

CONTINENTAL AIRCRAFT ENGINE CO

DETROIT MICHIGAN

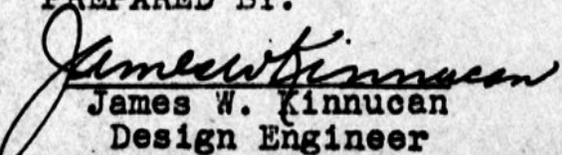
DESIGN REPORT No. 52
Date March 6, 1934

1-SHEET

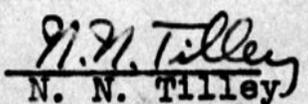
CONTINENTAL O-1430-1 ENGINE

STRESS IN TEETH OF REDUCTION GEARS

PREPARED BY.


James W. Kinnucan
Design Engineer

APPROVED BY.


N. N. Tilley
Chief Engineer

NAME OF ENGINE	RATED HORSE POWER	ENGINE SPEED R.P.M.	REDUCTION RATIO	TYPE OF GEAR	DIA METRAL PITCH OF GEARS	HELIX ANGLE	PITCH DIA. OF PINION - INCHES	PITCH LINE VELOCITY FT. PER MIN.	MEAN TANGENTIAL TOOTH LOAD LBS.	MAX. TANGENTIAL TOOTH LOAD LBS.	FACE WIDTH INCHES	MAX. APPLIED LOAD PER INCH FACE LBS.	MAX. LOAD PER INCH FACE PER INCH DIA. LBS.	MIN. AVAILABLE FACE WIDTH IN CONTACT-INCHES	APPLIED LOAD PER INCH OF CONTACT FACE LBS.	DISREGARDING INCREMENT LOADS		INCLUDING INCREMENT LOADS	
																MAX. SHEAR STRESS % LEWIS' FORMU.	MAX. COMP. STRESS % HERTZ' EQUIV.	MAX. SHEAR STRESS % LEWIS' FORMU.	MAX. COMP. STRESS % HERTZ' EQUIV.
NAPIER LION	560	2580	1.31:1	GROUND SPUR	5		6.60	4450	4150	4980	1.875	2650	402			39,400	153,000	75,100	220,000
NAPIER LION (RACING)	1320	3600	1.31:1	"	5		6.60	6210	7000	8400	1.875	4470	678			61,500	197,000	121,000	274,000
ROLLS-ROYCE (BUZZARD) #1	825	2000	1.9:1	"	3.5		6.00	3140	8680	9820	2.5	3930	656			47,500	176,000	77,600	238,000
FIRE PUMP GEARS #2	125	1400		SPUR	4/8		3.00	1100	3750	-	1.5	2500	835			36,600	185,000	73,000	261,000
FIRE PUMP GEARS	125	1400		"	5		3.60	1315	3140	-	1.75	1795	500			41,000	144,000	96,700	220,000
* CURTISS 1570	630	2450	2:1	"BIKES HEER	6/8		5.333	3415	6100	6900	3.00	2300	430			28,400	140,000	57,500	200,000
CURTISS 1570	630	2450	2:1	"		30°							430						
* CURTISS 1570	630	2450	7:5	"	6/8		6.666	4270	4850	5480	3.00	1830	274			22,500	120,000	48,800	177,000
CURTISS 1570	630	2450	7:5	"		30°							274						
* RANGER "12"	508	3040		"	6		4.00	3180	5250	5940	2.250	2640	660			46,500	184,000	92,000	237,000
RANGER "12"	508	3040		"									660						
* CONTINENTAL O-1430-1 5K-16	1000	3000	2:1	"									750			46,000	195,000	88,000	279,000
* " "	670	2610	"	"									580			40,500	172,000	68,000	238,000

* CALCULATED AS A PLAIN SPUR GEAR