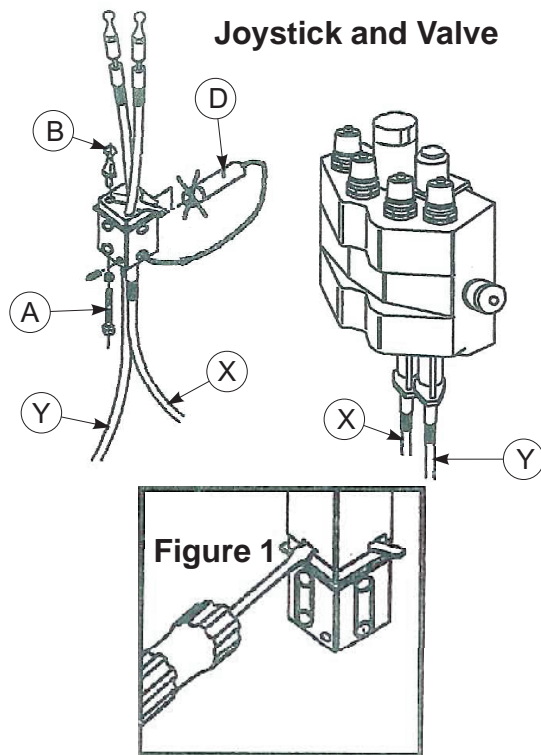


HYDRAULIC VALVE KIT McCORMICK MC90, MC100, & MC115 TRACTORS

Note: Requires McCormick power beyond manifold and joystick to complete.

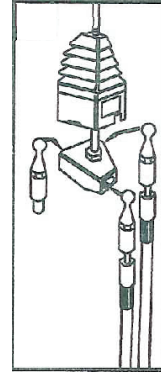
VALVE INSTALLATION

1. If joystick is not installed onto tractor. Install it at this time. (Uses McCormick factory or dealer installed joystick).
2. Mount the control cables into the joystick.



- Slide joystick cover upward by using a screwdriver to pry up. (Figure 1)
- Loosen the two stop screws and screw (A) holding the pivot of yoke (B).
- Push the cables into the holes (X) and (Y) of the joystick housing and guide them into the track. (Figure 2)
- Guide the pivot (B) into the yoke and press the cables backward (Figure 3). Then screw the pivot into the joystick housing.

Figure 2



- Lock the cables with the stop screw.

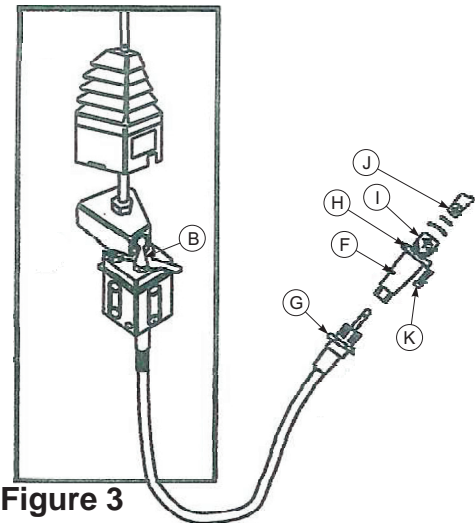
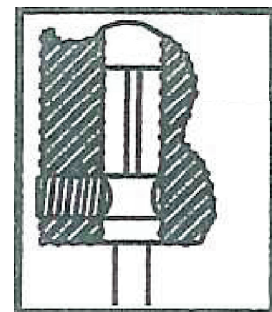


Figure 3

- Check that screws fit into the locking grooves. This position is obtained when the treated part of cable is level with bottom part of the joystick housing. (Figure 4)

