

## BELL AIRACOBRA SPECIFICATIONS

	XP-39	YP-39	YP-39A	XP-39B	P-39C	P-39D	XP-39E	P-39F	P-39J	P-39K	P-39L	P-39M	P-39N	P-39Q	P-400
Powerplant & hp- Allison	V-1710-17 (1150)	V-1710-37 (1090)	V-1710-31 (1150)	V-1710-37 (1090)	V-1710-35 (1150)	V-1710-35 (1150)	V-1710-47 (1325)	V-1710-35 (1150)	V-1710-59 (1100)	V-1710-63 (1325)	V-1710-63 (1325)	V-1710-83 (1200)	V-1710-85 (1200)	V-1710-85 (1200)	V-1710-35 (1150)
Span	35' 10"	34' 0"	34' 0"	34' 0"	34' 0"	34' 0"	35' 10"	34' 0"	34' 0"	34' 0"	34' 0"	34' 0"	34' 0"	34' 0"	34' 0"
Length	28' 8"	29' 9"	30' 2"	29' 9"	30' 2"	30' 2"	31' 11"	30' 2"	30' 2"	30' 2"	30' 2"	30' 2"	30' 2"	30' 2"	30' 2"
Height		9' 3"					11' 10"								12' 5"
Wing area (sq. ft.)		213	213		213	213		213	213	213	213	213	213	213	213
Gross weight (lbs.)	6204	6662	7250	6450	7180	7830	8918	7500	8260	8400	8500	8400	8200	8350	
Empty weight (lbs.)		4955				6300								6400	
Top speed	390	368	384	375	379	368	386	368	360	368	365	360	379	385	
Cruise speed						325									
Stall speed														88	
Rate of climb (ft./min.)						2500								2600	
Service ceiling						30,000'								35,000'	
Range (mi.)		1560				1100								1100	

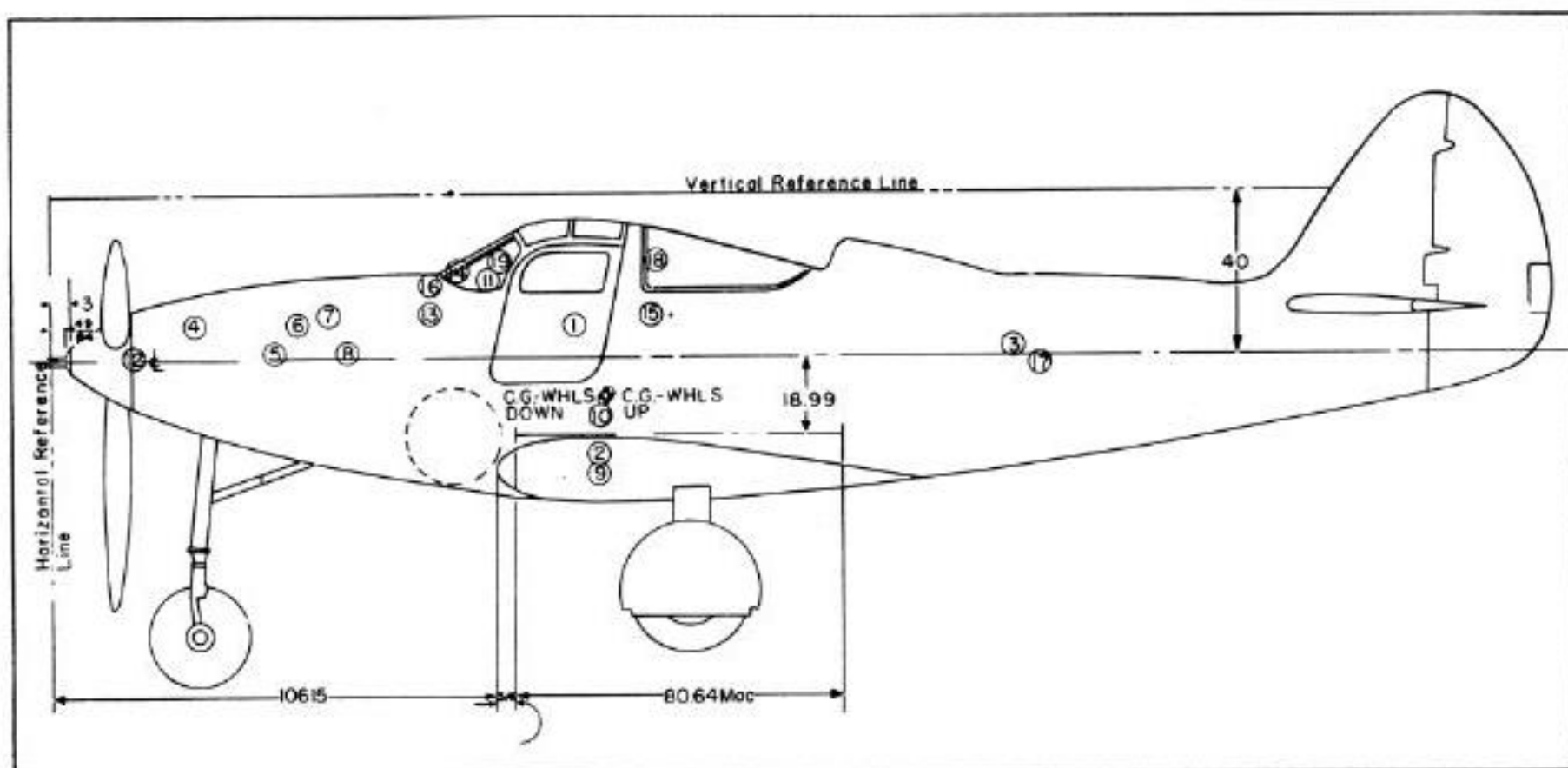
Pilot's IAS	Approximate True Air Speed			
	5,000	10,000	15,000	20,000
150	165	180	190	210
200	220	240	260	280
250	270	300	320	350
300	330	360	390	415
350	390	420	450	480

