TABLE XI. EXPERIMENTAL DATA FOR HYDROSTATIC EXTRUSION OF AISI 4340 ROUNDS AT ELEVATED TEMPERATURES

Billet diameter - 1-3/4 inches
Die angle - 45 degrees (included)
Billet surface finish - 60 to 120 microinches
Stem speed - 20 ipm

Trial	Extrusion Ratio	Fluid	Billet Lubricant	Type of Stem Seal[c]	Extrusion Pressure, 1000 psi Breakthrough Stem	Breakthrough Fluid	Runout Stem	Runout Fluid	Type of Curve (Fig. 26)	Length of Extrusion, inches	Comments
					Temperature 140 F						
226	5	Castor oil	L17[a]	1r	251	211	250	207	B1	16	
227	5	Ditto	L17[a]	1r	249	210	248	206	B1	16	
228[b]	5	"	L17[a]	1r	252	211	250	207	B1	16	
229	5	"	None[a]	1r	266	222	254	210	C1	15	
					Temperature 400 F						
413	4	Silicate ester	L31	2t	188	182	189	180	B1	10	
423	4	Ditto	L33	2t	198	173	192	170	B1	12	
414	5	"	L31	2t	223	216	--	--	--	3	Stem-seal leak occurred at breakthrough
422	5	"	L31	2t	223	196	214	193	B1	13	
					Temperature 500 F						
394	4	Polyphenyl ether	L31	1t	198	196	197	194	B1	13	
418	5	Ditto	L31	2t	243	213	233	206	B3	8	
420	5	"	L31	2t	230	200	222	197	B1	15	
393	4	Polyphenyl ether	L33	1t	195	195	--	--	--	1	P_b not reached
397	4	Ditto	L34	1t	187	199	185	195	A2	14	
409	4	"	L35	2t	194	190	190	186	B1	12	
399	4	"	L38	1t	199	204	197	203	B1	5	
401	4	"	L38	1t	193	200	189	195	B2	13	
407	4	"	L40	1t+1r	195	189	186	183	B2	10	
406	4	"	L43	1t+1r	202	198	199	194	B2	10	
408	4	"	L44	1t+1r	199	192	198	191	A4	9	
410	4	Tricresyl phosphate	L31	2t	200	187	200	185	A2	11	
411	4	Triaryl phosphate	L31	2t	202	192	201	191	A2	12	
412	4	Chlorinated biphenyl	L31	2t	196	186	191	181	B1	10	

(a) C1 coating was applied to billet; billet lubricants listed in Table III.
(b) Temperature was 120 F.
(c) 1t = 1 PTFE O-ring on stem; 2t = 2 PTFE O-rings on stem; 1t+1r = 1 PTFE O-ring and 1 rubber ring on stem.

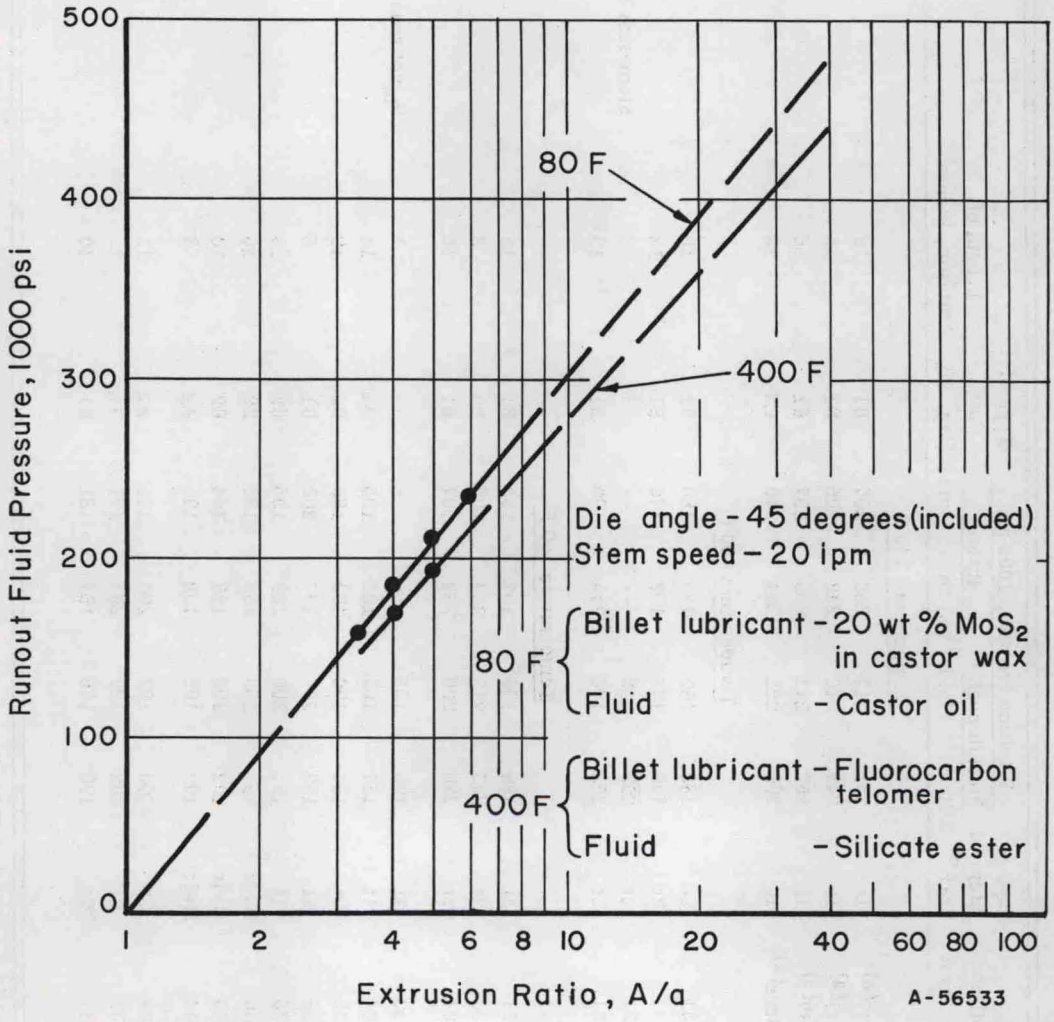

FIGURE 17. EFFECT OF EXTRUSION RATIO ON PRESSURES REQUIRED FOR HYDROSTATIC EXTRUSION OF AISI 4340 STEEL