



UFT Series Joint Simulator Operations Manual

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Contents

	<u>Page Number</u>
1. Operations Instructions for the UFT-S10 and UFT-S16	1
2. Breakdown of the UFT-S Joint Simulator	2
3. Breakdown of the UFT-S10 Joint Simulator	3
4. Breakdown of the UFT-S16 Joint Simulator	4
5. Operations Instructions for the UFT-6, UFT-10, UFT-16 and UFT-24	5
6. Breakdown of the UFT-BC Joint Simulator (Front and Top Views)	6
7. Breakdown of the UFT-6 Joint Simulator	7
8. Breakdown of the UFT-10 Joint Simulator	8
9. Breakdown of the UFT-16 Joint Simulator	9
10. Breakdown of the UFT-24 Joint Simulator	10
11. Maintenance	11
12. Certification of the UFT Joint Simulator	12
13. List of Hexagon Head Bolts	13

Operations Instructions

UFT-S10 and UFT-S16

These testers are capable of simulating four different joints: A, B, C, and D (hard, medium-hard, medium-soft, and soft, respectively).

A Joint: C and D valves closed (clockwise) and the A joint sleeve installed between the Plunger Bushing and the Spindle Nut.

B Joint: C and D valves closed (clockwise) and remove the A joint sleeve.

C Joint: Open the C valve under the side cylinder one turn (counter-clockwise). The D valve remains closed.

D Joint: Open both the C and D valves (one turn).

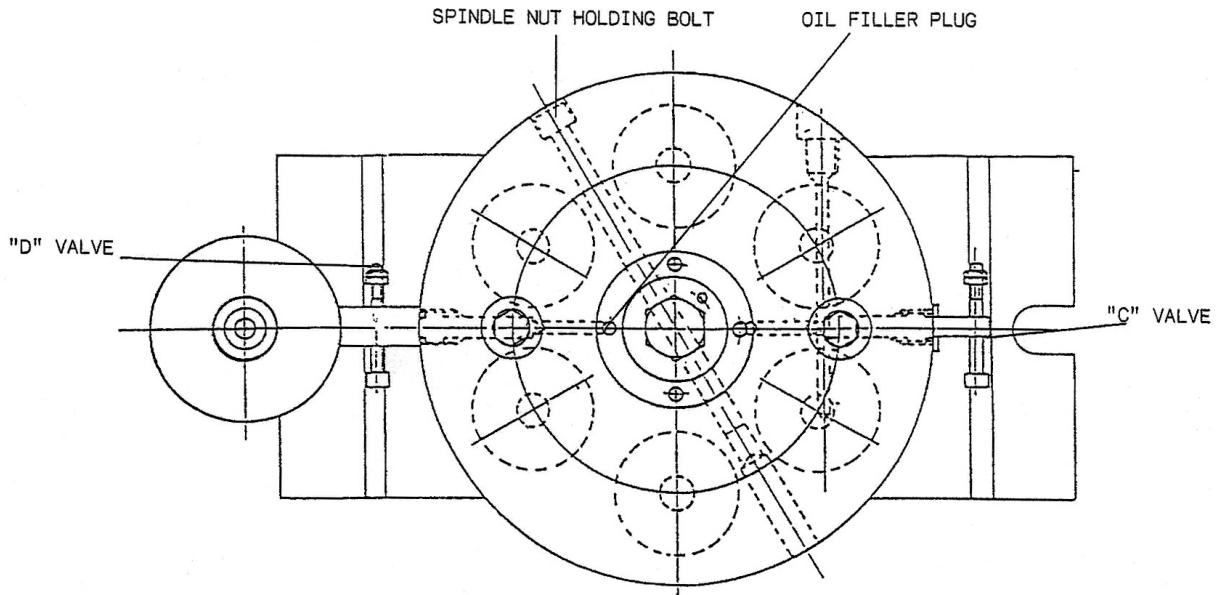
Changing Bolt Kits

To change the bolt:

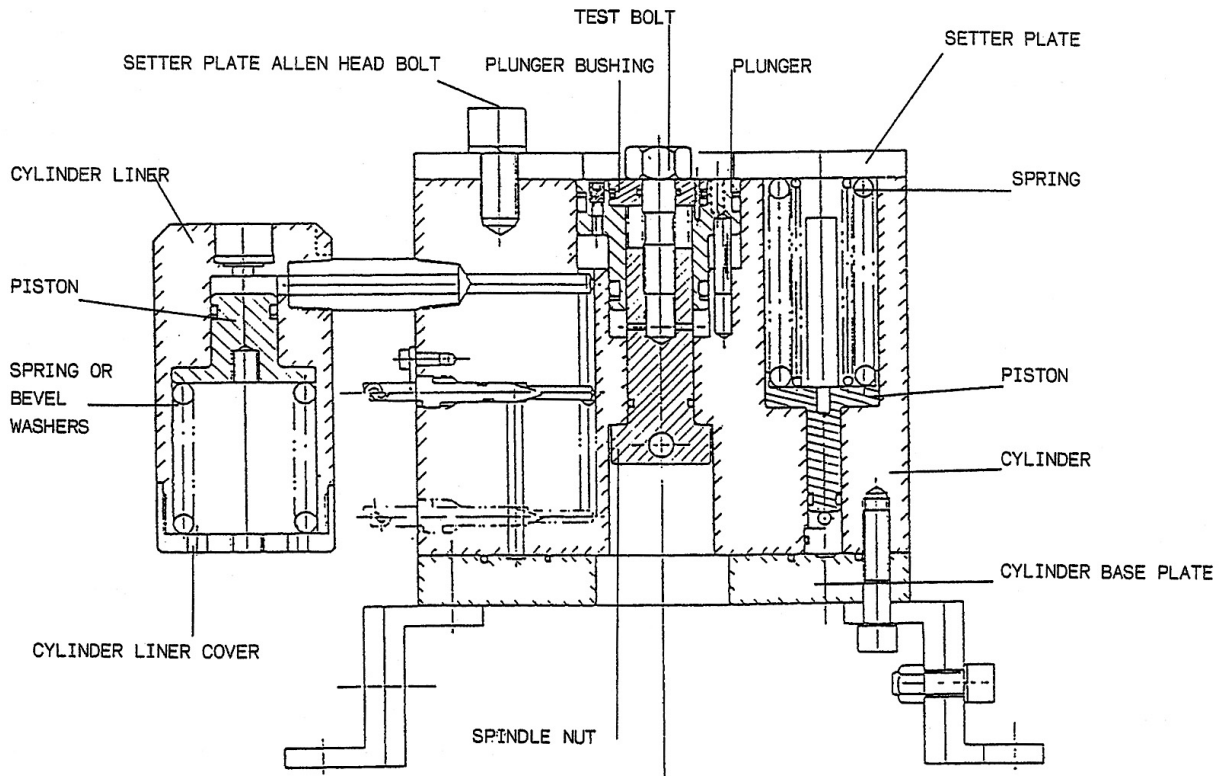
1. Remove the test bolt.
2. Remove the Spacer and Plunger Bushing.
3. Remove the Allen Head Bolt that holds the Spindle Nut. This is located on the side of the tester by the D valve lever.
4. Remove the Spindle Nut.
5. Install the new Spindle Nut.
6. Install the Allen Head Bolt back through the Spindle Nut.
7. Install the Plunger Bushing, Spacer, and new bolt.

