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A MANUAL OF RIGGING FOR AIRCRAFT

This handbook, which deals briefly with the theory and practice of the rigging of aircraft, is issued for the information and guidance of all concerned.

By Command of the Air Council,

C. G. Bullock

AIR MINISTRY
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NOTE.

Nothing in this manual is intended to overrule official instructions issued to cover any specific point.

INTRODUCTION

1. The tendency in scientific and mechanical matters is generally towards specialisation. In the early years of practical aviation, say 1908 or 1909, it was not usual to specialise in any particular phase of aeronautical work. It was the rule then for one man to try out his own theories by designing, building, and flying his own aircraft. Many of the pioneers did wonderful work in these combined capacities, but the system obviously could not continue. To-day, the design, construction, and piloting of aircraft are sub-divided into a large number of highly specialised tasks, with a consequent increase in efficiency. Every good rigger should realise that from the first thoughts of the theorist to the actual flying of the aircraft there is a complete chain of workers, and that the links in the chain are all interdependent. If any one of the widely different kinds of work is performed badly, or if any mistake is made, all the good work of the rest cannot set matters right. The design of the aircraft must be right, mathematically, aerodynamically, and mechanically; the construction must be sound, both in workmanship and choice of materials; the aircraft must be rigged according to the designer's intentions, and, lastly, the pilot must be capable. If any of these links in the chain should be faulty, failure, and perhaps disaster, follows.

2. The function of the rigger should now be more or less clear. His duties are to make the best use of the work of designer and constructor, so that the pilot may fly an aeroplane that is rigged truly and safely and in accordance with the designer's ideas. The days when a rigger had, so to speak, to finish off the designer's work are now past. In the early days of the war it was not unusual for the efficiency of the rigger to make up for minor faults in design, and many a good pilot and rigger between them obtained a better performance from an aeroplane than the designer had thought possible. On the other hand, careless or ignorant rigging has sometimes caused the loss of just that excellence of performance that would have enabled a pilot to overcome an opponent.

3. To-day it is no longer the rigger's function to question or alter the designer's arrangements. He must simply make certain that the relations of the various surfaces are exactly

as the designer planned, and that the various adjustments are properly made and securely locked. This does not mean that the studies of a rigger need be curtailed in any way. On the contrary, a study of the aerodynamical and mechanical sides of aviation will help him to grasp the great importance of accuracy in his adjustments and repairs, and assist him to work with sympathy and intelligence.

4. The rigger takes over an aircraft either assembled, if delivered by air, or dismantled, if it arrives by road or other transport. There are, in addition, many occasions on which a rigger must assemble and true up an aircraft which has been dismantled for repair or other purposes. In any case, his duty is to check very carefully the disposition of the fuselage and planes, tail and undercarriage, and other parts, and to examine, as far as possible, all wires, cables, struts, sockets, etc. He must make quite sure that the geometry of the aircraft is correct, i.e., that the undercarriage is symmetrical, the planes are symmetrical to the fuselage, and so on. Also he must watch for frayed cables, faulty wires or fork ends, loose nuts and damaged or missing split pins. The great responsibility of the work is self-evident. The pilot is more or less at the mercy of all who have been concerned with the design, construction, and erection of his aircraft, and it is not likely that the rigger, who is generally in fairly close contact with the pilot, would fail to realise his own responsibilities.

5. So far as Service aircraft are concerned, the duties of the rigger, and the periods between overhauls and inspections, are dealt with in Air Ministry Weekly Order 25 of 1929, as amended by subsequent orders, and in the King's Regulations and Air Council Instructions, paras. 702 and 788.

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