SCOPE

This procedure covers the "in-plant" engineering test requirements for new SARA SAE Remote Drilling Chokes.

Per API 6A, chokes are not intended to be used as shut off valves; therefore, no pressure tests are to be performed on the internal choke parts.

Note on Pressure Stabilization:

Pressure shall be considered stabilized when the change rate is no more than 5% of the testing pressure per hour or 500 psi/hour (3.45 Mpa/hour), whichever is less.

1.0 BODY HYDROSTATIC SHELL TEST

1.1 Test Pressures

1.1.1 The body or shell test pressure shall be determined by the rated working pressure for the equipment. Hydrostatic test pressures shall be shown in Table 1.

1.1.2 For chokes having an inlet connection of a higher pressure rating than the outlet connection, the body, from the inlet connection to the body-to-bean seal point of the replaceable seat, shall be hydrostatically tested to the appropriate pressure for the inlet connection. The remainder of the body, downstream from the seal point, shall be tested to the appropriate pressure for the outlet connection. Temporary seat seals may be used to facilitate testing.

1.2 Hydrostatic shell testing shall be completed prior to painting; however, painted units from stock may be retested without removing the paint.

1.3 Pressure holding periods shall not start until the test pressure has been obtained and allowed to stabilize. External surfaces shall be dried thoroughly before testing.

1.4 Body Shell Test Procedure

1.4.1 Flange up all connections utilizing appropriate size ring joint gaskets. Refer to Tables 2 and 3 for ring gasket size and/or SARA SAE part numbers.

NOTE: Rubber coated API ring joint gaskets are NOT permitted.

1.4.2 Each unit and test stool are to be connected with other test apparatus as illustrated in Figure 1. Note that block valve B is to remain open at all times during the test.

1.4.3 Fill unit with water. Make sure all air is expelled from the unit.

1.4.4 For PSL 3 and 4, place chart, identified with serial number and/or factory order number, on recorder.

1.4.5 Place safety test bell, or other protective device, over component.

1.4.6 Pressurize to shell test pressure as determined by unit working pressure and end connections per Paragraph 1.1 (see Table 1). Hold for a minimum of three minutes. Check for leaks. Bleed to zero pressure.

1.4.7 Repressurize to shell test pressure as in 1.4.6. Hold for a minimum of 15 minutes. Bleed to zero pressure.

1.4.8 The unit is acceptable if there is no visible evidence of leakage.

2.0 HYDRAULIC ACTUATOR HYDROSTATIC TEST

2.1 Pressure holding periods shall not start until test pressure has been reached and allowed to stabilize. External surfaces shall be dried thoroughly before testing.

2.2 The hydraulic test pressure shall be a minimum of 1.5 times the actuator's maximum operating hydraulic pressure (the maximum operating hydraulic pressure for SARA SAE actuator is 3000 psi).

2.3 Tap water with or without additives or hydraulic fluid shall be used as the testing fluid.

2.4 Test Procedure

2.4.1 Vent "close port" to atmosphere.

2.4.2 Pressurize the chamber through the "open port" to 4500 psi (+200 psi, -0). Hold for a minimum of three (3) minutes. Check for leaks. Bleed to zero pressure.

2.4.3 Repeat step 2.4.2.

2.4.4 Vent "open port" to atmosphere.

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2.4.5 Pressurize the chamber through the "close port" to 4500 psi (+200 psi, -0). Hold for a minimum of three (3) minutes. Check for leaks. Bleed to zero pressure.

2.4.6 Repeat step 2.4.5.

2.4.7 The assembly is acceptable if there is no visible evidence of leakage during each holding period.

TABLE 1
PRESSURE TABLE FOR FLANGE OR HUB CONNECTIONS

Working Pressure Rating (psi) (+5%, -0%) PSI (MPa)		Shell Test Pressure (+5%, -0%) PSI (MPa) Connection Sizes 14" & Smaller (psi)	
5,000 (34.5)	+250 (1.7), -0	7,500 (51.7)	+375 (2.6), -0
10,000 (69.0)	+500 (3.5), -0	15,000 (103.4)	+750 (5.2), -0
15,000 (103.4)	+750 (5.2), -0	22,500 (155.0)	+1125 (7.8), -0
Other Pressure Ratings		Specified on Dwg.	