Breakdown of the UFT-S Joint Simulator

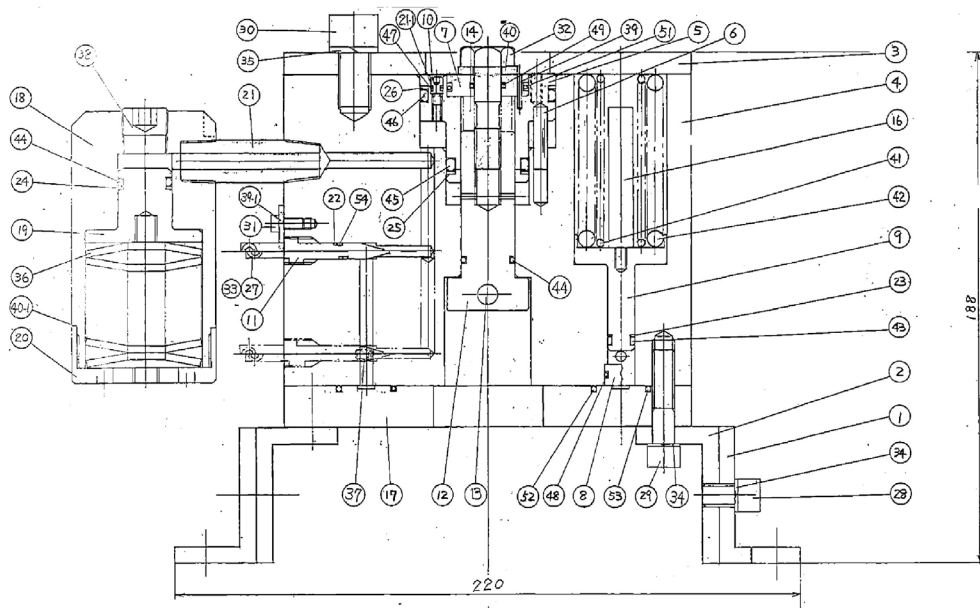
Top View of UFT-S Joint Simulator



Side View of UFT-S Joint Simulator



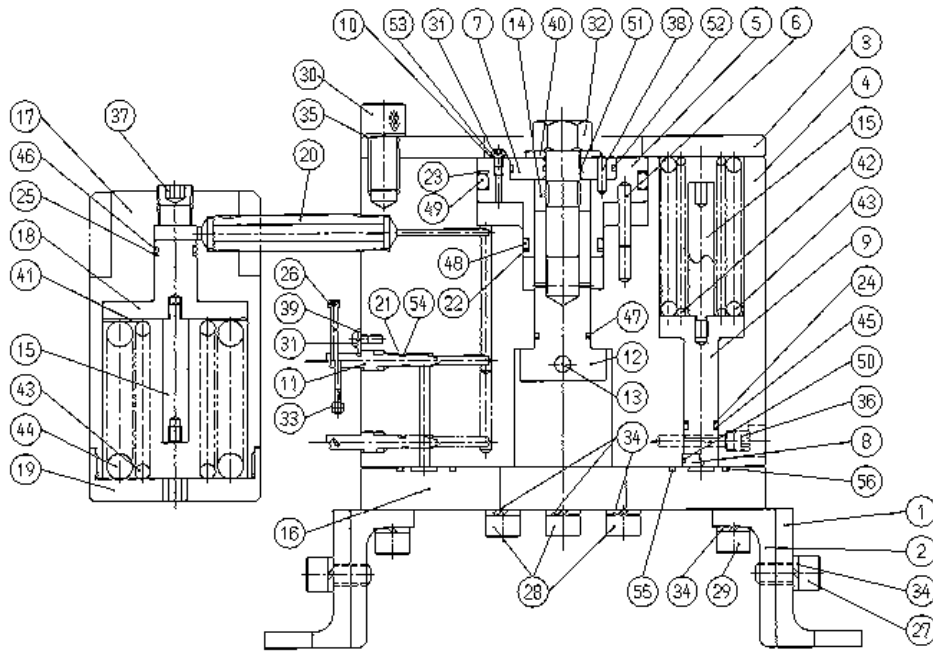
Breakdown of the UFT-S10 Joint Simulator



Index No.	Code No.	Description	Qty.
1	839-965-5	Base	2
2	839-718-5	Setting Plate	2
3	839-285-5	Rear Plate	1
4	839-286-5	Cylinder	1
5	839-600-5	Plunger	1
6	840-318-5	Pilot Pin	4
7	839-604-5	Plunger Bushing	1
8	839-674-5	Cylinder Bushing	2
9	839-546-5	Piston	6
10	194-742-3	Oil Plug	2
11	839-100-5	Valve	2
12	839-359-5	Spindle Nut (M10)	1
13	839-562-5	Stopper	1
14	839-567-5	Bushing (M10)	1
16	839-560-5	Piston Spring Guide	6
17	839-289-5	Front Plate	1
18	839-017-5	Oil Casing	1
19	839-545-5	Piston	1
20	839-016-5	Oil Casing Cover	1
21	839-082-5	Connecting Screw	1
21-1	944-003-0	Supporter Ring (3.0 x 5.0 x 1)	2
22	944-005-0	Back-up Ring (4.2 x 6 x 1)	2
23	944-015-0	Back-up Ring (P7)	6
24	944-316-0	Back-up Ring (P16)	1
25	944-025-0	Back-up Ring (P24)	1
26	944-044-0	Back-up Ring (P44)	1
27	945-005-0	Allen Head Bolt (M3 x 50)	2
28	945-315-0	Allen Head Bolt (M8 x 15)	4
29	945-330-0	Allen Head Bolt (M8 x 30)	10
30	945-443-0	Allen Head Bolt (M12 x 20)	2
31	945-943-0	Hexagon Round Head Bolt (M4 x 8)	2
32	946-972-0	Hexagonal Bolt (M10 x 35) (UFT)	1
33	960-020-0	Hexagon Nut (1-M3)	4
34	962-011-0	Spring Washer (2-8S)	14
35	962-013-0	Spring Washer (2-12S)	2
36	962-644-0	Belleville Spring (42 x 14.3 x 2.5)	17
37	966-100-0	Allen Head Plug (1/8)	1

