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Including Space Technology

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AIRCRAFT A

SPACE VEHICLES & MISSILES B

AVIONICS C

SUPPORT EQUIPMENT D

AIRLINE & AIRPORT EQUIPMENT E

BUYERS' GUIDE ISSUE

1951

1951—First lightweight all-metal anchor nut

1952

1952—First narrow lightweight gang channel

"The Most Copied Nut In The World"

1953—First narrow lightweight floating anchor nut

1954—First miniature anchor nut

1953

1954

1955—First miniature floating anchor nut

1956—First deep counterbore floating anchor nut

SETTING STANDARDS OF PROGRESS

1956—First internal/external wrenching hex nut

1955

1956

1956—First lightweight A-286 corrosion-resistant steel anchor nut and hex nut

1957—First complete line of NAS low-height nuts with thread relief

1957—First lightweight high tensile 12 pt. nut

1957

KAYLOCK

All-metal self-locking nuts ®

'symbol of leadership'

KAYNAR MFG. CO. INC. has become the world's leading manufacturer of lightweight all metal self-locking aircraft nuts.

- *All metal, rugged one piece construction*
- *Highest strength, lightest weight, lowest height*
- *Uniform locking torque* • *"Infinite" re-usability*

Kaylock Nuts conform to all Air Force-Navy standards: AN363, AN364, AN365, AN366, and the new low height lightweight National Aircraft Standards.

Kaylock Nuts available in steel or A-286 corrosion-resistant steel for use to 1200°F.

1958—First two-point miniature nut

Trade Mark

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Canadian Distributor: Abercorn Aero Ltd., Montreal, Quebec
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This fourth annual edition of the Aviation Week Buyers' Guide includes listings of Canadian firms serving the aircraft industry. You will find these companies listed separately in the Manufacturers' and Distributors' Indexes, but integrated alphabetically with U. S. firms in the product listings.

How to use the 1959 Buyers' Guide

SECTIONS OF GUIDE

A: AIRCRAFT. This section lists products that are installed either complete or as major systems in an airplane. Powerplants, major components, such complete units as seats or control assemblies are to be found herein.

B: MISSILES, SPACE VEHICLES AND COMPONENTS. Listings are similar to those in Section A, but are applicable specifically to missiles. Specialized supporting equipment is also listed, but common support items are not included here.

C: AVIONICS. The specialized equipment listings in this section include all the common parts—tubes, transistors, switches and rheostats—plus the large radars and computers, fire-control systems and specialized units that extend man's knowledge and control of a weapon.

D: SUPPORTING EQUIPMENT AND FACILITIES. The increasing importance of the task of support of a weapon system is recognized by setting these items apart in a category of their own, including all the hardware items, fasteners, raw materials and services that go into supporting functions.

E: AIRLINE AND AIRPORT EQUIPMENT. In this section are listed the hundreds of companies, small and large, that sell transportation of people or cargo; the manufacturers of large fixed items like hangars and runways and lighting systems; and services of airport constructors.

SECTIONALIZED FORMAT . . .

The Guide divides its manufactured products listing into five separate sections of related interest. This is done for maximum convenience in finding any particular item or service.

IF YOU ARE BUYING . . .

Refer to the alphabetical product index which follows to find the page number of each specific product with its manufacturers. All products in this Guide are indexed by section and page number. For example: Alternators . . . C-3 . . . would be found in Section C, page 3.

IF YOU ARE SELLING . . .

You will find the names of the buyers of complete systems and components for the military services between pages 17 and 26, and for the commercial airlines on page E-8.

MANUFACTURERS AND DISTRIBUTORS . . .

An alphabetical listing of manufacturers whose products are featured in this Guide begins on page 26. A similar listing of distributors serving the aircraft industry begins on page F-2.

BOLD-FACE LISTINGS . . .

Advertisers in the Guide are bold-faced in the Manufacturers' Index, the Distributors' Index and in the Product Listings, and page numbers of their advertisements are shown.

ADVERTISED PRODUCTS . . .

An index of advertisers, with page numbers of their ads, begins on page F-3. A special index of advertisers' products beginning on page 45 will help you to obtain complete information on products quickly and easily by referring to the advertising pages.

READER SERVICE . . .

Further information on all products advertised in the Guide is quickly available. Use the convenient, postage-paid card inserts, placed throughout the book, which are keyed to advertisements.

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Services List Contract Types That Govern Military Buying

One of the major responsibilities of the negotiator is the selection of the type of contract best suited to the procurement which he is conducting. His choice will have an important effect on the ultimate cost of the contract, on the incentive given the contractor to use materials and manpower efficiently, and on the nature of the supervision which must be exercised over the performance of the contract. While early agreement between the negotiator and the contractor is desirable, the negotiator should not hurry the decision on the contract type to be used. This decision will be based on a number of factors: the nature of the procurement, the contractor's production and cost experience, the degree of competition present, the availability of comparative cost data, the assumption of business risk, and the extent of the control which can and should be maintained over the contractor's operations. It is doubly important to avoid a premature decision, because the course of the negotiations will be considerably influenced by the type of contract contemplated for use.

Under certain circumstances it may be desirable to obtain greater flexibility in contract negotiations by asking the contractor to quote prices on more than one type. In such circumstances, if only one type of contract is considered and quoted upon and if, during negotiations, this proves unsatisfactory, a new contract proposal undoubtedly will be required, and much time and effort will have been wasted.

If it were always possible to establish firm prices which were fair both to the contractor and the purchaser, the determination of the most suitable type of contract would be no problem. A firm-fixed-price-contract would be used for all procurements. But the determination of fair prices for many items purchased is often a difficult, it not an impossible, task.

For this reason, several major types of contracts have been authorized for use by negotiators, as well as a number of specialized types designed to meet specific situations.

I–1 Firm Fixed Price Contracts

A. Explanation
   (a) Supplies or services are furnished at a specified firm price regardless of actual cost of performance.
B. Use
   (a) When sound cost estimates are possible.
      (i) Commercial-type items available from competing sources.
      (ii) Military type equipment previously produced on which relevant production and cost experience are available.
   (b) When a contractor desires to share costs of a research contract.
C. Advantages
   (a) Places maximum risk and responsibility upon the contractor; consequently, results in the greatest incentive for cost reduction.
   (b) Easiest and least costly type of contract to administer.
D. Disadvantages
   (a) Price may include excessive allowance for contingencies.

I–2.A Incentive Fixed Price

A. Explanation
   (a) Supplies are furnished at a tentative base price (target price). Upon completion of the work the price is redetermined based on the contractor's actual costs plus a sliding scale of profit which varies inversely with the cost. The redetermined price cannot exceed the ceiling price stated in the contract.
B. Use
   (a) When production is spread over a relatively long period.
   (b) When difficulty is encountered in negotiating a firm fixed price under the anticipated production conditions.
   (c) When target costs can be established initially or at an early interim point with substantial accuracy.
   (d) When reasonable opportunities for cost reduction through contract or efficiencies exist.
C. Advantages
   (a) Not necessary for contractor to include excessive allowances for contingencies.
   (b) Encourages cost reduction by contractor.
   (c) Government shares in contractor's cost reductions.
   (d) Government receives "after-the-fact" cost information valuable in negotiating follow-on procurements.
   (e) By varying the ceiling, the starting profit, and the profit sharing formula, contract can be adapted to fit many situations.
D. Disadvantages
   (a) Contractor has less incentive than under a firm-fixed-price-contract.
   (b) More costly and difficult to administer than a firm fixed price contract.

I–2.B. Maximum Price

A. Explanation
   (a) Supplies are furnished at a maximum price which is redetermined downward only after a specified percentage of the work has been completed. The final price is based on actual costs incurred to point of redetermination plus estimated costs to complete.
B. Use
   (a) When sound cost estimates cannot be made at the beginning of the work, but can be made after a certain minimum percentage of the work has been completed.
      (i) Repetitive work so that cost experience on the first portion permits the accurate projection of completion costs.
      (ii) Work extended over a sufficient period of time to permit redetermination before completion of contract.
C. Advantages
   (a) Permits fixed price contracting even when sound cost estimates are not possible at the beginning of the work.
   (b) Final price is based on additional cost information.
D. Disadvantages
   (a) Up until the time of redetermination, contractor has little incentive to keep costs low.
   (b) Because of time lag between point of redetermination and redetermination negotiations, contractor not only has later cost information than negotiators but may have completed a very large percentage of the work.
   (c) More costly and difficult to administer than a firm fixed price contract.

I–2.C. Flexible Fixed Price

A. Explanation
   (a) Supplies are furnished at a tentative price which is redetermined upward (subject to a ceiling) or downward after a specified percentage of the work has been completed. The final price is based on actual costs incurred to point of redetermination plus estimated costs to complete.
B. Use
C. Advantages
D. Disadvantages
   } Identical to those listed for "maximum-fixed-price-contract" since only difference is that price can be redetermined upward.

I–2.D. Fixed Price with Escalation

A. Explanation
   (a) Supplies are furnished at a fixed price which is subject to revision on the occurrence of specified contingencies. Applies to increases in material prices and labor rates and not to the quality of material or labor required.
B. Use
   (a) When increases or decreases in specific costs such as material prices or labor rates are beyond the control of the contractor.
C. Advantages
   (a) Government avoids paying for contingencies that do not occur.
   (b) Permits fixed price contracting even if certain cost elements are not subject to accurate prediction.
D. Disadvantages
   (a) Government assumes part of contractor's risk.
   (b) Additional administrative problems.

II–1. Cost-Plus-Fixed-Fee

A. Explanation
   (a) Supplies or services are furnished at actual cost plus a fixed fee which is based on a negotiated percentage of the original estimated cost.
B. Use
   (a) When it is impossible to estimate costs with any degree of accuracy.
      (i) Research and development work.
      (ii) Specifications not firm.
C. Advantages
   (a) Government avoids paying for contingencies that do not occur.
   (b) Profit not based on costs so contractors have no incentive to pad costs.
D. Disadvantages
   (a) Contractors have little incentive to reduce costs.
   (b) Most costly type of contract to administer.

II–2. Cost-No-Fee

A. Explanation
   (a) Supplies or services furnished at actual cost with no fee or profit allowed.
B. Use
   (a) When it is impossible to estimate costs with any degree of accuracy. Primarily used with educational and nonprofit organizations.
C. Advantages
D. Disadvantages
   } Identical to cost-plus-fixed-fee contracts

III–Letter Contract

A. Explanation
   (a) A written preliminary contractual instrument which authorizes immediate commencement of manufacture of supplies, or performance of services, including, but not limited to, preproduction planning and procurement of necessary materials.
B. Use
   (a) When interests of national defense demand contractor be given binding commitment so that work can be commenced immediately.
   (b) Negotiation of a definitive contract in sufficient time to meet procurement need is not possible.
C. Advantages
   (a) Quick contractural coverage.
D. Disadvantages
   (a) Competition required, when practicable.
   (b) Time lag before conversion to definitive contract.
   (c) Government assumes part of contractor's risk.

IV–Notice of Award

A. Explanation
   (a) A TWX or letter form that specifies firm pricing terms, deliveries and specifications, but incorporates other clauses by reference. Must be superseded by a definitive contract.
B. Use
   (a) When prompt contractual coverage is required and all terms have been agreed upon.
C. Advantages
   (a) Prompt contractual coverage.
D. Disadvantages
   (a) Administrative work.
   (b) Not as satisfactory legally as a firm contract.

Military Sales: Where to Go, Whom to See

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* As an additional procurement organization: Procurement of engineering, management, and other services for Air Defense Systems such as SAGE, DEW Line/White Alice and Ballistic Missile Early Warning System is assigned to the Electronics Defense Systems Division (EDSD) at New York City, N. Y.

Memphis Air Force Depot, Mallory Air Force Station, 3300 Jackson Ave., Memphis, Tenn. Attn: Directorate of Procurement and Production.
Railway equipment; motor vehicles, trailers and cycles; tractors; vehicular equipment components; gasoline reciprocating engines (except aircraft) and components; diesel engines and components; engine fuel systems components, non-aircraft; engine electrical systems components, non-aircraft; engine cooling, systems components, non-aircraft; engine air and oil filter, strainers and cleaners, non-aircraft; misc. engine accessories non-aircraft; gas generating equipment (ground); construction, mining, excavating and highway maintenance equipment; materials handling equipment; firefighting equipment; lubrication and fuel dispensing equipment; electric vehicular lights and fixtures non-aircraft.
Contractual maintenance and modification services for support for commodity areas listed above.

Dayton Air Force Depot, Gentile Air Force Station, Dayton, Ohio. Attn: Directorate of Procurement and Production.
Airborne radio, radar and navigational equipment and components; airborne communications equipment; electrical and electronic equipment, components; terminals, terminal boards, connectors, fuses, lightning arrestors, capacitors, resistors, switches, circuit breakers, tubes, relays, contactors, solenoids, insulators, knobs, pointers, dials and piezoelectric crystals; laboratory and shop test inspection equipment and maintenance parts; measuring tools; inspection gages; combination and miscellaneous instruments.
Contractual maintenance and modification services for support for commodity areas listed above. (* Except GFAE)

Rome Air Force Depot, Griffiss Air Force Base, Rome, N. Y. Attn: Directorate of Procurement and Production.
Ground radio, radar and navigational equipment; meteorological equipment, instruments (except airborne) and supplies; ground communications equipment; structural and installation parts for communications equipment; miscellaneous electric power and distribution equipment; photographic supplies; commercial electrical equipment and supplies; lighting fixtures, airport; lighting fixtures and lamps (except airborne); electric wire and cable; contractual maintenance and modification services for support for commodity areas listed above.
Procurement of systems integration, development, service test and similar functions required for implementation and operation of Electronic Support Systems (ESSPOs). Procurement of engineering and installation of ground electronics equipment, facilities and systems (GEEIA)

Mobile Air Materiel Area, Brookley Air Force Base, Mobile, Ala. Attn: Directorate of Procurement and Production.
Airframe structural components; aircraft air conditioning, pressurizing and breathing oxygen equipment; miscellaneous aircraft and engine accessories and components; mechanical power transmission equipment; containers and packaging materials; construction and building materials; prefabricated structures and scaffolding; hardware and abrasives; hand tools; alarm and signal systems; special industry machinery and equipment except gas generating equipment; rope, cable, chain and fittings; pumps and compressors; refrigeration and air conditioning equipment; furnace, steam plant and drying equipment; valves; plumbing, heating and sanitation equipment; water purification and sewage treatment equipment; pipe, tubing, hose and fittings;

lumber, millwork, plywood and veneer; ship and marine equipment; brushes, paints, sealers and adhesives; non-metallic fabricated materials; metal bars, sheets and shapes; ores, minerals and their primary products.

Contractual maintenance and modification services for support for commodities listed above and aircraft and/or engines for which the installation has prime maintenance responsibility.

Middletown Air Material Area, Olmsted Air Force Base, Middletown, Pa. Attn: Directorate of Procurement and Production.

Airframe structural components and aircraft and rocket engine parts; fuels, lubricants, oils, waxes and corrosion preventive compounds; chemicals and chemical products; gases, compressed and liquified and gas cylinders; miscellaneous instruments (other than GFAE) and laboratory equipment; electrical meters and maintenance parts; parachutes and aerial pick-up and cargo tiedown equipment; clothing, textiles and individual equipment (except single manager (Dept. of Army) clothing and textiles)); service and trade equipment; food preparation and serving equipment.

Contractual maintenance and modification services for support for commodities listed above and aircraft and/or engines for which the installation has prime maintenance responsibility.

Ogden Air Materiel Area, Hill Air Force Base, Ogden, Utah. Attn: Directorate of Procurement and Production.

Airframe structural components and engine parts; aircraft landing shock struts; aircraft hydraulic vacuum and de-icing systems components; training aids and devices except airborne type and items; ammunition and explosives (except Army Ordnance assigned items); ammunition maintenance and repair shop specialized equipment; ammunition packaging and special containers; laboratory equipment biological surveillance.

Contractual maintenance and modification services for support for commodities listed above—aircraft wheels and brakes, tires, tubes and aircraft and/or engines for which the installation has prime maintenance responsibility.

Sacramento Air Materiel Area, McClellan Air Force Base, Sacramento, Calif. Attn: Directorate of Procurement and Production.

Airframe structural components; generators and generator sets, electrical; aircraft auxiliary fuel tanks and pylons except fixed type.

Contractual maintenance and modification services for support for commodities listed above and aircraft and/or engines for which the installation has prime maintenance responsibility.

Oklahoma City Air Material Area, Tinker Air Force Base, Oklahoma City, Okla. Attn: Directorate of Procurement and Production.

Airframe structural components and aircraft engine parts; miscellaneous engine accessories (aircraft) and maintenance parts; aircraft engine cooling systems components; aircraft engine air and oil filters, strainers and cleaners.

Contractual maintenance and modification services for support for commodities listed above and aircraft and/or engines for which the installation has prime maintenance responsibility.

San Antonio Air Materiel Area, Kelly Air Force Base, San Antonio, Tex. Attn: Directorate of Procurement and Production.

Airframe structural components and aircraft engine parts; aircraft engine fuel and electrical system components; motors and converters, electrical; special weapons and equipment (atomic ordnance); hazard detecting instruments and apparatus; aircraft electric lights and fixtures.

Contractual maintenance and modification services for support for commodities listed above and aircraft and/or engines for which the installation has prime maintenance responsibility.

Warner Robins Air Materiel Area, Robins Air Force Base, Macon, Ga. Attn: Directorate of Procurement and Production.

Airframe structural components; aircraft launching, landing and ground handling equipment; weapons (guns, chemical and biological) except Army Ordnance assigned items; bearings; metal working machinery and woodworking machinery and equipment; maintenance and repair shop equipment (aircraft, motor vehicle and weapons); tires and tubes, except aircraft; gas turbines and jet engines, except aircraft; rescue and safety equipment.

Contractual maintenance and modification services for support of commodities listed above, bombing, gunnery and fire control systems and equipment and aircraft and/or engines for which the installation has prime maintenance responsibility.

San Bernardino Air Materiel Area, Norton Air Force Base, San Bernardino, Calif. Attn: Directorate of Procurement and Production.

Airframe structural components. Contractual maintenance and modification services for support for aircraft and/or engines for which the installation has prime maintenance responsibility.

** Air Force Central Procurement requirements for commodities under DOD Single Department Procurement assignment or under Single Manager assignment are procured by the Department of Army or Navy. Items designated for procurement by General Services Adminsitration are procured by GSA for the Air Force.

Apply to the nearest Air Force Procurement District to have your firm placed on Bidders' lists. To obtain a copy of a specified bid of specifications, however, apply directly to the purchasing office. Copies of current Invitations for Bids and Requests for Proposals, with specifications, are available for reference at Air Procurement District offices. These offices are located at the following addresses: 760 West Peachtree Street, NW., Atlanta, Ga.; 14 Court Square, Boston, Mass.; 165 North Canal Street, Chicago, Ill.; Big Four Bldg., Cincinnati, Ohio (suboffice); 1279 West Third Street, Cleveland, Ohio; 1407 Ross Avenue, Dallas, Tex.; Building 70, Area C, Wright-Patterson Air Force Base, Ohio; West Warren Avenue and Lonyo Boulevard, Detroit, Mich.; 500 Capitol Avenue, Hartford, Conn. (suboffice); 54 Monument Circle, Indianapolis, Ind.; 2601 Walnut Street, Phoenix, Ariz.; 20 Symington West Washington Boulevard, Los Angeles, Calif.; 770 North Plankinton Avenue, Milwaukee, Wis.; 910 Second Street, Minneapolis, Minn. (suboffice); 218 Market Street, Newark, N. J.; 780 Broadway, New York, N. Y.; 1411 Walnut Street, Philadelphia, Pa.; 133 West Monroe Street, Phoenix, Ariz.; 20 Symington Place, Rochester, N. Y.; 1114 Market Street, St. Louis, Mo.; 22 Southwest Temple Street, Salt Lake City, Utah (suboffice); 4325 Pacific Highway, San Diego, Calif.; 7755 East Marginal Way, c/o Boeing Aircraft Corporation, Seattle, Wash. (suboffice); 521 North Eclipse Street, South Bend, Ind. (suboffice); 449 West Oliver, Wichita, Kans.; 1515 Clay Street, Oakland, Calif.

HQ AIR MATERIEL COMMAND

AERONAUTICAL SYSTEMS CENTER, WRIGHT-PATTERSON AFB, OHIO

Strategic Systems

Chief, Col. L. F. Tanberg; Deputy, C. Stanley. B-15, Rm-201, Ext. 3-2307
B-70 WSPO: Chief, Col. R. J. Meyer; Deputy, D. W. Lang, B-14, Rm-057, Ext. 3-6234
B-58 WSPO: Chief, Col. D. D. Hutchens; Deputy, G. Oster, B-14, Rm-03, Ext. 2-6254
B-52 WSPO: Chief, Col. S. A. Dallas; Deputy, D. J. Reagan, B-14, Rm-101, Ext. 2-1156
Advanced Nuclear WSPO: Chief, Col. L. E. Symroski; Deputy, E. J. Jackson, B-14, Rm-028, Ext. 3-9160
Tanker WSPO: Chief, Col. G. A. Leslie; Deputy, N. Silverston, B-16, PJ-115, Ext. 2-2248
Strategic Missiles WSPO: Chief, Lt. Col. C. W. Tennant; Deputy, T. E. Shellabarger, B-16B, Rm-218, Ext. 3-4104
GAM Missiles WSPO: Chief, Col. H. W. Lanford, Jr.; Deputy, C. E. Jordan, B-16B, Rm-223, Ext. 3-3198

Air Defense Systems

Chief, Col. W. E. Chambers; Deputy, C. H. Nelson, B-15, Rm-204, Ext. 3-1314
F-106 WSPO: Chief, Col. H. M. Harlow; Deputy, T. R. Sullivan, B-14, Rm. 154, Ext. 3-3204
F-108 WSPO: Deputy, P. J. Di Salvo, B-14, Rm-100, Ext. 2-7110
F-101 WSPO: Chief, Col. R. A. Jaynes; Deputy, R. E. Koepp, B-14, Rm. 106, Ext. 2-5234
Bomarc WSPO: Chief, Col. F. E. Hignett; Deputy, J. D. Common, B-16B, Rm-209, Ext. 3-5229
GAR Missiles WSPO: Chief, Col. F. E. Oliver; Deputy, B. Sigmon, B-16B, Rm-124, Ext. 2-3175
Drones WSPO: Chief, Col. J. Beyer; Deputy, S. Garber, B-16B, Rm-121, Ext. 2-2225
Electronic Support Sys. Div: Chief, Lt. Col. D. C. Maulon; Deputy, A. D. Olson, B-15, Rm-108, Ext. 3-1363

Tactical Systems

Chief, Col. J. S. Pirruccello; Deputy, L. L. Koch, B-16, P H-101, Ext. 2-4157
F-105 WSPO: Chief, Col. P. E. Hofper; Deputy, E. W. Schuessler, B-14, Rm-128, Ext. 2-2237
F-104 WSPO: Chief, Lt. Col. M. H. Culp; Deputy, B. B. Mishkind, B-16B, Rm-114, Ext. 2-4119
Transport WSPO: Chief, Col. P. J. Kuhl; Deputy, V. L. Whiter, B-16, P E-115, Ext. 3-7132
Tactical Missiles WSPO: Chief, Col. B. F. Kelly; Deputy, R. Anlard, B-16B, Rm-204, Ext. 3-6101
Trainer WSPO: Chief, Lt. Col. B. F. Herman; Deputy, W. Lanken, B-16, P G-115, Ext. 2-5126
Helicopter Liaison WSPO: Chief, Col. R. H. Cobb; Deputy, E. R. Goodlett, B-16, P 103A, Ext. 2-1152

Equipment & Services

Chief, Col. M. C. Smith; Deputy, W. B. Gould, B-11A, Rm-156, Ext. 2-2209
Accessories Division: Chief, Col. C. E. Tootle; Deputy, R. T. Lawrance, B-11A, Rm-275, Ext. 2-8214
Comm. & Reconnaissance Division: Chief, Col. E. McKaba; Deputy, K. G. Springen, B-11A, Rm-251, Ext. 2-0222
Weapons Guidance Division: Chief, Col. J. W. Skelton; Deputy, J. L. Wilson, B-11, Rm-126, Ext. 4234
Specialized Procurement Division: Chief, Col. E. N. Odell, B-16, P H-101, Ext. 2-4157
Propulsion Division: Chief, Col. R. J. Disher; Deputy, C. A. Kochendorfer, B-11A, Rm-292, Ext. 2-3100
GFAE Control Division: Chief, R. H. Denning, B-11, Rm-001, Ext. 2-7254

Resources

Chief, Col. W. R. Carter; Deputy, D. H. Filbert, B-15, Rm-234, Ext. 3-5127
Industrial Facilities Division: Chief, Col. C. E. Moore; Deputy, E. Carrier, B-16, PI-110, Ext. 2-2132
Manufacturing Methods Division: Chief, Col. P. L. Hill; Deputy, J. Marsh, B-16, PI-110, Ext. 2-2132
Material Control Division: Chief, Col. J. B. McFarland; Deputy, W. J. Nolan, B-16, P-100, Ext. 2-5103

USAF AIR MATERIEL AREAS AND DEPOTS

Air Materiel Areas and Air Force Depots are responsible to Headquarters, Air Materiel Command, Wright-Patterson Air Force Base, Ohio. The Air Procurement Districts are responsible to the Air Materiel Areas under which they are listed.

Communications to an Air Materiel Area on Air Force Depot should be addressed to the Commander. Communications to an Air Procurement District should be addressed to the Chief.

For general procurement information, contact the Contractor Relations Branch, Office of Inspection, Directorate of Procurement and Production, Headquarters, Air Materiel Command, Wright-Patterson Air Force Base, Ohio, (MCPIC), Telephone: Clearwater 3-7111, Extension 33206.

Middletown Air Materiel Area

Middletown Air Materiel Area, Olmstead AFB, Middletown, Penn.
Commander: Maj. Gen. George R. Acheson
Deputy: Col. Millard L. Haskin
Dir. of Proc. & Pord.: Col. Louis H. Garrett Ext. 6102
Telephone: Whitney 4-5521 Ext. 3225
Boston Air Procurement District, Boston Army Base, Boston 10, Mass.
Chief: Col. Ernest H. Miller
Deputy: Lt. Col. C. N. Keppler
Telephone: Liberty 2-6000
Newark Air Procurement District, 218 Market St., Newark, N. J.
Chief: Col. Guy Richardson, Jr.
Deputy: Lt. Col. Joseph H. Selliken
Telephone: Mitchel 3-3434
New York Air Procurement District, 111 E. 16th St., N. Y. 3, N. Y.
Chief: Col. Lawrence B. Ocamb
Deputy: Lt. Col. H. Zipper
Telephone: Spring 7-4200
Philadelphia Air Procurement District, 1411 Walnut St., Phila. 2, Penn.
Chief: Col. J. K. Warner
Deputy: Lt. Col. Joseph Magdich, Jr.
Telephone: Locust 7-3886
Rochester Air Procurement District, 20 Symington Place, Rochester 3, N. Y.
Chief: Col. Alexander S. Young
Deputy: Lt. Col. M. C. Wells
Telephone: Fairview 8-7670

Mobile Air Materiel Area

Mobile Air Material Area, Brookley AFB, Alabama
Commander: Maj. Gen. Daniel F. Callahan
Deputy: Col. John A. Pechuls
Dir. of Proc. & Prod.: Col. Donald A. Olson
Telephone: Hemlock 8-3461, Ext. 793
Cleveland Air Procurement District, 1279 W. Third St., Cleveland 13, Ohio
Chief: Lt. Col. E. F. Pezda
Telephone: Cherry 1-7900
Dayton Air Procurement District, Bldg. 70, Area "C". Wright-Patterson AFB, Ohio
Chief: Lt. Col. John Bostick
Telephone: Clearwater 3-7111 Ext. 6-4131
Detroit Air Procurement District, W. Warren Ave. & Lonyo Blvd., Detroit 32, Mich.
Chief: Lt. Col. Leland P. Money
Telephone: Texas 4-9000
Indianapolis Air Procurement District, 54 Monument Circle, Indianapolis 6, Indiana
Chief: Lt. Col. S. L. Baird
Telephone: Melrose 2-1561 Ext. 501

Ogden Air Materiel Area

Ogden Air Material Area, Hill AFB, Ogden, Utah
Commander: Maj. Gen. P. H. Robey
Deputy: Col. Victor L. Anderson
Dir. of Proc. & Prod.: Col. Frank L. Tenney Ext. 211
Telephone: Taylor 5-2211 Ext. 208

Oklahoma City Air Materiel Area

Oklahoma City Air Materiel Area, Tinker AFB, Oklahoma City, Oklahoma
Commander: Maj. Gen. Thomas P. Gerrity
Deputy: Col. Charles E. Jung
Dir. of Proc. & Prod.: Col. Charles G. Esau Ext. 8-900
Telephone: Pershing 2-7321 Ext. 8675
Chicago Air Procurement District, 5555 S. Archer Ave., Chicago 38, Ill.
Chief: Col. D. M. Wright
Telephone: Reliance 5-3000 Ext. 203
Milwaukee Air Procurement District, 770 N. Plankinton Ave., Milwaukee, Wisc.
Chief: Lt. Col. J. C. Clerk
Deputy: Major Kenneth H. Ducat
Telephone: Broadway 2-4093 Ext. 33
St. Louis Air Procurement District, 1114 Market St., St. Louis 1, Missouri
Chief: Lt. Col. H. E. Greuter
Telephone: Main 1-8100 Ext. 2333-2334

Sacramento Air Materiel Area

Sacramento Air Materiel Area, McClellan AFB, Calif.
Commander: Maj. Gen. George E. Price
Deputy: Brig. Gen. M. F. Summerfelt
Dir. of Proc. & Prod.: Col. John R. Collidge Ext. 3142
Telephone: Wabash 2-1511
San Francisco Air Procurement District, Building 1, Oakland Army Terminal, West Grand Avenue and Maritime, Oakland 14, Calif.
Chief: Lt. Col. Oliver D. Burden
Deputy: Maj. Lester L. Stone
Telephone: Twin Oaks 3-4100

San Antonio Air Materiel Area

San Antonio Air Materiel Area, Kelly AFB, Texas
Commander: Maj. Gen. Thetus C. Odom
Deputy: Brig. Gen. L. L. Mundell
Dir. of Proc. & Prod.: Col. Hugh J. Mattia Ext. 5936
Telephone: Walnut 3-5411
Dallas Air Procurement District, 912 S. Ervay, Dallas 1, Texas
Chief: Lt. Col. Guy H. Stallings
Telephone: Riverside 8-5611 Ext. 2371

San Bernardino Air Materiel Area

San Bernardino Air Materiel Area, Norton AFB, Calif.
Commander: Maj. Gen. John S. Mills
Deputy: Brig. Gen.. James L. Jackson
Dir. of Proc. & Prod.: Col. D. L. Redd
Telephone: San Bernardino 9-4411
Arizona Air Procurement District, P. O. Box 5555, Helen St. Annex, Tucson, Arizona
Chief: Maj. Charles P. Cato, Jr.
Telephone: Tucson 4-2711
Los Angeles Air Procurement District, P. O. Box 2642, Terminal Annex, 1206 S. Maple St., Los Angeles, Calif.
Chief: Col. D. A. Cooper
Deputy: Maj. H. F. Pair
Telephone: Richmond 9-4711, Ext. 501
San Diego Air Procurement District, P. O. Box 1548, Old San Diego Station, San Diego 10, Calif.
Chief: Lt. Col. Charles R. Douglass
Deputy: Capt. Samuel E. Fant
Telephone: Academy 2-0541

Warner Robins Air Materiel Area

Warner Robins Air Materiel Area, Robins AFB, Georgia
Commander: Maj. Gen. A. V. P. Anderson, Jr.
Deputy: Col. Norman C. Spencer, Jr.
Dir. of Proc. & Prod.: Col. Thomas O. Lawton, Jr. Ext. 743
Telephone: Walker 2-5341, Ext. 204
Atlanta Air Procurement District, 41 Exchange Pl., S. E., Atlanta, Georgia
Chief: Maj. W. A. Smith
Telephone: Jackson 2-4121

Air Force Depots

Dayton Air Force Depot, Gentile AF Station, Dayton, Ohio
Acting Commander: Col. Alton A. Denton
Dir. of Proc. & Prod.: Col. Robert L. Salzarulo Ext. 505
Telephone: Clearwater 2-6551
Memphis Air Force Depot, Mallory AF Station, 3300 Jackson Ave., Memphis, Tennessee
Commander: Col. William T. Kemp, Jr.
Deputy: Col. L. B. Detrickson
Dir. of Proc. & Prod.: Lt. Col. H. Richbourg
Telephone: Glendale 8-4411
Rome Air Force Depot, Griffiss AF Base, Rome, N. Y.
Commander: Maj. Gen. Clyde H. Mitchell
Deputy: Col. J. W. Hope
Dir. of Proc. & Prod.: Col. W. A. Bennett, Jr.
Telephone: 3-200

USAF Small Business Specialists

Assistant for Small Business, AFMPP-SB, Room 4D254, Pentagon, Washington 25, D. C.
Mr. J. K. Weddell
Telephone: Hq, USAF-74126
Executive for Small Business, MCP-5, Room 108, Bldg. 11, WPAFB (Dayton), Ohio
Mr. M. L. Johnson
Telephone: Hq, AMC-23222

Middletown Air Materiel Area

Middletown AMA, Olmsted Air Force Base, Middletown, Pa.
Mr. R. A. MacMillan
Telephone: Whitney 4-5521, Ext. 72233
Boston Air Procurement District, Boston Army Base, Boston, Mass.
Mr. E. J. Fitzgerald
Mr. R. P. Murray
Telephone: Liberty 2-6000, Ext. 887
Newark Air Procurement District, 218 Market Street, Newark, New Jersey
Mr. V. J. Farrell
Telephone: Mitchell 3-3434, Ext. 125
New York Air Procurement District, 111 E. 16th Street, New York 3, N. Y.
Mr. L. N. Koivula
Telephone: Spring 7-4200, Ext. 690-2
Philadelphia Air Procurement District, 1411 Walnut Street, Philadelphia 2, Pa.
Mr. J. A. Walter
Mr. J. Rowbottom
Telephone: Locust 7-3886, Ext. 257
Pittsburgh Air Procurement Office, Old Post Office Bldg., Pittsburgh 19, Pa.
Rochester Air Procurement District, 20 Symington Place, Rochester 3, N. Y.
Mr. H. Hunting
Telephone: Fairview 8-7670
Buffalo Air Procurement Office, 1021 Main Street, Buffalo, N. Y.
Johnson City Air Procurement Office, 600 Main Street, Johnson City, N. Y.

Mobile Air Materiel Area

Mobile AMA, Brookley Air Force Base, Mobile, Alabama
Mr. L. L. McKean
Telephone: Hemlock 8-3461, Ext. 3227
Cleveland Air Procurement District, 1279 W. Third Street, Cleveland 13, Ohio
Mr. J. B. Colvard
Telephone: Cherry 1-7900, Ext. 228
Dayton Air Procurement District, Bldg. 70, Area "C" WPAFB, Ohio
Mr. P. E. Birkhold
Telephone: Clearwater 3-7111, Ext. 53137
Cincinnati Air Proc. Office, 2nd Floor, Big Four Railroad Bldg., Cincinnati 2, Ohio
Telephone: Dunbar 2200
Detroit Air Procurement District, W. Warren Avenue & Lonyo Boulevard, Detroit 32, Mich.
Mr. Hugh McGowan
Telephone: Texas 4-9000, Ext. 143
Grand Rapids Sub-Office, Wurzburg Bldg., 220-232 Monroe Avenue, N-W., Grand Rapids 2, Mich.
Mr. Jesse N. Crofoot
Telephone: Glendale 9-8251
Indianapolis Air Procurement District, 54 Monument Circle, Indianapolis 6, Ind.
Mr. W. L. Bayt
Telephone: Melrose 2-1561
Fort Wayne Air Proc. Office, 826 Ewing Street, Fort Wayne, Ind.
Mr. W. O. Luke
South Bend Air Proc. Office, 521 N. Eclipse Place, South Bend, Ind.
Mr. E. J. Koehler
Telephone: 3-2101

Oklahoma City Air Materiel Area

Oklahoma City AMA, Tinker Air Force Base, Oklahoma City, Okla.
Mr. H. W. Ray
Telephone: Pershing 2-7321, Ext. 7601
Chicago Air Procurement District, 5555 S. Archer Avenue, Chicago 38, Ill.
Mr. V. J. Ripp
Telephone: Reliance 5-3000
Milwaukee Air Procurement District, 770 N. Plankinton Avenue, Milwaukee, Wisc.
Mr. R. H. Leitch
Telephone: Broadway 2-4093
Minneapolis Air Proc. Office, 920 Second Avenue, Minneapolis, Minn.
Mr. Schumacher
Telephone: Federal 3-0115
St. Louis Air Procurement District, 9th Floor, U. S. Court & Customs House, 1114 Market Street, St. Louis, Mo.
Mr. K. Kichline
Telephone: Main 1-8100, Ext. 2330
Wichita Air Proc. Officer, 820 Second Street, Wichita 1, Kansas
Mr. M. W. Odor
Telephone: Amherst 7-0211
Kansas City Air Proc. Office, 601 Hardesty Street, Kansas City, Mo.
Mr. C. E. Holt
Telephone: Chestnut 1-7900

Ogden Air Materiel Area

Ogden Air Materiel Area, Hill AFB, Ogden, Utah
Mr. Kurt L. Young
Telephone: Taylor 5-2211, Ext. 8318
Denver Air Proc. Office, 3800 N. York Street, Denver 5, Colorado
Mr. S. J. Fill
Telephone: Taber 5-1161, Ext. 6079
Seattle Air Proc. Office, Room 211-212, GSA Bldg., 2460 4th Avenue S, Seattle, Wash.
Mr. Ellis
Telephone: Seneca 0360

Sacramento Air Materiel Area

Sacramento AMA, McClellan AFB, California
Mr. T. M. Spence
Telephone: Wabash 2-1511, Ext. 5112
San Francisco Air Procurement District, Bldg. 1, Oakland Army Terminal, Oakland 14, Calif.
Mr. A. McCoy
Telephone: Twin Oaks 3-4100, Ext. 3197

San Antonio Air Materiel Area

San Antonio AMA, Kelly Air Force Base, Texas
Mr. Jot E. Neri
Telephone: Walnut 3-5411, Ext. 64192
Dallas Air Procurement District, 912 S. Ervay, Dallas 1, Texas
Mr. George R. Phillips
Telephone: Riverside 8-5611, Ext. 2388

San Bernardino Air Materiel Area

San Bernardino AMA, Norton Air Force Base, California
Mr. W. J. Dunkerly
Telephone: Turner 9-4421, Ext. 6202
Los Angeles Air Procurement District, 1206 Maple Avenue, Los Angeles 15, California
Mr. G. J. Byrnes
Mr. P. M. Goodwin
Telephone: Richmond 9-4711, Ext. 582 & 584
San Diego Air Procurement Dist, 3054 Rosecrans Place, San Diego 10, Calif.
Mr. R. Downing
Telephone: Woodcrest 6611
Arizona Air Procurement District, 2875 Sky Harbor Blvd., Phoenix, Ariz.
Mr. J. W. Gaskins
Telephone: Bridge 5-5431, Ext. 57

Warner Robins Air Materiel Area

Warner Robins AMA, Robins Air Force Base, Georgia
Mr. D. W. McCarthy
Telephone: Walker 2-5341, Ext. 6267
Atlanta Air Procurement District, 41 Exchange Place, Atlanta, Georgia
Mr. W. C. Roose
Telephone: Jackson 2-4121, Ex. 580

Air Force Depots

Dayton Air Force Depot, Gentile Air Force Station, Dayton, Ohio
Mr. N. A. Hess
Telephone: Madison Clearwater 2-6551, Ext. 810
Memphis Air Force Depot, Mallory Air Force Station, 3300 Jackson Avenue, Memphis, Tenn.
Mr. J. P. Broderick
Telephone: Glendale 8-4411, Ext. 276
Rome Air Force Depot, Griffiss Air Force Base, Rome, New York
Mr. J. J. Dulberg
Telephone: Rome 3200, Ext. 74205
Ballistic Missiles Office, Inglewood, Calif.
Mr. R. A. Watkins
Telephone: Spring 6-1444, Ext. 2034-6

HQ Air Materiel Command, WPAFB

Hq. AMC, Bldg. 11, Room 108, Wright-Patterson AFB, Ohio
Mr. G. S. Rattenbury
Mr. P. F. Knost
Telephone: Clearwater 3-711, Ext. 24230

USAF LOCAL PURCHASES

The term "Local Purchase" denotes the purchase of materials, supplies, and services by an Air Force installation for use and consumption by that installation or other installations assigned to it for issue of materials and supplies.

These items are generally of a housekeeping nature, such as office supplies and so-called "off-the-shelf" items, and usually are bought in small quantities.

All local purchase functions involving appropriate funds are accomplished by Headquarters, Depot, or Base Purchasing and Contracting Officers. Being responsible for all purchase actions at their respective installations, they receive purchase requests from initiating activities and accomplish procurement action by formal advertising or negotiation, generally from firms in close geographical proximity.

The same laws and regulations which apply to central Air Force procurement also apply to local purchase.

Following is a list of Air Force installations at which local purchasing is accomplished. Communciations should be directed to the attention of the Purchasing and Contracting Officer.

Alabama

Gadsden AF Depot, Gadsden
Mobile AMA, Brookley AFB, Mobile
Maxwell AFB, Montgomery
Craig AFB, Selma
Gunter AFB, Montgomery

Alaska

Eielson AFB, Fairbanks

Arizona

Williams AFB, Chandler
Marana Field, Marana
Luke AFB, Glendale
Davis-Monthan AFB, Tucson
Yuma AFB, Yuma

Arkansas

Blytheville AFB, Blytheville
Little Rock AFB, Jacksonville

California

Travis AFB, Fairfield
Hamilton AFB, Hamilton
Beale AFB, Marysville
Cheli AF Depot, Maywood
Castle AFB, Merced
Cooke AFB, Lompoc
Edwards AFB, (Near Edwards)
Parks AFB, Pleasanton
George AFB, Victorville
Long Beach Municipal AP, Long Beach
Oxnard AFB, Oxnard
March AFB, Riverside
Mather AFB, Mather Field
McClellan AFB, McClellan
Norton AFB, San Bernardino

Colorado

Ent AFB, Colorado Springs
Lowry AFB, Denver

Washington, D. C.

Andrews AFB
Bolling AFB
Washington National Airport

Maryland

Andrews AFB, Camp Springs

Delaware

Dover AFB, Dover
New Castle County AP, Wilmington

Florida

Patrick AFB, Cocoa
Orlando AFB, Orlando
MacDill AFB, Tampa
Tyndall AFB, Panama City
Eglin AFB, Valparaiso
Palm Beach AFB, West Palm Beach
Homestead AFB, Homestead
Miami International AP, Miami
Pinecastle AFB, Orlando

Georgia

Turner AFB, Albany
Dobbins AFB, Marietta
Hunter AFB, Savannah
Spence AB, Moultrie
Moody AFB, Valdosta
Robins AFB, (Warner Robins)

Idaho

Mountain Home AFB, Mountain Home

Illinois

Scott AFB Belleville
Chanute AFB, Rantoul
O'Hare Intrnl AP, Park Ridge

Indiana

Bakalar AFB, Columbus

Iowa

Sioux City AFB, Sioux City

Kentucky

Kansas

Topeka AF Station, Topeka
Smoky Hill AFB, Salina
Forbes, AFB, Topeka
McConnel AFB, Wichita

Louisiana

Baton Rouge AF Station, Baton Rouge
England AFB, Alexandria
Lake Charles AFB, Lake Charles
Barksdale AFB, Shreveport

Maine

Dow AFB, Bangor
Loring AFB, Limestone
Presque Isle AFB, Presque Isle

Maryland

Massachusetts

Westover AFB, Chicopee Falls
Otis AFB, Falmouth
Lawrence G. Hanscom Field, Bedford

Michigan

Selfridge AFB, Mt. Clemens
Kinross AFB, Kinross
Willow Run AF Station, Belleville
Wurtsmith AFB, Oscoda

Minnesota

Minneapolis-St. Paul Intrnl AP, Minneapolis
Duluth Mun. AP, Duluth

Mississippi

Columbus AFB, Columbus
Keesler AFB, Biloxi
Greenville AFB, Greenville

Missouri

Whitman AFB, Sedalia
Richard-Gebaur AFB, Grandview, Missouri

Montana

Nebraska

Lincoln AFB, Lincoln
Offutt AFB, Omaha

Nevada

Stead AFB, Reno
Indian Springs AFB, Indian Springs
Nellis AFB, Las Vegas

New Hampshire

Grenier AFB, Manchester
Portsmouth AFB, Portsmouth

New Jersey

Hqs. Newark Transportation Control Depot, 400 Delaney St., Newark
McGuire AFB, Fort Dix

New Mexico

Kirtland AFB, Albuquerque
Holloman AFB, Alamogordo
Cannon AFB, Clovis
Walker AFB, Roswell

New York

Sampson AFB, Geneva
Mitchel AFB, Hempstead
Stewart AFB, Newburgh
Niagara Falls Mun. AP, Niagara Falls
Griffiss AFB, Rome
Suffolk Co. AFB, Westhampton
Plattsburgh AFB, Plattsburgh

North Carolina

Pope AFB, Ft. Bragg

Ohio

Clinton Co. AFB, Wilmington
Wilkins AF Station, Shelby
Gentile AF Depot, Dayton
Youngstown Mun. AP, Youngstown
Wright-Patterson AFB, Dayton
Wright Air Development Center
Wright-Patterson AFB

Oklahoma

Vance AFB, Enid
Ardmore AFB, Ardmore
Altus AFB, Altus
Tinker AFB, Oklahoma City

Oregon

Klamath Falls Municipal Airport, Klamath Falls

Pennsylvania

Greater Pittsburgh AP, Coraopolis
Olmsted AFB, Middletown

South Carolina

Donaldson AFB, Greenville
Charleston AFB, Charleston
Shaw AFB, Sumter

South Dakota

Ellsworth AFB, Rapid City

Tennessee

Mallory AF Station, Memphis
McGhee-Tyson Mun. AP, Knoxville
Memphis Mun. AP, Memphis
Sewart AFB, Smyrna
Arnold Engineering Development Center, Tullahoma

Texas

Abilene AFB, Abilene
Amarillo AFB, Amerillo
Bergstrom AFB, Austin
Gray AFB, Killeen
Biggs AFB, El Paso
Ellington AFB, Houston
Reese AFB, Lubbock
Wolters AFB, Mineral Wells
Goodfellow AFB, San Angelo
Brooks AFB, San Antonio
Lackland AFB, San Antonio
Carswell AFB, Ft. Worth
Randolph AFB, Randolph Field (San Antonio)
Kelly AFB, San Antonio
Edward Gary AFB, San Marcos
Perrin AFB, Sherman
James Connally AFB, Waco
Harlingen AFB, Harlingen
Hondo AFB, Hondo
Sheppard AFB, Wichita Falls
Hensley Field, Grand Prairie
Foster AFB, Victoria
Laughlin AFB, Del Rio
Laredo AFB, Laredo
Webb AFB, Big Spring

Utah

Hill AFB, Ogden
Wendover AFB, Wendover

Vermont

Ethan Allen AFB, Winooski

Virginia

Byrd Field, Richmond
Langley AFB, Hampton

Washington

Elmendorf AFB, Seattle
Fairchild AFB, Spokane
Geiger Field, Spokane
Ladd AFB, APO 731, Seattle, Wash. (Fairbanks)
Larson AFB, Moses Lake
McChord AFB, Tacoma
Paine AFB, Everett

Wisconsin

Truax Field, Madison

Wyoming

Francis E. Warren AFB, Cheyenne

USAF PLANT REPRESENTATIVES

Middletown AMA

Bell Aircraft Corp., Niagara Falls, N. Y.
AFPR: Lt. Col. Frank W. Jarek
Deputy: Captain John J. Keenan, Jr.
Telephone: Niagara 7851 X 428
Curtiss-Wright Corp., Wright Aeronautical Div., Wood-Ridge, N. J.
AFPR: Col. F. W. Toomey
Deputy: Lt. Col. Frank W. Hobson
Telephone: Prescott 9-5497 or Prescott 7-2900 X 844
Fairchild Eng. & Airplane Corp., c/o Fairchild Aircraft Div., Hagerstown, Maryland
AFPR: Maj. Lloyd M. N. Wenzel
Telephone Regent 3-3600 X 2231-2232
General Electric Co., Electronics Park, Syracuse, N. Y.
AFPR: Col. Norman J. Beaudrias
Deputy: Capt. W. C. Malone, Jr.
Telephone: 3-4320 X 497
Sperry Gyroscope Co., Great Neck L. I., N. Y.
AFPR: Lt. Col. Everett E. Zweifel
Telephone: Fieldstone 7-3600 X 2200
United Aircraft Corp., Sikorsky Aircraft Div., Stratford, Conn.
AFPR: Lt. Col. C. Wilkins
Telephone: Drexel 8-6361, Ext. 435

Mobile AMA

Hayes Aircraft Corp., P. O. Box 2287, Birmingham, Alabama
AFPR: Col. Carver T. Bussey
Deputy: Maj. A. Parsons
Telephone: Lyric 2-9611
Republic Aviation Corp., Farmingdale, L. I., N. Y.
AFPR: Lt. Col. Carrell T. Murrell
Deputy: Captain Leonard S. Stone
Telephone: Chapel 9-1100 Ext. 201

Oklahoma City AMA

Allison Div., GMC, Indianapolis, Indiana
AFPR: Col. Thomas B. Ardis
Deputy: Maj. Zack Grey
Telephone: Chapel 4-1541
Boeing Airplane Co., Seattle 14, Wash.
AFPR: Col. Robert J. Walling
Deputy: Lt. Col. Arthur L. Biberstein
Telephone: AXminister 2121
Boeing Airplane Co., Wichita, Kansas
AFPR: Col. W. E. Newby
Telephone: Murray 3-8511 Ext. 6089 or Ext. 6049
Douglas Aircraft Co., Inc., P. O. Box 1017, Tulsa, Oklahoma
AFPR: Lt. Col. James C. Arnold
Deputy: Maj. Albert M. Lehner
Telephone: 8-3351 X 682
General Electric Co., Evendale Plant, Lockland P. O., Cincinnati 15, Ohio
AFPR: Col. Henry J. Taylor
Deputy: Maj. Harry R. O'Brien
Telephone: Poplar 1-4100 X 1392

Ogden AMA

The Martin Company, Denver, Colorado
AFPR: Col. John P. Gibbons
Deputy: Lt. Col. W. Price
Northrop Aircraft, Inc., Hawthorne, Calif.
AFPR: Lt. Col. Desider A. Simcoe
Telephone: Oregon 89111 X 1901

Sacramento AMA

Lockheed Aircraft Corp., Sunnyvale, Calif.
AFPR: Col. R. W. Gustafson
Lockheed Aircraft Corp., Factory "A"—P. O. Box 551, Burbank, Calif.
AFPR: Col. E. A. Russell
Deputy: Lt. Col. Howard Hutchison
Telephone: Stanley 7-2711 X 81213
North American Aviation, Inc., Los Angeles International Airport, Los Angeles 45, Calif.
AFPR: Col. G. F. Keeling
Deputy: Lt. Col. Bert R. Eckstein
Telephone: Oregon 8-3011 X 1747
Aerojet-General Corp., Liquid Rocket Plant, P. O. Box 2048, Sacramento 14, Calif.
AFPR: Col. H. E. Tellman
Deputy: Lt. Col. O. L. Counselman
Telephone: Yukon 5-5111 Ext. 537

San Antonio AMA

Beech Aircraft Corp., 9709 E. Central Ave., Wichita 1, Kansas
AFPR: Major Loren P. Murray, Jr.
Telephone: Murray 3-4681
Convair Div., General Dynamics Corp., AF Plant No. 4, P. O. Box 371, Fort Worth, Texas
AFPR: Col. L. R. Hall
Telephone: Pershing 87311
Convair Div., General Dynamics Corp., P. O. Box 1950, 3165 Pacific Highway, San Diego 12, Calif.
AFPR: Col. George E. Bostwick
Telephone: Cypress 6-6611 X 327
Ford Motor Co., Aircraft Engine Div., 7401 S. Cicero Ave., Chicago 29, Ill.
AFPR: Lt. Col. Harvey E. Moose, Jr.
Deputy: Maj. Lyle W. Stoner
Telephone: Reliance 5-4200 X 2794
Astrodyne, Inc.,—AF Plant No. 66, P. O. Box 865, McGregor, Texas
AFPR: Lt. Col. G. W. McClughan
Telephone: Granite 5-2811

San Bernardino AMA

Douglas Aircraft Co., Inc., 3855 Lakewood Blvd.—P. O. Box 200, Long Beach 1, Calif.
AFPR: Col. Clair A. Peterson
Deputy: Lt. Col. Donald W. Mack
Telephone: Garfield 9-2441

Warner Robins AMA

Hughes Aircraft Company, Florence & Teale Sts., Culver City, Calif.
AFPR: Lt. Col. B. W. Cowdery
Deputy: Maj. William F. Woolfolk
Telephone: Texas 0-7111 X 2915-2749
The Martin Co., Baltimore, Maryland
AFPR: Lt. Col. Allen Warfield, Jr.
Telephone: Murdock 7-3800 X 533-402
Lockheed Aircraft Corp., Marietta, Ga.
AFPR: Col. G. C. Hozier
Deputy: Lt. Col. L. Vivian
Telephone: Marietta 9-9411, Ext. 3271

USAF AIR RESEARCH AND DEVELOPMENT COMMAND FIELDS OF INTEREST

AERODYNAMICS
Stability and control, performance, control surfaces, internal flow, boundary layer, airfoils, parasitic components, aerodynamic loads, thermodynamics.

