mt-propeller
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Courtesy
Translation of

Supplement to the Original Flight Manual No. E - 614

for the hydraulic 4-Blade-Constant-Speed Propeller

MTV-22-B/174-12

on the airplane

Robin DR 300/180R
Robin DR 400/180R
Robin DR 400/180S
Robin DR 400/180
Robin DR 253
Robin DR 253B

possible mufflers:

Gomolzig 74-0301

Hirth FVA 23-V2
(not for Robin DR 253, DR253B)

Robin Modification No.: 89 S.B. 129
(not for Robin DR 300/180R, DR 253, DR253B)

Edition of 03.03.1999

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Supplement to the Original Flight Manual No. E-614
Edition March 3, 1999

This Supplement to the Original Flight Manual belongs to the aircraft:

Aircraft registration No: _____

Serial No.: _____

Year of manufacture: _____

This Supplement to the Original Flight Manual contains all supplemental information to operate the aircraft with the Constant Speed Propeller MTV-22-B/174-12.

The information contained in the Original Flight Manual remains valid further on, provided that there are no amendments in this Supplement.

List of revisions

Edition/ Revision No.	Page Date	Description	approved
1	Pages 1 to 8 and cover page Nov. 11, 1999	Courtesy Translation	

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Supplement to the Original Flight Manual No. E-614
Edition March 3, 1999

1. GENERAL

Information concerning the propeller: MTV-22-B/174-12 see Section 2.
Propeller Spinner: MT-Propeller No.: P-274-A

2. LIMITATIONS

Diameter: 174 cm (68.5 in)
no cut-off allowed

Blade angle: at station cm 61 (24,0 in) :
low pitch: 11,5° ±0,2
high pitch: 30,0° ±0,1°

Propeller Speed:

	MTV-22-B/174-12
max. allowable take-off power	2.700 RPM (5 minutes)
max. allowable continuous power:	2.500 RPM

Markings at the tachometer :		
	green arc	500 to 2.200 and 2.400 to 2.500 RPM
	yellow arc	2.200 to 2.400 and 2.500 to 2.700 RPM
	red radial line	2.700 RPM

The airplane may be operated without spinner as well. In this case remove filler plates.

For DR 400/180S:
The a. m. operation limitations are valid. The restrictions to 2.600 RPM becomes obsolete.

Placards:

Close to the tachometer, there is a placard with the following contense:

Avoid manifold pressure over 18 inch Hg between 2.200 RPM and 2.400 RPM

If the offset of the tachometer can not be corrected to a value below 30 rpm, a placard with the rpm offset at 2200 rpm, 2300 rpm and 2400 rpm has to be installed close to the tachometer.

The installation of the manifold pressure gauge is marked as follows:

Manifold Pressure

The installation of Propeller lever is marked as follows:

Propeller control

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3. EMERGENCY PROCEDURES

Malfunction of the propeller pitch control:
In case of oil pressure loss in the propeller control sysem, or if the pitch control fails, the propeller will return to low pitch position (take-off position).
Push Propeller Control to maximum and hold propeller-speed below 2700 RPM by the power lever.
Select lower air speed, if applicable.
Monitor oil pressure and oil temperature.

4. NORMAL PROCEDURES

Daily Control

Before every flight, check condition of blades and Spinner. Blade tip play up to 3 mm is allowed, blade angel play up to 2mm is allowed.

No unallowable cracks in blades (refer to Installation and Operation Manual E-124)
Erosion sheets may not be loose. PU Tape has to be installed and o.k., in other case replace it in the next 10 operation hours after last check. No oilleakage allowed.

Starting the engine:	Propeller position	low pitch
Before take off:	Throttle	2000 RPM
	Propeller lever	high pitch
	Cycle Prop	to 1500 RPM then low pitch
	if engine is cold	repeat 3 times

Move the Propeller lever slowly, because the propeller MTV-22 is equipped with light natural composite blades and responds faster to pitch changes than propellers with metal blades.

After take off and after reaching the safety height, reduce rpm to a value within the green arc of the tachometer at full throttle, for noise reduction.

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5. PERFORMANCE

The performance data in the original Flight Manual remain valid except the information provided in this Supplement to the Original Flight Manual.

Take off distances:

The table take off distances in this Supplement of the Original Flight Manual is valid.

Take off Distances

Flapposition „Take off", Propeller MTV-22-B/174-12, no Wind

Aircraft DR 300/180R	refer to original AFM
Aircraft DR 400/180R	refer to original AFM
Aircraft DR 253	refer to original AFM
Aircraft DR 253 B	refer to original AFM

Aircraft DR 400/180 and DR 400/180S

Altitude feet	Temp. °C	Take off distances at 1100 kg				Take off distances at 900 kg			
		Concrete Runway (m)		Grass Runway (m)		Concrete Runway (m)		Grass Runway (m)	
		over 15 m Obstacle	roll	over 15 m Obstacle	roll	over 15 m Obstacle	roll	over 15 m Obstacle	roll
0	- 5	419	247	492	331	274	159	309	199
	+15	465	278	553	379	305	177	347	225
	+35	515	309	617	428	335	199	381	252
4000	- 13	560	331	688	477	362	212	419	278
	+ 7	629	371	781	547	404	238	473	318
	+ 27	701	419	880	627	446	265	528	357
8000	- 21	770	450	999	715	484	282	583	397
	- 1	889	512	1 147	834	545	322	663	459
	+19	978	574	1 318	971	606	382	747	525