Index No.	Code No.	Description	Qty.
38	966-102-0	Allen Head Plug (3/8)	1
39	973-072-0	Roll Pin (2.5 x 12)	1
39-1	975-066-0	Spacer (13 x 4.2 x 1.5)	2
40	975-552-0	Spacer (22 x 10.5 x 3) (H)	1
40-1	975-893-1	Adjusting Spacer (53 x 48.2 x T)	1
41	976-495-0	Spring (21 x 65)	6
42	976-706-0	Spring (33 x 65)	6
43	990-004-0	O-Ring (P6)	6
44	990-015-0	O-Ring (P15)	1
45	990-024-0	O-Ring (P24)	1
46	990-041-0	O-Ring (P44)	1
47	990-970-0	O-Ring (SNS-2) (NOK)	2
48	990-007-0	O-Ring (P9)	2
49	990-908-0	O-Ring (SNS-10)	1
51	990-919-0	O-Ring (SNS-22)	1
52	990-993-0	O-Ring (SNS-70)	1
53	990-998-0	O-Ring (SNS-112)	1
54	990-972-0	O-Ring (SNS-4) (NOK)	2
<u>Option</u>			
M8 Type			
58	878-903-1	Bushing (M8)	1
56	878-901-1	Plunger Bushing (M8)	1
57	878-902-1	Spindle Nut (M8)	1
59	946-971-0	Hexagonal Bolt (M8 x 32) (UFT)	1
60	975-551-0	Spacer (18 x 8.5 x 2.5) (H)	1
61	990-906-0	O-Ring (SNS-8)	1
62	990-919-0	O-Ring (SNS-22)	1
M6 Type			
66	878-908-1	Bushing (M6)	1
64	878-906-0	Plunger Bushing (M6)	1
65	878-907-0	Spindle Nut (M6)	1
67	946-970-0	Hexagonal Bolt (M6 x 30) (UFT)	1
68	975-550-0	Spacer (14 x 6.5 x 2) (H)	1
69	990-904-0	O-Ring (SNS-6)	1
70	990-919-0	O-Ring (SNS-22)	1

Breakdown of the UFT-S16 Joint Simulator



Index No.	Code No.	Description	Qty.
1	839-965-6	Setting Stand	2
2	839-718-6	Setting Plate	2
3	839-285-6	Rear Plate	1
4	839-286-6	Cylinder	1
5	839-600-6	Plunger	1
6	840-318-6	Pilot Pin	4
7	840-604-6	Plunger Bushing (M16)	1
8	839-674-6	Cylinder Bushing	3
9	839-546-6	Piston	9
10	185-807-1	Spacer	2
11	839-100-5	Valve	2
12	839-359-6	Spindle Nut	1
13	839-562-6	Stopper	1
14	839-567-6	Bushing (M16)	1
15	839-560-6	Piston Spring Guide	6
16	839-289-6	Front Plate	1
17	839-017-6	Oil Casing	1
18	839-545-6	Piston (large)	1
19	839-016-6	Oil Casing Cover	1
20	839-082-6	Connecting Screw	1
21	944-005-0	Back-up Ring (4.2 x 6 x 1)	2
22	944-032-0	Back-up Ring (P32)	1
23	944-070-0	Back-up Ring (P70)	1
24	944-312-0	Back-up Ring (P12)	9
25	944-316-0	Back-up Ring (P16)	1
26	945-005-0	Allen Head Bolt (M3 x 50)	2
27	945-423-0	Allen Head Bolt (M10 x 20)	4
28	945-429-0	Allen Head Bolt (M10 x 35)	6
29	945-433-0	Allen Head Bolt (M10 x 45)	4
30	945-505-0	Allen Head Bolt (M14 x 30)	3
31	945-942-0	Hexagon Round Head Bolt (M4 x 6)	2
32	946-975-0	Hexagonal Bolt (M16 x 50) (UFT)	1
33	960-020-0	Hexagon Nut (1-M3)	4
34	962-012-0	Spring Washer (2-10S)	14
35	962-014-0	Spring Washer (2-14S)	3
36	966-100-0	Allen Head Plug (1/8)	2
37	966-102-0	Allen Head Plug (3/8)	1

Index No.	Code No.	Description	Qty.
38	973-216-0	Roll Pin (4 x 16)	1
39	839-019-5	Spacer (13 x 4.2 x 1.5)	2
40	975-557-0	Spacer (35 x 16.5 x 3) (H)	1
41	975-907-0	Adjusting Spacer (68 x 30 x T)	1
42	976-561-0	Spring (23 x 75) (4.0)	9
43	976-711-0	Spring (37.5 x 75) (7.0)	10
44	976-780-0	Spring (64 x 75) (12.0)	9
45	990-010-0	O-Ring (P11)	9
46	990-015-0	O-Ring (P15)	1
47	990-020-0	O-Ring (P22)	1
48	990-032-0	O-Ring (P32)	1
49	990-055-0	O-Ring (P70)	1
50	990-328-0	O-Ring (JW1530-15)	3
51	990-914-0	O-Ring (SNS-16)	1
52	990-937-0	O-Ring (SNS-46)	1
53	990-971-0	O-Ring (SNS-3) (NOK)	2
54	990-972-0	O-Ring (SNS-4) (NOK)	2
55	990-996-0	O-Ring (SNS-100)	1
56	990-999-0	O-Ring (SNS-150)	1
<u>Option</u>			
M14 Type			
57	878-777-1	Plunger Bushing (M14)	1
58	878-911-1	Spindle Nut (M14) (S16)	1
59	878-912-1	Bushing (M14)	1
60	946-974-0	Hexagonal Bolt (M14 x 50) (UFT)	1
61	975-556-0	Spacer (30 x 14.5 x 3) (H)	1
63	990-912-0	O-Ring (SNS-14)	1
64	990-937-0	O-Ring (SNS-46)	1
M12 Type			
66	878-781-1	Plunger Bushing (M12)	1
67	878-916-1	Spindle Nut (M12) (S16)	1
68	878-917-1	Bushing (M12)	1
69	946-973-0	Hexagonal Bolt (M12 x 45) (UFT)	1
70	975-555-0	Spacer (26 x 12.5 x 3) (H)	1
73	990-911-0	O-Ring (SNS-12)	1
74	990-937-0	O-Ring (SNS-46)	1

Operations Instructions

UFT-6, UFT-10, UFT-16 and UFT-24

Warning

1. Always operate test bolt within specified torque range.
2. Always secure joint simulator before use.

Operation Cautions

1. Never change joints without loosening the test bolt.
2. Check the test bolt every 50,000 cycles.
3. Double-check all bolts after changing joints and bolt sizes.
4. Never use sloppy sockets or extensions.
5. Always use Power Driver Sockets per ANSI B107.2.

Operation Instructions

UFT-6, UFT-10, UFT-16 and UFT-24

There are two joints on these models: A “B” joint (medium-hard) and a “C” joint (medium-soft). To change these joints, simply turn the silver knob on the front of the tester clockwise until it stops for the “B” joint and counter-clockwise until it stops for the “C” joint.

