

SQUARE D COMPANY SMYRNA, TN		ENGINEERING STANDARD		PBD 49851									
SUBJECT		SF ₆ BOTTLE PRESSURE CHECK AND REFILL PROCEDURES		PAGE 1 OF 5									
I. GENERAL The SF₆ Fluarc Breaker contacts are, for each phase, isolated within a sealed container which has been evacuated and backfilled with SF₆ gas at the pressure listed in Table 1. Each interrupter is sealed with an internal gas pressure adequate for the arc contact life. It is not recommended that the pressure be checked or charged during periodic maintenance of the breaker. However, if the pressure of an interrupter is a concern, then it can be checked every five years to assure adequate pressure is retained for continued operation. If it is necessary to check the internal pressure of an interrupter, a tire pressure gauge with flexible hose and dial indicator is recommended. A "Retained Reading" gauge is preferred. If a breaker is suspected or known to be leaking gas, appropriate breathing filters should be used. The presence of SF₆ gas can be detected by a halogen detecting device. Table 1 - Breaker Rated Pressure at 20°C (68°F) <table><tr><th>BREAKER TYPE</th><th>RATED PRESSURE</th></tr><tr><td>FB 110, 125, 150</td><td>22 ± 3 psi</td></tr><tr><td>FB 200</td><td>36 ± 5 psi</td></tr><tr><td>FC</td><td>48 ± 7 psi</td></tr></table> CAUTION: Pure SF₆ gas is not toxic. However, the gas is approximately five (5) times more dense than air. Asphyxiation may be possible if SF₆ gas only was inhaled. Allow ventilation of the cubicle after removal of side access panels, before entering the enclosure. The contaminants produced by arc interruption may be toxic and must not be breathed or ingested. If any contaminated parts are to be handled, the use of rubber gloves is suggested. If contact with contaminants occurs, wash the effected area thoroughly with soap and water. Some of the possible contaminants that may be produced by arc extinction in an SF₆ medium are: SO₂, HF, SF₄, S₂F₂, SOF₂, SO₂F₂, WO₃, SiO₂ and AlF₃.						BREAKER TYPE	RATED PRESSURE	FB 110, 125, 150	22 ± 3 psi	FB 200	36 ± 5 psi	FC	48 ± 7 psi
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FB 110, 125, 150	22 ± 3 psi												
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REPLACES STANDARD	DATED	PREPARED BY	DATE	APPROVED BY	DATE	EFFECTIVE							
		T. Brock	12/14/83										

REV.	DATE	BY
A	12/83	815
B	11/85	815
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D/N (H0171) REV 8 - REWRITTEN, ADDED 200KV DATA

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II. PRESSURE CHECK PROCEDURE 1. Allow bottle to come to ambient temperature. 2. Measure ambient temperature. 3. Measure bottle pressure with a tire gauge. NOTES: 1. When the knurled valve cap is removed from the bottle to measure the pressure, be careful not to lose the O-ring seal in the cap. 2. Apply the pressure gauge to the exposed Schrader valve in a manner that will allow as little gas leakage as possible. Remove the gauge hose from the valve quickly. 4. Observe, on Figure 1, what the bottle pressure should be for the ambient temperature. Use the curve for type breaker you have, either FB 110, 125, 150 - FB 200 - or FC. Note, curves assume ambient pressure is 14.7 psi. Bottle pressure for ambient temperature can be calculated from equations on graph if ambient pressure is known to be significantly different from 14.7 psi. 5. Compare the measured value of bottle pressure with the value read from Figure 1. If the measured value is within + 15% of value shown on Figure 1, the bottle is at the correct pressure, and no action is required. 6. If the measured pressure is at least 50% of the value on Figure 1, we recommend that no SF₆ gas be added. We do recommend the bottle be checked again 3 months later to see if the pressure has fallen further. If it has, then SF₆ gas should be added to bring the pressure up to the pressure observed on Figure 1 for the ambient temperature, and the bottle pressure monitored again in 3 months for gas loss. If pressure has again fallen below 50% of Figure 1 pressure for the ambient temperature, we recommend the bottle be replaced.					
REPLACES STANDARD	DATED	PREPARED BY	DATE	APPROVED BY	EFFECTIVE
		T. BROCK	12/14/83		