the INSTRUCTIONS FOR USING CHART printed on each chart.

### IMPORTANT

The above instructions and following charts do not take into account the effect of wind. Adjustments to range values and flight duration to allow for wind may be made by any method familiar to the pilot such as by the use of a flight calculator or a navigator's triangle of velocities.

(5) The flight plan may be readily changed at any time enroute, and the chart will show the balance of range available at various cruising powers by following



P-39Q-1-BE NORMAL GROSS WEIGHT													
NO.	ITEM	WEIGHT	HORIZONTAL ARM      MOMENT		VERTICAL ARM      MOMENT		NO.	ITEM	WEIGHT	HORIZONTAL ARM      MOMENT		VERTICAL ARM      MOMENT	
1.	PILOT AND CHUTE	200.0	125	25000	34	6800	14.	ARMOR PLATE-WIND-SHIELD	8.2	95	779	18	148
2.	FUEL (87 GAL.)	522.0	134	69948	62	32364	15.	ARMOR PLATE-TURNOVER	15.8	142	2244	30	474
3.	OIL ENGINE (6.2 GAL)	46.5	238	11067	38	1767	16.	ARMOR PLATE-INST. BOARD	2.8	90	252	22	62
4.	OIL GEAR BOX (2 GAL)	15.0	38	570	32	480	17.	ARMOR PLATE-OIL TANK	29.0	248	7192	42	1218
5.	37MM INSTALLATION	238.4	57	13549	39	9247	18.	ARMOR PLATE-AFT CABIN	18.2	143	2603	18	328
6.	37MM AMMUNITION	60.0	67	4020	31	1860	19.	ARMOR GLASS-WIND-SHIELD	21.7	106	2300	14	304
7.	50 CAL. INSTALLATION (FUS.)	151.7	78	11761	29	4331		USEFUL LOAD	1886.4	111.18	209726	46.49	87693
8.	50 CAL. AMMUNITION	124.0	80	9920	40	4960		WEIGHT EMPTY (WHEELS DOWN)	5683.6		801327		287629
9.	50 CAL. INSTALLATION (WING)	145.0	134	19399	65	9425		GROSS WEIGHT (WHEELS DOWN)	7570.0	133.56	1011053	49.58	375322
10.	50 CAL. AMMUNITION	186.0	133	24738	55	10230		LANDING GEAR UP			+4999		-8065
11.	GUN SIGHT INSTALLATION	4.4	107	469	19	84		GROSS WEIGHT(WHEELS UP)	7570.0	134.22	1016052	48.51	367257
12.	ARMOR PLATE-GEAR BOX	70.7	21	1485	40	2828							
13.	ARMOR PLATE-FUME	27.0	90	2430	29	783							

