


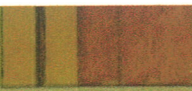
WASC 1994

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Development of
Cordite Charges for
Aircraft Catapults
and Accelerators



D.I.H. 'QUEEN BEE' SIMPLIFIED.



D.I.H. 'A' SIMPLIFIED.



C.I. SIMPLIFIED.

TYPICAL CATAPULT CHARGES.

L.P.B./E.B.

DEVELOPMENT OF CORDITE CHARGES. FOR AIRCRAFT CATAPULTS AND ACCELERATORS.

THE CHARGES ARE EMPLOYED TO LAUNCH AIRCRAFT FROM NAVAL CATAPULTS IN CAPITAL SHIPS, AND FROM CORDITE-OPERATED ACCELERATORS USED FOR LAUNCHES IN RAPID SUCCESSION.

THE LAUNCHING SPEED MAY BE UP TO 70 KNOTS, AND THE MAXIMUM ACCELERATION SHOULD NOT NORMALLY EXCEED 3.25 G. THE TRAVEL IS KEPT TO A MINIMUM FROM CONSIDERATIONS OF SPACE, AND IS USUALLY DESIGNED FOR A MEAN ACCELERATION OF 2.75 G. THE CHARGES SHOULD GIVE AS UNIFORM A PRESSURE AS PRACTICABLE OVER A TIME PERIOD OF ABOUT 1½ SECONDS.

MEAN/MAXIMUM PRESSURE RATIOS UP TO 80 PER CENT ARE OBTAINABLE.

TUBULAR CORDITE, A SHAPE OF CONSTANT BURNING SURFACE, IS THEREFORE EMPLOYED, THE TUBE ANNULUS BEING LARGE-UP TO ABOUT 1¼ INCHES-SO THAT THE CORDITE BURNS FOR THE REQUISITE LONG TIME. PRESSURES OF OPERATION VARY WITH THE DEVICE AND COVER A RANGE UP TO ABOUT 2000 LBS/SQ. INCH.

LIGHT CHARGES ARE PROVIDED TO EXERCISE THE CATAPULT AND TO ENSURE CORRECT FUNCTIONING.

HEAVY CHARGES ARE DESIGNED TO LAUNCH AIRCRAFT AND TO COVER ZONES OF AIRCRAFT WEIGHT.

ORIGINALLY, THE CHARGES WERE HOUSED IN 6-INCH CARTRIDGE CASES ACCOMMODATING WEIGHTS UP TO ABOUT 12 LBS. LATTERLY, DUE TO INCREASES IN LAUNCHING SPEED AND AIRCRAFT WEIGHT, THE CHARGES HAVE INCREASED UP TO ABOUT 35 LBS., NECESSITATING THE USE OF 8-INCH CASES.

THE CHARGES ARE IGNITED BY METAL PRIMER AND INCLUDE NO FABRIC OTHER THAN SECURING TIES OF SILK SEWING.

CHARGE DEVELOPMENT HAS PASSED THROUGH THREE MAIN STAGES.

THE CASTELLATED TYPE COMPRISES A MAIN CENTRAL TUBE CASTELLATED AT EACH END AND SURROUNDING THE PRIMER. ADDITIONAL TUBES, IN GENERAL OF THE SAME ANNULUS, ARE TIED ROUND THE MAIN TUBE, THE COMPLETED CHARGE BEING OF 6-INCHES DIAMETER. THE CASTELLATIONS ARE PROVIDED TO SECURE AND PROTECT THE IGNITING CORDITE OF S.C. 048.

THE BUNDLED TYPE WAS INTRODUCED FOR HEAVIER CHARGES, AND IN GENERAL COMPRISES SIX TUBES TIED ROUND A CENTRAL TUBE SHORTENED TO ACCOMMODATE THE PRIMER. THE IGNITING CORDITE OF S.C. 048 IS HOUSED IN RING FORM IN RECESSES CUT IN OUTER CORDITE TUBES.

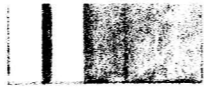
THE SIMPLIFIED TYPE WAS INTRODUCED TO ELIMINATE THE MACHINING NECESSARY WITH THE TWO FORMER TYPES. IT IS NOW IN GENERAL USE WITH THE EXCEPTION OF CERTAIN LIGHT CHARGES OF SMALL WEIGHT: IT IS GENERALLY SIMILAR TO THE BUNDLED TYPE, BUT THE IGNITING



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AUGUST 1943

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