AIRCRAFT INSTRUMENTS
Engine instruments, flight instruments, navigation instruments, indicators, timers, flight test instruments, testing and calibration, automatic flight control.

AIRCRAFT STRUCTURES
Loads, theory, design, testing, weight and balance, stress analysis, structural tests, aeroelasticity.

AIRPLANE DESIGN
Preliminary design, wing group, tail group, body group, landing gear, cockpit, research aircraft.

AIRPORTS AND AIRWAYS

Planning, design and construction, facilities, lighting.

ATOMIC ENERGY

Atomic structure, fission and fission products, radioactivity, isotope separation, reactors, instruments, health and safety, aeronautical applications.

AVIATION MEDICINE

All scientific disciplines pertaining to selection, training, efficiency, and safety of humans in flight.

CHEMISTRY

Inorganic, organic, analytical, physical bio-chemistry.

COMFORTIZATION

Air conditioning, oxygen systems, noise and vibration, furnishings, interior layout, lighting, protection.

ELECTRICAL EQUIPMENT

Generating equipment, converters, motors and actuators control and protective equipment, distribution equipment, lighting, heating, batteries, storage, electrical theory, testing.

ELECTRONICS

Communications, radar, navigational aids, static and interference, landing aids, electronic controls, television and electronic tubes, antennas, components, testing, telemetering, counter-measures.

FLIGHT OPERATING PROBLEMS

Icing, handling and storage, in-flight refueling, high speed flight, high altitude flight, piloting technique, cruise control, weather hazards, climatization, aircraft maintenance, sanitation.

FLIGHT TESTING

Methods, instrumentation, data evaluation, performance, handling characteristics, propulsion.

FUELS AND LUBRICANTS

Solid, liquid, and gaseous fuels, solid and liquid lubricants, solid and fluid propellants, analysis and testing, storage and distribution, hydraulic fluids.

FLUID MECHANICS

Theoretical and experimental, viscous, ideal, compressible, incompressible.

GEOPHYSICS

Weather forecasting, climatology, radar-meterological relationships, microseismic-meteorological relationships, atmospheric constituents and processes, radiation physics of clouds, atmospheric electricity, ionospheric physics, upper air research, terrestrial magnetism.

GLIDERS

Aerodynamics, airframe, launching and handling, design.

GUIDED MISSILES

Guidance and control, handling and launching, propulsion, aerodynamics peculiar to missiles, warheads, auxiliary equipment, structures, performance, design, testing.

HUMAN ENGINEERING AND PROTECTIVE EQUIPMENT

Design of weapons and control systems for operator efficiency, human factors in ground and flying accidents, personal protective equipment for ground and air crews.

HUMAN RESOURCES

Psychological and social sciences, vocational aptitude, proficiency, learning and transfer of training, training aids and methods, reaction time, work fatigue and efficiency, morale, management, Intelligence collection methods and techniques, psychological warfare techniques.

MACHINE ELEMENTS

Fastenings, bearings, gears and cams, drives, mechanisms, springs.

MATERIALS—NON-METALLIC

Ceramics, plastics, rubber, wood, leather and textiles, adhesive and sealants, paints.

MATHEMATICS

Algebra, theory of numbers, theory of equations, theory of functions, calculus, finite differences, infinite series, geometry, trigonometry, statistics, probability.

METALLURGY

Structural metallurgy, refining and reduction, preliminary working, iron, aluminum, magnesium, nickel, copper, lead, precious metals, alloys.

NAVIGATION

Theory, dead reckoning and pilotage, celestial and electronic navigation, special methods, maps and charts, instruments.

ORDNANCE AND ARMAMENT

Ammunition, guns, handling equipment, fire control, armor, explosives, bombs and warheads, bombing systems, fuzes, rockets and launchers, ballistics, gun mounts, ammunition feed systems.

PHOTOGRAPHY

Aerial, infra red, ultra-violet, Schlieren, stroboscopic, still cameras, motion picture, sensitized materials, processing, photogrammetry.

POWERPLANTS—JET AND TURBINE

Cooling, induction systems, compressors, combustion, ignition, exhaust system, vibration, fuel system, lubrication, accessories, control, combustion chambers, turbines, components, installation, testing, design, compounding, comparative studies.

POWERPLANTS—RECIPROCATING

Cooling, induction and supercharging, combustion, ignition, exhaust system, vibration, fuel, lubrication, control, components, installation, performance.

POWERPLANTS—ROCKETS

Cooling, control, ignition, exhaust, nozzles, combustion, propellant system, accessories, combustion chambers, installation, design, testing.

PROPELLERS

Aerodynamics, control, components, ice control, performance, testing, design.

PSYCHOLOGY

Experimental, clinical, includes studies in the chemical senses, vision, hearing, skin senses, reflexes and posture, cerebral motor functions, emotion, bodily needs, memory and retention, feeling and emotions, precipitation and predisposition, readjustment.

ROTATING WING AIRCRAFT

Aerodynamics, stability and control, control systems, rotor design, airframe, drive-system, testing, design.

SUPPORTING EQUIPMENT

Special purpose vehicles, shelters, ground handling equipment, portable power units.

USAF AIR RESEARCH AND DEVELOPMENT COMMAND

Hq Air Research and Development Command (Hq ARDC), Andrews Air Force Base, Washington 25, D. C.
Commander—Lt. General S. E. Anderson
Vice Commander—Maj. General J. W. Sessums, Jr.
Deputy Commander for Research—Maj. Gen. L. I. Davis
Deputy Commander for Resources—Brig. Gen. L. W. Fulton
Acting Director of Procurement—Mr. R. E. Miedel
Sources & Contractor Relations—Leroy E. Olson

Air Force Office of Scientific Research (AFSOR), Washington, 25, D. C.
Commander—Col. B. G. Holzman
Chief, Procurement Division—Lt. Col. A. L. Thayer
Asst. Chief, Procurement Division—Mr. John Walsh
Contractor Relations & Sources—Mr. S. Milnovsky

Arnold Engineering Development Center (AEDC), Tullahoma, Tennessee
Commander—Brig. Gen. Troop Miller Jr.
Director of Procurement—Mr. James Fuqua
Contracting Officer—Capt. C. L. Houston
Aerodynamics, power plants, high speed gas dynamics, supersonic and hypersonics aircraft.

Air Proving Ground Center (APGC), Elgin Air Force Base, Florida
Commander—Maj. Gen. J. W. Kelly
Director of Procurement—Lt. Col. Duke
Guns and other aircraft weapons, ammunition, rockets, bombs, fire control components and systems.

Air Force Cambridge Research Center (AFCRC), L. G. Hanscom Field, Bedford, Massachusetts
Director of Procurement—Mr. W. J. Irivin
Deputy Director of Procurement—M. J. Rooney
Geophysics, electronics, related physical sciences, human engineering.

Air Force Flight Test Center (AFFTC), Ewards Air Force Base, California
Commander—Brig. General M. F. Cooper
Director of Procurement—Major J. R. Pugh
Experimental aircraft, aricraft components, power plants and components, aero medical equipment, flight test instrumentation, related equipment.

Air Force Missile Test Center (AFMTC), Patrick Air Force Base, Florida
Commander—Maj. General D. N. Yates
Director of Procurement—Lt. Col. Venable
Deputy Director of Procurement—Mr. T. Larkin
Test range instrumentation.

Air Force Special Weapons Center (AFSWC), Kirtland Air Force Base, New Mexico
Comander—Maj. General W. M. Canterblury
Director of Procurement—Lt. Col. P. M. Packard
Air Force components of equipment related to atomic weapons.

Air Force Missile Development Center (AFMDC), Holloman Air Force Base, New Mexico
Commander—Brig. Gen. D. E. Hooks
Director of Procurement—Maj. C. La Barr
Deputy Director of Procurement—Mr. T. J. Irvine
Guided missiles, target drones, space biology, test range instrumentation.

Rome Air Development Center (RADC), Griffiss Air Force Base, Rome, New York
Commander—Brig. General D. P. Graul
Director of Procurement—Col. H. Burhanna
Acting Deputy Director of Procurement—Mr. R. Becker
Ground electronics systems: radar automatic flight, missile guidance, data transmission, radio and wire communications, air navigation and terminal aids, counter measures.

Wright Air Development Center (WADC), Wright-Patterson Air Force Base, Ohio
Commander—Brig. General S. T. Wray
Director of Procurement—Col. J. D. Prodgers
Aircraft and missile components: guidance & control systems, propellers, power plants, ground equipment, airborne equipment, aero medical equipment, airborne electronics equipment, other aero material.

DEPARTMENT OF DEFENSE AVIATION PLANTS PROCUREMENT ASSIGNMENTS

Aircraft Plants Assigned Air Force

Aeronca Manufacturing Corp., Middletown, Ohio
Beech Aircraft Corp., Wichita, Kansas
Bell Aircraft Corp., Niagara Falls, N. Y.
Bell Aircraft Corp., Kenmore, N. Y.
Boeing Airplane Co., Renton, Washington
Boeing Airplane Co., Seattle, Washington
Boeing Airplane Co., Wichita, Kansas
Chase Aircraft Co., Inc., West Trenton, N. J.
Consolidated Vultee Aircraft Corp., Plant No. 4, Fort Worth, Texas
Consolidated Vultee Aircraft Corp., Plant No. 2, San Diego, Calif.
Cessna Aircraft Co., Hutchinson, Kansas
Cessna Aircraft Co., Wichita, Kansas
Douglas Aircraft Co., Inc., Long Beach, Calif.
Douglas Aircraft Co., Inc., NIR Plant No. 3, Tulsa, Oklahoma
Fairchild Engine and Airplane Corp., Fairchild Aircraft Division, Hagerstown, Maryland
Fairchild Engine and Airplane Corp., Personal Plane Division, Winfield, Kansas
General Motors Corp., Buick, Oldsmobile, Pontiac Assembly Division, Air Force Plant No. 2, Kansas City, Kansas
Hayes Manufacturing Corporation, Aircraft Division, Birmingham, Alabama
Hughes Tool Co., Huges Aircraft Div., Culver City, Calif.
Kaiser Motors Corp., Willow Run, Mich.
Kaiser Metal Products, Inc., Bristol, Penna.
Kellett Hughes, North Wales, Penna.
Lockheed Aircraft Corp., Plant B, Burbank, Calif.
Lockheed Aircraft Corp., Marietta, Georgia
Lockheed Aircraft Corp., Van Nuys, Calif.
North America Aviation, Inc., Inglewood, Calif.
North American Aviation, Inc., Downey, California
Northup Aircraft, Inc., Hawthorne, Calif.
Palmdale Production and Testing Center, Palmdale, Calif.
Radioplane Company, Van Nuys, Calif.
Republic Aviation Corp., Farmingdale, N. Y.
United Aircraft Corp., Sikorsky Aircraft Division, Bridgeport, Conn.
Air Force Plant No. 1, Omaha, Nebraska
Air Force Plant No. 8, Chicago, Illinois

Engine Plants Assigned Air Force

Aerojet-General Corp., Liquid Rocket Plant, Nimbus Station, Sacramento, Calif.
Aircooled Motors, Inc., Syracuse, N. Y.
AVCO Manufacturing Corp., Bridgeport Lycoming Division, Stratford, Conn.
AVCO Manufacturing Corp., Lycoming Spencer Division, Williamsport, Penna.
Continental Motors Corp., Continental Aviation and Engineering, Corp., 1470 Algonquin Avenue, Detroit, Michigan
Curtiss-Wright Corporation, Wright Aeronautical Division, Woodridge, N. J.
Fairchild Engine and Airplane Corp., Fairchild Engine Division, Farmingdale, N. Y.
Ford Motor Company, Ford Aircraft Engine Plant, Chicago, Illinois
General Electric Company, Aircraft Gas Turbine Division, Plancor 36, Evendale, Ohio
General Electric Company, Aircraft Gas Turbine Division, Plancor 548, West Lynn, Mass.
General Motors Corp., Allison Division, Indianapolis, Ind.
General Motors Corp., Buick Motor Division, Buildings 43 and 44, Flint, Michigan
General Motors Corp., Buick Motor Division, Building 48, Willow Springs, Ill.
General Motors Corp., Chevrolet Motor Division, Aviation Engine Plant, Tonowanda, N. Y.
Jacobs Aircraft Engine Company, Pottstown, Penna.
Kaiser Motors Corp., Aircraft Engine Division, 12801 East Jefferson, Detroit, Michigan
Packard Motor Car Co., Aircraft Engine Division, Assembly Testing Plant, Utica, Michigan
Studebaker Corp., Aviation Division, Chicago, Illinois
Studebaker Corp., Aviation Division, South Bend, Indiana

Propeller Plants Assigned Air Force

Curtiss-Wright Corporation, Propeller Division, Caldwell, N. J.
General Motors Corporation, Aero Products Division, Vandalia, Ohio
Hartzell Industries, Inc., Propeller Division Company, Piqua, Ohio
A. O. Smith Corporation, Milwaukee, Wisconsin
Air Force Plant No. 5, Oklahoma City, Okla.
Air Force Plant No. 27, Toledo, Ohio

Aircraft Plants Assigned Navy

Bell Aircraft Corp., Hurst, Texas
Chance Vought Aircraft Inc., Plant B, Dallas, Texas
Consolidated Vultee Aircraft Corp., Plant No. 1, San Diego, Calif.
Douglas Aircraft Co., Inc., El Segundo, Calif., Santa Monica, Calif.
Edo Corporation, College Point, N. Y.
General Motors Corp., Buick, Oldsmobile, Pontiac Assembly Div., Arlington, Texas
Glenn L. Martin Co., Middle River, Md.
Goodyear Tire & Rubber Co., Goodyear Aircraft Corp., Akron, Ohio
Grumman Aircraft Engineering Corp., Bethpage, New York
Hiller Helicopter, Inc., Palo Alto, Calif.
Kaman Aircraft Corp., Bloomfield, Conn., Windsor Locks, Conn.
Lockheed Aircraft Corp., Plant A, Burbank, Calif.
McDonnell Aircraft Corp., St. Louis, Mo.
North-American Aviation, Inc., Columbus, Ohio
Vertol Aircraft Co., Merton, Pa.
Ryan Aeronautical Corp., San Diego, Calif.
Temco Aircraft Corp., Plant A, Dallas, Texas

Engine Plants Assigned Navy

Aerojet-General Corp.
Azusa, Calif.
Sacramento, Calif.
Chrysler Corp., Dodge Division, Jet Engine Plant, Sterling Township, Michigan
Ford Motor Co., Lincoln-Mercury Division.
Romulus, Mich.
Wayne, Mich.
Reaction Motors, Inc., Rockaway, New Jersey
United Aircraft Corp., Pratt & Whitney Aircraft Div., East Hartford, Conn., North Haven, Conn., Southington, Conn.
Westinghouse Electric Corp., Columbus Works, Columbus, Ohio
Westinghouse Electric Corp., Aviation Gas Turbine Division, Essington, Pa., Kansas City, Mo.

Propeller Plants Assigned Navy

Chrysler Corp., Dodge Division San Leandro, Calif.
Koppers Co., Inc., Metal Products Div., Baltimore, Md.
United Aircraft Corp., Hamilton Standard Propeller Division, Windsor Locks, Conn.

DEPARTMENT OF THE NAVY

Chief, Bureau of Aeronautics, Department of the Navy, Washington 25, D. C.
Airframes, aircraft engines (jet and reciprocating), propellers, electronic equipment, aircraft armament, aeronautical instruments, target drones, ground handling equipment for aircraft, guided missiles.

Chief, Bureau of Ordnance, Department of the Navy, Washington 25, D. C.
Ammunition, fire-control equipment (including radar), naval guns, gun mounts, missile launchers, torpedoes, mines, depth charges, nets and booms, aviation ordnance, guided missiles.

Chief, Bureau of Ships, Department of the Navy, Washington 25, D. C.
Ships and other watercraft, including hull and machinery (propulsion and control equipment);* electronic equipment, including radar, radio, and other communications equipment and accessories; refrigeration equipment and laundry equipment for shipboard use.

Chief, Bureau of Yards and Docks, Department of the Navy, Washington 25, D. C.
Floating dry docks* and floating cranes;* major boiler plants and electrical generators; public utilities services and permanent facilities (including acquisition and disposal of real estate). This Bureau is responsible for the Navy's construction projects, as well as station maintenance and repair. Contracts for such projects, however, are let through the District Public Works Offices.

The Quartermaster General, Headquarters, U. S. Marine Corps, Department of the Navy, Washington 25, D. C.
Automotive spare parts, engineering equipment and supplies, electronic equipment and spare parts, refrigeration and air-conditioning equipment, household supplies, galley equipment, and laundry equipment.

Officer in Charge, Navy Purchasing Office, Main Navy Building, 17th & Constitution Ave., NW., Washington 25, D. C.
Common hand tools,* machine tools, materials handling equipment* (including wood pallets), air-conditioning and refrigeration equipment, ferrous metal basic shapes and forms; also general procurement for naval activities in the area.

Officer in Charge, Navy Purchasing Office, 111 East 16th Street, New York, N. Y.
Chemicals, insecticides,* soap, waxes, precision instruments (navigational, optical, electrical-measuring), ecclesiastical items,* silverware (officers' mess gear),* rope, cordage, twine and vegetable fibers, training devices for Navy personnel; clothing, footwear, textiles, and related items; also general procurement for naval activities in the area.

General Stores Supply Officer, General Stores Supply Office, 700 Robins Avenue, Philadelphia 11, Pa.
Hardware and plumbing fixtures; building materials; heating, ventilation, and refrigeration equipment; electric light equipment; general household equipment, including electrical appliances; insulation materials; packing materials; shipboard furniture; precision instruments, bearings, valves, pumps, air compressors, navigational and mooring aids; gases; fire-fighting and gas-generating equipment; foundry equipment; nonferrous metal basic shapes and forms.

Aviation Supply Officer, Aviation Supply Office, 700 Robbins Avenue, Philadelphia 11, Pa.
Aircraft spare parts, aeronautical instruments, aeronautical electronic equipment, paints and related products, clocks,* marine hardware.

Electronic Supply Officer, Electronic Supply Office, Great Lakes, Ill.
Electronic maintenance and repair parts in suport of existing Navy electronic equipment.

Officer in Charge, Ships Parts Control Center, Naval Supply Depot, Mechanicsburg, Pa.
Spare parts for shipboard equipment—gasoline engines, Diesel engines, hull equipment, machinery components, searchlights, gyrocompasses and dead-reckoning equipment, navigation equipment.

Yards and Docks Supply Officer, Yards and Docks Supply Office, Naval Construction Center, Port Hueneme, Calif.
Construction and excavating equipment and spare parts; automotive spare parts; tires, tubes, and retreading material; automotive repair equipment; pumps; compressors; building materials; prefabricated buildings;* Navy landing pontoons and propulsion units; electrical generating equipment; refrigeration equipment; station and utility repair parts.

Submarine Supply Officer, Submarine Supply Office, Rittenhouse Square Building, 19th and Walnut Streets, Philadelphia 3, Pa.
Spare parts peculiar to submarines, including components and accessories for air conditioning and refrigeration equipment; hoists, winches, windlasses, and capstans; electrical distribution and control equipment; electric motors; parts and accessories for rotating electrical equipment; electrical quantity-measuring instruments; metal valves and pipe fittings.

Commander, Portsmouth Naval Shipyard, Building 153, Portsmouth, N. H.
Shipboard electrical fittings.*

Supply Officer, Naval Gun Factory, Building 176, M Street and Eighth SE, Washington, D. C.
Ordnance equipment and components; raw materials for the manufacture of ordnance equipment; gages, machine tools, tool-design services; instruction publications.

Fuel Suply Officer, Fuel Supply Office, Naval Gun Factory, Washington 25, D. C.
Coal and other solid fuel.*

Ordnance Supply Officer, Naval Ordnance Supply Office, Mechanicsburg, Pa.
Repair parts for ordnance equipment.

The following have procurement responsibilities of a special nature as indicated:

Chief, Bureau of Supplies and Accounts Department of the Navy, Washington 25, D. C.
Exercises management control over the field purchasing activities (including all of those listed above except the technical bureaus and the Marine Corps) and technical control over such items as food, clothing, and textiles; common-use building materials; and products and services used in connection with the packaging, transportation, and storage of supplies (including materials handling equipment). Inquiries relating to policy matters covering these items may be addressed to this Bureau.

Chief, Bureau of Navy Personnel, Department of the Navy, Washington 25, D. C.
Responsible for procurement of training services from educational institutions and of training publications and aids.

Cheif, Bureau of Medicine and Surgery, Department of the Navy, Washington 25, D. C.
Exercises technical control over specifications and determines requirements of medical and dental material purchased for the Navy by the Armed Services Medical Procurement Agency.

Chief of Naval Research, Department of the Navy, Washington 25, D. C.
Responsible for basic research, including fundamental studies in such fields as electronics, chemistry, and physics, and serves to coordinate the research programs of the technical bureaus.

Director, Special Devices Center, Office of Naval Research, Sands Point, Port Washington, Long Island, N. Y.
Responsible for the development and procurement of training aids and devices for Navy Personnel. Contracts are negotiated by this office or awarded through formal advertising by the Navy Purchasing Office, New York.

Commander, Military Sea Transport Service, Department of the Navy, Washington 25, D. C.
Obtains services of private shipping companies to operate Government-owned tankers; charters shipping from private operators; procures services of private ship-repair firms to effect repairs and alterations in Government-owned M. S. T. S. vessels. Material requirements are met through utilization of existing Navy stocks and Navy purchasing facilities.

Officer in Charge, Navy Ships Store Office, 29th Street and Third Avenue, Brooklyn 32, N. Y.
Effects procurement of supplies, equipment, and merchandise for use or resale in Ships Stores, Commissionary Stores, and Navy Exchanges through national contracts processed by the Navy Purchasing Office, N. Y. Merchandise for these resale activities may also be purchased locally by the individual stores or ordered from contracts entered into by the following:
Navy Purchasing Offices in New York, N. Y., San Francisco, Calif., Los Angeles, Calif., and in the Naval Supply Center, Norfolk, Va.; Naval Shipyards in Boston, Mass., Philadelphia, Pa., Charleston, S. C.; Marine Corps Air Station, Miami, Fla.; and Naval Supply Depot, Seattle, Wash.

Clothing Supply Officer, Clothing Supply Office, U. S. Naval Supply Activities, New York, 29th Street and Third Avenue, Brooklyn 32, N. Y.
Determines requirements for standard articles of the naval uniform and special clothing for climatic protection. This office can furnish information concerning specifications and requirements.

*Purchased for all military departments in accordance with single service procurement assignments.

The activities listed below purchase general-use items, as well as items of a technical nature, to fulfill their own special requirements or those of other naval activities in their geographical area for which they perform the purchase function. Most important of these are the Naval Purchasing Offices.

Officer in Charge, Navy Purchasing Office, 1206 South Santee Street, Los Angeles, Calif.
Officer in Charge, Navy Purchasing Office, 160 New Montgomery Street, San Francisco, Calif.
Officer in Charge, Navy Purchasing Office, Bldg. 143, Naval Supply Center, Norfolk, Va.
Commanding Officer, Naval Supply Depot, Naval Base, Newport, R. I.
Commanding Officer, Naval Supply Depot, Great Lakes, Ill.
Commanding Officer, Naval Supply Depot, Seattle, Wash.
Commander, Boston Naval Shipyard, Bldg. 149, Boston, Mass.
Commander, Philadelphia Naval Shipyard, Bldg. 83, Philadelphia, Pa.
Commander, Charleston Naval Shipyard, Bldg. 7, Charleston, S. C.
Commander, Puget Sound Naval Shipyard, Bremerton, Wash.

Commanding Officer, Naval Air Station, Patuxent River, Md.
Commanding Officer, Naval Air Station, Jacksonville, Fla.
Commanding Officer, Naval Air Station, Pensacola, Fla.
Commanding Officer, Marine Corps Air Station, Miami, Fla.
Commanding Officer, Naval Air Station, Memphis, Tenn.
Commanding Officer, Naval Air Station, Corpus Christi, Tex.
Commanding Officer, Naval Air Station, Dallas, Tex.
Commanding Officer, Naval Ordnance Plant, 1st and Arlington Avenue, Indianapolis 18, Ind.
Comanding Officer, Naval Ordnance Plant, 7500 West Roosevelt Road, Forest Park, Ill.
Commanding Officer, Naval Ordnance Plant, York, Pa.
Commanding Officer, Naval Ordnance Plant, Macon, Ga.
Commanding Officer, Naval Ammunition Depot, Crane, Ind.
Commanding Officer, Naval Ammunition Depot, McAlester, Okla.
Commanding Officer, Naval Station, Algiers, New Orleans 14, La.
Commanding Officer, Naval Station, Orange, Tex.
Superintendent, Naval Academy, Annapolis, Md.
Commanding Officer, Naval Submarine Base, New London, Conn.
Commander, Naval Air Materiel Center, Naval Base, Philadelphia 12, Pa.
Commander, Naval Proving Grounds, Dahlgren, Va.
Commanding Officer, Navy Mine Countermeasures Station, Panama City, Fla.
Director, Naval Research Laboratory, Anacostia, Washington 25, D. C.
Hydrographer, Naval Hydrographic Office, Suitland, Md.
Commander, Naval Ordnance Laboratory, White Oak, Md.
Commanding Officer, Naval Powder Factory, Indianhead, Md.
Depot Quartermaster, Marine Corps Depot of Supplies, 1100 South Broad Street, Philadelphia 46, Pa.
Also clothing, footwear, textiles and related items.
Depot Quartermaster, Marine Corps Depot of Supplies, 100 Harrison Street, San Francisco 6, Calif.

General information concerning Navy procurement, as well as possible subcontracting opportunities, may be obtained from the Industry Cooperation Officers in the Navy's field inspection offices, particularly those located in the following cities: Atlanta, Boston, Chicago, Cleveland, Dallas, Kansas City, Minneapolis, New York, Los Angeles, Philadelphia, San Francisco and Seattle. Copies of bid sets on unclassified proposed procurements in excess of $25,000, suitable for performance by small business concerns, are available for your reference at the regional and branch offices of the Small Business Administration. These include Army and Air Force as well as Navy procurements.

USN SMALL BUSINESS PERSONNEL

Washington, D. C.

Office of Naval Materiel, 18th & Constitution Ave. NW, Room B-205
Capt. F. A. Allis, (SC) USN
Mr. M. Questal
Telephone: Liberty 5-6700, Ext. 66053
*Bureau of Aeronautics, Room 2105, Munitions Bldg.
Cdr. D. S. Good, USN
Mr. G. W. Wilson
Telephone: Liberty 5-6700, Ext. 66558, 66022
*Bureau of Ordnance, Room 3006, 18th & Constitution Ave. N. W.
Mr. Lenahan
Mr. S. Tatigan
Telephone: Liberty 5-6700, Ext. 64972, 64452
Bureau of Naval Personnel, Room 2633, Arlington Annex
Capt. C. G. McKinney, USN
Telephone: Liberty 5-6700, Ext. 42240
*Bureau of Ships, 18th & Constitution Ave. N. W., Room 1304
Mr. Michael Chemsak
Mr. H. W. Garrard
Telephone: Liberty 5-6700, Ext. 63695
Bureau of Supplies & Accounts, Room 0235, Main Navy Bldg.
Mr. H. G. Fowler
Telephone: Liberty 5-6700, Ext. 64680
Bureau of Yards & Docks, Room 2A64, Yards & Docks Annex
Capt. W. J. Davis, USN
Telephone: Liberty 5-6700, Ext. 63726
Military Petroleum Supply Agency, Yards & Docks Annex
Mr. R. A. Wightman
Telephone: Liberty 5-6700, Ext. 56104
Military Sea Transportation Service, Room 2206, Bldg. T-8, 3800 Newark St. N. W.
Capt. T. M. Davis, USN
Mr. C. D. Taylor
Telephone: EMerson 2-9600 (Code 192), Ext. 120, 449
*Fuel Supply Office, Naval Gun Factory, 1st & M Sts., S. E., Bldg. 213, 4th Floor
Mr. Richard M. Bishop
Telephone: Lincoln 7-5700 (Code 142), Ext. 2231
*Naval Gun Factory, Bldg. 200, 2nd Floor, 11th & N Streets S. E.
Mr. J. L. Kensinger
Telephone: Lincoln 7-5700, Ext. 562
Naval Research Laboratory, Bldg. 32, 2nd Floor, 4th Near Chesapeake, S. W.
Mrs. Ilia B. Strife
Telephone: Johnson 3-6600 (Code 130), Ext. 464
*Navy Purchasing Office, Room 136, Tempo Bldg. D, 4th & Independence Ave. S. W.
Mr. R. G. Busby
Telephone: Liberty 5-6700, Ext. 64809
Office of Naval Research, Room 2804, T-3 Bldg.
Mr. L. O. Lincoln
Telephone: Liberty 5-6700, Ext. 66650
Hq. U. S. Marine Corps, Room 4004, Arlington Annex
Capt. F. B. Morris, USMC
Telephone: Liberty 5-6700, Ext. 41939

California

Marine Corps Supply Center, Barstow
Lt. Col. H. Wallace, USMC
Telephone: Barstow 2171
Marine Corps Base, Camp Pendleton
Mr. W. R. Brumbaugh
Telephone: SAratoga 2-4111, Ext. 8004
*Navy Purchasing Office, 1206 South Santee Street, Los Angeles
Mr. Bertram Friedman
Telephone: Richmond 9-4711, Ext. 1466
*Yards & Docks Supply Office, U. S. Naval Construction Center, Port Hueneme
Mrs. Olive E. Sherman
Telephone: Hunter 6-1651, Ext. 8515
Marine Corps Depot of Supplies, 100 Harrison Street, San Francisco
M. E. Toland
Telephone: Garfield 1-2013, Ext. 222
Military Sea Transportation Service, Fort Mason
Mr. Raymond C. Garfias
Telephone: Prospect 6-2200, Ext. 6266
Marine Corps Recruit Depot, San Diego
Lt. Col. Duevel, USMC
Telephone CYpress 8-3941, Ext. 786

Connecticut

U. S. Naval Submarine Base, New London
D. P. Sullivan
Telephone: Gibson 2-4411, Ext. 308

Florida

Naval Air Station, Bldg. 110, Jacksonville
Mr. F. C. Barnes
Telephone: Evergreen 9-7711, Ext. 613
Marine Corps Air Station, Miami
J. W. Osterhoudt
Telephone: Murry 8-3511, Ext. 210
Naval Mine Defense Lab., Panama City
Cdr. J. L. Warden, SC, USN
Telephone: Sunset 5-5285, Ext. 342
Naval Air Station, Bldg. 603, Pensacola
G. L. Hemphill
Telephone: Glendale 5-3211, Ext. 3195

Georgia

Marine Corps Supply Center, Albany
Maj. V. R. Penley, USMC
Telephone: HEmlock 5-3451, Ext. 221
Naval Ordnance Plant, Macon
Mr. Cecil E. Britt
Telephone: Macon 3-5401, Ext. 215

Hawaii

Navy Purchasing Office, Bldg. 475, Naval Supply Center, (Mail Address) Navy 128, Fleet Post Office, San Francisco, Calif.
Mr. T. H. Sunn
Telephone: Pearl Harbor 4711

Illinois

Naval Ordnance Plant, 7500 W. Roosevelt Road, Forest Park
Mr. Jason C. VanDyke
Telephone: Easterbrook 8-3800, Ext. 283
*Electronic Supply Office, Great Lakes
Mr. A. J. Dowe
Telephone: Delta 6-3500, Ext. 8284
Naval Supply Depot, Great Lakes
Miss S. Beth Newsom
Telephone: Delta 6-3500, Ext. 8305

Indiana

Naval Ammunition Depot, Bldg. 64, Crane
Mr. James W. Hudson
Telephone: Depot 2511, Ext. 5731
U. S. Naval Avionics Facility, Indianapolis
Marshall T. Wampler
Telephone: Fleetwood 7-8311, Ext. 490

Louisiana

Naval Station, Bldg. 11, New Orleans
Mr. G. H. Shepard
Telephone: Forest 6-2311, Ext. 265
Military Sea Transportation Service, Gulf Subarea, 4400 Dauphine Street
Mrs. C. H. Wiesendanger
Telephone: Crescent 5571, Ext. 240

Maryland

Naval Air Station, Patuxent River
Mr. Frank Albert
Telephone: VOlunteer 3-3111, Ext. 201
Naval Academy, Annapolis
Mr. John Peel, Jr.
Telephone: Colonial 3-2611, Ext. 739
Naval Powder Factory, Indian Head
Mr. J. A. Kenlon
Telephone: Riverside 3-2111, Ext. 193
Naval Hydrographic Office, Suitland
Mr. J. R. Newberry
Telephone: Jordan 8-9060, Ext. 205

Massachusetts

Naval Shipyard, Bldg. 149, Boston
Mr. A. J. Dolan
Telephone: Charleston 2-1400, Ext. 206

New Hampshire

Naval Shipyard, Bldg. 153, Portsmouth
Mr. Winfield O. Sprague
Telephone: IDlewood 9-1000, Ext. 424

New York

Military Medical Supply Agency, 84 Sands St., Brooklyn
Mr. A. Hornbacher
Telephone: MAin 5-4581, Ext. 488
Navy Ships Stores Office, 3rd Ave. & 29th St., Brooklyn
Mr. J. O. Combs
Telephone: STerling 8-5000, Ext. 352
U. S. Navy Purchasing Office, 3rd Ave. & 29th St., Brooklyn
Mr. Joseph Riemer
Telephone: STerling 8-5000, Ext. 623
Military Sea Transportation Service, 58th Street & Atlantic Ave., Brooklyn
Mr. G. P. Cross
Telephone: Gedney 9-5400, Ext. 5161
Office of Naval Research Special Devices Center, Sands Point, L. I.
Mr. H. B. Macartney
Telephone: Port Washington 78300, 433

North Carolina

U. S. Marine Corps Air Station, Cherry Point
Telephone: Gilbert 7-2111
U. S. Marine Corps Base, Camp LeJeune
Mr. E. D. Cleaton

Oklahoma

Naval Ammunition Depot, McAlester
Mr. D. H. Adams
Telephone: GA 3-6330, 411

Pennsylvania

U. S. Naval Air Development Center, Johnsville
Mr. G. F. Argetsinger
Telephone: OSborne 5-7000, Ext. 265
Ships Parts Control Center, Mechanicsburg
Mr. Leo A. Yeager
Ordnance Supply Office, Mechanicsburg
Mr. P. J. Horan
Telephone: Poplar 6-4751, Ext. 774

*Aviation Supply Office, 700 Robbins Avenue, Philadelphia
Mr. Clayton Vogel
Telephone: Pilgrim 2-1000, Ext. 468 or 410
Naval Air Materiel Center, Bldg. 76, U. S. Naval Base, Philadelphia
Miss Marie F. Flynn
Telephone: Howard 5-1000, Ext. 3695
*General Stores Supply Office, 700 Robbins Avenue, Philadelphia
Mr. S. Charles
Telephone: Pilgrim 2-1000, Ext. 749
Submarine Supply Office, Rittenhouse Square Bldg., 19th & Walnut Streets, Philadelphia
Mr. John T. Howard
Telephone: Locust 7-5778, Ext. 229
Marine Corps Depot of Supplies, 1100 South Broad Street, Philadelphia
Mr. V. P. Manganaro
Telephone: Kingsley 6-2000, Ext. 343
Naval Ordnance Plant, York
Mr. E. J. Yergo
Telephone: York 7821, Ext. 245

Rhode Island

Naval Supply Depot, Bldg. 11, Coddington Cove, Newport
Lillian L. Whitty
Telephone: VI 7-2280, Ext. 588

South Carolina

Naval Shipyard, Bldg. 7, Charleston
Mr. W. H. Heissenbuttel
Telephone: Charleston 4-5321, Ext. 2107

Tennessee

Naval Air Station, Bldg. 11, North Side, Memphis
Mr. A. C. Wilder, Jr.
Telephone: Jackson 6-8851, Ext. 411

Texas

Naval Air Station, Corpus Christi
Mr. Otto R. Gessling
Telephone: Terminal 5-8211, Ext. 2278
Naval Station, Orange
Lt. (J. G.) J. J. Hart, Jr.
Telephone: TUxedo 3-4311, Ext. 281

Virginia

Navy Proving Ground, Dahlgren
LCDR A. B. Jaquay, USN
Telephone: North 3-2501, Ext. 216
*Navy Purchasing Office, Bldg. 143, Naval Supply Center, Norfolk
Miss Esther Roberts
Telephone: Madison 2-8211, Ext. 3051
Marine Corps Supply Forwarding Annex, Portsmouth
Mr. S. W. Lankford, Jr.
Telephone: EXport 9-7541, Ext. 60
Norfolk Naval Shipyard
Mr. L. C. Shaughnessy
Telephone: EXport 7-6541, Ext. 2046
Marine Corps Schools, Quantico
Lt. Col. R. S. Anderson, USMC
Telephone: Quantico 1000

Washington

Puget Sound Naval Shipyard, Bremerton
Mr. R. I. Shenenberger
Telephone: Essex 3-5011, Ext. 07-355
Naval Supply Depot, Seattle
LCDR E. E. Bramhall (SC) USN
Telephone: Alder 5200, Ext. 421
*Major Purchasing Offices

USN BUREAU OF AERONAUTICS REPRESENTATIVES

Eastern District

Bureau of Aeronautics Gen. Rep., E. D., 252 Seventh Avenue, New York 1, N. Y.
Capt. H. W. Keopka, USN
Telephone: Watkins 4-5000, Ext. 470
Bureau of Aeronautics Rep., Bristol, Tenn.
Cdr. R. E. Clements
Telephone: South 4000, Ext. 241
Cornell Aeronautical Lab., P. O. Box 235, Buffalo 21, N. Y.
Capt. H. A. Romberg, USN
Telephone: Plaza 7500 Ext. 315
The Martin Co., Baltimore 3, Md.
Capt. R. F. Kane, USN
Telephone: Murdock 7-3800 Ext. 773
Grumman Aircraft Engineering Corp., Bethpage, L. I., N. Y.
Cdr. J. F. Rigg, USN
Telephone: Wells 11500—Olympia 8-5300 X-445
Hamilton Standard Div., United Aircraft Corp., Windsor Locks, Conn.
Capt. J. D. Haines, USN
Telephone: National 3-1621 Ext. 301
The Kaman Aircraft Corp., Bloomfield, Conn.
Cdr. J. D. Warner, USN
Telephone: Hartford Chapel—24481 Ext. 275
Kollsman Instrument Corp., 80-08 45th Ave., Elmhurst 73, L. I., N. Y.
Cdr. H. T. Krol, USN
Telephone: Newton 9-2900 Ext. 560
Pratt & Whitney Aircraft Div. United Aircraft Corp., East Hartford 8, Conn.
Capt. F. A. Roby, Jr., USN
Telephone: Hartford-Jackson 8-4811 Ext. 7891
Pratt & Whitney, W. Palm Beach Facility, W. Palm Beach, Fla.
Cdr. J. C. Jennings, USN
Telephone: VI 4-7311, Ext. 494, 495
Thiokol Chemical Corp., Reaction Motors Div., Ford Road, Denville, N. J.
Cdr. J. Y. Lichtenwalner, USN
Telephone: Rockaway 9-2323 Worth 4-8244 X205
Vertol Aircraft Corp., Morton, Pa.
Cdr. W. D. Gaboury, USN
Telephone: Kingswood 3-4000
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Capt. G. N. Eisenhart, USN
Telephone: Atlas 8-2000 Ext. 2153
Curtiss-Wright Corp., Wright Aeronautical Div., Wood-Ridge, N. J.
Mr. A. R. Pico
Telephone: Prescott 7-2900 Ext. 504

Central District

Bureau of Aeronautics Gen. Rep. C. D. Wright-Patterson Air Force Base, Ohio
RADM C. J. Pfinstag, USN
Telephone: Clearwater 3-7111, Ext. 32314
Akron Municipal Airport—Plant D, Akron 6, O.
Cdr. E. W. Steffen, Jr., USN
Telephone: Stadium 4-7127 Ext. 251
Bell Aircraft, P. O. Box 482, Fort Worth, Tex.
CDR. J. M. Richards, USN
Telephone: Atlas 4343, Ext. 675
McDonnell Aircraft Corp., P. O. Box 516, St. Louis 3, Mo.
Capt. T. W. Collins
Telephone: Pershing 1-2121 Ext. 344, 345
Naval Industrial Reserve Aircraft Plant, P. O. Box 5907, Dallas, Tex.
Capt. D. E. Dressendorfer, USN
Telephone: Andrews 2-3211 Ext. 308
Naval Industrial Reserve Aircraft Plant, P. O. Box 2459, Detroit 31, Mich.
Cdr. L. L. Brannan, USN
Telephone: Jefferson 9-2000 Ext. 215
No. Amer. Aviation, Inc., Columbus Div., 4300 E. Fifth Ave., Columbus 16, O.
Capt. G. A. Whiteside, USN
Telephone: Belmont 1-1851, Ext. 283
Thompson Products, Inc., 2355 Euclid Ave., Cleveland, Ohio
Capt. J. E. Hoch, USN
Telephone: Kenmore 1-8760, Ext. 294
Westinghouse Elec. Corp., P. O. Box 288, Kansas City, Mo.
Cdr. T. A. Thompson, USN
Telephone: Delmar 3-7400 Ext. 292

Western District

Bureau of Aeronautics Gen. Rep., W. D., 400 Douglas Street, El Segundo, Calif.
RADM T. J. Hedding, USN
Telephone: Oregon 8-8956, Eastgate 2-3234 X1
Aerojet-General Corp., 6352 No. Irwindale Ave., Azusa, Calif.
CDR. N. Garrett, USN
Telephone: Cumberland 3-6111, Ext. 5280
Convair, A Div. of General Dynamics Corp., San Diego 12, Calif.
Capt. D. M. Disehaupt, USN
Telephone: Cypress 6-6611 Ext. 2022
El Segundo Div., Douglas Aircraft Co., Inc., El Segundo, Calif.
Capt. R. M. Gibbons, USN
Telephone: Oregon 8-8211 Ext. 621
Factory "A", Lockheed Aircraft Corp., Burbank, Calif.
Capt. G. W. Okerson, USN
Telephone: Stanley 7-2711 Ext. 8-2585
Goodyear Aircraft Corp., Litchfield Park, Arizona
LCdr. V. D. Carruth, USN
Telephone: Westport 5-9331 Ext. 251
Hiller Helicopters, 1350 Willow Rd., Palo Alto, Calif.
Cdr. W. S. Lamm, USN
Telephone: Davenport 5-3241 Ext. 410
Lockheed Aircraft Service, Inc., International Airport, Ontario, Calif.
LCdr. S. J. Brocato, USN
Telephone: Yukon 6-4551, Ext. 240-241
Lockheed Aircraft Service, Inc., Honolulu International Airport, Honolulu, T. H.
Cdr. R. J. Trauger, USN
No. American Aviation, Inc., Los Angeles 45, Calif.
Cdr. S. W. Kerkering, USN
Telephone: Oregon 8-3011 Ext. 1091

JOINT AGENCIES

Chief, Armed Services Medical Procurement Agency, 84 Sands Street, Brooklyn 1, N. Y.
Medical, dental, surgical, and veterinary supplies and equipment.
Industrial mobilization planning; Industrial Mobilization and Procurement Planning Divison of the above agency.
Research and development and introduction of new items: Armed Services Medical Material Standardization Committee, 23rd and E Streets, NW., Washington 25, D. C.
Executive Officer, Armed Services Petroleum Purchasing Agency, Washington 25, D. C.
Petroleum and related products.

DEPARTMENT OF THE ARMY

Ordnance Corps

Commanding Officer, Detroit Arsenal, Center Line, Mich.
Limited quantities of components of combat vehicles and tanks for manufacture at the Arsenal and for research and development purposes.
Commanding General, Ordnance Ammunition Center, Joliet, Ill.
Artillery ammunition, cal. .60 and above.
Commanding General, Ordnance Tank Automotive Center, 1501 Beard Street, Detroit 9, Mich.
Tanks and combat vehicles, motor vehicles,* civilian and military types, including spare parts and accessories, tires and tubes, and automotive lighting fixtures.*
Commanding Officer, Small Arms Ammunition Center, 4300 Goodfellow Boulevard, St. Louis 20, Mo.
Ammunition items, less than cal. .60.
Commanding Officer, Frankford Arsenal, Bridesburg Station, Philadelphia 37, Pa.
Artillery,* small arms ammunition,* optical instruments, and watches.*
Commanding Officer, Picatinny Arsenal, Dover, N. J.
Newly developed items of explosives.
Commanding Officers, Raritan Arsenal, Metuchen, N. J.
Hardware, cleaning and preserving materials and maintenance equipment for Ordnance items.
Commanding Officer, Redstone Arsenal, Huntsville, Ala.
Rockets and guided missiles.
Commanding Officer, Rock Island Arsenal, Rock Island, Ill.
Artillery carriages* and small arms.*
Commanding Officer, Springfield Armory, Springfield 1, Mass.
Small arms,* automatic weapons,' and ammunition magazines.
Commanding Officer, Watertown Arsenal, Mass.
Artillery carriages* and mounts.*
Commanding Officer, Watervliet Arsenal, N. Y.
Artillery cannon.*

The following District offices are the proper points of contact for firms (within their respective geographical areas) seeking contracts. They have available for distribution copies of all Invitations for Bids issued by the purchasing offices and maintain current bidders' lists of firms within their districts. They also distribute Requests for Proposal and negotiate certain contracts at the request of the purchasing offices:

Birmingham Ordnance District, 2120 North Seventh Avenue, Birmingham, Ala.
Boston Ordnance District, Boston Army Supply Base, Boston 10, Mass.
Chicago Ordnance District, 209 West Jackson Boulevard, Chicago 6, Ill.
Cincinnati Ordnance District, Big Four Bldg., Cincinnati 2, Ohio.
Cleveland Ordnance District, 1367 East Sixth Street, Cleveland 15, Ohio.
Detroit Ordnance District, 574 East Woodbridge Street, Detroit 31, Mich.
Los Angeles Ordnance District, 55 South Grand Avenue, Pasadena 1, Calif.
New York Ordnance District, 180 Varick Street, New York 14, N. Y.
Philadelphia Ordnance District, 1500 Chestnut Street, Philadelphia 20 ,Pa.
Pittsburgh Ordnance District, 200 Fourth Avenue, Pittsburgh 22, Pa.
Rochester Ordnance District, Sibley Tower Bldg., Rochester 4, N. Y.
St. Louis Ordnance District, 1016 Olive Street, St. Louis 20, Mo.
San Francisco Ordnance District, 1515 Clay Street, Oakland, Calif.
Springfield Ordnance District, Springfield Armory. Springfield 1, Mass.

Quartermaster Corps

Chief, Research and Development Division, Office of The Quartermaster General, Washington 25, D. C.



LOCKHEED F-104 STARFIGHTERS

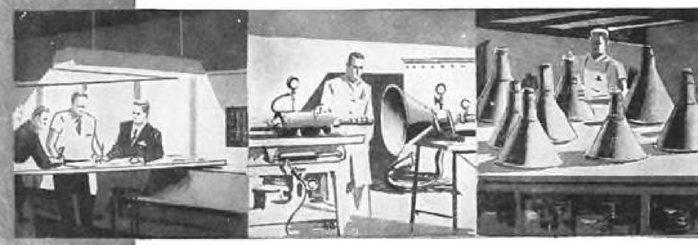
BUYERS' GUIDE FOR 1959

Section A



SCHULZ

DESIGNS
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BUILDS



TYPE MA-2

FLIGHT PRESSURE REFUELING COUPLING AND NOZZLE •

Designed and developed in conformance with specifications MIL-N-25161 and MIL-C-25162.

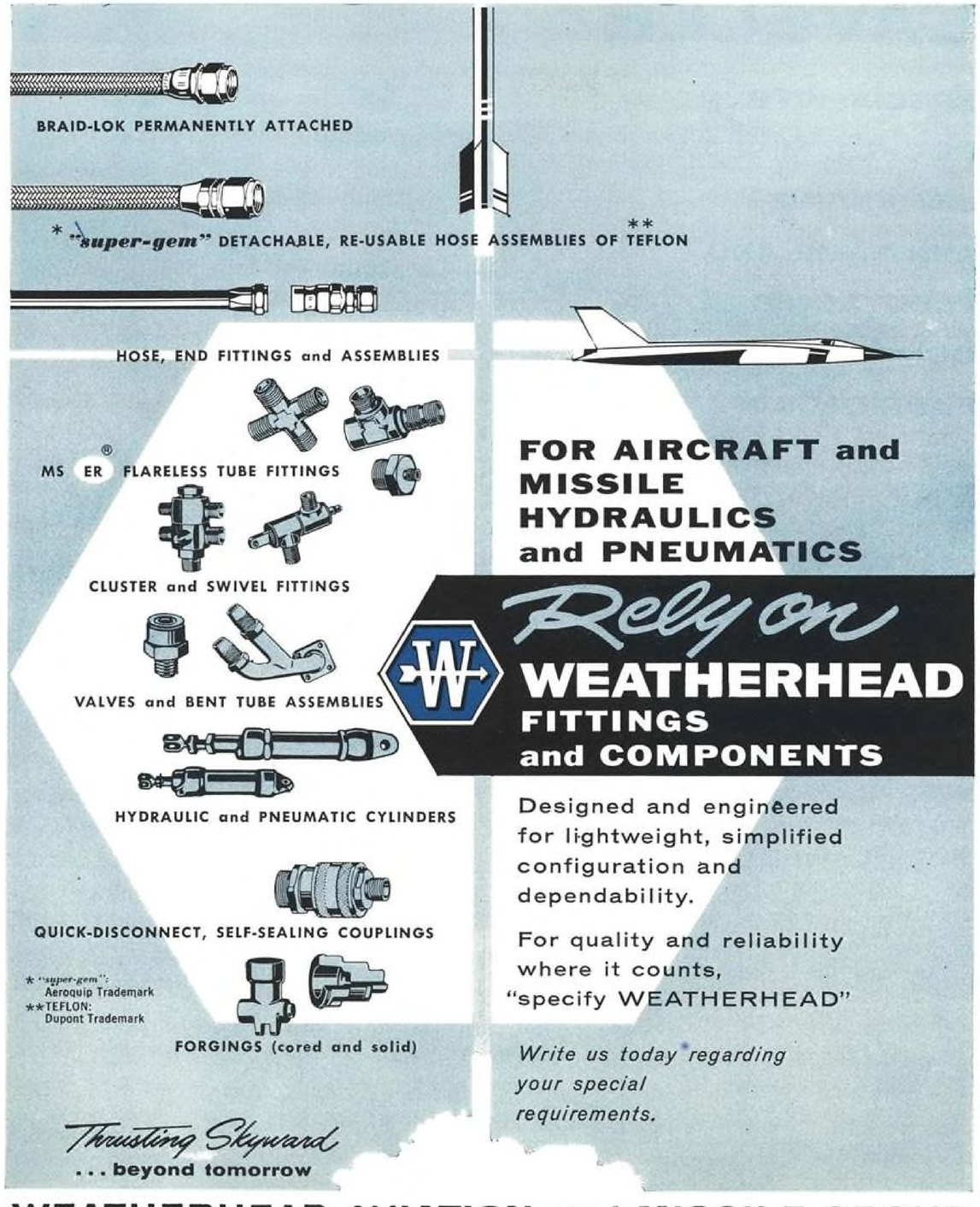
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WEATHERHEAD AVIATION and MISSILE GROUP



WESTERN DIVISION	SPECIAL PRODUCTS DIVISION	EASTERN AIRCRAFT PRODUCTS CORP.
1736 Standard Avenue	300 East 131st Street	229 River Street
GLENDALE, CALIFORNIA	CLEVELAND, OHIO	ORANGE, NEW JERSEY

LAVELLE

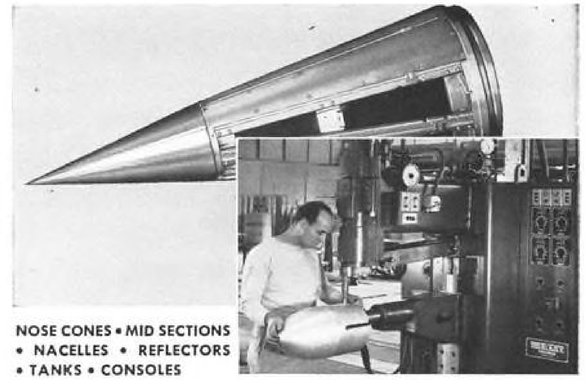
SPECIALISTS IN ROCKET, MISSILE, JET ENGINE, AIRFRAME AND ELECTRONIC COMPONENT FABRICATION

Sheet metal parts and assemblies precision welded, machined, and processed to your specifications by certified men, methods and machines . . . of stainless steel, titanium, aluminum, and heat resistant, high strength nickel alloys.