TABLE 2
R & RX RING JOINT GASKETS FOR TESTING

Flange		R Low Carbon Steel Cadmium Plated			RX Low Carbon Steel Cadmium
Working Pressure PSI (MPa)	Nominal Size in. (mm)	R or RX Number	Oval	Octagon	
5000 (34.5)	3-1/8 (79)	35	050197	050169	050384

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TABLE 3

BX RING GASKETS FOR TESTING

Flange		BX Number	Low Carbon Steel Cadmium Plated
Working Pressure Psi (MPa)	Nominal Size in. (mm)		
10,000 (69.0), 15,000 (103.4)	3-1/16 (78)	154	050355

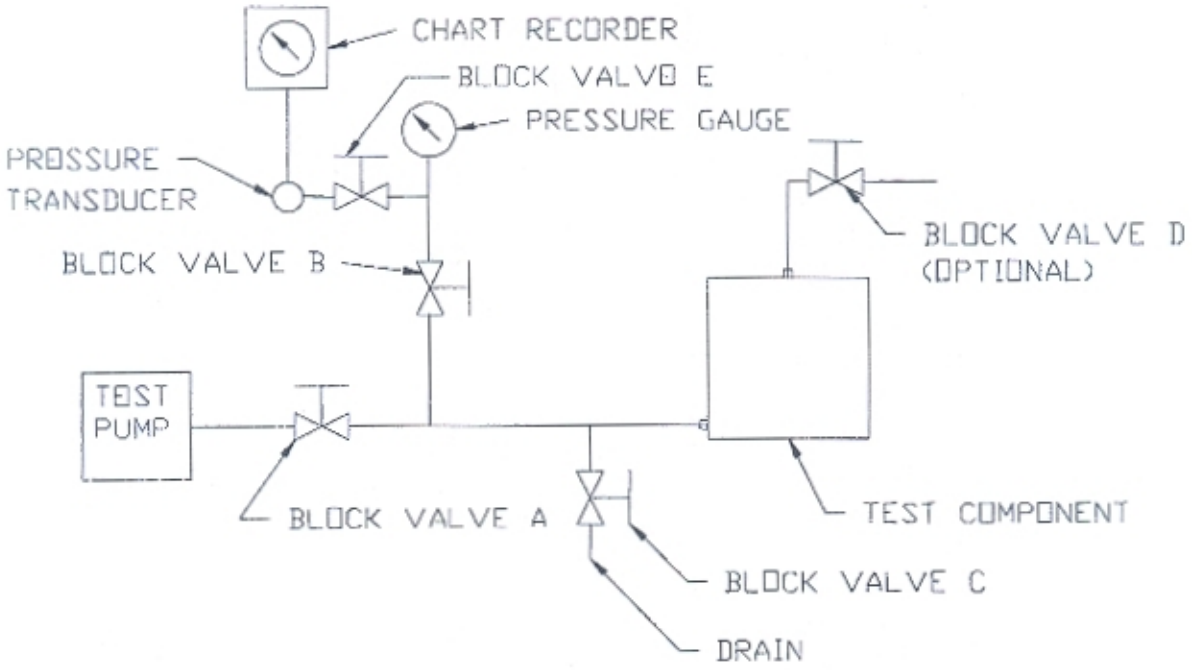

FIGURE 1

SCOPE

This procedure covers the "in-plant" engineering test requirements for SARA SAE manifold components (crosses, tees, buffer chambers, spools, etc.) and manifold assembly.

1.0 MANIFOLD COMPONENTS - BODY HYDROSTATIC SHELL TEST

1.1 Test Pressures

1.1.1 The body or shell test pressure shall be determined by the rated working pressure for the equipment. Hydrostatic test pressures shall be shown in Table 1.

1.1.2 For a member with end or outlet connections having different working pressures, the lowest working pressure rating shall be used to determine the shell test pressure.

1.2 Hydrostatic shell testing shall be completed prior to painting; however, if the bodies and other pressure containing parts have been made of wrought material, tests may be completed after painting. Also, painted units from stock may be retested without removing the paint.

1.3 Pressure holding periods shall not start until the test pressure has been obtained and allowed to stabilize. External surfaces shall be dried thoroughly before testing.

1.4 Body Shell Test Procedure

1.4.1 Flange up all connections utilizing appropriate size ring joint gaskets. Refer to Table 2 and 3 for ring gasket size and/or SARA SAE part numbers.

NOTE: Rubber coated API ring joint gaskets are NOT permitted.

1.4.2 Each unit and test stool are to be connected with other test apparatus as illustrated in Figure 1. Note that block valve B is to remain open at all times during the test.

1.4.3 Fill unit with water. Make sure all air is expelled from the unit.

1.4.4 Except for manifold components, PSL-1 and PSL-2, place chart, identified with Serial Number and/or Factory Order Number on Recorder.

