

CHECK FLIGHT CERTIFICATE



CESSNA 550 CITATION II

CFS190 issue 1

Date:	Crew:	Observer:	Registration:
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Performance	Climb #1	Climb #2	
Average Weight			Airfield:
Average Altitude			Start Weight Kg/Lbs*:
Average Temp.			Takeoff cg:
Speed			Performance: SATIS/UNSATIS/NOT APPLICABLE* (delete as applicable)*
Achieved Rate		ft	
Scheduled Rate		°C	
Margin		KIAS	
Permitted Margin	-80	-100	
			fpm
			fpm
			fpm

Defects

No.	Defect	-/R/FT	Action?

(use a continuation sheet as necessary)

Conclusions/Comments

I CERTIFY that I have tested the above aircraft and have detailed the deficiencies and unsatisfactory features above. Those items annotated R or FT must be dealt with as shown in the notes on the reverse side.

Name:	Signed:	Date:	Licence No.:
For CAA Use only	Report Logged by:	Date:	Report No.:

NOTES

General

Only CAA personnel or pilots specifically briefed to carry out CAA airtests may conduct the test. General notes on test conduct can be found in the CAA Handbook for Airworthiness Flight Testing.

This sheet replaces any flight test certificate given in the schedule.

Registration: If the aircraft is not on the UK register, add the manufacturers serial number and expected UK registration (if known).

Crew: Captain, co-pilot, Flight engineer (where applicable).

Airfield: Departure airfield.

Start Weight: Actual all up weight at first engine start. Also delete Kg or Lbs as appropriate.

Takeoff cg: Actual cg at lift-off, preferably as a % of the Mean Aerodynamic Chord.

Performance

A full description of climb analysis is given in the CAA Handbook for Airworthiness Flight Testing.

Climb#1/Climb#2: Enter in these columns data from the first and second climbs.

Average Weight: The aircraft all up weight at the midpoint of the measured climb.

Average Altitude: The altitude at which the line drawn to average the measured points passes through at the mid time.

Average Temp: The temperature at which the line drawn to average the measured points passes through at the mid time.

Speed: The target climb speed (Indicated Airspeed.)

Achieved Rate: The climb rate as given by the slope of the line drawn to average the measured altitude points in feet per minute.

Scheduled Rate: The expected gross rate of climb read from the appropriate graph in the Flight Manual with any adjustments for configuration differences. For large aircraft, the basic gross data are normally to be found in a separate supplement labelled 'Additional Flight Test Data'.

Margin: The difference between the Scheduled and Achieved rates of climb (negative if achieved is lower than scheduled).

Defects

Enter all defects from the flight. All defects must also be entered in the Technical Log. Procedural items entered in the Technical Log (such as re-stowing oxygen masks) need not be entered here. Items affecting flight safety which were known before the flight, whether or not they were deferred should be entered. In the latter case, the defect should be annotated accordingly after the details.

No.: The first column is to allow the items to be numbered.

Defect: Enter details of the defect.

-R/FT: Classify each defect according to its impact on safety, regardless of whether it can be deferred according to the MEL. Any deferrals should be dealt with in the normal way in the Technical Log. Items requiring rectification (or deferral under the MEL) before further flight for hire or reward or before the issue of the CofA should be marked 'R'. Additionally, items that require re-checking in-flight following rectification (such as inadequate climb performance) should be marked 'FT'. Items requiring both should be marked 'R/FT'.

Action?: This column should be left blank unless further information is required from the engineers or the item is considered to be of sufficient import that CAA action is considered necessary, then the person/department/agency from whom further action is required should be noted in this column. Annotate accordingly if an MOR or similar report is to be raised.

Conclusions/Comments

Any conclusions, notes or comments useful for tracking defects may be entered.

Name: Only the pilot who carried out the test may sign this sheet

CAA Check Flight Schedules

All CAA Check Flight Schedules (CFSs) are prepared based on a design standard which, before September 2003, was the UK Type Certificate. Following the creation of EASA there may be different design standards in service within the European Union (EU) - this may include modifications approved in any EU country.

It is the responsibility of the flight crew to ensure that the exercises and limitations in the CFS are correct for the aircraft under test.

The prime source of information will be the aircraft flight manual and in the event of conflict the flight manual should be taken as overriding.