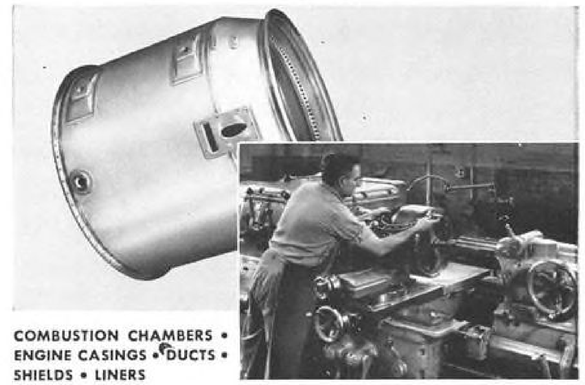
Weldments fabricated by resistance, inert gas shielded arc, metallic arc and oxyacetylene welding. X-ray, Zyglo and Magnaflux methods of non-destructive inspection are used to establish and control weld quality.

Services include engineering, production planning, tool making, sheet metal fabricating facilities, machine shop, anodizing, painting and quality control.

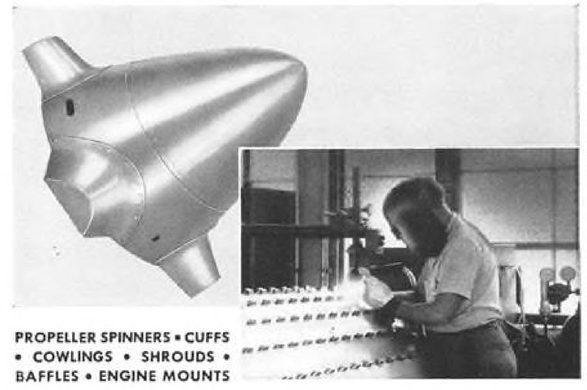
For components requiring precision fabrication, quality workmanship, dependable delivery . . . at reasonable cost . . . contact Lavelle.



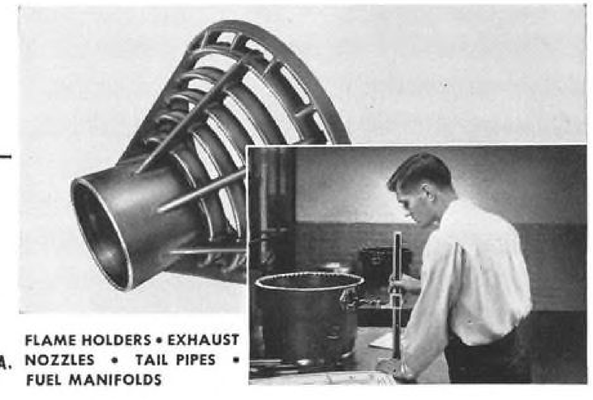
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Represented here are just a few of the many CECO products which are airborne with an array of important missiles as well as with many of the latest and finest military and commercial aircraft.

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SMALL ENGINE FUEL CONTROL SYSTEMS



CECO pioneered the combination of previously separate fuel system components into a "single package". Typical of this philosophy is a series of lightweight, compact fuel controls for small turbine engines. Some models in this series, even though they incorporate integral fuel pumps, actually weigh less than eight pounds. For free-power turbines, CECO produces a series of "unitized" fuel control systems, each containing main power control, power turbine governor, dual gear pump, and an emergency fuel system.

SERVO CONTROL VALVES

Both proportional and On-Off type servo control valves are produced at CECO — many versions manufactured in quantity on a subcontract basis. Skilled craftsmen, aided by the finest machine tool equipment, are known for their ability to hold tolerances between critical mating parts in hydraulic mechanisms to .00004".

HOT GAS SERVO CONTROLS

Moving toward the development of control valves, systems and sub systems which are relatively insensitive to high ambient temperature conditions, CECO has conducted extensive feasibility studies in the field of high-pressure pneumatics. *Representative* of projects which are in various stages of analytical and development test is a liquid-fueled hot gas servo actuator which modulates fuel flow in response to load demand.



AIRCRAFT FUEL PUMPS

Presently in design or production are both single and dual-element, high-pressure, gear-type pumps, some with integral centrifugal boosters. These CECO pumps are designed to entrain the entering fluid between the teeth and carry it to the discharge port, with intermeshing teeth to give positive displacement. Close tolerance techniques give them high volumetric efficiency over a wide range of discharge pressures.

AFTERBURNER FUEL CONTROLS



CECO's basic afterburner fuel control is a regulator of the by-pass type. It operates on a constant metering head across a variable orifice whose size is regulated by an air pressure parameter. Throttle modulation is available by providing for manual variations in either metering head or orifice size.

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CECO SYSTEMS CONTROLS

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AIRCRAFT DIVISION

Bell's X-14, which takes off and lands vertically in a conventional horizontal attitude, has demonstrated in actual flight that the minimum take-off requirements of helicopters can be combined successfully with the high-speed performance of jet aircraft. An operational military airplane embodying this Bell-pioneered VTOL concept now is in advanced stages of development under Navy and Air Force contract. Bell engineers foresee the day when the same principle will be applied to both military and commercial jets of all sizes.

AVIONICS DIVISION

Among the far-reaching accomplishments of this division is the development of an all-weather Automatic Landing System which brings aircraft in to touchdown without pilot control. After hundreds of successful demonstration landings on both airports and carrier decks, a commercial version of Bell's ALS recently has successfully landed a giant Boeing 707 jet transport as illustrated here. The Avionics Division is also among the industry leaders in the development of instrumentation and control systems for missile and aircraft guidance.

SPACE FLIGHT & MISSILES DIVISION

This Bell team had the sole weapon system responsibility for the design, development and production of the GAM-63 Rascal air-to-surface guided missile for the Strategic Air Command (left). It is now energetically engaged in many advanced problems surrounding space flight including development of the Dyna-Soar hypersonic glider for the Air Force. This Bell-conceived space craft is designed to carry man in orbit around the earth at high speeds and high altitudes for reconnaissance or bombardment.

ROCKETS DIVISION

In addition to developing and producing the complete propulsion system for Bell's own Rascal, this division also has been closely associated with the rocket power problems for many other missile and satellite programs. These skilled teams of scientists and engineers are now pursuing the potentials of propellants with even greater energy, and have recently accomplished the first large-scale rocket thrust chamber firing using the ultimate in chemical oxidizers, elemental liquid fluorine.

Bell Aircraft Corporation is a member of the Martin-Bell industry team developing the Dyna-Soar hypersonic glider for the U. S. Air Force. Other team members are the Martin Company, Bendix Aviation Corporation, Minneapolis-Honeywell Regulator Company, Goodyear Aircraft Company and American Machine and Foundry Company.

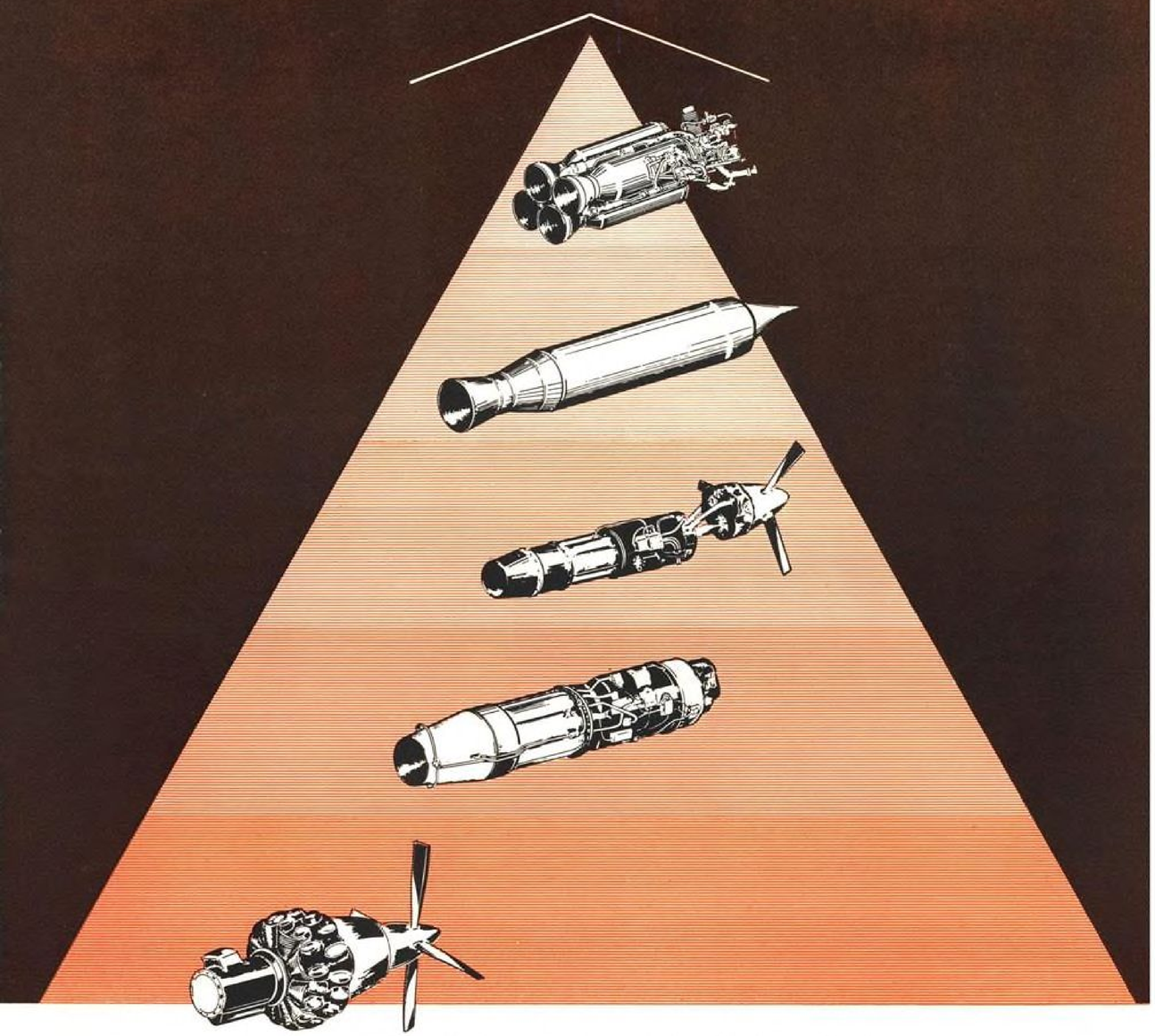
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FOR THE FULL SPECTRUM OF PROPULSION SYSTEMS



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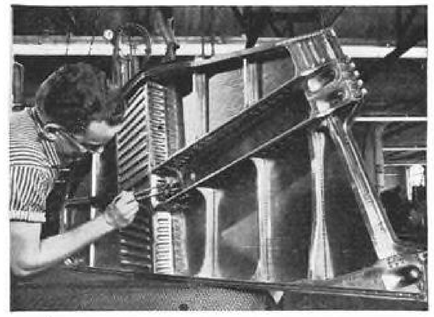
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You'll find it at The Budd Company where men, minds and machines create ideas and fabricate products of unique usefulness to the designers and builders of aircraft, missiles and rockets. These are the concern of various divisions and subsidiaries of The Budd Company, to all of which are available noteworthy research and testing facilities.



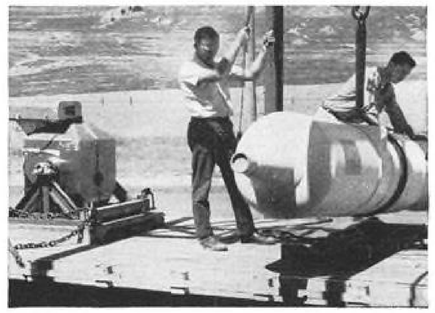
Defense Division. Heat resistant, resistance welded, integrated core structures for aircraft, missiles, rockets; jet engine components; parts for nuclear reactors. Ground support equipment. Shown above is the speed brake designed and built for the Convair F-106.



Tatnall Measuring Systems Company. The development and manufacture of a complete line of modern physical testing equipment to meet today's critical demands for precise measurements of all types. The PhotoStress machine shown here converts stress and strain into color patterns.



Continental-Diamond Fibre Corporation. Pioneering the development and manufacture of laminated and molded plastics, vulcanized fibre, and bonded mica in the form of sheets, rods, tubes and tapes.

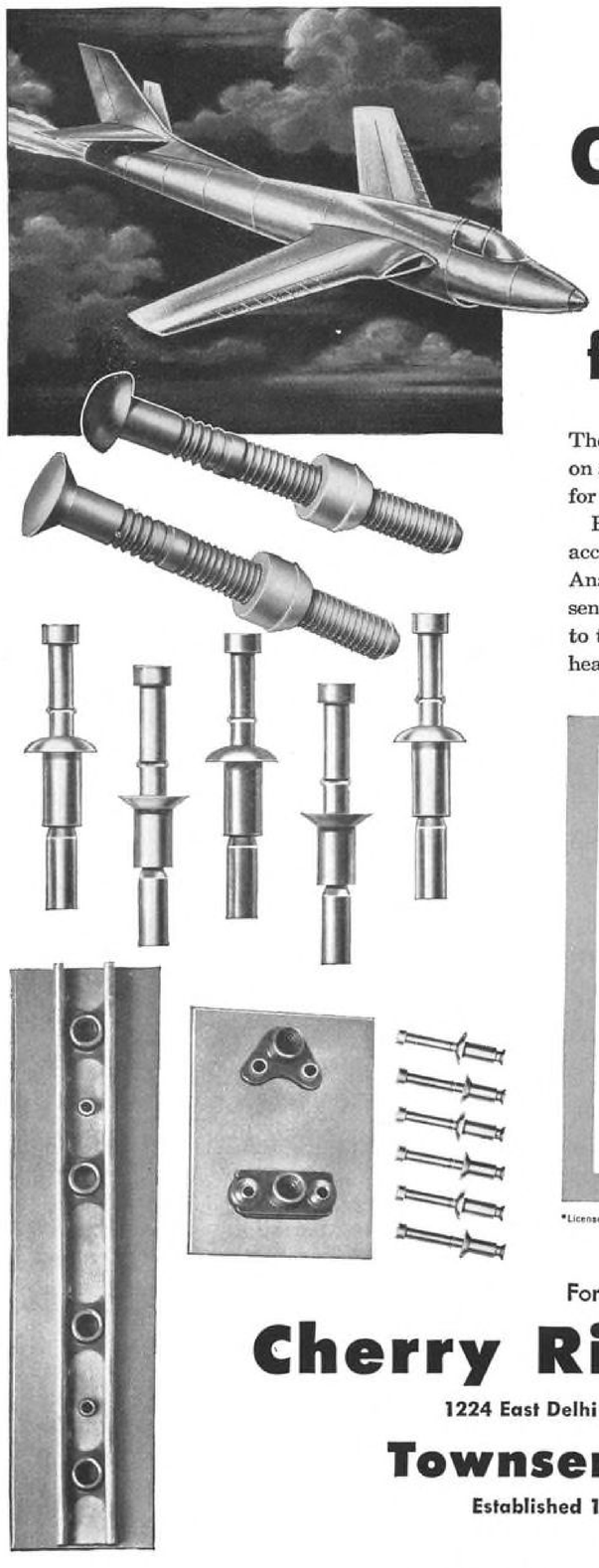


Nuclear Systems Division. Thiokol Chemical Corporation, Utah Division, chose Nuclear Systems' Model 1060 Multitron with a 1,000 curie cobalt 60 source for routine radiography of the Matador engine. Nuclear Systems offers the most complete line of gamma radiography equipment for this and many other applications.

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The Cherry Research and Development program operates on a single objective—to provide better fasteners and tools for the aircraft industry.

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Marines in trouble depend on the HOK-1—and this hard-working "whirlybird" depends on Harrison! Cruising cool with more than 2,000 pounds of payload requires reliable engine oil temperature control. And Harrison's tough, lightweight heat exchangers satisfy the necessary high standards! They're engineered for durability . . . designed to save space and weight, and provide the optimum in heat-transfer efficiency. Helicopters, bombers, jet fighters, transport and business planes—the finest aircraft of all types depend on Harrison for the finest in cooling equipment. You can rely on Harrison, with almost a half century of experience in the research and manufacture of heat-control products. If *you* have a cooling problem, look to Harrison for the answer.



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DOUBLE DIAGNOSIS TO PREVENT "HEART DISEASE"

...BY THE B&H JETCAL® ANALYZER

Two of the most important factors that affect jet engine life, efficiency, and safe operation are *Exhaust Gas Temperature (EGT)* and *Engine Speed (RPM)*. Excess heat will reduce "bucket" life as much as 50% and low EGT materially reduces efficiency and thrust. Any of such conditions will make operation of the aircraft both costly and dangerous. The *JETCAL Analyzer* predetermines accuracy of the EGT and (interrelatedly) Tachometer systems and isolates errors if they exist.

The *JETCAL* ANALYZES JET ENGINES 10 WAYS:

1) The JETCAL Analyzer *functionally* tests EGT thermocouple circuit of a jet aircraft or pilotless aircraft missile for error *without running the engine or disconnecting any wiring*. GUARANTEED ACCURACY is ±4°C. at engine test temperature.

2) Checks individual thermocouples "on the bench" before placement in parallel harness.

3) Checks thermocouples within the harness for continuity.

4) Checks thermocouples *and* paralleling harness for accuracy.

5) Checks resistance of the Exhaust Gas Temperature system.

6) Checks insulation of the EGT circuit for shorts to ground and for shorts between leads.

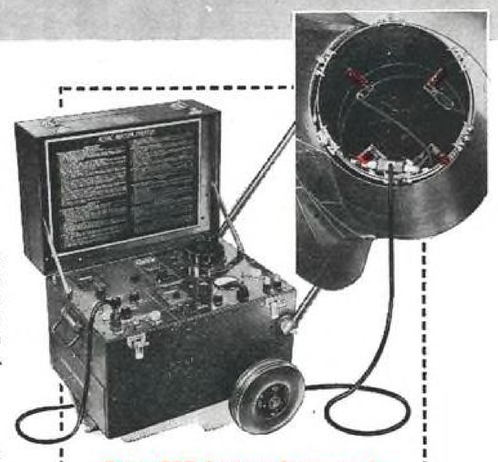
7) Checks EGT Indicators (in or out of the aircraft).

8) Checks EGT system with engine removed from aircraft (in production line or overhaul shop).

9) Reads jet engine speed while the engine is running with a guaranteed accuracy of ±0.1% in the range of 0-110% RPM. Additionally, the TAKCAL circuit can be used to trouble shoot and isolate errors in the aircraft tachometer system.

10) JETCAL Analyzer enables engine adjustment to proper relationship between engine temperature and engine RPM for maximum thrust and efficiency during engine run (Tabbing or Micing).

ALSO *functionally* checks aircraft Over-Heat Detectors and Wing Anti-Ice Systems (thermal switch and continuous wire) by using TEMPCAL Probes.. Rapid heat rise . . . 3 minutes to 800°F! Fast cycling time of thermal switches . . . 4 to 5 complete cycles per minute for bench checking in production.



Tests EGT System Accuracy to ±4°C at Test Temperature

(functionally, without running the engine)

Tests RPM Accuracy to 10 RPM in 10,000 RPM (±0.1%)

The JETCAL is in worldwide use . . . by the U. S. Navy and Air Force as well as by major aircraft and engine manufacturers. Write, wire or phone for complete information.

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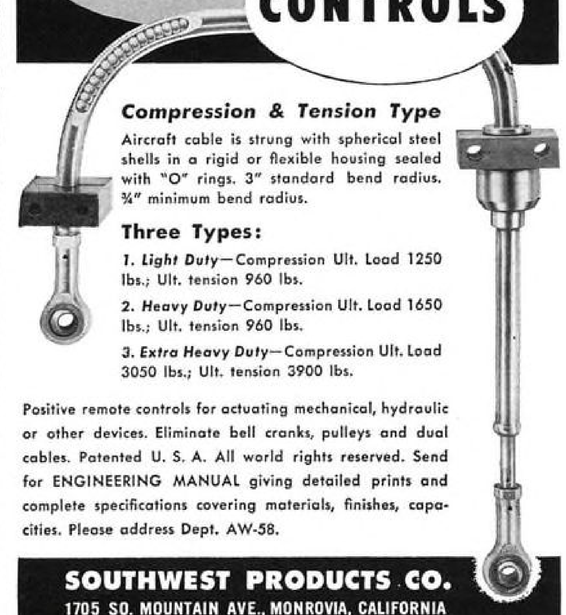
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Aircraft cable is strung with spherical steel shells in a rigid or flexible housing sealed with "O" rings. 3" standard bend radius. ¾" minimum bend radius.

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Goodyear Aircraft Corp., 1210 Massilon Rd., Akron 15, Ohio
Goodyear International Corp., Aviation Products Div., 1144 East Market St., Akron 16, Ohio
United States Rubber Co., 1230 Ave. of the Americas, New York 20, N. Y.
Weber Aircraft Corp., 2820 Ontario St., Burbank, Calif.

Thermometers, Cabin & Cockpit (See Also Gages)

Bendix Aviation Corp., Friez Instrument Div., 1400 Taylor Ave., Baltimore 4, Md.
THE ELECTRIC AUTO-LITE CO., Toledo 1, Ohio. SEE ADV. D-158
G. M. Mfg. Co., 134 West 26 St., New York 1, N. Y.
General Electric Co., Apparatus Sls. Div., 1 River Rd., Schenectady 5, N. Y.
Instrument Associates, 351 Great Neck Rd., Great Neck, N. Y.
LEWIS ENGINEERING CO., 52 Rubber Ave., Naugatuck, Conn. SEE ADV. C-102
Thomas A. Edison Industries, Instrument Div., 49 Lakeside Ave., West Orange, N. J.
S. M. S. Instrument & Accessories, Inc., N. Y. International Airport, Jamaica 30, N. Y.
Thompson Res. & Mfg. Co., Box 116, Davenport, Fla.
United Control Corp., 4540 Union Bay Pl., Seattle 5, Wash.
U. S. Gauge Div., American Machine & Metals, Inc., Sellersville, Pa.
Weksler Instruments Corp., 195 East Merrick Rd., Freeport, N. Y.
Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 12, N. J.

Thermos Jugs & Ovens

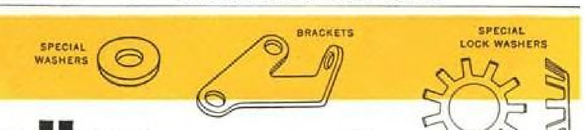
Aircraft Components, Inc., Woodland Ave., Twin Cities Airport, Benton Harbor, Mich.
AiResearch Aviation Service Div., The Garrett Corp., 6201 W. Imperial Hwy., Los Angeles 45, Calif.
D-K Mfg. Co., 5059 So. Kedzie, Chicago, Ill.
Mansfield Aircraft Products Co., Municipal Airport, Mansfield, Ohio
Temperature Engr. Corp., 1100 Union Landing Rd., Riverton, N. J.
Weber Aircraft Corp., 2820 Ontario St., Burbank, Calif.

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Accessories Manufacturers, Ltd., 641-645 St. James St., W., Montreal, Canada
Aerial Machine & Tool Corp., 38-27 30th St., Long Island City 1, N. Y.
Aeronautical Upholsterers, Inc., Friendship Internat'l Airport, Md.
Airconductors, 367 East Olive, Gardena, Calif.
Aircraft Mechanics Inc., 3200 North Nevada St., Colorado Springs, Colo.
Airite Products Inc., 3516 East Olympic Blvd., Los Angeles 23, Calif.
All American Aircraft Products Inc., 1311 West Pacific Coast Highway, Harbor City, Calif.
Associated Co. Inc., 1441 S. McLean Blvd., Wichita 13, Kans.
Associated Technical Sales Co., 1926 E. Siebenthaler Ave., Dayton, Ohio
Aviquipo of Canada Ltd., 636 St. Paul St. W., Montreal, Quebec, Canada
Boyt Harness Co., 303 New York Ave., Des Moines 5, Iowa
Bristol Aircraft (Western) Ltd., P. O. Box 874, Stevenson Field, Winnipeg, Manitoba, Canada
Brooks & Perkins, Inc., 1950 West Fort St., Detroit 16, Mich.
THE BRUNSWICK-BALKE-COLLENDER CO., DEFENSE PRODUCTS DIV., 1700 Messler St., Muskegon, Mich. SEE ADV. B-46
Buffalo Metal Container Corp., 35 Roetzer St., Buffalo 11, N. Y.
Canadian Flight Equipment Cobourg, Ltd., 66 Swayne St., Cobourg, Ontario, Canada
Cemco Industries, Inc., Galion, Ohio
Davis Aircraft Products, Inc., 1195 Spofford Ave., Bronx 59, N. Y.
Eastern Rotorcraft Corp., P. O. Box 110, Doylestown, Pa.
General Logistics Div., Aeroquip Corp., 2929 Floyd St., Burbank, Calif.
Lockheed Aircraft Corp., Georgia Div., Special Products Branch, Marietta, Ga.
Meteor Aircraft Prods., Inc., P. O. Box 787, Fairmont 1, West Va.
Miller Industries, 1525 Marion St., Grand Haven, Mich.
Nortronics Div., Northrop Aircraft Inc., 222 North Prairie Ave., Hawthorne, Calif.
Oro Mfg. Co., 1425 East Michigan St., Adrian, Mich.
Peck & Hale, Inc., Sayville, N. Y.
Security Parachute Co., 295 West 141 Ave., San Leandro, Calif.
SPACE CORP., P. O. Box 5175, Dallas, Texas. SEE ADV. D-161
Stanley Aviation Corp., 2501 Dallas St., Denver, Colo.
Stein Bros. Mfg. Co., 1401 W. Jackson, Chicago, Ill.
Thieblot Aircraft Co. Div., Vitro Corp. of America, P. O. Box 481, Martinsburg, West Va.
Townsend Engineered Products, Inc., 805 S. McClay St., Santa Ana, Calif.
Monadnock Mills Sub., United-Carr Fastener Corp., 1977 First Ave., San Leandro, Calif.
United-Carr Fastener Corp., Carr Fastener Co., Div., 31 Ames St., Cambridge 42, Mass.
United Supply Co., 3676 S. Broadway Pl., Los Angeles 7, Calif.
Universal Metal Products, 331 Vineland Ave., La Puente, Calif.
Waco Aircraft Co., The, Peters Ave., Troy, Ohio
Wichita Ponca Canvas Products Co., 611 East Central Ave., P. O. Box 2177, Wichita 1, Kansas

Transmission Assemblies, Helicopter

American Transmission Corp., Box 73, Caldwell, N. J.
Champion Aircraft Corp., Osceola, Wisc.
Fenn Mfg. Co., The, P. O. Box 235, Hartford, Conn.
Gilfillan Brothers, Inc., 1815 Venice Blvd., Los Angeles 6, Calif.
Hupp Aviation Company, 6633 West 65 St., Chicago 38, Ill.
Kelsey-Hayes Co., 3600 Military Ave., Detroit 32, Mich.
Philadelphia Gear Corp., Erie & G Streets, Philadelphia, Pa.
Piasecki Aircraft Corp., Island Rd., International Airport, Philadelphia 42, Pa.
Precision Gear Products, Inc., 132 Iowa Ave., Paterson 3, N. J.
Sundstrand Turbo, 10445 Glenoaks Blvd., Pacoima, Calif.
Technical Development Co., 305 South Chester Pike, Glenolden, Pa.
Western Gear Corp., P. O. Box 192, 2600 E. Imperial Hwy., Lynwood, Calif.
Westinghouse Electric Corp., 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa.
Zurn Industries, Inc., Mechanical Power Transmission Div., 1982 Pittsburgh Avenue, Erie, Pa.



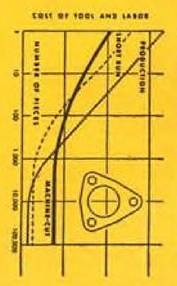
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Geometric Stamping Co., 1111 East 200 St., Cleveland 17, Ohio
The Thermix Corp., Box 1198, Greenwich, Conn.
Weber Aircraft Corp., 2820 Ontario St., Burbank, Calif.

Turbine Assemblies, Gas Turbine Engine

AiResearch Mfg. Div., The Garrett Corp., 402 S. 36 St., Phoenix, Ariz.
The American Welding & Mfg. Co., Warren, Ohio
Boeing Airplane Co., Seattle Div., Box 3707, Seattle 24, Wash.
CONSOLIDATED DIESEL ELEC. CORP., 880 Canal St., Stamford, Conn. SEE ADV. D-209
Fenn Mfg. Co., The, P. O. Box 235, Hartford, Conn.
The Garrett Mfg. Corp. of Canada, Ltd., 4 Racine Rd., Rexdale, Ontario, Canada
General Electric Co., Apparatus Sls. Div., 1 River Rd., Schenectady 5, N. Y.
B. H. Hadley, Inc., 1427 Garey Ave., Pomona, Calif.
Jack & Heintz, Inc., 17600 Broadway, Cleveland 1, Ohio
Kaiser Metal Products, Inc., Fleetwings Div., Bristol, Pa.
Kelsey-Hayes Co., 3600 Military Ave., Detroit 32, Mich.
Kerns Manufacturing Corp., 45-18 Court Sq., Long Island City 1, N. Y.
Walter Kidde & Co., Inc., 256 Main St., Belleville 9, N. J.
Loewy-Hydropress Div., Baldwin-Lima-Hamilton Corp., 111 Fifth Avenue., New York 3, N. Y.
LYCOMING DIV., AVCO MANUFACTURING CORP., Stratford, Conn. SEE ADV 3RD COVER
Meco Inc., 1401 S. Marshall, Paris, Ill.
McGregor Mfg. Corp., 2785 East Maple, Birmingham, Mich.
National U. S. Radiator Corp., Johnstown, Pa.
Rheem Mfg. Co., Aircraft Div., 11711 Woodruff Ave., Downey, Calif.
Rheem Mfg. Co., Gov. Products Div., 11711 Woodruff Ave., Downey, Calif.
Stainless Steel Prods., Inc., 2980 San Fernando Rd., Burbank, Calif.
Ryan Aeronautical Co., Lindbergh Field, San Diego 12, Calif.
SOLAR AIRCRAFT CO., 2200 Pacific Hwy., San Diego 12, Calif. SEE ADV. A-58
STALKER DEVELOPMENTS CO., 903 Woodside Ave., Essexville, Mich. SEE ADV. B-44
Therm-Electric Meters Co., Inc., Ithaca, New York
THOMPSON PRODUCTS, INC., GENERAL OFFICES, Cleveland 17, Ohio. SEE ADV. D-170
Titanium Fabricators, Inc., 3906 Cohasset, Burbank, Calif.
Turbo Products, Inc., 12177 Montague St., Pacoima, Calif.
Twigg Industries, Div., Pryor Mfg. Co., 1827 East National Rd., Brazil, Ind.
Westinghouse Electric Corp., 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa.

Turbines, Air

Air Logistics Corp., 3600 East Foothill Blvd., Pasadena, California
AiResearch Mfg. Div., The Garrett Corp., 9851 Sepulveda Blvd., Los Angeles 45, Calif.
AiResearch Mfg. Div., The Garrett Corp., 402 S. 36 St., Phoenix, Ariz.
Bendix Aviation Corp., Utica Div., Utica, N. Y.
The Garrett Mfg. Corp. of Canada, Ltd., 4 Racine Rd., Rexdale, Ontario, Canada
General Electric Co., Aircraft Accessory Turbine Dept., West Lynn, Mass.
Godfrey Engineering Co., Ltd., 480 Metropolitan Boulevard, Lachine, Montreal 32, Quebec, Canada
Hamilton Standard Div., United Aircraft Corp., Windsor Locks, Conn.
Jarvis Corp., Portland, Conn.
Walter Kidde & Co., Inc., 256 Main St., Belleville 9, N. J.
Marquardt Aircraft Co., 16555 Saticoy St., Van Nuys, Calif.
McGregor Mfg. Corp., 2785 East Maple, Birmingham, Mich.
New England Aircraft Products Co., 105 E. Main St., Plainville, Conn.
Paragon Tool & Die Co., 11035 Sutter Ave., Pacoima, Calif.
Stainless Steel Prods., Inc., 2980 San Fernando Rd., Burbank, Calif.
Stratos Div., Fairchild Engine & Airplane Corp., Bay Shore, N. Y.
Sundstrand Turbo, 10445 Glenoaks Blvd., Pacoima, Calif.
Therm-Electric Meters Co., Inc., Ithaca, New York
THOMPSON PRODUCTS, INC., GENERAL OFFICES, Cleveland 17, Ohio. SEE ADV. D-170
Turbo Products, Inc., 12177 Montague St., Pacoima, Calif.
Turbocraft Co., 492 E. Union St., Pasadena, Calif.

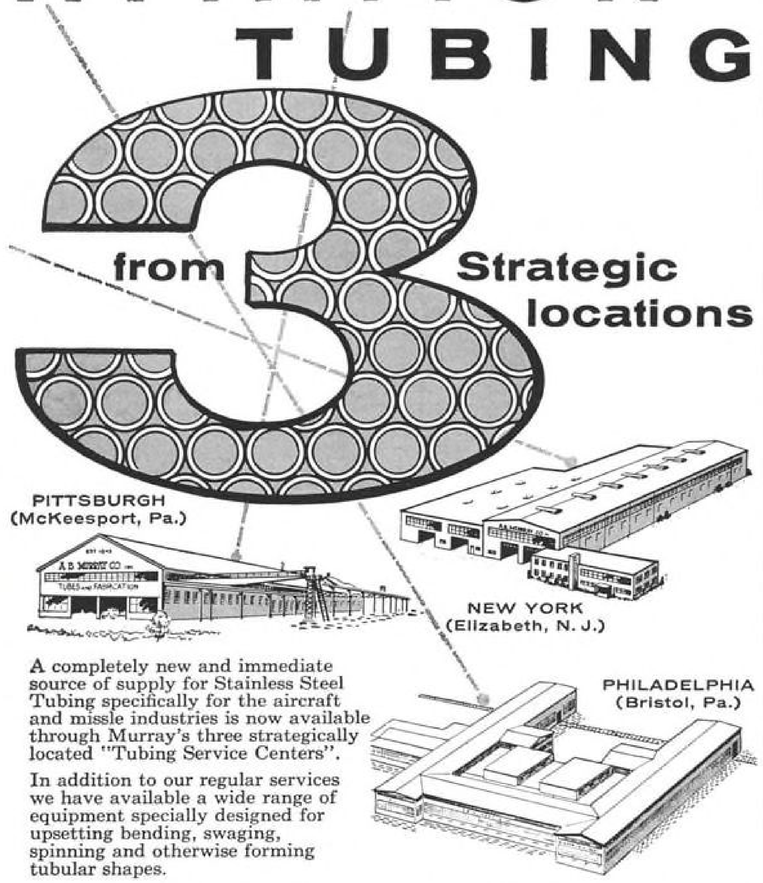
Turbines, Ram Air

AiResearch Mfg. Div., The Garrett Corp., 9851 Sepulveda Blvd., Los Angeles 45, Calif.
AiResearch Mfg. Div., The Garrett Corp., 402 S. 36 St., Phoenix, Ariz.
Bendix Aviation Corp., Utica Div., Utica, N. Y.
Curtiss-Wright Corp., Wood-Ridge, N. J.
The Garrett Mfg. Corp. of Canada, Ltd., 4 Racine Rd., Rexdale, Ontario, Canada
General Electric Co., Aircraft Accessory Turbine Dept., West Lynn, Mass.
Jarvis Corp., Portland, Conn.
Marquardt Aircraft Co., 16555 Saticoy St., Van Nuys, Calif.
McGregor Mfg. Corp., 2785 East Maple, Birmingham, Mich.
New England Aircraft Products Co., 105 E. Main St., Plainville, Conn.
Sundstrand Turbo, 10445 Glenoaks Blvd., Pacoima, Calif.
Therm-Electric Meters Co., Inc., Ithaca, New York
THOMPSON PRODUCTS, INC., GENERAL OFICES, Cleveland 17, Ohio. SEE ADV. D-170
Turbocraft Co., 492 E. Union St., Pasadena, Calif.

Turbosuperchargers

AiResearch Mfg. Div., The Garrett Corp., 9851 Sepulveda Blvd., Los Angeles 45, Calif.
The American Welding & Mfg. Co., Warren, Ohio
General Electric Co., Aircraft Accessory Turbine Dept., West Lynn, Mass.
General Electric Co., Apparatus Sls. Div. 1 River Rd., Schenectady 5, N. Y.

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Turret Control Systems (See Also Specific Parts; Ammunition Boosters; Turrets; etc.)

AiResearch Mfg. Div., The Garrett Corp., 9851 Sepulveda Blvd., Los Angeles 45, Calif.
American Bosch Arma Corp., 320 Fulton Ave., Hempstead, N. Y.
AVCO MANUFACTURING CORPORATION, CROSLEY DIVISION, 1329 Arlington Street, Cincinnati 25, Ohio. **SEE ADV. B-2**
Belock Inst. Corp., 112-03 14 Ave., College Point 56, N. Y.
Cadillac Gage Co., P .O. Box 3806, Detroit 5, Mich.
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Emerson Electric Mfg. Co., 8100 Florissant Ave., St. Louis, Mo.
General Electric Co., Light Military Electronics Dept., French Rd., Utica, N. Y.
Kelsey-Hayes Co., 3600 Military Ave., Detroit 32, Mich.
F. B. MacLaren & Co., Inc., 2 West 18 St., Huntington Station, N. Y.
W. L. Maxson Corp., The, 475 10 Ave., New York 18, N. Y.
Townsend Engineered Prods., Inc., 805 S. McClay St., Santa Ana, Calif.
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Turrets, Gun

American Bosch Arma Corp., 320 Fulton Ave., Hempstead, N. Y.
The American Welding & Mfg. Co., Warren, Ohio
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Brooks & Perkins, Inc., 1950 West Fort St., Detroit 16, Mich.
Defense Products, Nuclear Products—Erco Div., ACF Industries, Inc., Riverdale, Md.
Emerson Electric Mfg. Co., 8100 Florissant Ave., St. Louis, Mo.
General Electric Co., Light Military Electronics Dept., French Rd., Utica, N. Y.
Kelsey-Hayes Co., 3600 Military Ave., Detroit 32, Mich.
Ryan Aeronautical Co., Lindbergh Field, San Diego 12, Calif.
Thieblot Aircraft Co. Div., Vitro Corp. of America, P. O. Box 481, Martinsburg, West Va.
Universal Match Corp., Armament Div., P. O. Box 5841, St. Louis 21, Mo.
Waco Aircraft Co., The, Peters Ave., Troy, Ohio

Wheels

Dunlop Canada Ltd., 870 Queen Street East, Toronto 8, Ontario, Canada
General Tire & Rubber Co., 1708 Englewood Ave., Akron 9, Ohio
Goodyear International Corp., Aviation Products Div., 1144 East Market St., Akron 16, Ohio

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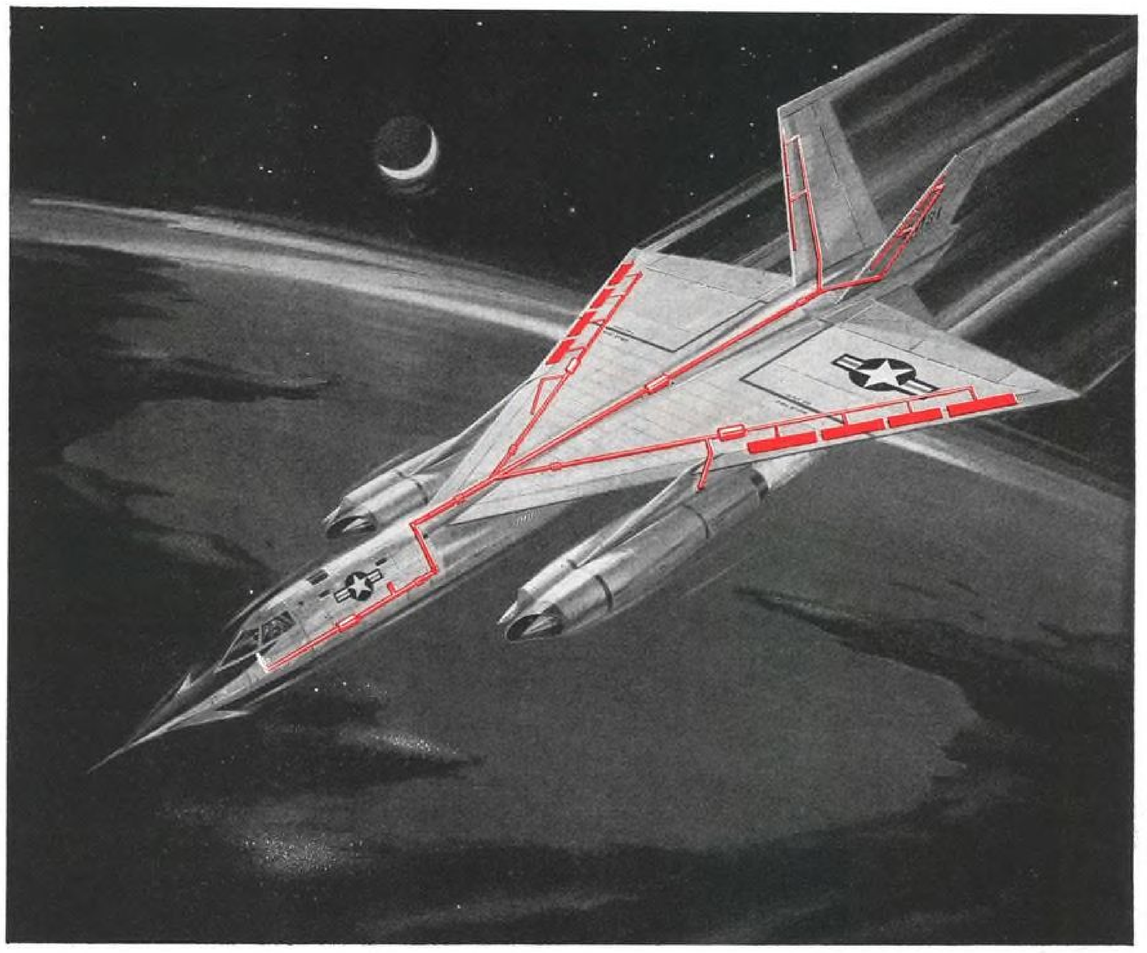
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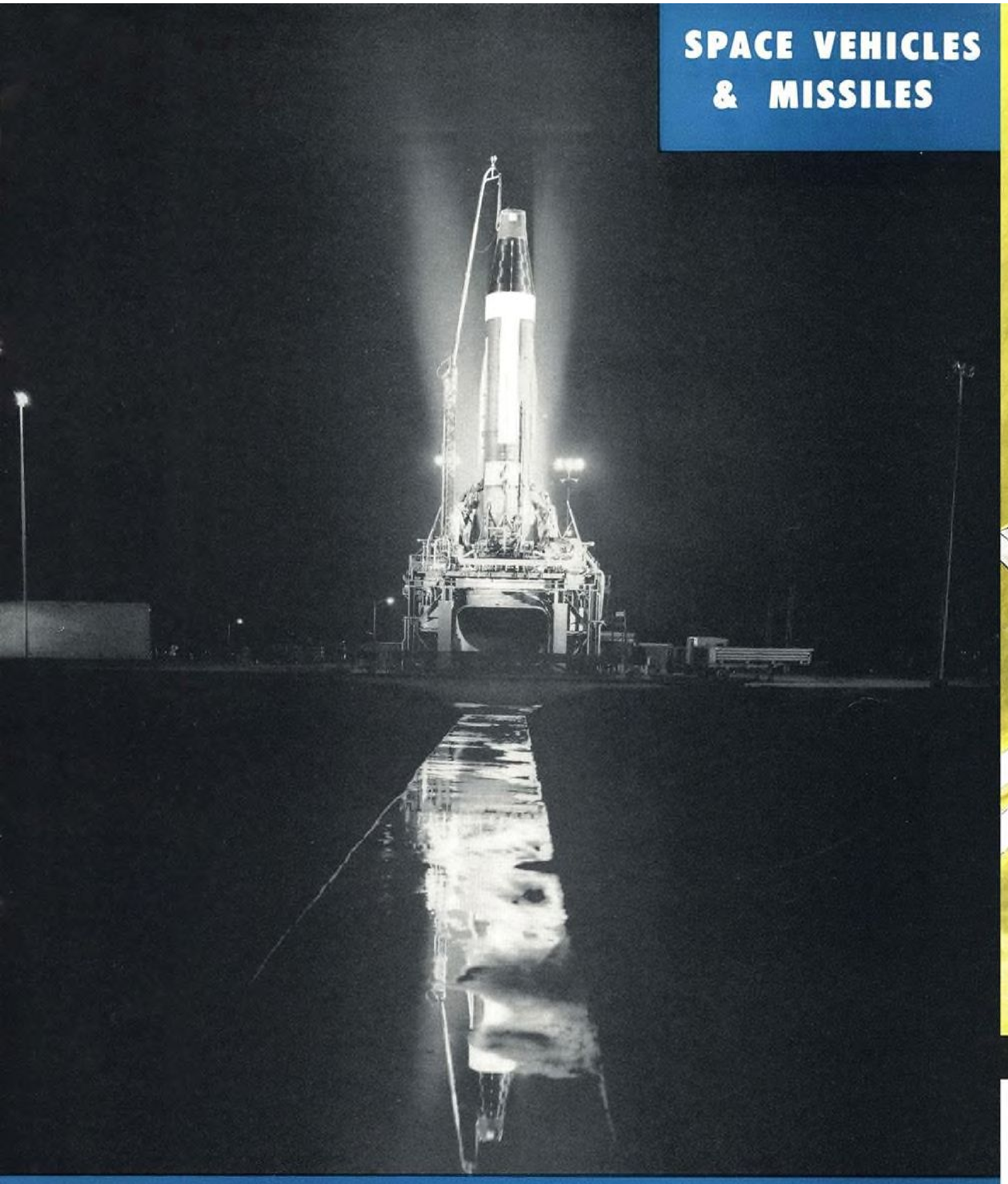
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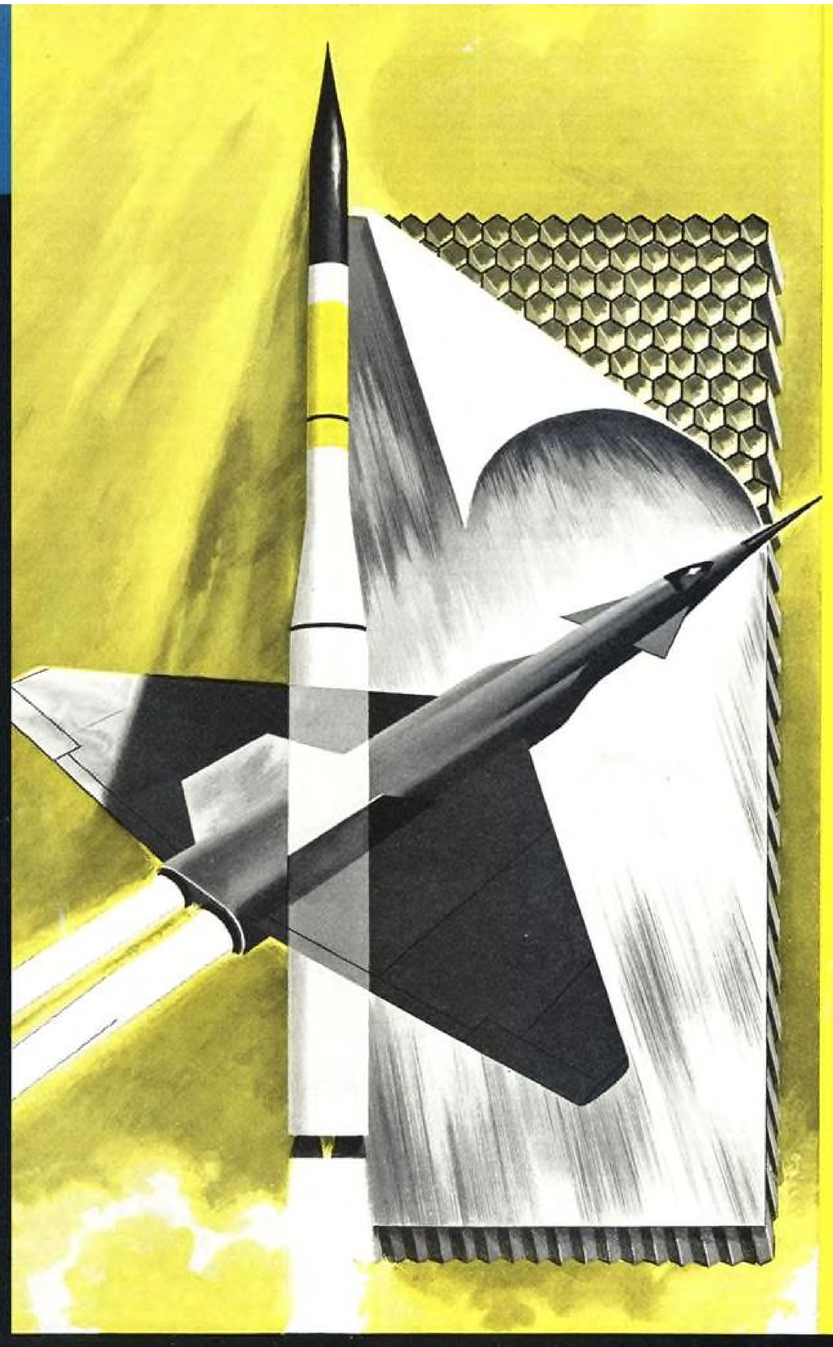


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BUYERS' GUIDE FOR 1959

Section B



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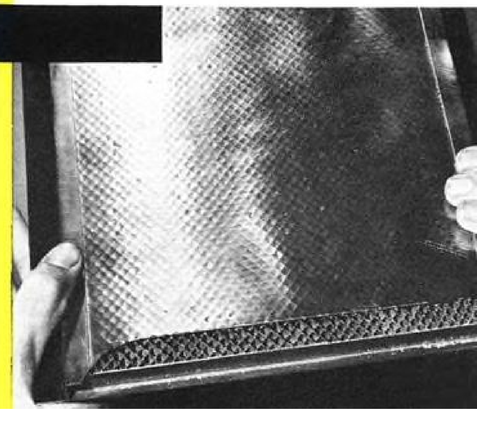
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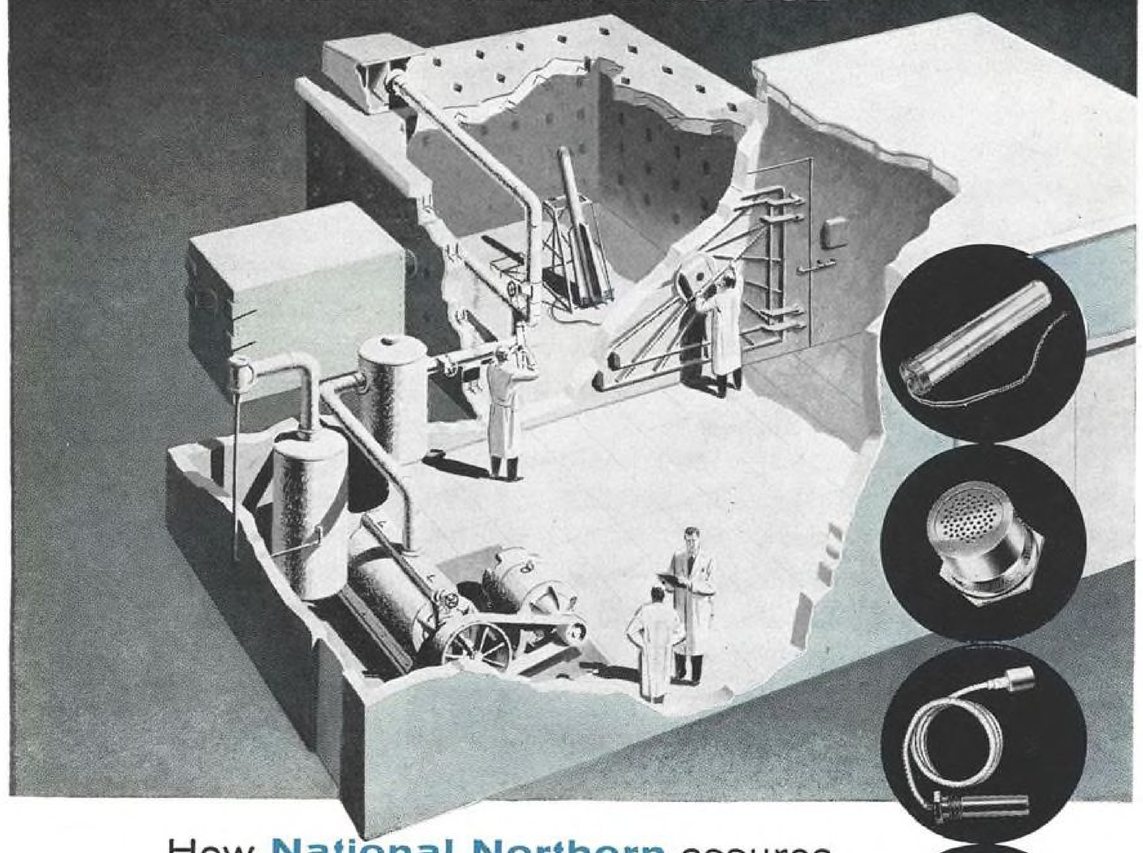
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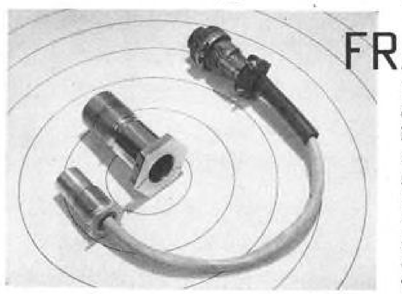
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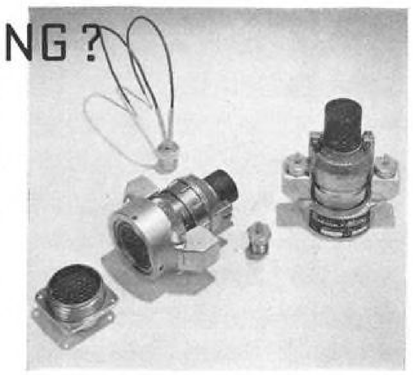
do you have these missile power problems?



