WASC 1870
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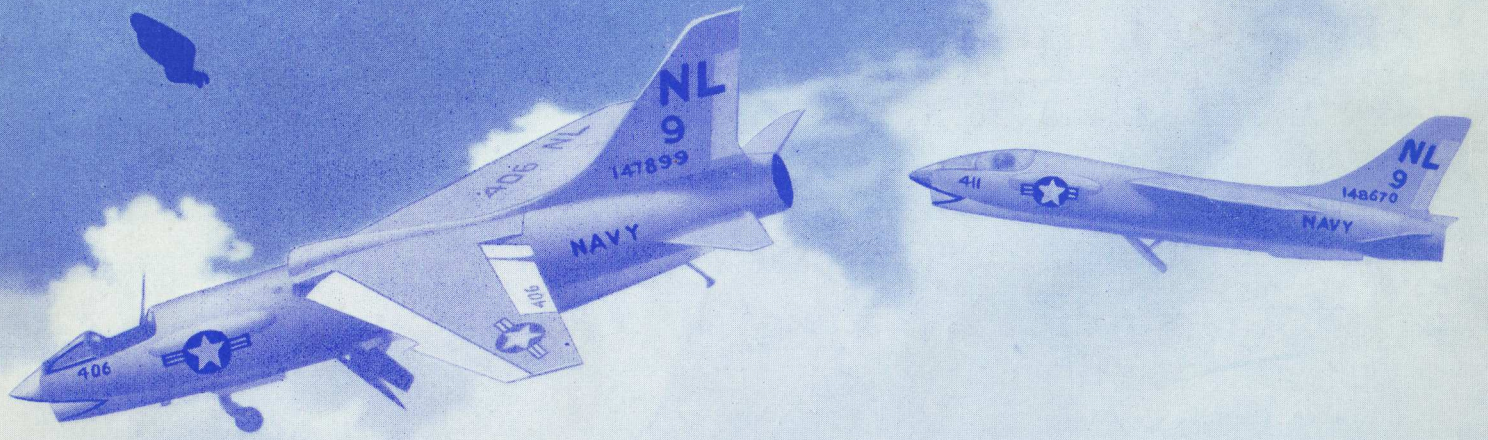
Martin Baker
Ejection Seat
Brochure and
Photograph

rising to the occasion



esent day trends in ejection seat development

MARTIN-BAKER

introduction

In 1944 with the introduction of jet fighters, the safe abandonment of damaged aircraft in an emergency became a real problem. As aircraft speeds increased and design became more complex, it was obvious that forced ejection would have to be provided to save pilots' lives and thus maintain morale at the required high level.

Since 1944, the Martin-Baker Aircraft Company have been engaged solely on design development and production of ejection seats, thus accumulating extensive and unique experience of the problems involved. This experience has been gained by a systematic tackling of the problems from the very outset, involving detailed studies to determine what the human body could tolerate in being thrust out of an aircraft into the blast of the slip stream. Programmes were planned and executed involving exhaustive tests on the ground and in the air, always culminating in live test ejections under all envisaged conditions as each new project was developed. Over 50 such live test ejections have been made to date, the first of which was carried out by Mr. Bernard Lynch of Martin-Bakers on 24th July 1946. Mr. Lynch subsequently made over 30 more test ejections, his courage and bravery being acknowledged by the award of the British Empire Medal in 1948.

The invaluable contributions towards ejection seat development made by Mr. Lynch were continued by Squadron Leader Fifield, the Company's Chief Test Pilot, whose many test ejections included on 3rd September 1955 the spectacular first ejection from ground level with the aircraft still gaining speed for take-off.

Amongst other live test ejections the following are outstanding:

1st April 1961	The first static live ejection using a rocket-assisted seat by Mr. W. T. H. Hay.
3rd June 1961	Mr. W. T. H. Hay repeated his demonstration of 1st April before an audience of several thousands at the Le Bourget International Air Salon.
13th March 1962	The first airborne live ejection using a rocket-assisted seat at an altitude of 250 feet by Wing Commander Peter Howard of the R. A. F. Institute of Aviation Medicine.

These are but a few of the many live test ejections made in the past by men whose courage and confidence in Martin-Baker seats have earned the respect of pilots throughout the world. The majority of these live test ejections have been made at the Company's airfield at Chalgrove in Oxfordshire, where facilities exist for testing ejection seats in a wide variety of test vehicles including transonic jet aircraft.

An inclined test track with a slope of 20 degrees to represent ejections from diving aircraft is extensively employed for comparative tests and is the only track of this kind in the world.

Martin-Baker ejection seats are fitted in 35 different types of current operational aircraft many of which originally had other types of seats. The retrospective fitting of Martin-Baker seats without structural alteration of the cockpit has

become a highly developed and specialised service to operators who are dissatisfied with existing seats.

The following list shows aircraft currently in service with Martin-Baker Ejection Seats:

Canberra
Vampire
Hunter
Jet Provost
Sea Hawk
Vulcan
Victor
Lightning
Javelin
Kestrel
Scimitar
Sea Vixen
Buccaneer
Venom
Mirage
Etendard IVM and IVP
North American F. 86D
North American F. 100D
Republic RF-84F
Lockheed T. 33
Lockheed F. 104
Canadair Sabre
Republic F. 84F
LTV Crusader
North American F. 86
McDonnell Phantom
Grumman Cougar
Grumman Intruder
McDonnell Demon
Douglas Skyray
North American Fury
Lockheed Seastar
Grumman Mohawk
Fiat G. 91
Macchi MB. 326

Since 30th May 1949 when the first emergency ejection took place, over 1,200 airmen have saved their lives by escaping from disabled aircraft using a Martin-Baker seat, and the number continues to increase at the rate of two or three per week. A very high recovery rate of over 90 per cent of all emergency ejections is currently recorded, an achievement second to none.

A study of the unsuccessful ejections reveals that the most frequent cause of failure to survive is a lack of altitude with the aircraft in a descending flight path, and that in practically all of these cases the ejection sequence was developing satisfactorily but the pilot struck the ground before his parachute was fully developed. These studies have resulted in the development of the Martin-Baker rocket-assisted seat, in which a rocket pack installed under the seat pan is utilised to augment the thrust of the ejection gun and thus increase the trajectory height. So successful has been this development that safe ejection is now possible at extremely low altitudes with the aircraft in a nose down attitude. It is also possible to make a safe ejection with the aircraft on the runway without any forward speed at all, a characteristic extremely useful in the case of V.T.O. aircraft, particularly during the vital transition period from vertical to horizontal flight or vice versa.

The seats described in this brochure depict the trend of modern ejection seat development ranging from a comparatively simple installation for a primary trainer, to a sophisticated integrated 'Command' escape system as was designed for the T.S.R.2. Each seat has been designed specifically for use in a particular aircraft and is 'tailor made' for the particular application, as indeed are all Martin-Baker seats.

It is, of course, impossible to cover in a brochure of this size anything approaching a comprehensive range, but it does portray what can be done, and experienced technical representatives are available throughout the world to assist and advise on any aspects of Martin-Baker escape systems.

mk.gz4

Since 1952 the Potez CM 170 Magister has been flying as a twin-jet primary trainer with the Air Forces of eight nations. Pupil and instructor are accommodated in tandem pressurised cockpits on static type seats and in an emergency have to unfasten the seat harness and make a standard over-the-side bale-out after manually releasing the canopy. The Martin-Baker Aircraft Company have now developed the Mk GZ 4 ejection seat for the Magister, complete with a coupled canopy jettison system.

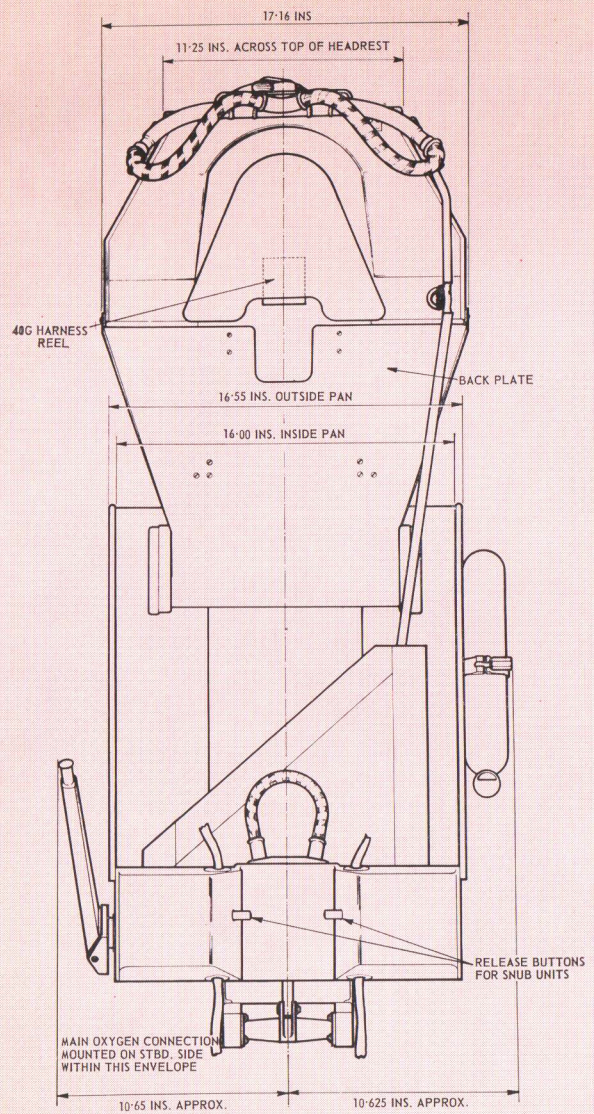
A requirement for this particular installation was the need for the minimum of alteration to the cockpit and canopy, and this has resulted in a seat which is smaller than usual, although incorporating the normal Martin-Baker features.

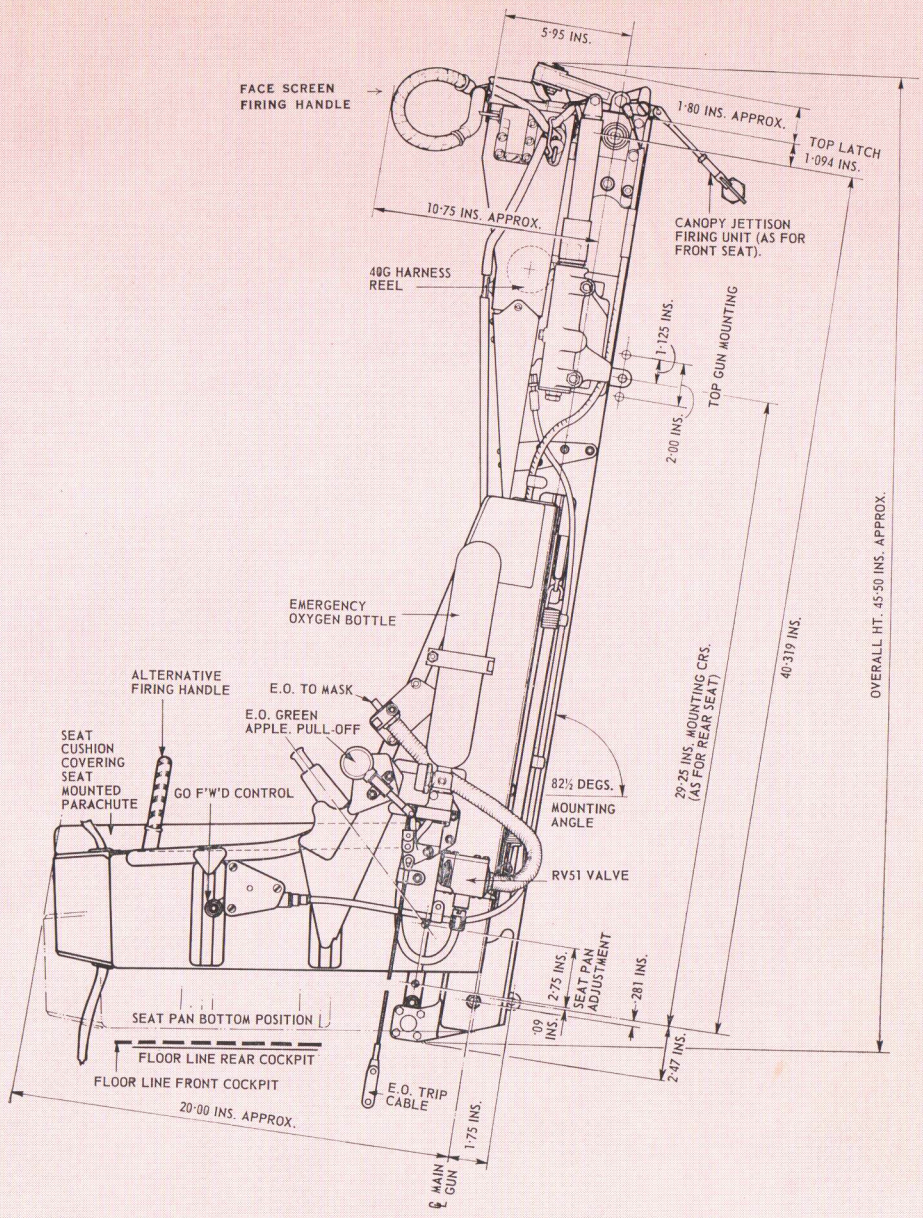
The ejection gun, apart from being shorter, is a standard 80 feet per second gun fitted with a restrictor which is connected to the canopy by a cable and prevents the primary cartridge being fired until the canopy is clear of the cockpit.

