



**Submittal - 024 Pump Station**

SIGMA C153 Ductile Iron Mechanical Joint Fittings (Submittal on the following page(s), this sheet is the response page)

**Response:**

**MKEC ENGINEERING, INC.**  
411 North Webb Road - Wichita, KS 67208

Reviewed       Reviewed As Noted  
 Revise and Resubmit     Rejected  
 Not Required by the Contract Documents

Reviewed for conformance with the design concept of the project and compliance with the information given in the contract documents. Contractor is responsible for dimensions to be confirmed and correlated at the job site, information that pertains solely to the fabrication process or to techniques of construction, and coordination of work of all other trades. If "Resubmit" or "Rejected" are not checked resubmission is neither desired or required.

By *Billy Shavel* Date *6-28-16*

# C153 DUCTILE IRON MECHANICAL JOINT FITTINGS

## C153 DUCTILE IRON MECHANICAL JOINT FITTINGS

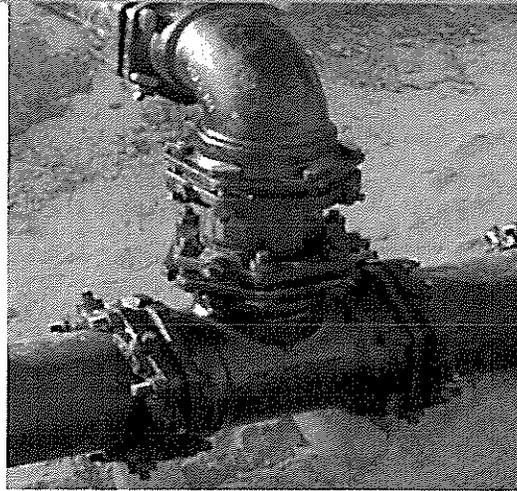
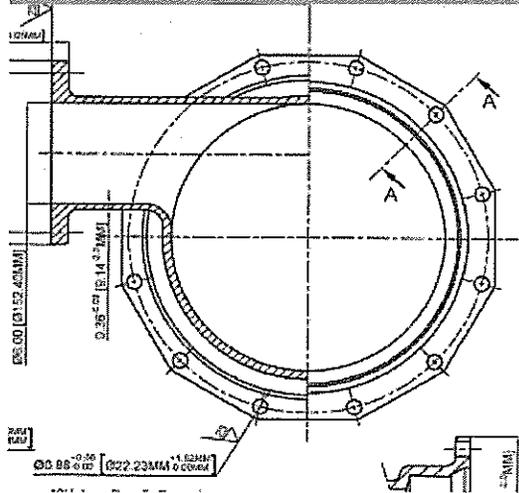
### BASIC SPECIFICATIONS

Buried MJ Fittings as needed for job completion

- SIZES:** • 2" - 64"
- MATERIAL:** • Ductile Iron ASTM A536, Grade 65-45-12, 60-42-10 or 70-50-05.
- PRESSURE:** • 350 PSI Water Working Pressure 2" - 24".  
• 250 PSI Water Working Pressure 30" - 48".  
• 150 PSI Water Working Pressure 54" - 64".
- TESTING:** • In accordance with ANSI/AWWA C153/A21.53.  
• In accordance with UL - FM requirements.  
• All fittings are hydrostatically tested in accordance with SIGMA Quality Management Standard.  
• All fittings are heat coded to ensure traceability and verification of metallurgical properties in accordance with the prevailing standards and SIGMA Quality Management Standards.
- LAYING LENGTH:** • Short body design - straight section of body deleted to provide a compact and lighter fitting without reducing strength or flow characteristics.  
• In accordance with ANSI/AWWA C153/A21.53.
- DEFLECTION:** • Maximum allowable deflection for MJ Joint on a full length pipe is as mentioned below:  
1. 3" - 4" = 8 Degrees  
2. 6" = 7 Degrees  
3. 8" - 12" = 5 Degrees  
4. 14" - 48" = 3 Degrees
- CEMENT LINING:** • Double cement lined in accordance with ANSI/AWWA C104 / A21.4.
- COATING:** • Interior of fitting is seal coated (asphaltic material) in accordance with ANSI AWWA C104/A21.4 and NSF61 approved.  
• Exterior of fitting is seal coated (asphaltic material) in accordance with ANSI/AWWA C153/A21.53 and NSF approved.
- GASKETS:** • SBR in accordance with ANSI/AWWA C111/A21.11.  
~~• Also available in EPDM, NBR and CR.~~
- T-BOLTS:** • Low Alloy corrosion resistant high strength steel in accordance with ANSI/AWWA C111/A21.11.
- APPROVALS:** • 3"-16" Underwriters Laboratories listed and Factory Mutual Approved.
- STANDARDS:** • Certified to NSF61 Standard including Annex G.  
• ANSI/AWWA C153/A21.53 for Compact Ductile Iron Fittings 2"-64" for water and other liquids.
- INSTALLATION:** • Per ANSI/AWWA C600 and C111 using DIP conforming to C150/C151 and PVC pipe conforming to C900/C905.