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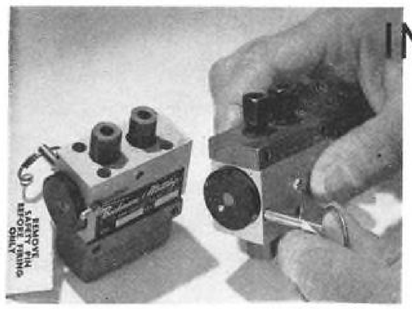
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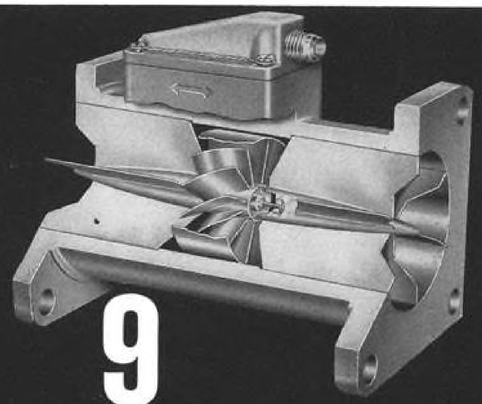
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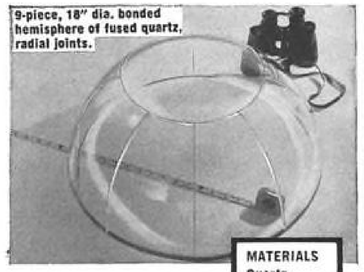
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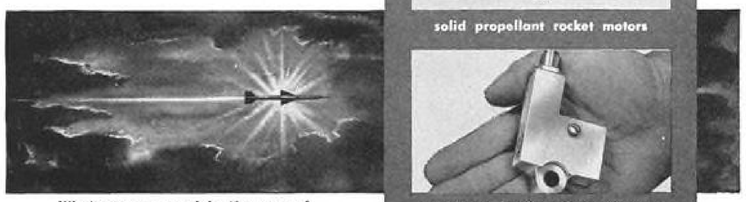
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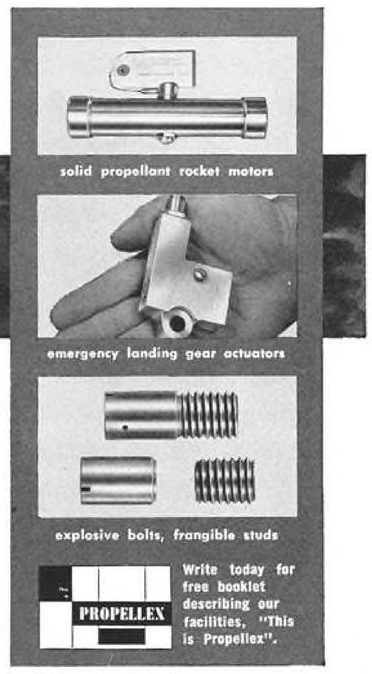
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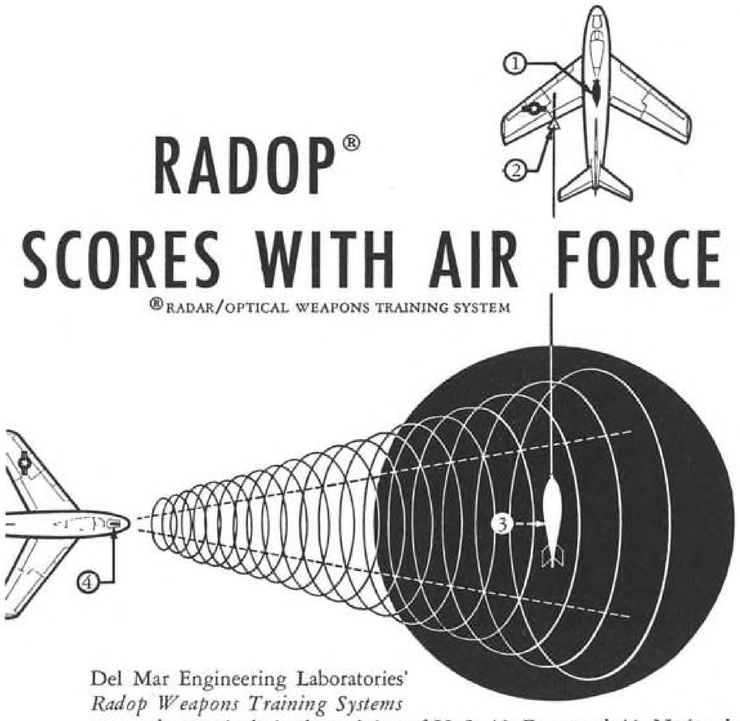
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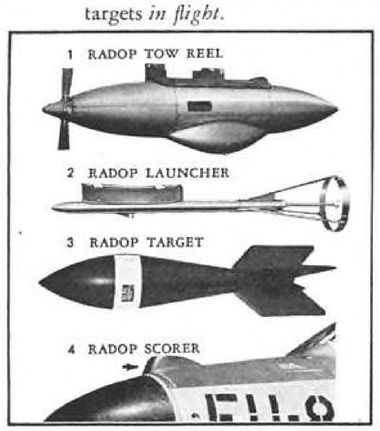


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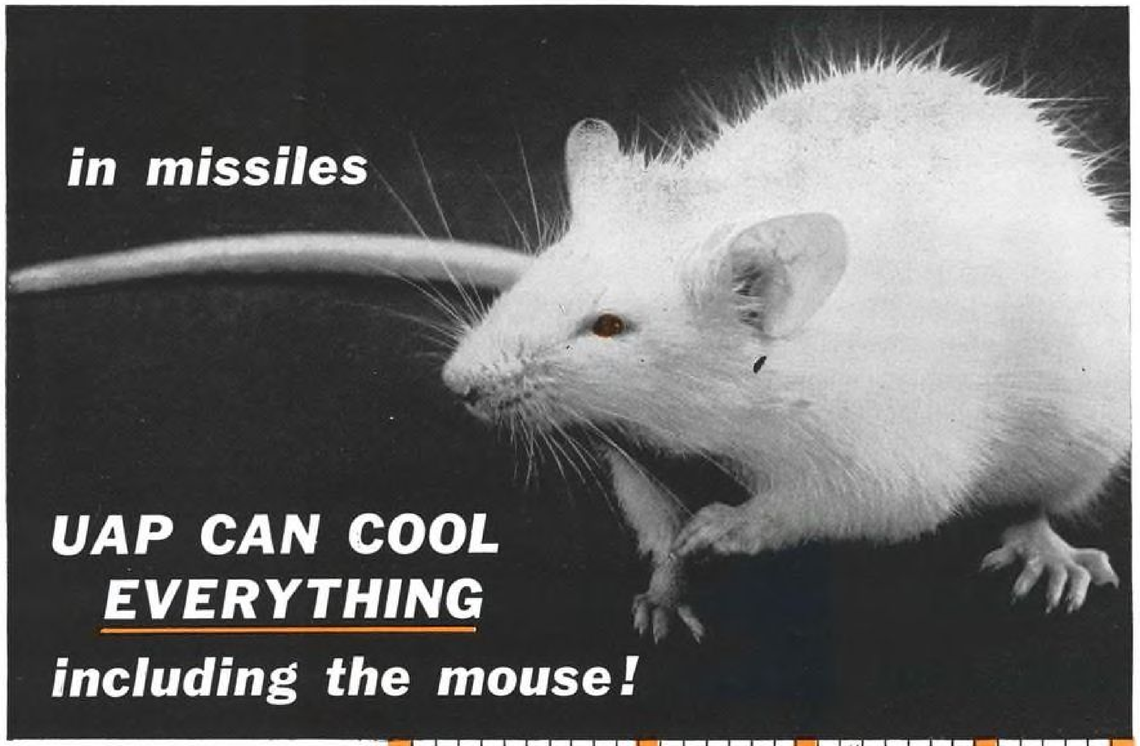
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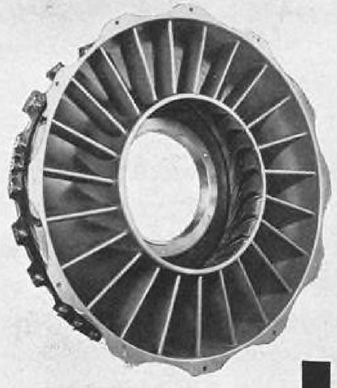


		missile type	Surface-Surface	Air-Surface	Air-Air	Surface-Air	ICBM	IRBM	IGBM	Drone	Tactical	Unknown	service use	Army Ordnance	USAF	NAVY	Army Sig. Corps	Bur. Aeronautics	Unknown	propulsion	Liq. Fuel Rocket	Solid Fuel Rocket	Booster	Ram Jet	Turbo Prop	Gas Turbine	Unknown	guidance	Radar	Inertial	Infra Red	Radio	Unknown	ground support
cooling systems	Mechanical Refrigeration		■			■	■								■	■							■	■									
	Expendable Refrigeration		■			■	■								■	■											■						■	
	Cryogenic						■											■				■									■			
	Heat Transport									■				■	■												■							■
	Console Cooling		■		■	■		■			■			■	■			■			■	■							■	■				
	Evaporative		■			■				■				■	■																	■		
heat exchangers	Liquid/Air		■	■		■				■				■	■			■			■			■	■				■	■				
	Ammonia/Glycol		■											■	■													■					■	
	Liquid/Gas										■							■							■								■	
	Evaporative			■										■	■													■					■	
	Liquid/Liquid		■	■		■								■	■			■					■				■			■			■	
	Liquid Ammonia/Liq. Oxygen						■														■								■					
	Hot Gas/Nitrogen Tetroxide					■								■	■			■										■					■	
	Ammonia/Air					■								■	■										■					■				
	Cold Plate		■		■						■							■					■							■				
valves	Rupture			■		■								■	■						■							■					■	
	Explosive					■								■	■													■					■	
	Bleed			■										■	■													■					■	
	Bypass			■	■	■			■					■	■											■						■		■
	Temperature Control										■								■									■						■	
	Pressure Control											■							■									■						■	
	Solenoid			■		■						■		■	■										■	■				■		■		
	Thermostatic											■							■									■						■	
hand pumps																																		
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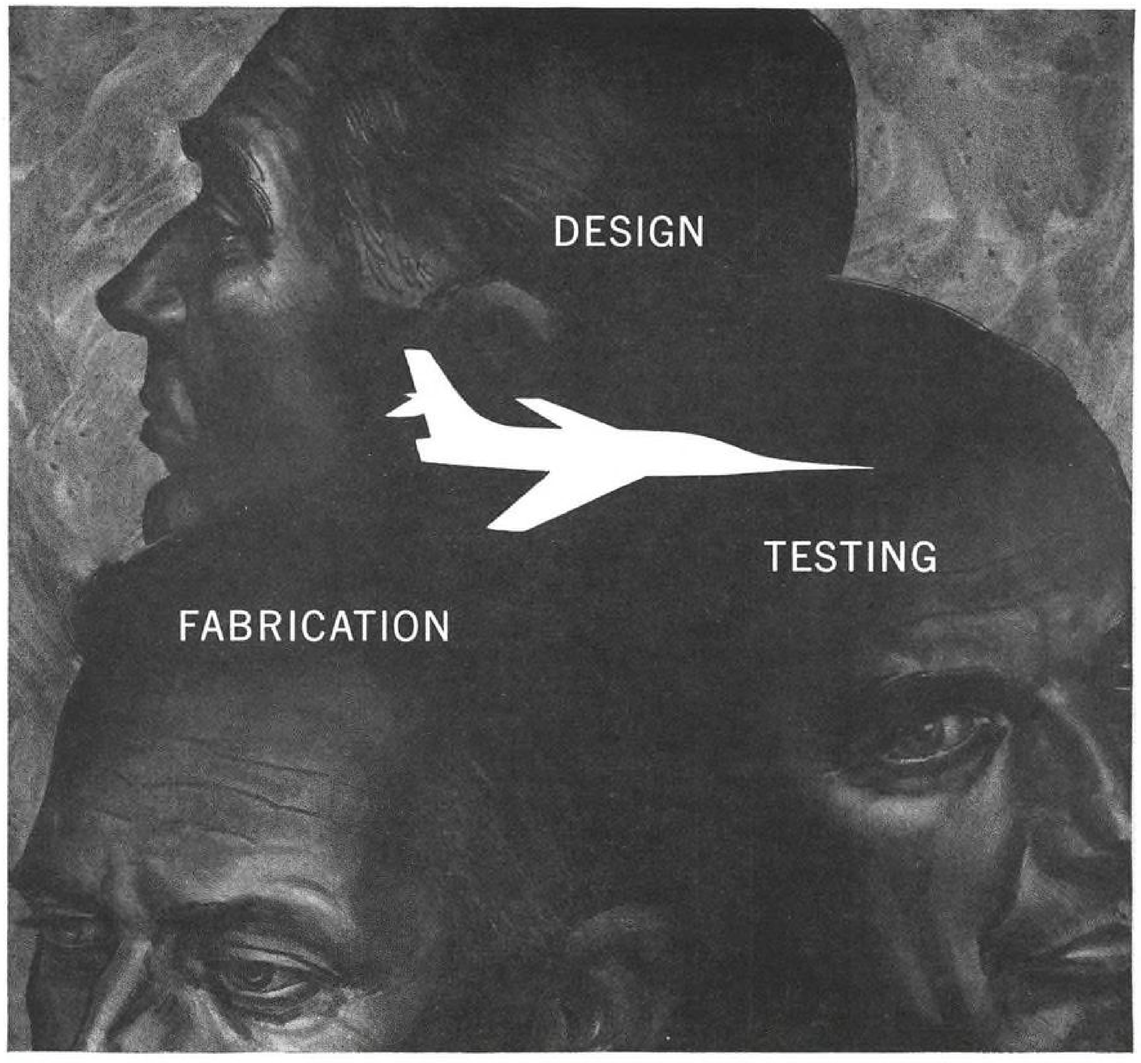
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In metal *honeycomb*, Brunswick produces many fabrications, including those which require compound curvatures and extremely close tolerances. And Brunswick offers a complete choice of the most advanced adhesive systems, tailored to your requirements.

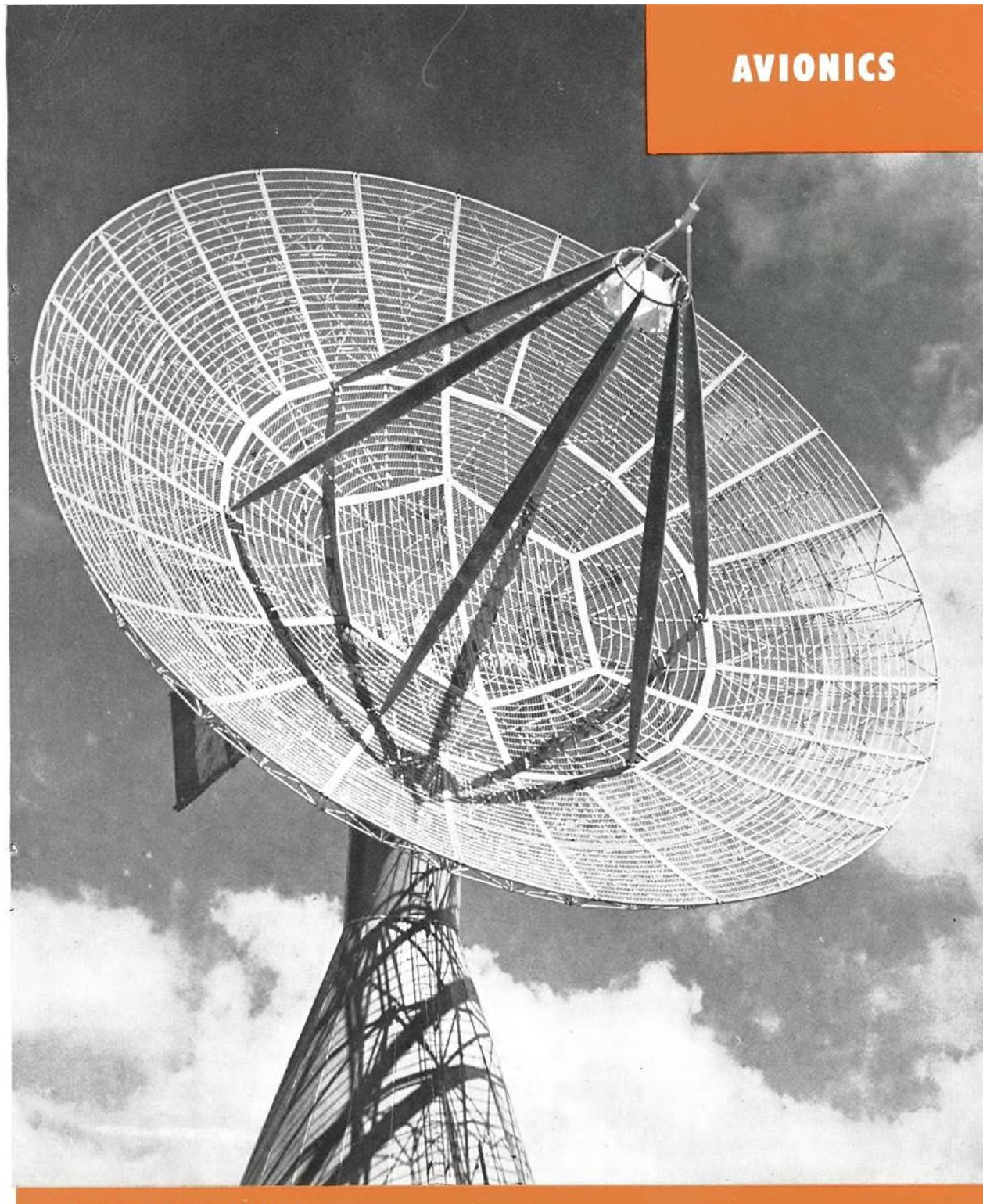
In conventional *metalwork*, Brunswick supplies the aircraft industry with pressurized windshield and canopy assemblies, major radar assemblies, ailerons and flaps. To put Brunswick's design, fabrication and testing facilities at your service, write today.

BRUNSWICK

The Brunswick-Balke-Collender Company • Defense Products Division Sales Manager • 1700 Messler Street, Muskegon, Michigan

B-46

Circle Number 32 on Reader-Service Card



TLM-18 TELEMETRY ANTENNA

AF VHF UHF SHF



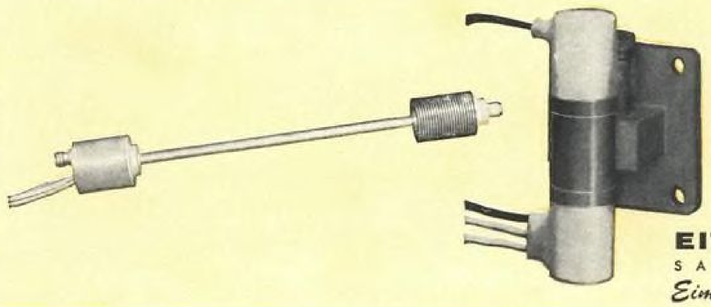
EIMAC FIRST

Covering the Spectrum with Reliable Ceramic Tubes



From audio into super high frequencies, Eimac covers the RF spectrum with modern ceramic tubes. This incomparable ceramic electron tube family—more than one-third of the Eimac line—includes reflex and amplifier klystrons, traveling wave tubes, negative grid tubes, rectifiers, pulse modulators, and receiving tubes. The tubes illustrated are typical of more than 40 Eimac ceramic tube types that are being selected by leading equipment manufacturers for use in all types of applications—from tropo-scatter to industrial heating, from single sideband to pulse.

The advantages of reliable Eimac ceramic tubes include: resistance to damage by impact, vibration, and heat; smaller size; and better processing techniques.



Eimac®

EITEL-McCULLOUGH, INC.
SAN CARLOS • CALIFORNIA
Eimac First with ceramic tubes that can take it

PRODUCTS DESIGNED AND MANUFACTURED BY EIMAC

Negative Grid Tubes
Reflex and Amplifier Klystrons
Ceramic Receiving Tubes
Vacuum Tube Accessories
Vacuum Switches
Vacuum Pumps
Traveling Wave Tubes

Circle Number 4 on Reader-Service Card

Includes the most extensive line of ceramic electron tubes

cppc for ANY



CLIFTON PRECISION PRODUCTS

CLIFTON HEIGHTS, PA.

ROTARY COMPONENT



Synchros

SIZE 8 • 10 • 11 • 15 • Pancake
BuOrd • High Temp. (450°F)

Highest accuracy in production quantities (7′ max. error is typical); lowest nulls; lowest phase shifts; corrosion resistant construction, stainless steel or aluminum housings. Double ended shafts available. An extremely wide variety of synchros available as Transmitters, Receivers, Control Transformers, Differentials, Resolvers.

Precision Computing Resolvers

SIZE 8 • 10 • 15 • Pancake

Highest accuracy (functional error .03% to .1%). Excellent nulls, low phase shift. Units to resist 450°F. Resistive, feedback winding or thermistor compensation. Types for transistor circuitry. BuOrd shafts and Mk 4 Mod 0 brush block obtainable.

Motor Generators

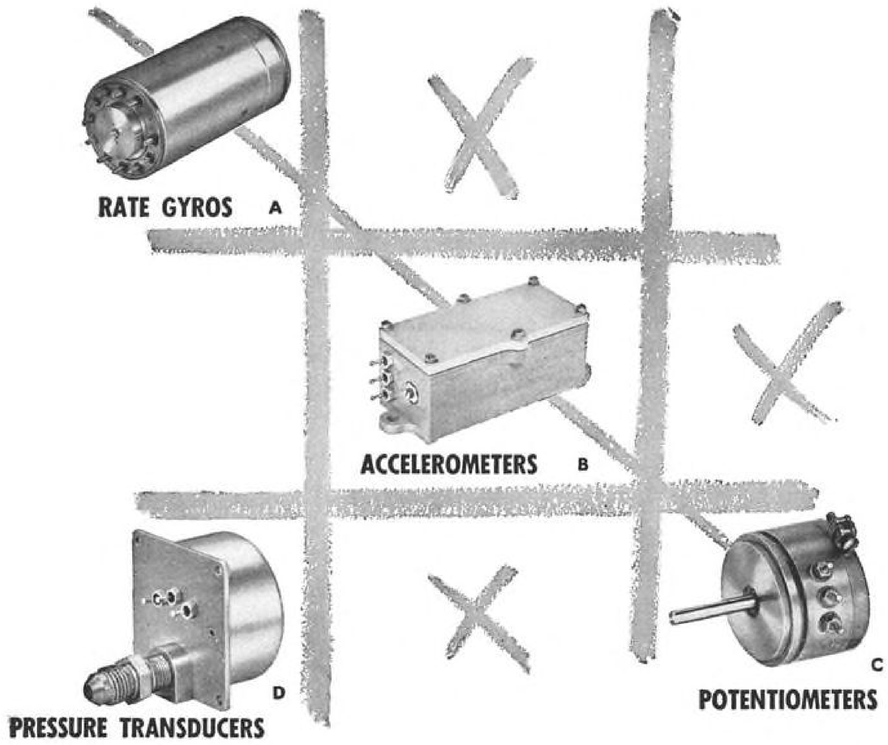
SIZE 8 • 10

Minimum length and weight. Suitable for error rate damping in servo systems for high stability. Motor rate tachometers available. Types for transistor circuitry.

CO., INC.

These pages describe only partially our wide line of Precision Rotary Components. Write or telephone for CPPC's latest catalogue which gives complete electrical data and drawings. Special units are available to withstand severe vibration and shock, extremely high temperature, and radio-active environments.

Most units available for immediate delivery. Two plants (Clifton Heights, Pa. and Colorado Springs, Colo.) to serve you. Home Sales Office: 9014 West Chester Pike, Upper Darby, Pa., HIlltop 9-1200 (Suburban Philadelphia).



All Winners—

COMPONENTS BY FAIRCHILD

A. RATE GYROS—*Fairchild's Subminiature Floated Rate Gyro* (⅞″ diameter x 2″ long) has uniform controlled damping for any required percentage of critical within ±15% through temperatures ranging from −40° to 200°F. This is the only subminiature Rate Gyro made that will take 100 g's of shock and 15 g's at 2000 cps vibration even at rates as low as 20° per second.

B. ACCELEROMETERS—*Fairchild's Line of Accelerometers* measure accelerations in the ±1 to ±100G range. It includes low, medium and high natural frequency units. Standard units have pot pick-offs; a. c. type pick-offs also available on special order. Outstanding features: Low cross talk, low friction, low hysteresis, excellent calibration and high voltage sensitivity.

C. POTENTIOMETERS—*Fairchild's High Reliability Potentiometers* can be had in ⅜″ to 5″ diameters, single and multi-turn, linear and non-linear, in standard and high temperature versions and with linearities as high as .009%.

D. PRESSURE TRANSDUCERS—*Fairchild's Precision Line of Pressure Transducers* include both bourdon tube and capsular diaphragm types for measuring pressures from 1 to 10,000 psi absolute, gauge, or differential. Standard units have pot pick-offs; a. c. type pick-offs available on special order. All designs withstand 2000 cps 25G vibration and 50G shock.

For more information regarding Fairchild precision components call the nearest Fairchild office or write Fairchild Controls Corporation, Dept. 20Y.

SALES OFFICES
Los Angeles, Calif. Phone Raymond 3-5191
Denver, Colo. Phone West 5-4646
Jacksonville, Fla. Phone Elgin 4-8484
Chicago, Ill. Phone Spring 4-4174
Allston, Mass. Phone Algonquin 4-2435
Hicksville, N. Y. Phone Wells 8-5600
Seattle, Wash. Phone Metrose 3-5858
Ottawa, Canada Phone Parkway 2-7152

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COMPONENTS DIVISION

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A Subsidiary of Fairchild Camera and Instrument Corporation

* Built-in SAFETY FACTORS Beyond the Specs for Reliability in Performance.

C-68

Circle Number 43 on Reader-Service Card

...the record tells you more

from a SANBORN SYSTEM

DESIGNED SPECIFICALLY FOR YOUR TYPE OF WORK



MODEL 276 CHART VIEWER

Permits convenient, variable speed editing and study of Sanborn charts and other types up to 16" wide, 200 ft. long. Single control for direction, paper speeds (15" to 100"/min). Transparent cursor slides left or right, adjusts for accurate alignment with coordinates.

1- TO 8-CHANNELS, 12 PLUG-IN PREAMPLIFIERS

150 SERIES



Features of the "150 series" direct writers include: frequency response to 100 cps; linearity 1% overall; inkless recording in true rectangular coordinates by heated stylus on plastic coated Permapaper charts; current feedback driver amplifier and regulated power supply for each channel. Recorder has 9 chart speeds, 0.25 to 100 mm/sec; individual stylus heat controls, time-code marker. Up to 6-channels can be housed in one vertical cabinet. Amplifiers, recorder also available in individual portable cases.



6-, 8-CHANNELS, FLUSH FRONT RECORDER, FREQUENCY RESPONSE TO 120 CPS

350 SERIES



New "350" series direct writers with compact plug-in preamps in modules of up to 4; individual power supplies; current feedback transistorized power amplifiers; limiter circuit ahead of power amplifiers; velocity feedback galvanometer damping; enclosed galvanometers. Linearity 0.2 div. over entire 50 divisions. Recorder-power amplifier-power supply package has 0.1 volt/div. sensitivity, can be used separately; pushbutton controls for 9 chart speeds 0.25 to 100 mm/sec; individual stylus heat controls; contacts for remote control; inkless rectangular coordinate recording on Permapaper charts.

6-, 8-CHANNELS

850 SERIES



Compact "850" series direct writers use 7" high plug-in preamplifiers in modules of up to eight and "350" flush front recorder package with transistorized power amplifiers, power supply; features velocity feedback galvanometer damping, linearity 0.2 div. over entire 50 divisions; 9 chart speeds from 0.25 to 100 mm/sec controlled by electric pushbuttons; inkless recordings on Permapaper charts. Available preamps include Servo Monitor (demodulator) and DC Coupling. Carrier, Chopper Stabilized and Low Level types are in development.

COMPUTER READOUT . . . AUTOMATIC PROGRAMMING

150 SERIES



"150 series" 6-, 8-channel consoles in 46½" high mobile cabinet. Dual-Channel Amplifiers have selectable sensitivity from 0.01 to 10 volts/div.; internal calibration 2 volts ±1% freq. response flat to 20 cps. Optional Programmer sequences system operation in 20 steps, including recorder turn-on, calibration, computer DC level reading, recording for pre-set time, turn-off and reset.

SELF-CONTAINED UNIT PREAMPLIFIERS TO DRIVE 'SCOPES, OPTICAL OSCILLOGRAPHS, TAPE RECORDERS, ETC.



Portable "350" series include Carrier, DC Coupling Servo Monitor (demodulator), True Differential DC types; others in development. Mount in portable "450" cases or in four-unit modules in 19" frame. Use individual power supplies. One "450" case and power supply can serve any "350" Preamp.

PORTABLE INDICATORS FOR STRAIN, ETC.



Model 150-300/700 Wide Band Amplifier and Power Supply accepts "150" series preamplifiers — for use with low power galvanometers, oscilloscopes, panel meter. Freq. range DC to 10,000 cps (but limited by particular preamp range). Panel meter has center zero scale, 25 divisions each side of center.

(ALL DATA SUBJECT TO CHANGE WITHOUT NOTICE)

For complete data, call your local Sanborn Engineering Representative or write the Industrial Division in Waltham.

SANBORN COMPANY

Industrial Division

175 Wyman Street, Waltham 54, Mass.



BENDIX RADAR SAVES WEIGHT, SPACE ON FAIRCHILD F-27

Here's important weight and space-saving news for airlines and multi-engine business aircraft owners. Now available from Bendix* . . . a new 150-mile range airborne weather radar TRANSMITTER/RECEIVER weighing only 28.7 pounds and completely housed in a 1/2-ATR package.

This new T/R unit, when used with the new Bendix 18-inch stabilized antenna, reduces the total system equipment weight to 82 pounds. (With 22- and 30-inch antennas, total system weight is approximately 91 pounds.)

Because of its lighter weight, smaller size, reduced power requirement, and increased performance, Bendix Weather Radar is recommended by FAIRCHILD for installation in the F-27.

For further information, write Bendix Radio Division, Aviation Electronic Products, Baltimore 4, Md. Export: Bendix International Div., 205 E. 42nd Street, New York 17, N. Y. Canada: Computing Devices of Canada, Ltd., Box 508, Ottawa 4, Ontario.

*TRADEMARK

Bendix Radio Division — Bendix AVIATION CORPORATION

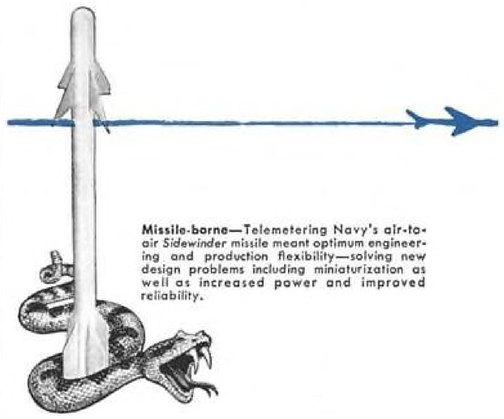
SEEBURG CAPABILITIES

that can help you solve your problems

TELEMETERING SYSTEMS ENGINEERING



Airborne—Telemetry simulators at AF Missile Test Center, Patrick AFB, Florida provide characteristic telemetry signals simulating actual in-flight missile data telemetering—are used for calibration and check out of ground station telemetry facilities and for training operating personnel.



Missile-borne—Telemetering Navy's air-to-air *Sidewinder* missile meant optimum engineering and production flexibility—solving new design problems including miniaturization as well as increased power and improved reliability.

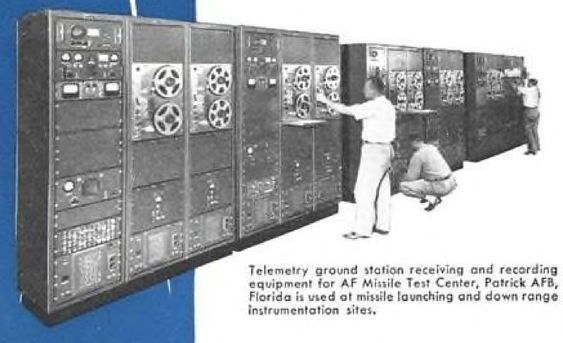


Ground—Telemetered data handling system for Navy Ordnance Laboratories, Corona, California includes tape playback mechanisms and amplifiers, decoders and recorders for displaying and analyzing in detail data recorded aboard the Bureau of Ordnance missile evaluation ship U.S.S. Mississippi.



Shipboard—Missile telemetry set aboard U.S.S. Mississippi comprised telemetering receiving and recording facility for automatically collecting and recording data from shipboard-launched missiles.

DATA RECEIVING & HANDLING SYSTEMS



Telemetry ground station receiving and recording equipment for AF Missile Test Center, Patrick AFB, Florida is used at missile launching and down range instrumentation sites.

SPECIAL PURPOSE TAPE RECORDING

Type 2310 Tape Recording System for recording in-flight information from pilot or crew comments, radio communications, reference signals, etc.—for complete and accurate in-flight data in reconnaissance as well as flight testing.





New Facilities Brochure
Reserve your copy of "This is Seeburg" now by requesting it on company letterhead.

This represents only a few of Seeburg's many accomplishments in R & D and production of precision electronic and electro-mechanical systems and equipment to exacting specification.

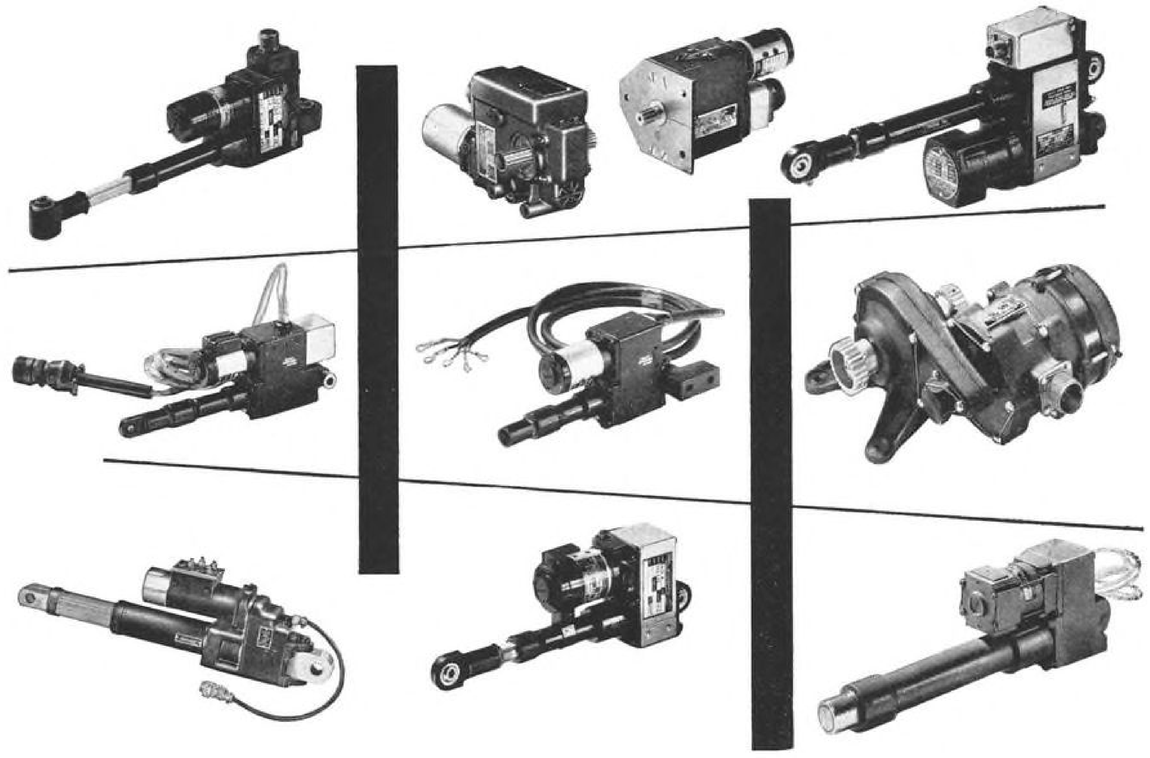
You'll find the answers to your problems at Seeburg—so see Seeburg first for—

PDM-FM, FM-PAM-PCM TELEMETERING · MAGNETIC RECORDING · DATA RECEIVING AND HANDLING SYSTEMS

Radar Assemblies • Audio Amplifiers • Airborne & Shipboard Navigation Equipment • Communications Equipment • Ferrite Core Memory Storage Systems • Airborne Radar Antennas • Guided Missile Electronic Units • Music Systems

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At your service with modular and special design electromechanical actuators

The actuator you need—for ailerons, trim tabs, feel systems, missile control surfaces, and ground handling equipment or for any of a hundred other applications—can in most instances be specified from the Airborne line of modular design electromechanical actuators.

Originated by Airborne, the modular concept of actuator design is based on a system of standardized, interchangeable components. From these components you can select literally hundreds of different combinations to get exactly the operating capacity and package configuration you want. Maximum operating load ratings for Airborne modular design actuators are 3500 lb. linear and 100 in.-lb. rotary.

Beyond the broad limits of this modular line, Airborne has the engineering capability and the production facilities to provide any special actuator you may require—singly or as part of a complete control system. Such actuators may be modifications of our conventional designs or completely custom made. We have built special actuators with operating capacities up to 12,000 lb. linear and 1200 in.-lb. rotary. Write for further information.

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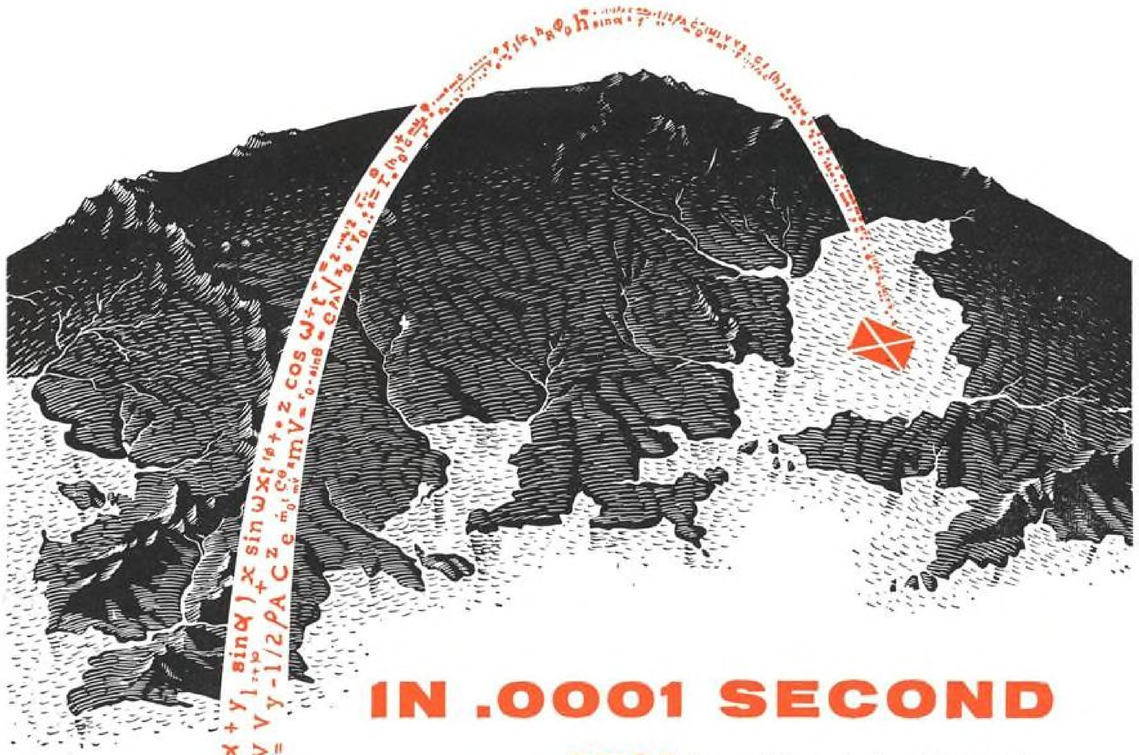
MODULAR ACTUATOR CATALOGS 57A AND MR-58

Contain pertinent information on Airborne modular design linear and rotary actuators, including operating capacity curves and complete dimensional data. For linear actuators, request Catalog 57A; for rotary, MR-58.

C-72

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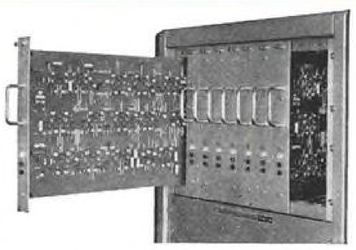
MISSILE IMPACT PREDICTION



IN .0001 SECOND

TRICE, the world's most advanced computer, saves many minutes over time currently required for ballistic missile impact prediction. TRICE modules (Integrators, Multipliers, etc.) can be assembled as a special purpose computer for dynamic systems or as a digital differential analyzer. Its incredible speed of 100,000 iterations per second *in parallel* is unaffected by the size of the problem. The first model is in operation at the U.S. Army Ordnance Missile Command, Huntsville, Ala.

Write for literature describing TRICE and its many uses: aerodynamic stability, control system stability, impact prediction, stable platform calculations, satellite orbit predictors and others.



ENGINEERING BEYOND THE EXPECTED

TRICE (Transistorized Realtime Incremental Computer, Expandable) is the first computer to combine the accuracy and repeatability of a digital computer with the speed, flexibility and ease of programming of an analog computer.

PACKARD-BELL COMPUTER CORP.
a subsidiary of
PACKARD BELL ELECTRONICS
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Los Angeles 64, Calif. BR. 2-2171

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Guidance and Control Instruments by Humphrey



FREE AND VERTICAL GYROS

New interchangeable motors make it possible to power these instruments with d-c, 400-cycle a-c or 1500-cycle inverter. Offered with a variety of pick-offs, including potentiometer, synchro or switch. Electrical or manual caging.



RATE GYROS

The Humphrey design provides a wide dynamic range with precision potentiometer or variable transformer output. Three basic units available, all in hermetically sealed cases with choice of a-c or d-c motors.



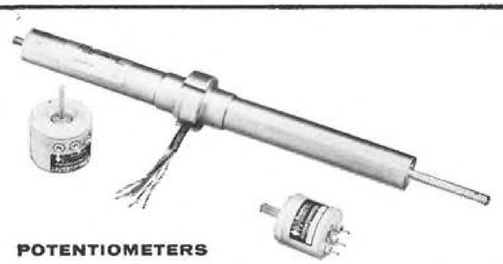
RATE SWITCHES

These specialized gyros operate switches when a predetermined rate of turn is reached. Extremely light weight. Dry gas filled and employing dry gas dampers that remain constant over full temperature range. Wide selection of rates available.



ACCELEROMETERS

These precision inertial sensing devices offer practically zero cross-talk, extra wide temperature range and precision potentiometer or magnetic pickoffs. Models available for angular or linear measurement. Dry gas damped, hermetically sealed.



POTENTIOMETERS

Precision rectilinear and rotary instruments. Wire wound. For direct mounting in aircraft or missiles. Operational to 400°F. Able to take tough environmental conditions, such as vibration 25G, 10 to 2,000 cps, and shock of 100G while operating.



NEW SERVOTRAN VARIABLE SPEED DRIVE

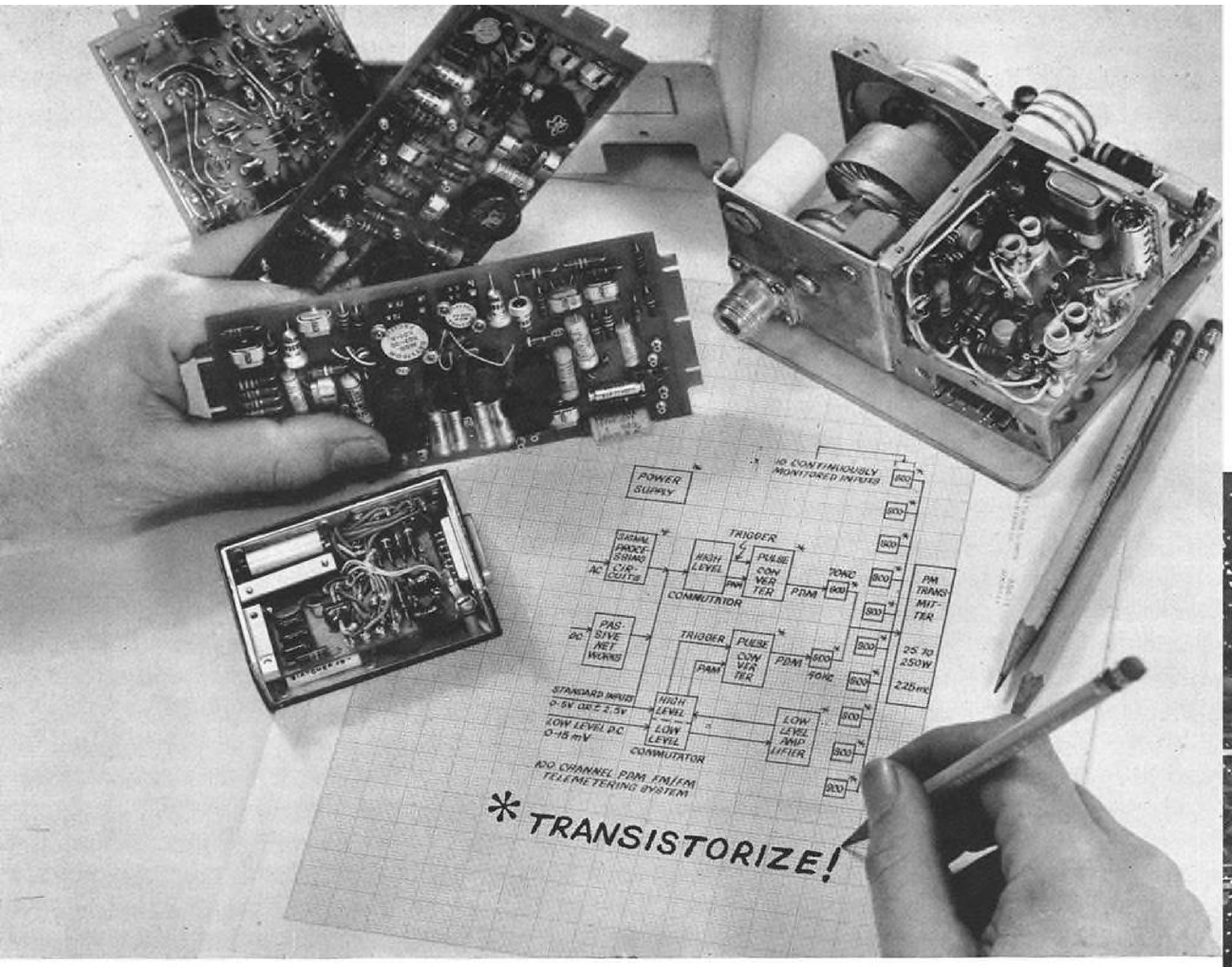
Offers frequency response equivalent to a hydraulic system and triple that of an electrical system in a dependable mechanical drive weighing only 1¾ lbs. A maximum of only two inch ounces on the control shaft changes speed from full forward to full reverse in .05 second. Ideal for actuators, computers, recorders and radar antennas.

Humphrey Inc.
ELECTRO-MECHANICAL INSTRUMENTS

DEPT. ABG-9 2805 CANON STREET
SAN DIEGO 6, CALIFORNIA

WRITE TODAY FOR MORE INFORMATION ON ANY OF THESE PRODUCTS

Circle Number 36 on Reader-Service Card



NOW... get more data on Strays and Long Shots

with TI transistorized PDM/FM/FM telemetering systems

Out-of-sight missiles, particularly those off course or in the far reaches of terminal flight, can now send back signals loud and clear — providing data previously blocked by attenuation and noise. This promise can be made because TI-developed transistorized telemetering can now transmit 200 W *and more* without exceeding the space and weight previously required by most 50-W systems. Not "frozen" to old production designs, rugged TI systems and components will *always* represent the practical state of the art. This is the TI policy which resulted in the 200-W *single package* transmitter shown above.



Your requirements in telemetering systems or components can normally be met by existing TI equipment, but your most unique developmental problems are equally welcome. And fast, flexible production facilities will deliver *on time*.

*TI Pulse Duration Modulation telemetering equipment shown, clockwise from lower left: Sub-Carrier Oscillator; Phase Discriminator; Low-Level Amplifier; Keyer; Single-Package 200-W Transmitter.

WRITE TODAY for more information on TI telemetering equipments.