1.4.5 Place safety test bell, or other protective device, over component.

1.4.6 Pressurize to shell test pressure as determined by unit working pressure and end connections per Paragraph 1.1 (see Table 1). Hold

for a minimum of three minutes. Check for leaks. Bleed to zero pressure.

1.4.7 Repressurize to shell test pressure as in 1.4.6. Hold for a minimum of 15 minutes. Bleed to zero pressure.

1.4.8 The unit is acceptable if there is no visible evidence of leakage.

2.0 MANIFOLD COMPONENTS - DRIFT TEST

2.1 Adapter and drilling spools shall be drift tested after the completion of the body hydrostatic shell test. The diameter and gauge length of the mandrel shall be in accordance with Table 2.

2.2 Pass the drift mandrel through the bore.

2.3 The component is acceptable if the mandrel passes through without being forced.

2.4 Record the results of the test.

3.0 MANIFOLD ASSEMBLY

3.1 The test pressure shall be the rated working pressure of the manifold.

3.2 Pressure holding periods shall not start until the test pressure has been obtained and allowed to stabilize. External surfaces shall be dried thoroughly before testing.

3.3 Test Procedure:

3.3.1 Flange up all connections utilizing appropriate size ring joint gaskets. Refer to Table 2 and 3 for ring gasket size and/or SARA SAE part numbers.

NOTE: Rubber coated API ring joint gaskets are NOT permitted.

3.3.2 The manifold is to be connected with other test apparatus as illustrated in Figure 1 (test component in Figure 1 is the manifold). Note that block valve B is to remain open at all times during the test.

3.3.3 Fill the manifold with water. Make sure all air is expelled from the manifold assembly.

3.3.4 Pressurize to the rated working pressure of the manifold. Hold for a minimum of three minutes. Check for leaks. Bleed to zero pressure.

3.3.5 Repressurize to the rated working pressure as in 3.3.4. Hold for a minimum of 15 minutes. Bleed to zero pressure.

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3.3.6 The manifold is acceptable if there is no visible evidence of leakage.

4.0 HYDRAULIC CONTROL LINES (IF APPLICABLE)

4.1 Pressure holding periods shall not start until test pressure has been reached and allowed to stabilize. External surfaces shall be dried thoroughly before testing.

4.2 Tap water with or without additives or hydraulic fluid shall be used as testing fluid for valve. Only hydraulic fluid shall be used as testing fluid for choke.

4.3 Verification of the hydraulic lines to the correct valves/chokes shall be done concurrently with the test.

4.4 Test Procedure

4.4.1 Vent "close" line to atmosphere.

4.4.2 Pressurize the valve/choke hydraulic chamber through the "open" line to 3000 psi (+200 psi, -0). Hold for a minimum of three (3) minutes. Check for leaks. Bleed to zero pressure.

4.4.3 Repeat step 4.4.2.

4.4.4 Vent "open" line to atmosphere.

4.4.5 Pressurize the valve/choke hydraulic chamber through the "close" line to 3000 psi (+200 psi, -0). Hold for a minimum of three (3) minutes. Check for leaks. Bleed to zero pressure.

4.4.6 Repeat step 4.4.5.

4.5 Repeat step 4.4 for each pair of hydraulic lines.

4.6 The test is acceptable if there is no visible evidence of leakage during each holding period.

TABLE NO. 1
PRESSURE TABLE FOR FLANGE OR HUB CONNECTIONS

WORKING PRESSURE (+5%, -0%) PSI (MPa)		SHELL TEST PRESSURE (+5%, -0%) PSI (MPa)	
1,000 (6.9)	+50 (0.3), -0	2,000 (13.8)	+100 (0.7), -0

2,000 (13.8)	+100 (0.7), -0	4,000 (27.6)	+200 (1.4), -0
3,000 (20.7)	+150 (1.0), -0	6,000 (41.4)	+300 (2.1), -0
5,000 (34.5)	+250 (1.7), -0	7,500 (51.7)	+375 (2.6), -0
10,000 (69.0)	+500(3.5), -0	15,000 (103.4)	+750 (5.2), -0
15,000 (103.4)	+750 (5.2), -0	22,500 (155.0)	+1125 (7.8), -0