## C153 Mechanical Joint Ductile Iron Fittings

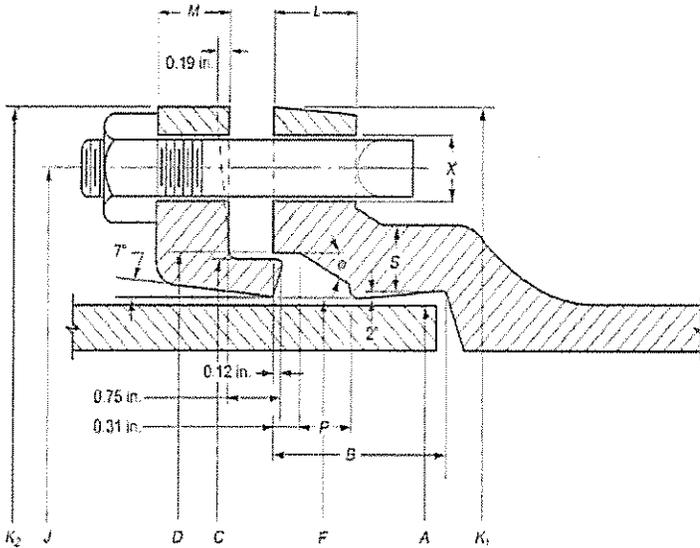


### 2-64in C153 Ductile Iron Mechanical Joint Class 350

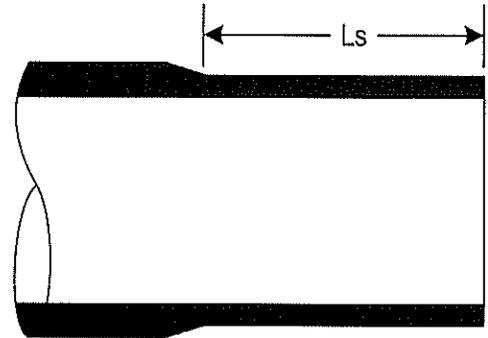
- MATERIAL:** Ductile Iron ASTM A536, Grade 65-45-12, 60-42-10 or 70-50-05.
- PRESSURE:** 350PSI WATER WORKING PRESSURE (CLASS 350) 3" - 24": & 250 PSI 30" - 48".
- TESTING:** In accordance with ANSI / AWWA C153 / A21.53 & UL - FM requirements.
- LAYING LENGTH:** Short body design - straight section of body deleted to provide a compact and lighter fitting without reducing strength or flow characteristics, in accordance with ANSI / AWWA C153 / A21.53.
- DEFLECTION:** 2"- 4"=8°, 6"=7°, 8"-12"=5°, 14"-16"=3 ½°, 18"-24"=3°, 30"-48"=2°
- CEMENT LINING:** In accordance with ANSI / AWWA C104 / A21.4.
- COATING:** Interior of fitting is seal coated (asphaltic material) in accordance with ANSI / AWWA C104 / A21.4 and NSF61 approved.
- COATING:** Exterior of fitting is seal coated (asphaltic material) in accordance with ANSI / AWWA C153/A21.53 and NSF approved.
- GASKETS:** SBR in accordance with ANSI / AWWA C111 / A21.11. Also available in EDPM, NBR and CR.
- T-BOLTS:** Low Alloy corrosion resistant high strength steel in accordance with ANSI / AWWA C111 / A21.11.
- APPROVALS:** 3"-16" Underwriters Laboratories listed and Factory Mutual Approved.
- STANDARDS:** Certified to NSF61 Standard ANSI / AWWA C153 / A21.53 for Compact Ductile Iron Fittings 3"-48" for water and other liquids.