APPARATUS DIVISION

TEXAS INSTRUMENTS

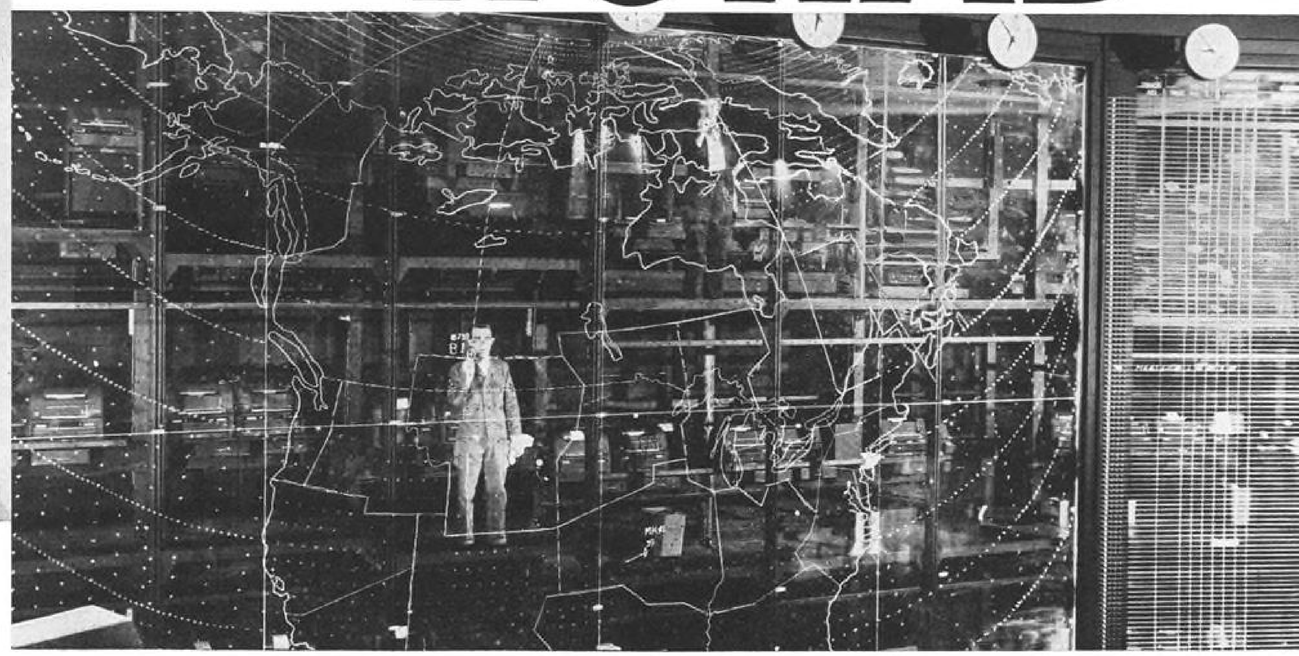
INCORPORATED

6000 LEMMON AVENUE DALLAS 9, TEXAS

Circle Number 37 on Reader-Service Card

Preserver of Peace...

Wrap-around bumper for a continent NORAD



Headquarters—NORAD—Colorado Springs

Like a huge "bumper" wrapped around the North American continent and reaching down along both the Atlantic and Pacific shores, the North American Air Defense Command (NORAD) has been created for operational control of air defense units of the Army, Navy and Air Force of the U.S. and the RCAF Air Defense Command of Canada. Its field includes the vast area between the southern border of the United States and the northernmost limits of Canada and Alaska. Under the functional control of NORAD will be BMEWS (Ballistic Missile Early Warning System) and SAGE (Semi-Automatic Ground Control Environment) for the defense of specified sectors. In addition to its responsibility as prime contractor for BMEWS, the Radio Corporation of America is working on other important electronic assignments for NORAD.

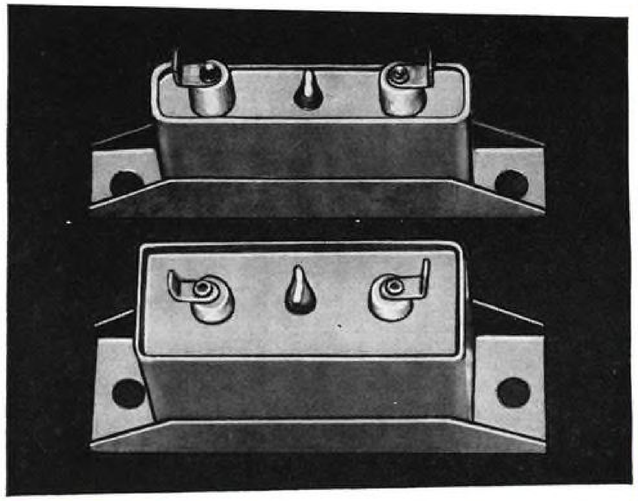
RCA Tmk(s) ®

RADIO CORPORATION of AMERICA

DEFENSE ELECTRONIC PRODUCTS

CAMDEN, N. J.

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HIGH TEMPERATURE CAPACITORS BY BENDIX

Now Available in Production Quantity

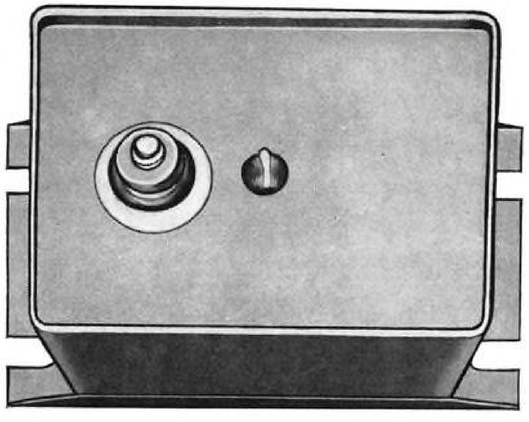
E-315

Scintilla Division of Bendix developed and has in production the *E*-315 family of *E*-nvironmental resistant capacitors to aid in satisfying the fast growing requirement for high temperature components in the high speed aircraft and missile fields.

The *E*-315 capacitor offers proven stability of operation over the temperature range of —55° to +315° Centigrade* with no voltage derating and low capacitance variation. Of rugged hermetically sealed construction and nonstrategic materials, this capacitor is built for high altitude and severe environmental operation.

This nonpolarized capacitor is available in a variety of sizes in a capacity range of from 0.05 to 4.0 microfarads at 600 VDC. It is also available in higher voltage ratings. Performance data and operating characteristics are given in Technical Bulletin SL-61 which is supplied upon request.

*Confirmed by qualification test of 1000 hours at 100% rated voltage over ambient temperature range of —55° to +315° C.



DESIGN FEATURES

Temperature Range . . . —55° to +315°C. Capacitance . . . 0.05 to 4.0 uf at 600 VDC. Voltage Range . . . 600 V to 3000 V per section. No Voltage Derating, Low Capacitance and Power Factor Variation, Environmental Resistant, Hermetically Sealed, Rugged Construction, Nonstrategic Materials, Minimum Size and Weight, High Altitude Operation.

Scintilla Division
Sidney, New York

Bendix
AVIATION CORPORATION

Circle Number 41 on Reader-Service Card

C-77

International Rectifiers

For all DC needs from microwatts to megawatts!



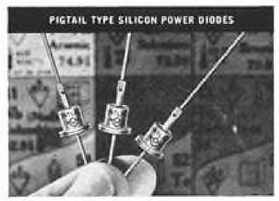
SUB MINIATURE SELENIUM DIODES

Ratings: 20 to 160 volts • 100μa to 11 ma.
Ideal components for bias supplies, sensitive relays, computers etc. High resistance, (10 megohms and higher at –10 volts). Excellent linear forward characteristics. Extremely small, low in cost. Encapsulated to resist adverse environmental extremes. Specify **Bulletin SD-18.**



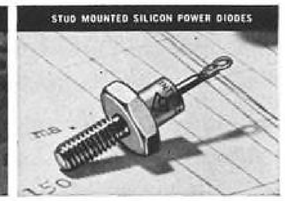
MINIATURE SILICON POWER DIODES

Ratings: 100 to 600 PIV, Up to 500 ma.
Specifically designed for missile and airborne equipment applications where miniaturization and reliability are prime factors. Hermetically sealed, all-welded, pigtail lead construction. Manufactured to meet the most rigid military requirements. Request **Bulletin SR-203**



PIGTAIL TYPE SILICON POWER DIODES

Ratings: 50 to 600 volts PIV • 250 to 750 ma.
An extensive line of silicon power diodes for military and industrial applications featuring all-welded, hermetically sealed construction. All designed and manufactured to meet the most rigid military requirements. For information on types for your application **Contact Factory**



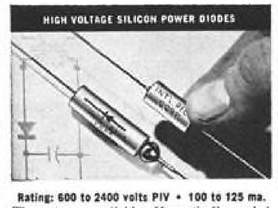
STUD MOUNTED SILICON POWER DIODES

Ratings: 50 to 600 volts PIV • 400 ma. to 1 amp.
Industrial and military types including the 1N253, 1N254 and 1N255. Stud mounted, hermetically sealed, all-welded construction. Operating temperature range: –55°C to +150°C. Designed and manufactured to meet most rigid military specifications. **Bulletin SR-135C**



SELENIUM RECTIFIER STACKS

Ratings: From 100 ma. to 50 Amps.
Low forward voltage drop and low leakage characteristics make this series ideal for a wide variety of power applications. For details request **Bulletin C-439,** (26 volt cells); **Bulletin SR-160,** (45 to 52 volts per cell) and **Bulletin SR-152,** on high current density cells.



HIGH VOLTAGE SILICON POWER DIODES

Rating: 600 to 2400 volts PIV • 100 to 125 ma.
Three types available. Hermetically sealed, pigtail construction. Style J rated at 600 to 1000 volts PIV at 125 ma. **Bulletin SR-138E** Styles K and L with PIV ratings from 600 to 2400 volts at 100 ma. dc output current are described in technical detail—**Bulletin SR-157.**



HIGH VOLTAGE SILICON CARTRIDGE RECTIFIERS

Ratings: 1500 to 16,0000 volts PIV @ 45 to 440 ma.
Especially suited for miniaturized military equipment where optimum reliability is a prime factor. Standard types for normal convection cooling and high current types for forced air or oil cooling. Hermetically sealed, metallized ceramic housing. Request **Bulletin SR-225**



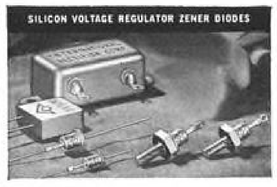
SELENIUM HIGH VOLTAGE CARTRIDGE RECTIFIERS

Ratings: 20 to 20,000 volts • 0.2 to 195 ma.
Designed for long life and reliability in half-wave, voltage doubler, bridge, center-tap circuits, and 3-phase circuit types. Phenolic cartridges and hermetically sealed types available. Operating temperature range: –65°C to +100°C. For details specify **Bulletin H-2.**



SELENIUM CONTACT PROTECTORS

Complete series of AC and DC types.
Designed to eliminate arcing and erosion across the contacts of relays, switches, etc. A complete series in each of three basic types: diode type, cartridge type and hermetically sealed types for industrial application. For complete data: **Bulletin SR-150-A**



SILICON VOLTAGE REGULATOR ZENER DIODES

Ratings: From 600 milliwatts to 10 watts
A complete series in 6 types. Miniature single junction types, multiple junction types and double anode units. 750 milliwatt and 1 watt types: **Bulletin SR-251,** 3.5 and 10 watt types: **Bulletin SR-252,** Multiple junction .5 watt types: SR-253, Double anode types: SR-254



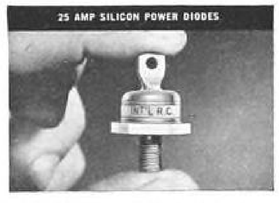
SILICON ZENER VOLTAGE REFERENCE ELEMENTS

Temperature compensated for stability to ±.001% °C
Extremely precise units for power supplies and voltage sources. Temperature compensated for excellent stability over a temperature range of from –55°C to +150°C. Manufactured to meet the most rigid military requirements. Types 1N430, 1N430A, 1N430B. **Bulletin SR-255**



SPECIAL HIGH VOLTAGE TYPES

Rating: 12,500 volts PIV at 5 Amps.
Illustrated above is a typical rectifier of advanced design produced by International Rectifier Corporation for military application. Data on ruggedized silicon substitutes for many standard vacuum tubes may be obtained from our Military Products Department.



25 AMP SILICON POWER DIODES

Rating: 50 to 500 volts PIV • 25 to 45 Amps.
Advanced ceramic techniques assuring excellent thermal characteristics and mechanical stability are used in the production of these highly reliable, hermetically sealed rectifiers for military or industrial applications. For complete technical data, request **Bulletin SR-304**



150 AMP. SILICON POWER DIODES

Ratings: 50 to 800 volts PIV • 45 to 150 Amps.
An extensive series of standard and reverse polarity types. Optional mounting bases including machine thread and pipe thread types. Machine thread base types: **Bulletin SR-300,** Pipe thread base types. **Bulletin SR-301,** Complete stack assemblies: **Bulletin SR-302**



SELENIUM HEAVY POWER RECTIFIERS

Ratings: 6 to 30,000 volts • 50 to 2,300 Amps.
Specifically designed for industrial DC power needs. Patented construction features assure long life. Descriptive bulletins available are; **Bulletin C-349,** (26 volt cells); **Bulletin SR-160,** (45 to 52 volts per cell) and **Bulletin SR-152,** on high current density cells.



PHOTOELECTRIC CELLS AND SUN BATTERIES

(Wide range of silicon and selenium types.)
Self-generating cells available in standard and custom sizes, mounted or unmounted. For details on wide selection of selenium types, request **Bulletin PC-649.** Silicon solar cells in mounted and unmounted types are described in technical detail—specify **Bulletin SR-156.**

A WORLD OF DIFFERENCE • THROUGH RESEARCH •

International Rectifier

CORPORATION

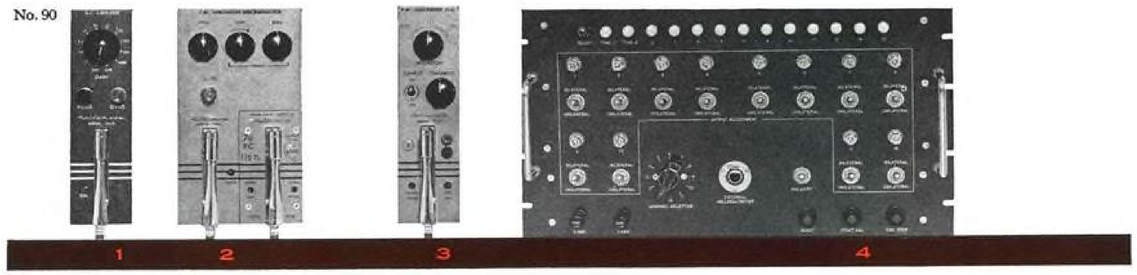
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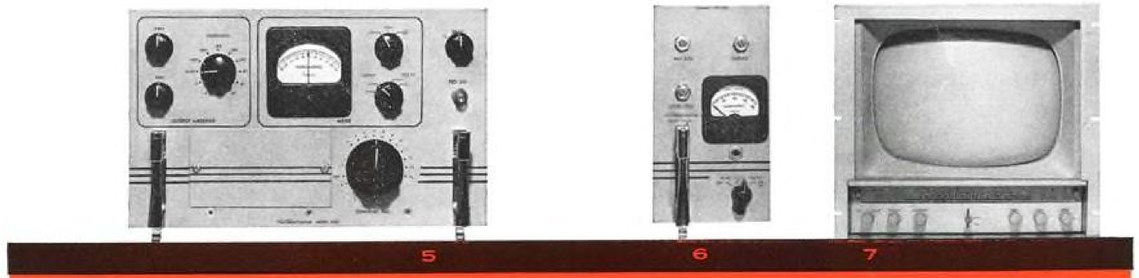
THE WORLD'S LARGEST SUPPLIER OF INDUSTRIAL METALLIC RECTIFIERS

C-78

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No. 90





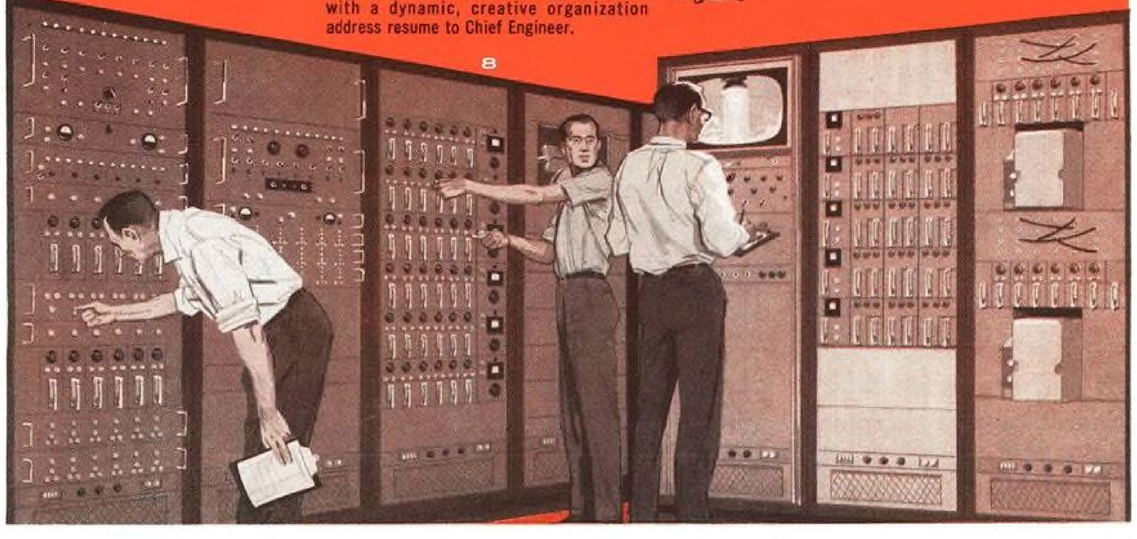
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8



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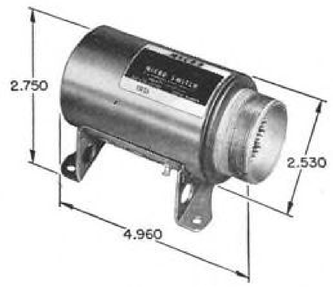
C-79

MICRO SWITCH Precision

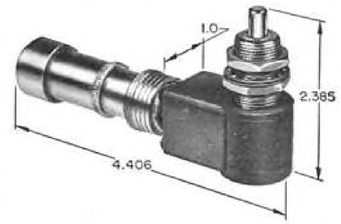
These 17 switches represent the widest for aircraft, missile, rocket, launcher,



4CE1—This weather-proof, corrosion-resistant switch is used as an indicator or limit switch on missile shelter, erecting and launching equipment. Has SPDT contact arrangement. Rating: 10a. 125vac; 5a. 250 vac. Operating force 6-10 lbs. *Data sheet 151.*



1RS1—High reliability telemetering switch for missile program sequencing. Hermetically sealed. Has rotary solenoid and 24 SPDT gold-contact "SM" switches. 74 terminals. Quick disconnect plug. *Data sheet 151.*



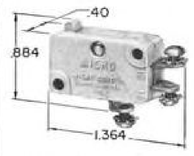
1EN42-R—A special design for high shock applications. Used on shipboard launching equipment. Meets requirements of U. S. Navy Bureau of Ordnance. Contains two SPDT switches. Quick disconnect connector. Ice and mud scraper on plunger. Operating force 6-12 lbs. Rating at 28vdc: inrush 24a., resistive 4a., inductive 3a., motor 4a. *Data sheet 151.*



54PB67-T2—Space-saving lighted pushbutton assembly. Flexible indication provided by indicator lamp and two-level position of button. Alternate action (on-off) of the switch contacts is provided. Four SPDT subminiature switches. All switch and lamp terminals are isolated. *Data sheet 133.*



1SE1—Smallest sealed environment-free switch. SPDT. Rating at 28vdc: ind. 3a., res. 4a., inrush 15a. Leaf and roller-leaf auxiliary actuators available. *Catalog 77.*



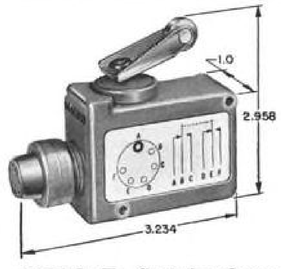
V3-1301—Operates reliably at 600°F. For jets, missiles, electronic gear. SPDT. 30vdc rating: ind. 10a., res. 10a., motor 6a. *Cat. 74.*



12HR1-S Hermetically sealed, high temperature DPDT switch for reliable use to 600°F. All seals in accordance with Par. 5.2.2, MIL-E-5272A. Ice scraper ring on actuator. Rating: 28vdc—res. 5a.; ind. 2a. Operating force 6-12 lbs. *Data sheet 122.*



44EN1-6 (MS-24420-4)—Rotary actuator adjustable through 360°. One 4-circuit basic switch. Rating: 28vdc-inrush 30a.; res. 15a.; ind. 10a. Operating torque—10 in. lbs. *Catalog 77.*



3EP2-E—Sealed enclosure. Rugged, two-hole side mounting. Two high capacity SPDT basic switches. Sealed connector receptacle and roller lever actuator. Rating: 28vdc—inrush 36a.; res. 10a.; ind. 6a. Operating force 4-6 lbs. *Catalog 77.*

201LS1—Heavy duty, sealed "Plug-in Limit" switch. Can be replaced on the job in 20 seconds. Switch enclosure, with actuator, positioned by dowels and secured by two No. 10 screws. Available in six actuator designs. Used in ground equipment as limit or indicator switch. *Catalog 84.*



Switches have uses unlimited

range of precision switches available marine and ordnance applications

Each of the switches illustrated on these pages represents a different *series* of MICRO SWITCH Precision Switches . . . Each switch has been designed to high reliability standards for a particular purpose . . . Each series includes many variations—sizes, weights, contact arrangements, electrical characteristics, housings, actuators, sealing, temperature, shock and mechanical characteristics . . . For example, the switches in which "EN" is a part of the catalog listing constitute a series in which nearly 100 different switches and assemblies are available . . . No other source of precision switches offers as broad a line . . . Furthermore, no other can offer the services of as large a staff of Application Engineers—in branch offices at strategic points throughout the country. Consult the yellow pages.

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Honeywell
MICRO SWITCH PRECISION SWITCHES



1EN75-R—High-impact shock switch for use on launching platforms, near jet after-burners, etc. Heavy duty push plunger with ice-mud scraper. Operating force 6-12 lbs., release force 4 lbs. Environment and immersion proof (MIL-S-901B, Navy and MIL-E-5272A, Proc. 1). Contains two SPDT switches. Available with straight (shown) or angle connector plug. *Data sheet 152.*



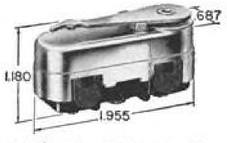
5ET1-6—Compact, magnetically-held toggle switch has a built-in 28vdc solenoid. Works as a momentary action toggle switch, but is converted to a maintained contact switch when solenoid is energized. Permits remote electrical release of the lever, thus eliminating auxiliary relays, etc. Toggle lever can be manually over-ridden. Environment and immersion-proof enclosure (MIL-E-5272A Proc.1). SPDT basic switch. 28vdc. rating: inrush 24a., resistive 4a., inductive 3a., motor 4a. *Data sheet 121.*



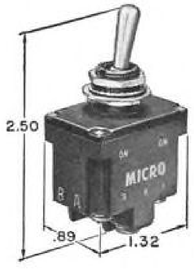
4TP1-1—Rocker-actuated key switch combines the advantages of both pushbutton and toggle manual control. Key is flat, like a pushbutton and can be engraved, but has toggle feature of visible position. Also enhances panel design and provides edge-light indication. Construction of case is rugged and sealed, with integral, stepped terminal design. 4-pole DT circuitry (others available). 28vdc rating: res. 20a., lamp 7a., ind. 15a. *Data sheet 141.*



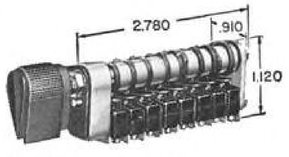
4TL1-1A—Same features as 2TL1-1 except toggle lever has safety feature which requires pull to unlock and move the lever. (Available in a variety of locking arrangements.) Knob facilitates operation with gloves. 4-pole DT circuitry. Rating same as 2TL1-1. *Data sheet 142.*



1HS1 (MS-25011-1)—Hermetic sealed construction (metal-to-metal or metal-to-glass seals). Contacts sealed in dry gas under pressure. SPDT. 28vdc rating: ind. 10a., res. 25a. *Catalog 77.*



2TL1-1—Integral, stepped terminal design. High impact strength, arc resistant case. Silicone seal on bushing and self-sealing sealant between cover and case. 2-pole DT circuitry. Rating at 28 vdc: res. 20a., lamp 7a., ind. 15a. Available in variety of toggle positions. *Data sheet 139.*



17AS8—Compact rotary selector switch handles eight different circuits, requires only 1¼ inch diameter panel area. Switching sequence is infinitely variable. *Data sheet 86.*

RD INSTRUMENTS
FOR RESEARCH AND DEVELOPMENT

TUBE TESTERS



AUTOMATIC—CARDMATIC
MODEL 1230—Card programmed to automatically set-up predetermined voltages and conditions for each tube under test. Self-calibrating and accurate within 1 to 3% of best known standards for transconductance and plate current measurements. Reject levels set in accordance with military specs. Also permits special purpose tube tests to meet specific circuit requirements. Portable style with cover.



FIELD SERVICE STANDARD
MODEL 1575—Meets Western Electric specifications as a Mutual Conductance tester. 0-60,000 micromhos in 7 ranges. Two separate meters for line and grid bias voltage indications. Has 4 signal voltages. Features new, voltage regulator tube test. Built-in roll chart. Portable style with cover.

RESEARCH LABORATORY MODEL (Not Illustrated)
MODEL 1700—For tube tests under handbook conditions. All voltages and currents are variable and metered (9 meters). 0-60,000 micromhos in 8 ranges. Electronically regulated and metered power supplies.

OSCILLOSCOPES



WIDE RANGE—VERSATILE
MODEL 1810—5" flat face, post accelerated CRT and illuminated, calibrated screen. 4 mc band vertical amplifier. 10 millivolts peak-to-peak per cm sensitivity. Triggered or recurrent sweeps—variable from 2 cps to 30 kc. Built-in, direct reading, regulated square wave voltage calibrator. AC or DC vertical amplifier inputs.



INDUSTRIAL'S 5" PORTABLE
MODEL 685—Features identical amplifiers DC to 750 kc—1 cps to 750 kc. 0.5 microseconds rise time. Sensitivity—20 millivolts RMS vertical (30 horizontal). Recurrent or triggered sweep. Covers 1 cps to 10 kc in 5 calibrated decade ranges with vernier control of 10 to 1. External sync for triggering and synchronizing the built-in sweep generator.



3" RACK MOUNT
MODEL 387R—Identical horizontal and vertical amplifiers. Triggered or recurrent sweeps from 1 cps to 100 kc. Slow sweeps (10 seconds or more) with external capacitors. 10 millivolts RMS per inch vertical sensitivity (14 horizontal).



3" PORTABLE
MODEL 385 CSM—Rugged lightweight designed for field service. Features unitized circuit modules. DC amplifiers (horizontal and vertical) with frequency coverage to 4 mc at .075 RMS volts per inch. 2 MC bandwidth has roll-off per IRE standard. Telescopic light shield and shock mounted carrying case.



CARD PROGRAMMED SWITCH
Cardmatic automatic or manual multiple switch provides up to 10-trillion variables. Self-cleaning, wiping type contacts rated .00025 ohms nominal (contact-to-pin), current rating is 10 amperes. Prox. 7" x 7½" x 4½" D.

GENERATORS



SINE WAVE—SQUARE WAVE
MODEL 710—Both sine and square wave outputs in one generator with wide frequency range (20 cps to 1 megacycle in 5 ranges). Sine wave total harmonic distortion below 1%. Hum level better than 90 db down. Square wave rise time less than 0.1 microsecond. Portable—easily adapted to rack mount.



SQUARE WAVE
MODEL 1715—Wide frequency range of 1 cps to 1 megacycle, continuous in 6 decade bands with constantly variable frequency available throughout the entire range. Rise time is 0.02 microseconds. Consistent output level is independent of frequency setting. Electronic regulation of power supply. Includes symmetry control and provision for external synchronization.

VACUUM TUBE VOLTMETERS



HIGH FREQUENCY MODEL
MODEL 1600—Accurately indicates AC voltages from .05 to 300 volts in frequencies from 20 cps to 700 mc (up to 3000 mc are possible). Includes special thermionic diode probe. Excellent plus or minus DC volts, readability from .05 to 1000 volts. 7-range ohmmeter with practical readability from 0.2 ohm to 1000 megohms. Power supply built-in. Has 1% meter.



SMALL SIZE VOM
MODEL 456—Has full-wave bridge type rectifier circuit. Features a patented automatic (button-reset) overload protection system to hold meter and associated circuits from damage due to accidental overload. 0-1200 AC or DC volts in 6 ranges. Sensitivity—20,000 ohms per volt DC (1000 AC). Resistance—0 to 100 megohms. 5 db ranges (−18 to +57).

HICKOK-DAWE INSTRUMENTS

True RMS-VTVM—300 microvolts to 300 volts, 5 cps to 500 kc.
Stroboscopes—3 models with wide ranges.
Sound Level Indicators—Portable and laboratory types.
Balancing Machine—For rotating parts (4 oz. to 10 lbs.).

HICKOK METERS
Accurate DC and AC Portables



Ammeters, milliammeters, microammeters, voltmeters, millivoltmeters, volt-ammeters, thermometers. Shielded. Accuracy within ½ of 1%—available to 2/10 of 1%.

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A complete panel meter line is available in numerous types, styles and ranges to meet every specification. The many special movements developed by HICKOK are: Electrodynamometers, self-contained frequency meters, galvanometers, true logarithmic deflections, ruggedized, long scale subminiatures, and taut-band suspensions with sensitivities to as low as ½ of 1 microampere.

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Kearfott — General Precision Equipment Corporation — GPE

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- 2V per thousand RPM voltage gradient
- 15°C to 75°C temperature range
- 0° ± 6 minutes 3000 RPM phase shift
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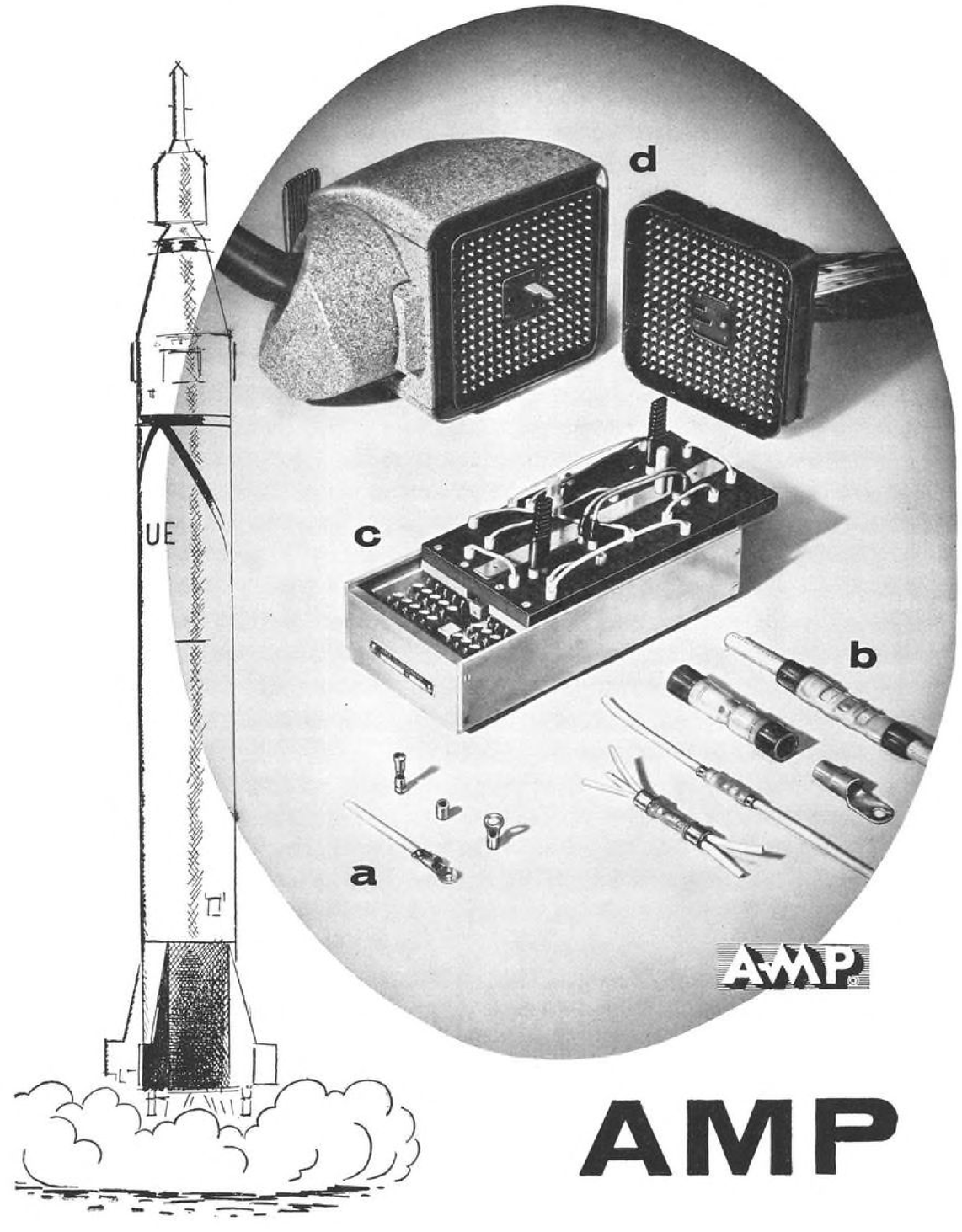
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C-85

because CIRCUIT



AMP

C-86

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. . . AMP's product is more than fine circuit terminals . . . more than remarkably precise compression-crimp tooling . . . more than an error free, fast method of attachment.

AMP's product is finished crimp-type terminations on your circuitry wires . . . by the hundreds or millions . . . of the highest reliability . . . performing under gruelling conditions . . . from basic terminals to complete patchcord systems.

Listed here are a few of the more than 15,000 circuitry items that AMP INCORPORATED has developed.

a **STRATOTHERM TERMINALS AND SPLICES FOR APPLICATIONS WITH CRITICAL THERMAL FACTORS**

- up to 1200°F. operating temperature
- solid, stranded or combination conductors
- shock and corrosion resistant
- wire size range 22-10 AWG
- serrated inner barrel for maximum tensile strength

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b **CERTI-SEAL AND Ampli-NYL SPLICES**

- combined wire size range 22-2/0 AWG
- exceed millivolt-drop specifications
- finest nylon pre-insulation
- shock and corrosion resistant
- color coded by wire size

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c **A-MP PATCHCORD PROGRAMMING SYSTEMS AND PANELS FOR COMPUTERS, TELEMETERING EQUIPMENT AND AUTOMATION** ("240" Airborne Unit illustrated)

- universal or shielded systems
- patented wiping action pre-cleans pins and contact springs
- nylon sleeve insulates and firmly seats patchcord pin in board
- contacts have rear board accommodation for taper pins to provide reliable solderless lead terminations

Circle Number 59 on Reader-Service Card

d **200 CONTACT CABLE CONNECTOR FOR CRITICAL MULTIPLE WIRING APPLICATIONS**

- voltage rating: 1,000 volts A.C., R.M.S.; current rating in excess of three amperes
- connector can be electrically disengaged without mechanical separation
- five indexed positions to permit strain-free cable entrance
- identical boards and contacts in both halves
- polarized to prevent improper coupling—has numbered cavities to assure proper circuit identification

Circle Number 55 on Reader-Service Card

Complete information on these four product lines is available on request.

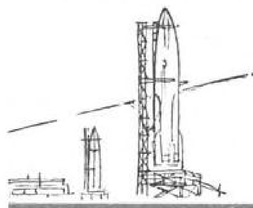
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GENERAL OFFICES: HARRISBURG, PENNSYLVANIA

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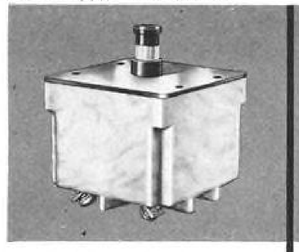
C-87

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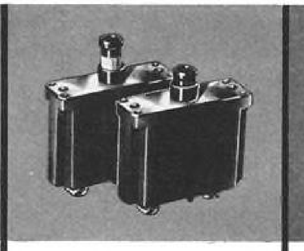


KLIXON Circuit Breakers,

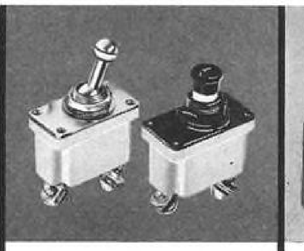
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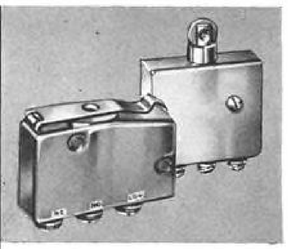
KLIXON D6760 CIRCUIT BREAKER
Thermal-type, three phase. Interrupts high AC short circuits . . . trips quickly . . . provides simultaneous tripping of all three phases should any one phase become overloaded. Ratings 5 to 60 amperes; weight 227 grams; minimum AC rupture capacity 2500 amperes, 1φ, 120 VAC, 400 cps.



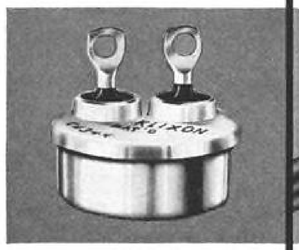
KLIXON D6752-5 CIRCUIT BREAKER
High temperature, push-pull, indicating type especially designed to compensate for ambient temperature in a −60°F to +250°F range. Carries rated current at 250°F and 115% of rating at −60°F and +77°F. High AC and DC rupture capacity, long cycling life (10,000 cycles min.), fast sensing and tripping. Ratings 5 to 50 amperes; weight 2.5 ozs.



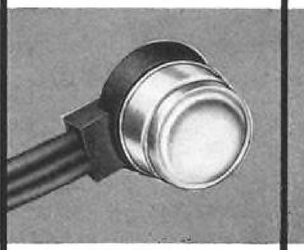
KLIXON D7270-D7271 CIRCUIT BREAKERS
Two miniature breakers different only in actuators. Simple trip-free design about ⅓ the size of MS25005 and MS25017. Only three moving parts — actuator, slide and thermal disc. Ratings 3 to 35 amperes; weight 1.5 ozs.; high rupture capacity 3500 amperes, 120 VAC, 400 cps.; 4,000 amperes, 30 VDC.



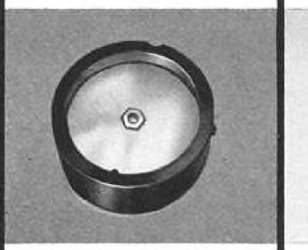
KLIXON KX4 and KX5 SERIES PRECISION SWITCHES
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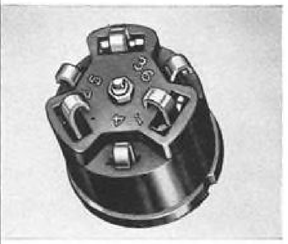
KLIXON M1 PRECISION THERMOSTAT
Hermetically sealed, vibration resistant, snap-action. Conforms with MIL-E-5272 and MIL-T-5574A. Pre-set and non-adjustable. Temperature settings from −65°F to +400°F. High dielectric strength 1250 VAC. Ratings up to 7 amperes, 30 VAC/DC resistive; or 6 amperes, 125 VAC; or 3 amperes, 250 VAC. Weight 5 grams.



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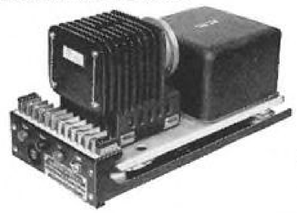


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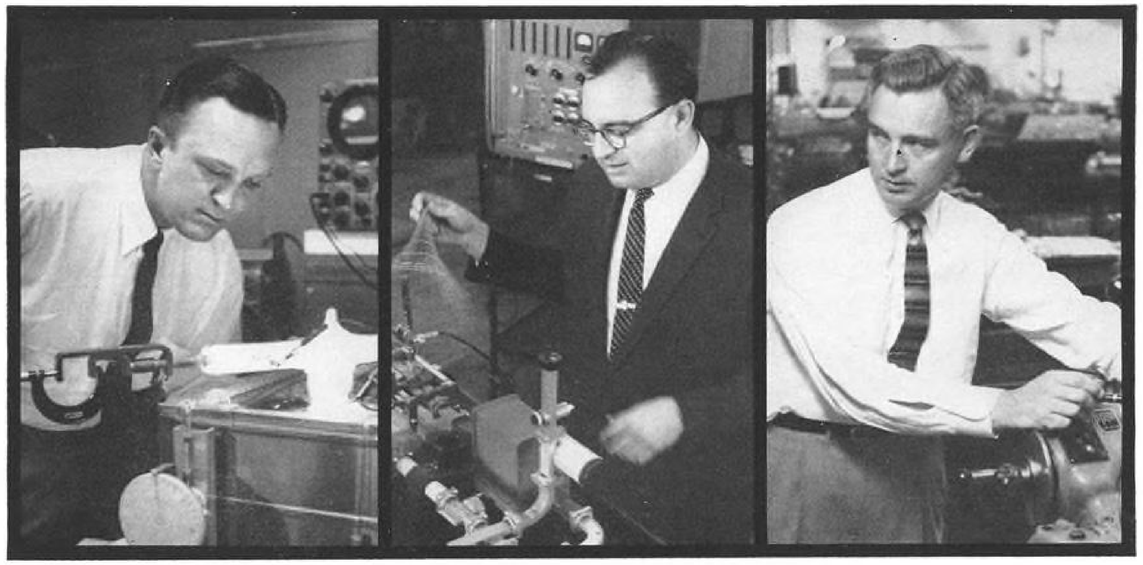
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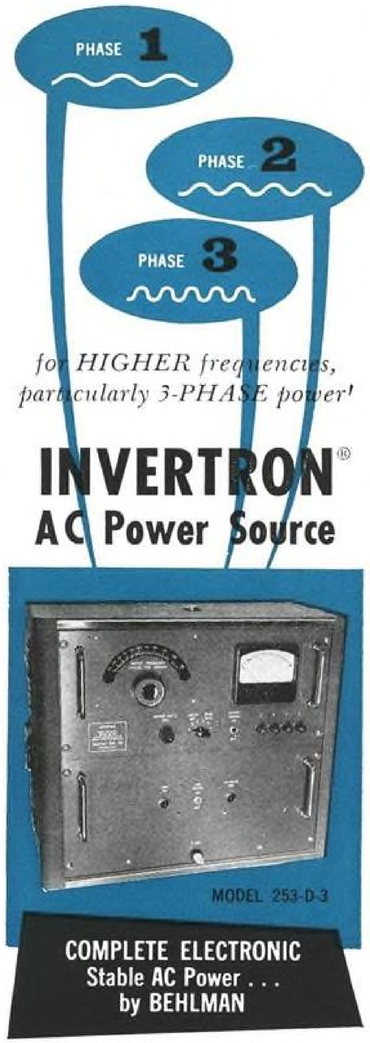
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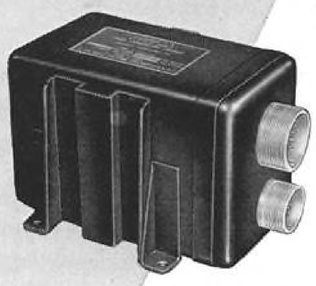
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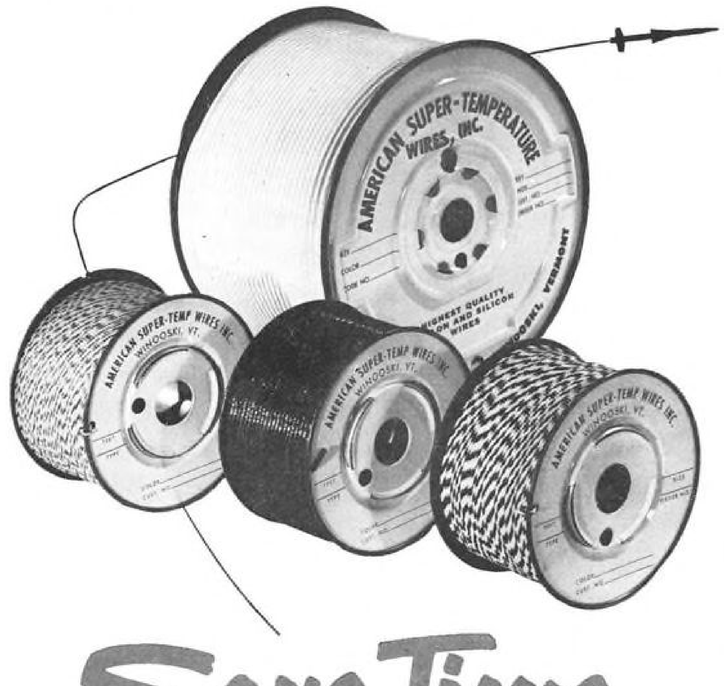
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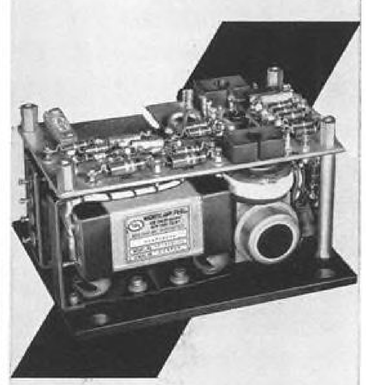
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RADIO CORP. OF AMERICA, Princeton, N. J. **SEE ADV. C-76**
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Telephonics Corp., Park Ave., Huntington, L. I., N. Y.
THIOKOL CHEMICAL CORP., 780 N. Clinton, Trenton 7, N. J. **SEE ADV. D-181**
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Bendix-Pacific Div., Bendix Aviation Corp., 11600 Sherman Way, N. Hollywood, Calif.
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DESIGNERS FOR INDUSTRY, INC., 4241 Fulton Pkwy., Cleveland 9, Ohio. **SEE ADV. C-96**
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Reiner Electronics Co., Inc., Centre & Glendale Sts., Easton, Pa.
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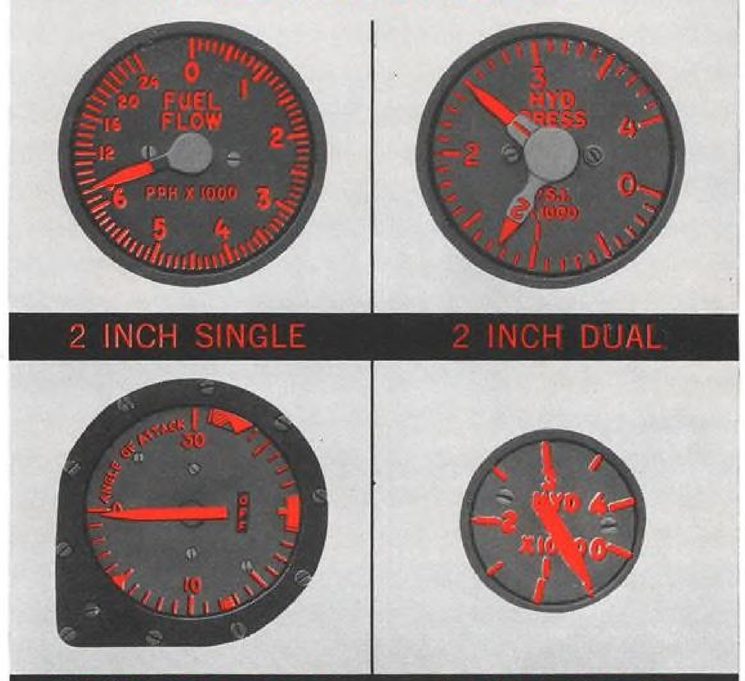
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Philco Corp., Lansdale Tube Co. Div., Lansdale, Pa.
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Sylvania Electric Products Inc., 1740 Broadway, New York 19, N. Y.
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U. S. Dynamics Corporation, 1250 Columbus Ave., Boston 20, Massachusetts
Vacuum Tube Prods. Co., Inc., 2020 Short St., Oceanside, Calif.
Varian Associates, Tube Div., 611 Hansen Way, Palo Alto, Calif.
Waterman Products Co., Inc., 2445-63 Emerald St., Philadelphia 25, Pa.
Westinghouse Electric Corp., 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa.

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CBS-Hytron Div., Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass.
Cadillac Electronic Co., 53 Worth St., New York 13, N. Y.
Allen B. DuMont Lab., Inc., 760 Bloomfield Ave., Clifton, N. J.
General Electric Co., Electronic Components Div., Owensboro, Ky.
General Electric Co., Receiving Tube Dept., Owensboro, Ky.
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Industrial Tube Div., Raytheon Manufacturing Co., 55 Chapel St., Newton, Mass.
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Philco Corp., Government & Industrial Div., 4700 Wissahickon Ave., Philadelphia 44, Pa.
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Sperry Gyroscope Co. Div., Sperry Rand Corp., Marcus & Lakeville Rds., Great Neck, N. Y.
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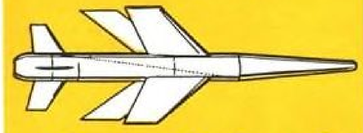
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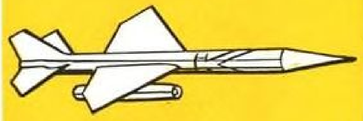
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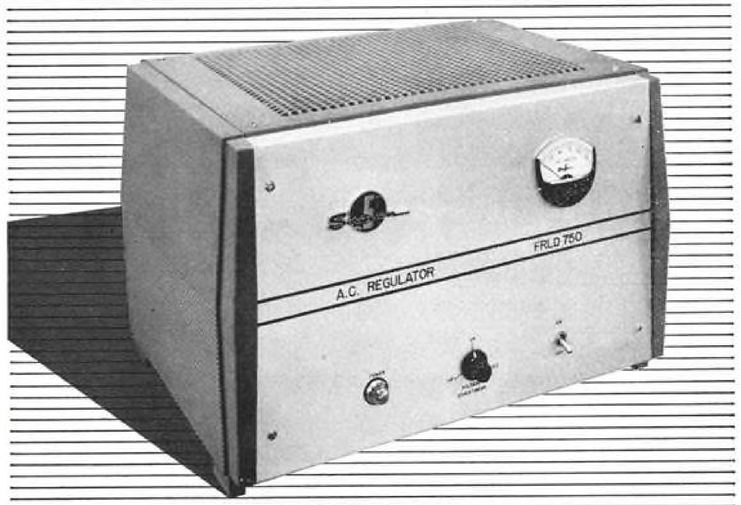
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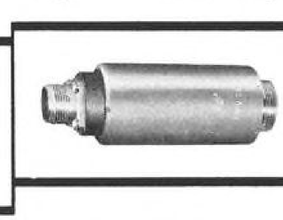
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NEW



AVION

fast response servo amplifier

transistor-magnetic
small size • light weight
"built in" stabilization

Suitable for use where specifications for low-power instrument servos call for small size, high gain, and high performance.