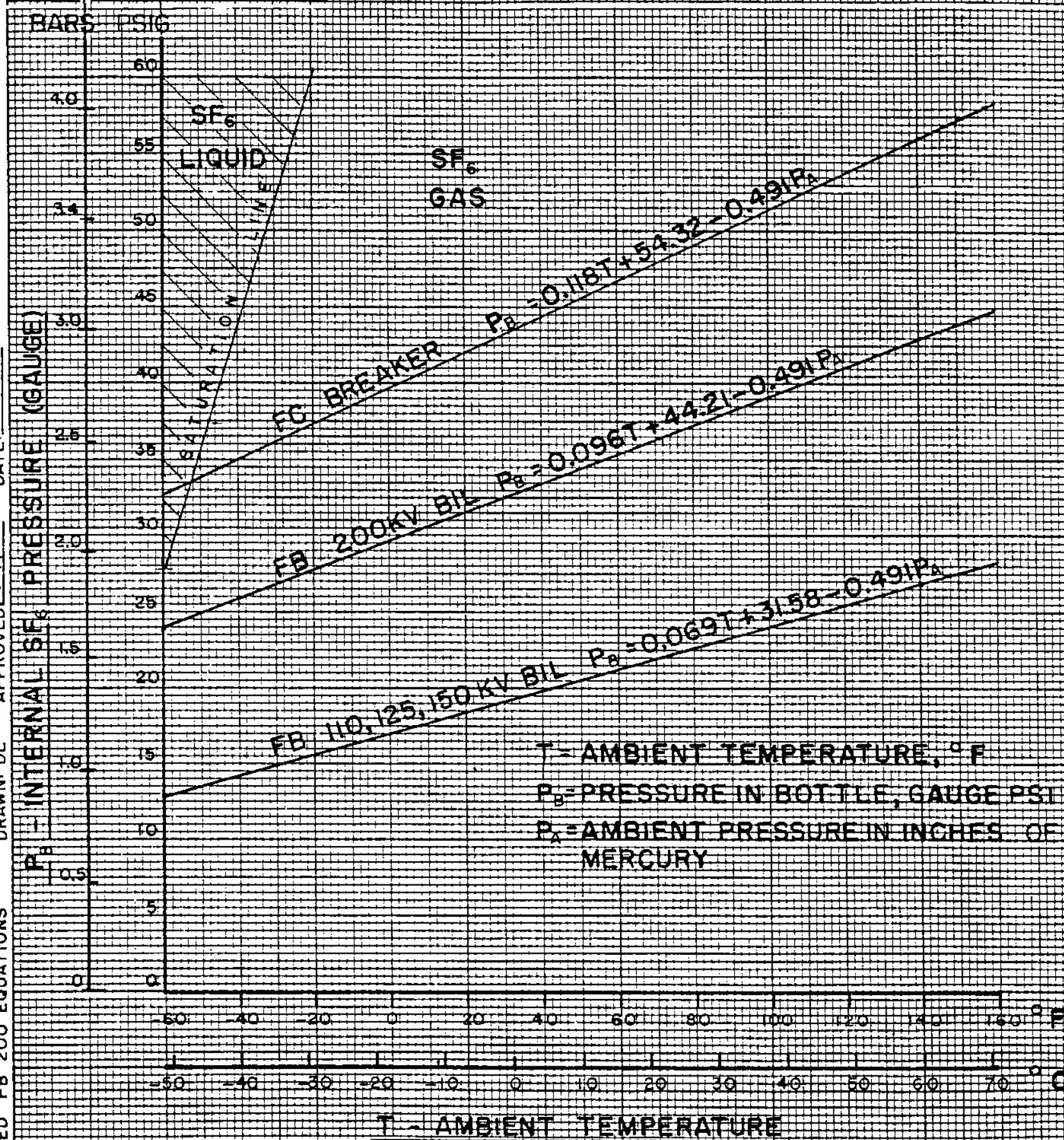
REV.	DATE	BY
A	12/83	B
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III. BOTTLE CHARGING PROCEDURE When charging the interrupter with SF₆ gas the use of the parts listed on Figure 2 is recommended. Instrument grade (99.99%, minimum purity) SF₆ gas must be used to charge interrupters. 1. The regulator of the SF₆ gas tank should be adjusted to establish a slight flow into the flexible hose. 2. Open the outlet valve and depress the chuck poppet with a screwdriver to bleed off a small amount of SF₆ and remove any air in the line. 3. Close the outlet valve and adjust the regulator to the pressure setting for the interrupter being charged. 4. Bleed off a small amount of gas by depressing the Schrader chuck poppet against the edge of the Schrader valve on the interrupter. 5. Check the setting of the regulator to verify that the correct pressure will be obtained. 6. Engage the Schrader chuck, in a manner that will allow as little gas leakage as possible, to the Schrader valve and wait for audible indication that flow has stopped. 7. Remove the Schrader chuck, quickly, and replace the knurled cap, with O-ring seal in place.							
REPLACES STANDARD		DATED	PREPARED BY	DATE	APPROVED BY	DATE	EFFECTIVE
			T. B ROCK	12/14/83			