TABLE NO. 2
R & RX RING JOINT GASKETS FOR TESTING

Flange		R Low Carbon Steel Cadmium Plated			RX Low Carbon Steel Cadmium
Working Pressure Psi (MPa)	Nominal Size in. (mm)	R or RX Number	Oval	Octagon	
2000 (13.8)	2-1/16 (52)	23	050192	050164	050376
3000 (20.7), 5000 (34.5)	2-1/16 (52)	24	050193	050165	050380
2000 (13.8)	2-9/16 (65)	26	050194	050166	050381
3000 (20.7), 5000 (34.5)	2-9/16 (65)	27	050195	050167	050382
2000 (13.8), 3000 (20.7)	3-1/8 (79)	31	050196	050168	050383
5000 (34.5)	3-1/8 (79)	35	050197	050169	050384
2000 (13.8), 3000 (20.7)	4-1/16 (103)	37	050198	050170	050385
5000 (34.5)	4-1/16 (103)	39	050199	050171	050386
3000 (20.7)	5-1/8 (130)	41	050200	050172	050387
5000 (34.5)	5-1/8 (130)	44	--	--	050388
2000 (13.8), 3000 (20.7)	7-1/16 (179)	45	050201	050173	050373
5000 (34.5)	7-1/16 (179)	46	050202	050174	050389

TABLE NO. 3
BX RING GASKETS FOR TESTING

Flange		BX Number	Low Carbon Steel Cadmium Plated
Working Pressure Psi (MPa)	Nominal Size in. (mm)		
10,000 (69.0), 15,000 (103.4) 20,000 (138.0)	1-13/16 (46)	151	050352
	2-1/16 (52)	152	050353
	2-9/16 (65)	153	050354
	3-1/16 (78)	154	050355
	4-1/16 (103)	155	050366
	7-1/16 (179)	156	050356

TABLE NO. 4
DRIFT TEST MANDRELS

Valve Bore Diameter in. (mm)	Mandrel Diameter in. (mm)	Minimum Mandrel Length in. (mm)
1-13/16 (46)	1.78 (45.20)	3.00 (76)
2-1/16 (52)	2.03 (51.60)	3.00 (76)
2-9/16 (65)	2.53 (64.30)	3.00 (76)
3-1/16 (78)	3.03 (77.00)	3.06 (78)
4-1/16 (103)	4.03 (102.40)	4.06 (103)
5-1/8 (130)	5.09 (129.40)	5.12 (130)
7-1/16 (179)	7.03 (178.60)	7.06 (179)

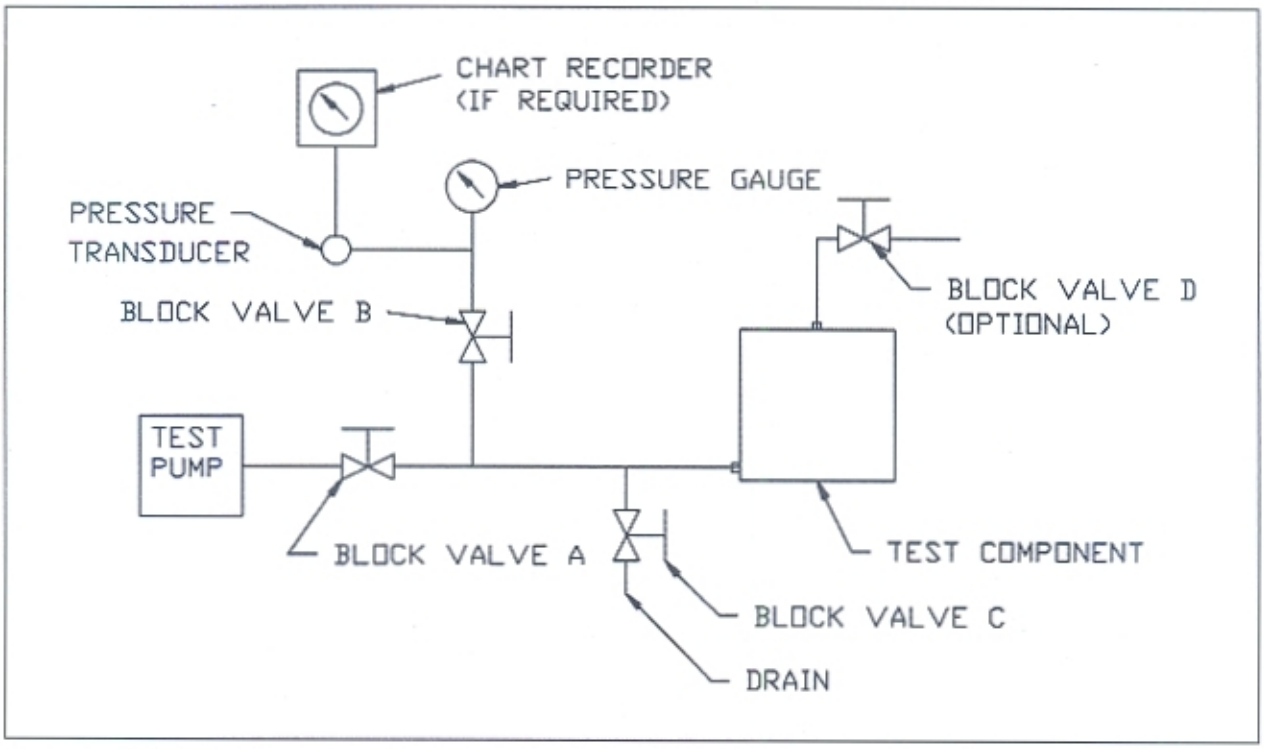
CHART RECORDER
(IF REQUIRED)
PRESSURE GAUGE
PRESSURE
TRANSDUCER
BLOCK VALVE B
BLOCK VALVE D
(OPTIONAL)
TEST
PUMP
BLOCK VALVE A
TEST COMPONENT
BLOCK VALVE C
DRAIN

