DIAMETER-HP-RPM Formula

Finding diameter from HP and RPM
(from Propeller Handbook by Dave Gerr)

Enter value for BHP (Brake Horsepower) , Engine RPM (RPM) and Gear ratio (RATIO)

BHP	=	315	Engine Brake Horsepower
SHP	=	302.4	Shaft Horsepower (computed)
RPM	=	5200	Engine RPM
RATIO	=	1.25	Gear Ratio
SRPM	=	4160	Shaft RPM (computed)

Optimum Prop Diameter : Gear Ratio = 1.25:1, SRPM = 4160

$$D = 632.7 * SHP^{0.2} / SRPM^{0.6}$$
$$= 632.7 * 302^{0.2} / 4160^{0.6}$$
$$= 632.7 * 3.1341253 / 148.407551$$
$$= 1982.961087 / 148.407551$$
$$= 13.3615916$$
$$= 13$$

Optimum Diameter for RPM

RPM		SRPM	Diameter	Diameter (rounded)
6000		4800	12.26	12
5500		4400	12.92	13
5400		4320	13.06	13
5300		4240	13.21	13
5200		4160	13.36	13
5100		4080	13.52	14
5000		4000	13.68	14
4400		3520	14.77	15
4000		3200	15.64	16
3000		2400	18.59	19
2000		1600	23.71	24

Prop Diameter for increased power levels - Gear Ratio = 1.25:1

BHP		135	200	250	300	350	400
SHP		129.6	192	240	288	336	384
RPM	**SRPM**						
6000	4800	10	11	12	12	13	13
5000	4000	12	12	13	14	14	14
4400	3520	13	14	14	15	15	16
4000	3200	13	14	15	15	16	16
3000	2400	16	17	18	18	19	19
2000	1600	20	22	23	23	24	25

Prop Diameter for increased power levels - Gear Ratio = 1:1

BHP		135	200	250	300	350	400
SHP		129.6	192	240	288	336	384
RPM	**SRPM**						
6000	6000	9	10	10	11	11	11
5000	5000	10	11	11	12	12	13
4400	4400	11	12	12	13	13	14
4000	4000	12	12	13	14	14	14
3000	3000	14	15	16	16	17	17
2000	2000	18	19	20	21	21	22