CAA policy is that pilots who conduct airtests on the behalf of the Authority must be acceptable to the Authority, must have been briefed on techniques and safety considerations before carrying out the tests in these schedules and must have carried out an airtest within the last 4 years.

The CAA does not accept responsibility for the use of a CAA CFS on a test flight not directly under their control.

CHECK FLIGHT SCHEDULE



CESSNA 550 CITATION II (JT 15D-4 ENGINES)

CFS 190 issue 1

INTRODUCTION

This schedule is applicable only to Cessna 550 Citation II aircraft. It is based on the assumption that the everyday operation of the aeroplane serves as a continuous check on the functioning of all normal services. On this test flight, however, the pilot is expected to monitor the behaviour of all equipment and report any unserviceable items. In addition to completing all the tests in this schedule, any characteristics which are considered to be unsafe or undesirable must be recorded.

The tests should, if possible, be carried out in the sequence of this schedule; altitude conditions must be observed. Except where otherwise indicated, the flight techniques are those associated with normal operation of the aeroplane. The limitations and procedures of the Flight Manual must be observed.

It is illegal to carry passengers on a test flight made under 'A' or 'B' Conditions except passengers performing duties in the aircraft in connection with the flight. While it is legal to carry passengers on a test flight with a Certificate of Airworthiness in force, the practice is not recommended. If it be done the pilot in command should, before accepting any passengers on an Airworthiness Test Flight, inform them that the risk is greater than on an ordinary flight.

The data contained in this schedule is correct at the time of writing, but may not be in agreement with subsequent Flight Manual amendments. In cases of conflict the current Flight Manual is overriding, and CAA Flight Department should be informed.

CREW

The minimum crew shall be as specified in the Flight Manual, supplemented by one observer to record the results. The second crew member, if carried, may act as the observer.

LOADING

The aircraft is to be loaded to a high weight with full fuel if possible within weight and CG limitations.

Record:	- Zero Fuel Weight		lb/kg
	- Ramp Weight		lb/kg
	- CG		

When the aircraft weight is required to be recorded for particular tests, it should be calculated from the fuel gauges which should be read in steady level flight.

PREPARATION

The roof panels in the passenger cabin holding the oxygen drop-out masks in position should be lightly taped along both fore and aft edges.

PRE-FLIGHT INFORMATION

Record:	- total airframe hours	
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Record:		Port	Starboard
- each engine serial	S/N		
and total hours run	Hrs		

1 PRE-FLIGHT CHECK

Carry out a comprehensive external and internal pre-flight check.

Record any deficiencies:

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2 TAKE-OFF

Before take-off set 9,000 ft on the Cabin Pressure Control in preparation for test 6. Carry out a normal take-off.

Record any unusual characteristics:

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3 ENGINE ACCELERATIONS _____

Recommended FL 40
(limits 3,000 ft AGL to FL 100)

- With:
- flaps 'TO and APPR'
 - pressurisation source NORMAL
 - anti-ice OFF
 - 120 KIAS

Extract from Table 1 and set the scheduled fan rpm for take-off thrust, reduced by 10%.

3.1 With ignition OFF, on each engine in turn,

- (a) close throttle.
- (b) carry out slam acceleration and throttle back immediately the scheduled fan rpm - 10% is seen. Acceleration should be smooth and surge-free.

Check and record :

Altitude		ft	Temp		°C
TOGA					
Target N1					

Flight idle N1 for each engine
Acceleration times to in-flight take-off power N1 less 10%

Port	Starboard

(slam acceleration time 7sec max).

3.2 If the acceleration time is greater than 7 seconds, repeat 3.1 with ignition ON

Flight idle N1 for each engine
 Acceleration times to in-flight
 take-off power N1 less 10%

Port	Starboard

(slam acceleration time 7sec max).

4 PERFORMANCE

The climbs should be made clear of cloud and turbulence and on a constant heading. Start recording when in a stabilised, trimmed condition at the scheduled speed using not more than 5° bank towards the live engine. Aim to keep IAS within ±2 kts of scheduled speed, and to adjust the live engine as necessary to maintain the scheduled thrust setting.