Figure 4



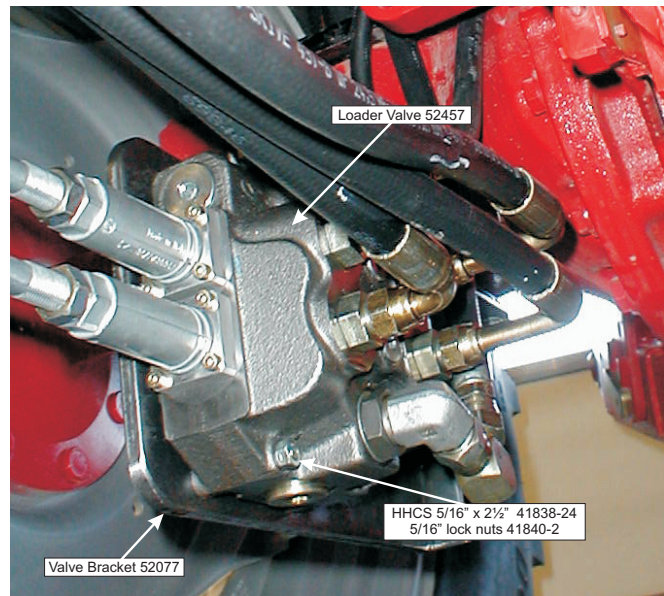
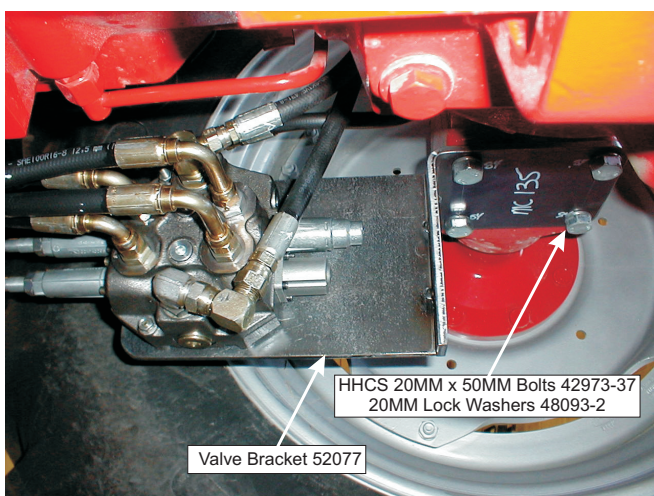
VALVE INSTALLATION (CONTINUED)

3. Move joystick forward and backward for raising or lowering loader to determine which cable gets connected to float position spool on loader valve (9). Engage lock on joystick to hold joystick centered. Attach cable connector kit to cable and valve.

- Pull the cables up to loader valve (9). Avoid sharp bends less than 7-1/2" radius.
- Slip the jam nut (G), the sleeve retainer (H) and sleeve (F) over the cable (Figure 3). Rotate jam nut and sleeve to expose cable clevis
- To obtain the correct lever movement, connect the control cable from the right front hole (X) of the joystick to the lift function of the valve (side A-B).
- Secure the cable in the valve spool with locking pin (J).
- Check that the joystick is locked. Push the washer backward.
- Rotate sleeve to valve body. Install sleeve retainer to valve body with socket head screws (G). Lock sleeve with jam nut. (Figure 3)
- Attach other cable to other valve spool on loader valve (9) using above procedure.

4. Remove plastic thread protectors from tractor trumpet housing. Install valve bracket (10) onto lower right side tractor trumpet housing using HHCS 20MM x 50MM (11) and 20MM lock washers (12). (Figure 5)

5. Remove plastic thread protectors from loader valve (9) and install 4 straight adapter fittings (3) into work ports on valve (9). Then install 90° adapter fittings (6) into pressure port and 90° adapter fitting (5) into tank port on valve (9). Install 90° adapter fitting (7) into load sense port on valve (9). Point 90° fittings away from spool and valve.
6. Install loader valve (9) onto valve bracket (10) using HHCS 5/16" x 2-1/2" (13) and 5/16" hex lock nuts (14). Spool on loader valve should face front of tractor and fittings face center of tractor. (Figure 6)