SPEC. AN-H-8 DEC. 18, 1942 FORM ASC-513	WEIGHT & BALANCE CHART			
	AIRPLANE MODELS	CG LIMITS (IN INCHES) AFT OF REFERENCE DATUM LINE	CONDITION	F'W'D      AFT
	P-390-1-BE		TAKE-OFF	
			LANDING	
BASIC WEIGHT ITEMS				POUNDS
WEIGHT EMPTY (INCLUDING TRAPPED FUEL AND OIL) INCLUDING RADIO				
EQUIPMENT:				
NAVIGATION _____ LB.      PHOTOGRAPHIC _____ LB.      OXYGEN _____ LB.				
ARMOR PLATE & GLASS				193
PYROTECHNICS (FLARES, ETC.) _____ LB.				
ARMAMENT:				
FIXED GUN INSTALLATION(S): ( 4 ) 50 CAL. 297 LB.; ( ) _____ CAL. _____ LB.; GUN SIGHT 4 LB.				301
FLEXIBLE GUN INSTALLATION(S): ( ) _____ CAL. _____ LB.; ( ) _____ CAL. _____ LB.				
CANNON INSTALLATION(S): ( 1 ) 37 MM. 238 LB.; ( ) _____ MM. _____ LB.				238
RADIO: MODEL(S) SCR-522 & SCR-535				
TOTAL BASIC WEIGHT (CG _____ INCHES AFT OF REFERENCE DATUM LINE)				6416
ITEMS OF USEFUL LOAD		ALTERNATE LOADINGS (POUNDS)		
		MAXIMUM FUEL	BOMBER	NORMAL LOAD
PILOT (200 LB. INCLUDING PARACHUTE)		200	200	200
CREW (200 LB. EACH INCLUDING PARACHUTE)				
PASSENGERS (200 LB. EACH INCLUDING PARACHUTES)				
BAGGAGE ( _____ LB. MAXIMUM)				
FUEL (6 LB./U.S. GAL. OR 7.2 LB./IMP. GAL.):      U.S. GAL. (IMP. GAL.)				
WING TANKS      87      ( 72.5 )		522	522	522
AUX. TANK      75      ( 62.5 )		450		
( )				
( )				
( )				
OIL (7.5 LB./U.S. GAL. OR 9 LB./IMP. GAL.): *      8.2      ( 6.8 )		62	62	62
EXTRA      5.4      ( 4.5 )		41		
EXTRA TANK(S) INSTALLATION		45		
BOMB INSTALLATION(S): ( ) INTERNAL AT _____ LB. EACH				
( ) EXTERNAL AT 500 LB. EACH			516	
TORPEDO INSTALLATION				
AMMUNITION				
(1000) RD. OF .50 CAL.; ( ) RD. OF _____ CAL.				
( 30 ) RD. OF 37 MM.; ( ) RD. OF _____ MM.		370	370	370
* INCLUDES 2 U.S. GAL. IN GEARBOX		8106	8086	7570
GROSS WEIGHT				
DISTANCE (IN INCHES) THAT CG IS AFT OF REFERENCE DATUM LINE				