Climb Performance:
For Type DR 300/180R: The climb performance data for the Propeller Sensenich 76EM8S5-0-58 according to the Original Flight Manual remain valid.
For type DR400/180R: The information given in the Original Flight Manual remain valid (Propeller Sensenich 76EM8S5-0-58)
For type DR400/180 bzw. DR 400/180S: The information given in the Original Flight Manual remain valid except:

Propeller speed:	2.500 RPM
Optimum speed:	160 km/h low Altitudes
	150 km/h at 15.500 ft

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Cruise Performance				20°C below standard temp.			standard temperature standard OAT [°C]=15-ALT[ft]/504.7			20°C above standard temp.		
Robin DR400/180 Robin DR400/180R Robin DR400/180S Robin DR300/180R Robin DR 253 Robin DR 253 B	ALT[ft]	nP(RPM)	MAP[]	%PWR Std-20°C	C[ph] Std-20°C	TAS[km/h] Std-20°C	%PWR Std	C[ph] Std	TAS[km/h] Std	%PWR Std+20°C	C[ph] Std+20°C	TAS[km/h] Std+20°C
	10000		20,5	73	43,8	221	70	41,0	215	68	38,5	209
	10000	2500	19	68	36,1	205	65	33,5	199	63	31,2	194
	10000		18	64	34,4	196	61	31,9	191	59	29,7	186
	10000		20,5	68	34,6	200	66	33,6	197	65	32,8	195
	10000	2200	19	62	32,2	192	59	31,4	189	57	30,6	187
Engine Lycoming O-360-A (Serien)	10000		18	58	30,8	187	55	30,1	184	53	29,6	182
Propeller: MTV-22-B/174-12	8000		22,5	81	44,0	235	76	41,9	229	75	40,0	224
Conditions Mixture "Best Power" max. Take off weight flaps clean	8000	2500	21	74	39,3	219	72	37,3	214	69	35,6	209
	8000		19	66	33,5	201	63	31,7	196	61	30,2	192
	8000		22,5	75	37,5	224	72	35,2	223	70	35,2	217
	8000	2200	21	69	34,7	210	66	33,7	208	64	32,8	203
	8000		19	62	33,7	194	60	32,9	153	58	32,2	190
	6000		24	86	46,4	245	83	44,2	237	80	42,2	230
	6000	2500	22	77	43,0	232	74	41,1	225	72	39,3	218
	6000		21	69	34,6	197	66	32,9	191	64	31,3	185
Fuel capacity	6000		23,5	77	38,5	237	75	37,2	230	72	36,1	222
	6000	2200	22	71	35,7	217	68	34,6	211	66	33,7	203
	6000		21	67	34,0	194	64	33,1	192	62	32,3	185
DR400/180 DR400/180S DR 253 DR253 B 190 Liter	4000		26	93	52,1	245	89	49,3	239	86	46,8	234
	4000	2500	24	85	44,1	231	82	41,5	226	79	39,2	221
	4000		23	75	38,4	214	73	36,1	201	71	34,0	205
DR300/180R 110 Liter	4000		23	73	36,6	213	72	35,5	206	70	35,6	199
	4000	2200	22	69	34,9	188	66	33,9	161	59	29,4	175
	2000		26	92	50,0	244	90	49,0	238	87	48,0	225
	2000	2500	24,5	85	46,0	224	82	45,0	218	80	44,0	207
	2000		23	80	43,0	205	78	42,0	198	76	41,0	190
	2000		24	75	37,5	211	73	36,3	206	73	41,3	201
	2000	2200	22	69	34,9	197	67	33,9	191	68	37,3	187
	2000		21	63	32,6	184	61	31,8	179	57	31,1	175

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6. WEIGHT AND BALANCE; LIST OF EQUIPMENT

Original equipment:

Standard propeller (Sensenich 76EM8S5-0-()) with spinner:	weight = 19,35 kg arm = 1,38 m mass moment = 26,7 kgm
Engine Lycoming O-360-A3A	weight = 131,0 kg arm = 0,957 m mass moment = 125,36 kgm

intended changes:

Propeller MTV-22 with Spinner	weight = 19,0 kg arm = 1,4 m mass moment= 16,6 kgm
Engine Lycoming O-360-A1P	weight = 132,45 kg arm = 0.957 m mass moment = 126,75 kgm
Hydraulic Propeller Governor	weight = 1,15 kg arm = 1,187m mass moment = 1,365 kgm
Vernier Control Cable 05-10460	weight = 0,7 kg arm = 0,55 m mass moment = 0,350 kgm
Manifold Pressure 7-100-12	weight = 0,13 kg arm = 0,1 m mass moment = 0,013 kgm

The empty mass moment with Lycoming O.360-A1P and the propeller MTV-22... is 3,38 kg higher than with the original Sensenich propeller.

The empty mass with Lycoming O-360-A1P and the propeller MTV-22... is 3,08 kg higher than with the original Sensenich propeller.