4.1 Engine out take-off climb _____

recommended FL 50
 (limits 3,000 ft AGL to FL 70)

- With - No 1 engine at take-off thrust (Table 1)
- No 2 engine at idle
- V₂ for weight (Table 3)
- Gear retracted Flap - 'TO and APPR'
- Anti-ice off
- Pressurisation source NORMAL

Engine Idling Take-off Climb _____

recommended start altitude FL50;
limits 3000 ft AGL to FL70

ZERO FUEL WEIGHT

FUEL GONE

START CLIMB WEIGHT

N1

Speed

TARGETS

TIME	ALTIMETER	ASI P1	IOAT	N1
0				
0.5				
1.0				
1.5				
2.0				
2.5				
3.0				
3.5				
4.0				
4.5				
5.0				

Trim Positions

Stab

Aileron

Rudder

ASI COMPARISON AT ONE INSTANT

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ENGINE PARAMETERS AFTER 3 MINUTES

N1

FUEL FLOW lb/hr

ITT

OIL PRESSURE

N2

OIL TEMPERATURE

FUEL GONE

END OF CLIMB WEIGHT

MEAN CLIMB WEIGHT

4.2 Engine out En Route climb _____

recommended FL 100
(limits 8,000 ft AGL to FL 150)

- With - No 2 engine at maximum continuous thrust (Table 2)
- No 1 engine HP cock closed
- En route climb speed for weight (Table 3)
- Gear retracted Flap 'UP'
- Anti-icing - OFF
- Pressurisation source NORMAL

Engine Out En-Route Climb _____

recommended start altitude FL100;
limits 8000 ft AGL to FL150

ZERO FUEL WEIGHT

FUEL CONTENTS

START CLIMB WEIGHT

	TARGETS
N1	<input style="width: 100%; height: 20px;" type="text"/>
Speed	<input style="width: 100%; height: 20px;" type="text"/>

TIME	ALTIMETER	ASI P1	IOAT	N1
0				
0.5				
1.0				
1.5				
2.0				
2.5				
3.0				
3.5				
4.0				
4.5				
5.0				

Trim Positions Stab Aileron Rudder

ASI COMPARISON AT ONE INSTANT

ENGINE PARAMETERS AFTER 3 MINUTES

N1	<input style="width: 100%; height: 20px;" type="text"/>	FUEL FLOW lb/hr	<input style="width: 100%; height: 20px;" type="text"/>
ITT	<input style="width: 100%; height: 20px;" type="text"/>	OIL PRESSURE	<input style="width: 100%; height: 20px;" type="text"/>
N2	<input style="width: 100%; height: 20px;" type="text"/>	OIL TEMPERATURE	<input style="width: 100%; height: 20px;" type="text"/>

FUEL CONTENTS

END OF CLIMB WEIGHT

MEAN CLIMB WEIGHT

5 ENGINE RELIGHT

Relight No 1 engine at 125 KIAS using the starter assisted technique at the altitude existing.

Record:

Altitude	<input type="text"/>	IOAT	<input type="text"/>	
Windmilling	N1	<input type="text"/>	N2	<input type="text"/>
Time to ITT rise	<input type="text"/>		sec (10 sec max)	
Max ITT	<input type="text"/>		C	
Time to stabilised Flight Idle	<input type="text"/>		sec	
Any abnormality during relight, spool up	SAT/UNSAT			

6 FUNCTIONING - PRESSURISATION AND OXYGEN -----

Carry out the following checks:

6.1 Crew oxygen equipment check

Put on crew oxygen masks, and check satisfactory oxygen flow and functioning of mask mikes. SAT/UNSAT

6.2 Cabin altitude warning check

Select the 'PRESS SOURCE SELECT' switch to 'OFF' and record the cabin altitude at which the 'CAB ALT 10,000' caption illuminates (10,000+350').

6.3 Passenger oxygen drop-out

Monitor the cabin rate of climb and record the cabin altitude at which passenger oxygen mask drop-out occurs (13,500+600'). It may be necessary to climb the aircraft to achieve this.

Repressurise with a cabin altitude of 9,000 ft and minimum rate selected. Do not exceed FL 170 until normal pressurisation is restored. Reselect maximum rate.