SPEC. AN-H-8  
DEC. 18, 1942

FORM ASC-512

# AIRPLANE MODELS

P-39Q-1-BE

# SPECIFIC ENGINE FLIGHT CHART

# ENGINE MODELS

V-1710-85

CONDITION	FUEL PRESSURE (LB./SQ. IN.)	OIL PRESSURE (LB./SQ. IN.)	OIL TEMP.		COOLANT TEMP.				MAX. PERMISSIBLE DIVING RPM:.....				
			°C	°F	°C	°F			CONDITION	ALLOWABLE OIL CONSUMPTION			
DESIRED	12-16	60-70	60-80	140-176	105-115				MAX. CONT.	13.3 U.S.QT/HR. 22.2 IMP.PT/HR			
MAXIMUM	16	85	95	203	125				MAX. CRUISE	10.0 U.S.QT/HR. 16.7 IMP.PT/HR			
MINIMUM	12	55			85		RED. GEAR	OIL	MIN. SPECIFIC	5.7 U.S.QT/HR. 8.12 IMP.PT/HR			
IDLING	10	15					PRESSURE	**	OIL GRADE: (S).....1120.....(W).....1100.....				
SUPERCHARGER TYPE: SINGLE SPEED, SINGLE STAGE, GEAR DRIVEN									FUEL GRADE: 100*		OCTANE		
OPERATING CONDITION	RPM	MANIFOLD PRESSURE (BOOST)	HORSE- POWER	CRITICAL ALTITUDE		BLOWER	USE LOW BLOWER BELOW:	MIXTURE CONTROL POSITION	FUEL FLOW (GAL./HR./ENG.)		MAXIMUM CYL. TEMP.		MAXIMUM DURATION (MINUTES)
				WITH RAM	NO RAM				U.S.	IMP.	°C	°F	
TAKE-OFF	3000	50.5	1200	SEA LEVEL				FULL RICH	142	118			5
WAR EMERGENCY	3000	57.0	1420	9,000		SINGLE SPEED		FULL RICH	170	142	SEE		5
MILITARY	3000	44.5	1125	15,500				AUTO RICH	138	118	COOLANT		15
MAXIMUM CONTINUOUS	2600	39.2	1000	14,000				AUTO RICH	109	91	TEMP.		
MAXIMUM CRUISE	2280	31.7	750	14,000				AUTO RICH	74	81			
MINIMUM SPECIFIC CONSUMPTION													

REMARKS: \* FUEL GRADE - AN-VV-F-781 (AMEND. 5)

\*\* REDUCTION GEARBOX OIL PRESSURE: IDLING 15 LB./SQ. IN.; MINIMUM CRUISE (1800 RPM) 40 LB./SQ. IN.



## AIRPLANE MODELS

P-39Q-1-BE

## TAKE-OFF, CLIMB &amp; LANDING CHART

## ENGINE MODELS

V-1710-85

## TAKE-OFF DISTANCE (IN FEET)

GROSS WEIGHT (IN LBS.)	HEAD WIND (MPH)	HARD SURFACE RUNWAY						SOD-TURF RUNWAY						SOFT SURFACE RUNWAY					
		AT SEA LEVEL		AT 3,000 FT.		AT 6,000 FT.		AT SEA LEVEL		AT 3,000 FT.		AT 6,000 FT.		AT SEA LEVEL		AT 3,000 FT.		AT 6,000 FT.	
		GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.
8100	0	1650	2600	2000	3050	2250	3450	1700	2650	2050	3150	2300	3500	1800	2750	2150	3250	2450	3650
	20	1150	1950	1400	2350	1650	2650	1200	2000	1450	2400	1650	2700	1250	2050	1550	2500	1800	2800
	40	700	1350	900	1650	1100	1900	750	1400	950	1700	1150	1950	800	1450	1000	1750	1200	2000
7800	0	1350	2150	1650	2500	1950	2950	1400	2200	1700	2550	2000	3000	1450	2250	1750	2650	2100	3150
	20	900	1550	1150	1850	1400	2250	950	1600	1200	1900	1450	2300	1000	1650	1250	1950	1500	2350
	40	550	1050	700	1300	900	1550	600	1100	750	1350	950	1600	650	1150	800	1400	1000	1650
7200	0	1150	1850	1400	2200	1700	2600	1200	1900	1450	2300	1750	2650	1250	1950	1500	2350	1800	2700
	20	800	1350	950	1600	1200	1950	850	1400	1000	1650	1250	2000	900	1450	1050	1700	1300	2050
	40	450	900	600	1100	750	1300	500	950	650	1150	800	1350	550	1000	700	1200	850	1400

