ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	Hilti Aktiengesellschaft
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-HIL-20240592-CBA1-DE
Issue date	19.03.2025
Valid to	18.03.2030

Hilti Pipe fixation elements made with metal and polymer parts Hilti AG



www.ibu-epd.com | https://epd-online.com





General Information

Hilti AG

Programme holder

IBU – Institut Bauen und Umwelt e.V. Hegelplatz 1 10117 Berlin Germany

Declaration number

EPD-HIL-20240592-CBA1-DE

This declaration is based on the product category rules:

Connection, assembly and installation systems, 01.08.2021 (PCR checked and approved by the SVR)

Issue date

19.03.2025

Valid to 18.03.2030

am liten

Dipl.-Ing. Hans Peters (Chairman of Institut Bauen und Umwelt e.V.)

Hilti Pipe fixation elements made with metal and polymer parts

Owner of the declaration Hilti Aktiengesellschaft Feldkircher Strasse 100 9494 Schaan Liechtenstein

Declared product / declared unit

MP-U-I 164-170 M8/10/1/2" / 1kg

Scope:

This document relates to the MP-U-I 164-170 M8/10/½" as a representative product for the Pipe fixation elements made with metal and polymer parts product group designed and sold by Hilti AG. The Pipe fixation elements made with metal and polymer parts product group refers to round shaped fastening elements with polymer inlays to provide sound insulation function or with plastic parts to enable certain functionalities of the fixation. These products are designed to clamp fresh water, wastewater, sanitary, heating, ventilation, and processing pipes in residential and industrial construction. The products are produced in 2 different coating types to accommodate intended use in indoor and outdoor environments. There are various types within the product group, and the different types are produced in outsourced locations in Turkey, Spain, and China. This EPD is a representative group due to highest production volume in 2022, and the product MP-U-I 164-170 M8/10/½" is selected as declared product, because it has the highest net weight amongst the product group.

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR							
Independent verification of the declaration and data according to ISO 14025:2011							
	internally	X	externally				

Florian Pronold (Managing Director Institut Bauen und Umwelt e.V.)

1. Albert

Mrs Kim Allbury, (Independent verifier)



Product

Product description/Product definition

The MP-U-I 164-170 M8/10/1/2" is designed as a fastening clamp to fix pipes of various materials and sizes. It is intended to be fixed onto Hilti modular support systems or directly to the base materials in connection with threaded rods, base plates, anchors or beam clamps. The pipe clamps consist of two profiled steel bands, which are designed to be able to surround a pipe circularly. The clamp bands are connected together on one side by a steel screw and on the other side by a threestage guick locking mechanism. The clamp bands with the inlays are pressed onto the outside of the pipe to be fastened by engaging the next stage of the closing mechanism and by tightening the screw. Each pipe clamp has a designated clamping range. The top clamp band features welded connection heads with M8, M8/M10, M8/10/O16 or M8/10/1/2" combi-threads. The clamps are fitted with an TPE profile on the inside to aid structure-borne sound insulation, to balance unevenness and to prevent contact corrosion.

The individual Pipe clamps with inlay items under this group and represented by MP-U-I 164-170 M8/10/ $\frac{1}{2}$ " are as listed below:

Item designation	Item designation	Item designation
MP-U-I 9-13 1/8" M8	MP-U-I 25-29 3/4" M8	MP-U-I 42-47 1 1/4" M8
MP-U-I 13-17 1/4" M8	MP-U-I 29-33 M8	MP-U-I 47-52 1 ½" M8
MP-U-I 17-21 3/8" M8	MP-U-I 33-37 1" M8	MP-U-I 52-57 M8
MP-U-I 21-25 1/2" M8	MP-U-I 37-42 M8	MP-U-I 57-62 2" M8
MP-U-I 9-13 1/8" M8/10	MP-U-I 52-57 M8/10	MP-U-I 109-115 4" M8/10
MP-U-I 13-17 1/4" M8/10	MP-U-I 57-62 2" M8/10	MP-U-I 115-121 M8/10
MP-U-I 17-21 3/8" M8/10	MP-U-I 62-67 M8/10	MP-U-I 122-128 M8/10
MP-U-I 21-25 1/2" M8/10	MP-U-I 67-72 M8/10	MP-U-I 129-135 M8/10
MP-U-I 25-29 3/4" M8/10	MP-U-I 72-77 2 1/2" M8/10	MP-U-I 135-141 5" M8/10
MP-U-I 29-33 M8/10	MP-U-I 78-84 M8/10	MP-U-I 141-147 M8/10
MP-U-I 33-37 1" M8/10	MP-U-I 84-90 3" M8/10	MP-U-I 147-153 M8/10
MP-U-I 37-42 M8/10	MP-U-I 90-96 M8/10	MP-U-I 154-160 M8/10
MP-U-I 42-47 1 ¼" M8/10	MP-U-I 97-103 M8/10	MP-U-I 160-166 6" M8/10
MP-U-I 47-52 1 ½" M8/10	MP-U-I 103-109 M8/10	MP-U-I 164-170 M8/10
MP-U-I 9-13 1/8" M8/10/O16	MP-U-I 52-57 M8/10/O16	MP-U-I 109-115 4" M8/10/O16
MP-U-I 13-17 1/4" M8/10/O16	MP-U-I 57-62 2" M8/10/O16	MP-U-I 115-121 M8/10/O16
MP-U-I 17-21 3/8" M8/10/O16	MP-U-I 62-67 M8/10/O16	MP-U-I 122-128 M8/10/O16
MP-U-I 21-25 1/2" M8/10/O16	MP-U-I 67-72 M8/10/O16	MP-U-I 129-135 M8/10/O16
MP-U-I 25-29 3/4" M8/10/O16	MP-U-I 72-77 2 1/2" M8/10/O16	MP-U-I 135-141 5" M8/10/O16
MP-U-I 29-33 M8/10/O16	MP-U-I 78-84 M8/10/O16	MP-U-I 141-147 M8/10/O16
MP-U-I 33-37 1" M8/10/O16	MP-U-I 84-90 3" M8/10/O16	MP-U-I 147-153 M8/10/O16
MP-U-I 37-42 M8/10/O16	MP-U-I 90-96 M8/10/O16	MP-U-I 154-160 M8/10/O16
MP-U-I 42-47 1 1/4" M8/10/O16	MP-U-I 97-103 M8/10/O16	MP-U-I 160-166 6" M8/10/O16
MP-U-I 47-52 1 1/2" M8/10/O16	MP-U-I 103-109 M8/10/O16	MP-U-I 164-170 M8/10/O16
MP-U-I 9-13 1/8" M8/10/1/2"	MP-U-I 52-57 M8/10/½"	MP-U-I 109-115 4" M8/10/1/2"
MP-U-I 13-17 1/4" M8/10/1/2"	MP-U-I 57-62 2" M8/10/1/2"	MP-U-I 115-121 M8/10/1/2"
MP-U-I 17-21 3/8" M8/10/1/2"	MP-U-I 62-67 M8/10/1/2"	MP-U-I 122-128 M8/10/1/2"
MP-U-I 21-25 1/2" M8/10/1/2"	MP-U-I 67-72 M8/10/1/2"	MP-U-I 129-135 M8/10/1/2"
MP-U-I 25-29 3/4" M8/10/1/2"	MP-U-I 72-77 2 1/2" M8/10/1/2"	MP-U-I 135-141 5" M8/10/1/2"
MP-U-I 29-33 M8/10/1/2"	MP-U-I 78-84 M8/10/1/2"	MP-U-I 141-147 M8/10/1/2"
MP-U-I 33-37 1" M8/10/½"	MP-U-I 84-90 3" M8/10/1/2"	MP-U-I 147-153 M8/10/½"
MP-U-I 37-42 M8/10/½"	MP-U-I 90-96 M8/10/1/2"	MP-U-I 154-160 M8/10/1/2"
MP-U-I 42-47 1 1/4" M8/10/1/2"	MP-U-I 97-103 M8/10/1/2"	MP-U-I 160-166 6" M8/10/1/2"
MP-U-I 47-52 1 ½" M8/10/½"	MP-U-I 103-109 M8/10/½"	MP-U-I 164-170 M8/10/½"
MP-U-G 16 M8	MP-U-G 32 M8/10	MP-U-G 160 M8/10
MP-U-G 20 M8	MP-U-G 40 M8/10	MP-U-G 50 M8/10/½"
MP-U-G 25 M8	MP-U-G 50 M8/10	MP-U-G 56 M8/10/½"
MP-U-G 32 M8	MP-U-G 56 M8/10	MP-U-G 63 M8/10/½"
MP-U-G 40 M8	MP-U-G 63 M8/10	MP-U-G 75 M8/10/½"
MP-U-G 50 M8	MP-U-G 75 M8/10	MP-U-G 90 M8/10/½"
MP-U-G 56 M8	MP-U-G 90 M8/10	MP-U-G 110 M8/10/1/2"
MP-U-G 16 M8/10	MP-U-G 110 M8/10	MP-U-G 125 M8/10/½"
MP-U-G 20 M8/10	MP-U-G 125 M8/10	MP-U-G 135 M8/10/1/2"
MP-U-G 25 M8/10	MP-U-G 135 M8/10	MP-U-G 160 M8/10/½"