*Note: 2" - 24" also available in Fusion Bonded Epoxy*





**Mechanical Joint Details**



**Plain End Detail**

Size	A	B	C	D	F	J	K1	K2	L	M	P	S	X	Bolts			PE Ls	
														No.	Size	Len		
3	3.96	2.50	4.84	4.94	4.06	6.19	7.62	7.69	0.58	0.62	0.63	0.39	3/4	4	5/8	3.0	5.5	
4	4.80	2.50	5.92	6.02	4.90	7.50	9.06	9.12	0.60	0.75	0.75	0.39	7/8	4	3/4	3.5	5.5	
6	6.90	2.50	8.02	8.12	7.00	9.50	11.06	11.12	0.63	0.88	0.75	0.43	7/8	6	3/4	3.5	5.5	
8	9.05	2.50	10.17	10.27	9.15	11.75	13.31	13.37	0.66	1.00	0.75	0.45	7/8	6	3/4	3.5	5.5	
10	11.10	2.50	12.22	12.34	11.20	14.00	15.62	15.62	0.70	1.00	0.75	0.47	7/8	8	3/4	3.5	5.5	
12	13.20	2.50	14.32	14.44	13.30	16.25	17.88	17.88	0.73	1.00	0.75	0.49	7/8	8	3/4	3.5	5.5	
14	15.30	3.50	16.40	16.54	15.44	18.75	20.25	20.25	0.79	1.25	0.75	0.55	7/8	10	3/4	4.0	8.0	
16	17.40	3.50	18.50	18.64	17.54	21.00	22.50	22.50	0.85	1.31	0.75	0.58	7/8	12	3/4	4.0	8.0	
18	19.50	3.50	20.60	20.74	19.64	23.25	24.83	24.75	1.00	1.38	0.75	0.68	7/8	12	3/4	4.0	8.0	
20	21.60	3.50	22.70	22.84	21.74	25.50	27.08	27.00	1.02	1.44	0.75	0.69	7/8	14	3/4	4.0	8.0	
24	25.80	3.50	26.90	27.04	25.94	30.00	31.58	31.50	1.02	1.56	0.75	0.75	7/8	16	3/4	4.5	8.0	
30	32.00	4.00	33.29	33.46	32.17	36.88	39.12	39.12	1.31	2.00	1.00	0.82	1 1/8	20	1	5.5	8.0	
36	38.30	4.00	39.59	39.76	38.47	43.75	46.00	46.00	1.45	2.00	1.00	1.00	1 1/8	24	1	5.5	8.0	
42	44.50	4.00	45.79	45.96	44.67	50.62	53.12	53.12	1.45	2.00	1.00	1.25	1 3/8	28	1 1/4	6.0	8.0	
48	50.80	4.00	52.09	52.26	50.97	57.50	60.00	60.00	1.45	2.00	1.00	1.35	1 3/8	32	1 1/4	6.0	8.0	
54																		
60																		
64																		

54" - 64" fittings & dimensions available upon request



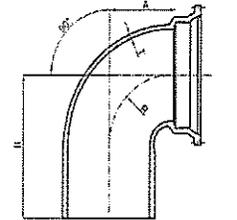
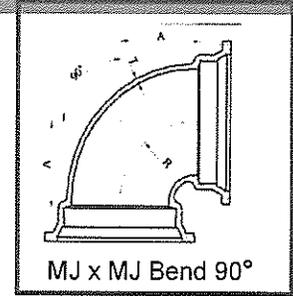
Weights in Pounds, Less Accessories / Dimensions in inches  
Ductile Iron Class 350 per ANSI/AWWA C153/A21.53

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# C153 Mechanical Joint Compact Fittings

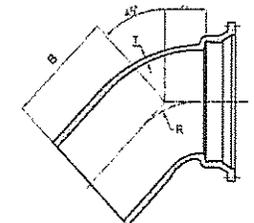
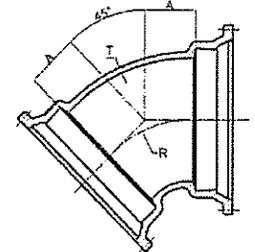
## 90° Bends

