660 Tapping Machine

Sizes: 3- to 12-inch

Model 660C

T.D. Williamson

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Description

Tapping machines are used for making connections to pipelines, tanks, and plant piping without shutdown and are used to make hot taps in preparation for plugging machine applications.

Tapping machines are also used to set completion plugs such as LOCK-O-RING® or LOCK-O-RING® Plus plugs after completion of hot tapping and plugging operations.

Model 660C Tapping Machines can be either air or hydraulically operated and are used for making pipe and tank taps from 3" to 12" (DN 80 to DN 300). Its maximum working pressure is 1,480 psi (100 bar) at 100°F (38°C). Its operating temperature is -20°F (-29°C) to 700°F (371°C) at 700 psi (48 bar) for intermittent service. Its maximum continuous rating is 350°F (177°C) at 1,025 psi (70 bar).

This model features a split-frame for lower maintenance costs and ease of packing replacement.

Features

The basic machine includes:

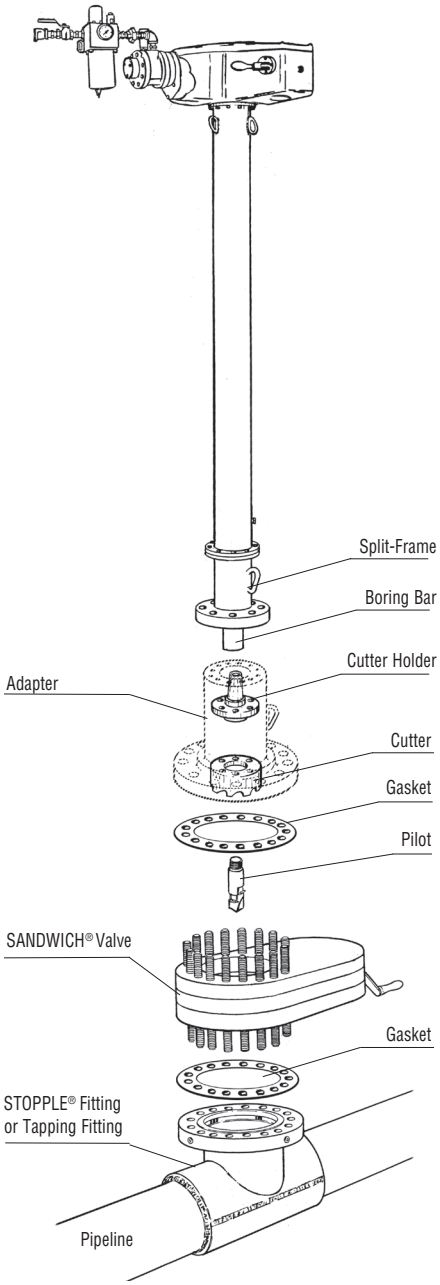
- Lower-in crank
- Measuring rod
- Retainer rod pusher
- Ring gasket
- Bleeder valve and nipple
- Motor adapter
- Set of bolts and nuts
- LOCK-O-RING® bypass gauge
- Capability to set LOCK-O-RING® and LOCK-O-RING® Plus completion plugs

Options*

T.D. Williamson is committed to providing you with the exact product to assist you in planning, budgeting and meeting the specifications for your individual application needs. The following options are available:

- Model 660c Tapping Machine can be either air or hydraulically operated with optional dual drive.
- A flywheel is installed on the tapping machine. It enhances performance of the tapping machine due to inertia and reduced stress on the gears.
- Hydraulic feed system can be installed as an option. It will assist technician to lower the completion plug during plug setting process.

Typical Tapping Setup



* For design code options not listed and additional sizes, consult your sales representative.

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Operating Specifications

Boring Bar Travel	42" (1,067 mm)
Tank Taps*	3" through 12" (80-300 mm)
Pipe Taps*	3" through 12" (80-300 mm)
LOCK-O-RING® and LOCK-O-RING® Plus Completion Plugs	4" through 12" (100-300 mm)
Max. Operating Pressure	1,480 psi (100 bar) at 100°F (38°C)
Max. Operating Temperature	700°F (371°C) at 700 psi (48 bar)**
Power	Hydraulic or Air Motor
Feed Rate	.003" (.076 mm) per revolution
Lower-In Crank	4-1/2 turns per inch (5.6 mm per turn)
Length without measuring rod	64-1/2" (1,638 mm)
Length with measuring rod	110-1/2" (2,087 mm)
Meets NACE specification	MR0175

* See note 5 in "Recommended Power Options" chart. ** For intermittent service only. Maximum continuous rating is 350°F (177°C) at 1,025 psi (70 bar).

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660C Basic Tapping Machine Components

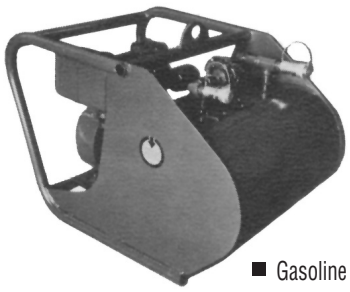
	Lbs.	Kg.	Part Number
Tapping machine body (standard feed)	490	227	05-1394-0000
Tapping machine body (slow feed)	490	227	05-1392-0000
w/Air motor drive unit*	40	18	05-2327-0000
w/Single drive unit & control valve*	45	20	05-2508-0000
w/Tandem drive unit & control valve*	100	46	05-1379-0000

* These options will work with both feed rate tapping machines (slow and standard).