NOTE: INCREASE DISTANCE 10% FOR EACH 10°C (50°F) ABOVE 0°C (32°F)

ENGINE LIMITS FOR TAKE-OFF 3000 RPM &amp; 51.5 IN. HG

COMBAT MISSIONS USE 3000 \* RPM &amp; 44.5 IN. HG

## CLIMB DATA

FERRY MISSIONS USE 2300 RPM &amp; 31 IN. HG

GROSS WEIGHT (IN LBS.)	TYPE OF CLIMB	S.L. TO 3000 FT. ALT.			AT 5000 FT. ALT.				AT 10000 FT. ALT.				AT 15000 FT. ALT.				AT 25000 FT. ALT.				BLOWER CHANGE
		BEST I.A.S.	FT./MIN.	TIME FROM S.L.	BEST I.A.S.	FT./MIN.	TIME FROM S.L.	FUEL FROM S.L.	BEST I.A.S.	FT./MIN.	TIME FROM S.L.	FUEL FROM S.L.	BEST I.A.S.	FT./MIN.	TIME FROM S.L.	FUEL FROM S.L.	BEST I.A.S.	FT./MIN.	TIME FROM S.L.	FUEL FROM S.L.	
8100	COMBAT FERRY	160	2700	1.1	160	2650	1.9	25	155	2550	3.8	30	155	2050	6.0	34	135	750	13.1	39	SINGLE
		140	950	3.1	140	950	5.2	25	140	900	10.5	31	140	750	16.4	39	140	650	30.7	42	
7800	COMBAT FERRY	175	3200	0.9	175	3200	1.6	24	175	3150	3.1	28	175	2600	4.9	32	150	1200	10.1	34	SPEED
		150	1300	2.3	150	1300	3.9	24	150	1250	7.7	28	160	1200	11.8	34	160	1050	20.8	35	
7200	COMBAT FERRY	175	3450	0.9	175	3450	1.4	24	175	3350	2.9	28	175	2800	4.5	31	145	1350	9.3	33	BLOWER
		150	1450	2.1	150	1450	3.5	23	150	1450	7.0	27	150	1300	10.6	32	150	1200	18.5	33	

NOTE: INCREASED ELAPSED CLIMBING TIME % FOR EACH 10°C ABOVE 0°C FREE AIR TEMPERATURE ( % FOR EACH 20°F ABOVE 32°F) FUEL INCLUDES WARM-UP AND TAKE-OFF ALLOWANCE

\* COMBAT MISSIONS USE TAKE-OFF POWER FOR 5 MINUTES &amp; EMERGENCY MAXIMUM FOR 15 MINUTES.

## LANDING DISTANCE (IN FEET)

GROSS WEIGHT (IN LBS.)	BEST I.A.S. Approach	HARD DRY SURFACE						FIRM DRY SOD						WET OR SLIPPERY					
		AT SEA LEVEL		AT 3,000 FT.		AT 6,000 FT.		AT SEA LEVEL		AT 3,000 FT.		AT 6,000 FT.		AT SEA LEVEL		AT 3,000 FT.		AT 6,000 FT.	
		TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL
7200	130	1800	1050	1950	1150	2100	1300	1900	1200	2050	1300	2200	1400	3250	2500	3500	2750	3800	3000
6700	110	1700	1000	1800	1100	1950	1200	1800	1100	1950	1200	2100	1300	3050	2300	3300	2550	3550	2800

NOTE: FOR GROUND TEMPERATURES ABOVE 35°C (95°F) INCREASE APPROACH I.A.S. 10% AND ALLOW 20% INCREASE IN GROUND ROLL.

## REMARKS

+ 130 BEST I.A.S. APPROACH POWER OFF; 110 BEST I.A.S. APPROACH POWER ON.

## LEGEND

I.A.S.: Indicated Air Speed  
 NOTE: All distances are averages, and subject to considerable variations because of differences in pilot technique, load, C.G., etc.  
 RED FIGURES HAVE NOT BEEN FLIGHT CHECKED.