REV.	DATE	BY
A	12/83	BF
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BOTTLE PRESSURE VS. TEMPERATURE

FIG. 1

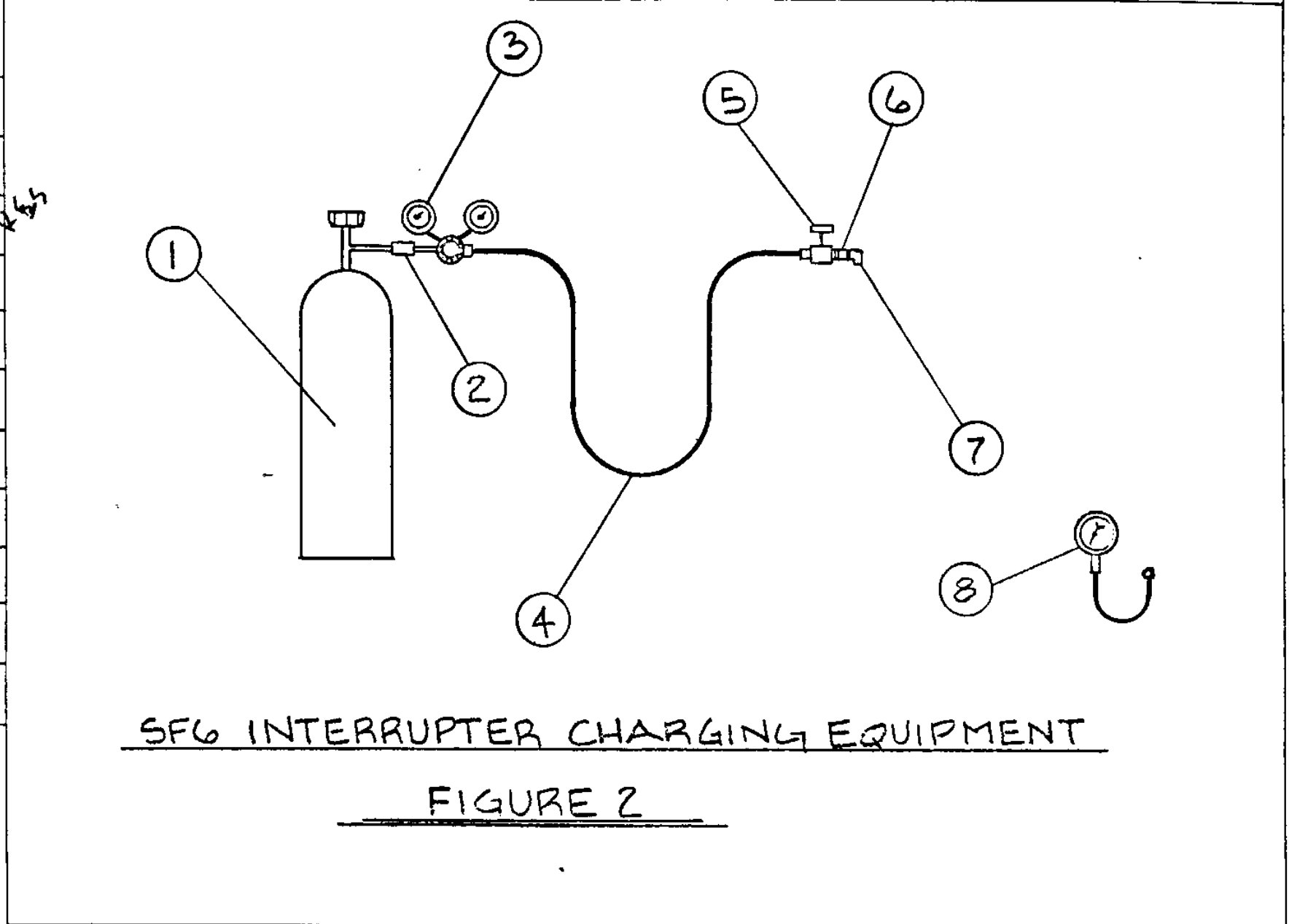


NOTES:

1. MINIMUM ALLOWABLE OPERATING TEMPERATURE FOR ALL BREAKERS IS -17°F - -27°C.
2. STRAIGHT LINE GRAPHS DRAWN ASSUMING AMBIENT PRESSURE EQUAL TO 14.7 PSIA.
3. 1 BAR = 14.5 PSIA.

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ITEM	DESCRIPTION	QTY
1	SFG GAS BOTTLE (SIZE 80) CONTAINING INSTRUMENT QUALITY GAS	1
2	REGULATOR ADAPTOR FOR CGA 590 BOTTLE OUTLET (L.H. THREADS)	1
3	PRESSURE REGULATOR AIRCO #17	1
4	HOSE (3 FT.) AIRCO #055-10313	1
5	VALVE	1
6	1/4 NPT ADAPTOR	1
7	AIR CHUCK - SCHRADER #6739	1
8	TIRE GAUGE - SCHRADER #6297, 0 - 80 PSI	1

NOTE:
SEAL ALL THREADED JOINTS USING TEFLON TAPE

REPLACES STANDARD	DATED	PREPARED BY	DATE	APPROVED BY	DATE	EFFECTIVE
		WRB	11.11.85	DYKES	11/11/85	