The seat beams are formed from a fabricated structure, reinforced with cross-members to take the thrust of the gun and to house the shoulder harness mechanism. Owing to the restricted cockpit space, the seat pan has been designed to fit round the beams and not on the front as is standard practice. The manually operated seat adjusting mechanism is housed within the pan, the occupant's weight being counter-balanced by elastic cords whilst adjusting the seat pan for height.

Due to the upright installation angle the personnel parachute is housed in the seat pan, enabling the occupant to sit further back than would be possible with a horseshoe pack. The headbox, containing the standard duplex drogues, is correspondingly shallow to allow the head to assume a naturally comfortable position. Separate parachute and seat harnesses are utilised, the time release mechanism operating the quick release box to free the seat harness and leg restraint lines. The $1\frac{3}{4}$-second time release and one second drogue gun are mounted on the starboard and port beams respectively and emergency oxygen equipment, automatically tripped on ejection, is carried on the seat pan.

The Martin-Baker Mk GZ 4 ejection seats for instructor and pupil are identical with the exception of their mounting brackets, and location of the canopy jettison breech. The seats are light in weight, small in envelope dimensions yet accommodate pilots of varying stature in what must be one of the smallest cockpits of any jet aircraft in the world. They are capable of bringing about safe ejection at zero altitude in straight and level flight with a minimum forward speed of 90 knots, canopy jettisoning and seat ejection being brought about by operating either the face screen or seat pan firing handle.


17·16 INS
11·25 INS. ACROSS TOP OF HEADREST
40G HARNESS REEL
BACK PLATE
16·55 INS. OUTSIDE PAN
16·00 INS. INSIDE PAN
RELEASE BUTTONS FOR SNUB UNITS
MAIN OXYGEN CONNECTION MOUNTED ON STBD. SIDE WITHIN THIS ENVELOPE
10·65 INS. APPROX.
10·625 INS. APPROX.


5·95 INS.
FACE SCREEN FIRING HANDLE
1·80 INS. APPROX.
TOP LATCH 1·094 INS.
10·75 INS. APPROX.
CANOPY JETTISON FIRING UNIT (AS FOR FRONT SEAT).
40G HARNESS REEL
1·125 INS.
2·00 INS.
TOP GUN MOUNTING
EMERGENCY OXYGEN BOTTLE
ALTERNATIVE FIRING HANDLE
E.O. TO MASK
E.O. GREEN APPLE. PULL-OFF
SEAT CUSHION COVERING SEAT MOUNTED PARACHUTE
GO F'W'D CONTROL
82½ DEGS. MOUNTING ANGLE
29·25 INS. MOUNTING CRS. (AS FOR REAR SEAT)
40·319 INS.
OVERALL HT. 45·50 INS. APPROX.
RV51 VALVE
2·75 INS.
SEAT PAN ADJUSTMENT
·281 INS.
·09 INS.
SEAT PAN BOTTOM POSITION
2·47 INS.
FLOOR LINE REAR COCKPIT
FLOOR LINE FRONT COCKPIT
E.O. TRIP CABLE
20·00 INS. APPROX.
1·75 INS.
℄ MAIN GUN

mk.6ha

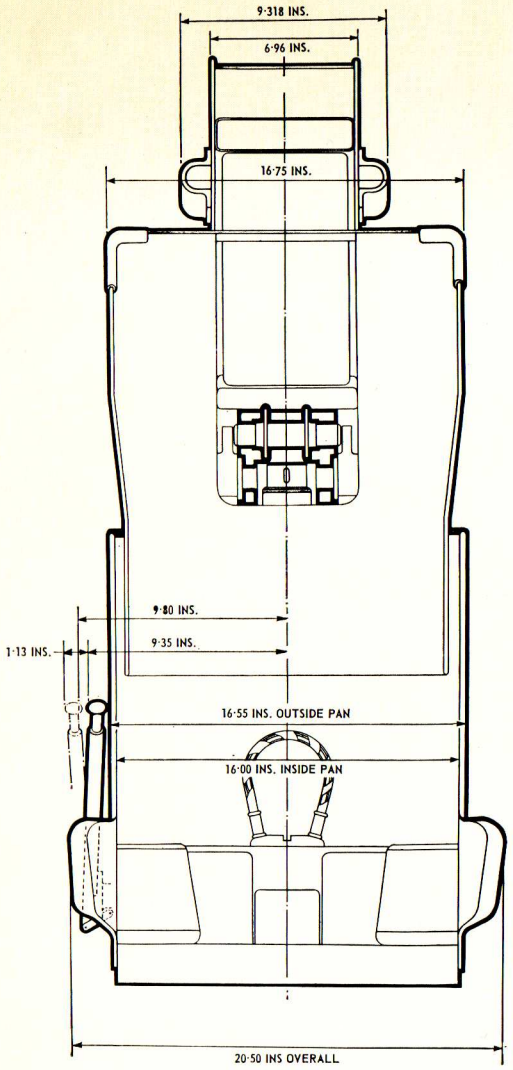
Ejection seats for the VTOL range of aircraft must be capable of providing safe escape when an emergency occurs during take-off, landing or transition from horizontal to vertical flight. These requirements are outside the design capabilities of the standard Mk 4 and 5 seats at present in service which depend on a minimum forward speed of 90 knots for full parachute development at ground level. To ensure safe escape from such aircraft under these conditions it is vital that a higher trajectory is reached than normally possible with conventional ejection guns. This factor has led to the adoption of the Martin-Baker Mark 6 HA ejection seat as standard equipment for the world's first VTOL jet aircraft to see squadron service, the Hawker P. 1127 (Kestrel).

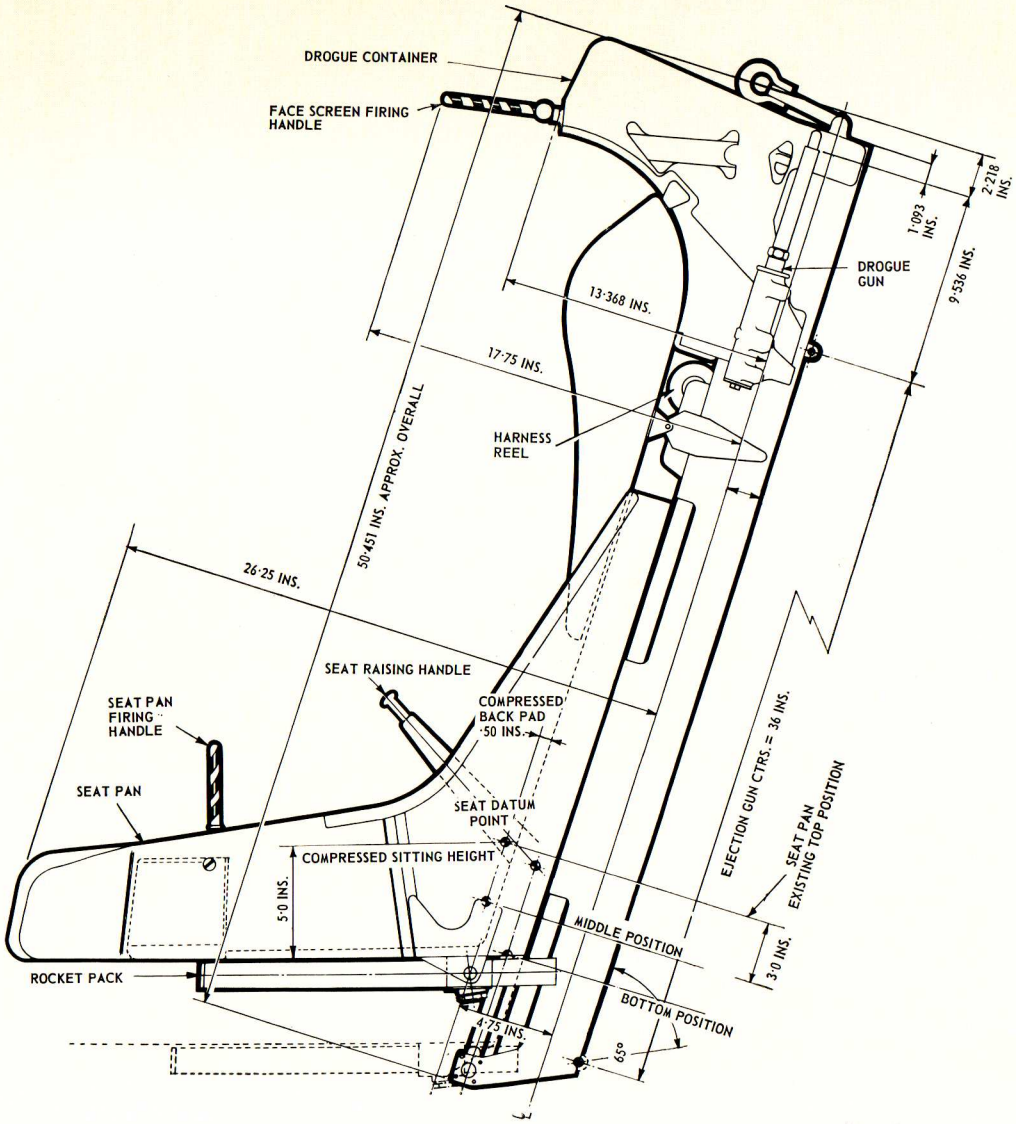
Developed from the Mk 4 range of seats which have seen service with the Royal Air Force, Royal Navy and many Air Forces throughout the world, the Mk 6 HA is powered by a conventional ejection gun the thrust of which is augmented by that from the Martin-Baker rocket pack mounted on the underside of the seat pan.

The rocket pack has been designed to fit neatly in the space normally available between the seat pan and the cockpit floor. It is attached by two side bolts and a single locking pin and this facilitates its quick and simple removal without the use of special tools.

This rocket pack, now adopted or under evaluation for other types of seat, consists of a number of small diameter combustion tubes containing a solid propellant, screwed into a transverse gallery mounted across the underside of the seat pan. One of the combustion tubes is fitted with a mechanical firing mechanism and cartridge. As the ejection seat nears the end of the ejection gun stroke a static line attached to the cockpit floor withdraws the sear from the firing mechanism, allowing the spring loaded firing pin to descend and fire the cartridge, causing simultaneous ignition of the propellant. To ensure the correct light-up characteristics, the efflux nozzles are sealed by steel discs which blow out when the correct pressure build-up is attained. The rocket pack has enabled the peak 'G' forces and the onset of 'G' to be held at a much lower level than formerly achieved by seats powered entirely by cartridges. Many hundreds of test ejections have been undertaken with the rocket pack and a free fall on a fully-developed parachute can be achieved approximately 170 feet from the ground in a zero altitude, zero speed test with a total ejected weight of 450 lb.

Structurally, the Mk 6 HA ejection seat incorporates all the latest developments in detail design such as the inertia reel, guillotine and a negative 'G' restraint system. In addition survival equipment is stowed in the seat pan and contained in the latest type of glass fibre hard survival pack.