Item designation	Item designation	Item designation
NP-L-I 9-14 M8	MP-L-I 26-32 M8	MP-L-I 45-53 M8
MP-L-I 15-20 M8	MP-L-I 32-38 M8	MP-L-I 54-63 M8
MP-L-I 20-26 M8	MP-L-I 38-45 M8	
/IP-L-I 9-14 M8/M10 /IP-L-I 15-20 M8/M10	MP-L-I 45-53 M8/M10 MP-L-I 54-63 M8/M10	MP-L-I 104-114 M8/M10 MP-L-I 115-128 M8/M10
MP-L-I 20-26 M8/M10	MP-L-I 54-63 M8/M10 MP-L-I 63-72 M8/M10	MP-L-I 129-142 M8/M10
MP-L-I 26-32 M8/M10	MP-L-I 73-82 M8/M10	MP-L-I 143-156 M8/M10
/P-L-I 32-38 M8/M10	MP-L-I 83-92 M8/M10	MP-L-I 157-170 M8/M10
MP-L-I 38-45 M8/M10	MP-L-I 93-103 M8/M10	
MP-HI 8-12 M8/M10	MP-HI 52-59 M8/M10	MP-HI 119-129 M8/M10
MP-HI 12-16 M8/M10	MP-HI 59-66 M8/M10	MP-HI 129-137 M8/M10
/IP-HI 16-20 M8/M10	MP-HI 66-75 M8/M10	MP-HI 137-145 M8/M10
MP-HI 20-25 M8/M10	MP-HI 75-84 M8/M10	MP-HI 145-155 M8/M10
MP-HI 25-31 M8/M10	MP-HI 84-93 M8/M10	MP-HI 155-163 M8/M10
MP-HI 31-38 M8/M10	MP-HI 93-101 M8/M10	MP-HI 163-172 M8/M10
MP-HI 38-45 M8/M10	MP-HI 101-110 M8/M10	
/IP-HI 45-52 M8/M10	MP-HI 110-119 M8/M10	
/IP-PI 11-15 1/4" M8/M10 /IP-PI 16-20 3/8" M8/M10	MP-PI 67-73 M8/M10 MP-PI 75-80 21/2" M8/M10	MP-PI 149-161 M8/M10 MP-PI 162-170 6" M8/M10
/P-PI 16-20 3/8" M8/M10 /IP-PI 20-24 1/2" M8/M10	MP-PI 75-80 21/2" M8/M10 MP-PI 81-87 M8/M10	MP-PI 162-1/0 6" M8/M10 MP-PI 177-182 M8/M10
MP-PI 20-24 1/2 M8/M10 MP-PI 25-28 3/4" M8/M10	MP-PI 87-92 3" M8/M10	MP-PI 177-182 M8/M10 MP-PI 192-204 M8/M10
MP-PI 32-36 1" M8/M10	MP-PI 99-105 31/2" M8/M10	MP-PI 207-219 M8/M10
MP-PI 32-36 1 M8/M10 MP-PI 38-46 11/4" M8/M10	MP-PI 107-115 4" M8/M10	MP-PI 207-219 M8/W10 MP-PI 218-226 8" M12
MP-PI 48-53 11/2" M8/M10	MP-PI 120-128 M8/M10	MP-PI 242-253 M12
MP-PI 54-58 M8/M10	MP-PI 129-134 M8/M10	MP-PI 272-281 10" M12
/P-PI 59-66 2" M8/M10	MP-PI 135-143 5" M8/M10	MP-PI 313-326 12" M12
MP-PI 16-20 3/8" M8/M10 HDG	MP-PI 67-73 M8/M10 HDG	MP-PI 135-143 5" M8/M10 HDG
/P-PI 20-24 1/2" M8/M10 HDG	MP-PI 75-80 21/2" M8/M10 HDG	MP-PI 149-161 M8/M10 HDG
MP-PI 25-28 3/4" M8/M10 HDG	MP-PI 81-87 M8/M10 HDG	MP-PI 162-170 6" M8/M10 HDG
/IP-PI 32-36 1" M8/M10 HDG	MP-PI 87-92 3" M8/M10 HDG	MP-PI 177-182 M8/M10 HDG
MP-PI 38-46 11/4" M8/M10 HDG	MP-PI 99-105 31/2" M8/M10 HDG	MP-PI 192-204 M8/M10 HDG
MP-PI 48-53 11/2" M8/M10 HDG	MP-PI 107-115 4" M8/M10 HDG	MP-PI 207-219 M8/M10 HDG
/IP-PI 54-58 M8/M10 HDG	MP-PI 120-128 M8/M10 HDG	MP-PI 11-15 1/4" M8/M10 HDG
MP-PI 59-66 2" M8/M10 HDG	MP-PI 129-134 M8/M10 HDG	
MP-MI 3/8" G MP-MI 1/2" G	MP-MI 2" G	MP-MI 117 G
MP-MI 1/2" G MP-MI 3/4" G	MP-MI 68/72 G MP-MI 2 1/2" G	MP-MI 125 G MP-MI 133 G
MP-MI 3/4 G	MP-MI 2 1/2 G	MP-MI 5" G
MP-MI1 1/4" G	MP-MI 3" G	MP-MI 159 G
MP-MI 1 1/2" G	MP-MI 101.6 G	MP-MI 6" G
MP-MI 54/57 G	MP-MI 4" G	
MP-MI 2" C	MP-MI 133 C	MP-MI 193.7 C
MP-MI 2 1/2" C	MP-MI 159 C	MP-MI 212 C
MP-MI 3" C	MP-MI 6" C	MP-MI 219.1 C
MP-MI 4" C	MP-MI 177.8 C	MP-MI 244.5 C
MP-MI 3/8" DL	MP-MI 1" DL	MP-MI 54/57 DL
		1
tem designation	Item designation	Item designation
MP-MI 1/2" DL MP-MI 3/4" DL	MP-MI 1 1/4" DL MP-MI 1 1/2" DL	MP-MI 2" DL MP-MI 68/72 DL
	MP-MI 2 1/2" EL	MP-MI 159 EL
MP-MI 117 EI		MP-MI 6" EL
	MP-MI 3" EL	
MP-MI 125 EL		MP-MI 193.7 EL
//P-MI 125 EL //P-MI 133 EL	MP-MI 3" EL	
/IP-MI 125 EL /IP-MI 133 EL /IP-MI 152.4 EL	MP-MI 3" EL MP-MI 101.6 EL	MP-MI 193.7 EL
NP-MI 125 EL NP-MI 133 EL NP-MI 152.4 EL NP-MI 177.8 EL	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL	MP-MI 193.7 EL
AP-MI 125 EL AP-MI 133 EL AP-MI 152.4 EL AP-MI 177.8 EL AP-MI 212 EL	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 127 EL	MP-MI 193.7 EL
AP-MI 125 EL AP-MI 133 EL AP-MI 152.4 EL AP-MI 177.8 EL AP-MI 212 EL AP-MI 212 EL	MP-MI 3° EL MP-MI 101.6 EL MP-MI 4° EL MP-MI 127 EL MP-MI 5° EL MP-MI 5° EL MP-MIS 21/2° G MP-MIS 78/84 G	MP-MI 193.7 EL MP-MI 219.1 EL
AP-MI 125 EL AP-MI 133 EL AP-MI 132 E EL AP-MI 172 E EL AP-MI 212 EL AP-MI 313° G AP-MIS 12° G	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 12T EL MP-MI 5" EL MP-MIS 2 1/2" G	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G
AP-MI 125 EL AP-MI 133 EL AP-MI 152 4 EL AP-MI 77.8 EL AP-MI 212 EL AP-MI 212 EL AP-MIS 30° G AP-MIS 12° G AP-MIS 31° G AP-MIS 1° G	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 5" EL MP-MI 52 L2" G MP-MIS 78/84 G MP-MIS 3" G MP-MIS 101.6 G	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159.0 MP-MIS 159.0 MP-MIS 6°.0 MP-MIS 177.8 C MP-MIS 193.7 C
AP-MI 125 EL AP-MI 133 EL AP-MI 152 4 EL AP-MI 177.8 EL AP-MI 177.8 EL AP-MI 512 EL AP-MIS 313" G AP-MIS 112" G AP-MIS 11 G AP-MIS 11/4" G	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 5" EL MP-MI 5" EL MP-MI 5" EL MP-MI 5" AL	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 6" G MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 193.7 C
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 177 8 EL AP-MI 512 EL AP-MIS 310° G AP-MIS 310° G AP-MIS 310° G AP-MIS 110° G AP-MIS 114° G AP-MIS 1 112° G	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 52 EL MP-MI 52 FL MP-MIS 7 824 G MP-MIS 7824 G MP-MIS 101.6 G MP-MIS 4" G MP-MIS 101.6 G MP-MIS 117 G	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 157 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 121 C MP-MIS 212 C MP-MIS 219.1
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 173 EL AP-MI 212 EL AP-MI 212 EL AP-MIS 130° G AP-MIS 112° G AP-MIS 112° G AP-MIS 114° G AP-MIS 114° G AP-MIS 114° G AP-MIS 54/57 G	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 57 EL MP-MI 57 EL MP-MI 57 EL MP-MIS 78/84 G MP-MIS 3" G MP-MIS 101.6 G MP-MIS 101.7 G MP-MIS 117 G MP-MIS 125 G	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 6" G MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 193.7 C
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 173 EL AP-MI 77 8 EL AP-MI 212 EL AP-MI 212 EL AP-MI 212" G AP-MIS 12" G AP-MIS 14" G AP-MIS 114" G AP-MIS 114" G AP-MIS 114" G AP-MIS 112" G AP-MIS 5457 G AP-MIS 2" G	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 5" EL MP-MI 52 L2 MP-MI 52 1/2" G MP-MIS 2 1/2" G MP-MIS 3" G MP-MIS 101.6 G MP-MIS 101.7 G MP-MIS 125 G MP-MIS 133 G	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 157 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 121 C MP-MIS 212 C MP-MIS 219.1
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 177.8 EL AP-MI 177.8 EL AP-MI 512 EL AP-MIS 30° G AP-MIS 30° G AP-MIS 10° G AP-MIS 11° G AP-MIS 117° G AP-MIS 112° G AP-MIS 112° G AP-MIS 26457 G AP-MIS 8672 G	MP-MI 3" EL MP-MI 101.6 EL MP-MI 101.6 EL MP-MI 127 EL MP-MI 52 TL2 MP-MIS 78284 G MP-MIS 730 G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 125 G MP-MIS 133 G MP-MIS 5" G	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 6" G MP-MIS 77.8 C MP-MIS 193.7 C MP-MIS 193.7 C MP-MIS 212 C MP-MIS 219.1 MP-MIS 219.1
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 173 EL AP-MI 272 EL AP-MI 272 EL AP-MIS 126 C AP-MIS 12° G AP-MIS 11° G AP-MIS 54/57 G AP-MIS 54/57 G AP-MIS 54/57 G	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 127 EL MP-MI 52 1/2" G MP-MIS 3" G MP-MIS 3" G MP-MIS 101.6 G MP-MIS 117 G	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 212 C MP-MIS 219.1 MP-MIS 219.1 MP-MIS 219.1
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 152 4 EL AP-MI 212 EL AP-MI 212 EL AP-MI 212 EL AP-MIS 12" G AP-MIS 112" G AP-MIS 114" G AP-MIS 114" G AP-MIS 114" G AP-MIS 54/57 G AP-MIS 54/57 G AP-MIS 56/72 G AP-MIS 66/72 G AP-MIF 12" AP-MIF 12"	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 5" EL MP-MI 52 TZ" G MP-MIS 2 1/2" G MP-MIS 78/84 G MP-MIS 3" G MP-MIS 101.6 G MP-MIS 101.7 G MP-MIS 125 G MP-MIS 123 G MP-MIS 133 G MP-MIF 1 1/4" MP-MIF 1 1/2"	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 157 G MP-MIS 193.7 C MP-MIS 193.7 C MP-MIS 193.7 C MP-MIS 212 C MP-MIS 219.1 MP-MIS 244.5 C MP-MIF 2"
MP-MI 125 EL MP-MI 133 EL MP-MI 133 EL MP-MI 173 EL MP-MI 177 8 EL MP-MI 176 G MP-MI 176 G MP-MI 176 G MP-MI 177 G	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 127 EL MP-MI 52 I27 G MP-MIS 78284 G MP-MIS 78284 G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 125 G MP-MIS 157 G MP-MIS 156 G MP-MIS 157 G MP-MIS 153 G MP-MIS 176 H MP-MIS 177 G MP-MIS 176 H MP-MIS 5"G	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 6" G MP-MIS 193.7 C MP-MIS 193.7 C MP-MIS 193.7 C MP-MIS 193.7 C MP-MIS 212.1 MP-MIS 219.1 MP-MIS 244.5 C MP-MIF 2.12" MP-MIF 7.12"