7 CLIMB

to FL 350

Continue a normal climb to FL 350. During the climb check each flying control for backlash, breakout force, centering, weight and response. Check trimmers for correct functioning, backlash, and friction. Check speedbrakes for normal operation. Record any unusual characteristics.

Accurate aircraft trim

Elevator Aileron Rudder

Controls for backlash, weight, response, centring, breakout loads SAT/UNSAT

Trimmers for effectiveness, friction and backlash SAT/UNSAT

8 FUNCTIONING

8.1 Maximum differential pressure check ----- FL 350

At FL 350 and 170 KIAS, wind down the cabin altitude selector to 5,000 ft with maximum rate selected. Monitor the differential pressure gauge and record the stabilised maximum differential pressure (8.8 +0/-0.2 psi).

Warning: In the event of the maximum differential pressure controller failing to control, do not exceed the maximum differential limit as indicated by the red line on the differential pressure gauge.

8.2 'PRESS SOURCE SELECT' switch check

Select 'PRESS SOURCE SELECT' switch to LH, RH and EMER in turn noting the transient change on the cabin ROC indicator.

Record: stabilised differential pressure on each setting.

LEFT	RIGHT	EMERGENCY

8.3 Engine surge check ----- 150 KIAS, FL 350

Prior to check ensure that the only engine bleed in use is cabin. Carry out the test on each engine in turn setting up the other engine as required to maintain 150 KIAS at the start condition. Stabilise the test engine at 98% fan rpm and then rapidly throttle back to the idle position. As the turbine rpm decelerates through 80%, rapidly re-open the throttle to achieve 90% fan rpm. Ensure that there is no tendency for either engine to surge or compressor to stall repeatedly.

LEFT	RIGHT
SAT/UNSAT	SAT/UNSAT

Note: Surge or compressor stall is characterised by a light, regular popping noise from the engine. Be prepared for this, and if it occurs, immediately throttle back and record it. A maximum of three 'pops' is acceptable.

9 HIGH MACH RUN ----- FL 350 to FL 300

NOTE: Flying conditions must not be significantly turbulent for this test.

Carry out an acceleration to 0.73 Indicated Mach Number (IMN) aiming to complete by FL 300. Use maximum continuous thrust (MCT) and select an initial pitch attitude of 10 nose down to increase acceleration. At 0.73 IMN apply small elevator and aileron inputs in turn checking for normal response. Close throttles to idle for recovery and extend speedbrakes.

Record: -

- IMN at which high speed warning (HSW) first sounds on both combined speed indicators (CSI) (0.695 - 0.715)

- any abnormal trim changes during acceleration or speedbrake selection SAT/UNSAT

- any unusual control characteristics or engine behaviour. SAT/UNSAT

10. ENGINE SHUTDOWN AND RELIGHT ----- FL300

Shut down No 2 engine and start stop watch. Accept a drift down with MCT set on the operating engine aiming to start relight using windmill technique at or above FL 250 at 210 KIAS after a 3 minute shutdown period.

Record:

Altitude	<input style="width: 150px; height: 25px;" type="text"/>	IOAT	<input style="width: 150px; height: 25px;" type="text"/>
Windmilling	N1 <input style="width: 100px; height: 25px;" type="text"/>	N2	<input style="width: 100px; height: 25px;" type="text"/>
Time to ITT rise	<input style="width: 150px; height: 25px;" type="text"/> <hr/> <input style="width: 150px; height: 25px;" type="text"/> <hr/> <input style="width: 150px; height: 25px;" type="text"/>		sec (10 sec max)
Max ITT			dg C
Time to stabilised Flight Idle			sec
Any abnormality during relight, spool up	SAT/UNSAT		

11 HIGH IAS RUN ----- .FL 220 to FL 160..

NOTE: Flying conditions must not be significantly turbulent for this test.

Between FL 220 and 160 carry out an acceleration to 290 KIAS. Trim in all VMO. Make small control inputs at 290 KIAS. Close the throttles to idle. speed brakes.