Changing Bolt Kits

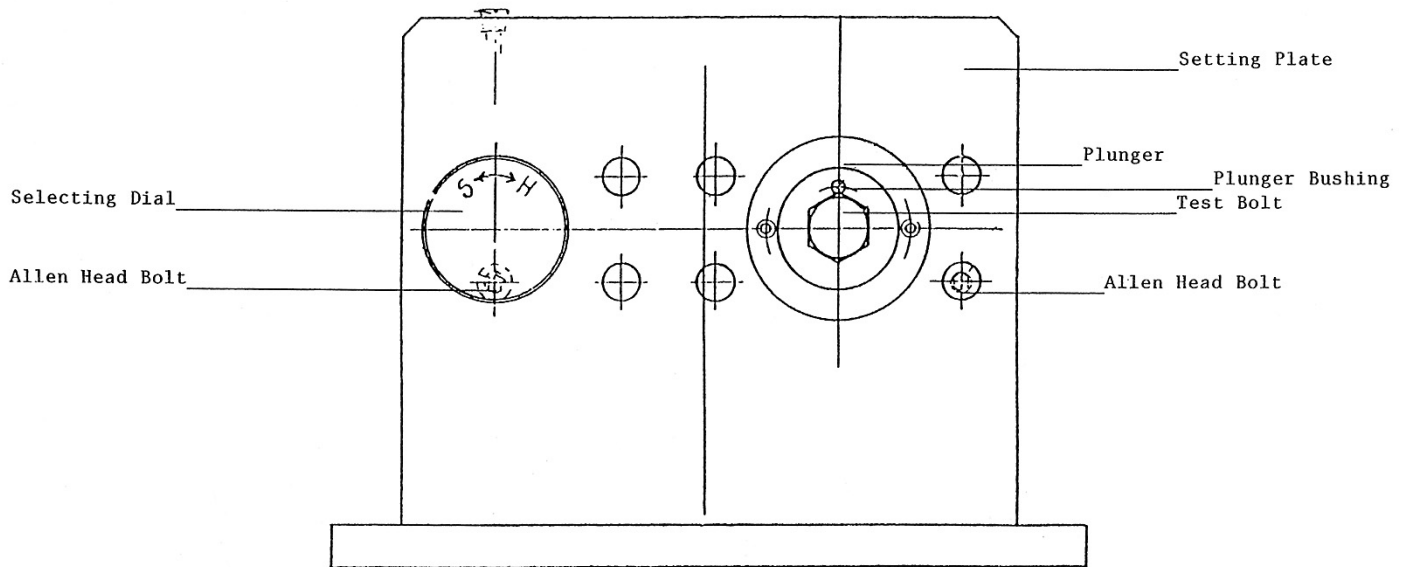
UFT-10, UFT-16 and UFT-24

1. Each bolt kit has certain springs that go with them. Please consult the chart below to match the right spring with the size of bolt that you are using.
2. To change bolts:
 - a) Remove the test bolt and Plunger Bushing.
 - b) On the UFT-10 and UFT-16, remove the two Allen Head Bolts from the Spindle Nut located on the back of the testers. Insert the new Spindle Nut and re-install the Allen Head Bolts.
 - c) Install the new bolt and Plunger Bushing.
 - d) Remove the Cylinder Liner Casing Cover and change out the springs. Reinstall the Cylinder Liner Casing Cover.

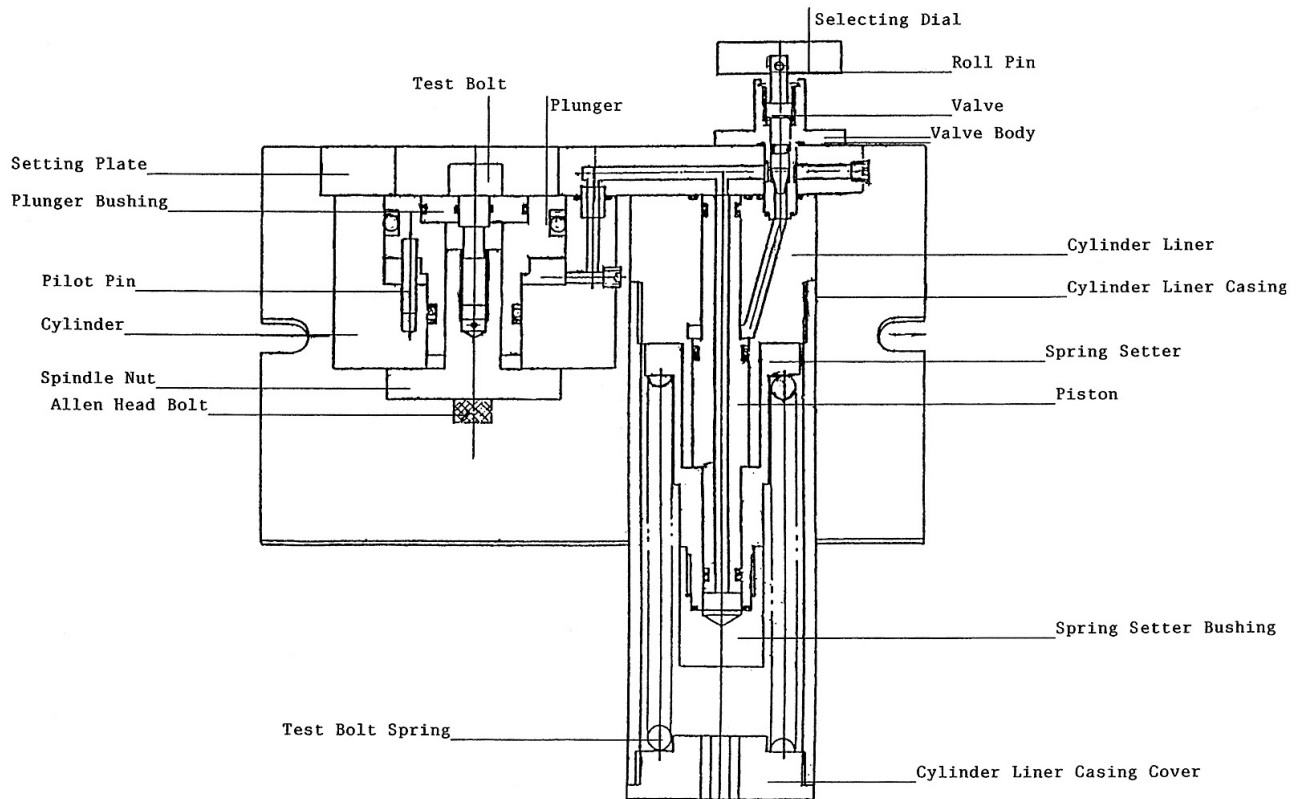
Model	Bolt Size	Spring Size Installed Into the Chamber and the Quantity Used		
UFT-10	M6	48.5 x 120	(8.5)	1 pc.
	M8	51 x 120	(9.5)	1 pc.
	M10	51 x 120	(10.0)	1 pc.
UFT-16	M12	49 x 120	(9.0)	2 pcs.
	M14	49 x 120	(9.0)	2 pcs.
	M16	49 x 120	(9.5)	2 pcs.
UFT-24	M18	59 x 115	(11.0)	3 pcs.
	M20	59 x 115	(11.0)	3 pcs.
	M20	35.5 x 105	(6.6)	3 pcs.
	M24	59 x 115	(11.0)	3 pcs.
	M24	35 x 105	(7.0)	3 pcs.