AP-MI 125 EL AP-MI 133 EL AP-MI 152 4 EL AP-MI 152 4 EL AP-MI 177 8 EL AP-MI 512 EL AP-MIS 30° G AP-MIS 30° G AP-MIS 30° G AP-MIS 30° G AP-MIS 112° G AP-MIS 112° G AP-MIS 112° G AP-MIS 5457 G AP-MIS 2° G AP-MIS 2° G AP-MIS 2° G AP-MIS 7° G AP-MIS 7° G	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 27 EL MP-MI 52 TEL MP-MIS 78/84 G MP-MIS 78/84 G MP-MIS 101.6 G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 125 G MP-MIS 15 G MP-MIS 17 G MP-MIS 5 G MP-MIS 5 G MP-MIS 5 G MP-MIS 5 6 G MP-MIS 5 7 G MP-MIS 5 7 G MP-MIS 5 7 G MP-MIS 5 7 G MP-MIS 5 6 G MP-MIS 6 7 MI6	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 212 C MP-MIS 212 C MP-MIS 219.1 MP-MIS 219.1 MP-MIS 219.1 MP-MIF 2 1/2" MP-MIF 2 1/2" MP-MIF 2 1/2"
MP-MI 125 EL MP-MI 133 EL MP-MI 133 EL MP-MI 173 EL MP-MI 173 EL MP-MI 212 EL MP-MI 212 EL MP-MI 512 G MP-MIS 14" G MP-MIS 114" G MP-MIS 114" G MP-MIS 114" G MP-MIS 114" G MP-MIS 12" G MP-MIS 2" G MP-MIS 2" G MP-MI-F 10" MP-MI-F 14" MP-MIX 2 MIOM12	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 127 EL MP-MI 5" EL MP-MI 52 1/2" G MP-MIS 3" G MP-MIS 3" G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 125 G MP-MIS 133 G MP-MIS 5" G MP-MIS 133 G MP-MIS 5" G MP-MIS 117 G MP-MIS 125 G MP-MIS 133 G MP-MIS 5" G MP-MIS 6" G MP-MIS 6" G MP-MIS 6" G MP-MI-F 1 1/2"	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159.6 MP-MIS 159.7 MP-MIS 137.7 MP-MIS 133.7 C MP-MIS 212.C MP-MIS 219.1 MP-MIS 219.1 MP-MIS 219.1 MP-MIF 2" MP-MI-F 2 1/2" MP-MI-F 2 1/2" MP-MI-F 324 M16 MP-MXI 326 M16
MP-MI 125 EL MP-MI 133 EL MP-MI 133 EL MP-MI 153 EL MP-MI 177 & EL MP-MIS 10° G MP-MIS 114° G MP-MIS 24/57 G MP-MIS 21° MIOM12 MP-MIS 21° MIOM12 MP-MIS 21° MIOM12 MP-MIX 21° MIOM12 MP-MIX 3° MIOM12	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 27 EL MP-MI 52 TEL MP-MIS 78/84 G MP-MIS 78/84 G MP-MIS 101.6 G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 125 G MP-MIS 15 G MP-MIS 17 G MP-MIS 5 G MP-MIS 5 G MP-MIS 5 G MP-MIS 5 6 G MP-MIS 5 7 G MP-MIS 5 7 G MP-MIS 5 7 G MP-MIS 5 7 G MP-MIS 5 6 G MP-MIS 6 7 MI6	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 212 C MP-MIS 212 C MP-MIS 219.1 MP-MIS 219.1 MP-MIS 219.1 MP-MIF 2 1/2" MP-MIF 2 1/2"
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL PAMI 152 4 EL AP-MI 177 8 CL AP-MI 177 8 CL AP-MI 177 8 CL AP-MIS 10° G AP-MIS 11° G AP-MIS 112° G AP-MIS 112° G AP-MIS 24/57 G AP-MIS 27 G AP-MIS 734° AP-MIF 12° AP-MIF 134° AP-MIS 21 CL AP-MIS 21 CL <t< td=""><td>MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 52 TL2 MP-MIS 78284 G MP-MIS 78284 G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 125 G MP-MIS 133 G MP-MIS 5" G MP-MIS 133 G MP-MIS 144 MP-MIS 15" G MP-MIS 144 MP-MIS 5" G MP-MIS 5" G MP-MIS 6" M16 MP-MXI 107.7 M16</td><td>MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 159 G MP-MIS 159 G MP-MIS 178 C MP-MIS 193.7 C MP-MIS 193.7 C MP-MIS 193.7 C MP-MIS 212 C MP-MIS 219.1 MP-MIS 244.5 C MP-MI-F 2.1/2" MP-MI-F 2.1/2" MP-MI-F 3" MP-MKI 324 M16 MP-MKI 326 M16</td></t<>	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 52 TL2 MP-MIS 78284 G MP-MIS 78284 G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 125 G MP-MIS 133 G MP-MIS 5" G MP-MIS 133 G MP-MIS 144 MP-MIS 15" G MP-MIS 144 MP-MIS 5" G MP-MIS 5" G MP-MIS 6" M16 MP-MXI 107.7 M16	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 159 G MP-MIS 159 G MP-MIS 178 C MP-MIS 193.7 C MP-MIS 193.7 C MP-MIS 193.7 C MP-MIS 212 C MP-MIS 219.1 MP-MIS 244.5 C MP-MI-F 2.1/2" MP-MI-F 2.1/2" MP-MI-F 3" MP-MKI 324 M16 MP-MKI 326 M16
AP-MI 125 EL AP-MI 133 EL AP-MI 132 EL AP-MI 173 EL AP-MI 172 EL AP-MI 173 C AP-MI 172 G AP-MIS 147 G AP-MIS 114" G AP-MIS 144" G AP-MI 12" G AP-MI 14" MITA AP-MI 2" MITA AP-MI 2" MITA AP-MIX 2 TAP AP-MX1 2 TAP AP-MX1 2 TAP AP-MX1 125 M16	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 27 EL MP-MI 52 TL MP-MIS 78/84 G MP-MIS 78/84 G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 125 G MP-MIS 117 G MP-MIS 125 G MP-MIS 125 G MP-MIS 126 G MP-MIS 127 M MP-MIS 126 M MP-MIS 127 M MP-MIS 126 M MP-MIS 127 M MP-MIS 147 M MP-MIS 147 M MP-MIS 147 M MP-MIS 1142 MP-MIS 1142 MP-MIS 1142 MP-MIS 1142 MP-MIS 1142 MP-MIS 1142	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 212 C MP-MIS 219.1 MP-MIS 219.1 MP-MIF 2 1/2" MP-MIF 2 1/2" MP-MIF 3" MP-MXI 326 M16 MP-MXI 368 M16
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 152 EL AP-MI 177.8 EL AP-MI 177.8 EL AP-MI 512 EL AP-MIS 12" G AP-MIS 112" G AP-MIS 114" G AP-MIS 114	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 127 EL MP-MI 52 1/2" G MP-MIS 3"G MP-MIS 3"G MP-MIS 101.6 G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 5" G MP-MIS 5" G MP-MI-F 1 1/2" MP-MI-F 54/57 MP-MIC 6" M16 MP-MXI 172.8 M16 MP-MXI 210 M16 MP-MXI 219 M16	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 212 C MP-MIS 212 C MP-MIS 219.1 MP-MIS 201.1 MP-MIS 201.1 MP-MIS 201.1 MP-MIS 201.1 MP-MIS 324.5 C
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 177 & EL AP-MIS 10° G AP-MIS 11° G AP-MIS 11/2° G AP-MIS 11/2° G AP-MIS 11/2° G AP-MIS 24/57 G AP-MIS 11/2° G AP-MIS 27 G AP-MIS 21/2° G AP-MIS 12° MIOM12 AP-MIS 12° MIOM12 AP-MIS 12° MIOM12 AP-MIX 12° MIOM12 AP-MIX 12° MIOM12 AP-MIX 125 MI6 AP-MIX 125 MI6 AP-MIX 130 MI6 AP-MIX 130 MI6	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 52 TL MP-MI 53 G MP-MI 51 TL MP-MI 55 G MP-MI 55 G MP-MI 51 TL MP-MI 54/57 MP-MOL 6" M16 MP-MXI 193.7 M16 MP-MXI 210 M16 MP-MXI 2210 M16 MP-MXI 2210 M16 MP-MXI 244.5 M16	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 159.7 G MP-MIS 193.7 C MP-MIS 193.7 C MP-MIS 212 C MP-MIS 214.5 C MP-MIS 214.5 C MP-MIF 2 'L' MP-MIF 2 1/2' MP-MIF 2 1/2' MP-MIF 3' MP-MIX 326 M16 MP-MXI 355 M16 MP-MX 467 M16
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 177 & C AP-MI 177 G AP-MIS 102 G AP-MIS 112' G AP-MIS 112' G AP-MIS 112' G AP-MIS 24/67 G AP-MIS 27' G AP-MIS 27' G AP-MIS 27' G AP-MI 57' G AP-MI 712'' AP-MI 712'' AP-MI 712'' AP-MI 71'' AP-MIX 12'' M10M12 AP-MIX 12'' M10M12 AP-MIX 12'' M16 AP-MIX 12'' M16 AP-MIX 12'' M16 AP-MIX 15'' M16 AP-MIX 15'' M16	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 52 TL2 MP-MI 52 FL MP-MIS 78284 G MP-MIS 87 364 G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 125 G MP-MIS 117 G MP-MIS 125 G MP-MIS 5"G MP-MIS 5"G MP-MIS 5"G MP-MIF 1 1/4" MP-MIF 5 15G MP-MIF 7 11/2" MP-MX1 107.8 M16 MP-MX1 100 116 MP-MX2 10 M16 MP-MX2 210 M16 MP-MX1 267/274 M16	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 159.7 G MP-MIS 193.7 C MP-MIS 193.7 C MP-MIS 212 C MP-MIS 214.5 C MP-MIS 214.5 C MP-MIF 2 'L' MP-MIF 2 1/2' MP-MIF 2 1/2' MP-MIF 3' MP-MIX 326 M16 MP-MXI 355 M16 MP-MX 467 M16
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 177.8 EL AP-MI 172.7 G AP-MIS 114° G AP-MIS 214° G AP-MIS 200° G AP-MIS 200° C AP-MI 500° C AP-MI 70° C	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 127 EL MP-MI 52 TEL MP-MIS 127 CG MP-MIS 3" G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 117 G MP-MIS 125 G MP-MIS 125 G MP-MIS 5" G MP-MIS 117.7 MP-MIS 5" G MP-MIS 11/4" MP-MIS 100.10" MP-MIS 117.8 M16 MP-MX1 107.8 M16 MP-MX1 210 M16 MP-MX2 120 M16 MP-MX2 120 M16 MP-MX2 120 M16 MP-MX2 120 M16 MP-MX2 1275 M16	MP-MI 193.7 EL. MP-MI 219.1 EL MP-MIS 159.G MP-MIS 159.G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 212.C MP-MIS 212.C MP-MIS 219.1 MP-MIS 219.1 MP-MI-F 2" MP-MI-F 2 1/2" MP-MI-F 2 1/2" MP-MI-F 3" MP-MXI 326 M16 MP-MXI 326 M16 MP-MXI 406 M16 MP-MXI 406 M16 MP-MXI 407 M16
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 177 & G AP-MI 176 G AP-MIS 11/2° G AP-MIS 11/2° G AP-MIS 11/2° G AP-MIS 26/457 G AP-MIS 27 G AP-MIS 26/457 G AP-MIS 27 M10M12 AP-MIS 12° M10M12 AP-MIS 12 / 12° M10M12 AP-MXI 12 / 126 M16 AP-MXI 12 / 125 M16 AP-MXI 12 / 120 / 110 AP-MXI 12 / 120 / 110	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 4" EL MP-MI 57 EL MP-MI 52 10/2 G MP-MI 52 10/2 G MP-MIS 78/84 G MP-MIS 8" G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 125 G MP-MIS 133 G MP-MIS 5" G MP-MIS 5" G MP-MIS 5" G MP-MIS 70 MI6 MP-MXI 210 MI6 MP-MXI 2210 MI6 MP-MXI 2210 MI6 MP-MXI 2210 MI6 MP-MXI 2275 MI6 MP-MXI 267/27 MI6 MP-MXI 6" 1"	MP-MI 193.7 EL. MP-MI 219.1 EL MP-MIS 159.6 MP-MIS 6°.6 MP-MIS 139.7 C MP-MIS 139.7 C MP-MIS 121.2 MP-MIS 212.4 MP-MIS 212.7 MP-MIS 214.5 MP-MIS 214.5 MP-MI-F 2" MP-MI-F 2 1/2" MP-MI-F 2 1/2" MP-MI-F 2 1/2" MP-MI-S 25 M16 MP-MXI 326 M16 MP-MXI 365 M16 MP-MXI 467 M16 MP-MXI 508 M16 MP-MXI 508 M16 MP-MXI 324 1"