FIGURE 1

SCOPE

This procedure covers the "in-plant" engineering test requirements per API 6A, 19th Edition, for new SARA SAE Chokes - Type "MP", "XP", and "B-." All the API 6A test requirements, quality control, and general performance for choke assemblies are included.

QUALITY CONTROL TEST REQUIREMENTS

Note on Pressure Stabilization:
Pressure shall be considered stabilized when the change rate is no more than 5% of the testing pressure per hour or 500 psi/hour (3.5 MPa/hour), whichever is less. (See Table 4 for shorter holding period).

1.0 HYDROSTATIC PRESSURE TEST

1.1 Hydrostatic Test Pressures

1.1.1 The hydrostatic test pressure shall be determined by the rated working pressure of the choke assembly (see Tables 1A and 1B). For chokes with dissimilar inlet and outlet connections see 1.1.2.

1.1.2 For a choke with end or outlet connections having different working pressures, a "blind seat shall be utilized such that the inlet portion of the choke (from inlet connection to seat/body seal) is tested at the appropriate pressure for the inlet connection. Test the remainder of the choke (seat body seal to outlet connection) at the appropriate pressure for the outlet connection.

1.2 Hydrostatic testing shall be completed prior to painting; however, painted valve assemblies from stock may be retested without removing the paint.

1.3 Pressure holding periods shall not start until the test pressure has been reached and allowed to stabilize. External surfaces shall be dried thoroughly before testing.

1.4 Hydrostatic Body Test Procedure

1.4.1 Assemble the choke complete. Note that testing per 1.1.2 above, the choke must be re-assembled following hydrostatic test.

1.4.2 Prepare inlet and outlet connections utilizing appropriate size ring joint gaskets and suitable blind flanges. Refer to Tables 2 and 3 for ring gasket size and/or SARA SAE part numbers.

1.4.3 The choke is to be connected with other test apparatus as shown in Figure 1.

1.4.4 Open the choke and set the plug in the one-half open position (if applicable).

1.4.5 Tap water or water with additives shall be used as the testing fluid.

1.4.6 Fill choke body with the testing fluid. Make sure all air is expelled from the body. Chokes shall normally be tested with the inlet connection facing up to facilitate release of entrapped air.

1.4.7 For PSL 3 and 4, place chart, identified with serial number and/or factory order number, on recorder or other device.

1.4.8 Place safety test bell, or other protective device, over the choke.

1.4.9 Pressurize to shell test pressure as determined by choke assembly working pressure or end connections per Section 1.1. Hold pressure for a minimum period of three (3) minutes. Check for leaks. Bleed to zero pressure.

1.4.10 Re-pressurize to shell test pressure as in Section 1.4.9. For non-PSL product and PSL 1 and 2, hold for a minimum period of three (3) minutes. For PSL 3 and 4, hold for a minimum of fifteen (15) minutes. Check for leaks. Bleed to zero pressure.

1.5 For PSL 3G and PSL 4, continue to Section 2.0, "Gas Body Test."

1.6 The assembly is acceptable if there is no visible evidence of leakage during each holding period.

2.0 GAS BODY TEST (PSL 3G and 4)

2.1 Test Pressures

2.1.1 The test pressure shall be the rated working pressure for the assembly (see Table 1).

2.1.2 Chokes with end or outlet connections having different working pressures, a "blind" seat shall be utilized such that the inlet portion of the choke (from inlet connection to seat/body seal) is tested at the appropriate pressure for the inlet connection. Test the remainder of

the choke (seat body seal to outlet connection) at the appropriate pressure for the outlet connection.