Breakdown of the UFT-BC Joint Simulator

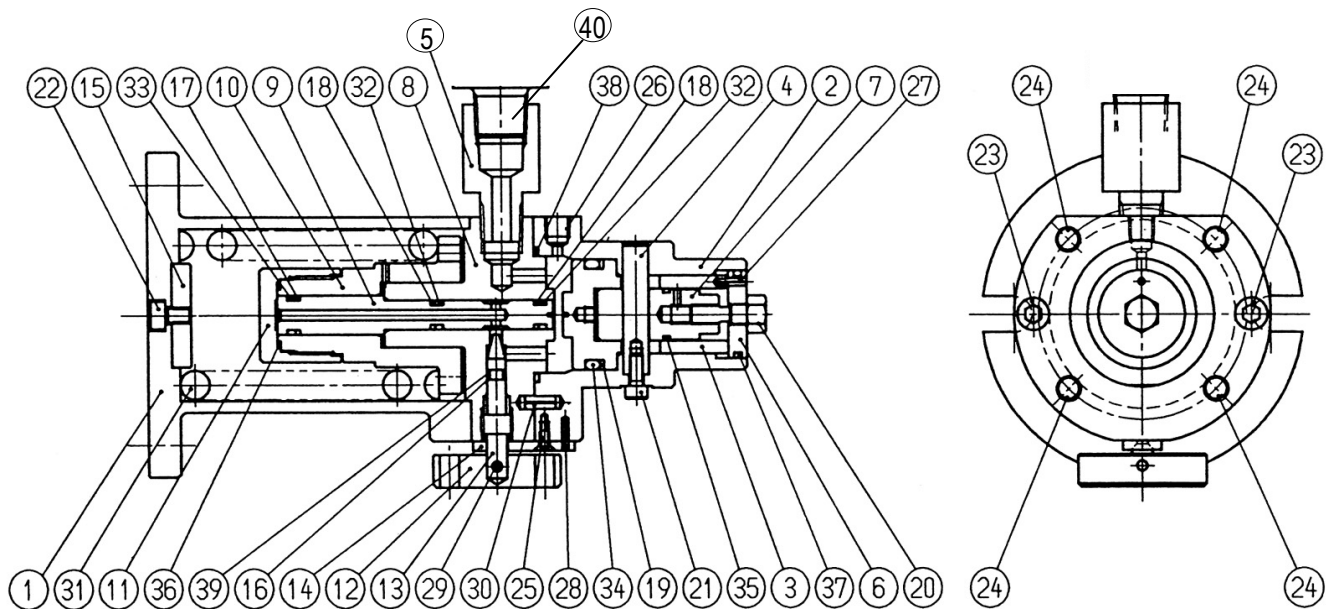
Front View



Top View



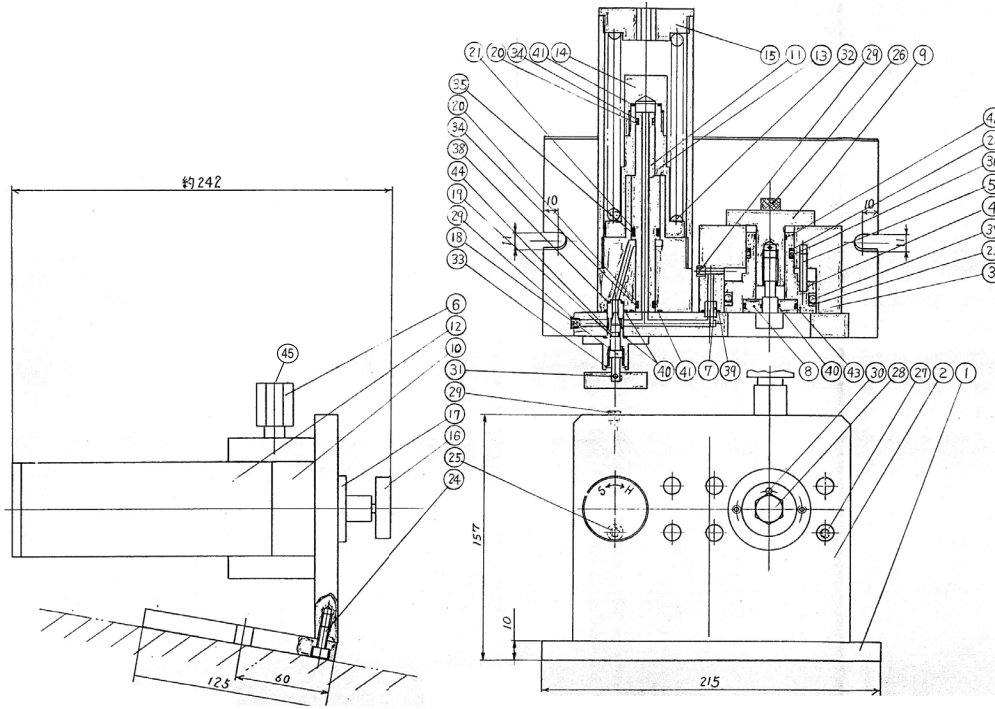
Breakdown of the UFT-6 Joint Simulator



Index No.	Code No.	Description	Qty.
1	840-965-4	Setting Stand	1
2	840-286-4	Cylinder	1
3	840-600-4	Plunger	1
4	840-318-4	Pilot Pin	1
5	840-049-5	Setting Screw for Pressure Sensor	1
6	840-604-4	Plunger Bushing (M6)	1
7	840-359-4	Spindle Nut (M6)	1
8	840-676-4	Cylinder Liner	1
9	840-546-4	Piston	1
10	840-164-4	Retainer	1
11	840-175-4	Retainer Bushing	1
12	840-107-5	Valve Lever	1
13	840-100-5	Valve	1
14	840-133-4	Valve Wheel Nut Flange	1
15	840-166-4	Spring Holder Spacer	1
16	944-005-0	Support Ring (42 x 6 x 1)	1
17	944-011-0	Back-up Ring (P9)	1
18	944-027-0	Back-up Ring (P6)	2
19	944-028-0	Back-up Ring (P28)	1
20	946-969-0	Hexagon Bolt (M6 x 18) (UFT)	1
20-1	975-550-0	Spacer (14 x 6.5 x 2) (H)	1
21	945-010-0	Allen Head Bolt (M4 x 10)	1
22	945-108-0	Allen Head Bolt (M5 x 8)	1
23	945-245-0	Allen Head Bolt (M6 x 45)	1
24	945-325-0	Allen Head Bolt (M8 x 25)	2
25	948-423-0	Allen Flush Head Screw (M3 x 6)	4
26	966-110-0	Allen Head Plug (NPT1/16)	1
27	973-008-0	Roll Pin (2 x 8)	1
28	973-010-0	Roll Pin (2 x 10)	1
29	973-130-0	Roll Pin (3 x 30)	1
30	973-210-0	Roll Pin (4 x 10)	1

Index No.	Code No.	Description	Qty.
31	976-768-0	Spring (52 x 80) (9.0)	1
32	990-004-0	O-Ring (P6)	2
33	990-007-0	O-Ring (P9)	1
34	990-027-0	O-Ring (P28)	1
35	990-912-0	O-Ring (SNS-14)	1
36	990-916-0	O-Ring (SNS-18)	1
37	990-917-0	O-Ring (SNS-24)	1
38	990-928-0	O-Ring (SNS-38)	1
39	990-972-0	O-Ring (SNS-4)	1
40	966-102-0	Allen Head Plug (3/8)	1
41	878-850-1	Test Socket (10 x 3/8)	1
42	975-550-1	Spacer (14 x 6.5 x 2) (H)	1
M5 Type			
45	878-763-1	Plunger Bushing (M5)	1
46	878-764-1	Spindle Nut (M5)	1
47	946-968-0	Hexagon Bolt (M5 x 17) (UFT)	1
48	975-549-0	Spacer (12 x 5.5 x 2) (H)	1
49	990-912-0	O-Ring (SNS-14)	1
50	990-917-0	O-Ring (SNS-24)	1
M4 Type			
51	878-766-1	Plunger Bushing (M4)	1
52	878-767-1	Spindle Nut (M4)	1
53	946-967-0	Hexagon Bolt (M4 x 15) (UFT)	1
54	975-548-0	Spacer (10 x 4.5 x 2) (H)	1
55	990-912-0	O-Ring (SNS-14)	1
56	990-917-0	O-Ring (SNS-24)	1