9·318 INS.
6·96 INS.
16·75 INS.
9·80 INS.
9·35 INS.
1·13 INS.
16·55 INS. OUTSIDE PAN
16·00 INS. INSIDE PAN
20·50 INS OVERALL


DROGUE CONTAINER
FACE SCREEN FIRING HANDLE
DROGUE GUN
1·093 INS.
2·218 INS.
9·536 INS.
13·368 INS.
17·75 INS.
HARNESS REEL
50·451 INS. APPROX. OVERALL
26·25 INS.
SEAT RAISING HANDLE
SEAT PAN FIRING HANDLE
COMPRESSED BACK PAD ·50 INS.
SEAT PAN
SEAT DATUM POINT
COMPRESSED SITTING HEIGHT
5·10 INS.
EJECTION GUN CTRS. = 36 INS.
SEAT PAN EXISTING TOP POSITION
MIDDLE POSITION
3·0 INS.
ROCKET PACK
BOTTOM POSITION
4·75 INS.
65°

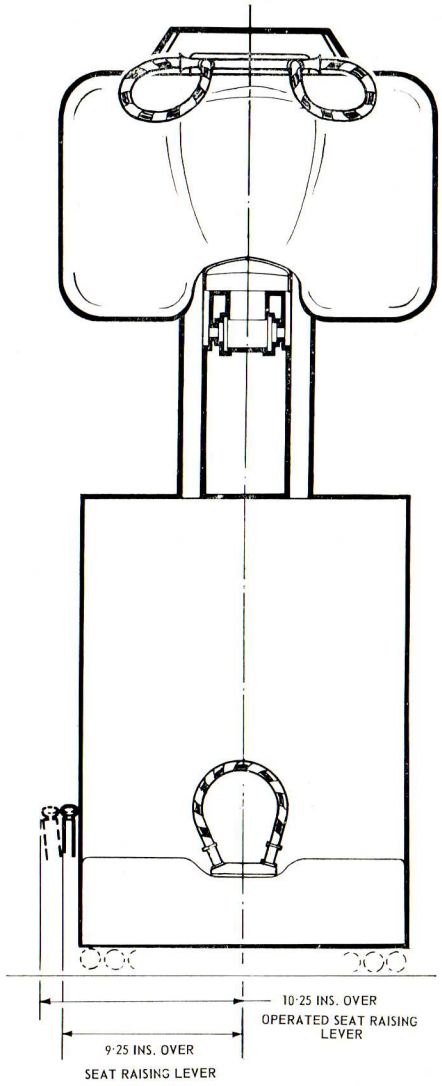
mk.v6

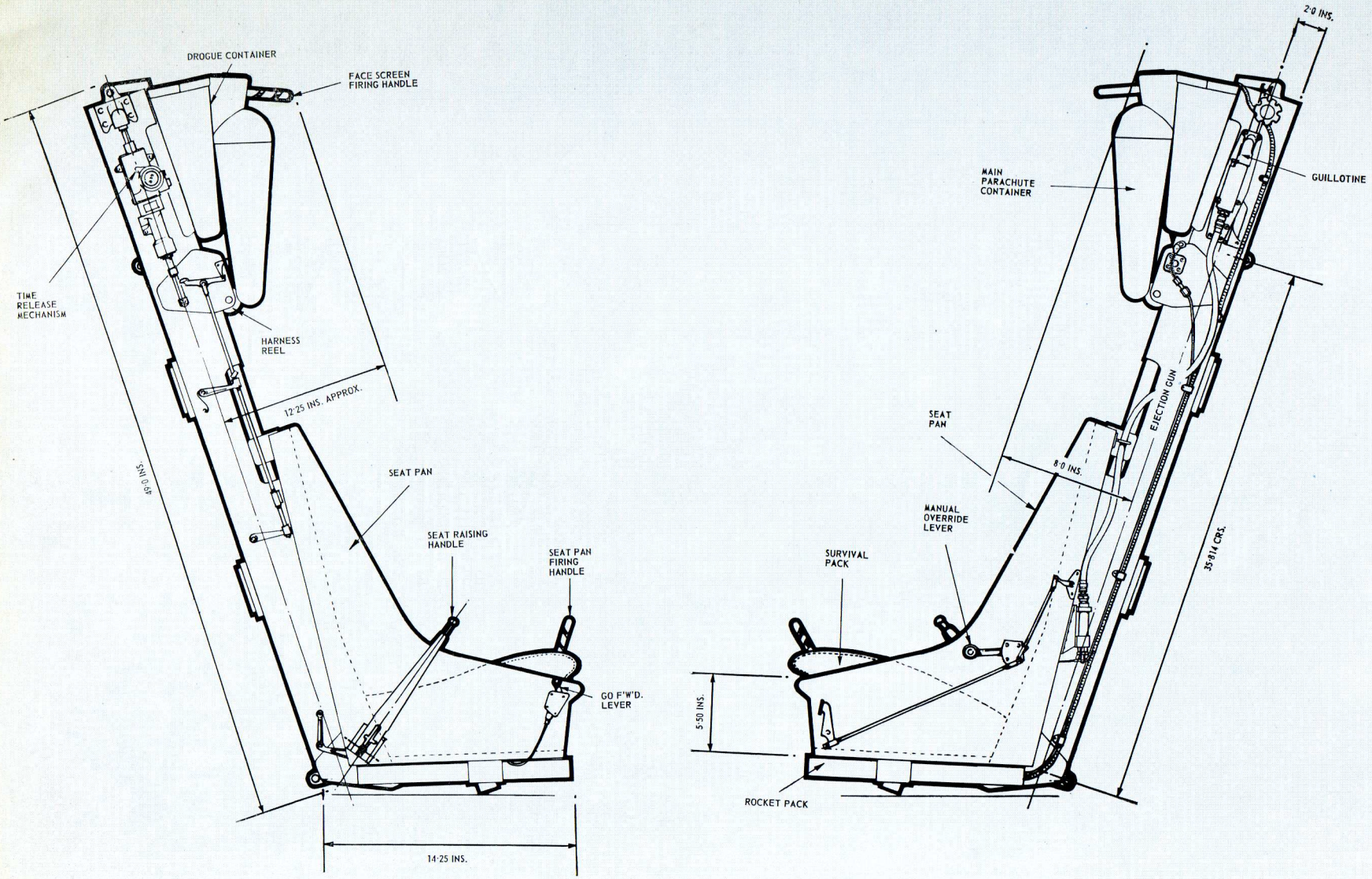
The Martin-Baker Mk V6 ejection seat has been designed for the Short SC1, VTOL experimental aircraft. Owing to the restricted amount of space available in the cockpit the envelope dimensions of the seat have been kept as small as possible. This has in no way affected the function of the seat which incorporates many of the well-proven Martin-Baker ejection seat components.

In order to keep the overall dimensions of the seat to a minimum the fore and aft measurement of the drogue container has been reduced. A special rigid type parachute pack has been designed and, to ensure the correct posture of the seat occupant, has been attached to the front of the drogue container, thus forming the headrest. The seat pan can be adjusted for height by means of a handle on the starboard side of the seat structure. The handle is spring loaded sideways against the side of the seat pan to reduce the overall width.

When an emergency arises in a VTOL aircraft the time taken to jettison the canopy can prove fatal, consequently the Mk V6 ejection seat has been designed to eject through the canopy, thus saving these vital seconds.

In keeping with all Martin-Baker ejection seats designed for VTOL aircraft the Mk V6 incorporates a rocket pack mounted on the underside of the seat pan and is capable of bringing about a safe ejection under zero altitude/zero speed conditions.




DROGUE CONTAINER
FACE SCREEN FIRING HANDLE
TIME RELEASE MECHANISM
HARNESS REEL
12·25 INS. APPROX.
49·0 INS.
SEAT PAN
SEAT RAISING HANDLE
SEAT PAN FIRING HANDLE
GO F'W'D. LEVER
14·25 INS.
2·0 INS.
MAIN PARACHUTE CONTAINER
GUILLOTINE
SEAT PAN
EJECTION GUN
8·0 INS.
MANUAL OVERRIDE LEVER
SURVIVAL PACK
35·814 CRS.
5·50 INS.
ROCKET PACK

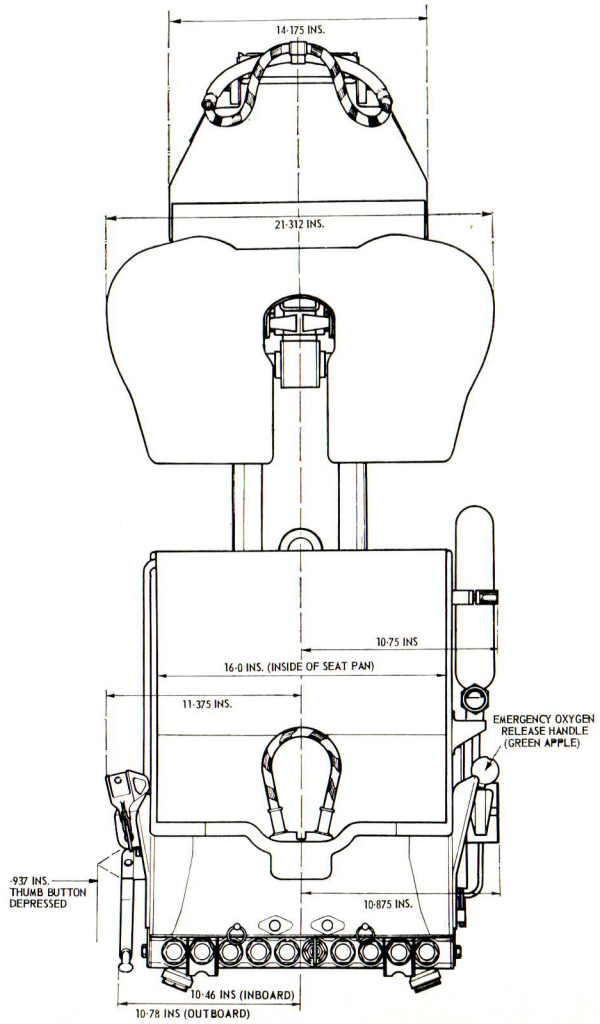
mk.dq7

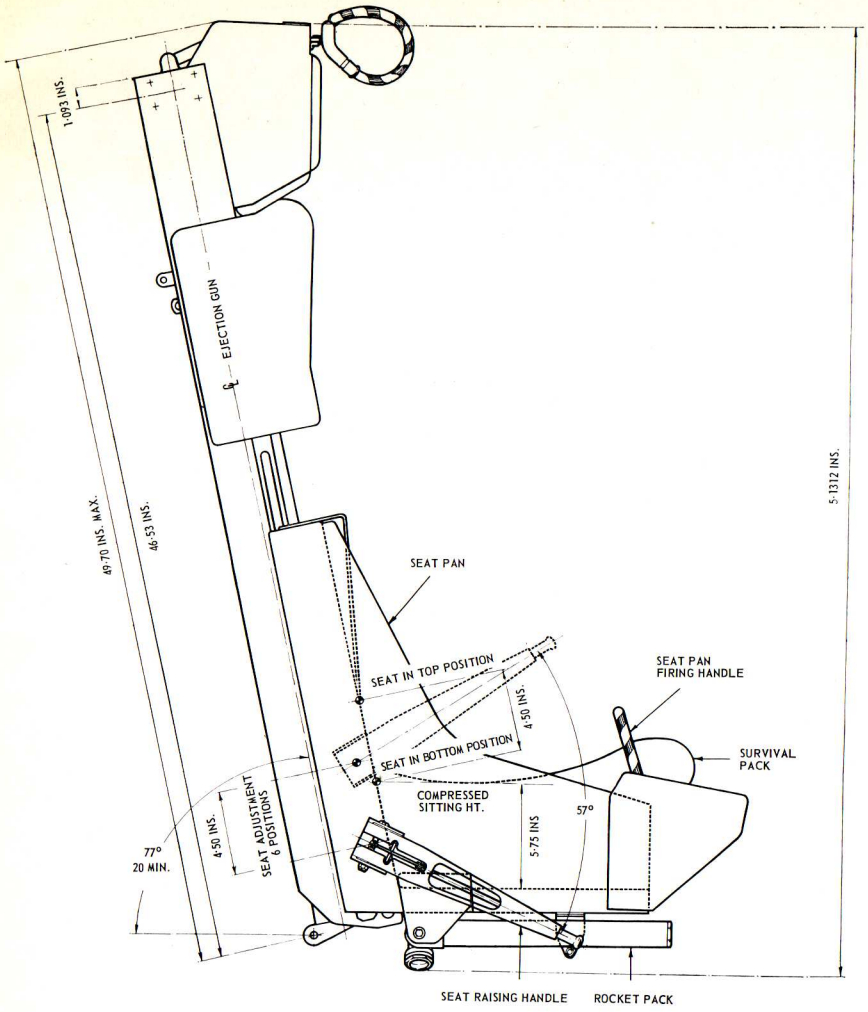
Designed specifically for the lockheed F 104G Starfighter, the Martin-Baker Mk DQ7 ejection seat incorporates many new features developed over the past few years to improve both performance and comfort.