SPECIFICATIONS —	*MODEL* A	B
Rated Power Output: 3.5 watts, 57 volts Mark XIV motor or equivalent	X	X
Input Impedance: 30K ohm	X	
500K ohm		X
Voltage Gain: 2000 max.	X	
900 max.		X
adjustable by external resistor over 50:1 range		
Response Time: 1 cycle of supply frequency	X	X
Zero drift over ambient Temperature Range (—55°C +100°C): Less than ±5% of rated output voltage	X	X
Inherent servo stabilization at velocity constant of 100-200	X	X
Power Supply: 115 Volts ± 10%, 400 cps ± 5%	X	X

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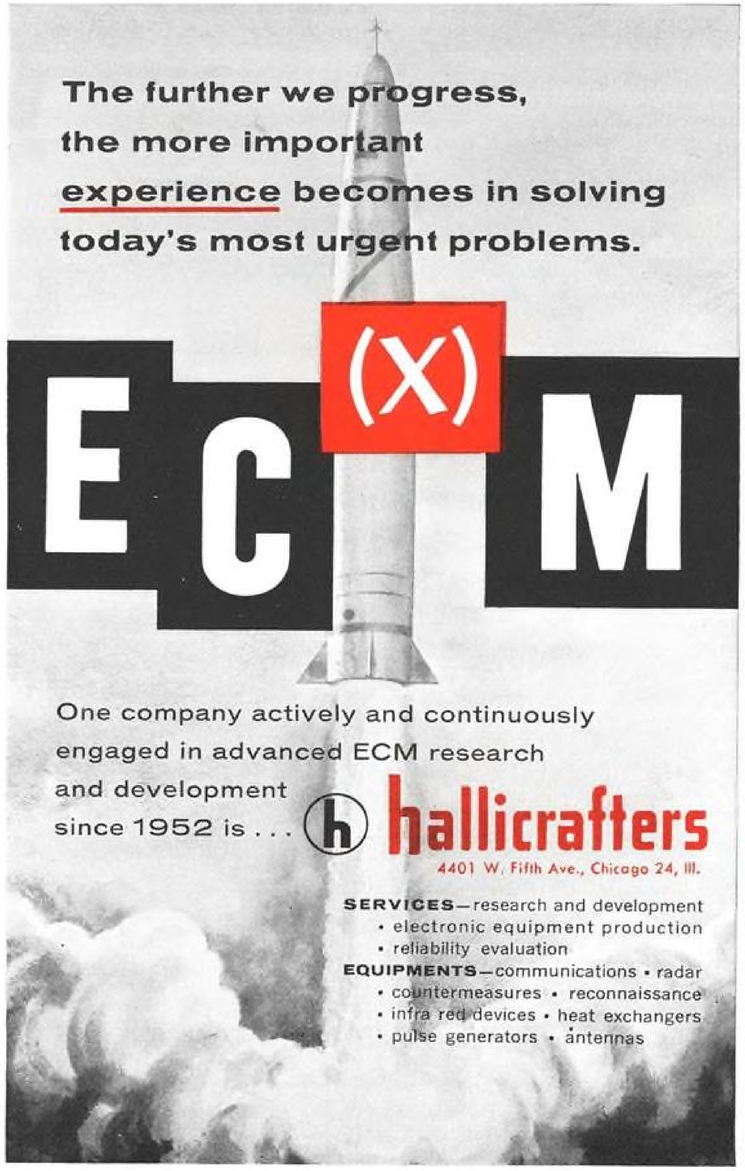
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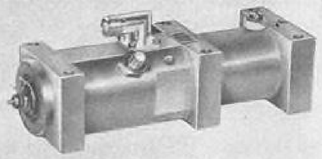
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"S" - BAND

pulse oscillator

model no. 306

- *offering superior stability for both vibration and temperature under extreme environmental conditions . . .*
- *small-size and light-weight*

TUNING RANGE 300 MC (Nominal)

POWER OUTPUT 1.5 KW peak minimum at .001 duty cycle, 1 μsec pulsewidth, 1000 pps

TUBE GE 6442 triode

OPERATING CONDITIONS 3000 V at 2.5 amp peak (Nominal) Heater 6.3 V ac or dc (5%)

VIBRATION 20 g . . . 20-2000 cps (FM 2 MC max.)

SHOCK 70 g while operating (frequency shift 1 MC max.)

Temperature –50 C to 100 C (4 MC max.)

FIXED CATHODE Plate tuned (only tuning adjustment)

TUNING LOCKING DEVICE Output connector (type N, TNC, or BNC, nominally 50 ohms)

OVERALL DIMENSIONS Length 6-1/4"; Width 2"; Height 1-7/8" excluding connector

WEIGHT 20 oz.

MOUNTINGS Integral parts of the oscillator — included in the dimensions and weight, above

OTHER MICROWAVE COMPONENTS S, C, and X — bands available.

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MULTI-CONDUCTOR CABLES for MISSILES and ELECTRONIC APPLICATIONS



Combining the light weight, superior dielectric properties, heat resistance and solvent resistance of teflon*insulated conductors with the tough abrasion, temperature and solvent resistance of a woven nylon jacket, nylon finished, a cable has been made available that is particularly suited for use in missiles and electronic applications.

Individual wires having silver plated copper strands, insulated with teflon suitably color-coded in accordance with MIL-W-16878B, Type E, are cabled together and jacketed with a tough nylon braid with a nylon finish applied overall.
Available in various conductor sizes as required or in combinations of sizes consistent with standard manufacture.

Cables may be shielded with #36 tinned copper braid applied directly over the nylon braid and jacketed with a nylon braid or extruded PVC applied overall.

MULTI-CONDUCTOR CABLES OF THERMOCOUPLE MATERIALS

For permanent conduit installations, thermocouple wire cables are constructed to customers' specifications. Illustrated LEWIS Part PFN-9, a six pair, #16 solid iron-constantan (JX) cable with individual conductors PVC insulated and color coded white and red, twisted together then cabled with a #36 tinned copper shield woven overall and finally a 3/64 inch black PVC jacket applied over the shielding braid. A center core of asbestos fibers is used as an aid in forming the cable into a rounded contour.



Any thermocouple material may be made into such multi-conductor cables, or if desired, a cable combining electrical wires and thermocouple wires may be designed to fit your requirements. Cables to withstand environmental conditions of severe temperature extremes, moisture and abrasion are prepared with shielding braid on single or paired conductors or with an over-all shielding. Tell us of your requirements.

HIGH TEMPERATURE CABLE . . .

Suitable for operating temperatures up to 650°F with nickel-clad copper conductor and laminated insulation having superior dielectric strength and moisture resistance. In AWG sizes 22 thru 4/0. In accordance with MIL-C-25038.

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Teflon*insulated silver coated copper conductor with insulation in standard colors in accordance with MIL-W-16878B. Types E and EE.

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NOW UP TO 250 KW!

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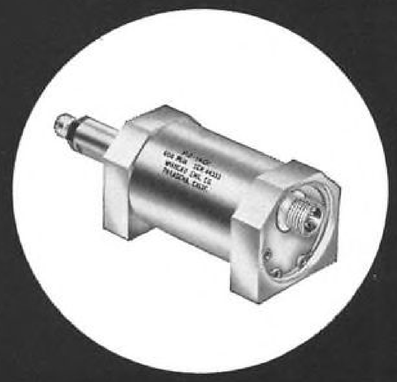
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a variable-reluctance
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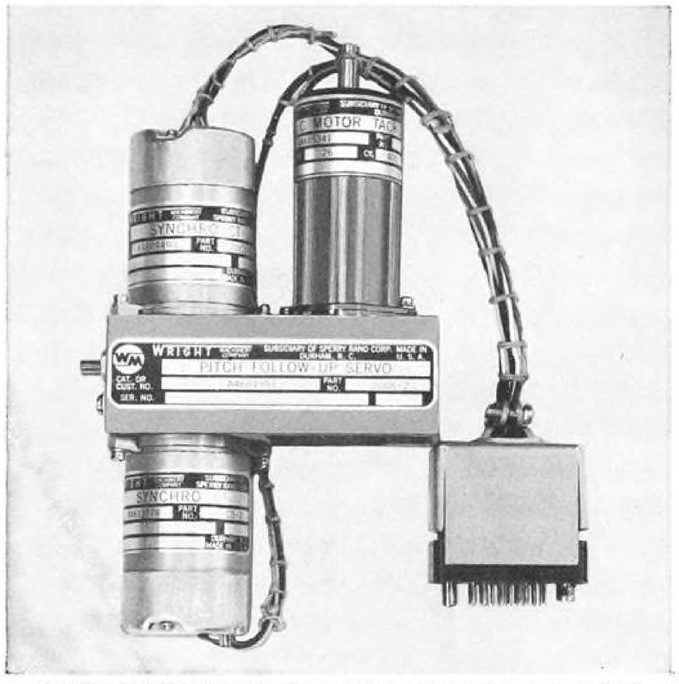
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This servo illustrates Wright's exceptional capability for production of special small precision components and assemblies. You are invited to consult us on your next requirement for . . .

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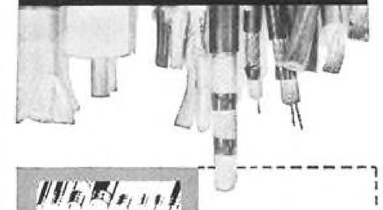


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MODEL H-42

HIGH PRESSURE TRANSDUCER



In each Hawk missile launcher developed by Northrop Aircraft Inc., two Servonic H-42 pressure transducers provide damping in the servo systems which operate the azimuth and elevation controls. A radar impulse furnishes guidance and slews the missile carriage to the proper position for launch. The Servonic transducer senses the pending oscillation in the hydraulic system due to the inertia of the moving mass and applies a correction signal to the servo amplifiers controlling hydraulic pressure so that each oscillation is counteracted. This provides a stable motion as the platform is brought to rest in the correct firing attitude.

The use of the H-42 in the Hawk launcher servo systems is typical of the many application capabilities of Servonic pressure transducers in extreme environmental situations.

H-42 SPECIFICS:

Range: ±4,000 psid.
Linearity: ±0.5%
Hysteresis: Less than 1%.
Resolution: 0.2%.
Vibration Effects: Less than 1% at 20g.
Shock: 30g.

Complete Details in Technical Bulletin SI-581

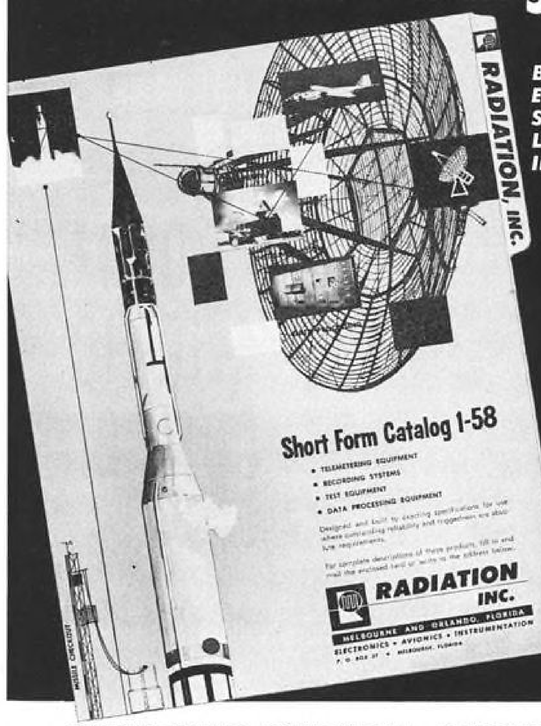
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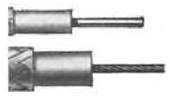
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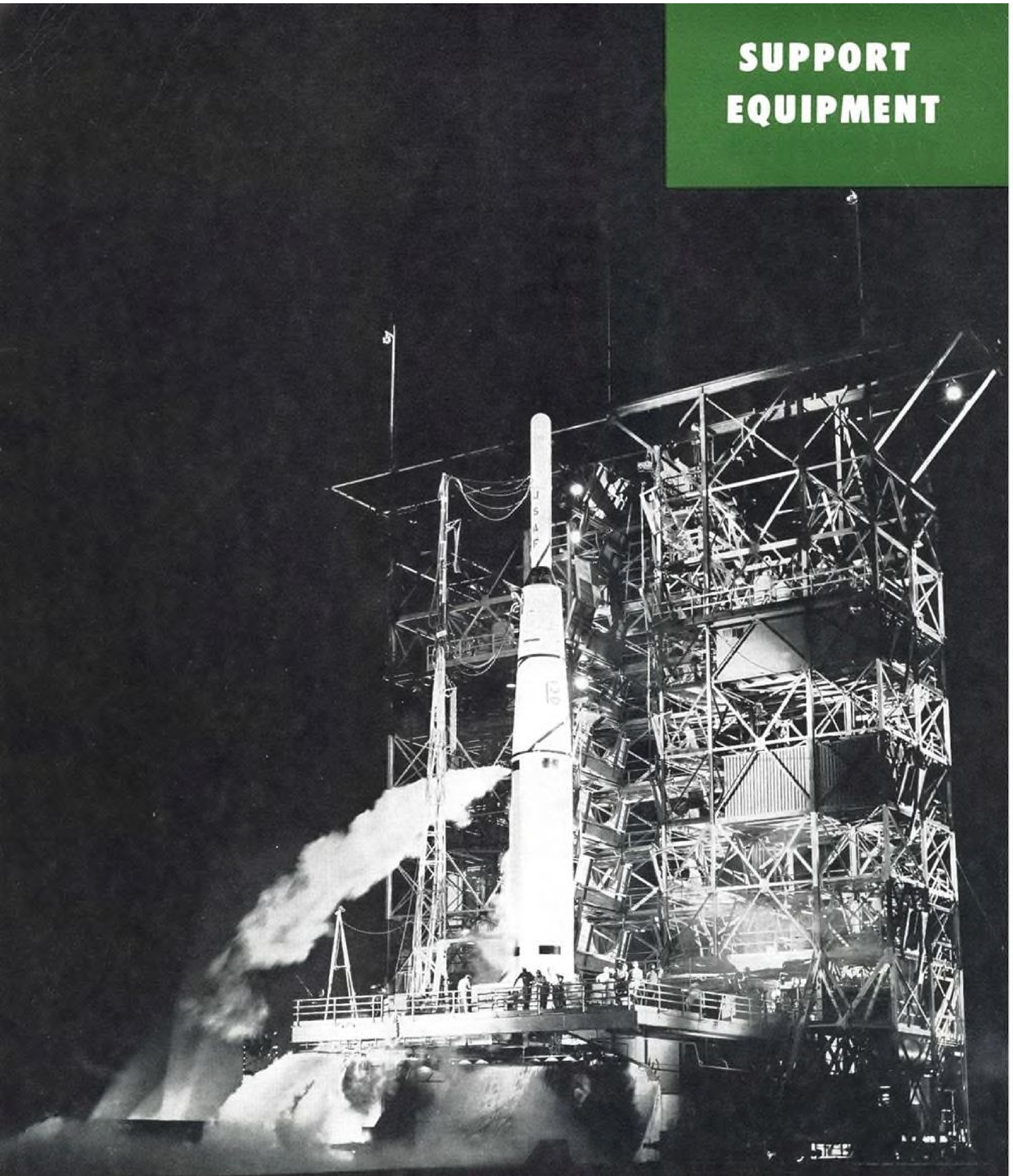
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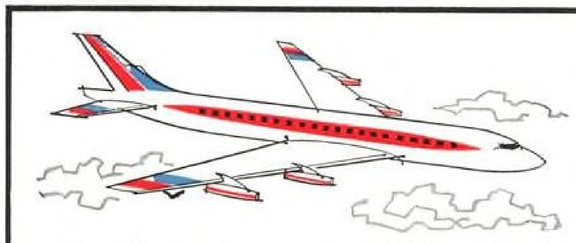
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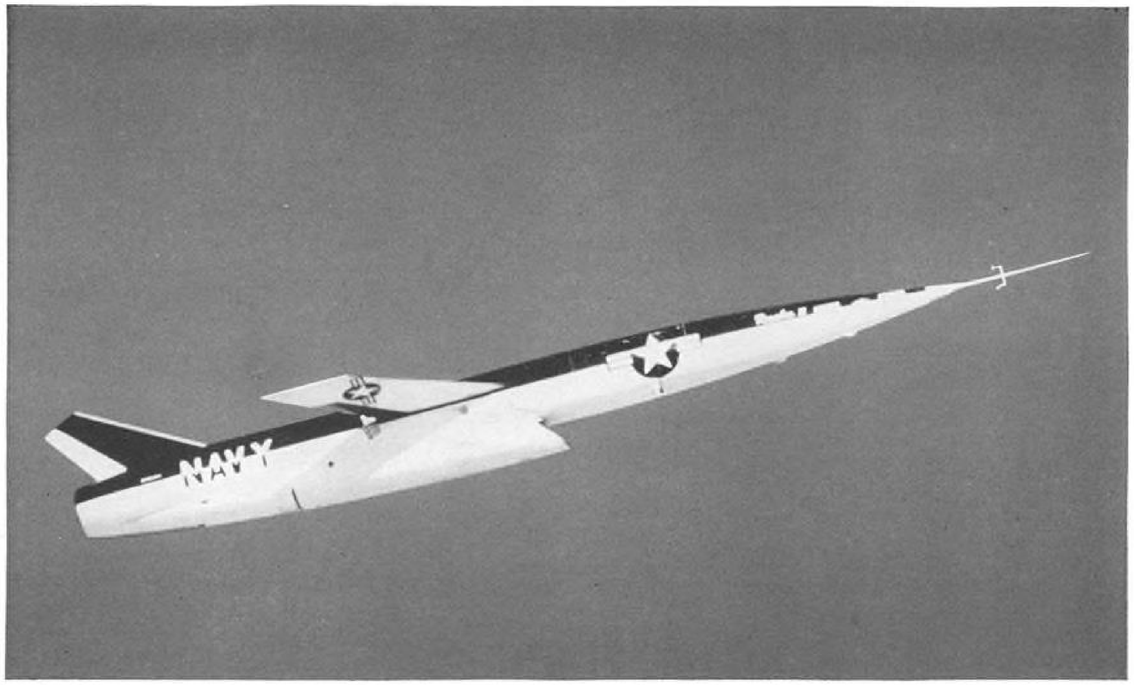
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AUTO-LITE 350 WIRE
Gives top performance from 400°F. to −80°F.
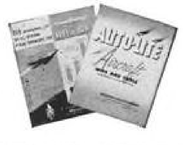
The Chance Vought Regulus II employs a Machmeter signal to control altitude, calling for climb until cruise level is reached. Service ceiling is listed "over 60,000 feet." High Mach number and altitude requirements make Auto-Lite 350 Silicone-rubber-insulated wire ideal for the job.

Flexible at −80°F., Auto-Lite 350 Wire also has high resistance to flame, abrasion, most missile chemicals, and lubricants. In any installation where extreme temperature demands or chemicals are serious problems, consider Auto-Lite 350 Wire.

Many missile manufacturers find that Auto-Lite 350 Wire also reduces over-all production costs compared with other types of high-temperature wire.

- Flexible at temperatures below −80°F.
- Smokeless
- Resistant to modern aircraft hydraulic fluids, lubricants, and fuels for reciprocating and jet-type engines
- Resistant to most missile propellants
- No discoloration at maximum operating cable temperatures
- Flame-resistant
- Easy printing of circuits with conventional marking machines
- Meets Spec. MIL-W-8777A
- Free stripping
- Manufactured in sizes 22 thru 2/0

For complete information on Auto-Lite Aircraft Wire, including specifications and samples, write to . . .
The Electric Auto-Lite Company, Wire and Cable Division, Port Huron, Michigan or Hazleton, Pennsylvania



AUTO-LITE® 350 GENERAL PURPOSE HIGH-TEMPERATURE AIRCRAFT WIRE

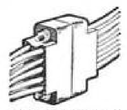
D-158

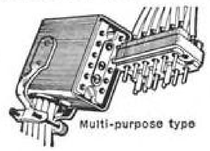
Circle Number 100 on Reader-Service Card

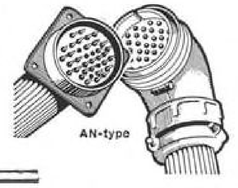
BURNDY
FOR SOLDERLESS RELIABILITY

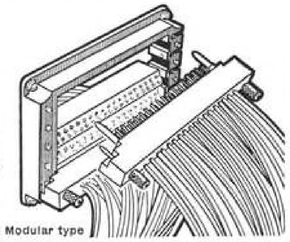
Connectors
Components
Compression Tooling

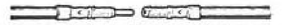
PLUG and RECEPTACLE CONNECTORS


Miniature MS-type


Multi-purpose type

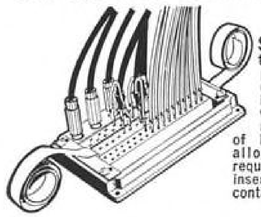

AN-type


Feed-through, Modular type

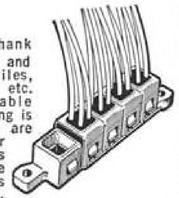

With Crimp-type, Snap-Locked Contacts

HYFEN* — Crimp-type connectors permit the design of lighter, more compact equipment. Contacts can be removed, re-inserted or replaced. Designed to replace, or mate with virtually all existing connectors, the HYFEN meets or exceeds MIL specs. Reliability-tested crimping saves time and ends the high rejection rate inherent with solder.

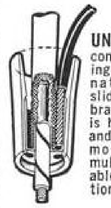
TAPER PIN PANELS



STAPIN* — Solid shank taper-pin contacts and panels for missiles, control equipment, etc. Especially valuable where circuit testing is required. Contacts are of high-quality copper alloy and plated as required. An impact-type insertion tube installs contacts into the panel.



COMPRESSION SHEATH CONNECTORS
For Shielded or Coaxial Cable



UNIRING* — One-piece connector for grounding, joining or terminating. Inner ring slides under shielded braid while tap wire is held between braid and outer ring. Accommodates single or multiple taps. Available with nylon insulation or uninsulated.

HYRINGs* — Two-piece inner and outer ferrules, color-coded. The small HYRING is slipped under the braided shield and the larger, HYRING is slipped over the shield and ground leads. A single crimp completes the assembly. Outer ferrule available pre-insulated.



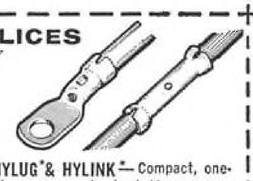
TERMINALS, LUGS, SPLICES



INSULUG* — Color-coded, nylon insulated lugs. Also spade or fork-tongue design, or banded for automatic machines.



SEALINK* — Nylon insulated, water-sealed, one-piece splice for single or multi-cable. Anodized aluminum sealing rings. Takes AN 26 thru 10.

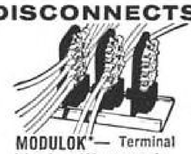


HYLUG* & HYLINK* — Compact, one-piece, pure electrolytic copper. Electro-tin plated to prevent corrosion. With or without insulation grip. Inspection holes for simple, check of wire insertion.

PANELS and DISCONNECTS



UNILOK* — Single or gang disconnect, pressure or non-pressure applications. Seamless, crimp-type, removable contacts with maximum mechanical, electrical efficiency.

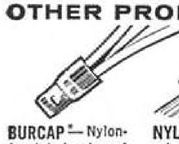


MODULOK* — Terminal block with snap-in, spring-loaded contact and separable modules. Either quick-disconnect or permanent block. 30 modules (2 or 4 tier) per ft.

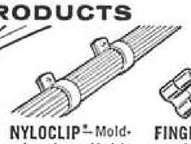


PANELOK* — Pressure-tight, molded panels with nylon insulated or uninsulated, silver-plated HYPIN* sockets. Connect, disconnect from either side of bulkhead without removing panel.

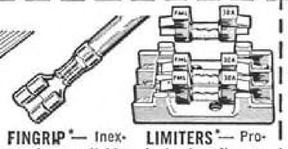
OTHER PRODUCTS



BURCAP* — Nylon-insulated, crimped splice for wide range of wire combinations. Electrolytic copper for maximum conductivity.



NYLOCLIP* — Molded nylon, lightweight, cable hanger. Resists temperatures from −60° to 250°F. 17 sizes for cable, bundles ⅛" to over 2".

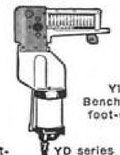


FINGRIP* — Inexpensive, reliable quick-disconnect terminals. Male, female, right angle variations. Install with automatic machine or simple hand tools.

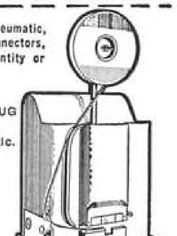
LIMITERS* — Protect aircraft systems against high overloads, shorts. Visual or mechanical indicating type. 400 c, 115/208 v AC, DC up to 30 v.

TOOLING
Over 100 different hand, hydraulic, pneumatic, semi-automatic tools and machines available for installation of connectors, splices, and contacts. Choice usually depends on installation quantity or current assembly methods.


MBND
Depth-of-indent-controlled hand tool


YD series
Cartridge-fed, semi-automatic


Y10NCP
Bench-mounted, foot-operated.


BANDOLUG
Fully-automatic.

BURNDY, world's largest exclusive connector manufacturer, offers more than 10,000 tested and proven connectors. With companion tooling designed to fit any production line, large or small, the BURNDY compression method has solved literally thousands of connector problems for OEM, Electronics, Aircraft/Missile, Marine, and other government agencies. The adjoining coupon will bring you the complete story.

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Mr. S. D. Bergman, Sales Manager BG
OMATON DIVISION, BURNDY, Norwalk, Connect.

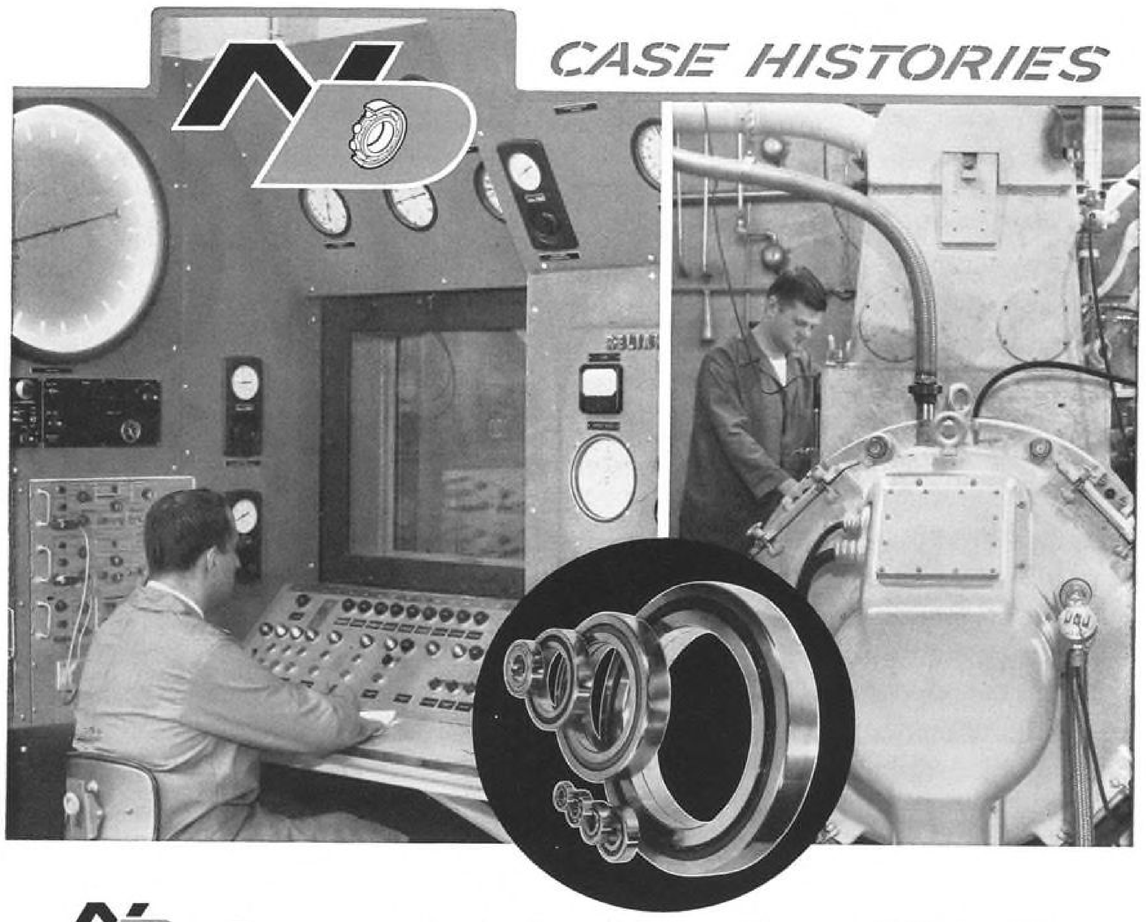
Yes, I'd like more information. Send the catalogs or bulletins checked.

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58-11 (Note: Please attach to company letterhead.) *Trade Mark

- ☐ HYFEN plug & receptacle connectors.
- ☐ STAPIN taper-pin panels & contacts.
- ☐ UNIRING/HYRING tap connectors.
- ☐ HYDENT terminals, lugs, & splices.
- ☐ SEALINK insulated, water-sealed splices.
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- ☐ MODULOK snap-in terminal blocks.
- ☐ PANELOK pressurized panels.
- ☐ BURCAP "pig-tail" splices.
- ☐ NYLOCLIP nylon cable hangers.
- ☐ FINGRIP quick-disconnect terminals.
- ☐ LIMITER aircraft fuses.
- ☐ BANDOLUG automatic terminating machine.
- ☐ BURNDY compression installation tooling.
- ☐ HAVE YOUR REPRESENTATIVE CALL FOR AN APPOINTMENT.

D-159



Research Labs Keep Pace With Giant Stride Of America's Air Industry!

CUSTOMER PROBLEM:

Require test rig for measuring full scale aircraft turbine bearings. Test rig must simulate actual operating conditions.

SOLUTION:

N/D engineering, in cooperation with customer under the direction of a defense agency, developed the aircraft turbine bearing testing equipment shown above. The Test Rig Control Console, shown on the left, initiates and controls tests, and completely records *all* operating performance characteristics. The test stand itself, above right, simulates the actual conditions to which the bearings are subjected in flight. It develops radial loads of up to 25,000 lbs. . . . and thrust loads reaching a maximum 75,000 lbs. Bearings up to 110mm bore are tested at speeds as high as 20,000 r.p.m., in temperatures ranging up to 1200° F. Research facilities such as this are your assurance that New Departure stands ready to work closely with you on *your* bearing research problems.

For information on New Departure precision Aircraft and Instrument ball bearings, or research facilities, call the New Departure Sales Engineer in your area or write Dept. G-12..

NEW DEPARTURE

DIVISION OF GENERAL MOTORS, BRISTOL, CONN.

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SPACE meets the pace... of today's accelerated ground support needs



Air Start Cart

Significant advance in efficiency, economy, safety:

NEW SPACE UNIVERSAL AIR START CART provides low or high pressure jet engine starting, landing gear and strut servicing — at a fraction of the initial cost, operating and maintenance expense of comparable facilities.

A single compact unit (less than 88″ wide), easily stored and transported, its storage capacity is adequate for eight normal engine starts. Air is controlled to 450° and delivered to the engine in uncontaminated condition.

Elimination of blower-type exhausts prevents all possibility of injury caused by burns.

Standard commercial components, capable of withstanding ambient conditions from −65°F to +160°F, are used throughout. Equipped with pneumatic tires and springs, covered by a canopy of heavy gauge metal, this SPACE cart can be truck mounted with compressor driven from power take off, or supplied with either gasoline or electrically driven air compressor.

Mission accomplished:

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altitude simulation chambers / permanent, semi-portable and mobile test cells / block house instrumentation / missile liquid level propellant detection systems / cabin leakage testers

Name your functional requirements for ground support! Conventional aircraft, turbojets, turboprops, ramjets, missiles or rockets — count on the same SPACE skill to speed the solution to your problems.

SPACE FIRE CONTROL UNIT

Now, fire control... faster, more efficiently, and at lower cost than with any type of conventional equipment known today! Easily portable, fool-proof in operation, and completely dependable, SPACE Fire Control delivers enormous volumes of dry chemical plus chemical foam at high pressures, when and wherever needed. SPACE Fire Control meets the highest standards set by industrialists and airfield safety experts. And if necessary, this SPACE unit doubles as a pumper with capacity for more than 500 gallons of water a minute.

Available skid, trailer or truck mounted to suit your particular requirements.

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why HYATT is America's NO. 1 SOURCE of jet engine roller bearings:

HYATT offers two decisive advantages:

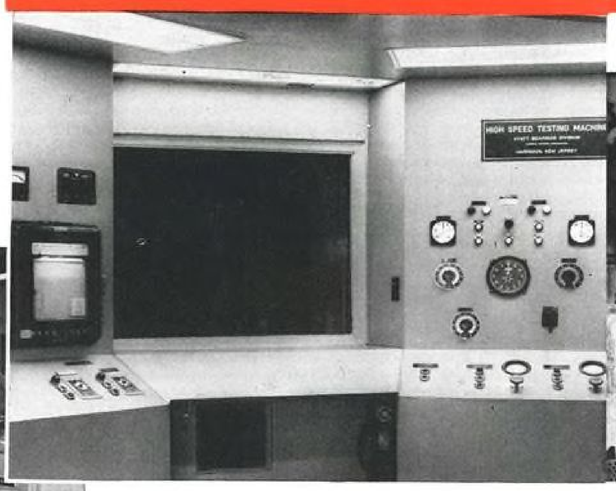
1 Years of experience in cooperating with aircraft engineers to develop solutions to jet-age bearing problems.

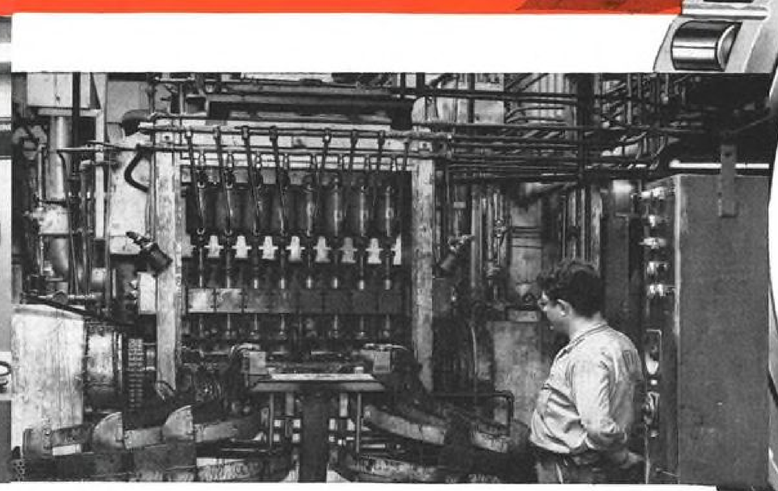
2 The skills and facilities to maintain *prototype quality* throughout on-time *quantity production.*

For size ranges and load ratings of standard **HYATT** Aircraft Bearings, request Catalog A-56. For expert engineering and production help in solving special bearing problems, contact Hyatt Bearings Division, General Motors Corporation, Harrison, N. J.



THE MEN AND DEVELOP DEPENDABLE ...THE FACILITIES THE MACHINES TO AND DELIVER MORE AIRCRAFT BEARINGS!







FACILITIES: This high speed test machine is part of a completely equipped metallurgical laboratory with modern test equipment, for research and development in the fields of Higher Temperatures • Higher Speeds • Heavier Loads in smaller areas, to meet aircraft requirements.

MEN: A highly-trained force of expert Metallurgists • Chemists • Designers • Engineers • Technicians • Production Craftsmen

MACHINES: Millions of dollars worth of equipment for Machining • Heat Treating • Grinding • Assembling and Inspecting bearings with micro-inch precision

THE RECOGNIZED LEADER IN CYLINDRICAL BEARINGS

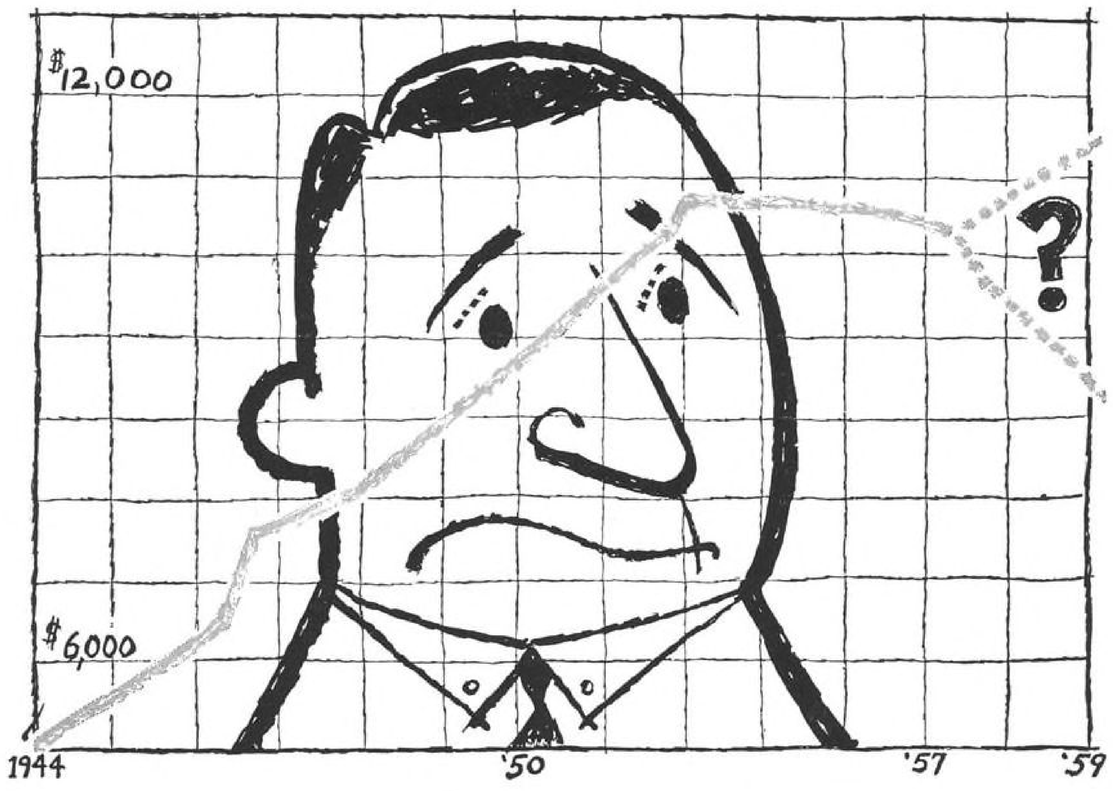
GM GENERAL MOTORS

HYATT HY-ROLL BEARINGS FOR AIRCRAFT INDUSTRY

D-162

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D-163



The "career-curve" of a man named Carter

Charlie Carter started out like a ball of fire. First ten years — terrific! Then he seemed to slow down. Other men — younger newcomers — passed him by. Why?

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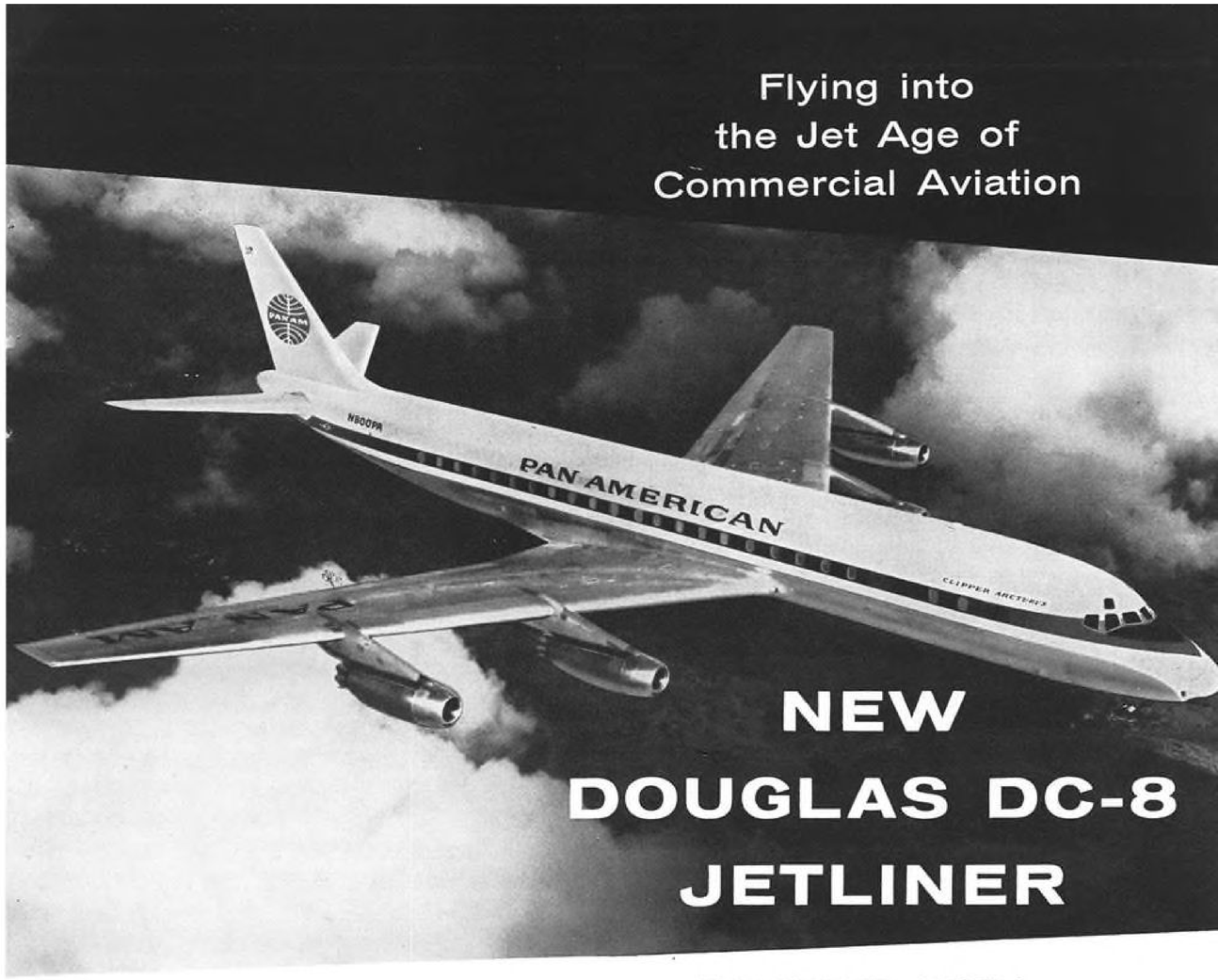
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Douglas' sleek new DC-8 packs four turbojet engines, cruises at speeds up to 590 MPH . . . and will span the United States in just 4 hours, 37 minutes on *regularly scheduled flights!* These fine aircraft will soon be delivered to major airlines, including Pan American World Airways, who will use them to span the Pacific in 10½ hours and the Atlantic in 6½ hours.

Up to 176 passengers can enjoy the DC-8's comfort and quiet flying "over the weather" in sea-level atmosphere at altitudes up to 23,000 feet. With a wing span of 139'9" and a total length of 150'6", the DC-8 will carry a full payload 5000 miles *non-stop.*

Every inch of the DC-8 has been thoroughly tested, undergoing structural-fatigue punishment simulating over 100 years of air service. And every component was selected to give maximum service.

Macwhyte aircraft cable is an important element in the DC-8's control system.

Macwhyte "Hi-Fatigue®" Aircraft Cable is made in a complete line of sizes and types. Macwhyte "Safe-Lock" Cable terminals of stainless steel are available loose or in complete assemblies ready for installation. Macwhyte Aircraft Cables, Terminals, and Assemblies meet the requirements of aircraft manufacturers, airlines, and military specifications. Aircraft Catalog A-3 free on request.

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Whether it's a crash program or a long range project . . . single piece of hardware or complete ground support system . . . we'll build it to your prints or do the whole package from R&D through manufacturing.

Also, our experience has taught us how to *organize* as well as execute. We call it systems-management capability. Businesslike. On schedule. It means time and money saved for you.

Write or call: Special Products Manager, Missile Division, 12214 Lakewood Boulevard, Downey, California.

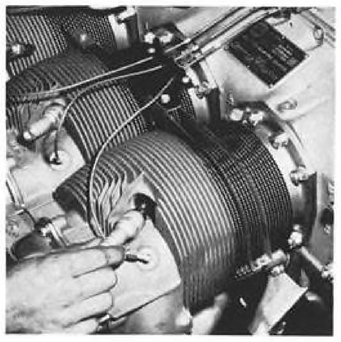
MISSILE DIVISION
NORTH AMERICAN AVIATION, INC.

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WBAALT* specifies HSR-86**

AC Aircraft Spark Plugs original equipment on NEW Cessna 310 and L-27A Light Twins!





Picture above shows AC type HSR-86 installed in 0470 Continental engine.

*"World's Best All Around Light Twins" sparked by **World's Best Aircraft Spark Plugs!

They took the limit off the sky when Cessna engineered the new 310 and the military version, L-27A. Only the finest materials, components and workmanship go into these "advance design" planes. And, of course, these rigid specifications include factory installation of AC Spark Plugs!

AC Aircraft Spark Plugs give longer service life with fewer unscheduled removals. They heat up fast to burn away fouling combustion deposits as soon as they form. ACs stay clean longer because of the efficient scavenging action. They deliver the high-incendivity spark needed for peak performance and reliability.

In addition to the Light Twins, Cessna specifies AC's S-88 for the entire 180 Series, including the luxurious Skylane! The military L-19 uses the HSR-87 as original equipment.

You'll find AC Aircraft Spark Plugs best for the planes you fly!



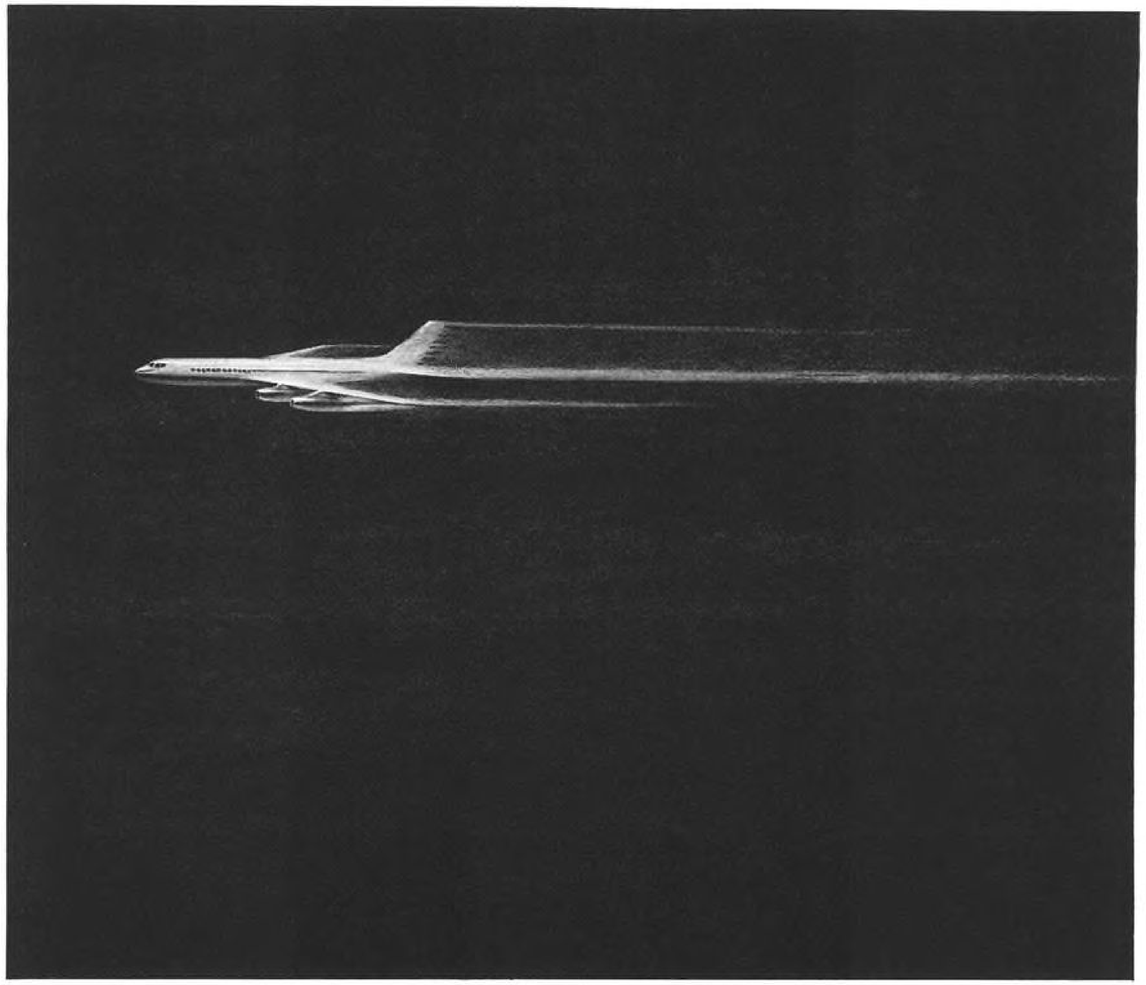
Aircraft Care starts with . . .

AC SPARK PLUG ⚛ THE ELECTRONICS DIVISION OF GENERAL MOTORS

AC **AIRCRAFT SPARK PLUGS**

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It's another reason for Rohr's position as leader in the design and production of major components for flight.

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The ELECTRA WING FLAPS



are dependably actuated with less power, weight and space by SAGINAW SCREWS

6 DECISIVE ADVANTAGES FOR AIRCRAFT AND MISSILE ENGINEERS

1 **POWER SAVINGS.** Operating with over 90% efficiency, Saginaw b/b Screws permit much smaller motors with far less drain on electrical systems, and also simplify circuitry.

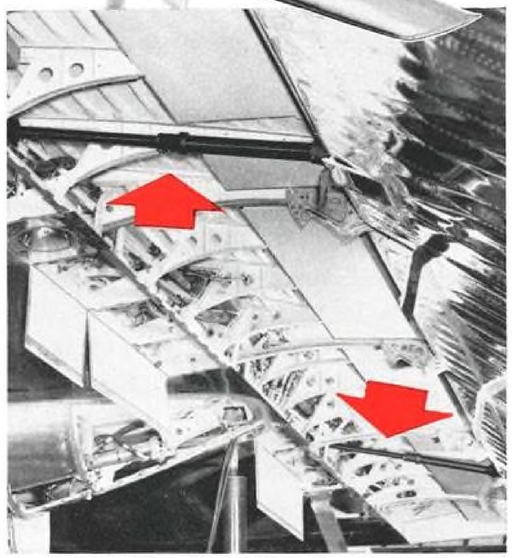
2 **SPACE SAVINGS.** Saginaw b/b Screws themselves are compact. They permit smaller motors and gear boxes and eliminate auxiliary equipment required by hydraulics.

3 **DEPENDABLE PERFORMANCE.** Saginaw b/b Screws are far more reliable than hydraulics or pneumatics. Gothic-arch grooves, yoke deflectors and multiple circuits provide added assurance of dependability.

4 **PRECISE POSITIONING.** Saginaw b/b Screws will position components far more precisely than hydraulics or pneumatics; tolerances on position can be held to .0006 in./ft. of travel.

5 **TEMPERATURE TOLERANCE.** Normal operating temperature for Saginaw b/b Screws is from −75°F. to +275°F. But in selected materials, they will function efficiently at temperatures as high as +900°F.

6 **LUBRICATION.** If lubrication fails the Saginaw b/b Screw will still function with remarkable efficiency. Units have been built and qualified for operation without lubrication.



Custom-ground Saginaw Screw wing flap actuators being installed on Lockheed Electra

More and more progressive designers are switching to Saginaw Screws to actuate flaps, speed brakes, afterburners, guidance controls and similar critical components with efficiency and precision no other method can equal. *Available from 1½ inches to 40 feet long, 3/16 to 10 inch diameter.* If you are not familiar with the almost limitless possibilities of this remarkable device,



SEND TODAY FOR ENGINEERING DATA BOOK

Address: Ball Bearing Screw and Spline Operation, Saginaw Steering Gear Division, General Motors Corporation, Saginaw, Michigan.



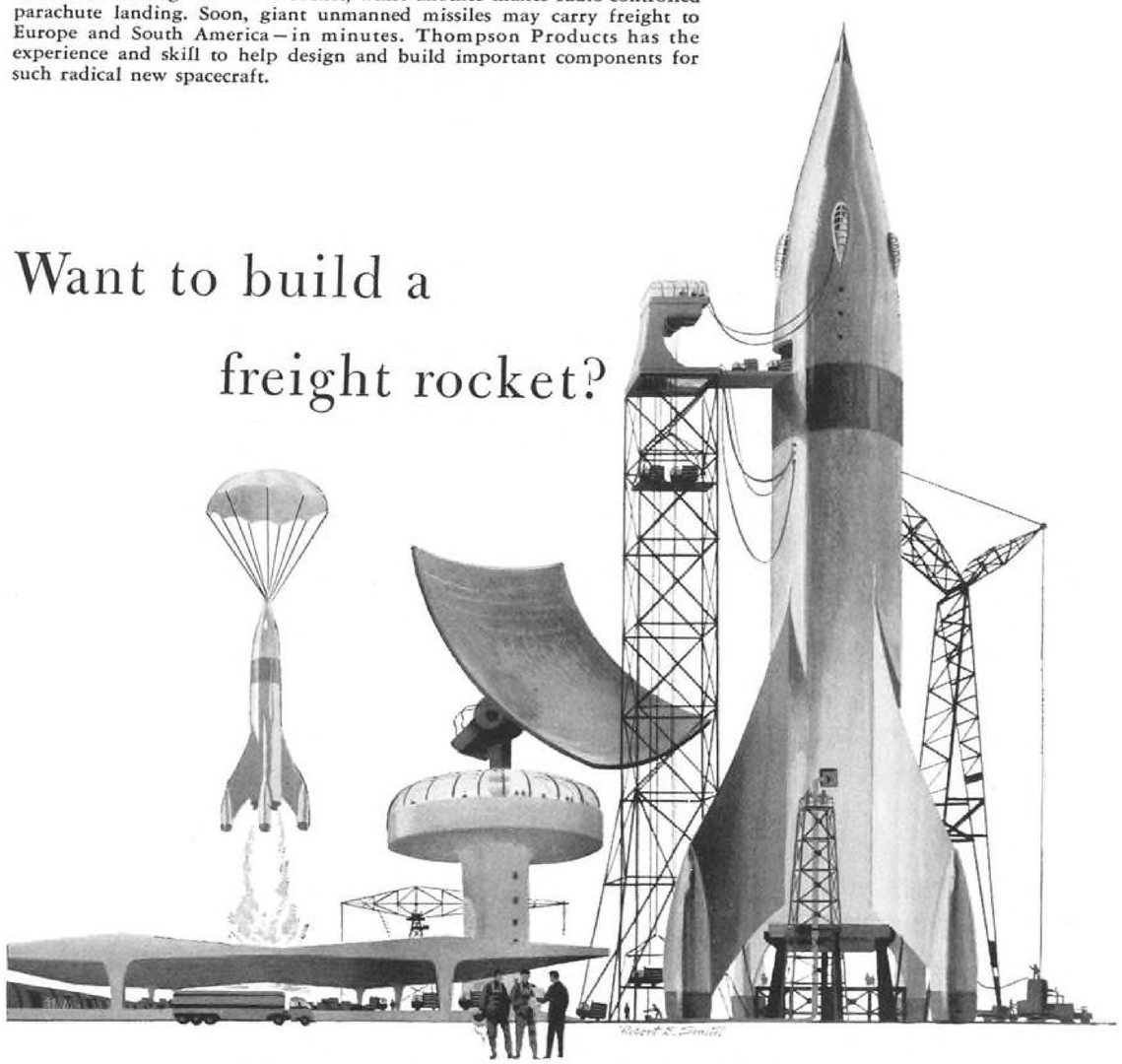
Saginaw ball bearing Screw

WORLD'S MOST EFFICIENT ACTUATION DEVICE

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Elevator loads freight into one rocket, while another makes radio-controlled parachute landing. Soon, giant unmanned missiles may carry freight to Europe and South America—in minutes. Thompson Products has the experience and skill to help design and build important components for such radical new spacecraft.