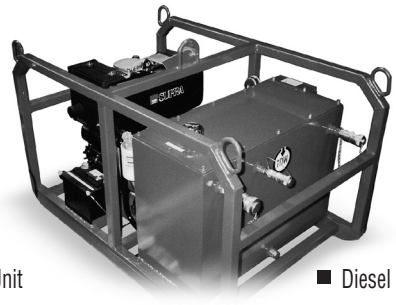
Additional Equipment

	Lbs.	Kg.	Part Number
Skid*	179	81	12371870
Hydraulic Power Unit and 50' Hose (with oil)			
Manual Start/Diesel	585	266	05-2017-0000
Electric Start/Diesel	600	272	12303420
Manual Start/Gas	533	242	05-2351-0000
Electric Start/Gas	550	250	05-2354-0000
Hydraulic feed system for completion plug installation	45	21	05-1366-0000
Flywheel	46	21	05-2376-0000

* If skid is not purchased with the tapping machine, there will be an additional crating charge; consult factory.



■ Gasoline Power Unit



■ Diesel Power Unit

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Standard Adapters for Gate Valves

		ASME Class 150 RF Flange			ASME Class 300 RF Flange			ASME Class 600 RF Flange		
Inches	mm	Lbs.	Kg.	Part Number	Lbs.	Kg.	Part Number	Lbs.	Kg.	Part Number
3	80	54	24	06-6102-0003	55	25	06-6103-0003	57	26	06-6105-0003
4	100	57	26	06-6102-0004 *	65	29	06-6103-0004	80	36	06-5091-0004
6	150	70	32	06-5088-0006 *	95	43	06-6103-0006	146	66	06-5091-0006
8	200	85	39	06-6102-0008 *	100	45	06-6103-0008	150	68	06-6105-0008
10	250	115	42	06-6102-0010 *	155	70	06-6103-0010	200	91	06-6105-0010
12	300	170	77	06-6102-0012 *	215	98	06-6103-0012	315	143	06-6105-0012

* Will work on SHORTCUTT® Valves, Bulletin 2010.000.00

Adapters for SANDWICH® Valves & Ball Valves (Compatible to set LOCK-O-RING® and LOCK-O-RING® Plus Completion Plugs)

		ASME Class 150 RF Flange			ASME Class 300 RF Flange			ASME Class 600 RF Flange		
Inches	mm	Lbs.	Kg.	Part Number	Lbs.	Kg.	Part Number	Lbs.	Kg.	Part Number
4	100	65	29	26-3205-0415	75	34	26-3205-0430	85	39	26-3205-0460
6	150	80	36	26-3205-0615	100	45	26-3205-0630	130	59	26-3205-0660
8	200	100	45	26-3205-0815	125	57	26-3205-0830	170	77	26-3205-0860
10	250	170	77	26-3205-1015	210	95	26-3205-1030	285	129	26-3205-1060
12	300	250	113	26-3205-1215	300	136	26-3205-1230	375	170	26-3205-1260

Cutter Holders

Inches	mm	Lbs.	Kg.	Part Number
3 & 4	80 & 100	2.5	1	05-0054-0001
6-12	150-300	8	4	05-0054-0002

Completion Plug Holders

Inches	mm	ASME Class	Lbs.	Kg.	Part Number
LOCK-O-RING® Completion Plugs					
4-16*	100-400	600	3.5	1.6	05-0075-0000
LOCK-O-RING® Plus Completion Plugs					
4-6	100-150	600*	4.5	2	12308409
		900**	4.5	2	12308306
8-16*	200-400	600*	11	5	12309011

* Also compatible for Class 150 and 300.
**Plug holder up to 16 inch can also be used with 760c Tapping Machine. When used with 760 tapping machine the Plug Holder is rated to 1480 psi.

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Standard Cutters & Pilot Drills

Nominal Tap Size		Actual Tap Size		Cutters			Pilot Drills			Spare U-Rods
Inches	mm	Inches	mm	Wt./Lbs.	Wt./Kg.	Part Number	Wt./Lbs.	Wt./Kg.	Part Number	Part Number
3	80	2-7/16	61.9	1	0.5	05-0001-0001	1/2	0.2	05-0293-0001	00-1424-0012
4	100	3-7/16	87.3	2	0.9	05-0328-0004	1/2	0.2	05-0293-0008	00-1424-0012
6	150	5-15/32	138.9	5-3/4	3	05-0328-0006	2	0.9	05-0293-0002	00-1424-0003
8	200	7-5/16	185.8	14-1/2	7	05-0328-0008	2	0.9	05-0293-0003	00-1424-0003
10	250	9-1/2	241.3	22-1/2	10	05-0328-0010	2	0.9	05-0293-0004	00-1424-0003
12	300	11-1/2	292.1	36	16	05-0389-0012	2-1/2	1.0	05-0293-0005	00-1424-0008