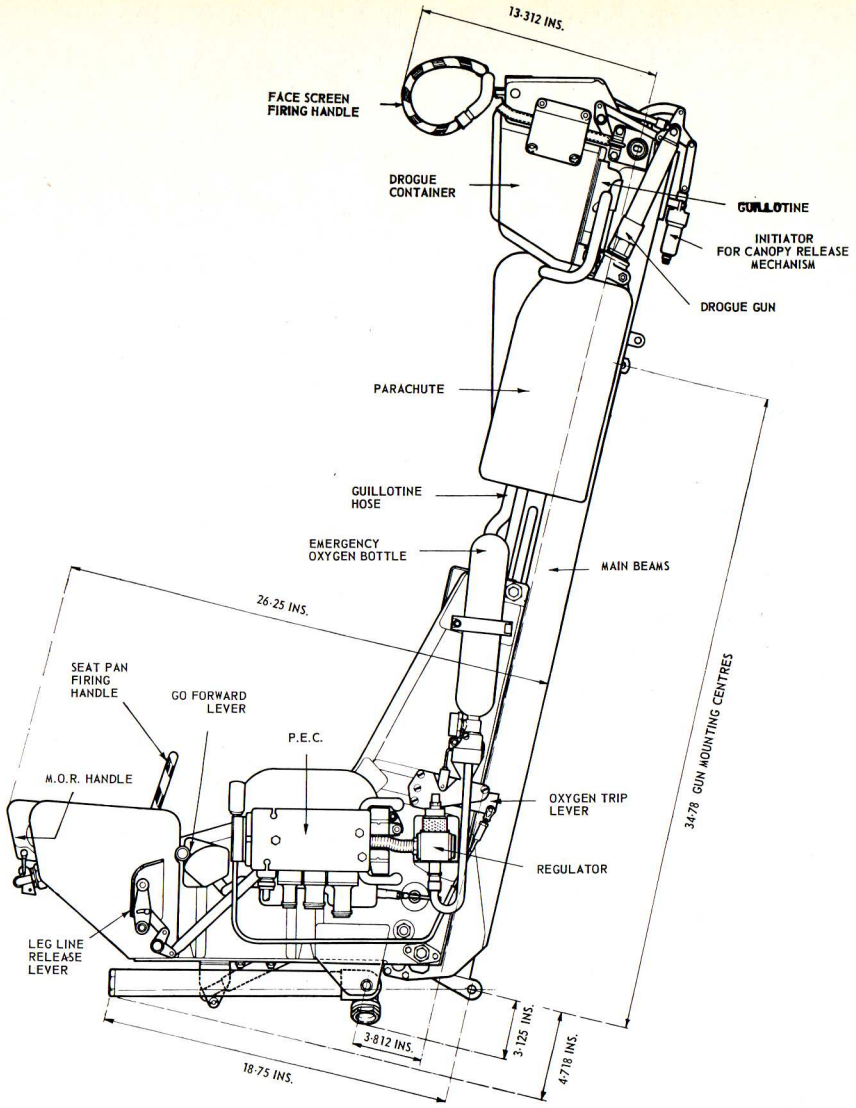
To provide greater comfort and to obtain the space for full survival equipment in the seat pan, the fore and aft thickness of the parachute pack, drogue container and headrest has been reduced compared with those normally fitted to ejection seats. The parachute is housed in a rigid pack contoured to avoid seat mechanisms mounted on the main beams. The survival pack is of the latest rigid construction to provide an extremely stable sitting platform, greater comfort and improved ejection characteristics.

A Martin-Baker patent rocket pack is installed on the underside of the seat pan. Similar in construction and operation to the rocket pack approved for the Hawker P. 1127, Mirage 3V and VJ101C (and currently under evaluation for application to various U. S. aircraft including the McDonnell Phantom), this pack gives the seat tremendous advantages by increasing considerably the trajectory height. As well as giving recovery at zero speed/zero altitude, the 'G' forces involved have been reduced from the usual 20G to about 15G. Similarly, the rate of rise of acceleration has been reduced to less than 200G per second which results in a much softer ride and eliminates the risk of injury to the seat occupant during ejection.

To reduce the number of actions required should an emergency arise, the canopy jettison initiator is coupled with the ejection gun operating mechanism so that only one action is necessary to jettison the canopy and initiate seat ejection, that of operating either the face screen or seat pan firing handle. To ensure that the canopy is well clear







of the aircraft before the ejection seat operates, a half second time delay mechanism is installed in the breech of the ejection gun. When the sear is withdrawn from the time delay mechanism the initial downward movement of the firing pin is controlled by an escapement mechanism until a delay of a half second has elapsed when the firing pin is free to descend, under spring pressure, to strike the percussion cap of the primary cartridge and thus initiate seat ejection.

The design for the Mk DQ7 seat is based on the original Martin-Baker seat for the F-104 which was fully tested by the Lockheed Aircraft Corporation on the high speed sled track up to a speed of 640 knots. This has now brought into being a seat both wholly compatible with the cockpit of the F-104 and possessing unsurpassed ejection characteristics.

mk.8a

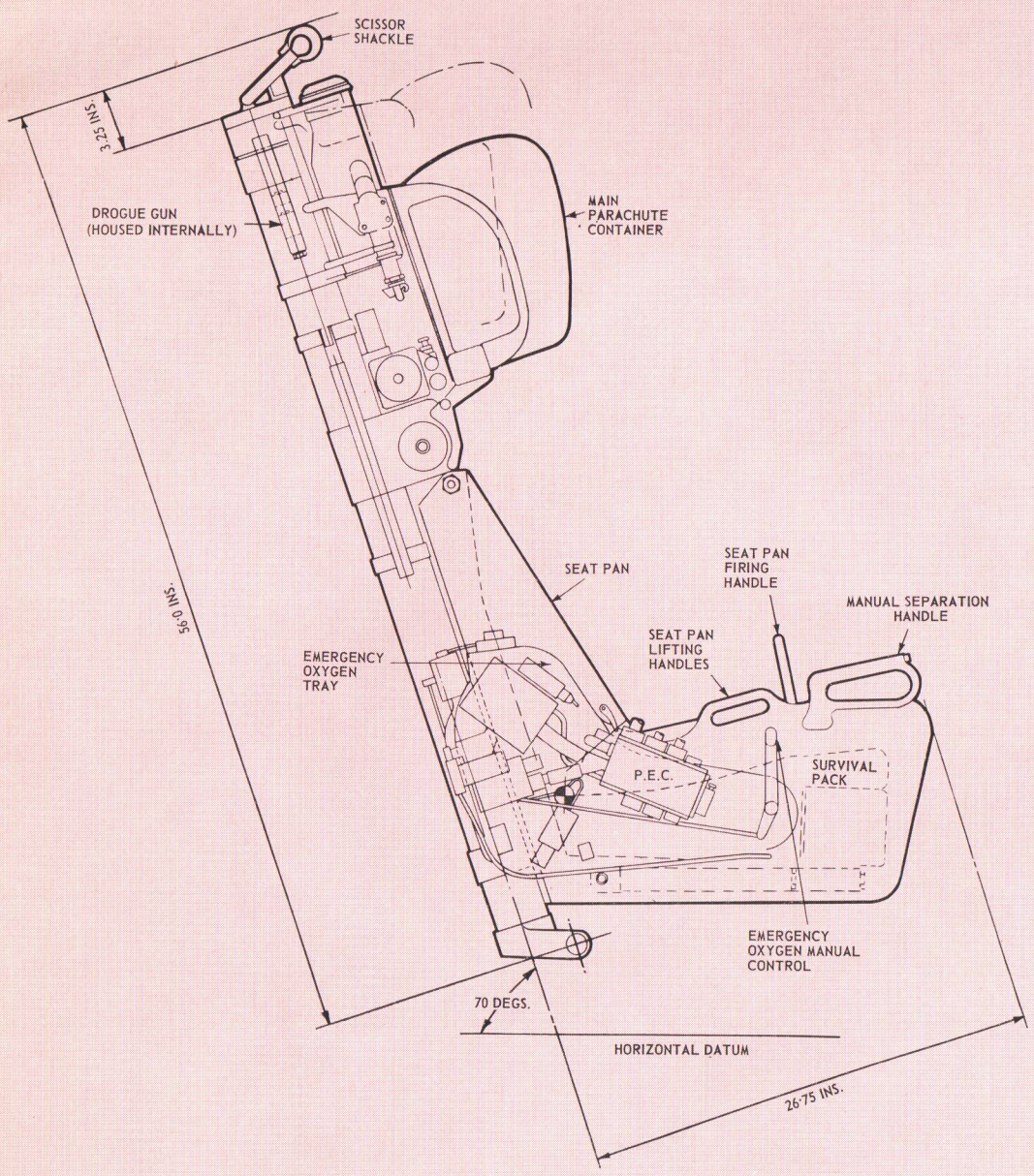
Undoubtedly the most advanced aircrew escape system produced by Martin-Baker was the Mk 8A ejection seat for the T.S.R.2 aircraft. The Mk 8A ejection seat was designed to meet the exacting demands of an emergency escape system when fitted in an aircraft at times engaged in lengthy periods of high speed flight at extremely low altitude. Many new features, combined with extensive detail design improvements of the well-proven Martin-Baker mechanisms, resulted in a seat which was able to meet these requirements whilst affording maximum protection to the occupant during ejection.

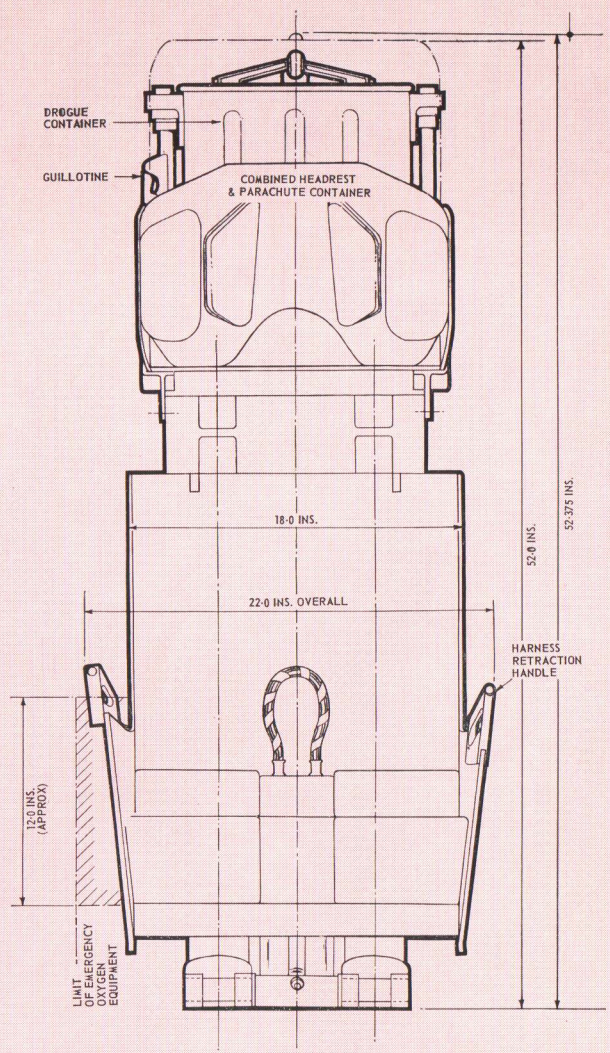
Initial power was obtained from a telescopic ejection gun of proven efficiency and reliability and this was sustained by the additional thrust from a Martin-Baker rocket pack mounted on the underside of the seat pan. In common with other seats equipped with this rocket pack, the 'G' forces involved were reduced in magnitude, resulting in a much softer ride.