**Figure 6****Figure 5**

PLUMBING VALVE TO TRACTOR

Tractor Equipped with Type A Tractor Valve (Figure 7)

1. Tractor equipped with Type A valve requires Power Beyond Manifold Block, McCormick part # 19969A1, to be mounted onto tractor stack valve. If tractor is not equipped with Power Beyond Manifold, it must be purchased and installed. In addition to the Power Beyond Manifold is a Check Valve, McCormick #304018A1, which is not included in this kit because it is not used with Type B tractor valve. The Check Valve, McCormick # 304018A1, needs to be supplied by the dealer.
2. Remove 18MM plug (42) from power beyond manifold and install check valve (45) described in step 1.

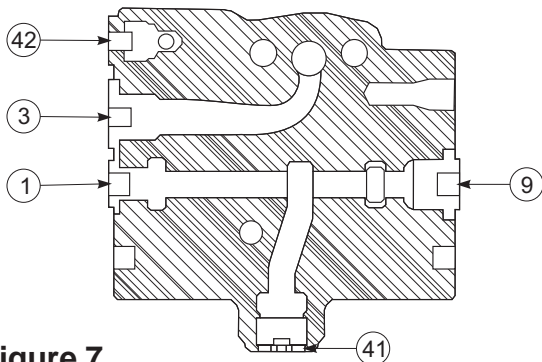
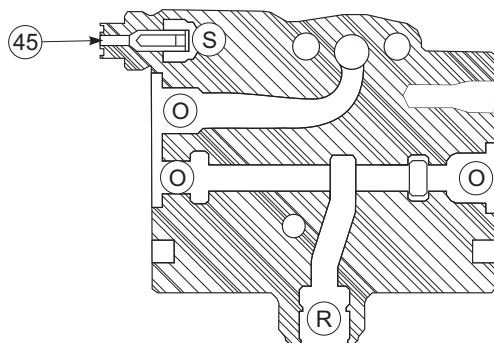


Figure 7



- Ⓢ Signal Port
- Ⓞ Outlet Port (Power Beyond Supply)
- Ⓡ Return Port

3. Remove 22MM plugs (41). Install 22MM x 1.5 straight male O-ring x JIC adapter fitting (1) into port. Remove cap on return line under cab platform. (Figures 8)

4. Attach 90° fitting on 1/4" x 44" hydraulic hose (21) to check valve adapter (2). Route hydraulic hose (21) to valve (9) and connect to 90° fitting (7) at load sense port on valve (9). Attach 90° fitting of 1/2" x 44" hydraulic hose adapter fitting (24) on left side of power beyond manifold and route to pressure port 90° elbow (6) on loader valve (9). Attach 90° fitting of 1/2" x 44" hydraulic hose (20) to oil line tube under cab.

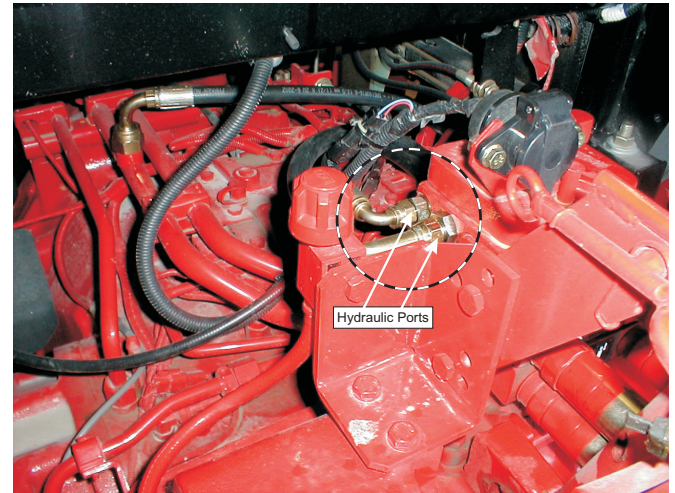


Figure 8

2-7367

Tractors Equipped with Bosch (Type B) Tractor Valve MC Tractors & MTX Tractors through MTX95 – Horizontal Valve Arrangement