SHORTSTOPP® Cutters & Pilot Drills

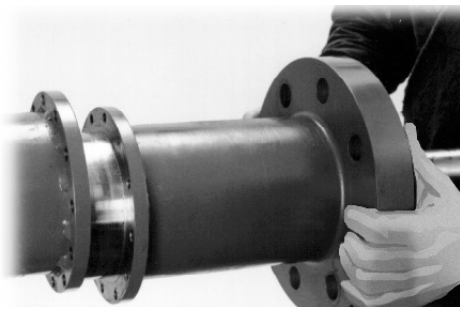
Nominal Tap Size		Actual Tap Size		Cutters			Pilot Drills			Spare U-Rods
Inches	mm	Inches	mm	Wt./Lbs.	Wt./Kg.	Part Number	Wt./Lbs.	Wt./Kg.	Part Number	Part Number
4	100	3-7/8	98.4	3-1/4	1	05-0330-0004	1/2	0.2	05-0293-0008	00-1424-0012
6	150	5-7/8	149.2	8-3/4	3	05-0330-0006	2	0.9	05-0293-0002	00-1424-0003
8	200	7-3/4	196.9	20	9	05-0330-0008	2	0.9	05-0293-0003	00-1424-0003
10	250	9-3/4	247.7	23	10	05-0330-0010	2	0.9	05-0293-0004	00-1424-0003
12	300	11-3/4	298.5	40	18	05-0330-0012	2-1/2	1.0	05-0293-0005	00-1424-0003

STOPPLE® Cutters & Pilot Drills

Nominal Tap Size		Actual Tap Size		Cutters			Pilot Drills			Spare U-Rods
Inches	mm	Inches	mm	Wt./Lbs.	Wt./Kg.	Part Number	Wt./Lbs.	Wt./Kg.	Part Number	Part Number
4	100	3-15/16	100	3-1/2	2	05-0329-0004	1/2	0.2	05-0293-0008	00-1424-0012
6	150	5-15/16	150.8	9	4	05-0329-0006	2	0.9	05-0293-0002	00-1424-0003
8	200	7-7/8	200	16	7	05-0329-0008	2	0.9	05-0293-0003	00-1424-0003
10	250	9-7/8	250.8	27	12	05-0329-0010	2	0.9	05-0293-0004	00-1424-0003
12	300	11-13/16	300.1	40-1/2	18	05-0388-0012	2-1/2	1	05-0293-0005	00-1424-0008

■ Split-frame Feature

The frame assembly is split at the lower end so the lower section can be unbolted and removed over the drive tube and boring bar, and the packing replaced.



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Recommended Power Options for Tapping Size-On-Size

	Cutter Size					
Feed Rate	3"	4"	6"	8"	10"	12"
(0.005"/REV) AIR/HYD	A	A	A	A	A	A
	B	B	B	B	B	
	C	C	C	C		
(0.005"/REV) DUAL HYD	A	A	A	A	A	A
	B	B	B	B	B	B
	C	C	C	C	C	C
(0.003"/REV) AIR/HYD	A	A	A	A	A	A
	B	B	B	B	B	B
	C	C	C	C	C	
(0.003"/REV) DUAL HYD	A	A	A	A	A	A
	B	B	B	B	B	B
	C	C	C	C	C	C

Notes:

1. The following letters represent:
   A = Carbon steel pipe SMYS (Specified Minimum Yield Strength) 30,000 to 50,000 psi maximum, tensile strength of 70,000 psi.
   B = Carbon steel pipe SMYS 50,000 to 70,000 psi maximum, tensile strength of 90,000 psi.
   C = Cast iron pipe. Cutting characteristics vary widely; hard to predict.
2. The dual hydraulic drive features an ability to shift from high speed/low torque to low speed/high torque when tapping the larger diameter pipes and/or the more difficult cutting steels.
3. The table for selecting power options (above) is based on the latest TDW designs and past experience.
   The data should be used as a guideline. There have been, and will be, conditions which will not strictly follow the guidelines.
4. Special cutters are available for flat plates, stainless steel pipe, cast iron pipe and other special conditions.

FLAT PLATE Condition Hot Tap:

When tapping a larger pipe or tank, the cutter will sometimes go through the flat-plate condition. For example, all teeth are cutting at the same time. This is a high power-consuming condition and special cutters may be required. Considering cutter size, diameter of cylinder, wall thickness, feed rates, different materials of construction, etc., there are many possibilities. The following table gives some examples of flat-plate conditions.
Any pipe or tank with wall thicknesses greater than those shown will also be considered flat-plate. Contact our TDW Representative to review your special application and select the appropriate equipment.

Cutter Size	Nom. Pipe x Wall	Nom. Pipe x Wall	Nom. Pipe x Wall
3"	4" x .359"	6" x .232"	8" x .176"
4"	6" x .481"	8" x .357"	10" x .282"
6"	10" x .748"	12" x .616"	14" x .556"
8"	18" x .776"	20" x .692"	24" x .571"
10"	24" x .980"	30" x .772"	48" x .475"
12"	36" x .943"	48" x .699"	60" x .556"

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