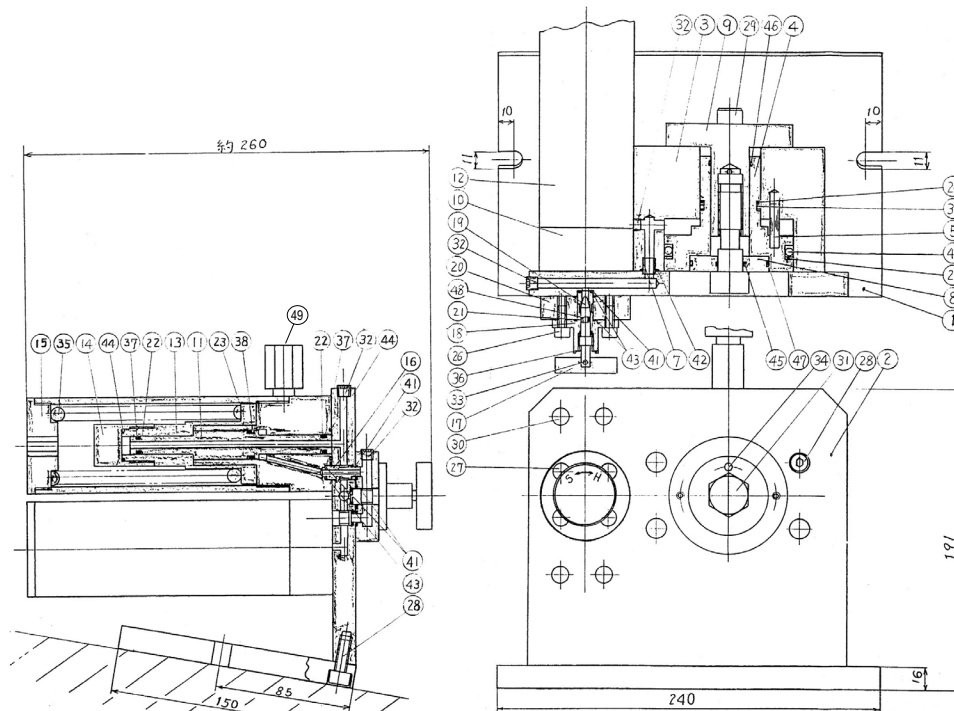
Breakdown of the UFT-10 Joint Simulator



Index No.	Code No.	Description	Qty.
1	840-965-5	Setting Stand	1
2	840-718-5	Setting Plate	1
3	840-286-5	Cylinder	1
4	840-600-5	Plunger	1
5	840-318-5	Pilot Pin	4
6	840-049-5	Pressure Gauge Stand Screw	1
7	840-674-5	Cylinder Bushing	1
8	840-604-5	Plunger Bushing (M10)	1
9	840-359-5	Spindle Nut (M10)	1
10	840-676-5	Cylinder Liner	1
11	840-546-5	Piston	1
12	840-905-5	Cylinder Liner Casing	1
13	840-164-5	Spring Setter	1
14	840-175-5	Spring Setter Bushing	1
15	840-906-5	Cylinder Liner Casing Cover	1
16	840-107-5	Selecting Dial	1
17	840-014-5	Valve Body	1
18	840-100-5	Valve	1
19	944-005-0	Backup Ring (4.2 x 6 x 1)	1
20	944-011-0	Backup Ring (P9)	2
21	944-017-0	Backup Ring (P14)	1
22	944-025-0	Backup Ring (P24)	1
23	944-045-0	Backup Ring (P48A)	1
24	945-214-0	Allen Head Bolt (M6 x 14)	3
25	945-230-0	Allen Head Bolt (M6 x 30)	2
26	945-320-0	Allen Head Bolt (M8 x 20)	2
27	945-967-0	Hexagon Round Head Bolt (M6 x 25)	6
28	946-972-0	Hexagonal Bolt (M10 x 35) (UFT)	1
28-1	975-552-0	Spacer (22 x 10.5 x 3) (H)	3
29	966-110-0	Allen Head Plug (NPT1/6)	1
30	973-114-0	Roll Pin (3 x 14)	1
31	973-126-0	Roll Pin (3 x 26)	1

Index No.	Code No.	Description	Qty.
32	976-767-0	Spring (51 x 120) (10.0)	1
33	979-312-0	Inner Snap Ring (IRTW-12)	1
34	990-007-0	O-Ring (P9)	2
35	990-014-0	O-Ring (P14)	1
36	990-024-0	O-Ring (P24)	1
37	990-045-0	O-Ring (P48A)	1
38	990-904-0	O-Ring (SNS-6)	1
39	990-905-0	O-Ring (SNS-7)	1
40	990-908-0	O-Ring (SNS-10)	3
41	990-913-0	O-Ring (SNS-15)	2
42	990-916-0	O-Ring (SNS-18)	1
43	990-924-0	O-Ring (SNS-30)	1
44	990-972-0	O-Ring (SNS-4) (NOK)	1
45	966-102-0	Allen Head Plug (3/8)	1
M8 Type			
47	878-770-1	Plunger Bushing (M8)	1
48	878-771-1	Spindle Nut (M8)	1
49	946-971-0	Hexagonal Bolt (M8 x 32) (UFT)	1
49-1	975-551-0	Spacer (18 x 8.5 x 2.5) (H)	1
50	976-766-0	Spring (51 x 120) (9.5)	1
51	990-906-0	O-Ring (SNS-8)	1
52	990-924-0	O-Ring (SNS-30)	1
M6 Type			
54	878-773-1	Plunger Bushing (M6)	1
55	878-774-1	Spindle Nut (M6)	1
56	946-970-0	Hexagonal Bolt (M6 x 30) (UFT)	1
56-1	975-550-0	Spacer (14 x 6.5 x 2) (H)	1
57	976-765-0	Spring (48.5 x 120) (8.5)	1
58	990-904-0	O-Ring (SNS-6)	1
59	990-924-0	O-Ring (SNS-30)	1