1. Remove M22 plug next to top right rear remote female couplers and install 22MM x 1.5 straight male O-ring x JIC adapter fitting (1) into port. This will be the pressure feed to the loader valve (9). Attach 90° fitting on 1/2" x 44" hydraulic hose (24) to adapter fitting (1) and route to pressure port on loader valve (9).
2. Remove M12 plug at bottom of center cover on left side of rear remote stack. Install M12 x O-ring face seal adapter (2) into port. Attach 90° fitting on 1/4" x 44" hydraulic hose (21) and route to loader valve (9) and attach to 90° fitting (7) at load sense port on loader valve (9).
3. Remove cap from return line under tractor cab. Attach 90° fitting of 1/2" x 44" hydraulic hose (20) to tube and route hydraulic hose to loader valve (9) and attach to 90° fitting (5) at return port on loader valve.

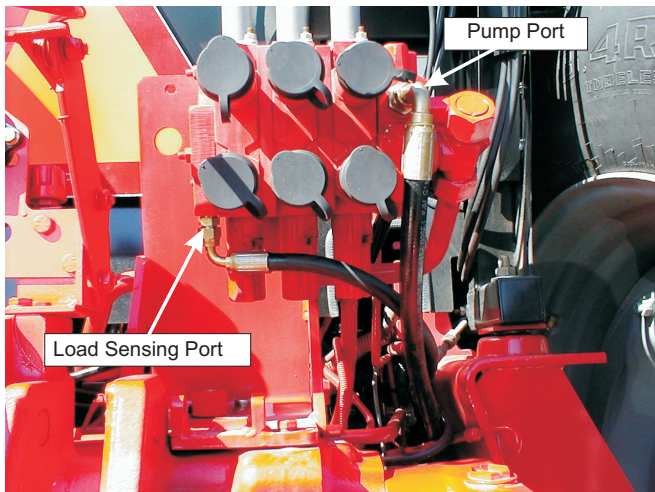


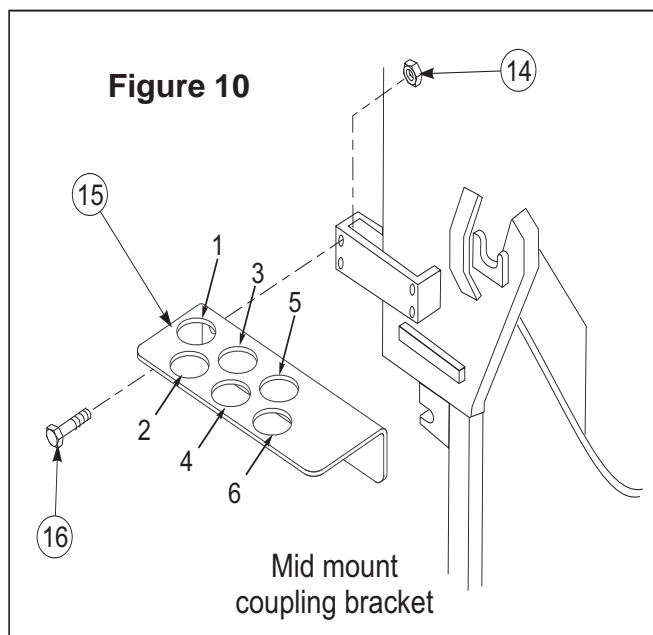
Figure 9

Tractors Equipped with Bosch Valve with 4 Rear Remote Sections

1. Remove M22 plug next to top right rear remote coupler and install 22MM x 1.5 straight male O-ring x JIC adapter fitting (1) into port. This will be the pressure feed for the loader valve (9). Attach 90° fitting on 1/2" x 44" hydraulic hose (24) to adapter fitting (1) and route hydraulic hose to pressure port on loader valve (9) and attach to 90° fitting (6).
2. On back side of bracket supporting rear remote stack valve there is an access hole in the upper left area of the bracket. Remove plug from valve cover plate through access hole. Install M12 x O-ring face seal adapter (2) into port. Attach 90° fitting on 1/4" x 44" hydraulic hose (20) to adapter fitting (2) and route hydraulic hose to loader valve (9) and attach to 90° fitting (7) at load sense port of loader valve (9).
3. Remove cap from return line under tractor cab. Attach 90° end of 1/2" x 44" hydraulic hose (20) to tube and route hydraulic hose to loader valve (9) and attach to 90° fitting (5) at return port of loader valve (9).

PLUMBING FROM LOADER VALVE TO LOADER BULK-HEAD (FIGURES 10 & 10A)

1. Install midmount bulkhead coupling bracket (15) onto right loader mounting bracket using four HHCS 5/16" x 3/4" screws (16) and 5/16" hex lock nuts (14).