Size	MJ x MJ			MJ x PE				T
	Item No.	Wt.	A	Item No.	Wt.	A	B	
2	DMB290	17	3.00					0.30
3	DMB390	19	3.50	DME390	16	3.25	8.50	0.33
4	DMB490	25	4.00	DME490	22	4.00	9.50	0.34
6	DMB690	39	5.00	DME690	41	5.00	11.50	0.36
8	DMB890	57	6.50	DME890	58	6.50	12.50	0.38
10	DMB1090	89	7.50	DME1090	83	7.50	13.00	0.40
12	DMB1290	108	9.00	DME1290	114	9.00	14.50	0.42
14	DMB1490	210	11.50	DME1490	197	11.50	19.50	0.47
16	DMB1690	264	12.50	DME1690	248	12.50	20.50	0.50
18	DMB1890	335	14.00	DME1890	325	14.00	21.00	0.54
20	DMB2090	400	15.00	DME2090	390	15.00	22.50	0.57
24	DMB2490	565	16.75	DME2490	575	17.00	25.00	0.61
30	DMB3090	930	21.50	DME3090	865	21.50	30.50	0.66
36	DMB3690	1,450	24.50	DME3690	1,355	24.50	33.50	0.74
42	DMB4290	2,205	29.25	DME4290	2,055	29.25	38.25	0.82
48	DMB4890	2,990	33.25	DME4890	2,805	33.25	42.25	0.90



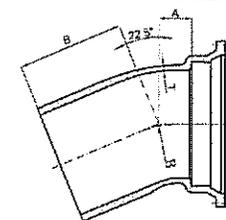
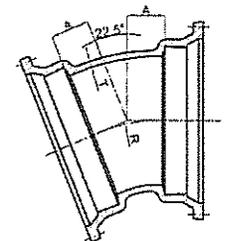
## 45° Bends

Size	MJ x MJ			MJ x PE				T
	Item No.	Wt.	A	Item No.	Wt.	A	B	
2	DMB245	10	1.50					0.33
3	DMB345	16	1.50	DME345	13	1.50	7.00	0.33
4	DMB445	22	2.00	DME445	19	2.00	7.50	0.34
6	DMB645	32	3.00	DME645	34	3.00	8.50	0.36
8	DMB845	46	3.50	DME845	49	3.50	9.00	0.38
10	DMB1045	70	4.50	DME1045	69	4.50	10.00	0.40
12	DMB1245	86	5.50	DME1245	93	5.50	11.00	0.42
14	DMB1445	160	5.00	DME1445	146	5.00	13.00	0.47
16	DMB1645	202	5.50	DME1645	184	5.50	13.50	0.50
18	DMB1845	250	6.00	DME1845	235	6.00	13.00	0.54
20	DMB2045	305	7.00	DME2045	290	7.00	14.00	0.57
24	DMB2445	405	7.50	DME2445	390	7.50	14.50	0.61
30	DMB3045	780	10.50	DME3045	715	10.50	19.50	0.66
36	DMB3645	1,135	11.50	DME3645	1,040	12.00	21.00	0.74
42	DMB4245	1,610	14.00	DME4245	1,460	14.00	23.00	0.82
48	DMB4845	2,090	15.00	DME4845	1,905	15.00	24.00	0.90



## 22 1/2° Bends

Size	MJ x MJ			MJ x PE				T
	Item No.	Wt.	A	Item No.	Wt.	A	B	
2	DMB222		1.00					0.30
3	DMB322	15	1.00	DME322	12	1.00	6.50	0.33
4	DMB422	18	1.50	DME422	18	1.50	7.00	0.34
6	DMB622	31	2.00	DME622	29	2.00	7.50	0.36
8	DMB822	46	2.50	DME822	43	2.50	8.00	0.38
10	DMB1022	64	3.00	DME1022	61	3.00	8.50	0.40
12	DMB1222	80	3.50	DME1222	79	3.50	9.00	0.42
14	DMB1422	136	3.75	DME1422	133	3.75	11.25	0.47
16	DMB1622	172	3.75	DME1622	166	3.75	11.75	0.50
18	DMB1822	255	4.50	DME1822	235	6.00	13.00	0.54
20	DMB2022	310	4.50	DME2022	300	7.00	14.00	0.57
24	DMB2422	412	4.50	DME2422	395	7.50	14.50	0.61
30	DMB3022	665	6.75	DME3022	600	6.75	15.75	0.66
36	DMB3622	960	7.75	DME3622	865	7.75	16.75	0.74
42	DMB4222	1,350	9.00	DME4222	1,200	9.00	18.00	0.82
48	DMB4822	1,760	10.00	DME4822	1,575	10.00	19.00	0.90