SPEC. AN-H-8 DEC. 18, 1962		FORM ASC-311		MODEL (S)				FLIGHT OPERATION INSTRUCTION CHART						EXTERNAL LOAD ITEMS															
				P-39Q-1-BE				SHEET 1 OF 1 SHEETS		GR. WT. 7600 TO 7200 POUNDS		NONE																	
CONDITION		R.P.M.	M.P. (IN. HG.)	BLOWER POSITION	MIXTURE POSITION	DURATION IN MIN.	U.S. G.P.H.	IMP. G.P.H.	INSTRUCTIONS FOR USING CHART: Select figure in fuel column equal to or less than total amount of fuel in airplane. Move horizontally to the right or left and select a figure equal to or greater than the air miles to be flown. Vertically below and opposite desired cruising alt. to read optimum cruising conditions. NOTES: (A) Avoid continuous cruising in Column I except in emergency. (B) Columns (II, III, IV & V) toward the right progressively give increase in range at sacrifice in speed. (C) Manifold Pressure (M.P.), Gallons Per Hour (G.P.H.), are approximate maximum values for reference. (D) For quick reference, take-off and military power data are listed in the upper left corner of chart.																				
TAKE-OFF		3000	50.5	-	F.R.	5	142	118																					
MILITARY POWER		3000	44.5	-	A.R.	15	138	116																					
ENGINE (S)		V-1710-85																											
(NO WIND)														ALTERNATE CRUISING CONDITIONS										(NO RESERVE FUEL ALLOWANCE)					
I (MAX. CONT. POWER)				FUEL U. S. GALS. ①		II		III		IV		FUEL IMP. GALS. ②		V (MAX. RANGE)															
RANGE IN AIR MILES						RANGE IN AIR MILES		RANGE IN AIR MILES		RANGE IN AIR MILES				RANGE IN AIR MILES															
STATUTE		NAUTICAL				STATUTE NAUTICAL		STATUTE NAUTICAL		STATUTE NAUTICAL				STATUTE NAUTICAL															
AT S.L.	AT 12,000	AT S.L.	AT 12,000																										
	215		185	88	16 U.S. (13.3 IMP.) GALLONS NOT AVAILABLE IN FLIGHT						71.6																		
				70	260	225	300	260	345	300	58.3	430	375																
	175		150	60	220	190	255	220	295	255	50	370	320																
	145		125	50	185	160	215	185	245	215	42	310	270																
	115		100	40	150	130	170	150	195	170	33	245	215																
	85		75	30	110	95	130	115	145	125	25	185	160																
	60		50	20	75	65	85	75	100	85	17	125	110																
	30		25	10	35	30	40	35	50	45	8.3	60	50																
OPERATING DATA				① DENSITY ALT. IN FEET	OPERATING DATA				OPERATING DATA				① DENSITY ALT. IN FEET	OPERATING DATA															
R.P.M.	I.A.S. M.P.H.	I.A.S. KNOTS	M.P. IN. HG.		U.S. G. P. H.	IMP. G. P. H.	R.P.M.	I.A.S. M.P.H.	I.A.S. KNOTS	M.P. IN. HG.	U.S. G. P. H.	IMP. G. P. H.		R.P.M.	I.A.S. M.P.H.	I.A.S. KNOTS	M.P. IN. HG.	U.S. G. P. H.	IMP. G. P. H.										
				30000									30000																
				25000									25000																
2600	330	287	F.T. 62	20000	2600	224	195	30 77 64	2400	223	194	28 66 55	2600	222	193	26 60 50	20000	2200	200	174	24 41 34								
2600	345	300	F.T. 82																										
2600	354	308	F.T. 104	15000	2600	247	215	30 78 65	2400	240	209	28 65 54	2600	219	190	24 52 43	15000	2000	204	177	24 39 32								
2600	347	302	39 107 89	12000	2600	247	215	30 74 62	2400	244	212	28 63 53	2400	221	192	25 50 42	12000	2000	208	181	24 37 31								
2600	335	292	39 104 87	9000	2600	249	217	30 71 59	2400	245	213	28 60 50	2200	246	214	30 53 44	9000	1800	207	180	26 35 29								
2600	323	281	39 102 85	6000	2600	252	219	30 69 58	2400	244	212	28 58 48	2000	245	213	31 50 42	6000	1600	207	180	28 34 28								
2600	312	272	39 98 82	3000	2600	257	224	30 67 56	2400	243	211	28 55 46	2000	247	215	31 48 40	3000	1600	211	183	29 33 28								
2600	300	261	39 96 80	S. L.	2600	258	224	31 64 53	2400	239	208	28 51 42	2000	245	213	31 46 29	S. L.	1600	211	183	29 32 27								