2.2 The pressure holding period shall not start until the test pressure has been reached and allowed to stabilize.

2.3 The test shall be conducted at ambient temperature.

2.4 The test medium shall be nitrogen.

2.5 The test shall be conducted with the assembly completely submerged in a water bath.

2.6 Test Procedure

2.6.1 The choke is to be connected with other test apparatus as shown in Figure 1.

2.6.2 Blind flanges or other suitable end closures are to be used with the valve end or outlet connections.

2.6.3 Open choke and set the plug in the one-half open position if applicable.

2.6.4 Place chart, identified with serial number and/or factory order number, on recorder (can be same chart as in 1.4.7).

2.6.5 Place safety test bell, or other protective device, over component.

2.6.6 Pressurize to test pressure as determined by the working pressure of the choke assembly or end connections per Section 2.1. Hold for a minimum period of fifteen (15) minutes. Check for leaks. Bleed to zero.

2.6.7 The assembly is acceptable if there are no visible bubbles in the water bath during the holding period.

3.0 SEAT CLOSURE TESTS

3.1 The seat closure test is performed only when specified on the sales order, and one of the closure tightness levels shall be specified:

3.1.1 Class IV (four), where the allowable leakage shall not exceed 0.01% of the trim's rated Cv. See the computation in Table 5.

Or

3.1.2 Class V (five), where the allowable leakage shall not exceed 0.0005 ml/min/inch of trim size/differential pressure. See the computation in Table 6.

3.2 Class IV Test Procedure

3.2.1 The Class IV test shall be conducted only after a successful hydrostatic shell test.

3.2.2 The test fluid shall be tap water or water with additives. Steps shall be taken to assure that the entire choke body from inlet to outlet is filled with the test fluid and that air is not present in the outlet chamber.

3.2.3 The test pressure shall be 45 to 60 psig.

3.2.4 The choke shall be tested in the fully closed position. The test pressure shall be applied to the inlet side of the choke. Leakage is monitored and collected at the outlet connection. A suitable graduated container shall be used to determine the total amount of leakage collected over the test interval.

3.2.5 The test interval shall be a minimum of three minutes, or of sufficient duration to accurately determine the leakage rate of fluid through the choke.

3.2.6 The test shall be considered successful if the collected leakage averaged over the test interval does not exceed the values listed in Table 5.

3.3 Class V Test Procedure

3.3.1 The Class V test shall be conducted only after a successful hydrostatic shell test.

3.3.2 The test fluid shall be tap water or water with additives. Steps shall be taken to assure that the entire choke body from inlet to outlet is filled with the test fluid and that air is not present in the outlet chamber.

3.3.3 The test pressure shall be the working pressure of the choke.

3.3.4 The choke shall be tested in the fully closed position.

3.3.5 Test pressure shall be applied to the inlet side of the choke. Leakage is monitored and collected at the outlet connection. A suitable graduated container shall be used to determine the total amount of leakage collected over the test interval.

3.3.6 The test interval shall be a minimum of three minutes, or of sufficient duration to accurately determine the leakage rate of fluid through the choke.

3.3.7 Given the operating pressure of the choke, the corresponding leakage rates in Table 6 are multiplied by the trim size of the choke in order to determine the maximum allowable leakage.

3.3.8 The test shall be considered successful if the collected leakage averaged over the test interval does not exceed product of the trim size in inches times the allowable leakage for that operating pressure.

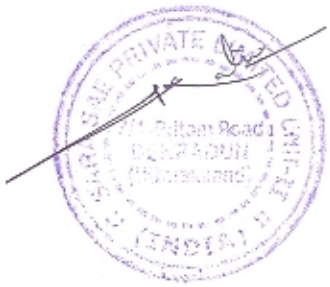

TABLE No. 1A
PRESSURE TABLE FOR FLANGE OR HUB CONNECTIONS API RATINGS

WORKING PRESSURE (+5%, -0%) PSI (MPa)		SHELL TEST PRESSURE (+5%, -0%) PSI (MPa)	
1,000 (6.9)	+50 (0.3), -0	2,000 (13.8)	+100 (0.7), -0
2,000 (13.8)	+100 (0.7), -0	4,000 (27.6)	+200 (1.4), -0
3,000 (20.7)	+150 (1.0), -0	6,000 (41.4)	+300 (2.1), -0
5,000 (34.5)	+250 (1.7), -0	7,500 (51.7)	+375 (2.6), -0
10,000 (69.0)	+500(3.5), -0	15,000 (103.4)	+750 (5.2), -0
15,000 (103.4)	+750 (5.2), -0	22,500 (155.0)	+1125 (7.8), -0
20,000(137.9)	+1000(6.9), -0	30000(206.7)	+1500(10.33),-0

TABLE No. 1B
PRESSURE TABLE FOR FLANGED

CONNECTIONS ANSI RATINGS

WORKING PRESSURE PSI (MPa)	SHELL TEST PRESSURE PSI (MPa) MINIMUM
ANSI 600 -- 1480 (10.2)	2,225 (15.3)
ANSI 900 -- 2250 (15.5)	3,375 (23.2)
ANSI 1500 -- 3750 (25.8)	5,625 (38.8)
ANSI 2500 -- 6250 (43.1)	9,375 (64.6)
Note that the values above are for Group 1 steel. Pressure ratings and test pressures will vary for other groups. Refer to the sales order for specific test pressures.	