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 153 EL AP-MI 152 4 EL AP-MI 177 8 EL AP-MI 51 20 EL AP-MIS 10" G AP-MIS 11'G AP-MIS 11/2" G AP-MIS 2072 G AP-MIS 10" M10M12 AP-MI-F 10" AP-MI-F 10" AP-MIS 10" M10M12 AP-MIX 110 M112 AP-MIX 125 M16 AP-MIX 150 M16 AP-MIX 120 M16 AP-MIX 120 M16 <t< td=""><td>MP-MI 3" EL MP-MI 101.6 EL MP-MI 101.6 EL MP-MI 127 EL MP-MI 127 EL MP-MI 127 EL MP-MI 52 TL2 G MP-MIS 3" G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 117 G MP-MIS 125 G MP-MIS 133 G MP-MIS 5" G MP-MIS 133 G MP-MIS 4" G MP-MIS 117 G MP-MIS 5" G MP-MIS 5" G MP-MIS 6" M16 MP-MIS 6" M16 MP-MXI 177.8 M16 MP-MXI 210 M16 MP-MXI 2275 M16 MP-MXI 277.4 M16 MP-MXI 275 M16 MP-MXI 276 7.74 M16 MP-MXI 277.8 1"</td><td>MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 121.2 C MP-MIS 212 C MP-MIS 219.1 MP-MIF 2 112 MP-MIF 2 112 MP-MIF 2 7 MP-MIF 2 112* MP-MIF 5 3* MP-MXI 326 M16 MP-MXI 368 M16 MP-MXI 406 M16 MP-MXI 508 M16 MP-MXI 508 M16 MP-MXI 324 1* MP-MXI 326 1*</td></t<>	MP-MI 3" EL MP-MI 101.6 EL MP-MI 101.6 EL MP-MI 127 EL MP-MI 127 EL MP-MI 127 EL MP-MI 52 TL2 G MP-MIS 3" G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 117 G MP-MIS 125 G MP-MIS 133 G MP-MIS 5" G MP-MIS 133 G MP-MIS 4" G MP-MIS 117 G MP-MIS 5" G MP-MIS 5" G MP-MIS 6" M16 MP-MIS 6" M16 MP-MXI 177.8 M16 MP-MXI 210 M16 MP-MXI 2275 M16 MP-MXI 277.4 M16 MP-MXI 275 M16 MP-MXI 276 7.74 M16 MP-MXI 277.8 1"	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 121.2 C MP-MIS 212 C MP-MIS 219.1 MP-MIF 2 112 MP-MIF 2 112 MP-MIF 2 7 MP-MIF 2 112* MP-MIF 5 3* MP-MXI 326 M16 MP-MXI 368 M16 MP-MXI 406 M16 MP-MXI 508 M16 MP-MXI 508 M16 MP-MXI 324 1* MP-MXI 326 1*
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 177.8 EL AP-MI 177.8 EL AP-MI 121 EL AP-MI 122 EL AP-MI 127 G AP-MIS 1/2" G AP-MIS 1/2" G AP-MIS 1/4" G AP-MIS 54/57 G AP-MIS 54/57 G AP-MIS 54/57 G AP-MIS 2/4" AP-MIS 2/4" AP-MIS 2/4" AP-MIS 2/4" AP-MIS 2/4" AP-MIX 12 AP-MIX 13" M10M12 AP-MIX 13" M106 AP-MIX 13" M106 AP-MIX 13" 3M16 AP-MIX 12" 3/4" AP-MIX 12 1/2" 3/4" AP-MIX 12 1/2" 3/4" AP-MIX 12 1/2" 3/4"	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 127 EL MP-MI 52 TL MP-MI 53 76 MP-MIS 101.6 G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 117 G MP-MIS 125 G MP-MIS 125 G MP-MIS 125 G MP-MIS 5"G MP-MIS 125 G MP-MIS 15" G MP-MIS 16" M16 MP-MIS 177.8 M16 MP-MIS 123 G MP-MIS 133 G MP-MIS 147.78 M16 MP-MIS 1477.8 M16 MP-MX1210 M16 MP-MX2 210 M16 MP-MX2 275 M16 MP-MX2 76" 1" MP-MX1 07.78 1"	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 212 C MP-MIS 212 C MP-MIS 219.1 MP-MIS 219.1 MP-MI-F 2' MP-MI-F 2 1/2' MP-MI-F 2 1/2' MP-MI-F 3' MP-MI-F 5' MP-MIX 324 M16 MP-MXI 326 M16 MP-MXI 365 M16 MP-MXI 368 M16 MP-MXI 368 M16 MP-MXI 324 1' MP-MXI 324 1' MP-MXI 326 1'
MP-MI 125 EL MP-MI 133 EL MP-MI 133 EL MP-MI 133 EL MP-MI 177 & G MP-MIS 11'G MP-MIS 11/2' G MP-MIS 11/2' G MP-MIS 11/2' G MP-MIS 24/57 G MP-MIS 26/57 G MP-MIS 26/72 G MP-MIS 27' G MP-MIS 27' G MP-MIS 27' G MP-MIS 26/72 G MP-MI 72 MT0M12 MP-MI 72 MT0M12 MP-MI 72 MT0M12 MP-MX 12 1/2' M10M12 MP-MX 150 M16 MP-MX 12 3/4'' MP-MX 12 3/4'' MP-MX 13' 3/4'' M	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 52 L2 MP-MI 52 L2 MP-MI 52 L2 MP-MI 52 V27 G MP-MIS 78/84 G MP-MIS 8" G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 117 G MP-MIS 133 G MP-MIS 5" G MP-MIS 5" G MP-MIS 5" G MP-MIS 5" G MP-MIS 6" G MP-MIS 75 M16 MP-MIS 193 7 M16 MP-MXI 177.8 M16 MP-MXI 210 M16 MP-MXI 210 M16 MP-MXI 2275 M16 MP-MXI 275 M16 MP-MXI 6" 1" MP-MXI 177.8 1" MP-MXI 177.8 1"	MP-MI 193.7 EL. MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 137.7 C MP-MIS 121.2 C MP-MIS 212 C MP-MIS 244.5 C MP-MIF 21/2" MP-MIF 2 1/2" MP-MIF 2 1/2" MP-MIF 2 1/2" MP-MIF 3" MP-MIF 400 324 M16 MP-MXI 326 M16 MP-MXI 326 M16 MP-MXI 406 M16 MP-MXI 407 M16 MP-MXI 324 1" MP-MXI 351 1" MP-MXI 354 1"
MP-MI 125 EL MP-MI 133 EL MP-MI 133 EL MP-MI 133 EL MP-MI 133 EL MP-MI 177 & EL MP-MI 121 EL MP-MI 121 EL MP-MI 121 EL MP-MI 51 20 EL MP-MI 51 20 EL MP-MI 51 20 EL MP-MI 51 20 EL MP-MI 51 70 G MP-MIS 11/2° G MP-MIS 11/2° G MP-MIS 11/2° G MP-MIS 54/5° G MP-MIS 10° M012 MP-MIS 10° M10 MP-MIX 10° M10 MP-MIX 10° M10 MP-MIX 10° M10 MP-MIX 10° M16 MP-MIX 10° M16° M16° M16° M16° M16° M16° M16° M16	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 127 EL MP-MI 52 TL2" G MP-MI 52 TL2" G MP-MIS 78284 G MP-MIS 3" G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 126 G MP-MIS 117 G MP-MIS 126 G MP-MIS 126 G MP-MIS 127 G MP-MIS 117 G MP-MIS 126 G MP-MIS 126 G MP-MIS 133 G MP-MIS 6" G MP-MIS 7000 IN 100 MP-MIS 133 G MP-MIS 700 IN 100 MP-MIS 700 IN 101 MP-MIS 700 IN 101 MP-MX1 177.8 M16 MP-MX2 120 M16 MP-MX2 275 M16 MP-MX2 275 M16 MP-MX1 177.8 1" MP-MX1 177.8 1" MP-MX1 177.8 1" MP-MX2 120 1"	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 193.7 C MP-MIS 191.1 MP-MIS 210.1 MP-MIF 2 'L C MP-MIF 5'' MP-MIF 5'' MP-MIF 5'' MP-MX 326 M16 MP-MXI 326 M16 MP-MXI 406 M16 MP-MXI 324 1'' MP-MXI 326 1''
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 177.8 EL AP-MI 177.8 EL AP-MI 121 EL AP-MI 121 EL AP-MI 122 EL AP-MI 127 G AP-MIS 1/2" G AP-MIS 1/2" G AP-MIS 1/4" G AP-MIS 54/57 G AP-MIS 54/57 G AP-MIS 2" G AP-MIS 2" MIOM12 AP-MIS 2" MIOM12 AP-MI 72 2" MIOM12 AP-MX 3" MIOM12 AP-MX 3" MIOM12 AP-MX 3" MIOM12 AP-MX 13 MI6 AP-MX 133 M16 AP-MX 133 M16 AP-MX 12 72" 3/4" AP-MX 12 72" 3/4" AP-MX 12 73" 3/4" AP-MX 125 3/4" AP-MX 125 3/4" AP-MX 13 3" 4" AP-MX 13 3" 4"	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 127 EL MP-MI 52 TL MP-MI 52 TL MP-MIS 3" G MP-MIS 101.6 G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 125 G MP-MIS 125 G MP-MIS 126 G MP-MIS 127 G MP-MIS 117 G MP-MIS 126 G MP-MIS 126 G MP-MIS 126 G MP-MIS 127 MI6 MP-MIF 1 1/4" MP-MIF 1 1/2" MP-MIF 54/57 MP-MIF 54/57 MP-MX103 0"M16 MP-MX1210 M16 MP-MX1210 M16 MP-MX1210 M16 MP-MX1210 M16 MP-MX1275 M16 MP-MX1275 M16 MP-MX1275 M16 MP-MX13275 M16 MP-MX137.1" MP-MX13210 1" MP-MX1210 113.7 1" MP-MX1210 11" MP-MX1210 1" MP-MX1210 1"	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 212 C MP-MIS 212 C MP-MIS 219.1 MP-MIS 219.1 MP-MI-F 2" MP-MI-F 2 1/2" MP-MI-F 2 1/2" MP-MI-F 3" MP-MIX 324 M16 MP-MXI 326 1" MP-MXI 355 1" MP-MXI 406 1" MP-MXI 406 1" MP-MXI 406 1"
MP-MI 125 EL MP-MI 133 EL MP-MI 133 EL MP-MI 133 EL MP-MI 177 & EL MP-MI 177 & EL MP-MI 121 EL MP-MI 121 EL MP-MI 131 G MP-MI 177 & G MP-MIS 10° G MP-MIS 11° G MP-MIS 11/2° G MP-MIS 11/2° G MP-MIS 11/2° G MP-MIS 24/57 G MP-MIS 24/57 G MP-MIS 21/2° G MP-MIS 11/2° G MP-MIS 21/2° M10/M12 MP-MIS 21/2° M10/M12 MP-MIS 12/12° M10/M12 MP-MIS 12 1/2° M10/M12 MP-MIS 12 M16 MP-MIS 125 M16 MP-MIX 125 M16 MP-MIX 125 M16 MP-MIX 127 3/4° MP-MIX 127 3/4° MP-MIX 127 3/4° MP-MIX 125 3/4° MP-MIX 133 3/4° MP-MIX 133 3/4° MP-MIX 125 1° MP-MIX 150 1°	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 127 EL MP-MI 52 TL MP-MI 52 TL MP-MI 52 TL MP-MI 53 TG MP-MIS 101.6 G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 125 G MP-MIS 125 G MP-MIS 125 G MP-MIS 126 G MP-MIS 126 G MP-MIS 127 MI MP-MIS 126 G MP-MIS 126 G MP-MIS 117.7 MP-MIS 126 G MP-MIS 1142" MP-MIS 126 G MP-MIS 120 MI6 MP-MX1 210 M16 MP-MX1 210 M16 MP-MX1 210 M16 MP-MX1 210 M16 MP-MX1 275 M16 MP-MX1 275 M16 MP-MX1 275 M16 MP-MX1 275 M16 MP-MX1 210 1" MP-MX1 2210 1" <t< td=""><td>MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 212 C MP-MIS 212 C MP-MIS 219.1 MP-MIS 219.1 MP-MIF 2 'I2' MP-MIF 2 1/2' MP-MIF 5 '' MP-MIX 324 M16 MP-MXI 326 T' MP-MXI 406 T' MP-MXI 406 T' MP-MXI 457 T'</td></t<>	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 212 C MP-MIS 212 C MP-MIS 219.1 MP-MIS 219.1 MP-MIF 2 'I2' MP-MIF 2 1/2' MP-MIF 5 '' MP-MIX 324 M16 MP-MXI 326 T' MP-MXI 406 T' MP-MXI 406 T' MP-MXI 457 T'
MP-MI 125 EL MP-MI 133 EL MP-MI 133 EL MP-MI 133 EL MP-MI 133 EL MP-MI 177 8 EL MP-MI 121 EL MP-MI 122 EL MP-MI 51 ZE MP-MI 51 ZE MP-MIS 310" G MP-MIS 112" G MP-MIS 114" G MP-MIS 2167 G MP-MIS 2672 G MP-MIF 10" MP-MIF 21" MP-MIF 21" MP-MIF 21" M10M12 MP-MIX 12" M10M12 MP-MX 31" M10M12 MP-MX 31" M10M12 MP-MX 13" M10M14 MP-MX 13" M10M15 MP-MX 12" M10M16 MP-MX 12" M10M15 MP-MX 12" M10M15 MP-MX 12" M10M12 MP-MX 12" M14" M16	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 52 L2 MP-MI 52 L2 MP-MI 52 V12" G MP-MI 52 V12" G MP-MIS 78/84 G MP-MIS 8" G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 117 G MP-MIS 125 G MP-MIS 133 G MP-MIS 5" G MP-MIS 5" G MP-MIF 11 1/2" MP-MIF 54/57 MP-MXI 77.8 M16 MP-MXI 193.7 M16 MP-MXI 210 M16 MP-MXI 210 M16 MP-MXI 210 M16 MP-MXI 227 M16 MP-MXI 210 11" MP-MXI 210 11" MP-MXI 210 11" MP-MXI 210 11" MP-MXI 2275 11" MP-MXI 210 1" MP-MXI 210 1" MP-MXI 2275 1" MP-MXI 2275 1" MP-MXI 275 1" MP-MXI 275 1" MP-MXI 275 1" MP-MXI 275 1"	MP-MI 193.7 EL. MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 121.2 C MP-MIS 212 T MP-MIS 219.1 MP-MI-F 2" MP-MI-F 2" MP-MXI 326 M16 MP-MXI 326 M16 MP-MXI 355 M16 MP-MXI 356 11 MP-MXI 326 11 MP-MXI 326 11 MP-MXI 326 11 MP-MXI 326 11 MP-MXI 356 11 MP-MXI 356 11 MP-MXI 368 11 MP-MXI 368 11 MP-MXI 368 11 MP-MXI 466 11