Record:

- ASIR at which HSW first sounds on both CSIs (VMO +6/-0 KIAS)
- any abnormal trim changes during acceleration or speedbrake selection SAT/UNSAT
- any unusual control characteristics or engine behaviour. SAT/UNSAT

Repeat the acceleration up to HSW ----- FL 120 to FL 100

ASIR at which HSW first sounds on both CSIs (VMO +6/-0 KIAS)

12 STALLING _____

FL 150 and 8,000 ft AGL

Prior to each stall trim the aircraft at the speed given in Table 4 for the appropriate configuration with power at idle. Aim for a steady speed reduction of 1 kt/sec on the approach to the stall, and accept the descending flight path that this will give. Note that a minimum speed defined by stick hard back may be reached before the aircraft performs a classic stall (nose drop). If this happens, recover and record the speed when full back stick is reached, which is the scheduled stall speed, and the minimum speed reached..

Stall with Flap 0, Gear Up and Idle Power.

Zero Fuel Weight	lb	Fuel Contents	lb
Aircraft Weight			
Trim Speed	kts	Elevator Trim	
Scheduled Stall Warning	kts	Actual Stall Warning	kts
Scheduled Stall Speed	kts	Stall Speed	kts
		Stall Warning Margin	kts
Stalling Behaviour			

Stall with Flap 'TO and APPR', Gear Up and Power Idle.

Zero Fuel Weight	lb	Fuel Contents	lb
Aircraft Weight			
Trim Speed	kts	Elevator Trim	
Scheduled Stall Warning	kts	Actual Stall Warning	kts
Scheduled Stall Speed	kts	Stall Speed	kts
		Stall Warning Margin	kts
Stalling Behaviour			

13.4 Normal operation of gear and flap

Time the following selections, all made at 175 KIAS: (limit speed 176 KIAS)

gear down		(2.5 to 4.5 seconds)
flap 'UP' to 'LAND'		(5 to 8 seconds)
flap 'LAND' to 'UP'		(2 to 6 seconds)
gear up		(2.5 to 4.5 seconds)

13.5 Emergency dump

Reduce cabin differential pressure to between 1.0 and 0.5 psi and operate emergency dump switch. The differential pressure should dissipate almost immediately. Reselect switch to normal. SAT/UNSAT

14 LANDING

Carry out a normal landing. If thrust reversers are fitted, deploy within limitations to a high reverse thrust setting. Record any unusual aspects.

15 EMERGENCY BRAKE

When clear of the runway and at a slow taxi speed, progressively apply the pneumatic brakes. Note that there is no differential braking using this system. Record braking action normal. SAT/UNSAT

Note: Brakes will require bleeding after use of pneumatic system.

16 Check for the presence and legibility of all placards.

The tables give the fan speed for take-off thrust to be used for the take-off climb test in paragraph 4.1, and, when reduced by 10% fan rpm, for the engine acceleration test in paragraph 3, with pressurisation bleeds NORMAL and anti-ice OFF.

A. If the indicated OAT is greater than -6°C use this table \longrightarrow

IND OAT $^{\circ}\text{C}$	FAN SPEED % RPM	IND OAT $^{\circ}\text{C}$	FAN SPEED % RPM
50	92.4	20	98.3
48	92.8	18	98.7
46	93.2	16	99.1
44	93.6	14	99.5
42	94.0	12	99.9
40	94.4	10	100.3
38	94.7	8	100.6
36	95.1	6	101.0
34	95.5	4	101.4
32	95.9	2	101.8
30	96.3	0	102.2
28	96.7	-2	102.5
26	97.1	-4	102.8
24	97.5	-6	103.1
22	97.9		

B. If the indicated OAT is less than -6°C , and the altitude is greater than the minimum given in the last column, use this table \longrightarrow

IND OAT $^{\circ}\text{C}$	FAN SPEED % RPM	MINIMUM ALT FT
-6	103.1	3,000
-8	103.3	3,300
-10	103.5	3,600
-12	103.7	3,800
-14	103.8	4,000
-16	103.9	4,200
-18	104.0	4,400
-20	104.0	4,600
-22	104.0	4,800
-24	104.0	5,000
-26	104.0	5,200
-28	104.0	5,400
-30	104.0	5,600