Want to build a freight rocket?



Thompson Products can help you handle the job

One of these days, a future-minded manufacturer may launch a rocket freight service, and reap a sky-full of profits.

This company could well turn to Thompson Products for aid in designing and building components for these huge, freight-carrying missiles. Ever since the earliest days of flight, Thompson has displayed remarkable ingenuity in developing advanced new aviation products.

Today, Thompson supplies precision-made parts not only for piston-powered planes, but for all American jets. And Thompson scientists, designers and engineers have now turned their talents to guided missiles.

Thompson has blazed new trails not only in the sky, but on the ground (for the automotive business), *in* the ground (for agriculture), and even *under* the ground (for mining)—not to mention dozens of other industries.

If you're considering the development of an advanced new product, why not call the Thompson people and let them help you get it on the assembly line?

You can count on

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as a partner in solving the design and production problems of an advancing technology

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From Thompson's 21 research centers and factories in 18 cities, come, each year, important new advances in mechanics, electronics, hydraulics, pneumatics, aerodynamics, thermodynamics and nucleonics.

D-170

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TENNEY packages any environment

...and delivers on time!

The most extreme field conditions your product will ever meet — duplicated exactly in a compact, precise Tenney environmental testing chamber custom-built for the job! Starting with one of Tenney's extensively-tested chamber prototypes, the right unit can be engineered in a surprisingly short time. In operation, actual environmental conditions are achieved quickly, maintained efficiently throughout the test run, and accurate data is provided for quick, simple evaluation. For literature describing Tenney's prototype chambers, or for recommendations on specific environmental testing problems, write to Tenney Engineering, the world's largest, most experienced creator of environmental testing equipment.

TENNEY ENGINEERING, INC. U.S.A.

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1090 SPRINGFIELD ROAD, UNION, N. J.

PLANTS: UNION, N. J. AND BALTIMORE, MD. • THERE IS A TENNEY CHAMBER TO SIMULATE ALTITUDE, HEAT, COLD, HUMIDITY, VACUUM, EXPLOSION, SAND, DUST, FOG, AND MOST OTHER ENVIRONMENTAL CONDITIONS.

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D-171



Boeing 707's 98 windows are triple-glazed with PLEXIGLAS. Outer and middle panels are made of stretched PLEXIGLAS 55.

"Where there's Progress, there's Plexiglas"

PLEXIGLAS *is a trademark, Reg. U.S. Pat. Off. and in principal countries in the Western Hemisphere.*

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D-172

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Circle Number 98 on Reader-Service Card→

If you can use custom quality
at commercial prices

-then check on HUDSON...

4-stage service



HUDSON precision quality metal components are produced by cost-reducing mass production methods. The HUDSON production department is equipped with batteries of standard and special presses ranging up to 300 tons. HUDSON performs a wide range of operations to meet your needs.

4 STANDARD PRECISION DRAWN INSTRUMENT CASES

Standardized cases include over 1400 different sizes, with both inside and outside covers, in six standard metals. Hudson offers the engineer a range of closures unequalled in the industry.

3 MIL-T-27A CLOSURES FROM AF TO OA

Cases and covers now offered by HUDSON from types AF to OA inclusive. Immediate shipment from large stock supplies. Cover assemblies to MIL-T specifications also available.

2 SPECIAL FACILITIES FOR TRANSISTOR CLOSURES

HUDSON'S newly installed 10 station automatic presses speed production on your transistor caps. Closures for transistors, diodes and other miniature components to specifications.

1 COMPLETE SERVICE ON MU METAL FABRICATION

HUDSON is now able to supply MU Metal closures in all standard sizes and shapes. Stock supply assures prompt delivery. Consult HUDSON on all your electrical alloy requirements.

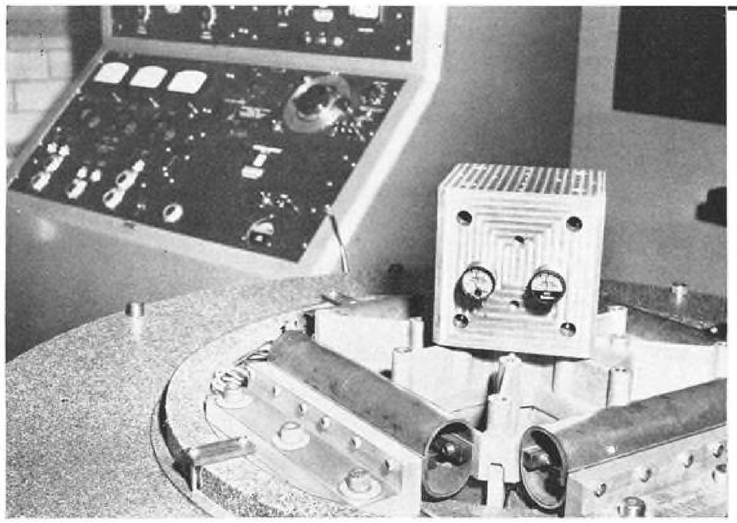


HUDSON service is complete... includes sheet metal fabrication, spot welding, heliarc welding and silver soldering. HUDSON designers and production engineers will be happy to help work out your problems.

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Expert Fabrication in Steel, Stainless Steel, Aluminum, Brass, Copper and MU Metal Precision Metal Components for Electronics, Nucleonics, Avionics and Rocketry



RMC-LINDSAY ONLY GAUGE TO STAND THIS TEST — This photograph shows vibration testing of RMC-Lindsay pressure gauges on the 3200 force pounds Calidyne Vibrator to 50 G output, amplitude .010 to .20. Cycling frequencies to 2,000 cps. The test is conducted so as to parallel actual installation conditions, with gauges subjected to 350°F under operating pressures. Complete test reports are available on request.

THE RMC-LINDSAY GAUGE IS RADICALLY DIFFERENT

from ordinary high pressure gauges

HERE'S WHY...



1. **The RMC-Lindsay gauge is a multiple coil, helical bourdon tube type, *restricted for overpressure.***
2. **The pointer is attached directly to the end of the coil, with no linkages or pivots to be affected by vibration.**
3. **Superior techniques in coiling, heat treatment, calibration, and material specification are *new* and *exclusive* with RMC.**
4. **No other gauge can match RMC-Lindsay specifications:**

PRESSURE RANGE: Pressures in ranges 0 to 1,000 p.s.i. up to 15,000 p.s.i. with retard scales available. OVERLOAD PRESSURE: Nominal overload pressure factor of 2.0 times the maximum dial reading (higher factors available). BURST PRESSURE: Normally 3.0 times the maximum dial reading. TEMPERATURE: Not affected by temperatures up to 350°F. VIBRATION: Qualification test report available on pressure tests showing cycling, vibration, to 2,000 cps. at 25 G's, and resonant frequency vibration tests at 25 G's. SHOCK: Data available on MIL-E-5272 shock test. PULSATION: Practically unaffected by line pulsations of 3% of the full dial reading. ENDURANCE: To 250,000 cycles or higher depending on application. ACCURACY: Hysteresis friction and backlash are below readable limits. Absolute gauge accuracy to extremely low limits as required.



Write to either plant, or contact one of the RMC representatives listed at right.

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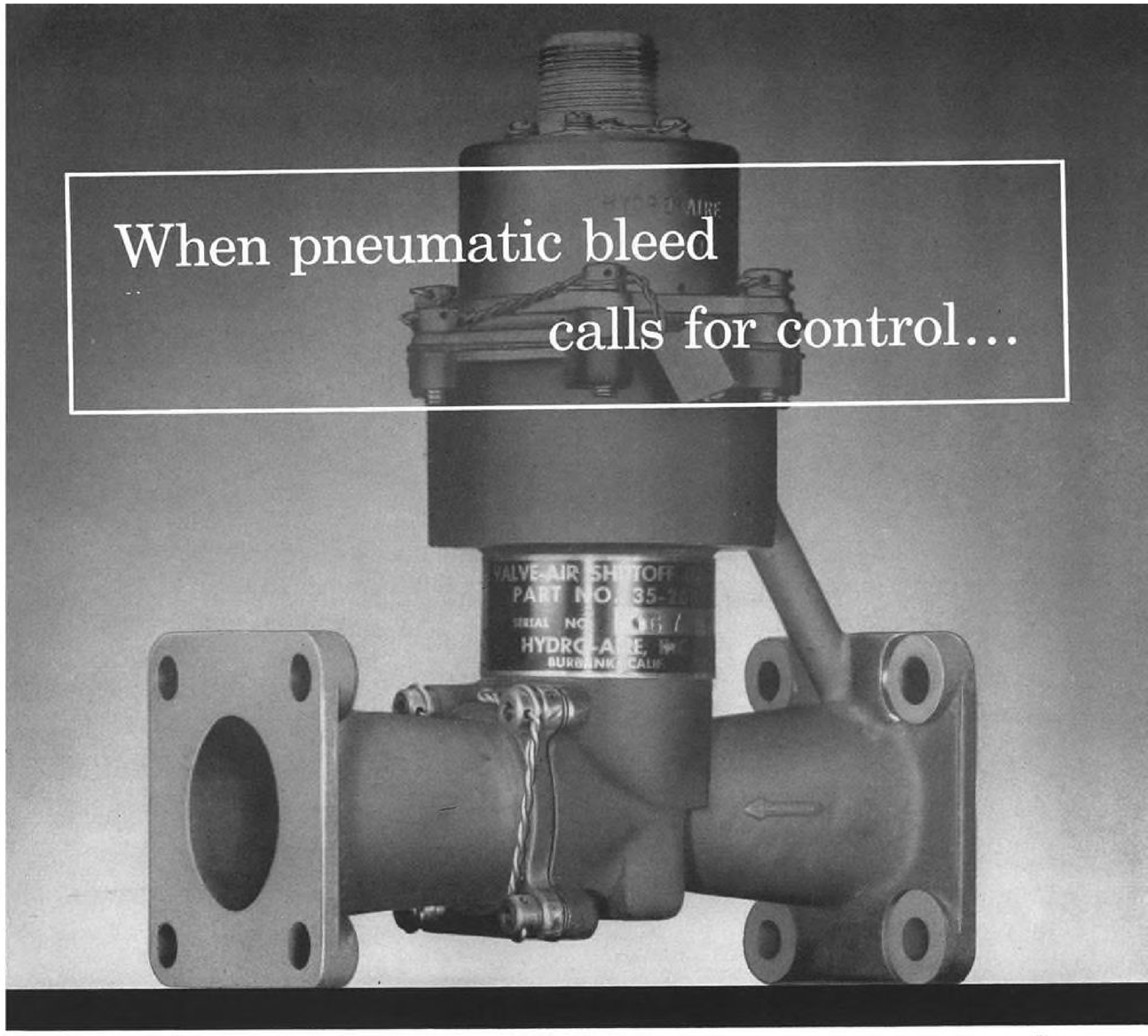
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Motor operated Hot Air Butterfly Valves



Mass Flow Control Valve



Pressure Regulator & Anti-Icing Valve

the answer is right in this family

The featured player on this page is one of the latest additions to Hydro-Aire's family of pneumatic controls: a fast acting (less than a second) D.C. solenoid operated hot air shutoff valve. All dressed up in a precision casting (for low weight), it is ready to handle 250 psig at operating temperatures up to 900 degrees F. Because it is pilot operated, it's easy on current drain, and it can be supplied to fail safe open or closed. Below... some of its distinguished colleagues. If you don't see the one for your requirement, let us know. We're always happy to add to this family.

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BURBANK, CALIFORNIA
Anti-Skid Braking Systems • Fuel System Controls • Pneumatic Controls • Actuation Systems Electronic Devices

Producing Controls for Every Basic Airborne System

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POWER BOOSTED MASTER BRAKE CYLINDERS—HYDRAULIC



4-WAY SOLENOID SELECTOR VALVES—HYDRAULIC



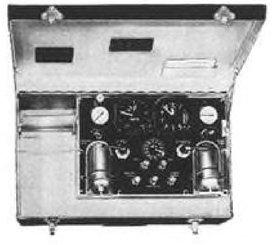
3-WAY SOLENOID SELECTOR VALVES—HYDRAULIC



CONTROLLABLE CHECK VALVES—HYDRAULIC



RESTRICTORS AND CHECK VALVES



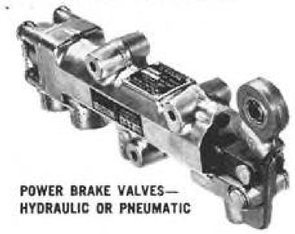
PITOT-STATIC TESTERS



SEQUENCE VALVES—HYDRAULIC OR PNEUMATIC



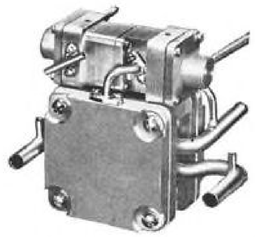
QUADRUPLE 3-WAY SOLENOID SELECTORS—PNEUMATIC OR HYDRAULIC



POWER BRAKE VALVES—HYDRAULIC OR PNEUMATIC



4-WAY SOLENOID SELECTOR VALVES—PNEUMATIC



AUTOPILOT SERVO AMPLIFIERS—PNEUMATIC

MEMO TO AIRCRAFT AND MISSILE DESIGNERS:

Call on Tactair for dependable hydraulic and pneumatic components

Does your job include the design or procurement of hydraulic and pneumatic components for aircraft or missile control systems?

If so, it will pay you to investigate the advantages of working with Tactair. Solving the unusual problem, meeting ultra-critical performance specifications, providing precision, high-pressure, high-performance valves of the utmost dependability is our job. To do this requires a rare combination of creative engineering and specialized manufacturing skills. To these must be added precision equipment and long experience with weapons system components. Tactair has all these essentials.

A wide variety of Tactair valves and components are performing essential functions in today's aircraft and missiles. Typical components produced by Tactair include: solenoid selectors, brake controls, master brake cylinders, sequence valves, manual selectors, controllable checks, restrictors and check valves. Tactair has also developed a servo amplifier for the first completely pneumatic autopilot for business aircraft and is the sole producer of a commercial pitot-static tester—a portable laboratory of indicating instruments that makes possible the flightline testing of pitot and static systems in aircraft.

We welcome the opportunity of assisting you with your next precision valve problem. Every job we do is done on a personalized basis; it has been that way for 18 years. Tactair Valve Division, Aircraft Products Company, Bridgeport, Pa., BRoadway 5-1000.

CONTROL, SELECT, BRAKE, RESTRICT, CHECK... with TACTAIR®

D-176

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Eastern Aviation Hydraulic Pumps set new standards for performance, yet are the smallest, most lightweight ever made.

By meeting customer requirements and government specifications with precise detail, Eastern Pumps give reliable long-term service.

Hundreds of models, close-coupled to electric motors with speeds to 24,000 RPM, can be furnished for your special systems. You gain the advantage of economical mass-produced components custom-engineered into whatever configuration is needed. Performance is from .015 to 1.5 GPM, 0 to 3000 PSIG, with theoretical displacements from .0021 to .0419 cubic inches per revolution. A variety of bearing combinations handle different types of fluid and operating pressures.

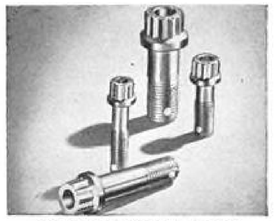
Missile and aircraft system engineers have discovered Eastern Pumps do the same job as units that use greater space and weigh far more. Applications have included circulating coolant in bomber guidance system, providing hydraulic power for ground control of jet, charging accumulator in an in-flight refueling system, furnishing an APU system with power to a missile, and countless others.

For your next project, contact Eastern for creative engineering help that really helps.

Write for NEW Aviation Bulletin 350 describing the above units and larger-capacity pumps.

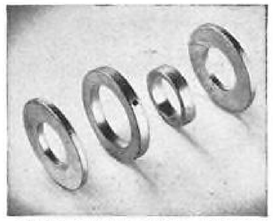
EASTERN INDUSTRIES, INCORPORATED

100 Skiff Street • Hamden 14, Conn. West Coast Office: 1608 Centinela Avenue • Inglewood 3, California



SPS SELF-LOCKING BOLTS WITH NYLOK*

All male-threaded SPS fasteners are available with Nylok self-locking element. Integral nylon pellet assures positive self-locking, eliminates lockwashers, jam nuts, cotter pins, and wiring.



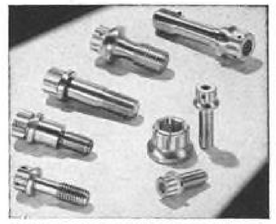
PRELOAD INDICATING WASHERS

PLI washers are more accurate than torque wrenches, assure precisely correct preload. Fastener is tightened properly when compressible inner ring is deformed to same thickness as outer ring. All standard sizes.



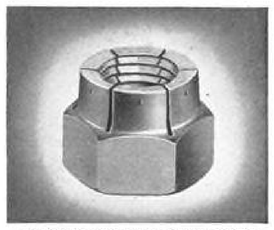
SPS PRESSURE PLUGS

Sizes 1/16 through 1¼ ANPT. Specification MIL-F-5509. Heat treated alloy steel, aluminum alloy, or magnesium. Provide a positive seal without compound. Cadmium or zinc plated. Magnesium plugs unplated.



SPS SPECIAL-DESIGN FASTENERS

Above, special high-strength engine bolts offering tensiles up to 240,000 psi. We are equipped to make special screw machine products as well as fasteners from all appropriate metals and alloys, including titanium.



FLEXLOC SELF-LOCKING NUTS

AN-363, 363C, 365. Sizes 4-40 through 1¼-12. Specifications AN-N-10a, 5b, NAS-1021, MS-20365. Cadmium plated steel (to 550°F); corrosion-resistant steel, silver plated (to 800°F); brass and aluminum. Microsizes #0-4.

More reliable fastening for aircraft and missiles

. . . proved in application

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High Reliability factor

At SPS we apply a dynamic standard of quality —continually refined—so that our fasteners will always have the high reliability factor required by today's faster speeds, higher temperatures, and greater dynamic forces.

This emphasis on reliability has resulted in development of fasteners with increasingly higher strength-to-weight ratios, longer fatigue life, and better resistance to the deteriorating effects of heat. Notable examples include SPS Hi Ti bolts—the first successful titanium fasteners for aircraft; EWB-22 bolts—a 220,000 psi replacement for conventional MS 20004 types; and Hi Tm 9 fasteners—a unique bolt and locknut combination providing 170,000 psi at Mach 3-4 skin temperatures.

For complete information on standard or special SPS fasteners, write Aircraft/Missiles Division, STANDARD PRESSED STEEL CO., Jenkintown **3**, Pa.

SPS **Jenkintown • Pennsylvania**

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*T.M. Reg. U.S. Pat. Off., The Nylok Corporation



SEL-LOK SPRING PINS

.062 through .500 in. nom. diam. Specifications MS 9047, 9048, and 171401 through 171900. Material Specifications AMS 5506, 5120, 5121. Corrosion-resistant or carbon steel, zinc or cadmium plate. Also beryllium copper.



FLEXLOC SELF-LOCKING NUTS, THIN, AN 364

Sizes 6-32 through 1¼-12. Specifications AN-N-5b, NAS-1022, MS-20364. Made of steel, cadmium plated, for service to 550°F. Act as locknuts or stop nuts; lock wherever wrenching stops.



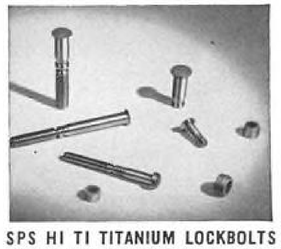
HI-TORQUE 100° FLUSH HEAD SHEAR BOLTS Pat. Nos. 2,677,985; 2,745,120

Sizes 10-32 through ⅜-18. Cadmium plated alloy steel. NAS 498. Also AMS 5735 high-temperature material, 4AL:4Mn and 6AL:4V titanium. Patent recess permits high torquing.



MS 20004 SERIES INTERNAL WRENCHING BOLTS

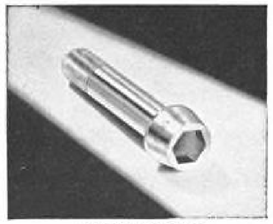
Sizes ¼-28 through 1½-12. Procurement Specification MIL-B-7838. Alloy steel, heat treated to 160,000-180,000 psi. Head-shank fillets cold worked for greatly increased fatigue life.



SPS HI TI TITANIUM LOCKBOLTS

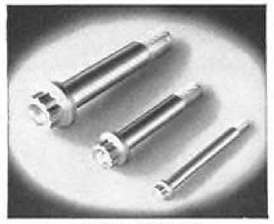
Licensed under the following Huck patents: 2,527,307, 2,531,046, 2,531,049 and 2,754,703

Pull or stump type in variety of grip lengths. Body diameters from 3/16 to 1 in. Protruding or 100° flush head. Help speed production; weigh approx. 43% less than alloy steel counterparts.



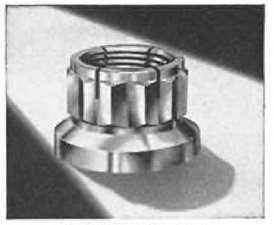
NAS 144 SERIES INTERNAL WRENCHING BOLTS

Sizes ¼-28 through 1½-12. Procurement Specification NAS 159. Made of aircraft alloy steel, heat treated to 160,000-180,000 psi. Threads fully formed by rolling after heat treatment.



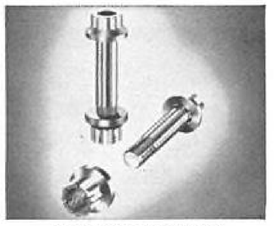
NAS 624 SERIES EXTERNAL WRENCHING BOLTS

Sizes ¼-28 through 1½-12. Aircraft alloy steel, heat treated to 180,000 psi. Plated to your specifications. Similar to MS 20004 Series, but offering higher tensile and fatigue values.



FLEXLOC EXTERNAL WRENCHING LOCKNUTS

42 FW, sizes ¼-28 through 1½-12. Procurement Specifications NAS 353 and others that apply. Aircraft alloy steel. Serve as locknuts or stop nuts. Approved for temperatures up to 550°F.



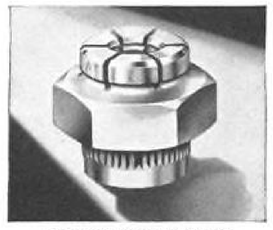
SPS HIGH-STRENGTH AIRFRAME FASTENERS

Hi Psi EWB-22 airframe bolts incorporate new configuration, new materials, new heat treat methods, new thread form; provide 220,000 psi. Use with EWN-22 self-locking nuts.



TORQ-SET 100° FLUSH HEAD SHEAR BOLTS Pat. Nos. 494,726; 558,663

Sizes 10-32 through ⅜-18. Cadmium plated alloy steel. NAS 498. Also AMS 5735 high-temperature material, 4AL:4Mn and 6AL:4V titanium. Patented recess permits high torquing.



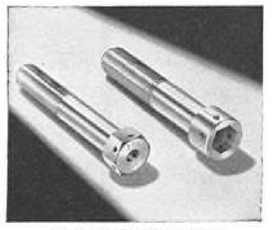
FLEXLOC SELF-LOCKING CLINCH NUTS

Sizes 4-40 through 5/16-24. Cadmium plated steel, rated to 550°F. Also stainless, aluminum and brass. Knurled shank for clinching to thin-section materials. Microsizes 0-80 to 4-48.



FLEXLOC FLW LIGHTWEIGHT, HIGH-STRENGTH LOCKNUTS

Sizes ¼-28 through ½-20. Alloy steel, cadmium plated. Up to 40% lighter than comparable 12-point nuts, yet provide tensile strength (180,000 psi) exceeding MIL-N-25027 minimum.



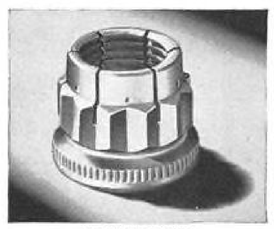
AN STANDARD 6-DIGIT ENGINE BOLTS

All sizes. External hexagon head or internal hexagon socket head types. Made of aircraft alloy steel or corrosion-resistant steel. Supplied with drilled head or with drilled shank.



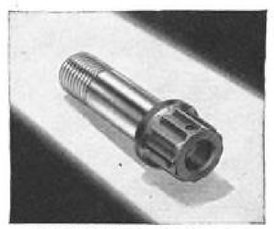
SPS FEATHERWEIGHT LOCKNUTS, FN-12 SERIES

Sizes #4-40 through ⅜-24. Alloy steel, cadmium plated. Specification MIL-N-25027. Up to 72% lighter than comparable locknuts, equal or better strength properties. Rated to 550°F.



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119 FW, sizes 10-32 through ½-20. Corrosion-resistant, stainless steel, silver plated. Withstand temperatures to 1200°F without losing high tensile. Resist galling and seizing.



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High strength bolts offering tensiles to 220,000 psi. Threads fully formed by rolling after heat treat. Available in all the newer alloys, such as AMS 5735. Also made to MS 9038 Series.



SPS HI TI TITANIUM AIRCRAFT BOLTS

43% lighter than comparable steel bolts, yet have higher strength-to-weight ratio and greater fatigue resistance, save up to 1000 lb. per airframe. Tension or shear configurations.



NAS 100° FLUSH HEAD SHEAR BOLTS

Sizes 10-32 through ⅜-18. Procurement Specification NAS 498. Phillips cross recess or internal hexagon head. Cadmium plated alloy steel. Supplied undrilled or with drilled shank.



SPS SLEEV-LOCK BLIND FASTENERS

Sizes 3/16 through ⅜ in. diameter in 1/16 in. grip increments. NAS 1059. Hex head or 100° flush head. Alloy steel, stainless or titanium. Can be removed without drilling and reused.



NAS INTERNAL WRENCHING LOCKNUTS

Sizes ¼-28 through 1¼-12. Procurement Specification AN-N-5, except as noted on NAS 353. Aircraft alloy steel, cadmium plated. Positive locking provided by two nonmetallic plugs.



SPS EWB HI TM 9 HIGH-TEMPERATURE FASTENERS

Provide 170,000 psi tensile at 900°F. Resist deteriorating effects of long exposure to heat. Bolt is made of 5% chrome die steel; nut of AMS 6304 material. Diameters from ¼ to 1½ in.

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the MOST COMPLETE LINE of Sealing and Caulking Compounds in America

PRODUCT	RECOMMENDED APPLICATIONS	CHARACTERISTICS
108 Smoothing Compound	To provide efficient aerodynamic smoothness by eliminating surface irregularities. For use on recessed bolt and rivet patterns and along non-flush butt joints. Complies with Specification BMS-5-13B.	Two-component, chemically curing type compound. Curing has excellent adhesion under all weather and temperature extremes. Good flexibility. Excellent resistance to aromatic fuels and oils. Can be sanded to feather edge. Stands high-frequency vibration stresses.
193.1 High Temperature	Used as surface seal on de-icer ducts of aircraft wings. High-temperature pressure seal and gasketing material. Complies with Specification BMS-5-18, Type 11.	Solvent release plus heat cure. Does not become thermoplastic up to 350°F. Does not become brittle at —65°F. Good adhesion to clean metal surfaces after cure. Good resistance to oils, weathering, aromatic fuels, water, and impact.
217.5 Metal Putty	Used as smoothing or fairing compound to fill irregularities in aircraft skin components. Can be used as heat resistant coating. Can be sanded and polished after cure.	Air-drying type cure. Good resistance to water, water vapor, aromatic fuels, hydraulic fuels, bases and acids. Dries rapidly to a tough, resilient mass.
218 Aerodynamic Compound	Structural adhesive on missiles and air frame components. Void or seam filling compound where flexibility is not necessary. Applications where compressive strength at high temperatures is an absolute requisite.	Two-component material, chemically cured without addition of heat. Excellent adhesion to metal, excellent compressive strength at 500°F. Very hard and rigid after cure. Good resistance to milk acids and bases, aromatic solvents and fuels, oils and water.
195.32 Top Coat	Used as protective coating for integral fuel tank sealants. As secondary corrosion resistant coating for inside integral tanks. Complies with Specification MIL-S-4383B.	Air-drying type cure. Excellent resistance to aromatic fuels, oils, water and weather. Good physical resistance to shock, abrasion, heat and cold.
590 Series Oil Resistant Sealer	Used as faying surface seal on metal lap joints. As a sealer for glass and acrylic window enclosures in pressurized areas. Complies with MIL-S-7124, MIL-S-7126, MIL-P-8116, MIL-S-11030B, BMS-5-1.	Non-curing, plastic, available in extruded beads and tapes, and in bulk. Excellent resistance to water, gasoline, aromatic fuels and oils. Flexible at high and low temperatures.
1094 Hole Filling Compound	Used as light weight hole and gap filler in the interior structure of aircraft fuselage. Complies with BMS-5-16.	Two-component, room-temperature curing type. During application, material will not flow or sag from filled hole even in vertical position. Excellent resistance to water, gasoline, aromatic fuels and oils. Flexible at high and low temperatures.
1150 Potting Compound	For use as rigid encapsulating or potting compound where low viscosity characteristics are necessary.	Low viscosity, two-component material which chemically cures at room temperature, easily pours into connectors or encapsulating molds.
1100 Tank Sealant	Pressure Cabin Sealing Compound. Complies with MIL-S-7124.	Two-component, chemically-cured compound which needs no additional heat to set up. Maintains a water-tight, pressure-tight seal when applied to seams of fuselage skins. Excellent fuel resistance, good flexibility under all weather extremes. Non-sag.
1156 Potting Compound	Electrical potting compound for use in electronic connectors and components as a rubber-like dielectric cushion to seal against water, fuels, and foreign particles. Complies with MIL-S-8516B.	Two-component, chemically-cured compound, needs no additional heat to set up. Good adhesion to connector components and wires. Resilient rubber-like cure. High insulation resistance, surface and volume resistivity, and dielectric constant values. Pourable consistency.
1170 Class A Class B Integral Fuel Tank Sealant	For use in integral fuel tanks, for pressure cabin sealing, for window sealing and for access door sealing. Complies with MIL-S-7502B. Class A, ¼, ½, 2, 4. Class B, ¼, ½, 2, 4, 8, 12.	Two-Component, chemical cure. Excellent adhesion to primed and unprimed metal surfaces. Excellent salt water, aromatic fuel resistance. Both brush grade and non-sag gun grade. Excellent flexibility at high and low temperatures. Good tensile strength and elongation.

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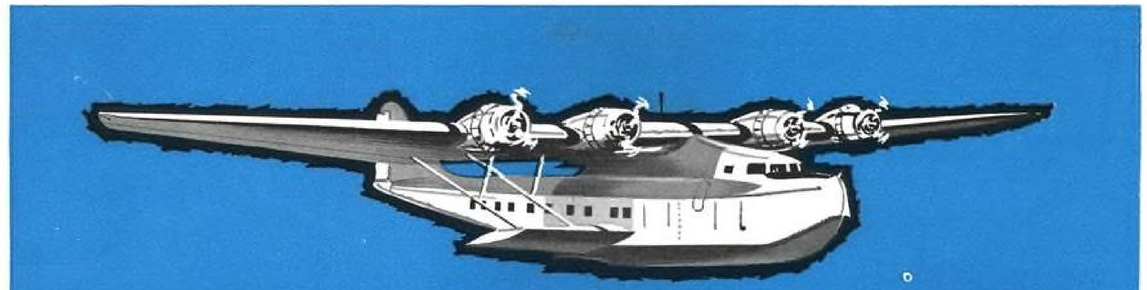
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Back in 1942, sealants based on THIOKOL polymers were used to seal the gas tanks of the then-giant China Clipper . . . permitting storage of the enormous quantity of fuel needed to fly the vast Pacific.

Through the years, their availability has made possible ever-new aircraft design and construction techniques.

Today, virtually every commercial airplane produced goes airborne with several hundred pounds of THIOKOL liquid polymer base sealants in its wings, fuselage and cabins.

Their super adherence to aluminum and other aircraft building materials under normal flight stress . . . their high resistance to ozone, moisture, gasoline, oil and temperature extremes . . . these characteristics suit them ideally to the sealing of fuel tank seams, body seams and joints — both exterior and interior.

As the jet age in commercial flight comes closer . . . introduced by great aircraft like the Boeing 707 Stratoliner . . . THIOKOL liquid polymer base sealants help to enlarge man's mastery of time and distance.



TO THE BOEING 707

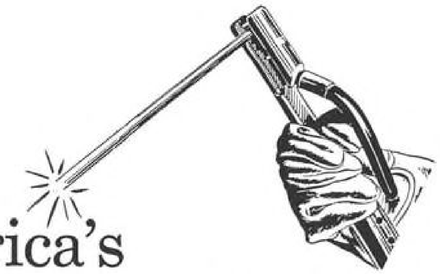
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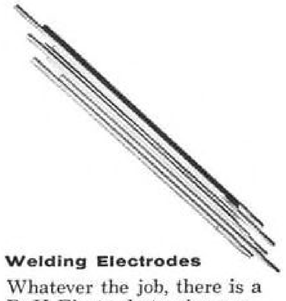
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For faster, economical downhand welding. Standard models have 360° rotation, 135° tilt, and power elevation, enabling largest weldments to be handled with ease. Capacities from 100 to 100,000 lbs.



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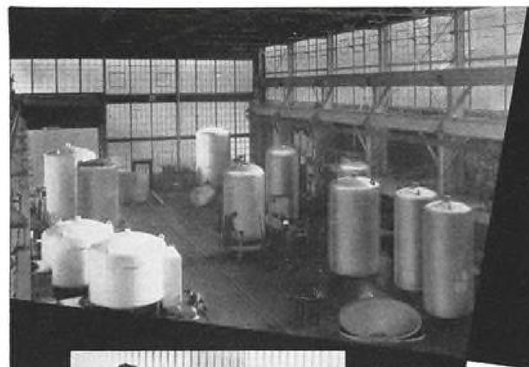
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- The simplest, most economical way to transmit power drive or remote control to instruments or parts, REGARDLESS OF LOCATION OR OBSTACLES!
- A complete range of sizes supplied complete, ready to install, ready to go to work for you!
- Only one part...for easier installation, easier servicing, lower production and maintenance costs!

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- Where space limitations prevent a direct connection, S.S.White Angle Adapters make it easy to attach flexible shafts to parts.
- Available in 90°, 135° and straight styles for remote control or power-drive applications.

WRITE FOR BULLETIN 5403





PRESSURE BULKHEAD FITTINGS

- To assure an effective air seal when flexible shaft controls pass through bulkheads of pressurized cabins.
- Low operating torque, lightweight, maintain excellent pressure tightness.

WRITE FOR BULLETIN 5403





MECHANICAL SCREW JACKS

- For use with flexible shafts or direct motor drive.
- Provide safe operating axial load of 390 lbs.
- Precision made, lightweight, minimum end shake.

WRITE FOR BULLETIN 5403





easy to apply, easy to remove

PROTECTIVE PLASTIC PLUGS AND CAPS

- Protect openings and studs against damage, dirt, dampness, loss of lubricants.
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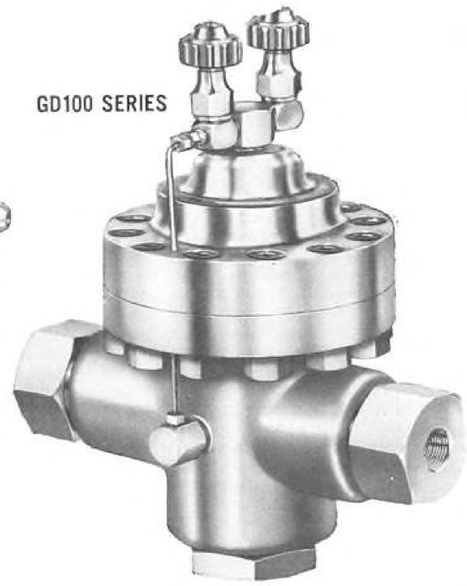


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GD60 AND 80 SERIES



GD100 SERIES



GD700 SERIES

Control gases safely, accurately

to 15,000 psi and 200,000 scfh with

VICTOR REGULATORS

You get precise regulation of high pressure gases with large flow rates, because Victor employs gas pressure to control the regulating diaphragm. The result is accurate delivery from 5 to 15,000 psi with inlet pressures to 15,000 psi . . . plus ability to obtain flows in excess of 200,000 scfh at maximum inlet and outlet pressures. Chart below shows operating range of standard models.

MODEL NO.	MAX. INLET PSI	MAX. OUTLET PSI	FEATURES	MAX. FLOW SCFH
GD10	3,600	500	Single adjustment regulator control	15,000
GD30	2,500	2,500	Load & bleed valve control	25,000
GD31	3,600	3,600	Load & bleed valve control	36,000
GD61C	2,500	2,500	Load & bleed valve control	10,000
GD62C	3,600	3,600	Load & bleed valve control	12,000
GD65	6,000	6,000	Load & bleed valve control	15,000
GD65C	7,000	7,000	Load & bleed valve control	15,000
GD80A	5,000	5,000	Load & bleed valve control	30,000
GD81A	10,000	10,000	Load & bleed valve control	50,000
GD86R	10,000	10,000	For remote control only	75,000
GD100R	6,000	6,000	For remote control only	240,000
GD100	6,000	6,000	Load & bleed valve control	240,000
GD700	7,000	7,000	Single adjustment regulator control; self relieving	15,000
SR10	3,600	1,000	Small, spring loaded regulator	200
LR20B	7,000	7,000	Spring loaded regulator; self relieving	120

Operating temperature range: −67° F. to +250° F.

. . . Yours for the asking
Take advantage of Victor's long experience with high pressure gas regulation to help solve your special problems involving flow rates, delivery pressures, corrosive fluids and temperature compensation. Write, wire or phone us today. No obligation.

All models listed are field proved. Most are designed for panel mounting or remote control. They regulate all non-corrosive gases, including oxygen. Stainless steel models available for corrosive gases and pressures above 10,000 psi. For complete specifications, write for Victor High Pressure Regulator sheets.

VICTOR for regulators

VICTOR EQUIPMENT COMPANY

Mfrs. of High Pressure and Large Volume Gas Regulators; welding & cutting equipment; hardfacing rods; blasting nozzles; cobalt & tungsten castings; straight-line and shape cutting machines.

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GROUND SUPPORT EQUIPMENT

AND TEAMWORK

G·S·E·

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Weatherhead capability is founded in a history of successful development and production of hydraulic and fluid system components. Such experience is hard to come by, especially with the accelerated complexities of the missile age, where "teamwork" becomes the other side of "know-how."

If you're in GSE or missile design, development or manufacture, call Weatherhead for teamwork . . . today!

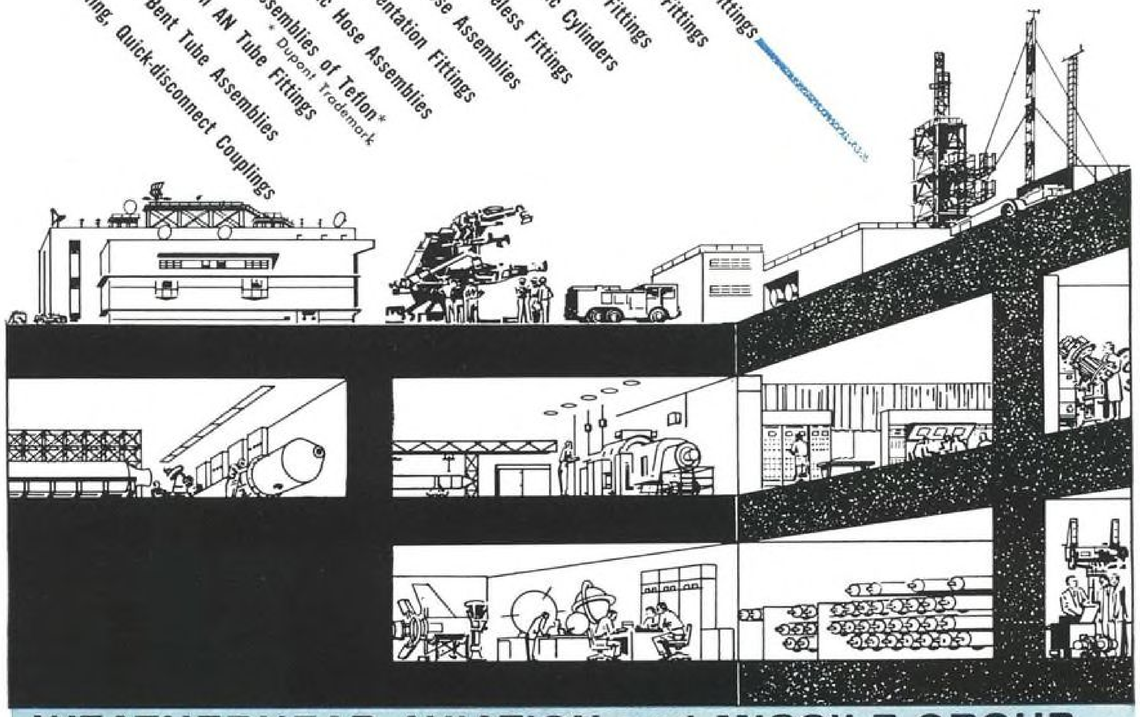
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3 ways to design flexibility into tension ducting systems

Arrowhead has concentrated on the development of all three types of stainless steel flexible bellows units. Each design has been refined to its ultimate in efficiency for its size and weight. Compare all three. They are Arrowhead's answers to your problems of flexibility in a tension ducting system.

Compare all these factors



PRODUCT	TIE-ROD	GIMBAL JOINT	PIN JOINT
TENSION MEMBER	Struts and linkage	Gimbal ring	Side pin hinge
ENVELOPE SIZE	Smallest	Largest	Medium
WEIGHT	Low	Heavier	Low
PRESSURE DROP	Approx. 7x△P St. Tube	Approx. 3x△P St. Tube	Approx. 2½x△P St. Tube
FLEXIBILITY	Angular movement in all directions.	Angular movement in all directions.	Movement in one plane only. Absorbs load on axis perpendicular to deflection.
DEFLECTION FORCE	Lowest	Low	Low

The relationships above will vary with combined factors of temperature, pressure and size.
A fourth tension device – Arrowhead braided bellows – was not compared because of the wide variation in its characteristics according to its length.

Arrowhead tie-rods, gimbal joints and pin joints are available in all aircraft ducting sizes. Designed to meet the most stringent aircraft requirements.

Write for complete information and technical data.

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Division of Federal-Mogul-Bower Bearings, Inc.

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Cornelius

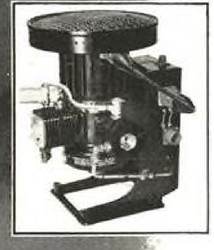
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It's no mere coincidence that Cornelius has manufactured more airborne compressors than all other makes combined – in fact, of all aircraft carrying compressors, 98% use Cornelius.

Engineers who specify them tell us the reason is clear: *Cornelius compressors have what it takes – efficiency-wise and performance-wise*. Model for model, they are the smallest, lightest and coolest running of any made. Cornelius compressors give you a choice of hydraulic, AC, DC, or engine drive. Some models weigh only 9 pounds *complete with motor*. They will deliver from 0.5 to 10 SCFM at pressures up to 3000 PSI, through a full range of altitudes and temperatures. 5000 PSI models are also available for special applications.

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THE Cornelius COMPANY

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*Photographs show but 10 of the 36 different Cornelius compressors available.

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Extremely high horsepower-to-weight ratio combined with exceptionally high efficiency.



Surge Valves
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A complete line of hydraulic pumps and motors ranging from 0.06 to 1.77 cubic inches per revolution (c.i.p.r.) with variable or constant delivery.

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Fluid Motors
Reversible, capable of high speeds and temperatures.

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Manufacturers of hydraulic components and hydraulic systems for the aircraft and missile industries.

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WIRE, ANTENNA

(*Continued from page* D-157)

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Page Steel & Wire Div., American Chain & Cable Co., Inc., P. O. Box 692, Monessen, Pa.
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Wire, Brass

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Wire, Ceramic Insulated

Aero Research Instrument Co., 315 N. Aberdeen St., Chicago 7, Ill.
Allied Wire & Cable Co., Inc., 139 Grand St., New York 13, N. Y.
Atlantic & Pacific Wire & Cable Co., 137 Grand St., New York 13, N. Y.
Consolidated Electrodynamics Corp., 300 N. Sierra Madrevilla, Pasadena 15, Calif.
Hitemp Wires Inc., 1200 Shames Dr., Westbury, N. Y.
Phelps Dodge Copper Products Corp., 300 Park Ave., New York 22, N. Y.
Rea Magnet Wire Co., Inc., 3610 East Pontiac St., Fort Wayne 4, Ind.
Secon Metals Corp., 7 Intervale St., White Plains, N. Y.
Sequoia Wire & Cable Co., 2950 N. Ontario St., Burbank, Calif.
Sequoia Wire & Cable Co., 2201 Bay Rd., Redwood City, Calif.
Sprague Electric Co., North Adams, Mass.
STANDARD WIRE & CABLE CO., 3440 Overland Ave., Los Angeles 34, Calif. SEE ADV. C-104
Tensolite Insulated Wire Co. Inc., West Main St., Tarrytown, N. Y.
Warren Wire Co., Pownal, Vt.
Western International Co., 45 Vesey St., New York, N. Y.

Wire, Copper

Allied Wire & Cable Co., Inc., 139 Grand St., New York 13, N. Y.
Almo Radio Co., 913 Arch St., Philadelphia, Pa.
Alpha Wire Corporation, 200 Varick St., New York 14, New York
Amalgamated Electric Corp., 46 Elgin St., Ottawa, Ontario, Canada
The American Brass Co., Waterbury, Conn.
American Electric Cable Co., 181 Appleton St., Holyoke, Mass.
American Steel & Wire Div., United States Steel Corp., Rockefeller Bldg., Cleveland 13, Ohio
Atlantic & Pacific Wire & Cable Co., 137 Grand St., New York 13, N. Y.
Belden Mfg. Co., 4647 West Van Buren St., Chicago 44, Ill.
Berkshire Electric Cable Co., Main St., Leeds, Mass.
Bowsteel Dist. Canada, Ltd., 7001 Cote des Neiges Rd., Montreal, Quebec, Canada
Bram Metallurgical-Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Chester Cable Corp., Sub. of Miami Copper Co., Chester, N. Y.
Copperweld Steel Co., Wire Cable Div., Glassport, Pa.
Eaton Mfg. Co., Reliance Div., 25 Charles Ave., S. E., Massillon, Ohio
ELECTRIC AUTO-LITE CO., WIRE & CABLE DIV., Port Huron, Mich. SEE ADV. D-158
THE ELECTRIC AUTO-LITE CO., Toledo 1, Ohio. SEE ADV. D-158
General Gable Corp., 420 Lexington Ave., N.Y. 17, N.Y.
The Gilbert & Bennett Mfg. Co., Georgetown, Conn.
Industrial Products, Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
New England Electrical Works, Inc., 365 Main St., Lisbon, N. H.
Okonite Co., The, Passaic, N. J.
Olin Mathieson Chemical Corp., 460 Park Ave., New York 22, N. Y.
Packard Elec. Div., General Motors Corp., Warren, Ohio
Phelps Dodge Copper Products Corp., 300 Park Ave., New York 22, N. Y.
Rea Magnet Wire Co., Inc., 3610 East Pontiac St., Fort Wayne 4, Ind.
Reynolds Wire Div., National Standard Co., Dixon, Ill.
Riverside-Alloy Metal Div., H. K. Porter Co., Inc., Riverside, N. J.
Rome Cable Corp., Rome, N. Y.
Sanders Associates, Inc., 95 Canal St., Nashua, N. H.
Sequoia Wire & Cable Co., 2950 N. Ontario St., Burbank, Calif.
STANDARD WIRE & CABLE CO., 3440 Overland Ave., Los Angeles 34, Calif. SEE ADV. C-104
Sylvania Electric Products Inc., 1740 Broadway, New York 19, N. Y.
U. S. Steel Corp., 525 William Penn Pl., Pittsburgh 30, Pa.
Warren Wire Co., Pownal, Vt.
Western International Co., 45 Vesey St., N.Y.C.
Whitaker Cable Corp., 1301 Burlington St., North Kansas City 16, Mo.
Wickwire-Spencer Steel Div., Colorado Fuel & Iron Corp., The, 575 Madison Ave., New York, N. Y.

Wire, Insulated

Allied Wire & Cable Co., Inc., 139 Grand St., New York 13, N. Y.
Almo Radio Co., 913 Arch St., Philadelphia, Pa.
Alpha Wire Corporation, 200 Varick St., New York 14, New York
Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.
Amalgamated Electric Corp., 46 Elgin St., Ottawa, Ontario, Canada
The Ame Wire Co., New Haven, Conn.
American Electric Cable Co., 181 Appleton St., Holyoke, Mass.
American Steel & Wire Div., United States Steel Corp., Rockefeller Bldg., Cleveland 13, Ohio
Amphenol Canada Ltd., 300 Campbell Ave., Toronto 9, Ontario, Canada
AMPHENOL ELECTRONICS CORP., 1830 South 54th Ave., Chicago 50, Ill. SEE ADV. C-106
Atlantic & Pacific Wire & Cable Co., 137 Grand St., New York 13, N. Y.
Belden Mfg. Co., 4647 West Van Buren St., Chicago 44, Ill.
Berkshire Electric Cable Co., Main St., Leeds, Mass.
Boston Insulated Wire & Cable Co., 65 Bay St., Dorchester 25, Mass.
William Brand & Co., Inc., 106 Valley St., Willimantic, Conn.
Chester Cable Corp., Sub. of Miami Copper Co., Chester, N. Y.
Cornish Wire Co. Inc., 50 Church St., New York 7, N. Y.
Driver-Harris Co., 201 Middlesex St., Harrison, N. J.
ELECTRIC AUTO-LITE CO., WIRE & CABLE DIV., Port Huron, Mich. SEE ADV. D-158
THE ELECTRIC AUTO-LITE CO., Toledo 1, Ohio. SEE ADV. D-158
Essex Wire Corp., 1601 Wall St., Fort Wayne 6, Ind.
General Cable Corp., 420 Lexington Ave., New York 17, N. Y.
General Electric Co., 1285 Boston Ave., Bridgeport, Conn.
Haveg Industries, Inc., 900 Greenbank Rd., Wilmington 8, Del.
Hitemp Wires Inc., 1200 Shames Dr., Westbury, N. Y.
LEWIS ENGINEERING CO., 52 Rubber Ave., Naugatuck, Conn. SEE ADV. C-102
National Electric Prods. Corp., 140 Stanwix St., Pittsburgh 22, Pa.
New England Electrical Works, Inc., 365 Main St., Lisbon, N. H.
Packard Elec. Div., General Motors Corp., Warren, Ohio
Phelps Dodge Copper Products Corp., 300 Park Ave., New York 22, N. Y.
Phalo Plastics Corp., 530 Boston Turnpike, Shrewsbury, Mass.
Rea Magnet Wire Co., Inc., 3610 East ,Pontiac St., Fort Wayne 4, Ind.
Rockbestos Products Corp., Nicoll & Canner Sts., New Haven 4, Conn.
Rome Cable Corp., Rome, N. Y.
Royal Electric Corp., International Tel. & Telegraph Corp., 95 Grand Ave., Pawtucket, R. I.
Sanders Associates, Inc., 95 Canal St., Nashua, N. H.
Sequoia Wire & Cable Co., 2950 N. Ontario St., Burbank, Calif.
Sequoia Wire & Cable Co., 2201 Bay Rd., Redwood City, Calif.
Sigmund Cohn Corp., 121 S. Columbus Ave., Mt. Vernon, N. Y.
STANDARD WIRE & CABLE CO., 3440 Overland Ave., Los Angeles 34, Calif. SEE ADV. C-104
Surprenant Mfg. Co., 172 Sterling St., Clinton, Mass.
Tensolite Insulated Wire Co. Inc., West Main St., Tarrytown, N. Y.
U. S. Steel Corp., 525 William Penn Pl., Pittsburgh 30, Pa.
Warren Wire Co., Pownal, Vt.
Western International Co., 45 Vesey St., New York, N. Y.
Whitaker Cable Corp., 1301 Burlington St., North Kansas City 16, Mo.