LEGEND

- ① INDICATED ALTITUDE CORRECTED FOR FREE AIR TEMPERATURE.  
 ② ALLOW 16 U.S. GALS. 13.3 IMP. GALS. FOR WARM UP, TAKE-OFF AND CLIMB TO 5,000 FEET ALTITUDE  
 RETURN FUEL FLOWS TO TANK  
 USE FUEL FROM TANKS IN THE FOLLOWING ORDER

REFER TO "SPECIFIC ENGINE FLIGHT CHART" FOR ADDITIONAL ENGINE OPERATION DATA.

BOLD NUMBERS: Use Auto-Rich  
 LIGHT NUMBERS: Use Auto-Lean  
 WITH TWO SPEED BLOWER: Use high blower above heavy line only

I.A.S.: Indicated Air Speed  
 M.P.: Manifold Pressure (In. Hg)  
 U.S.G.P.H.: U.S. Gallons Per Hour  
 IMP.G.P.H.: Imperial Gallons Per Hour  
 F.T.: Full Throttle  
 S.L.: Sea Level

RED FIGURES ARE PRELIMINARY: SUBJECT TO REVISION AFTER FLIGHT CHECK



SPEC. AN-6 DEC. 18, 1942 FORM ASC-511	<b>MODEL (S)</b> <b>P-39Q-1-BE</b>	<b>FLIGHT OPERATION INSTRUCTION CHART</b> SHEET <u>1</u> OF <u>1</u> SHEETS GR. WT. <u>8100</u> TO <u>7200</u> POUNDS	<b>EXTERNAL LOAD ITEMS</b> <b>75 GAL. BELLY TANK</b>
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CONDITION	R.P.M.	M.P. (IN. HG.)	BLOWER POSITION	MIXTURE POSITION	DURATION IN MIN.	U.S. G.P.H.	IMP. G.P.H.
T/ XE-OFF	3000	50.5	-	F. R.	5	142	118
MILITARY POWER	3000	44.5	-	A. R.	15	138	116
ENGINE (S)	Y-1710-85						

INSTRUCTIONS FOR USING CHART: Select figure in fuel column equal to or less than total amount of fuel in airplane. Move horizontally to the right or left and select a figure equal to or greater than the air miles to be flown. Vertically below and opposite desired cruising altitude read optimum cruising conditions. NOTES: (A) Avoid continuous cruising in Column I

except in emergency. (B) Columns (II, III, IV & V) toward the right progressively give increase in range at sacrifice in speed. (C) Manifold Pressure (M.P.), Gallons Per Hour (G.P.H.), are approximate maximum values for reference. (D) For quick reference, take-off and military power data are listed in the upper left corner of chart.