TABLE No. 2
R & RX RING JOINT GASKETS FOR TESTING

Flange		R Low Carbon Steel Cadmium Plated			RX Low Carbon Steel Cadmium
Working Pressure Psi (MPa)	Nominal Size in. (mm)	R or RX Number	Oval	Octagon	
2000 (13.8)	2-1/16 (52)	23	050192	050164	050376
3000 (20.7), 5000 (34.5)	2-1/16 (52)	24	050193	050165	050380
2000 (13.8)	2-9/16 (65)	26	050194	050166	050381
3000 (20.7), 5000 (34.5)	2-9/16 (65)	27	050195	050167	050382
2000 (13.8), 3000 (20.7)	3-1/8 (79)	31	050196	050168	050383
5000 (34.5)	3-1/8 (79)	35	050197	050169	050384
2000 (13.8), 3000 (20.7)	4-1/16 (103)	37	050198	050170	050385
5000 (34.5)	4-1/16 (103)	39	050199	050171	050386
3000 (20.7)	5-1/8 (130)	41	050200	050172	050387
5000 (34.5)	5-1/8 (130)	44	--	--	050388
2000 (13.8), 3000 (20.7)	7-1/16 (179)	45	050201	050173	050373
5000 (34.5)	7-1/16 (179)	46	050202	050174	050389

TABLE No. 3

Flange		BX Number	Low Carbon Steel Cadmium Plated
Working Pressure Psi (MPa)	Nominal Size in. (mm)		
10,000 (69.0), 15,000 (103.4) 20,000 (138.0)	1-13/16 (46)	151	050352
	2-1/16 (52)	152	050353
	2-9/16 (65)	153	050354
	3-1/16 (78)	154	050355
	4-1/16 (103)	155	050366
	7-1/16 (179)	156	050356

TABLE No. 4
ALLOWABLE CHANGE RATE FOR PRESSURE STABILIZATION

TESTING PRESSURE PSI (MPa)	ALLOWABLE CHANGE RATE (5% of Testing Pressure per Hour or 500 psi (3.5 MPa) per Hour)			
	PER HOUR Psi (MPa)	5 MIN. psi (MPa)	10 MIN. psi (MPa)	15 MIN. psi (MPa)
1,000 (6.9)	-50 (-0.3)	-5 (-0.03)	-9 (-0.06)	-13 (-0.09)
2,000 (13.8)	-100 (-0.7)	-9 (-0.06)	-17 (-0.12)	-25 (-0.17)
3,000 (20.7)	-150 (-1.0)	-13 (-0.09)	-25 (-0.17)	-38 (-0.26)
4,000 (27.6)	-200 (-1.4)	-17 (-0.12)	-34 (-0.23)	-50 (-0.34)
5,000 (34.5)	-250 (-1.7)	-21 (-0.14)	-42 (-0.29)	-63 (-0.43)
6,000 (41.4)	-300 (-2.1)	-25 (-0.17)	-50 (-0.34)	-75 (-0.52)
10,000 (69.0)	-500 (-3.5)	-42 (-0.29)	-83 (-0.57)	-125 (-0.86)
15,000 (103.4)	-500 (-3.5)	-42 (-0.29)	-83 (-0.57)	-125 (-0.86)

22,500 (155.0)	-500 (-3.5)	-42 (-0.29)	-83 (-0.57)	-125 (-0.86)
30,000(206.7)	-500(-3.5)	-42(-0.29)	-83(-0.57)	-125(-0.86)

TABLE No. 5
CLASS IV ALLOWABLE LEAKAGE RATES

Trim Orifice Size (Cv)	MAXIMUM ALLOWABLE LEAKAGE ml/min
.25" (1.5)	.567
0.50" (6.0)	2.27
0.75" (13.0)	4.92
1.0"(25.0)	9.46
1.5"(50)	18.92
2.0"(90)	34.06
2.5"(150)	56.78
3.0"(190)	71.92
3.25"(TBA)	TBA
3.5"(270)	102.19
4.5"(450)	170.34
6.0"(765)	289.55
6.5"(890)	336.86