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 177 & EL AP-MI 177 & EL AP-MI 121 EL AP-MI 122 EL AP-MI 127 C AP-MIS 12" G AP-MIS 12" G AP-MIS 114" G AP-MIS 54/57 G AP-MIS 54/57 G AP-MIS 21" M10M12 AP-MIS 12" M10M12 AP-MIS 12" M10M12 AP-MX1 3" M10M12 AP-MX1 133 M16 AP-MX1 12" 34" AP-MX1 12" 34" AP-MX1 4" 34" AP-MX1 4" 34" AP-MX1 4" 34"	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 127 EL MP-MI 52 TL MP-MI 52 TL MP-MI 52 TL MP-MI 53 TG MP-MIS 101.6 G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 125 G MP-MIS 125 G MP-MIS 125 G MP-MIS 126 G MP-MIS 126 G MP-MIS 127 MI MP-MIS 126 G MP-MIS 126 G MP-MIS 117.7 MP-MIS 126 G MP-MIS 1142" MP-MIS 126 G MP-MIS 120 MI6 MP-MX1 210 M16 MP-MX1 210 M16 MP-MX1 210 M16 MP-MX1 210 M16 MP-MX1 275 M16 MP-MX1 275 M16 MP-MX1 275 M16 MP-MX1 275 M16 MP-MX1 210 1" MP-MX1 2210 1" <t< td=""><td>MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 212 C MP-MIS 212 C MP-MIS 219.1 MP-MIS 219.1 MP-MIF 2 'I2' MP-MIF 2 1/2' MP-MIF 5 '' MP-MIX 324 M16 MP-MXI 326 T' MP-MXI 406 T' MP-MXI 406 T' MP-MXI 457 T'</td></t<>	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 212 C MP-MIS 212 C MP-MIS 219.1 MP-MIS 219.1 MP-MIF 2 'I2' MP-MIF 2 1/2' MP-MIF 5 '' MP-MIX 324 M16 MP-MXI 326 T' MP-MXI 406 T' MP-MXI 406 T' MP-MXI 457 T'
AP-MI 125 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 133 EL AP-MI 177 & EL AP-MIS 10° G AP-MIS 11° G AP-MIS 20 G AP-MIS 20 G AP-MIS 20 TO M012 AP-MIS 12° M10M12 AP-MIX 12° M10M12 AP-MXI 120 M16 AP-MXI 130 3'4" AP-MXI 130 3'4" AP-MXI 130 3'4" AP-MXI	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 52 L2 MP-MI 52 L2 MP-MI 52 V12" G MP-MI 52 V12" G MP-MIS 78/84 G MP-MIS 8" G MP-MIS 101.6 G MP-MIS 117 G MP-MIS 117 G MP-MIS 125 G MP-MIS 133 G MP-MIS 5" G MP-MIS 5" G MP-MIF 11 1/2" MP-MIF 54/57 MP-MXI 77.8 M16 MP-MXI 193.7 M16 MP-MXI 210 M16 MP-MXI 210 M16 MP-MXI 210 M16 MP-MXI 227 M16 MP-MXI 210 11" MP-MXI 210 11" MP-MXI 210 11" MP-MXI 210 11" MP-MXI 2275 11" MP-MXI 210 1" MP-MXI 210 1" MP-MXI 2275 1" MP-MXI 2275 1" MP-MXI 275 1" MP-MXI 275 1" MP-MXI 275 1" MP-MXI 275 1"	MP-MI 193.7 EL. MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 121.2 C MP-MIS 212 T MP-MIS 219.1 MP-MI-F 2" MP-MI-F 2" MP-MXI 326 M16 MP-MXI 326 M16 MP-MXI 355 M16 MP-MXI 356 11 MP-MXI 326 11 MP-MXI 326 11 MP-MXI 326 11 MP-MXI 326 11 MP-MXI 356 11 MP-MXI 356 11 MP-MXI 368 11 MP-MXI 368 11 MP-MXI 368 11 MP-MXI 466 11
MP-MI 125 EL MP-MI 133 EL MP-MI 133 EL MP-MI 133 EL MP-MI 133 EL MP-MI 177 8 EL MP-MI 121 EL MP-MI 122 EL MP-MI 51 20 C MP-MIS 127 G MP-MIS 127 G MP-MIS 112° G MP-MIS 114° G MP-MIS 114° G MP-MIS 114° G MP-MIS 112° G MP-MIS 112° G MP-MIS 2167 G MP-MIS 2672 G MP-MI-F12° MP-MI-F12° MP-MI-F12° MP-MI-F12° MP-MI-F24″ MP-MI 210°	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 52 L2 MP-MI 52 L2 MP-MI 52 V27 G MP-MI 52 V27 G MP-MIS 78/84 G MP-MIS 8" G MP-MIS 101.6 G MP-MIS 5" G MP-MIS 5" G MP-MIF 11/2" MP-MIF 54/57 MP-MXI 193.7 M16 MP-MXI 193.7 M16 MP-MXI 210 M16 MP-MXI 210 M16 MP-MXI 2210 M16 MP-MXI 275 M16 MP-MXI 275 M16 MP-MXI 210 1" MP-MXI 210 1" MP-MXI 210 1" MP-MXI 210 1" MP-MXI 2275 1" MP-MXI 277.8 1" MP-MXI 276 1" MP-MXI 277.1 M16 MP-MXI 277.1 M16 MP-MXI 277.1 M16 MP-MXI 277.1 M16 <td< td=""><td>MP-MI 193.7 EL. MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 212 T MP-MIS 212 T MP-MIS 219.1 MP-MIS 231.1 MP-MOX 324 M16 MP-MXI 355 11 MP-MXI 356 11 MP-MXI 457 11 MP-MXI 528 M16 MP-MXI-538 M16</td></td<>	MP-MI 193.7 EL. MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 212 T MP-MIS 212 T MP-MIS 219.1 MP-MIS 231.1 MP-MOX 324 M16 MP-MXI 355 11 MP-MXI 356 11 MP-MXI 457 11 MP-MXI 528 M16 MP-MXI-538 M16
MP-MI 125 EL MP-MI 133 EL MP-MI 133 EL MP-MI 133 EL MP-MI 133 EL MP-MI 177 & EL MP-MI 177 & EL MP-MI 121 EL MP-MI 512 EL MP-MI 512 EL MP-MIS 102° G MP-MIS 102° G MP-MIS 114° G MP-MIS 216° G MP-MIS 114° G MP-MIS 216° G MP-MIS 217° G MP-MIS 210° G MP-MIS 210° C MP-MIS 210° C MP-MIS 21° C MP-MIS 21° C MP-MIS 21° M10M12 MP-MIS 21° M10M12 MP-MX12 2° M10M12 MP-MX133 3° M10M12 MP-MX1 21° 31° MP-MX1 21° 31° MP-MX1 21° 31° MP-MX1 21° 31° MP-MX1 25 34″ MP-MX1 25 34″ MP-MX1 25 34″ MP-MX1 25 34″ MP-MX1 25 31″ MP-MX1 33	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 127 EL MP-MI 52 TL2" G MP-MI 52 TL2" G MP-MIS 7824 G MP-MIS 7824 G MP-MIS 177 G MP-MIS 117 G MP-MIS 125 G MP-MIS 133 G MP-MIS 5"G MP-MIS 125 G MP-MIS 133 G MP-MIS 5"G MP-MIS 5"G MP-MIS 133 G MP-MIS 5"G MP-MIS 5"G MP-MIS 133 G MP-MIS 133 G MP-MIS 144 MP-MIS 125 G MP-MIS 133 G MP-MIS 133 G MP-MIS 126 G MP-MIS 120 M16 MP-MX1 210 M16 MP-MX1 220 M16 MP-MX1 220 M16 MP-MX2 210 M16 MP-MX1 2275 M16 MP-MX1 210 1" MP-MX1 210 1" MP-MX2 210 1" <	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 121.1 MP-MIS 122 C MP-MIS 212 C MP-MIS 212 C MP-MIF 2 MP-MIF 2 MP-MIF 2 MP-MIF 2 MP-MIF 2 MP-MIF 3'' MP-MXI 324 M16 MP-MXI 325 M16 MP-MXI 326 M16 MP-MXI 326 1'' MP-MXI 326 1'' MP-MXI 326 1'' MP-MXI 467 1'' MP-MXI 526 1''
WP-MI 125 EL WP-MI 133 EL WP-MI 133 EL WP-MI 133 EL WP-MI 133 EL WP-MI 177 & EL WP-MIS 12 EL WP-MIS 12 EL WP-MIS 17 G WP-MIS 17 G WP-MIS 11/2' G WP-MIS 11/2' G WP-MIS 24/57 G WP-MIS 26/57 G WP-MIS 27 G WP-MIS 26/72 G WP-MIS 27 M100M12 WP-MIS 21/2' M10M12 WP-MIS 21/2' M10M12 WP-MX1 25 M16 WP-MX1 25 M16 WP-MX1 25 3/4''	MP-MI 3" EL MP-MI 101.6 EL MP-MI 127 EL MP-MI 127 EL MP-MI 127 EL MP-MI 52 TL2 G MP-MIS 127 G MP-MIS 3"G MP-MIS 117 G MP-MIS 117 G MP-MIS 117 G MP-MIS 117 G MP-MIS 125 G MP-MIS 117 G MP-MIS 117 G MP-MIS 126 G MP-MIS 5"G MP-MIS 5"G MP-MIF 1 1/4" MP-MIF 5 1/2" MP-MIF 5 1/2" MP-MIF 5 1/2" MP-MIF 5 1/2" MP-MIF 7 1/2" MP-MX1 177.8 1" MP-MX1 2275 M16 MP-MX1 227 M16 MP-MX1 275 1" MP-MX2 210 1" MP-MX2 210 1"	MP-MI 193.7 EL. MP-MI 219.1 EL MP-MIS 159 G MP-MIS 159 G MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 212 T MP-MIS 212 T MP-MIS 219.1 MP-MIS 231.1 MP-MOX 324 M16 MP-MXI 355 11 MP-MXI 356 11 MP-MXI 457 11 MP-MXI 528 M16 MP-MXI-538 M16
WIP-MI 117 EL WIP-MI 125 EL WIP-MI 133 EL WIP-MI 133 EL WIP-MI 132 EL WIP-MI 152 4 EL WIP-MI 152 4 EL WIP-MI 122 EL WIP-MI 13 12" G WIP-MI 13 12" G WIP-MI 13 14" G WIP-MIS 114" G WIP-MIS 112" G WIP-MIS 12" G WIP-MIS 12" G WIP-MIS 12" G WIP-MIS 21" M10/M12 WIP-MIS 21" M10/M12 WIP-MIX 12" M10/M12 WIP-MIX 12" M10/M12 WIP-MIX 125 M16 WIP-MIX 125 M16 WIP-MIX 125 M16 WIP-MIX 13" 34" WIP-MIX 13" 34" WIP-MIX 13" 34" WIP-MIX 13" 34" WIP-MIX 13" 34" <td>MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 127 EL MP-MI 52 TL2" G MP-MI 52 TL2" G MP-MIS 7824 G MP-MIS 7824 G MP-MIS 177 G MP-MIS 117 G MP-MIS 125 G MP-MIS 133 G MP-MIS 5"G MP-MIS 125 G MP-MIS 133 G MP-MIS 5"G MP-MIS 5"G MP-MIS 133 G MP-MIS 5"G MP-MIS 5"G MP-MIS 133 G MP-MIS 133 G MP-MIS 144 MP-MIS 125 G MP-MIS 133 G MP-MIS 133 G MP-MIS 126 G MP-MIS 120 M16 MP-MX1 210 M16 MP-MX1 220 M16 MP-MX1 220 M16 MP-MX2 210 M16 MP-MX1 2275 M16 MP-MX1 210 1" MP-MX1 210 1" MP-MX2 210 1" <</td> <td>MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 121.1 MP-MIS 122 C MP-MIS 212 C MP-MIS 212 C MP-MIF 2 MP-MIF 2 MP-MIF 2 MP-MIF 2 MP-MIF 2 MP-MIF 3" MP-MXI 324 M16 MP-MXI 325 M16 MP-MXI 326 M16 MP-MXI 326 1" MP-MXI 326 1" MP-MXI 326 1" MP-MXI 326 1" MP-MXI 467 1" MP-MXI 535 16 MP-MXI 535 16 MP-MXI 535 16 MP-MXI 536 16 MP-MXI 536 16 MP-MXI 536 16 MP-MXI 536 M16 MP-MXI 536 M16 MP-MXI 536 M16</td>	MP-MI 3" EL MP-MI 101.6 EL MP-MI 4" EL MP-MI 127 EL MP-MI 52 TL2" G MP-MI 52 TL2" G MP-MIS 7824 G MP-MIS 7824 G MP-MIS 177 G MP-MIS 117 G MP-MIS 125 G MP-MIS 133 G MP-MIS 5"G MP-MIS 125 G MP-MIS 133 G MP-MIS 5"G MP-MIS 5"G MP-MIS 133 G MP-MIS 5"G MP-MIS 5"G MP-MIS 133 G MP-MIS 133 G MP-MIS 144 MP-MIS 125 G MP-MIS 133 G MP-MIS 133 G MP-MIS 126 G MP-MIS 120 M16 MP-MX1 210 M16 MP-MX1 220 M16 MP-MX1 220 M16 MP-MX2 210 M16 MP-MX1 2275 M16 MP-MX1 210 1" MP-MX1 210 1" MP-MX2 210 1" <	MP-MI 193.7 EL MP-MI 219.1 EL MP-MIS 159 G MP-MIS 177.8 C MP-MIS 193.7 C MP-MIS 121.1 MP-MIS 122 C MP-MIS 212 C MP-MIS 212 C MP-MIF 2 MP-MIF 2 MP-MIF 2 MP-MIF 2 MP-MIF 2 MP-MIF 3" MP-MXI 324 M16 MP-MXI 325 M16 MP-MXI 326 M16 MP-MXI 326 1" MP-MXI 326 1" MP-MXI 326 1" MP-MXI 326 1" MP-MXI 467 1" MP-MXI 535 16 MP-MXI 535 16 MP-MXI 535 16 MP-MXI 536 16 MP-MXI 536 16 MP-MXI 536 16 MP-MXI 536 M16 MP-MXI 536 M16 MP-MXI 536 M16