2. Install snap rings (27) onto female quick coupler (26) in 1st groove on port side of female quick couplings (26). Slide female quick couplers (26) into midmount bulkhead coupling bracket (15). Position from the bottom side of the bracket (15) and attach using snap ring (27). Female quick couplers (26) should occupy the first four holes in bracket (15) moving from left to right when facing midmount bulkhead bracket (15). (Figure 2)



3. Slide O-ring end of 1/2" x 72" hydraulic hose (23) with longer 90° fitting through nylon sleeve (25), assemble yellow dust plug (35) to hydraulic hose (23) and attach to female coupler (26) Position 1 of coupling bracket. Route hydraulic hose (23) to loader valve (9) and attach to Port "A" of loader valve (top rear work port as positioned on tractor).
4. Slide O-ring end of 1/2" x 72" hydraulic hose (22) with shorter 90° fitting through same nylon sleeve (25) that previous hydraulic hose (23) was inserted into. Assemble the green dust plug (36) to hydraulic hose (22) and attach to female coupler (26) in Position 2 of coupling bulkhead bracket (15). Route to loader valve (9) and attach to Port "B" of loader valve (9) (top front work port as positioned on tractor).
5. Slide O-ring end of 1/2" x 72" hydraulic hose (23) with longer 90° fitting through nylon sleeve (25). Assemble blue dust plug (34) to hydraulic hose (23) and attach to female coupler (26) in Position 3 of coupling bulkhead bracket (15). Route to loader valve (9) and attach to Port "A2" of loader valve (9) (lower rear work port as positioned on tractor).
6. Slide O-ring end of 1/2" x 72" hydraulic hose (22) with shorter 90° fitting through nylon sleeve (25) that hose with blue dust plug was previously passed through. Assemble red dust plug to hydraulic hose (22) and attach to female coupler (26) in Position 4 of coupling bulkhead bracket (15). Route to loader valve (9) and attach to Port B2 of loader valve (9) (lower front port as positioned on tractor).
7. Slide nylon sleeves as close to O-ring end of hydraulic hose as possible. Attach adjustable plastic straps (19) over nylon sleeves and use two of them to secure each sleeve to hydraulic hoses.