If neither A nor B apply, use this table

IND OAT $^{\circ}\text{C}$	FAN SPEED % RPM					
	3,000 ft	3,500 ft	4,000 ft	4,500 ft	5,000 ft	5,500 ft
-6	103.1					
-8	102.9					
-10	102.6	103.4				
-12	102.2	103.0				
-14	101.9	102.7				
-16	101.6	102.4	103.4			
-18	101.2	102.0	103.1			
-20	100.9	101.7	102.7	103.8		
-22	100.6	101.4	102.4	103.4		
-24	100.2	101.0	102.0	103.0		
-26	99.9	100.7	101.7	102.7	103.6	
-28	99.5	100.4	101.4	102.3	103.3	
-30	99.2	100.0	101.0	102.0	102.9	103.8

TABLE 1
TAKE-OFF THRUST SETTING

This table gives fan speed for maximum continuous thrust to be used for the en-route climb test in paragraph 4.2, with pressurisation bleeds NORMAL and anti-ice OFF.

IND OAT °C	FAN SPEED % RPM	IND OAT °C	FAN SPEED % RPM	IND OAT °C	FAN SPEED % RPM	MIN ALT FT
40	92.5	10	98.8	-20	103.6	
38	92.9	8	99.2	-22	103.7	
36	93.4	6	99.6	-24	103.9	
34	93.8	4	100.0	-26	104.0	
32	94.3	2	100.4	-28	104.0	
30	94.7	0	100.9	-30	104.0	
28	95.1	-2	101.3	-32	104.0	
26	95.5	-4	101.6	-34	104.0	
24	95.9	-6	101.9	-36	104.0	
22	96.3	-8	102.2	-38	104.0	
20	96.7	-10	102.5	-40	104.0	
18	97.2	-12	102.8	-42	104.0	
16	97.6	-14	103.1	-44	104.0	8,100
14	98.0	-16	103.3	-46	104.0	8,300
12	98.4	-18	103.4	-48	104.0	8,500

TABLE 2
MAXIMUM CONTINUOUS THRUST SETTING

GROSS WEIGHT LB	V ₂ KIAS (FLAPS TO AND APPR)	EN-ROUTE CLIMB SPEEDS KIAS		
		8,000 FT	12,000 FT	15,000 FT
13,200	114	144	141	138
13,000	113	143	140	136
12,800	112	142	139	135
12,600	111	141	138	134
12,400	111	140	137	133
12,200	110	139	136	132
12,000	109	138	135	131
11,800	108	137	133	130
11,600	107	136	132	129
11,400	106	135	131	128
11,200	105	133	130	127
11,000	104	132	129	126
10,800	103	131	128	125
10,600	102	130	127	124
10,400	101	129	126	123
10,200	100	127	125	121
10,000	99	126	123	120
9,800	98	125	122	119
9,600	97	124	121	118
9,400	97	122	119	116
9,200	96	121	118	115
9,000	95	119	117	114
8,800	94	118	115	113
8,600	93	117	114	111

TABLE 3
SINGLE ENGINE CLIMB SPEEDS

This table gives trim and stall speeds KIAS rated for centre of gravity positions near 26% MAC, which should result from the loading specified in this schedule.

GROSS WEIGHT LB	FLAPS UP		FLAPS TO & APPR (15°)		FLAPS LAND (40°)	
	TRIM	STALL	TRIM	STALL	TRIM	STALL
13,200	134	96	126	90	118	84
13,000	133	95	125	89	117	84
12,800	132	94	124	89	116	83
12,600	131	93	123	88	115	82
12,400	130	93	122	87	114	82
12,200	129	92	121	87	113	81
12,000	128	91	120	86	112	80
11,800	127	91	119	85	112	80
11,600	126	90	118	84	111	79
11,400	125	89	117	84	110	78
11,200	124	88	116	83	109	78
11,000	123	87	115	82	108	77
10,800	121	87	114	82	107	76
10,600	120	86	113	81	106	76
10,400	119	85	112	80	105	75
10,200	118	84	111	79	104	74
10,000	117	84	110	78	103	74
9,800	116	83	109	78	102	73
9,600	115	82	108	77	101	72
9,400	113	81	107	76	100	72
9,200	112	80	106	75	99	71
9,000	111	79	105	75	98	70
8,800	110	78	103	74	97	69
8,600	109	78	102	73	96	69
8,400	108	77	101	72	95	68
8,200	106	76	100	71	94	67
8,000	105	75	98	70	92	66

TABLE 4
STALL SPEEDS