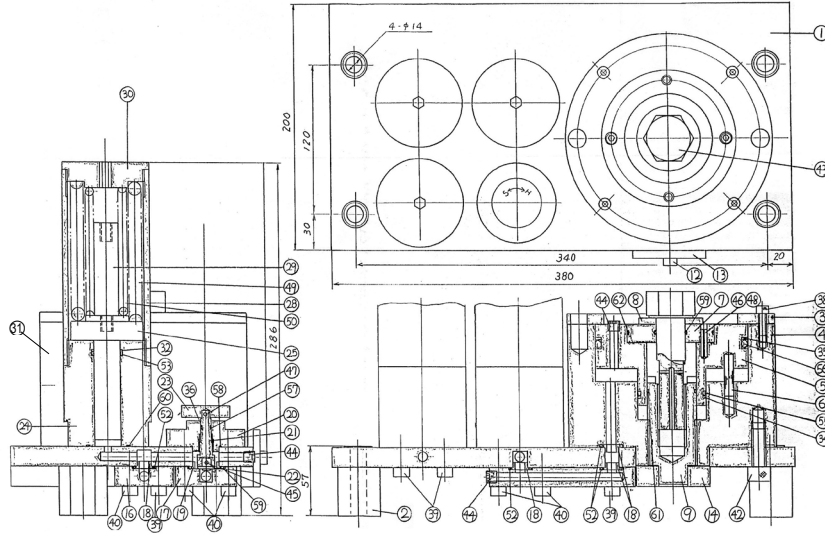
Breakdown of the UFT-16 Joint Simulator



Index No.	Code No.	Description	Qty.
1	840-965-6	Setting Stand	1
2	840-718-6	Setting Plate	1
3	840-286-6	Cylinder	1
4	840-600-6	Plunger	1
5	840-318-6	Pilot Pin	4
6	840-049-5	Pressure Gauge Stand Screw	1
7	840-674-6	Cylinder Bushing	1
8	840-604-6	Plunger Bushing (M16)	1
9	840-359-6	Spindle Nut (M16)	1
10	840-676-5	Cylinder Liner	2
11	840-546-5	Piston	2
12	840-905-5	Cylinder Liner Casing	2
13	840-164-5	Spring Setter	2
14	840-175-5	Spring Setter Bushing	2
15	840-906-5	Cylinder Liner Casing Cover	2
16	840-567-6	Bushing	2
17	840-107-5	Selecting Dial	1
18	840-014-5	Valve Body	1
19	840-100-5	Valve	1
20	840-027-6	Separator	1
21	944-005-0	Back-up Ring (4.2 x 6 x 1)	1
22	944-011-0	Back-up Ring (P9)	4
23	944-017-0	Back-up Ring (P14)	2
24	944-032-0	Back-up Ring (P32)	1
25	944-070-0	Back-up Ring (P70)	1
26	945-214-0	Allen Head Bolt (M6 x 14)	2
27	945-235-0	Allen Head Bolt (M6 x 35)	4
28	945-320-0	Allen Head Bolt (M8 x 20)	7
29	945-425-0	Allen Head Bolt (M10 x 25)	2
30	945-967-0	Hexagon Round Head Bolt (M6 x 25)	4
31	946-975-0	Hexagonal Bolt (M16 x 50) (UFT)	1
31-1	975-557-0	Spacer (34 x 16.5 x 3) (H)	1
32	966-110-0	Allen Head Plug (NPT1/6)	4
33	973-130-0	Roll Pin (3 x 30)	1

Index No.	Code No.	Description	Qty.
34	973-216-0	Roll Pin (4 x 16)	1
35	976-764-0	Spring (49.5 x 120) (9.5)	2
36	979-312-0	Inner Snap Ring (ITRW-12)	1
37	990-007-0	O-Ring (P9)	4
38	990-014-0	O-Ring (P14)	2
39	990-032-0	O-Ring (P32)	1
40	990-055-0	O-Ring (P70)	1
41	990-904-0	O-Ring (SNS-6)	7
42	990-907-0	O-Ring (SNS-9)	1
43	990-908-0	O-Ring (SNS-10)	4
44	990-913-0	O-Ring (SNS-15)	4
45	990-914-0	O-Ring (SNS-16)	1
46	990-923-0	O-Ring (SNS-26)	1
47	990-937-0	O-Ring (SNS-46)	1
48	990-972-0	O-Ring (SNS-4) (NOK)	1
49	966-102-0	Allen Head Plug (3/8)	1
M14 Type			
51	878-777-1	Plunger Bushing (M14)	1
52	878-778-1	Spindle Nut (M14)	1
53	946-974-0	Hexagonal Bolt (M14 x 50) (UFT)	1
53-1	975-556-0	Spacer (30 x 14.5 x 3) (H)	1
54	976-763-0	Spring (49 x 120) (9.0)	2
55	990-912-0	O-Ring (SNS-14)	1
56	990-937-0	O-Ring (SNS-46)	1
M12 Type			
58	878-781-1	Plunger Bushing (M12)	1
59	878-782-1	Spindle Nut (M12)	1
60	946-973-0	Hexagonal Bolt (M12 x 45) (UFT)	1
60-1	975-555-0	Spacer (26 x 12.5 x 3) (H)	1
61	976-763-0	Spring (49 x 120) (9.0)	2
62	990-911-0	O-Ring (SNS-12)	1
63	990-937-0	O-Ring (SNS-46)	1

Breakdown of the UFT-24 Joint Simulator



Index No.	Code No.	Description	Qty.	Index No.	Code No.	Description	Qty.
1	840-718-7	Setting Stand	1	45	973-112-0	Roll Pin (3 x 12)	1
2	840-397-7	Setting Plate	1	46	973-124-0	Roll Pin (3 x 24)	1
3	840-285-7	Cylinder Rear Plate	1	47	973-130-0	Roll Pin (3 x 30)	1
4	840-286-7	Cylinder	1	48	973-322-0	Roll Pin (5 x 24)	1
5	840-600-7	Plunger	1	49	976-775-0	Spring (59 x 115) (11.0)	3
6	840-318-7	Pilot Pin	4	50	976-716-0	Spring (35 x 105) (7.0)	3
7	840-604-7	Plunger Bushing (M24)	1	51	979-407-0	Outer Snap Ring (E4)	1
8	840-357-7	Spindle Spacer (53 x 24.5 x 5) (H)	1	52	990-014-0	O-Ring (P14)	4
9	840-359-7	Spindle Nut (M24)	1	53	990-020-0	O-Ring (P22)	1
12	840-800-7	Socket Pin	1	54	990-013-0	O-Ring (P25)	3
13	840-521-7	Socket Plate	1	55	990-046-0	O-Ring (P50)	1
14	840-520-7	Socket	1	56	990-115-0	O-Ring (P115)	1
15	840-522-7	Socket Bushing	1	57	990-904-0	O-Ring (SNS-6)	1
16	840-090-7	Air Inlet Bushing	1	58	990-919-0	O-Ring (SNS-22)	1
17	840-098-7	Air Inlet Bushing (B)	1	59	990-917-0	O-Ring (SNS-24)	2
18	840-567-7	Bushing	1	60	990-924-0	O-Ring (SNS-30)	3
19	840-101-7	Valve Bushing	1	61	990-929-0	O-Ring (SNS-36)	1
20	840-014-7	Valve Body	1	62	990-991-0	O-Ring (SNS-67)	1
21	840-114-7	Valve Spindle	1	63	878-877-1	Test Socket (3/4SQ x 36) (M24)	1
22	840-100-7	Valve	1				
23	840-107-5	Selecting Dial	1				
24	840-676-7	Cylinder Liner	1	M20 Type			
25	840-546-7	Piston	1	64	878-785-1	Plunger Bushing (M20)	1
26	840-675-7	Cylinder Liner	2	65	878-786-1	Spindle Spacer (44 x 20.5 x 4) (H)	1
27	840-545-7	Piston	2	66	878-787-1	Spindle Nut (M20)	1
28	840-905-7	Liner Casing	3	67	946-977-0	Hexagon Head Bolt (M20 x 85) (UFT)	1
29	840-547-7	Piston Rod	3	68	976-717-0	Spring (35.5 x 105) (6.5)	3
30	840-906-7	Liner Casing Setter	3	69	990-918-0	O-Ring (SNS-20)	1
31	966-101-0	Allen Head Plug (1/4)	1	70	990-929-0	O-Ring (SNS-36)	1
32	944-021-0	Back-up Ring (P22)	1	71	990-991-0	O-Ring (SNS-67)	1
33	944-026-0	Back-up Ring (P25)	2	72	878-874-1	Test Socket (3/4SQ x 30) (M20)	1
34	944-048-0	Back-up Ring (P50)	1				
35	944-155-0	Back-up Ring (P115)	1	M18 Type			
36	944-206-0	Back-up Ring (6.1 x 8 x 1)	1	73	878-790-1	Plunger Bushing (M18)	1
37	945-212-0	Allen Head Bolt (M6 x 12)	2	74	878-791-1	Spindle Spacer (40 x 18.5 x 4) (H)	1
38	945-216-0	Allen Head Bolt (M6 x 169)	4	75	878-792-1	Spindle Nut (M18)	1
39	945-330-0	Allen Head Bolt (M8 x 30)	10	76	946-792-0	Hexagon Head Bolt (M18 x 80) (UFT)	1
40	945-342-0	Allen Head Bolt (M8 x 45)	10	77	990-916-0	O-Ring (SNS-18)	1
41	945-429-0	Allen Head Bolt (M10 x 35)	2	78	990-929-0	O-Ring (SNS-36)	1
42	945-446-0	Allen Head Bolt (M12 x 30)	4	79	990-991-0	O-Ring (SNS-67)	1
43	946-978-0	Hexagon Head Bolt (M24 x 90) (UFT)	1	80	878-871-1	Test Socket (3/4SQ x 27) (M18)	1
44	966-100-0	Allen Head Plug (1/8)	6				