To gain the greatest advantage from the high trajectory obtained with the rocket pack, the time taken to abandon the aircraft was reduced to a minimum. This was achieved by a system whereby the complete ejection sequence, consisting of the jettisoning of both canopies, the pre-tensioning of the pilot's and navigator's harness and the ejection of the navigator followed by that of the pilot, was initiated by one action, that of the pilot operating his firing handle. This system of sequencing events, known as the Command System, eliminated the need for the pilot to order the navigator to eject with the subsequent loss of time whilst he did so, thus saving vital seconds in a low level emergency. The navigator could, if necessary, however, jettison his canopy and eject at any time independent of the pilot and without prejudice to the safety of the aircraft. To ensure satisfactory posture on ejection (particularly essential for the navigator who may be ejected by the pilot without time for proper preparation) automatic harness pre-tensioning and also head positioning and restraint occurred immediately prior to ejection. However, during prolonged flight the harness could be slackened off by a control on the seat pan, thus providing maximum comfort. In addition to the usual leg restraint mechanism, arm restraint was incorporated to obviate injury during high speed ejection. Both operated by lines being drawn through snubbing units as the seat rose up the guide rails.

Much attention was paid to the structure of the seat to ensure the reliability of the mechanism during the stresses of high speed/low level ejection. The main seat beams were of tubular construction and the time release and drogue gun were housed within them. The parachute was stowed in a moulded plastic container at the rear of the occupant's head, the container being formed to provide a positive head location during ejection. To ensure ease of servicing the seat pan, parachute and drogue containers were all quickly detachable leaving the basic seat structure still installed in the aircraft.

The design and development of the Mk 8A ejection seat has paved the way for this new concept of aircrew ejection, namely the Command System, and despite the cancellation of the T.S.R.2 much valuable experience was gained which will undoubtedly be put to good use in aircraft of the future.


SCISSOR SHACKLE
3·25 INS.
DROGUE GUN (HOUSED INTERNALLY)
MAIN PARACHUTE CONTAINER
56·0 INS.
SEAT PAN
SEAT PAN FIRING HANDLE
MANUAL SEPARATION HANDLE
SEAT PAN LIFTING HANDLES
EMERGENCY OXYGEN TRAY
P.E.C.
SURVIVAL PACK
EMERGENCY OXYGEN MANUAL CONTROL
70 DEGS.
HORIZONTAL DATUM
26·75 INS.

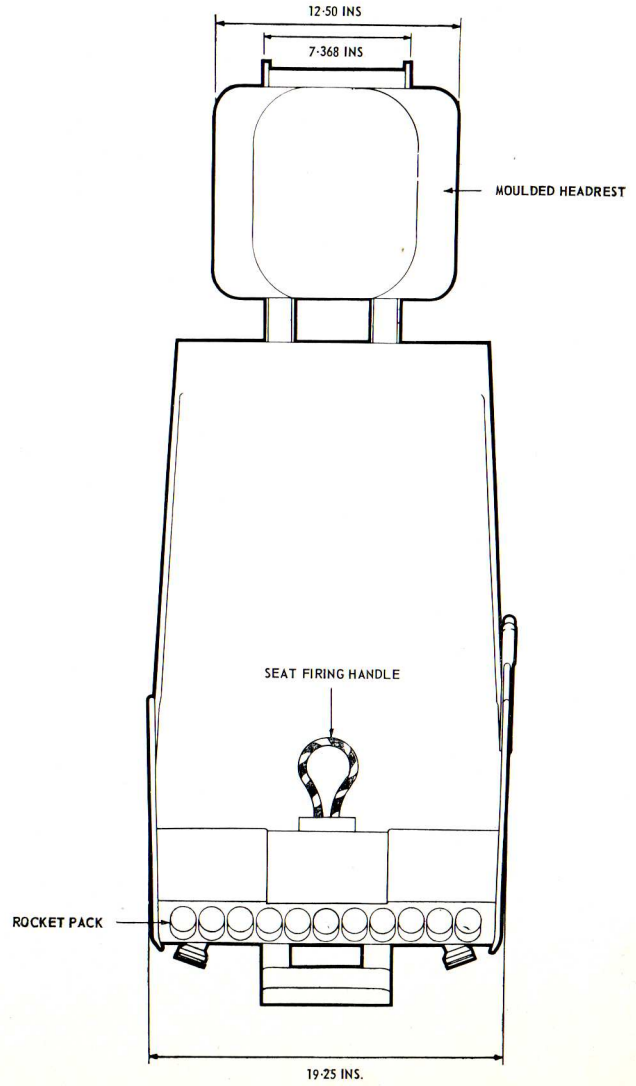

DROGUE CONTAINER
GUILLOTINE
COMBINED HEADREST & PARACHUTE CONTAINER
18·0 INS.
22·0 INS. OVERALL
52·0 INS.
52·375 INS.
HARNESS RETRACTION HANDLE
12·0 INS. (APPROX)
LIMIT OF EMERGENCY OXYGEN EQUIPMENT

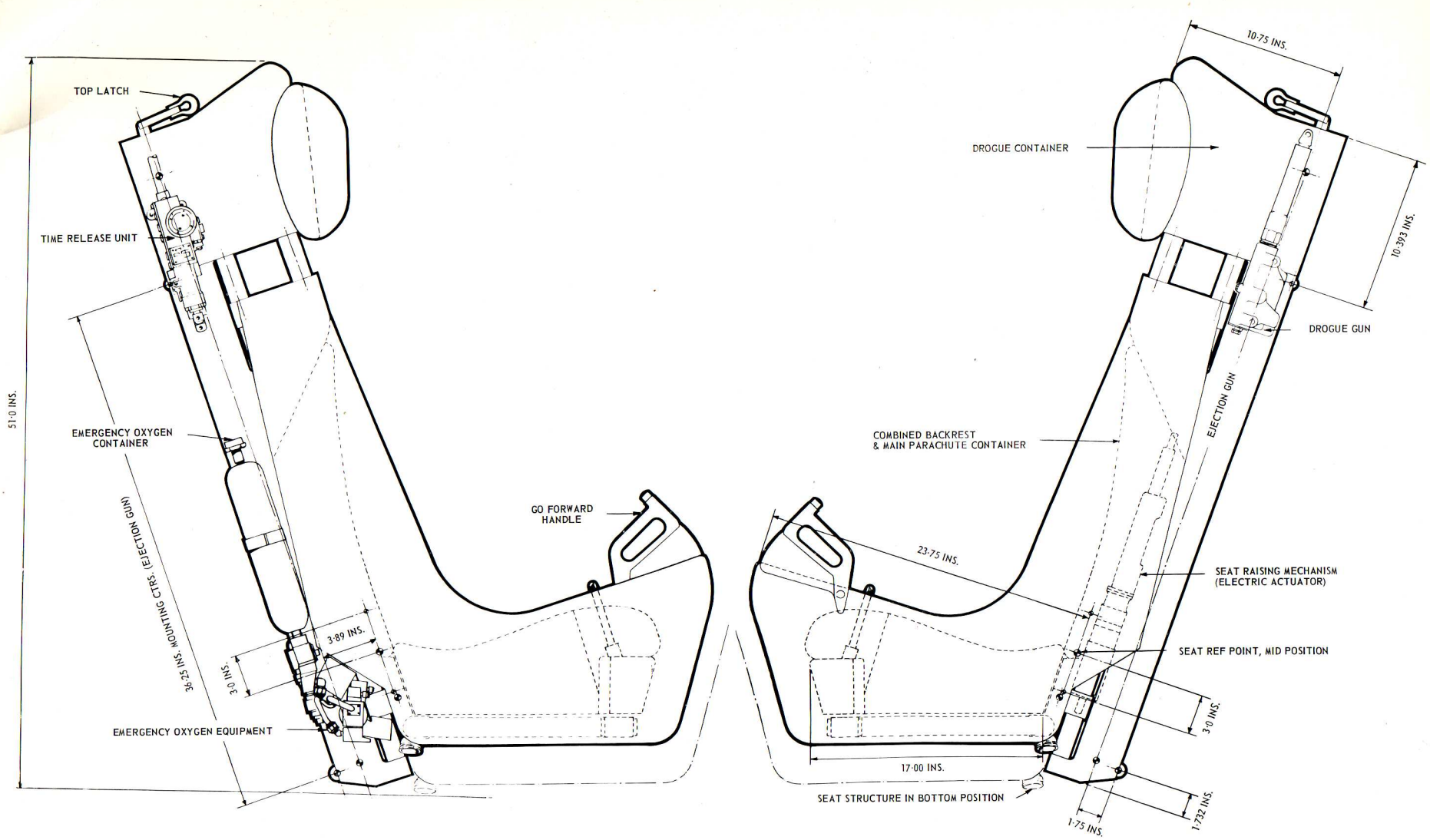
mk.9

At present under development for the West German Air Force, the VAK 191 V/STOL tactical reconnaissance fighter is to be equipped with the Martin-Baker Mk. 9 ejection seat. The speed range of the aircraft is such that although escape must be possible under zero altitude/zero speed conditions the ejection seat must also be capable of bringing about a safe ejection at speeds in excess of Mach 1.

The Mk. 9 ejection seat has been developed from the Mk. 8A and, at the request of the aircraft designers, prime consideration has been given to keeping the seat as light as possible. Many of the features embodied in the Mk. 8A ejection seat which were highly recommended by the test crews who flew the T.S.R.2 are incorporated in the Mk. 9.

To facilitate ease of servicing, the seat pan, and parachute container are manufactured in one assembly and may be separated from the main beams by the removal of four bolts. Removal of the seat pan assembly will therefore provide ample space in the cockpit for maintenance operations without the necessity of removing the complete ejection seat. The guillotine system, required to sever the parachute withdrawal line during a manual seat separation, has been dispensed with and in its place is a slide disconnect pin which connects the drogue link line to the parachute withdrawal line. During a normal ejection sequence the pull of the link line on the slide disconnect pin is such that the parachute withdrawal line will deploy the main parachute but, should a manual separation be necessary, then the pull of the parachute withdrawal line on the slide disconnect pin will separate the parachute withdrawal line from the pin.





Attached to the front of the drogue container is a specially moulded head rest which provides positive head location during ejection. Like the Mk. 8A ejection seat the Mk. 9 does not incorporate a face screen firing handle, the ejection sequence being initiated by the seat pan firing handle and to prevent injury during high speed ejection, harness retraction and leg and arm restraint systems are incorporated. To augment the thrust of the ejection gun a Martin-Baker rocket pack is fitted to the underside of the seat pan.

The personal parachute is contained in a semi-rigid pack which forms a backrest and the survival equipment is stored in the seat pan and contained in a glass fibre survival pack.