Item designation	Item designation	Item designation
MV-PI 125 M8/M10	MV-PI 300 M8/M10	MV-PI 710
MV-PI 140 M8/M10	MV-PI 315 M8/M10	MV-PI 800
MV-PI 150 M8/M10	MV-PI 355 M8/M10	MV-PI 900
MV-PI 160 M8/M10	MV-PI 400 M8/M10	MV-PI 1000
MV-PI 180 M8/M10	MV-PI 450 M8/M10	MV-PI 1120
MV-PI 200 M8/M10	MV-PI 500 M8/M10	MV-PI 1250
MV-PI 224 M8/M10	MV-PI 560 M8/M10	
MV-PIF 80 M8/M10/1/2"	MV-PIF 224 M8/M10/1/2"	MV-PIF 450 M8/M10/1/2"
MV-PIF 100 M8/M10/1/2"	MV-PIF 250 M8/M10/1/2"	MV-PIF 500 M8/M10/1/2"
MV-PIF 125 M8/M10/1/2"	MV-PIF 280 M8/M10/1/2"	MV-PIF 560 3/4"
MV-PIF 150 M8/M10/1/2"	MV-PIF 300 M8/M10/1/2"	MV-PIF 630 3/4"
MV-PIF 160 M8/M10/1/2"	MV-PIF 315 M8/M10/1/2"	MV-PIF 800 3/4"
MV-PIF 180 M8/M10/1/2"	MV-PIF 355 M8/M10/1/2"	
MV-PIF 200 M8/M10/1/2"	MV-PIF 400 M8/M10/1/2"	
MFP-CSL-I	MFP-LD-I	MFP-ULD2-I
MFP-CL-I	MFP-LD2-I	MFP-UM-I
MFP-CLD-I	MFP-UL-I	MFP-UM2-I
MFP-L-I	MFP-UL2-I	
MFP-L2-I	MFP-ULD-I	
MSG-MQ 0,6 M8/M10	MSG 1,0 1/2"	MSG 1,75 M12/16D
MSG-SE 1,75 M10	MSG 1,0 3/4"	MSG-UK D1,75
MSG 1,0 M12/16	MSG 1,75 M8/10D	MSG-D 200 1,5 M12/M16