TABLE No. 6
CLASS V ALLOWABLE LEAKAGE RATES

OPERATING PRESSURE	MAXIMUM ALLOWABLE LEAKAGE PER INCH OF TRIM SIZE ml/min
1,000 (6.9)	0.5
ANSI 600 -- 1480 (10.2)	0.74
2,000 (13.8)	1.0
ANSI 900 -- 2250 (15.5)	1.125
3,000 (20.7)	1.50
ANSI 1500 -- 3750 (25.8)	1.875
4,000 (27.6)	2.0
5,000 (34.5)	2.50
6,000 (41.4)	3.00
ANSI 2500 -- 6250 (43.1)	3.125
10,000 (69.0)	5.0
15,000 (103.4)	7.5
22,500 (155.0)	11.25
30,000(206.7)	15.00

Sara Sae	SARA SAE ENGINEERING SPECIFICATION	
	SECTION SES - 26 – 753	
	ISSUE "A"	REV. "1"

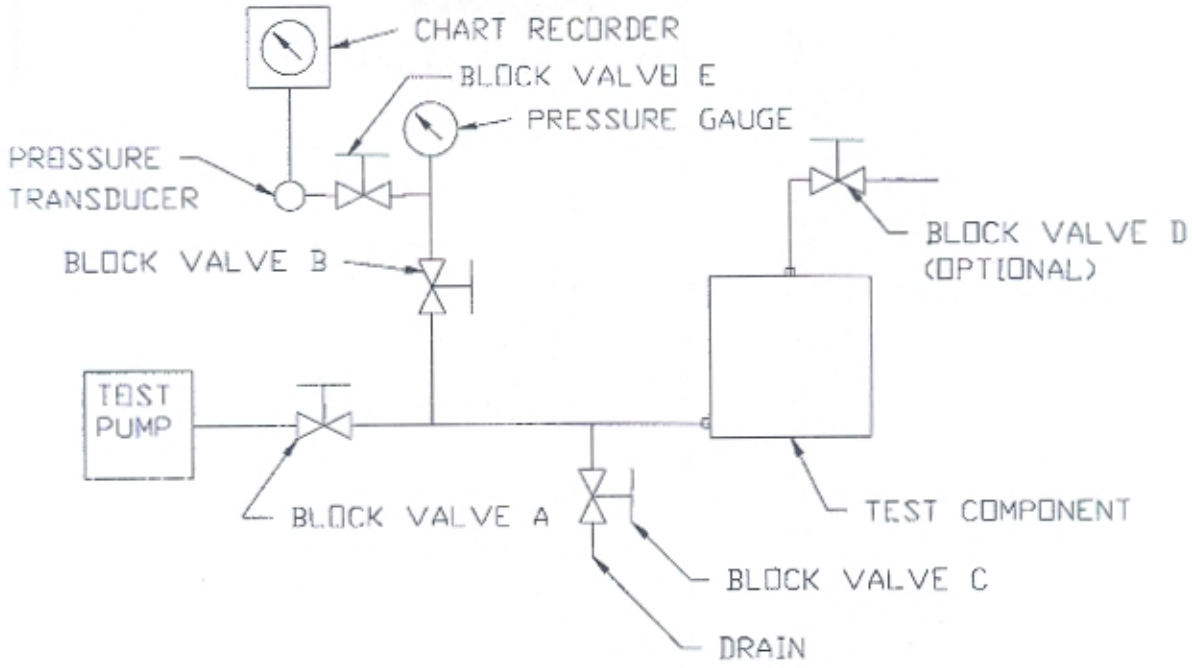

FIGURE No. 1

Shaffer
A Varco Company

Choke Assembly & Test Record
Certificate of Choke Testing

Customer: _____ Sales Order: _____ Date: _____

W/O #: _____ Part #: _____

Description: _____

Serial No(s): _____

PSL Level: _____ Qty: _____ Test Procedure: A-X060909, Test Record

Description	Part Number	Hardness	Lot #	Serial Number

Recording Device No.:_____ (Gauge or Chart Recorder)

Description	Test Pressure (minimum)	Test Duration (minutes)
Primary Hydrostatic Shell Test		
Secondary Hydrostatic Shell Test		
Seat Hydrostatic Test		
Inlet Shell Test		
Outlet Shell Test		

Test Conducted By: _____ Date:_____

Assembly Supervisor:_____ Date:_____

Customer Witness(es):_____ Date:_____

Quality Control:_____ Date:_____

SAE PRIVATE LIMITED