
| F-rating 4 hrs. | |
| Max. opening diameter | 102 mm |
| Min. Annular space | 6 mm |
| Max. Annular space | 25 mm |
| Cross-sectional area of cables | max. 33% of cross-sectional area of cable tray |




| Annular gap (space) between penetrants | Minimum | Maximum |
|---|---|---|
| Between individual cables and cable bundles | 13 mm | 305 mm |
| Between individual/bundles cables and other penetrants | 13 mm | 305 mm |
| Between individual/bundled cables and copper pipes greater than 76 mm, steel pipe, iron pipe, and conduits greater than 102 mm. | 51 mm | 305 mm |
| Between metallic pipes, conduit and tubes and insulated pipes and tubes | 51 mm | 305 mm |
| Between 76 mm (or smaller) copper pipes and tubes | 13 mm | 305 mm |
| Between 102 mm (or smaller) steel and iron pipes and conduits | 13 mm | 305 mm |
| Between 51 mm (or smaller) metallic pipes and conduits | 0 mm | 305 mm |
| Between PVC, CPVC and RNC penetrants | 13 mm | 305 mm |
| Between PVC, CPVC and RNC and other penetrants | 51mm | 305 mm |
| Between insulated penetrants, non-metallic penetrants or cable tray and periphery of the opening | 13 mm | 305 mm |
| Between all other penetrants and periphery of the opening | 0 mm | 305 mm |

Not to scale (Representation only)

| UL System no. - C-AJ-8143 | |
|---|---|
| F-rating 2 hrs. | |
| Max. area of opening | 9,290 cm² with max dimension of 1,219mm |
| Copper tubing (Type L or heavier) | 152 mm diameter or smaller |
| Copper pipe (Regular or heavier) | 152 mm diameter or smaller |
| Steel pipe (Schedule 40 or heavier) | 610 mm diameter or smaller |
| cast or ductile iron pipe | 610 mm diameter or smaller |
| EMT | 102 mm diameter or smaller |
| Rigid Steel Conduit | 152 mm diameter or smaller |
| Stainless Steel pipe (Schedule 10 or heavier) | 102 mm diameter or smaller |
| Cable tray | Max. 610 mm wide and 152 mm deep |
| Cable bundle | Max. 102mm diameter tightly bundled cables |
| PVC pipe (Schedule 40) | Nom. 51 mm diameter or smaller |
| RNC (Schedule 10) | Nom. 51 mm diameter or smaller |
| Crosslinked Polyethylene (PEX) tubing (SDR 9) | Nom. 51 mm diameter or smaller |
| PP-R pipe (SDR 7.4 or 11) | Nom. 63 mm OD or smaller |
| PP-RCT pipe (SDR 9,11 or 17.6) | Nom. 63 mm OD or smaller |
| PP-RCT pipe (SDR 7.3,11 or 17) | Nom. 63 mm OD or smaller |
| PP-RCT pipe (SDR 7.4,11 or 17.6) | Nom. 63 mm OD or smaller |
| PP pipe (SDR 9 or 11) | Nom. 63 mm OD or smaller |
| Glass fibre insulation | Nom. 38 mm for pipes with nom. dia. 203 mm (or smaller) or tubes with nom. dia 102 mm (or smaller) |
| Glass fibre insulation | Nom. 51 mm for pipes or tubes with nom. dia. 51 mm or smaller |
| AB/PVC insulation | Nom. 25 mm for pipes or tubes with nom. dia. 51 mm or smaller |

**DISCLAIMER:**

1. These are general drawings representing application of Hilti products and are not to be considered as designs.
2. Fire rating of assembly is dependent on the performance of all components of the system in the actual conditions.
3. For fire rating in actual site conditions, proper dimensions and number of penetrants – pipes, cable trays, ducts, insulation must be provided.
4. Where UL systems cannot cover the application, an engineering judgement request must be raised.
5. Hilti shall not incur any obligation or liability for any loss, expense or damages, including incidental or consequential, arising out of or in connection with the use, interpretation of, or application based on these drawing templates.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