(NO WIND)				ALTERNATE CRUISING CONDITIONS												(NO RESERVE FUEL ALLOWANCE)																
I (MAX. CONT. POWER)				FUEL U. S. GALS. ①	II		III		IV		FUEL IMP. GALS. ②	V (MAX. RANGE)																				
RANGE IN AIR MILES					RANGE IN AIR MILES		RANGE IN AIR MILES		RANGE IN AIR MILES			RANGE IN AIR MILES																				
STATUTE		NAUTICAL			STATUTE	NAUTICAL	STATUTE	NAUTICAL	STATUTE	NAUTICAL		STATUTE	NAUTICAL																			
AT S.L.	AT 12,000	AT S.L.	AT 12,000																													
				165	20 U.S. (16.7 IMP.) GALLONS NOT AVAILABLE IN FLIGHT.						137																					
	385		315	145	430	375	495	430	560	486	120.3	680	600																			
	325		280	130	385	335	445	385	500	435	108	620	540																			
	290		250	115	340	295	390	340	445	385	96	550	480																			
	250		215	100	295	255	340	295	385	335	83	475	410																			
	215		185	85	250	215	290	250	330	285	71	405	350																			
	175		150	70	210	180	240	210	270	235	58	335	290																			
	140		120	55	165	145	190	165	210	180	46	260	225																			
	100		85	40	120	105	135	115	155	135	33	190	165																			
	85		55	25	75	65	85	75	95	80	21	120	105																			
	25		20	10	30	25	35	30	40	35	8.3	50	45																			
OPERATING DATA				① DENSITY ALT. IN FEET	OPERATING DATA						① DENSITY ALT. IN FEET	OPERATING DATA																				
R.P.M.	T.A.S. M.P.H.	T.A.S. KNOTS	M.P. IN. Hg		U.S. G. P. H.	IMP. G. P. H.	R.P.M.	I.A.S. M.P.H.	I.A.S. KNOTS	M.P. IN. Hg		U.S. G. P. H.	IMP. G. P. H.	R.P.M.	I.A.S. M.P.H.	I.A.S. KNOTS	M.P. IN. Hg	U.S. G. P. H.	IMP. G. P. H.	R.P.M.	I.A.S. M.P.H.	I.A.S. KNOTS	M.P. IN. Hg	U.S. G. P. H.	IMP. G. P. H.							
2600	267	232	F.T.	62	52	30000													30000													
2600	292	254	F.T.	82	68	25000													25000													
2600	292	254	F.T.	82	68	20000	2600	179	156	30	76	63							20000													
2600	304	264	F.T.	104	87	15000	2600	207	180	32	82	68	2600	203	177	29	69	58	2400	191	166	27	58	48	15000	2200	170	148	25	42	35	
2600	298	259		39	107	89	12000	2600	214	186	32	80	67	2600	205	178	29	67	56	2400	193	168	27	56	47	12000	2000	172	150	26	40	33
2600	289	252		39	104	87	9000	2600	217	189	32	77	64	2600	207	180	29	65	54	2400	195	170	27	53	44	9000	2000	177	154	26	39	32
2600	279	243		39	102	85	6000	2600	220	191	32	75	63	2400	211	183	30	63	53	2200	214	186	31	56	47	6000	1800	170	148	27	36	30
2600	269	234		39	98	82	3000	2600	223	194	31	72	60	2400	216	188	30	61	51	2200	216	188	31	54	45	3000	1600	164	143	29	33	28
2600	259	225		39	96	80	S. L.	2600	226	197	32	70	58	2400	217	189	30	59	49	2200	210	183	31	50	42	S. L.	1600	168	146	29	32	27

LEGEND

- ① INDICATED ALTITUDE CORRECTED FOR FREE AIR TEMPERATURE.  
 ② ALLOW 20 U. S. GALS. 16.7 IMP. GALS. FOR WARM UP.  
 TAKE-OFF AND CLIMB TO 5000 FEET ALTITUDE  
 RETURN FUEL FLOWS TO TANK  
 USE FUEL FROM TANKS IN THE FOLLOWING ORDER

**BOLD NUMBERS:** Use Auto-Rich  
**LIGHT NUMBERS:** Use Auto-Lean  
**WITH TWO SPEED BLOWER:** Use high  
 blower above heavy line only

I.A.S.: Indicated Air Speed  
 M.P.: Manifold Pressure (In. Hg)  
 U.S.G.P.H.: U. S. Gallons Per Hour  
 IMP.G.P.H.: Imperial Gallons Per Hour  
 F.T.: Full Throttle  
 S.L.: Sea Level

REFER TO "SPECIFIC ENGINE FLIGHT CHART" FOR ADDITIONAL ENGINE OPERATION DATA.

RED FIGURES ARE PRELIMINARY: SUBJECT TO REVISION AFTER FLIGHT CHECK