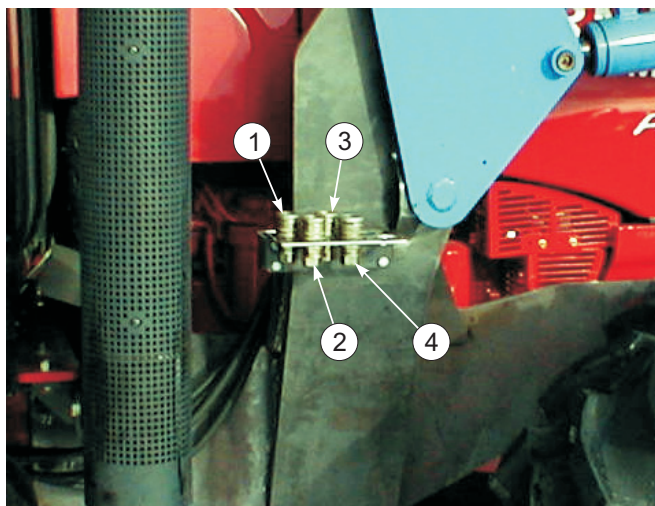


Figure 10A

PLUMBING FROM LOADER TO LOADER BULKHEAD

Layout hydraulic hoses, male couplers, dust caps, nylon sleeves so they can be identified easily. Use a marker and identify both ends of each hose uniquely by coding. Loosen

1. Attach 1/2" x 59" hydraulic hoses (17) to oil lines beginning with bottom oil line on loader boom and lighten. Mark opposite end of hydraulic hose to identify color. Lift cylinder base end should be Green. Lift cylinder rod should be Yellow. Tilt cylinder rod should be Red. Tilt cylinder base should be Blue. Slide lower two hoses through one nylon sleeve (18) and two upper hoses through second nylon sleeve (18). Loosely attach color coded dust caps (29, 30, 31, 32) and male couplers (28) as illustrated in Figure 3.
2. Insert male couplers (28) into female couplers (26) making sure that colors correspond.

NOTE: *It is important to make sure color coding corresponds between dust caps and dust plugs on each hydraulic hose.*

3. Tighten hydraulic hose connections between male couplers and hydraulic hoses. Use adjustable plastic tie straps to secure nylon sleeves to hydraulic hoses, two for each nylon sleeve.
4. Use other adjustable straps (19) to secure hydraulic hoses from loader bulkhead (15) to loader valve (9). And hydraulic hoses feeding loader valve (9) to tractor.
5. Run rubber tie strap around hydraulic hoses going from loader to coupling bulkhead (38) and secure to bracket on loader mounting to keep hydraulic hoses from rubbing on the tractor.
6. After hydraulic plumbing is complete, slowly cycle loader several times to purge air from hydraulic system. Replenish tractor hydraulic system with hydraulic oil recommended by tractor manufacturer. Note: When cycling loader joystick functions, operate loader according top operation decal for joystick. If direction of control lever is wrong, reverse hose connects and recheck operation.