For the placing of the product on the market in the European Union European Free Trade Association

EU/EFTA) (with the exception of Switzerland) Regulation (EU) No. 305/2011 (CPR) applies. For the application and use the respective national provisions apply.

The product has a European Technical Assessment (ETA), a declaration of performance based on EAD 280016-00-0602 'Products for installation systems for supporting technical building equipment". However, this is limited to the following product groups in the list table: MP-U-I, MP-L-I M8/M10, MP-U-G, MP-HI, MP-MI -G, MP-MI -C types size 4' and above. Product groups not mentioned here are not covered with the aforementioned ETA.

Application

The MP-U-I 164-170 M8/10/ $\frac{1}{2}$ " is developed to clamp pipes of various materials and sizes. It is intended to be fixed onto Hilti modular support systems or onto base materials in connection with threaded rods, base plates, anchors or beam clamps. The product and the product group it represents are intended to be used for the following applications:

- Fixing of fresh water distribution pipes
- Fixing of heating pipes
- Fixing of gas distribution pipes
- Fixing of waste water pipes
- Fixing of light industrial piping
- Fixing of ventilation pipes

Technical Data

LCA: Calculation rules

Declared Unit

The declared product is the MP-U-I 164-170 M8/10/O16 from HILTI AG. The declared unit refers to 1 kg pipe ring. The packaging is also included in the calculation, as the product is sold by Hilti with packaging. The declared unit is indicated in [kg].

Declared unit and mass reference

Name	Value	Unit
Declared unit (e.g. modular channel system)	1	kg
Gross density	4171	kg/m ³

System boundary

Type of EPD: cCradle to gate with op-tions, modules C1-C4, and module D. The following information modules are defined as system boundaries in this study:

Production stage (A1-A3):

The following data pertains to the selected product (MP-U-I 164-170 M8/10/½") only:

Constructional data

Name	Value	Unit
Width of material	224	mm
Diameter	170	mm
Weight	0.3655	kg
Load resistance (max. recommended)	2400	N

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to European Technical Assessment based on EAD 280016-00-0602 'Products for installation systems for supporting technical building equipment'

Base materials/Ancillary materials

The raw material used to produce the declared product MP-U-I 164-170 M8/10/ $\prime\!\!/ 2"$ is

- Steel 85.2% for the clamping band, the connection head, and the clamping screw

- Polymer 14.6% for the washer, the O-ring, and the rubber inlays.

Per piece of item weighs 0.3655 kg.

This product/article/at least one partial article contains substances listed in the *REACH SVHC* candidate list (date: 17.01.2023) exceeding 0.1 percentage by mass: NO.

This product/article/at least one partial article contains other carcinogenic, mutagenic, reprotoxic (CMR) substances in categories 1A or 1B which are not on the *candidate list*, exceeding 0.1 percentage by mass: NO.

Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) *Ordinance on Biocide Products No. 528/2012*): NO.

Reference service life

This EPD does not declare the use stages (B1-B7). The lifetime of zinc coated (all galvanization types) steel will depend on the lifetime of the entire installation system with which it has been used in combination, the lifetime of the respective building, and the environmental conditions. Therefore, the service life is not declared in this declaration.

- A1, Raw material,
- A2, Transport to the manufacturer,
- A3, Production.

End of life (C1- C4):

- C1, Dismantling/demolition,
- C2, Transport,
- · C3, Waste treatment,
- C4, Disposal.

Reuse, recovery and recycling potential (D)

To accurately record the indicators and environmental impacts of the declared unit, a total of nine information modules are considered. The information modules A1 to A3 cover the material provision, transport to the production site, and the production processes of the product itself.



Information modules C1 to C4 cover the dismantling or demolition of the product from the building, transportation for waste disposal, waste treatment and final disposal of the product. Additionally, reuse, recovery and recycling potentials are adressed in information module D.

Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product's

LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

No renewable raw materials are used. Therefore, the biogenic carbon is reported as zero. In the packaging, the following raw material contains biogenic carbon

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO2.

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.005	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO2.

End of life (C1-C4)

lifespan: Turkey

Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. The database referred to in this study is LCA for *Experts by Sphera*.