THE QUEEN'S AWARD
TO INDUSTRY 1966

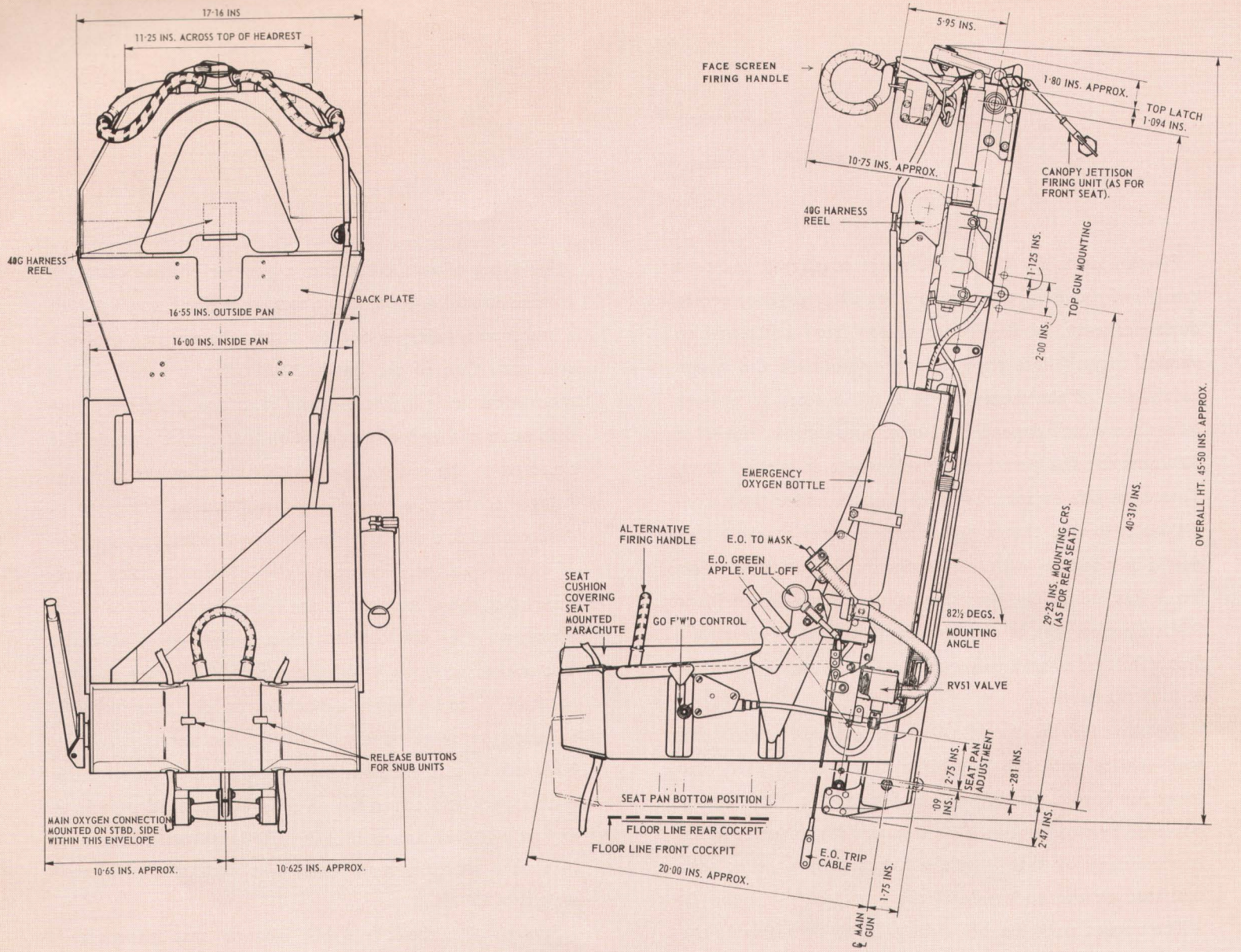
Martin-Baker Aircraft Company Limited

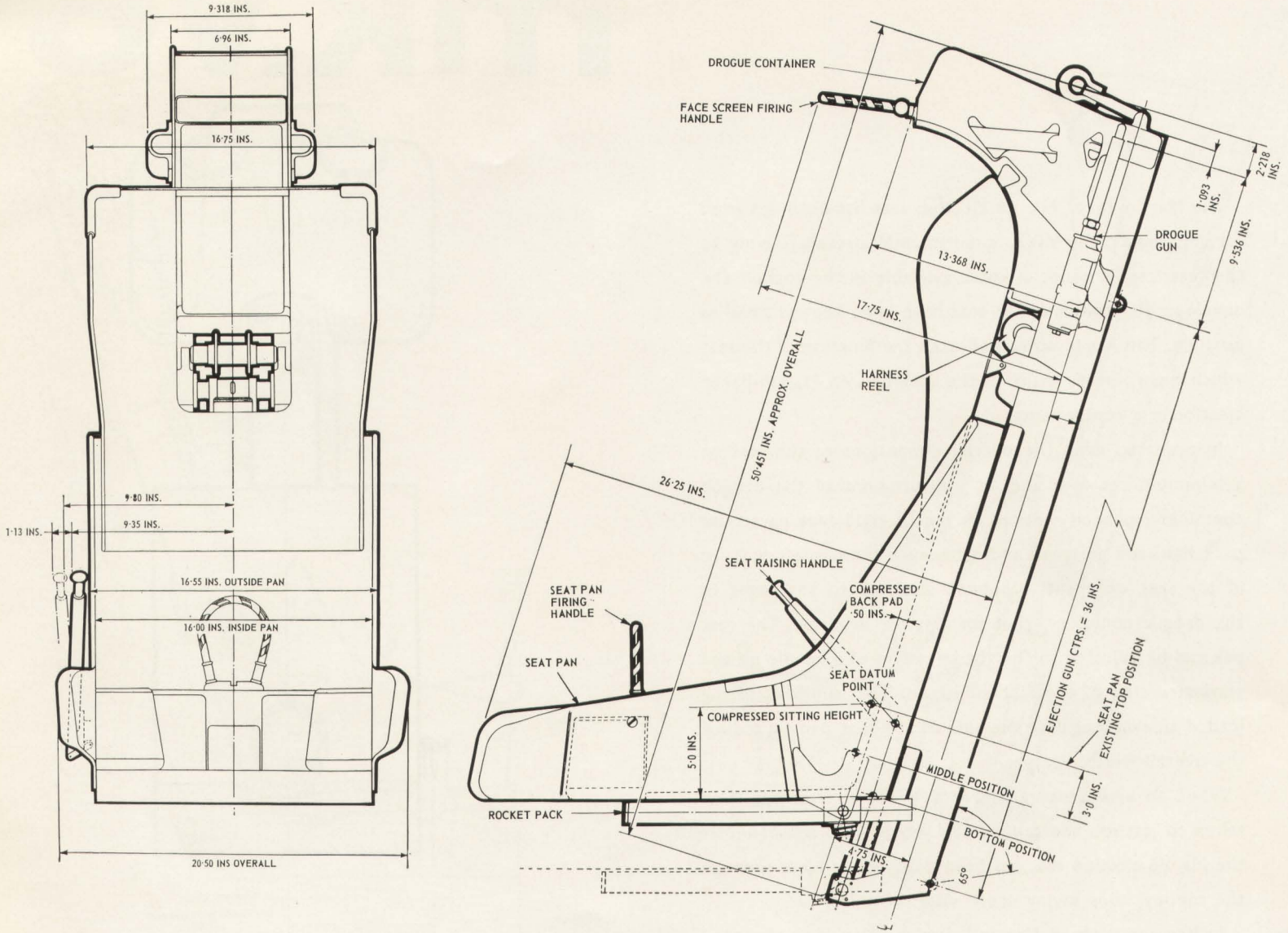
HIGHER DENHAM, NEAR UXBRIDGE, MIDDLESEX, ENGLAND.

rising to the occasion

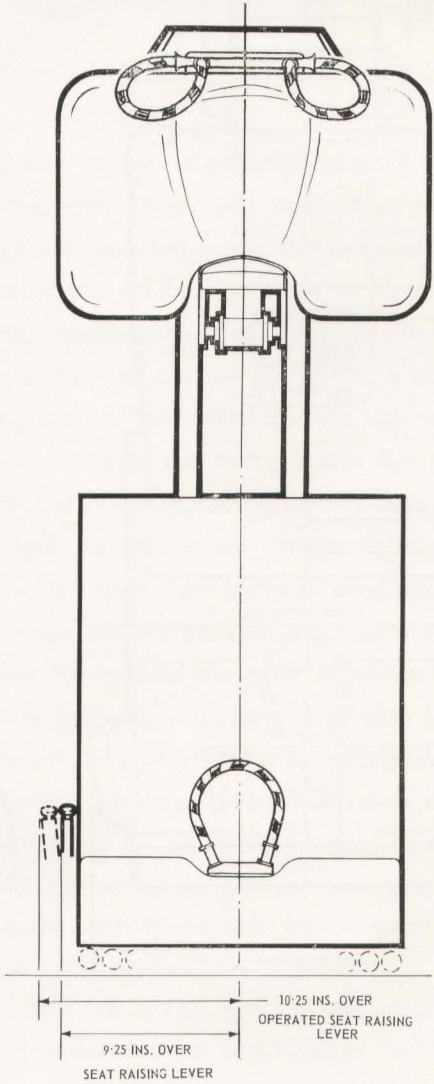
present day trends in ejection seat development

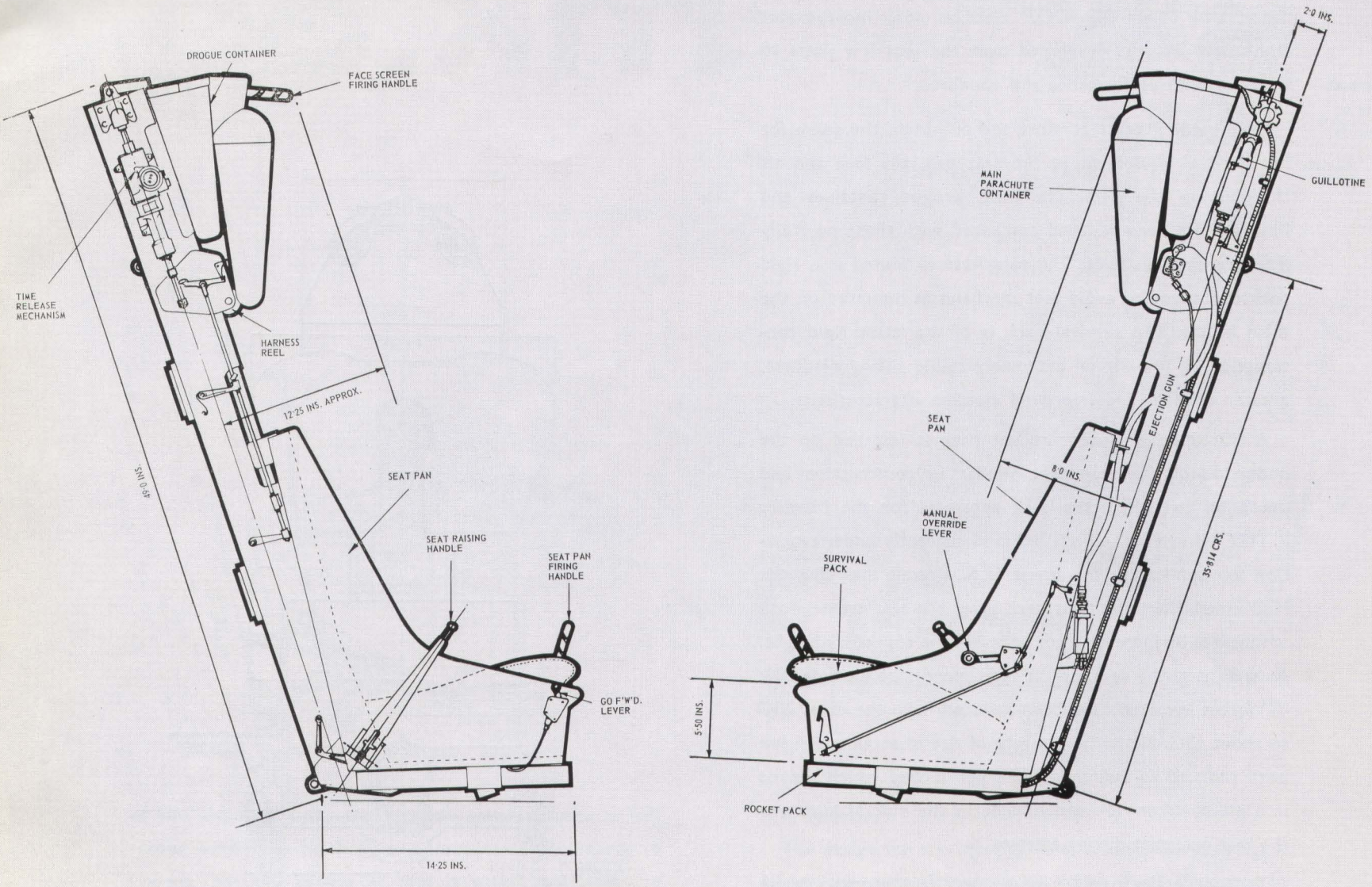
MARTIN-BAKER


17·16 INS
11·25 INS. ACROSS TOP OF HEADREST
40G HARNESS REEL
BACK PLATE
16·55 INS. OUTSIDE PAN
16·00 INS. INSIDE PAN
RELEASE BUTTONS FOR SNUB UNITS
MAIN OXYGEN CONNECTION MOUNTED ON STBD. SIDE WITHIN THIS ENVELOPE
10·65 INS. APPROX.
10·625 INS. APPROX.
5·95 INS.
FACE SCREEN FIRING HANDLE
1·80 INS. APPROX.
TOP LATCH 1·094 INS.
10·75 INS. APPROX.
CANOPY JETTISON FIRING UNIT (AS FOR FRONT SEAT).
40G HARNESS REEL
1·125 INS.
TOP GUN MOUNTING
2·00 INS.
EMERGENCY OXYGEN BOTTLE
ALTERNATIVE FIRING HANDLE
E.O. TO MASK
E.O. GREEN APPLE. PULL-OFF
SEAT CUSHION COVERING SEAT MOUNTED PARACHUTE
GO F'W'D CONTROL
82½ DEGS. MOUNTING ANGLE
29·25 INS. MOUNTING CRS. (AS FOR REAR SEAT)
40·319 INS.
OVERALL HT. 45·50 INS. APPROX.
RV51 VALVE
2·75 INS. SEAT PAN ADJUSTMENT
·281 INS.
·09 INS
SEAT PAN BOTTOM POSITION
FLOOR LINE REAR COCKPIT
FLOOR LINE FRONT COCKPIT
E.O. TRIP CABLE
2·47 INS.
20·00 INS. APPROX.
1·75 INS.
℄ MAIN GUN