PARTS LIST - WALVOIL VALVE KIT







NOTE: Uses McCormick Factory or dealer installed joystick to complete

Item	Part No.	Description	Qty.
1	52305-1	ADAPTER, STRAIGHT MALE JIC X MALE 22 MM X 1.5 O-RING	1
2	52306-1	ADAPTER, STRAIGHT MALE O-RING FACE SEAL X MALE O-RING	1
3	32844-7	ADAPTER, STRAIGHT MALE 3/4"-16 JIC X MALE 7/8" - 14 O-RING	4
4	34128-1	ELBOW 90° MALE 7/8" -14 JIC X FEMALE 7/8"-14 JIC SWIVEL	1
5	32845-4	ELBOW 90° MALE 7/8"-14 JIC X MALE 1-1/16" - 12 O-RING	1
6	32845-11	ELBOW 90° MALE 3/4"-16 JIC X MALE 1-1/16" - 12 O-RING	1
7	32845-1	ELBOW 90° MALE 9/16"-18 JIC X MALE 9/16"-18 O-RING	1
8			
9	52457	VALVE, PRESSURE COMP LOAD SENSE	1
10	52077	VALVE MOUNT ASSEMBLY	1
11	42672-37	HHCS 20MM-2.5MM X50MM	3
12	48093-2	WASHER/ LOCK 20MM	3
13	41838-24	HHCS, 5/16"-18 X 2-1/2" GR5	3
14	41840-2	NUT/ HEX LOCK 5/16"-18	7
15	52311	BULKHEAD ANGLE	1
16	41838-26	HHCS 5/16"-18 X 3/4" GR5	4
17	48794-4	HOSE 1/2" X 60"	4
18	34853-3	SLEEVE NYLON 1.75 ID X 60"	2
19	8137-1	STRAP-ADJUST .19 X 11.00	8
20	50578-4	HOSE 1/2" X 44" RGT ANGLE 37 FEM X 37 FEM	1
21	52307-1	HOSE 1/4" X 44" RGT ANGLE 37 FEM X 37 FEM	1
22	52308-1	HOSE 1/2" X 72" RGT ANGLE 37 FEM X 3/4 STR MALE	2
23	52480-1	HOSE 1/2" X 72" RGT ANGLE 37 FEM X 3/4 STR MALE	2
24	52481-1	HOSE 1/2" X 44" RGT ANGLE O-RING FEM X 37 JIC FEM	1
25	34853-6	NYLON SLEEVE 1.75 x 40"	2
26	47110-2	QUICK COUPLER BODY/ FEMALE 3/4"-16 ORB	4
27	6040-16	RING, RETAINING 1-1/2"	8
28	6137-13	COUPLER ADAPTER, MALE QC 3/4"-16 ORB	4
29	4838-3	CAP DUST, RED	1
30	4838-8	CAP DUST, BLUE	1
31	4838-9	CAP DUST, YELLOW	1
32	4838-10	CAP DUST, GREEN	1
33	4838-4	DUST PLUG, RED	1
34	4838-12	DUST PLUG, BLUE	1
35	4838-13	DUST PLUG, YELLOW	1
36	4838-14	DUST PLUG, GREEN	1
37	8137-3	STRAP, ADJUSTABLE 1/2" X 20"	2
38	7438-1	TARP STRAP	1

GENERAL TORQUE SPECIFICATIONS

USE THE FOLLOWING TORQUES WHEN SPECIAL TORQUES ARE NOT GIVEN

Standard American and Metric Cap Screws

AMERICAN STANDARD CAP SCREWS									METRIC CAP SCREWS								
SAE Grade	5				8				Metric Class	8.8				10.9			
Typ. Head Markings									Typ. Head Markings	 				 			
Cap Screw	TORQUE				TORQUE				Cap Screw	TORQUE				TORQUE			
Size	FT·LBS		N·m		FT·LBS		N·m		Size	FT·LBS		N·m		FT·LBS		N·m	
Inches	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	Millimeters	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
1/4 - 20	6.25	7.25	8.5	10	8.25	9.5	11	13	M6 x 1.00	6	8	8	11	9	11	12	15
1/4 - 28	8	9	11	12	10.5	12	14	16	M8 x 1.25	16	20	21.5	27	23	27	31	36.5
5/16 - 18	14	15	19	20	18.5	20	25	27	M10 x 1.50	29	35	39	47	42	52	57	70
5/16 - 24	17.5	19	23	26	23	25	31	34	M12 x 1.75	52	62	70	84	75	91	102	123
3/8 - 16	26	28	35	38	35	37	47.5	50	M14 x 2.00	85	103	115	139	120	146	163	198
3/8 - 24	31	34	42	46	41	45	55.5	61	M16 x 2.50	130	158	176	214	176	216	238	293
7/16 - 14	41	45	55.5	61	55	60	74.5	81	M18 x 2.50	172	210	233	284	240	294	325	398
7/16 - 20	51	55	69	74.5	68	75	92	102	M20 x 2.50	247	301	335	408	343	426	465	577
1/2 - 13	65	72	88	97.5	86	96	116	130	M22 x 2.50	332	404	450	547	472	576	639	780
1/2 - 20	76	84	103	114	102	112	138	152	M24 x 3.00	423	517	573	700	599	732	812	992
9/16 - 12	95	105	129	142	127	140	172	190	M27 x 3.00	637	779	863	1055	898	1098	1217	1488
9/16 - 18	111	123	150	167	148	164	200	222	M30 x 3.00	872	1066	1181	1444	1224	1496	1658	2027
5/8 - 11	126	139	171	188	168	185	228	251	NOTE: These values apply to fasteners as received from supplier, dry or when lubricated with normal engine oil. They do not apply if special graphite or moly sulphide greases or other extreme lubricants are used.								
5/8 - 18	152	168	206	228	203	224	275	304									
3/4 - 10	238	262	322	355	318	350	431	474									
3/4 - 16	274	305	371	409	365	402	495	544									
7/8 - 9	350	386	474	523	466	515	631	698									
7/8 - 14	407	448	551	607	543	597	736	809									
1 - 8	537	592	728	802	716	790	970	1070									
1 - 14	670	740	908	1003	894	987	1211	1337									