In the C1 information module, the demolition of the mounting system from the building is calculated. Demolition is carried out by means of an electric screwdriver. The electrical energy consumption for the tool is assumed to be 0.003MJ for the declared unit. The electricity consumption is calculated with a German electricity mix.

Namo

Name	Value	Unit
Collected separately waste type waste type	1	kg
Recycling	0.835	kg
Energy recovery	0.165	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

A recycling rate of 95% is assumed in Module D and 85% in Module D1. Module D is intended to reflect a European recycling rate and D1 a global recycling rate.

Name	Value	Unit
Steel recycling (D)	0,793	kg
Steel recycling (D1)	0,710	kg



LCA: Results

LCA RESULTS - additional impact categories according to EN 15804+A2-optional are not declared as experience with the indicators is limited.

×Tansport×Tansport×Tansport×Tansport×Tansport×Tansport×Tansport×Tansport×Tansport×Tansport×Tansport×Tansport×Tansport×Tansport×Use×<	= MODI		DT REL	EVANT Constr proces	ruction				lse stag						ife stage		Benefits and loads beyond the system boundaries
	Raw material supply	Transport	Manufacturing	sport from the	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment		Operational water use		Transport		Disposal	Reuse- Recovery- Recycling- potential
X X X MND MND MND MND MNR MNR MNR MNR MND MND X X X X X X	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	Х	Х	Х	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	Х	Х	Х	Х	Х

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 kg Hilti Pipe fixation elements made with

Parameter	Unit	A1-A3	C1	C2	C3	C4	D	D/1
GWP-total	kg CO ₂ eq	2.61E+00	5.41E-04	4.67E-03	3.92E-01	0	-1.89E+00	-1.71E+00
GWP-fossil	kg CO ₂ eq	2.6E+00	5.41E-04	4.59E-03	3.92E-01	0	-1.89E+00	-1.7E+00
GWP-biogenic	kg CO ₂ eq	4.7E-03	1.22E-07	0	0	0	-1.26E-03	-1.19E-03
GWP-luluc	kg CO ₂ eq	1.04E-03	8.09E-08	7.6E-05	2.77E-05	0	-7.46E-04	-6.69E-04
ODP	kg CFC11 eq	9.87E-12	5.94E-15	4.55E-16	1.32E-10	0	-2.65E-12	-2.5E-12
AP	mol H ⁺ eq	5.58E-03	1.26E-06	1.77E-05	2.11E-04	0	-4.01E-03	-3.6E-03
EP-freshwater	kg P eq	7.24E-06	2.83E-10	1.93E-08	2.82E-07	0	-1.57E-06	-1.43E-06
EP-marine	kg N eq	1.28E-03	2.12E-07	8.31E-06	7.78E-05	0	-1.04E-03	-9.36E-04
EP-terrestrial	mol N eq	1.35E-02	2.27E-06	9.3E-05	1E-03	0	-1.12E-02	-1.01E-02
POCP	kg NMVOC eq	4.15E-03	6.31E-07	1.64E-05	2.26E-04	0	-3.41E-03	-3.07E-03
ADPE	kg Sb eq	7.24E-04	2.56E-11	3.85E-10	6.47E-09	0	-8.52E-08	-7.75E-08
ADPF	MJ	3.37E+01	1E-02	5.9E-02	3.35E-01	0	-1.84E+01	-1.67E+01
WDP	m ³ world eq deprived	4E-01	3.09E-05	6.73E-05	3.96E-02	0	-3.56E-02	-3.34E-02

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 kg Hilti Pipe fixation

elements made with metal and polymer parts									
Parameter	Unit	A1-A3	C1	C2	C3	C4	D	D/1	
PERE	MJ	6.65E+00	1.43E-03	4.99E-03	4.74E-02	0	-1.78E+00	-1.67E+00	
PERM	MJ	8.5E-01	0	0	0	0	0	0	
PERT	MJ	7.5E+00	1.43E-03	4.99E-03	4.74E-02	0	-1.78E+00	-1.67E+00	
PENRE	MJ	2.95E+01	1E-02	5.9E-02	4.52E+00	0	-1.84E+01	-1.67E+01	
PENRM	MJ	4.18E+00	0	0	-4.18E+00	0	0	0	
PENRT	MJ	3.37E+01	1E-02	5.9E-02	3.35E-01	0	-1.84E+01	-1.67E+01	
SM	kg	4.53E-01	0	0	0	0	7.93E-01	7.1E-01	
RSF	MJ	0	0	0	0	0	0	0	
NRSF	MJ	0	0	0	0	0	0	0	
FW	m ³	1.11E-02	2.01E-06	5.6E-06	9.44E-04	0	-1.54E-03	-1.44E-03	

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of non-renewable primary energy resources; NRSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2:

1 kg Hilti Pipe fixation elements made with metal and polymer parts									
Parameter	Unit	A1-A3	C1	C2	C3	C4	D	D/1	
HWD	kg	7.82E-09	1.42E-12	1.91E-12	8.21E-11	0	-3.4E-09	-3.22E-09	
NHWD	kg	4.38E-02	2.48E-06	9.18E-06	8.08E-03	0	-2.29E-02	-2.06E-02	
RWD	kg	1.18E-03	1.3E-06	7.63E-08	1.35E-05	0	-2.63E-04	-2.54E-04	
CRU	kg	0	0	0	0	0	0	0	
MFR	kg	2.89E-01	0	0	8.35E-01	0	0	0	
MER	kg	0	0	0	0	0	0	0	



EEE	MJ	0	0	0	6.32E-01	0	0	0
EET	MJ	0	0	0	1.45E+00	0	0	0

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 kg Hilti Pipe fixation elements made with metal and polymer parts									
Parameter	Unit	A1-A3	C1	C2	C3	C4	D	D/1	
PM	Disease incidence	ND	ND	ND	ND	ND	ND	ND	
IR	kBq U235 eq	ND	ND	ND	ND	ND	ND	ND	
ETP-fw	CTUe	ND	ND	ND	ND	ND	ND	ND	
HTP-c	CTUh	ND	ND	ND	ND	ND	ND	ND	
HTP-nc	CTUh	ND	ND	ND	ND	ND	ND	ND	
SQP	SQP	ND	ND	ND	ND	ND	ND	ND	

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 – for the indicator "Potential Human exposure efficiency relative to U235". This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators "abiotic depletion potential for non-fossil resources", "abiotic depletion potential for fossil resources", "water (user) deprivation potential, deprivation-weighted water consumption", "potential comparative toxic unit for ecosystems", "potential comparative toxic unit for humans – cancerogenic", "Potential comparative toxic unit for humans - not cancerogenic", "potential soil quality index". The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

References

DD11

DD11, Mild non-alloy steel for cold forming

EN 10111

DIN EN 10111:2008, Continuously hot rolled low carbon steel sheet and strip for cold forming

EN 10277

DIN EN 10277, Bright steel products - Technical delivery conditions

EN ISO 7045

EN ISO 7045, Pan head screws with type H or type Z cross recess — Product grade A

Further references

Candidate List of substances of very high concern for Authorisation

European Chemicals Agency (ECHA), in accordance with Article 50(10) of the REACH regulation

European Waste code

in accordance with the European Waste Catalogue (EWC) (EWC 2014/955/EU) Commission Decision amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European Parliament and of the Council

European Technical Approval Hilti Installation channels of MT system

assessed based on EAD 280016-00-0602 'Products for installation systems for supporting technical building equipment'

DIN EN ISO 14025

DIN EN /ISO 14025:2011-10/, Environmental labels and declarations - Type III Environment Declarations - Principles and Procedures

DIN EN ISO 14044

DIN EN ISO 14044:2006-10, Environmental management - Life cycle assessment - Requirements and guidance (ISO 14044:2006); German and English version EN ISO 14044:2006

Construction Products Regulation (CPR, Regulation (EU) No. 305/2011)

Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011laying down harmonised conditions for the marketing of construction productsand repealing Council Directive 89/106/EEC Text with EEA relevance

Biocidal Products Regulation (BPR, Regulation (EU) 528/2012)

Regulation (EU) No 528/2012 of the European Parliament and of the Council of22 May 2012 concerning the making available on the market and use ofbiocidal products Text with EEA relevance

ecoinvent 3.9.1:

Hintergrunddatenbank: ecoinvent 3.9.1 Zürich: ecoinvent (Hrsg.) http://www.ecoinvent.org (15.11.2024)

EN 15804+A2

EN 15804:2019-04+A2, Sustainability of construction works – Environmental product declarations – Basic rules for the product category of construction products.

EN/TR 15941

CEN/TR 15941:2010-03: Sustainability of Buildings – Environmental Product Declarations- M methods for the selection and use of generic data; German version CEN/TR

IBU 2021

Institut Bauen und Umwelt e.V.: General instructions for the



EPD program of the Institut Bauen und Umwelt e.V., Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021 www.ibu-epd.com

Product Category Rules Construction Products Part A

Product Category Rules for Construction Products and Services - Calculation Rules for Ecology and Requirements for the Background Report V1.3, Institut Bauen und Umwelt e.V., 08.2022.

Product Category Rules Part B

Connection, assembly and installation systems, 01.08.2021

Sphera

LČA for Experts: Holistic balancing Leinfelden-Echterdingen; Sphera Solution GmbH (Hrsg.) Product Sustainability Data Search | Sphera (GaBi) (15.011.2024)





Publisher

Institut Bauen und Umwelt e.V. Hegelplatz 1 10117 Berlin Germany +49 (0)30 3087748- 0 info@ibu-epd.com www.ibu-epd.com



Programme holder

Institut Bauen und Umwelt e.V. Hegelplatz 1 10117 Berlin Germany +49 (0)30 3087748- 0 info@ibu-epd.com www.ibu-epd.com

Author of the Life Cycle Assessment

FIT-Umwelttechnik GmbH Westerstr. 13 38442 Wolfsburg Germany 05362 72 69 474 bertram@fit-umwelttechnik.de www.fit-umwelttechnik.com



Owner of the Declaration

Hilti Aktiengesellschaft Feldkircher Strasse 100 9494 Schaan Liechtenstein +423 234 2111 HAGHSE@hilti.com www.hilti.com