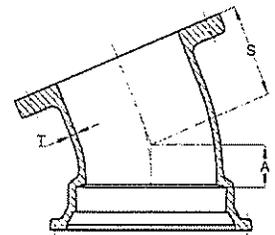
Weights in Pounds, Less Accessories / Dimensions in inches  
 Ductile Iron Class 350 per ANSI/AWWA C153/A21.53  
 4 | SIGMA Corporation www.sigmaco.com



# C153 Mechanical Joint Compact Fittings

## 22 1/2° Bends: MJ X Flange

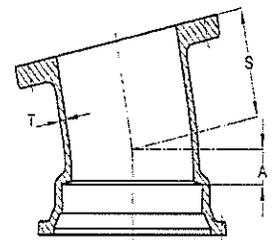
Size	Item No.	A	S	T	Wt.
3	MFB322	1.00	3.00	0.33	15
4	MFB422	1.50	4.00	0.34	23
6	MFB622	2.00	5.00	0.36	37
8	MFB822	2.50	5.50	0.38	56
10	MFB1022	3.00	6.50	0.40	81
12	MFB1222	3.50	7.50	0.42	114
14	MFB1422	3.75	7.50	0.47	158
16	MFB1622	3.75	8.00	0.50	198
18	MFB1822	4.50	8.50	0.54	244
20	MFB2022	4.50	9.50	0.57	317
24	MFB2422	4.50	11.00	0.61	417
30	MFB3022	6.75	15.00	0.66	723
36	MFB3622	7.75	18.00	0.74	1,108
42	MFB4222	9.00	21.00	0.82	1,583
48	MFB4822	10.00	24.00	0.90	2,156



MJ x Flange 22 1/2° Bend

## 11 1/4° Bends: MJ X Flange

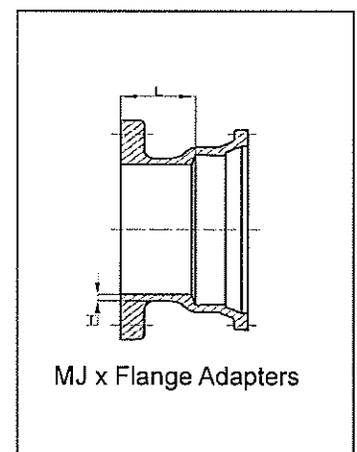
Size	Item No.	A	S	T	Wt.
3	MFB311	1.00	3.00	0.33	15
4	MFB411	1.25	4.00	0.34	23
6	MFB611	1.50	5.00	0.36	36
8	MFB811	1.75	5.50	0.38	54
10	MFB1011	2.00	6.50	0.40	78
12	MFB1211	2.25	7.50	0.42	110
14	MFB1411	2.50	7.50	0.47	148
16	MFB1611	2.50	8.00	0.50	187
18	MFB1811	3.00	8.50	0.54	229
20	MFB2011	3.00	9.50	0.57	284
24	MFB2411	3.00	11.00	0.61	395
30	MFB3011	4.75	15.00	0.66	683
36	MFB3611	5.00	18.00	0.74	1,042
42	MFB4211	6.00	21.00	0.82	1,528
48	MFB4811	6.50	24.00	0.90	2,024



MJ x Flange 11 1/4° Bend

## Adapters: MJ X Flange

Size	Item No.	L	T	Wt.
3	MFA3	3.50	0.33	18
4	MFA4	3.50	0.34	24
6	MFA6	3.50	0.36	36
8	MFA8	3.75	0.38	52
10	MFA10	3.75	0.40	67
12	MFA12	3.75	0.42	80
14	MFA14	5.00	0.47	126
16	MFA16	5.00	0.50	166
18	MFA18	5.00	0.54	206
20	MFA20	5.00	0.57	275
24	MFA24	5.00	0.61	324
30	MFA30	7.00	0.66	420
36	MFA36	7.00	0.74	710
42	MFA42	7.00	0.82	993
48	MFA48	7.00	0.90	1,225



MJ x Flange Adapters

### Engineers Note:

A MJ x Flange Adapter will be the last fitting installed with a 12" Blind Flg for connection by Waterline Contractor. A Zinc Flg Kit will be used for temporary bolting requirements.