37° JIC Fittings

Size	Thread Size	Assembly Torque		Tube Connection F. F. F. T.	Swivel Nut or Hose Connection F. F. F. T.
		in.·lb.	ft.·lb.		
-4	7/16 - 20	140 ± 10	12 ± 1	2	2
-5	1/2 - 20	180 ± 15	15 ± 1	2	2
-6	9/16 - 18	250 ± 15	21 ± 1	1 1/2	1 1/4
-8	3/4 - 16	550 ± 25	45 ± 5	1 1/2	1
-12	1 1/16 - 12	1000 ± 50	85 ± 5	1 1/4	1
-16	1 5/16 - 12	1450 ± 50	120 ± 5	1	1
-20	1 5/8 - 12	2000 ± 100	170 ± 10	1	1
-24	1 7/8 - 12	2400 ± 150	200 ± 15	1	1
-32	2 1/2 - 12	3200 ± 200	270 ± 20	1	1

O-Ring Face Seal Tube/ Hose Swivel Nut

Metric Tube O.D. (mm)	Dash Size	Thread Size (in.)	Swivel Nut Hex Size (in.)	Swivel Nut Torque	
				N·m	lb·ft
5	-3	--	--	--	--
6	-4	9/16 - 18	11/16	16	12
8	-5	--	--	--	--
10	-6	11/16 - 16	13/16	24	18
12	-8	13/16 - 16	15/16	50	37
16	-10	1 - 14	1-1/8	69	51
20	-12	1-3/16 - 12	1-3/8	102	75
22	-14	1-3/16 - 12	--	102	75
25	-16	1-7/16 - 12	1-5/8	142	105
32	-20	1-11/16 - 12	1-7/8	190	140
38	-24	2 - 12	2-1/4	217	160
50.8	-32	--	--	--	--

SAE O-Ring Fittings

Size	Swivel Nut or Hose	Assembly Torque		F. F. F. T.
		in.·lb.	ft.·lb.	
2	5/16 - 24	90 ± 5	7.5 ± 0.5	1 ± .25
3	3/8 - 24	170 ± 10	14 ± 1	1 ± .25
4	7/16 - 20	220 ± 15	18 ± 1	1 ± .25
5	1/2 - 20	260 ± 15	22 ± 1	1 ± .25
6	9/16 - 18	320 ± 20	27 ± 2	1.5 ± .25
8	3/4 - 16	570 ± 25	48 ± 2	1.5 ± .25
10	7/8 - 14	1060 ± 50	90 ± 5	1.5 ± .25
12	1 1/16 - 12	1300 ± 50	110 ± 5	1.5 ± .25
14	1 3/16 - 12	1750 ± 75	145 ± 6	1.5 ± .25
16	1 5/16 - 12	1920 ± 125	160 ± 6	1.5 ± .25
20	1 5/8 - 12	2700 ± 150	225 ± 12	1.5 ± .25
24	1 7/8 - 12	3000 ± 150	250 ± 12	1.5 ± .25
32	2 1/2 - 12	3900 ± 200	325 ± 15	1.5 ± .25

INSTALLATION INSTRUCTIONS