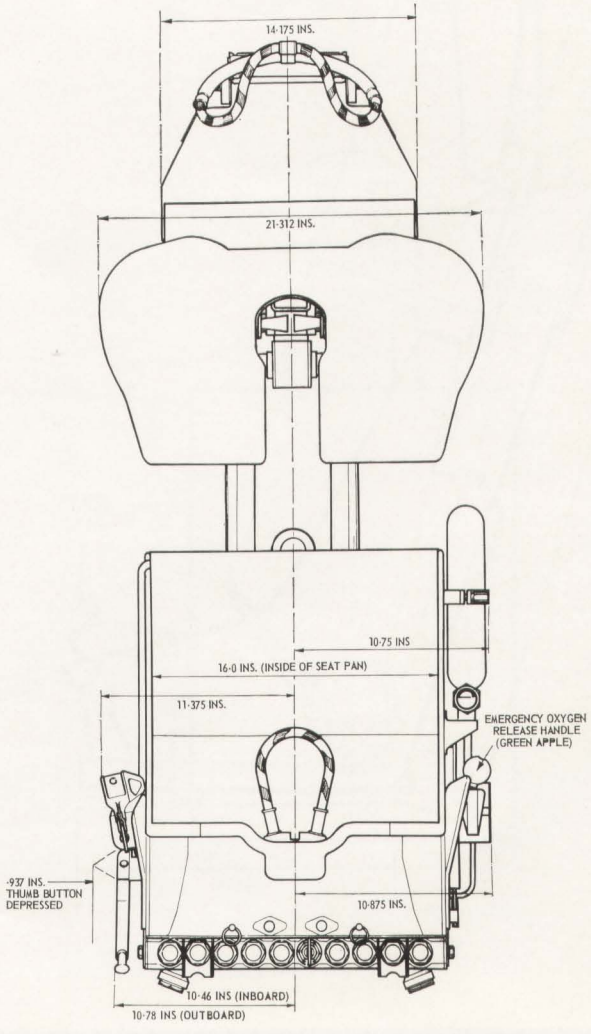

9·318 INS.
6·96 INS.
16·75 INS.
9·80 INS.
9·35 INS.
1·13 INS.
16·55 INS. OUTSIDE PAN
16·00 INS. INSIDE PAN
20·50 INS OVERALL
DROGUE CONTAINER
FACE SCREEN FIRING HANDLE
1·093 INS.
2·218 INS.
DROGUE GUN
9·536 INS.
13·368 INS.
17·75 INS.
HARNESS REEL
50·451 INS. APPROX. OVERALL
26·25 INS.
SEAT RAISING HANDLE
COMPRESSED BACK PAD ·50 INS.
SEAT PAN FIRING HANDLE
SEAT PAN
SEAT DATUM POINT
COMPRESSED SITTING HEIGHT
5·0 INS.
EJECTION GUN CTRS. = 36 INS.
SEAT PAN EXISTING TOP POSITION
3·0 INS.
MIDDLE POSITION
ROCKET PACK
BOTTOM POSITION
1·75 INS.
65°

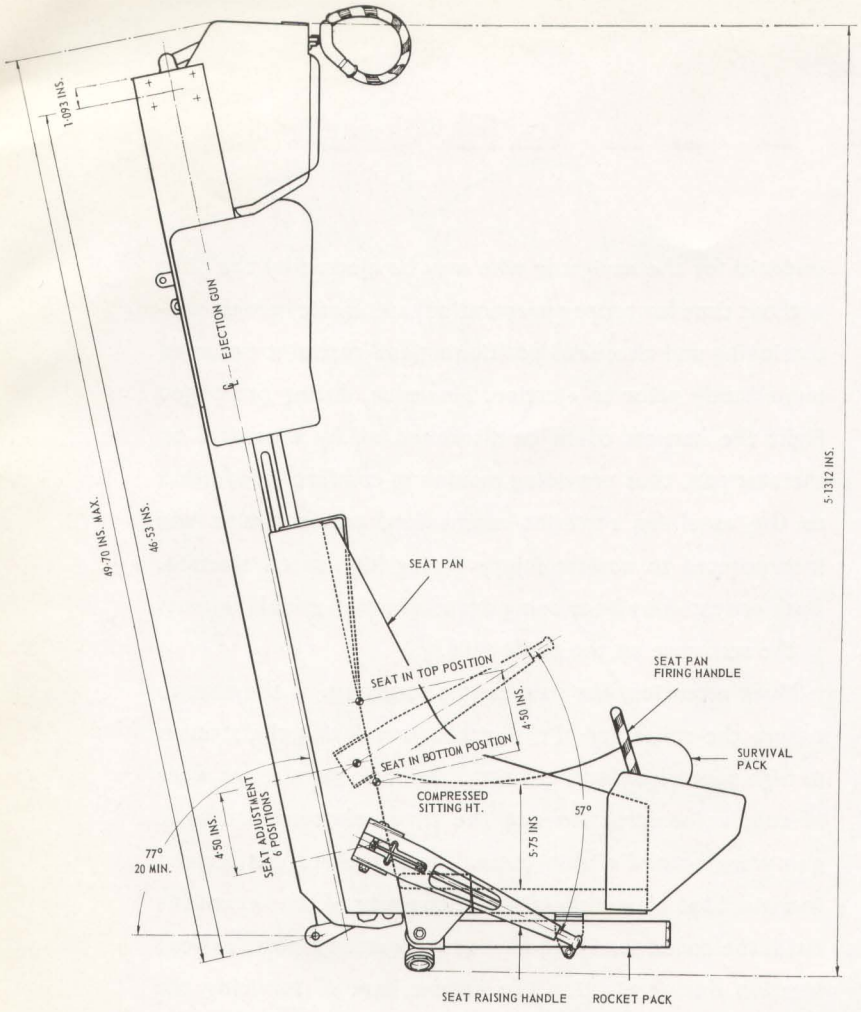
mk.v6

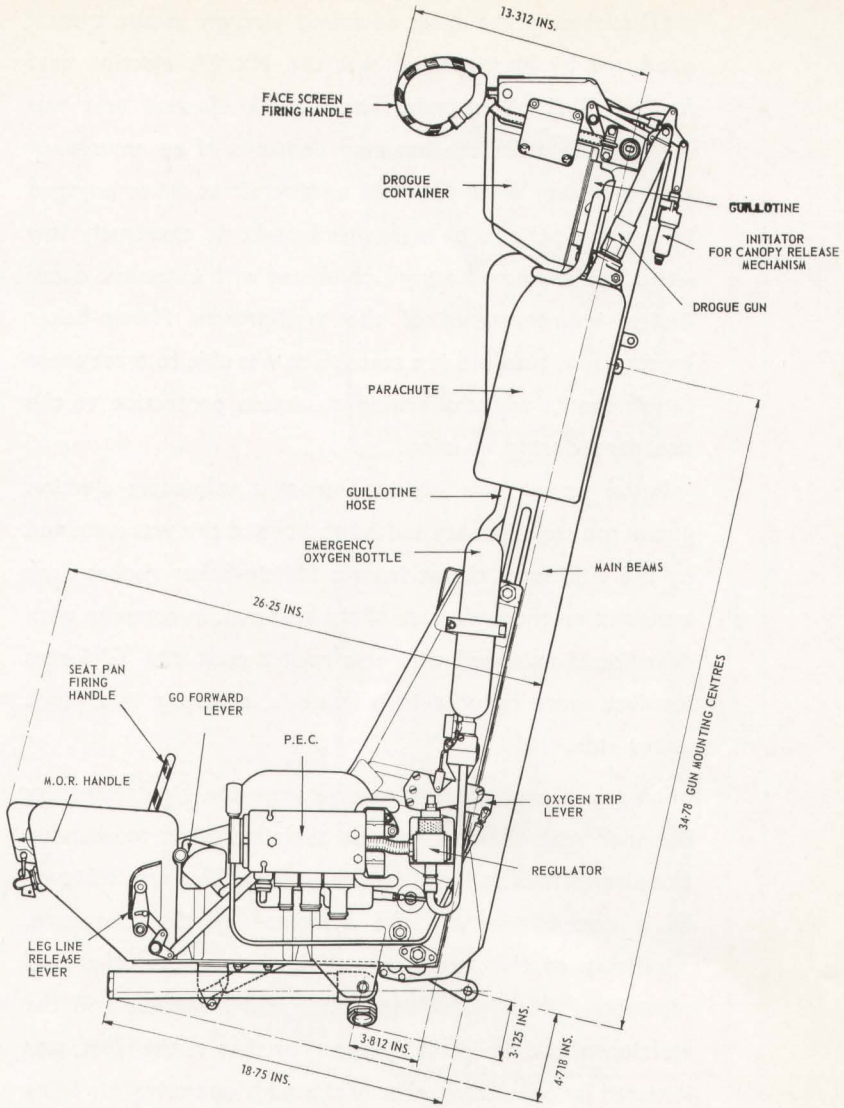

10·25 INS. OVER
OPERATED SEAT RAISING
LEVER
9·25 INS. OVER
SEAT RAISING LEVER


DROGUE CONTAINER
FACE SCREEN FIRING HANDLE
TIME RELEASE MECHANISM
HARNESS REEL
12·25 INS. APPROX.
SEAT PAN
SEAT RAISING HANDLE
SEAT PAN FIRING HANDLE
GO F'W'D. LEVER
45·0 INS.
14·25 INS.
2·0 INS.
MAIN PARACHUTE CONTAINER
GUILLOTINE
SEAT PAN
EJECTION GUN
8·0 INS.
MANUAL OVERRIDE LEVER
SURVIVAL PACK
35·814 CRS.
5·50 INS.
ROCKET PACK