Maintenance

1. Inspect the Bolt and Spindle Nut every 50,000 cycles.
2. Should the Plunger not come back up to the top of the Cylinder, then the tester is low on fluid. To fill the tester with fluid, the tester must be level.
 - Remove the two oil filler plugs from the plunger.
 - Pull the plunger back up to the top of the cylinder.
 - While holding the plunger up, fill the tester up through the filler holes with Dextron II.
 - Reinstall the oil filler plugs.
 - If the Plunger does not come back up to the top of the Cylinder, open all valves so that the UFT is set for the softest joint. Then tighten the test bolt pushing the plunger down and fluid into the plungers for the springs under the top plate. Now close the valves to set for hard joint, loosen the test bolt, remove the oil fill plugs and pull the plunger to the top of the cylinder. Fill with fluid, install the oil fill plugs and then open all valves to set for the softest joint. This may need to be done several times to certify the test bolt in the UFT.
3. If the Plunger continues to stay down, the tester has a damaged seal and must be repaired. After the damaged parts are replaced, follow the same fill procedures as above.

Certification of the UFT Joint Simulator

The UFT tester should be certified every 5,000 cycles.

Certification Procedures

1. On the chart below, find the UFT model you are certifying.
2. Next, find the bolt size.
3. With a torque wrench, tighten to the recommended snug torque.
4. Turn the torque wrench the number of degrees recommended from snug for each joint. The torque reading should be the same as shown on the chart.
5. If the readings do not match, the Test Bolt might be worn. Replace the Test Bolt and re-certify the tester. If the tester still does not match the chart, check the fluid level and/or all O-Rings and Supporter Rings for wear.

Torque Values for Certifying Tester

Model	Bolt Size	Snug Point Torque		B Joint at 60° from Snug		C Joint at 180° from Snug		D Joint at 180° from Snug	
		ft. lbs.	Nm	ft. lbs.	Nm	ft. lbs.	Nm	ft. lbs.	Nm
UFT-S10	M6	2	2.71	5.2-7.7	7.1-10.4	5.9-9.2	8.0-12.4	3.0-4.5	4.1-6.1
	M8	5.5	7.46	11.2-16.8	15.2-22.8	11.2-16.8	15.2-22.8	6.6-9.8	8.9-13.3
	M10	11	15	19.5-29.2	26.4-39.6	18.6-27.9	25.2-37.8	12.5-18.8	17.0-25.5
UFT-S16	M12	20.25	27.4	34.5-51.8	46.8-70.2	41-61.5	55.6-83.4	23.6-35.4	32.0-48.0
	M14	32.5	44	54.9-82.4	74.4-111.6	51.9-76.4	70.3-103.5	35.4-53.3	48.0-72.0
	M16	54.25	73.5	88.6-132.8	120-180	83-122.6	112.5-166.1	57.3-85.9	77.6-116.4
				60° from Snug		180° from Snug			
UFT-6	M5	1.8	2.5	2.4-3.6	3.3-4.9	2.9-4.3	3.9-5.8		
	M6	3.7	5.0	5-7.5	6.8-10.2	6.5-9.7	8.8-13.2		
UFT-10	M6	3.7	5.0	5-7.5	6.8-10.2	5.2-7.9	7.1-10.7		
	M8	5.75	7.8	9.4-14.2	12.8-19.2	10.3-15.5	14-21		
	M10	11.5	15.2	18.9-28.3	25.6-38.4	19.2-28.8	26-39		
UFT-16	M12	20.25	27.4	37.8-56.8	51.2-76.8	37.8-56.8	51.2-76.8		
	M14	32.5	44	61.4-92.1	83.2-124.8	61.4-92.1	83.2-124.8		
	M16	50.5	68.5	76.7-115.1	104-156	79.7-119.6	108-162		
UFT-24	M18	70	95	129.9-195.6	176-265	135.8-203.7	184-276		
	M20	108.5	147	200.7-301.1	272-408	211.7-318.8	288-432		
	M24	162.75	220	301.1-451.6	408-612	307-460.5	416-624		
UFT-33	M30		200	460-690	624-936	422-708	640-960		

List of Hexagon Head Bolts

For UFT Joint Simulators

MODEL	PART NUMBER	BOLT SIZE
UFT-6	946-967-0	M4
UFT-6	946-968-0	M5
UFT-6	946-969-0	M6 x 18
UFT-S10	946-970-0	M6 x 30
UFT-S10	946-971-0	M8 x 32
UFT-S10	946-972-0	M10 x 35
UFT-10	946-970-0	M6 x 30
UFT-10	946-971-0	M8 x 32
UFT-10	946-972-0	M10 x 35
UFT-S16	946-973-0	M12 x 45
UFT-S16	946-974-0	M14 x 50
UFT-S16	946-975-0	M16 x 50
UFT-16	946-973-0	M12 x 45
UFT-16	946-974-0	M14 x 50
UFT-16	946-975-0	M16 x 80
UFT-24	946-976-0	M18 x 80
UFT-24	946-977-0	M20 x 85
UFT-24	946-978-0	M24 x 90



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