mk.dq7

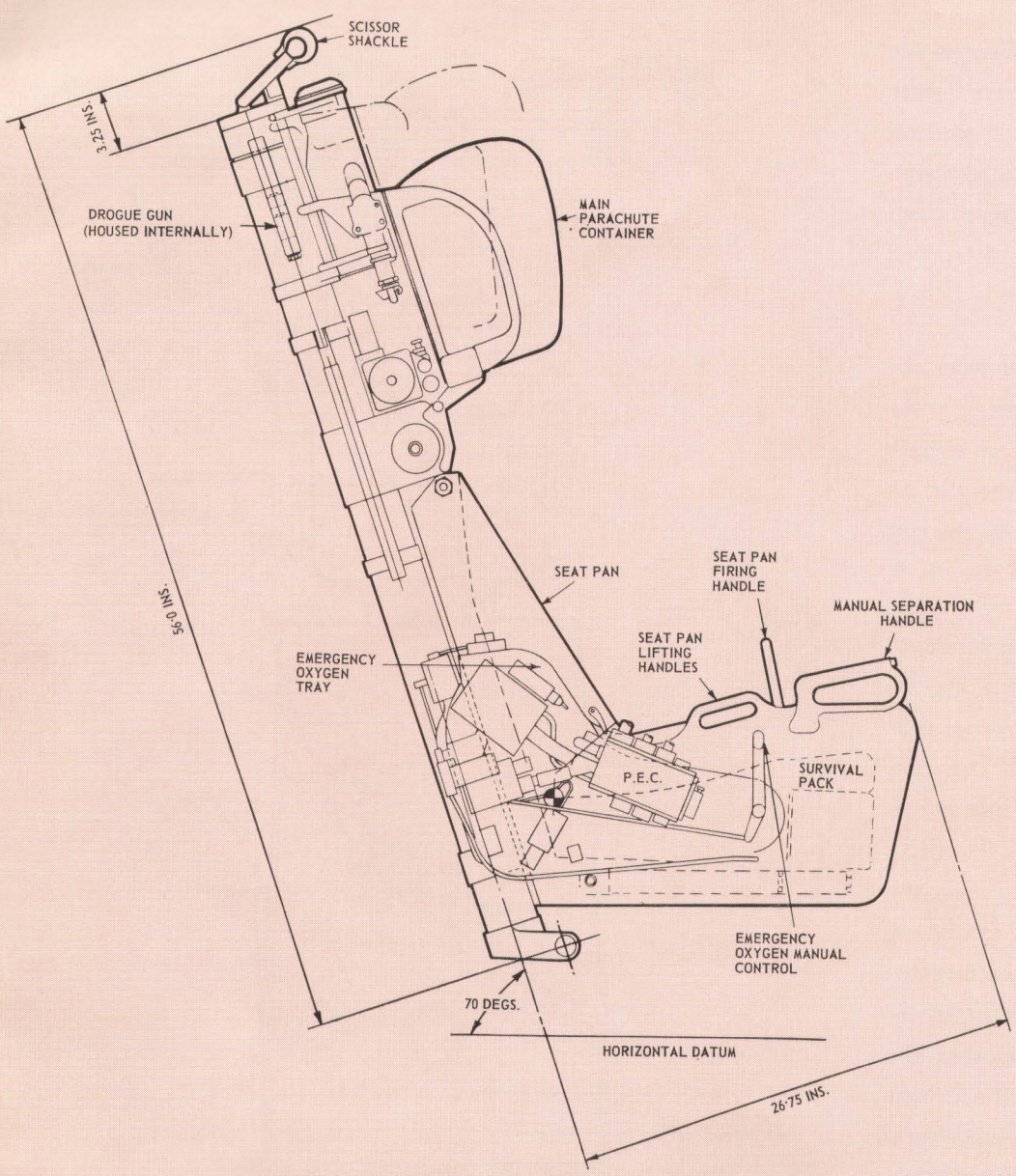

14·175 INS.
21·312 INS.
10·75 INS
16·0 INS. (INSIDE OF SEAT PAN)
11·375 INS.
EMERGENCY OXYGEN RELEASE HANDLE (GREEN APPLE)
·937 INS. THUMB BUTTON DEPRESSED
10·875 INS.
10·46 INS (INBOARD)
10·78 INS (OUTBOARD)

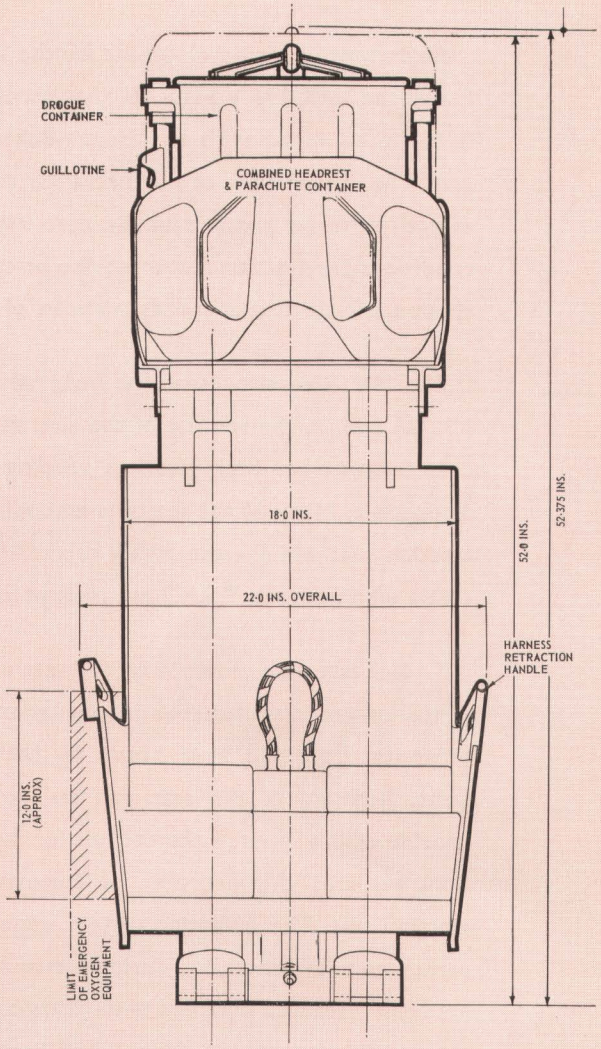




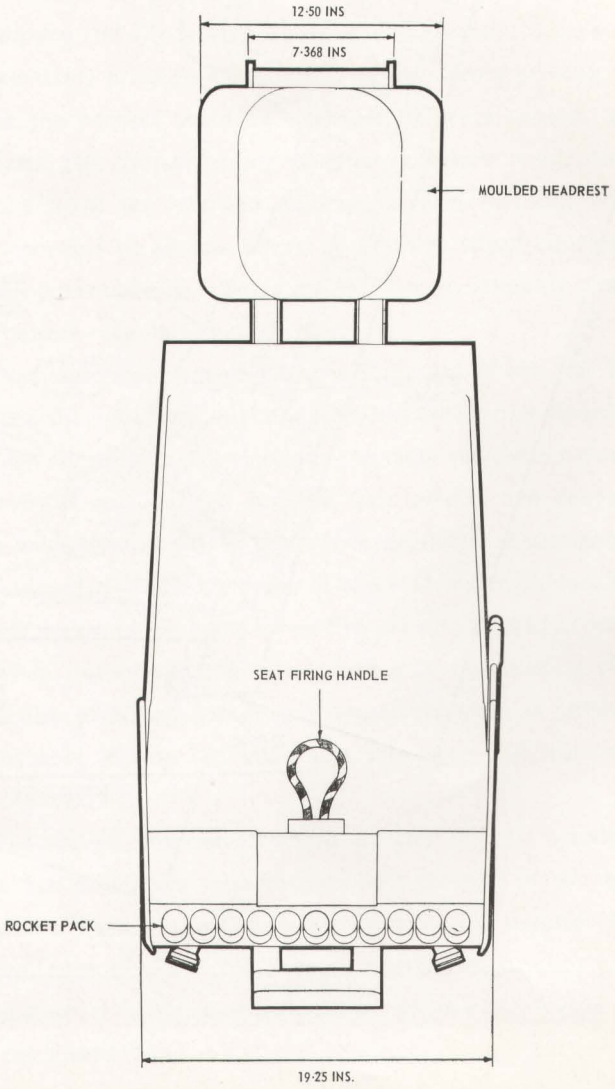
of the aircraft before the ejection seat operates, a half second time delay mechanism is installed in the breech of the ejection gun. When the sear is withdrawn from the time delay mechanism the initial downward movement of the firing pin is controlled by an escapement mechanism until a delay of a half second has elapsed when the firing pin is free to descend, under spring pressure, to strike the percussion cap of the primary cartridge and thus initiate seat ejection.

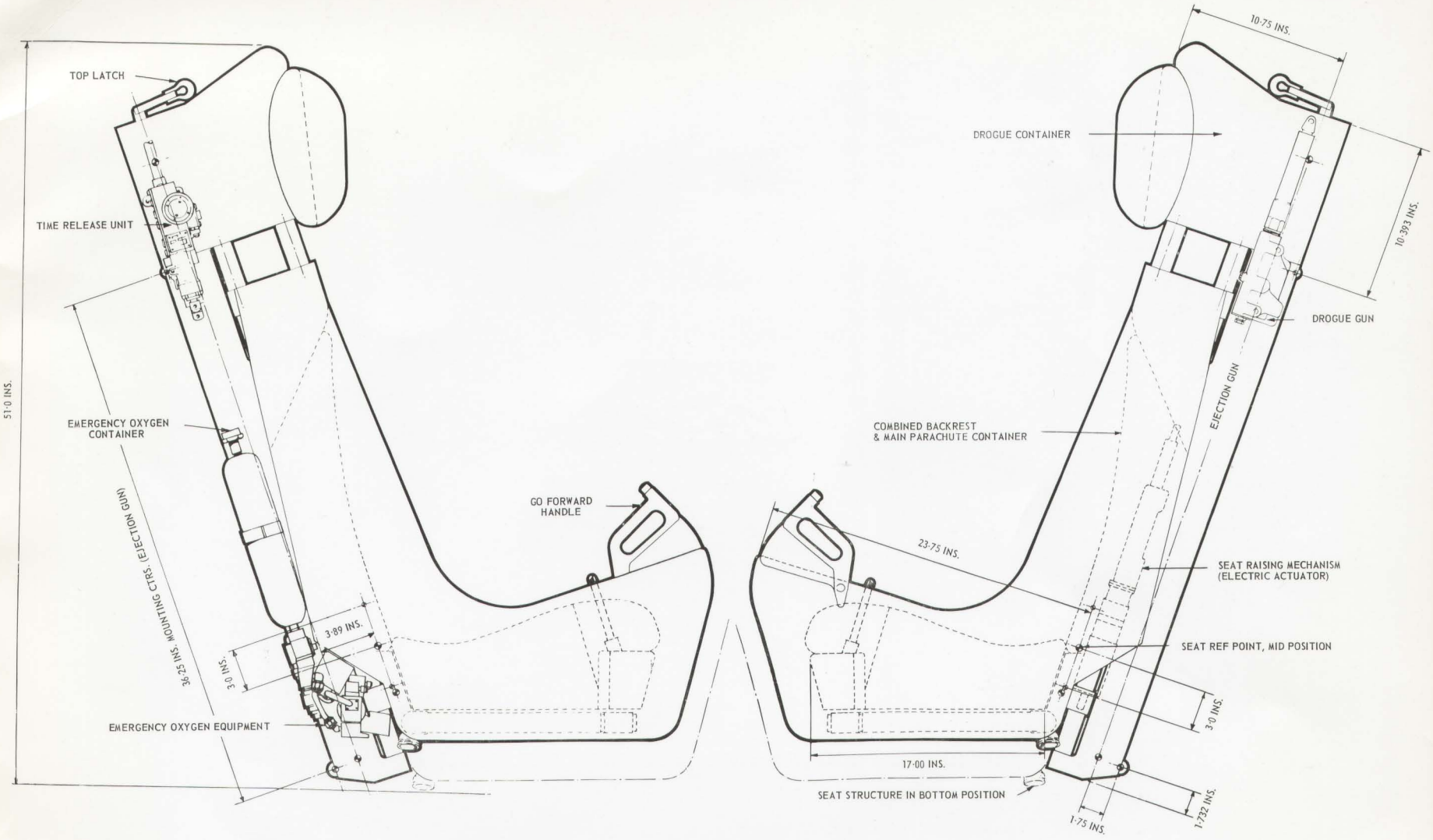
The design for the Mk DQ7 seat is based on the original Martin-Baker seat for the F-104 which was fully tested by the Lockheed Aircraft Corporation on the high speed sled track up to a speed of 640 knots. This has now brought into being a seat both wholly compatible with the cockpit of the F-104 and possessing unsurpassed ejection characteristics.


SCISSOR SHACKLE
3·25 INS.
DROGUE GUN (HOUSED INTERNALLY)
MAIN PARACHUTE CONTAINER
56·0 INS.
SEAT PAN
SEAT PAN FIRING HANDLE
MANUAL SEPARATION HANDLE
SEAT PAN LIFTING HANDLES
EMERGENCY OXYGEN TRAY
P.E.C.
SURVIVAL PACK
EMERGENCY OXYGEN MANUAL CONTROL
70 DEGS.
HORIZONTAL DATUM
26·75 INS.


DROGUE CONTAINER
GUILLOTINE
COMBINED HEADREST & PARACHUTE CONTAINER
18·0 INS.
22·0 INS. OVERALL
52·0 INS.
52·375 INS.
HARNESS RETRACTION HANDLE
12·0 INS. (APPROX)
LIMIT OF EMERGENCY OXYGEN EQUIPMENT

mk.9


12·50 INS
7·368 INS
MOULDED HEADREST
SEAT FIRING HANDLE
ROCKET PACK
19·25 INS.



Attached to the front of the drogue container is a specially moulded head rest which provides positive head location during ejection. Like the Mk. 8A ejection seat the Mk. 9 does not incorporate a face screen firing handle, the ejection sequence being initiated by the seat pan firing handle and to prevent injury during high speed ejection, harness retraction and leg and arm restraint systems are incorporated. To augment the thrust of the ejection gun a Martin-Baker rocket pack is fitted to the underside of the seat pan.

The personal parachute is contained in a semi-rigid pack which forms a backrest and the survival equipment is stored in the seat pan and contained in a glass fibre survival pack.

Martin Baker
ejector seat
(34)
WA

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