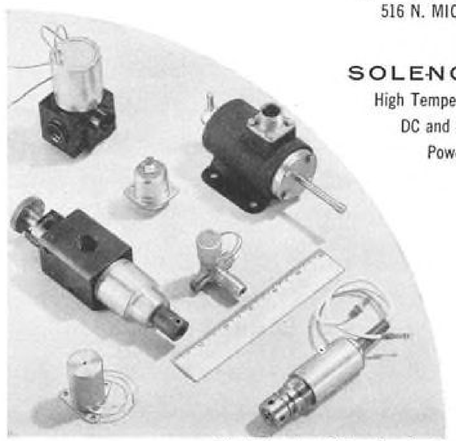
Wire, Insulated High Temperature

The Aero-Marine Development Corp., 110 Summit Ave., Chatham, N. J.
Aero Research Instrument Co., 315 N. Aberdeen St., Chicago 7, Ill.
Airconductors, 367 East Olive, Gardena, Calif.
Allied Wire & Cable Co., Inc., 139 Grand St., New York 13, N. Y.
Alpha Wire Corporation, 200 Varick St., New York 14, New York
Amalgamated Electric Corp., 46 Elgin St., Ottawa, Ontario, Canada
Almo Radio Co., 913 Arch St., Philadelphia, Pa.
American Electric Cable Co., 181 Appleton St., Holyoke, Mass.
American Steel & Wire Div., United States Steel Corp., Rockefeller Bldg., Cleveland 13, Ohio
Amphenol Canada Ltd., 300 Campbell Ave., Toronto 9, Ontario, Canada
AMPHENOL ELECTRONICS CORP., 1830 South 54th Ave., Chicago 50, Ill. SEE ADV. C-106
Atlantic & Pacific Wire & Cable Co., 137 Grand St., New York 13, N. Y.
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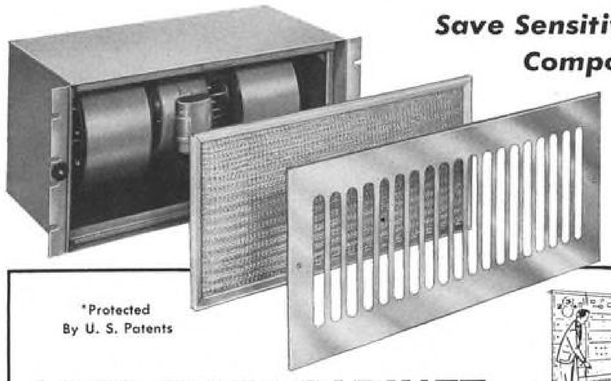


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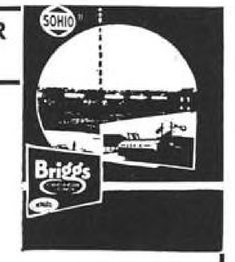
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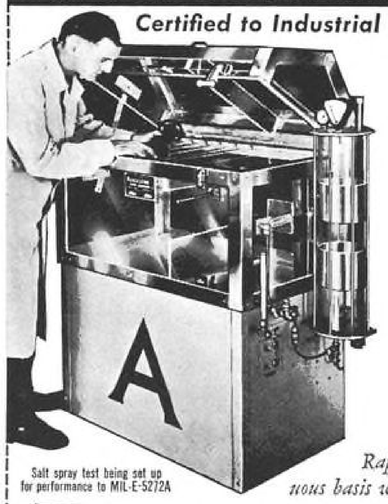
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Copperweld Steel Co., Wire & Cable Div., Glassport, Pa.
Cornish Wire Co., Inc., 50 Church St., N. Y. 7, N. Y.
ELECTRIC AUTO-LITE CO., WIRE & CABLE DIV., Port Huron, Mich. SEE ADV. D-158
THE ELECTRIC AUTO-LITE CO., Toledo 1, Ohio. SEE ADV. D-158
Essex Wire Corp., 1601 Wall St., Fort Wayne 6, Ind.
General Cable Corp., 420 Lexington Ave., New York 17, N. Y.
General Electric Co., 1285 Boston Ave., Bridgeport, Conn.
Haveg Industries, Inc., 900 Greenbank Rd., Wilmington 8, Del.
Hitemp Wires Inc., 1200 Shames Dr., Westbury, N. Y.
Inso Products, Ltd., 404 Fifth Ave., N. Y. 18, N. Y.
LEWIS ENGINEERING CO., 52 Rubber Ave., Naugatuck, Conn. SEE ADV. C-102
Packard Elec. Div., General Motors Corp., Warren, Ohio
Phelps Dodge Copper Products Corp., 300 Park Ave., New York 22, N. Y.
Rea Magnet Wire Co., Inc., 3610 East Pontiac St., Fort Wayne 4, Ind.
REVERE CORP. OF AMERICA, 845 North Colony Rd., Wallingford, Conn. SEE ADV. B-38
Rockbestos Products Corp., Nicoll & Canner Sts., New Haven 4, Conn.
Rome Cable Corp., Rome, N. Y.
Royal Electric Corp., International Tel. & Telegraph Corp., 95 Grand Ave., Pawtucket, R. I.
Sanders Associates, Inc., 95 Canal St., Nashua, N. H.
Secon Metals Corp., 7 Intervale St., White Plains, N. Y.
Sequoia Wire & Cable, 2950 N. Ontario St., Burbank, Calif.
Sequoia Wire & Cable Co., 2201 Bay Rd., Redwood City, Calif.
STANDARD WIRE & CABLE CO., 3440 Overland Ave., Los Angeles 34, Calif. SEE ADV. C-104
Surprenant Mfg. Co., 172 Sterling St., Clinton, Mass.
Tensolite Insulated Wire Co. Inc., West Main St., Tarrytown, N. Y.
Warren Wire Co., Pownal, Vt.
Western International Co., 45 Vesey St., N.Y.C.
Wright, P. M., Electrical Co., 1327 Dorchester St., W., Montreal 25, Quebec, Canada

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Belmont Smelting & Refining Wks. Ind., 330 Belmont Ave., Brooklyn 7, N. Y.
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Division Lead Co., 7742 W. 61 Pl., Summit, Ill.
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Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York, N. Y.
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Wire, Locking

American Steel & Wire Div., United States Steel Corp., Rockefeller Bldg., Cleveland 13, Ohio
Arnav Fitting Corp., 32 Industrial Ave., Little Ferry, N. J.
CONTINENTAL MOTORS CORP., AIRCRAFT ENGINE DIV., Muskegon, Mich. SEE ADV. A-52
Crucible Steel Co. of America, Henry W. Oliver Bldg., Mellon Sq., Pittsburgh 30, Pa.
Wilbur B. Driver Co., 1875 McCarter Hwy., Newark 4, N. J.
Garron Aircraft Supply, Inc., 5 Union Square, New York 3, N. Y.
New England Electrical Works, Inc., 365 Main St., Lisbon, N. H.
Page Steel & Wire Div., American Chain & Cable Co., Inc., P. O. Box 692, Monessen, Pa.
Riverside-Alloy Metal Div., H. K. Porter Co., Inc., Riverside, N. J.
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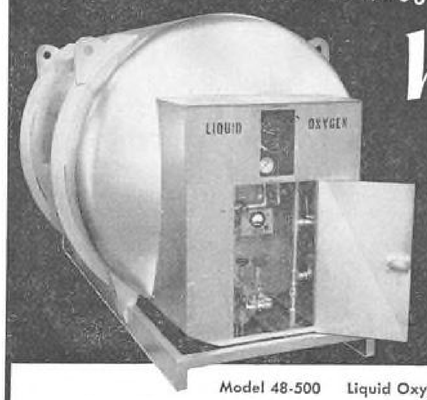
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Wilbur B. Driver Co., 1875 McCarter Hwy., Newark 4, N. J.
ELECTRIC AUTO-LITE CO., WIRE CABLE DIV., Port Huron, Mich. SEE ADV. D-58
International Nickel Co., Inc., The, 67 Wall St., New York 5, N. Y.
A. D. Mackay, Inc., 198 Broadway, New York 38, N. Y.
Reynolds Wire Div., National Standard Co., Dixon, Ill.
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Secon Metals Corp., 7 Intervale St., White Plains, N. Y.
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Wright, P. M., Electrical Co., 1327 Dorchester St., W., Montreal 25, Quebec, Canada

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Almo Radio Co., 913 Arch St., Philadelphia, Pa.
Amalgamated Electric Corp., 46 Elgin St., Ottawa, Ontario, Canada
American Steel & Wire Div., United States Steel Corp., Rockefeller Bldg., Cleveland 13, Ohio
AMERICAN SUPER-TEMPERATURE WIRES, INC., 24 W. Canal St., Winooksi, Vt. SEE ADV. C-94
Amphenol Canada Ltd., 300 Campbell Ave., Toronto 9, Ontario, Canada
Belden Mfg. Co., 4647 West Van Buren St., Chicago 44, Ill.
J. Bishop & Co. Platinum Works, Malvern, Pa.
Bram Metallurgical-Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
Bulova Res. & Devel. Labs., Inc., 62-10 Woodside Ave., Woodside 77, N. Y.
Cadre Industries Corp., P. O. Box 150, Endicott, New York
Chester Cable Corp., Sub. of Miami Copper Co., Chester, N. Y.
Copperweld Steel Co., Wire & Cable Div., Glassport, Pa.
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Wilbur B. Driver Co., 1875 McCarter Hwy., Newark 4, N. J.
General Cable Corp., 420 Lexington Ave., New York 17, N. Y.
Haynes Stellite Co. Div., Union Carbide Corps., General Office & Works, Kokomo, Ind.
International Nickel Co., Inc., The, 67 Wall St., New York 5, N. Y.
A. D. Mackay, Inc., 198 Broadway, New York 38, N. Y.
New England Electrical Works, Inc., 365 Main St., Lisbon, N. H.
Page Steel & Wire Div., American Chain & Cable Co., Inc., P. O. Box 692, Monessen, Pa.
Republic Steel Corp., 1441 Republic Bldg., Cleveland 1, Ohio
Riverside-Alloy Metal Div., H. K. Porter Co., Inc., Riverside, N. J.
Secon Metals Corp., 7 Intervale St., White Plains, N. Y.
Sigmund Cohn Corp., 121 S. Columbus Ave., Mt. Vernon, N. Y.
STANDARD WIRE & CABLE CO., 3440 Overland Ave., Los Angeles 34, Calif. SEE ADV. C-104
Surprenant Mfg. Co., 172 Sterling St., Clinton, Mass.
Tensolite Insulated Wire Co. Inc., West Main St., Tarrytown, N. Y.
Thermo Electric Co., Inc., Saddle Brook, N. J.
U. S. Steel Corp., 525 William Penn Pl., Pittsburgh 30, Pa.
Western International Co., 45 Vesey St., New York, N. Y.

Wire, Piano

American Steel & Wire Div., United States Steel Corp., Rockefeller Bldg., Cleveland 13, Ohio
Surprenant Mfg. Co., 172 Sterling St., Clinton, Mass.
U. S. Steel Corp., 525 William Penn Pl., Pittsburgh 30, Pa.

Wire, Precious Metal

American Silver Co., Inc., 36-07 Prince St., Flushing, N. Y.
J. Bishop & Co. Platinum Works, Malvern, Pa.
Bram Metallurgical-Chemical Co., 820 65th Ave., Philadelphia 26, Pa.
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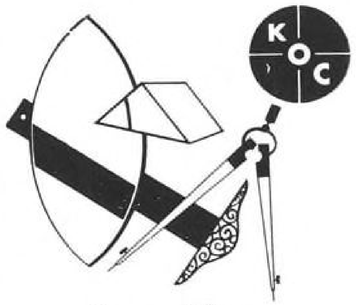
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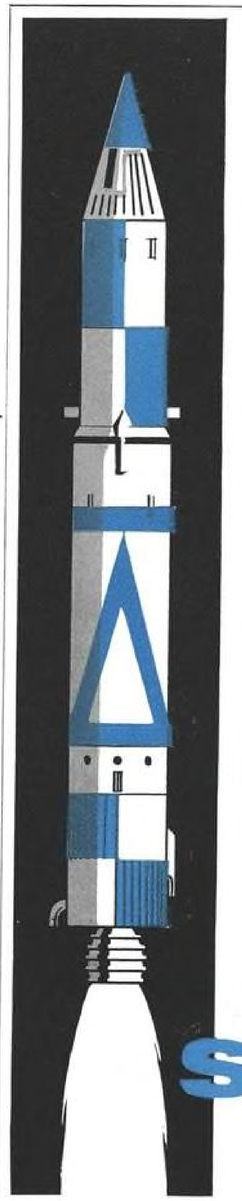
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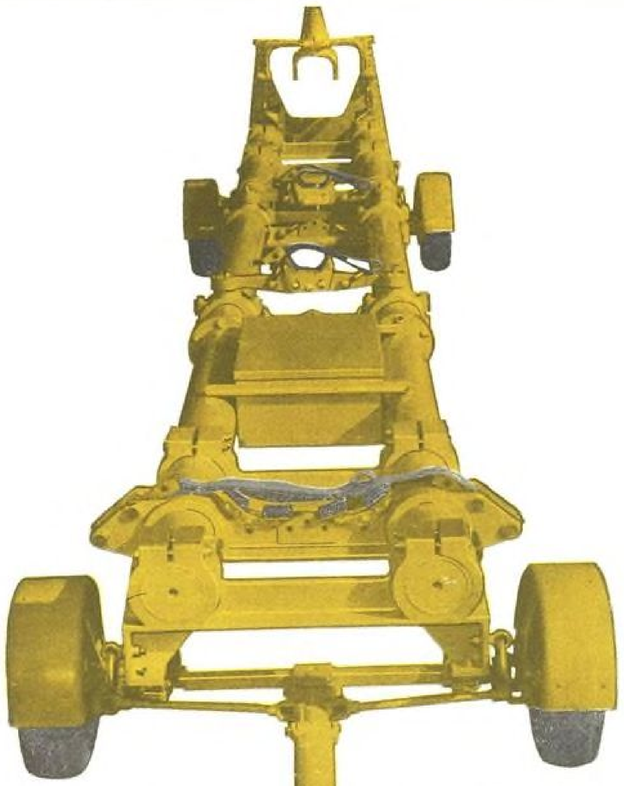
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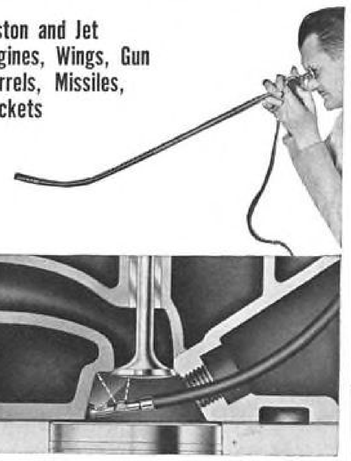
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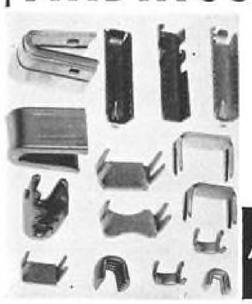
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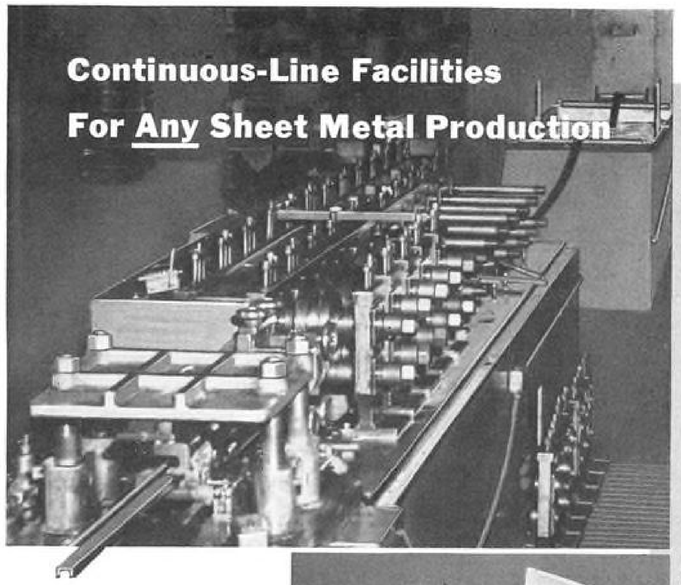
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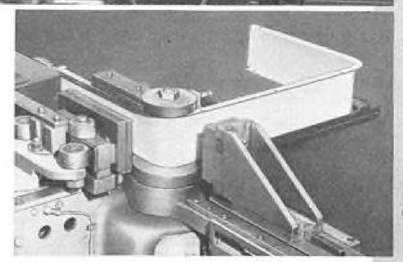


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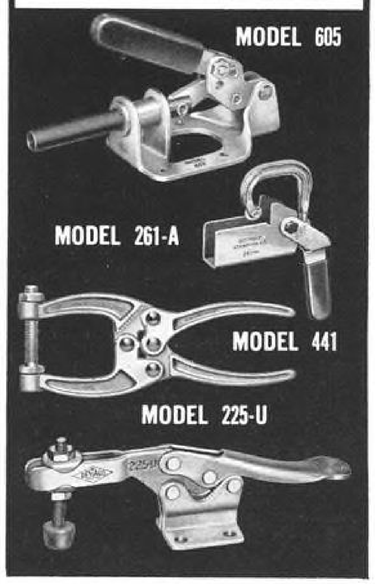
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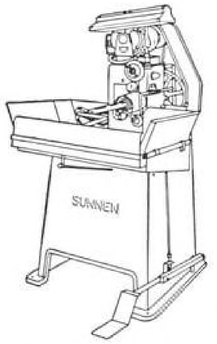
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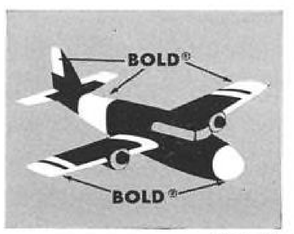
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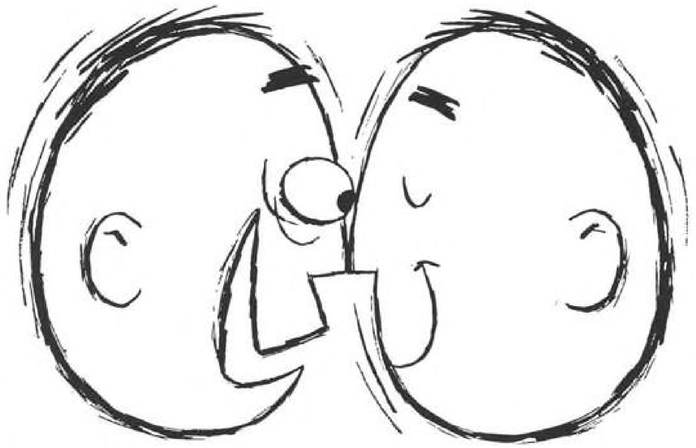
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D-199



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STANPAT SOLVES THE GHOSTING PROBLEM

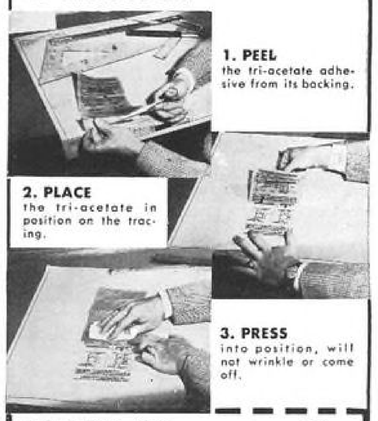
NEW resin-base STANPAT ELIMINATES GHOSTING, *offers better adhesion qualities on specific drafting papers!*

THE PROBLEM
Some of our longtime customers first called our attention to the "ghosting" problem. Certain tracing papers contain an oil which could be leeched out by the STANPAT adhesive (green back) causing a ghost.

THE SOLUTION
A new STANPAT was developed (red back), utilizing a resin base which did not disturb the oils and eliminates the ghost. However, for many specific drafting papers where there is no ghosting problem, the original (green back) STANPAT is still preferred.

WHICH ONE IS BEST FOR YOU?
Send samples of your drawing paper and we will help you specify. Remember, STANPAT is the remarkable tri-acetate pre-printed with your standard and repetitive blueprint items—designed to save you hundreds of hours of expensive drafting time.

SO SIMPLE TO USE



1. PEEL the tri-acetate adhesive from its backing.

2. PLACE the tri-acetate in position on the tracing.

3. PRESS into position, will not wrinkle or come off.

STANPAT CO.
WHITESTONE 57, N. Y., Dept. 77
Phone: FLushing 9-1693-1611

STANPAT CO. Whitestone 57, N. Y. U.S.A.

☐ Enclosed are samples of the drafting paper(s) I use (identify manufacturer). Please specify whether Rubber Base or Resin Base STANPAT is most compatible with these samples.

☐ Send literature and samples of STANPAT.

☐ Please quote price on our enclosed sketches which we are considering to have pre-printed.

NAME_____

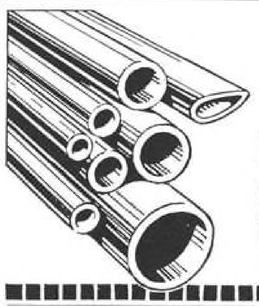
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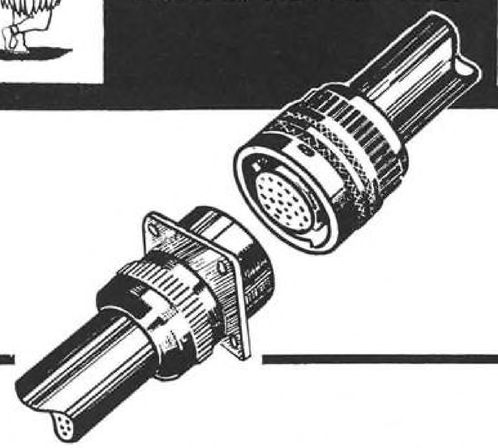
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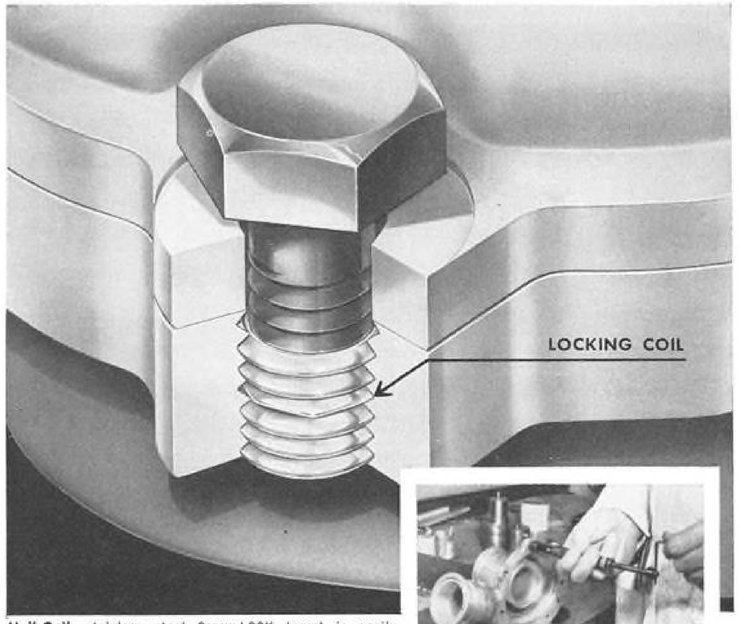
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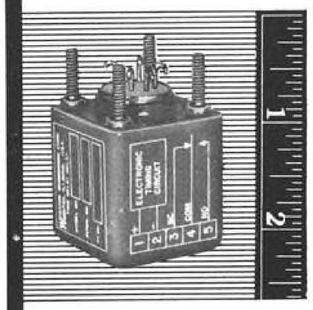
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• Voltage Range .....18 to 30 V. DC	• Voltage Range .....18 to 30 V. DC
• Weight .....from 1.5 ounces	• Weight .....7 ounces
• Temperature Range .—65°F. to +250°F.	• Temperature Range —65°F. to + 165°F.
• Vibration .....10 to 80 CPS .06 in dbl. amplitude 80 to 2,000 CPS at 20 G's	• Vibration ....10— to 80 CPS .06 in dbl. amplitude 80 to 2,000 CPS at 20 G's
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  Available in tube sizes —4 through —16 precisely calibrated to your specific flow requirements.
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Also suppliers of similar items and other Hydraulic Components for Industrial usage.

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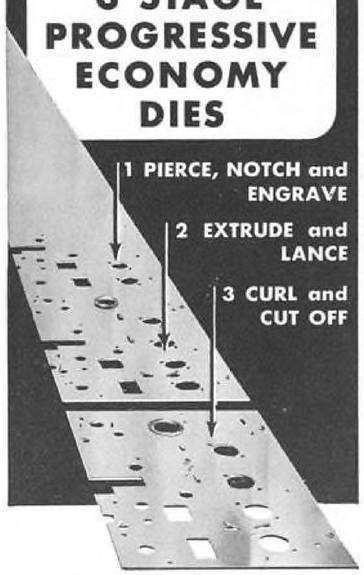
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Any suitable vibration equipment now available can be installed in Guardite equipment so as not to affect high altitude or temperature conditions during testing.

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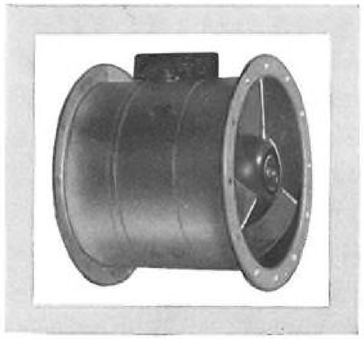
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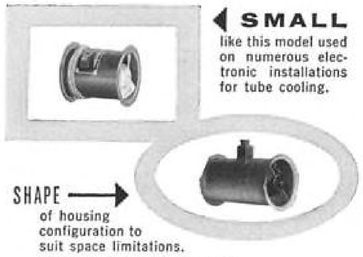
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SHAPE → of housing configuration to suit space limitations.

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AUBURN



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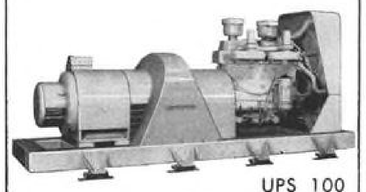
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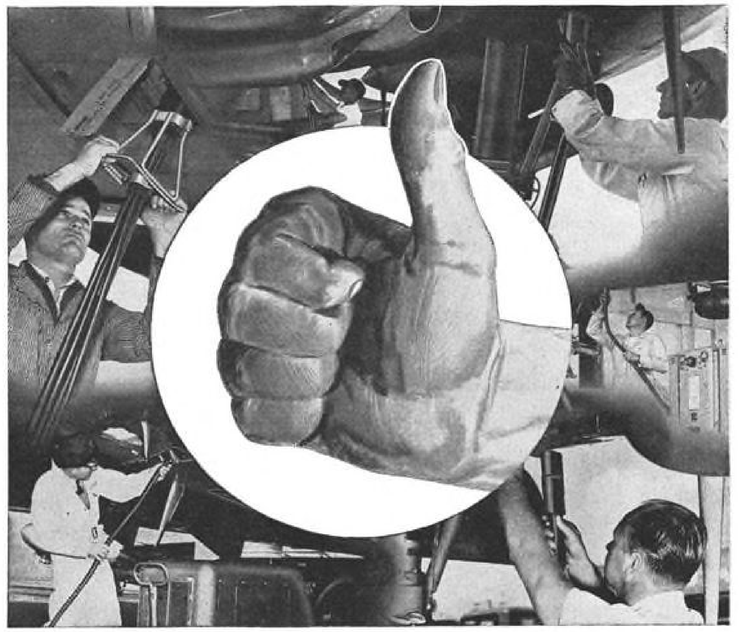
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113026-S-L

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Above hose assemblies conform in every detail to specifications listed.

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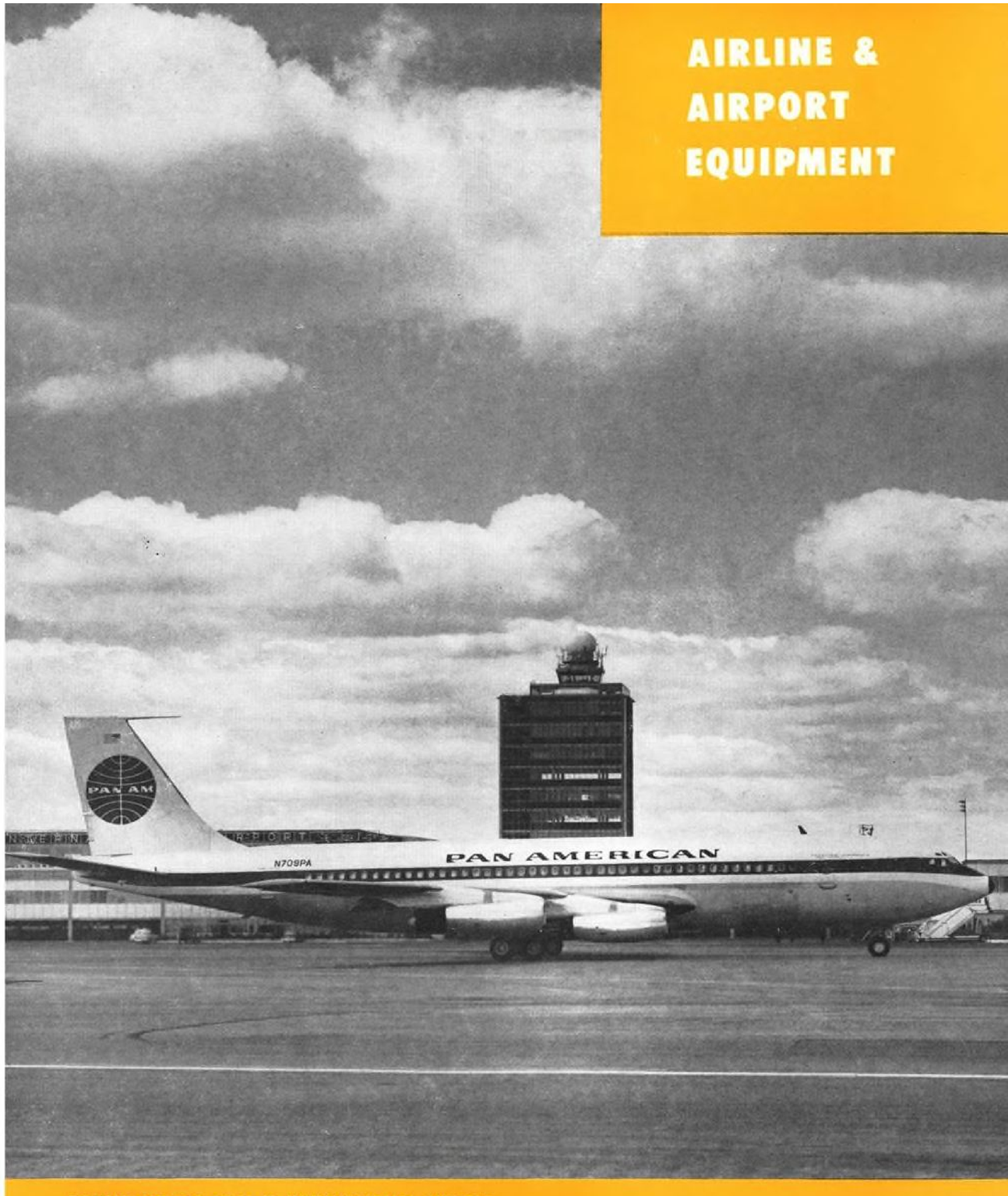
STRATOFLEX Inc.

P.O. Box 10398 • Fort Worth, Tex.

Branch Plants: Los Angeles, Fort Wayne, Toronto. In Canada: Stratoflex of Canada, Inc.

Circle Number 160 on Reader-Service Card

AIRLINE & AIRPORT EQUIPMENT



BOEING 707-120 AT N. Y. INTERNATIONAL AIRPORT

BUYERS' GUIDE FOR 1959

Section **E**



Favorite Welcoming Committee the World Over...

CROUSE-HINDS

aviation lighting equipment

Wherever pilots fly, for over a quarter of a century they have depended on Crouse-Hinds aviation lighting and weather equipment to guide them safely. Crouse-Hinds has grown up in partnership with the aviation industry – anticipating its demands for better and more specialized lighting equipment – until today Crouse-Hinds offers you the most complete line of aviation lighting equipment in the world. Only a small portion of it can be illustrated here. Contact your nearby Crouse-Hinds office for complete details.



A Complete Line of
Lighting Equipment

Type DCB Rotating Beacons (CAA Spec. 291)

High Intensity Runway Lights



Type HRC Bi-Directional-Movable Beam (CAA Spec. L-818)

Type HRL Bi-Directional-Fixed Focus (CAA Spec. L-819)

Type HSL Uni-Directional-Fixed Focus (CAA Spec. L-820)



Type ERL Medium Intensity Marker Lights
(CAA Spec. L-802)
Taxiway Lights same design, but with blue globe (CAA Spec. L-822)

Obstruction Marker Lights
Type VAW (Spec. MIL-L-7830) and Type EOL (Spec. L-810)

Type TGS Taxi Guidance Signs

Because of ever-increasing ground traffic, larger fields and increased activity under reduced visibility, Crouse-Hinds has led the field in developing a fully approved system of illuminated signs to help pilots to their destination quickly and safely.

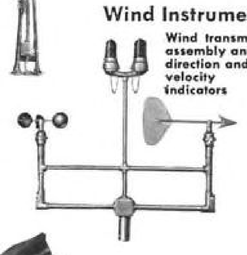
A Complete Line of
Weather Equipment

Illuminated Wind Cones

Type WC-36 (Spec. MIL-I-7854) and Type WC-18 (Spec. L-807)

Wind Instruments

Wind transmitter assembly and direction and velocity indicators

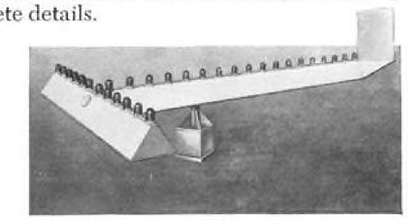




Type PTS **Portable Traffic Signals** (Spec. MIL-L-6617)

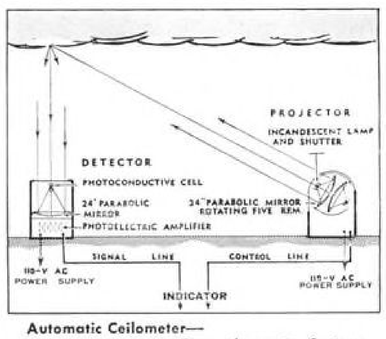
Type UGA **Underground Junction Boxes**





Illuminated Wind Tee, Type WT

Only Crouse-Hinds offers you wind tees to serve as a continuous night and day indicators of wind direction and preferred landing position. Wind tees can be free floating or remotely controlled, as desired.



Automatic Ceilometer—
Transmissometer Systems

Crouse-Hinds' rotating beam Ceilometer system not only provides accurate night and day ceiling readings in the runway approach, but also reads automatically every 6 seconds giving frequent, accurate observations of cloud height at the point where they are most vitally needed.

The photoelectric Transmissometer system provides an exact measurement of visibility in the runway approach regardless of tower location. Even if the tower is encircled in fog or several miles distant from the approach, the tower operator is still always sure if a safe landing can be made when he uses the Crouse-Hinds Transmissometer system.

CROUSE-HINDS COMPANY

SYRACUSE 1, N. Y.

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Crouse-Hinds Company of Canada, Ltd. Toronto, Ont.

Circle Number 6 on Reader-Service Card

CONSOLIDATED LISTING OF CAA CERTIFICATED REPAIR STATIONS

(As of July 1, 1958)

This listing shows the name, mailing address, and ratings of repair stations certificated by the Civil Aeronautics Administration as of July 1, 1958. It supersedes the listing dated July 1, 1957.

The listing is divided into CAA regions and states within each region. Requests for information relative to CAA certificated repair stations should be directed to the Regional Administrator, Civil Aeronautics Administration, at the address shown at the head of the regional listing.

Foreign repair stations are subject to specific limitations imposed by the Administration, attention Director, Office of International Cooperation.

Ratings of the repair stations are indicated on the listing by use of code letters. These code letters and ratings are:

Coding					
A-1	Airframe, Class 1	R-2	Radio, Class 2	L-M&P	Limited Magnetic and Penetrant Inspection
A-2	Airframe, Class 2	R-3	Radio, Class 3	L-EE	Limited Emergency Equipment Overhaul and Repair
A-3	Airframe, Class 3	AC-1	Accessory, Class 1	L-RB	Limited Rotor Blade Overhaul and Repair
A-4	Airframe, Class 4	AC-2	Accessory, Class 2	L-AF	Limited Aircraft Fabric Work
P-1	Powerplant, Class 1	AC-3	Accessory, Class 3	L-XR	Limited X-Ray Inspection
P-2	Powerplant, Class 2	L-A	Limited Airframe	L-OS	Limited Oxygen Systems
P-3	Powerplant, Class 3	L-P	Limited Powerplant		
PR-1	Propeller, Class 1	L-PR	Limited Propeller		
PR-2	Propeller, Class 2	L-I	Limited Instrument		
I-1	Instrument, Class 1	L-R	Limited Radio		
I-2	Instrument, Class 2	L-AC	Limited Accessory		
I-3	Instrument, Class 3	L-LGC	Limited Landing Gear Component Overhaul and Repair		
I-4	Instrument, Class 4	L-F	Limited Float Overhaul and Repair		
R-1	Radio, Class 1				

Region 1

Federal Building, New York International Airport, Jamaica, Long Island, New York

Name and Ratings:

Connecticut

Doman Helicopters, Inc., Aircraft Repair Station, P. O. Box 603, Danbury, Connecticut. L-A, L-M&P

Magnaflux Corporation, 483 Park Avenue, East Hartford 8, Connecticut. L-M&P

Magnaflux Corporation, 35 North Avenue, Bridgeport, Connecticut. L-M&P

New England Propeller Service, Inc., Main Street, Bradley Field, Windsor Locks, Connecticut. PR-2, L-PR, AC-1, 2, L-AC

Pratt & Whitney Aircraft, Airport Department, 400 Main Street, East Hartford 8, Conn. L-A

Pratt & Whitney Aircraft, Airport Department, 400 Main Street, East Hartford 8, Connecticut. AC-1, 2, L-AC

Putnam Technical School, 28 Providence Street, Putnam, Connecticut. L-A, L-P

Taloa Overhaul, Division of Flight Enterprises, Incorporated, Bradley Field, Windsor Locks, Connecticut. A-1, 2, 3, 4, I-1, 2, 3, L-I, R-1, 2, L-R, AC-1, 2, 3, L-EE

Usher Aviation Radio Division, Municipal Airport, Burr Street, New Haven 13, Connecticut. R-1, 2, 3

Delaware

Atlantic Aviation Corporation, Wilmington Division, P. O. Box 1709, Wilmington, Delaware. L-A, R-1, 2, L-AF

District of Columbia

Allegheny Airlines, Inc., Hangar #12, Washington National Airport, Washington, D. C. L-A, R-1, 2, I-1, 2, L-I, AC-1, 2

Butler Aviation, Hangar #9, Washington National Airport, Washington 1, D. C. L-A, R-1, 2

Capital Airlines, Inc., Washington National Airport, Washington 1, D. C. PR-2, R-1, 2, I-1, 2, 3, 4, AC-1, 2, L-AC, L-A, L-P

Kentucky

Aircraft Radio Laboratory, Bowman Field, Louisville, Kentucky. R-1, 2

Falls City Flying Service, Inc., Standiford Field, Louisville 13, Kentucky. P-1, PR-1, AC-1, 2, L-PR

Maryland

Baltimore Aero Service, Hangar 2, Harbor Field, Baltimore 22, Maryland. L-A

Pan-Maryland Airways, Inc., Friendship International Airport, Baltimore, Maryland. L-A, R-1, L-R

Massachusetts

Boston University, College of Industrial Technology, 395 Maverick Street, East Boston 28, Massachusetts. A-1, 3, P-1, PR-1, AC-1, 2, L-PR

W. J. Connell Company, Inc., Winged Instrument Division, 210 Needham Street, Newton Upper Falls, Massachusetts. I-1, L-I, AC-1, 2

East Coast Aviation Corporation, Bedford Airport, Lexington 73, Massachusetts. A-1, 3, L-A, P-1, L-M&P

Arnold Green & Company, Inc., P. O. Box 425, Cambridge 39, Massachusetts. L-M&P, L-XR

Massachusetts Air Industries, Municipal Airport, New Bedford, Massachusetts. P-1

Revere Airways, Inc., 339 Squire Road, Revere, Massachusetts. A-1, 3, P-1

E. W. Wiggins Airways, Inc., Norwood, Massachusetts. A-1, 3, P-1

New Jersey

Aircraft Supplies, 44 Park Avenue, Nutley 10, New Jersey. L-M&P

Airwork Corporation, Millville Municipal Airport, Millville, New Jersey. P-1, 2, AC-1, 2

Associated Airmotive, Inc., P. O. Box 368, Millville, New Jersey. L-A, R-1, 2, L-AC

Atlantic Aviation Corporation, P. O. Box 146, Hasbrouck Heights, New Jersey. A-3, L-A

The Babb Company, Inc., Route 1, Linden Airport, Linden, New Jersey. P-1, L-P, PR-1, 2, AC-1, 2, 3, L-M&P

H. J. Burke Company, Inc., 49-57 Washington Avenue, Little Ferry, New Jersey. R-1, L-R, I-1, 2, L-I

Consolidated Instrument Company, Inc., Teterboro Air Terminal, Teterboro, New Jersey. I-1, 2, 3, AC-2

Continental Can Company, Inc., Air Transport Department, Box 791, Morristown, New Jersey. L-A, R-1, 2, L-R

Curtiss-Wright Corp., Caldwell Wright Division, Passaic Avenue, Caldwell, New Jersey. P-2, L-A

Essex County Vocational & Technical High School, 209 Franklin Street, Bloomfield, New Jersey. L-P, L-AF

Kearfott Company, Inc., 1150 McBride Avenue, Little Falls, New Jersey. I-2, L-I

Magnaflux Corporation, 39 Delavan Avenue East, Newark 4, New Jersey. L-M&P

Magnaplate Testing Laboratories, Inc., 331 Main Street, Belleville, New Jersey. L-M&P

Mattituck Airbase Corporation, Linden Airport, Linden, New Jersey. A-3, L-A

Midway Aircraft Instrument Company, 185 Berger Street, Wood-Ridge, New Jersey. I-1, 2, 3, 4

Newark Air Service, Inc., Newark Airport, Hangar No. 12, Newark 5, New Jersey. A-3, L-A

Radio Aircraft Company, Teterboro Air Terminal, Teterboro, New Jersey. R-1, L-R

Safair Flying Service, Inc., Teterboro Airport, Teterboro, New Jersey. L-P, L-AC



REDA pioneers the FIRST submergible jet fuel pump

Now, the Reda Pump Company—world's largest manufacturer of submergible motors and pumps provides a new, improved means of pumping jet fuel and gasoline with these exclusive advantages:

1. No surface structures.
2. No vapor locks.
3. No priming necessary.
4. No stuffing boxes to leak.
5. No explosion hazards.
6. No pressure limitations.
7. No horsepower limitations.

. . . and backed by over 35 years submergible pump manufacturing experience and know-how. Reda designed and developed the first successful submergible motor and pump. Over 100,000 Reda Submergible Pumps are installed for pumping oil, brine and water wells, L.P.G. and gasoline for filling stations.

Let us know your requirements. Complete information will be furnished on request.

SIGN OF QUALITY
SUBMERGIBLE REDA PUMPS

REDA PUMP CO.

BARTLESVILLE, OKLAHOMA

Worlds Largest Manufacturer of Submergible Electric Motors and Pumps, For Over 35 Years.

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Central Sta. Alarm Co., 610 N. Akard, Dallas, Texas
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Ferrnati Electric, Industry Street, Mount Dennis, Toronto 15, Ontario, Canada
G. W. Galloway Co., 220 South First Ave., Arcadia, Calif.
LAWTER CHEMICALS, INC., 3550 Overland Ave., Los Angeles 34, Calif. SEE ADV. D-199
McGraw-Edison Co., Elgin, Ill.
National Company, Inc., Guided Missile Div., 61 Sherman St., Maldon, Mass.
ORDCO DIV., BERMITE POWDER CO., 11120 Crumpston St., North Hollywood, Calif. SEE ADV. B-40
Penn Keystone Corp., Derby, Conn.

Weather Station Equipment

Alden Electronics & Impulse Recording Equip Co., Westboro, Mass.
Bendix Aviation Corp., Fisher Bldg., Detroit 2, Mich.
Bendix Aviation Corp., Friez Instrument Div., 1400 Taylor Ave., Baltimore 4, Md.
Bendix-Pacific Div., Bendix Aviation Corp., 11600 Sherman Way, N. Hollywood, Calif.
Burroughs Corp., Defense Sales Div., 6071 Second Ave., Detroit 32, Mich.
CROUSE-HINDS COMPANY, Syracuse 1, N. Y. SEE ADV. E-2
Decca Radar, Inc., 386 Fourth Ave., New York 36, N. Y.
Defense Products Div., Fairchild Camera & Inst. Corp., Robbins Lane, Syosset, L. I., N. Y.
Dynametrics Corp., Northwest Industrial Park, Burlington, Mass.
Epic, Inc., 154 Nassau St., New York, N. Y.
G. M. Mfg. Co., 134 West 26 St., New York 1, N. Y.
Industrial Prods. Div., International Tel. & Tel. Corp., 15191 Bledsoe St., San Fernando, Calif.
Instruments Corp., The, 4 N. Central Ave., Baltimore 2, Md.
National Company, Inc., Guided Missile Div., 61 Sherman St., Maldon, Mass.
Seaview Electric Co., 406 Main St., Avon, N. J.
Universal Winding Co., 1655 Elmwood Ave., Cranston, R. I.
Wang Laboratories, 37 Hurley St., Cambridge 41, Mass.
Weksler Instruments Corp., 195 East Merrick Rd., Freeport, N. Y.
Westinghouse Electric Corp., 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa.

Winches

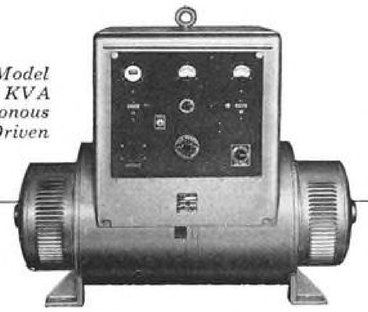
Air Cargo Equip. Co., 1121 E. Colorado Ave., Glendale 5, Calif.
All American Engineering Co., du Pont Airport, Wilmington, Del.
Bill-Jax, Inc., Archbold, Ohio
Breeze Corporations, Inc., 700 Libertay Ave., Union, N. J.
Cemco Industries, Inc., Galion, Ohio
Chicago Pneumatic Tool Co., 8 East 44th St., New York 17, N. Y.
HOOVER ELECTRIC CO., 2100 South Stoner Ave., Los Angeles 25, Calif., Eastern Sls. & Serv., Hangar 2, Port Columbus Airport, Columbus 19, Ohio SEE ADV. C-97
Lindholm Corp., 585 Main St., East Orange, N. J.
National Frost Protection Co., Inc., 2990 N. San Fernando Blvd., Burbank, Calif.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Safway Steel Products, Inc., 6228 W. State St., Milwaukee 13, Wis.
Silent Hoist & Crane Co., 855 63rd St., Brooklyn 27, N. Y.
Carl N. Soule Co., 700 Xenia Ave., Dayton 10, Ohio
Talley Corp., The, Newbury Park, Calif.
Western Design & Mfg. Corp. Div., U. S. Industries, Inc., Bldg. 344, Santa Barbara Airport, Goleta, Calif.
Ward, Inc., 2981 E. Colorado St., Pasadena 8, Calif.
Western Gear Corp., P. O. Box 192, 2600 E. Imperial Hwy., Lynwood, Calif.
Wheland Company, The, Signal Mountain Blvd., Chattanooga, Tenn.

Wind Instruments, Airport

Aircraft Componets, Inc., Woodland Ave., Twin Cities Airport, Benton Harbor, Mich.
Bendix Aviation Corp., Fisher Bldg., Detroit 2, Mich.
Bendix Aviation Corp., Friez Instrument Div., 1400 Taylor Ave., Baltimore 4, Md.
Instruments Corp., The, 4 N. Central Ave., Baltimore 2, Md.
Seaview Electric Co., 406 Main St., Avon, N. J.

Wind Socks & Cones

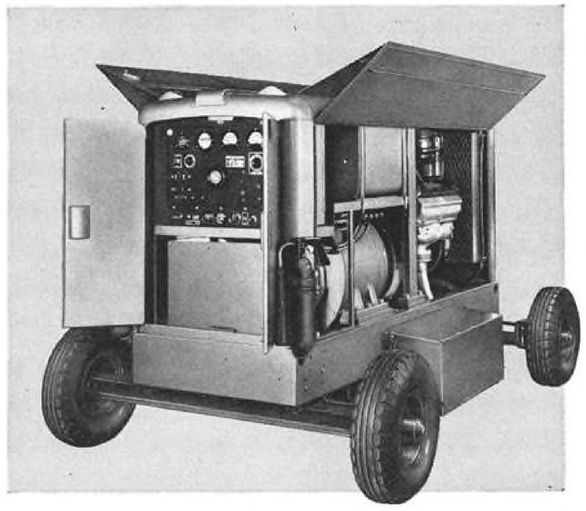
Aeronautical Upholsterers, Inc., Friendship Internat'l Airport, Md.
Aircraft Components, Inc., Woodland Ave., Twin Cities Airport, Benton Harbor, Michigan
Cooper Industries, Inc., 3722 West North Ave., Chicago 39, Ill.
Line Material Industries, McGraw-Edison Co., 700 W. Michigan, Milwaukee 1, Wisc.
McLean Mfg. Co., Inc., P. O. Box 64, Sussex, N. J.
Security Parachute Co., 295 West 141 Ave., San Leandro, Calif.



Model 1048-18.75 KVA Synchronous Motor Driven

modern equipment for TODAY'S Needs!

Model 3008-P-37.5 KVA
Gasoline engine driven trailer-mounted



Here's the new Hobart 400 cycle ground electrical support equipment that is as modern as the aircraft they power. Versatility, portability and performance, plus real economy—that's what you get with Hobart 400 Cycle Ground Power Units.

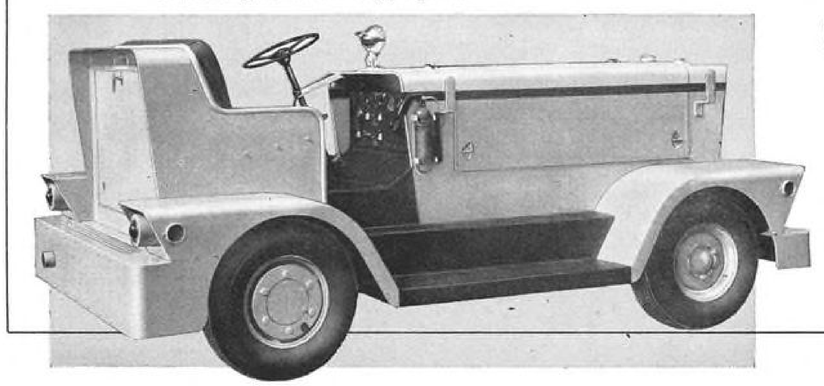
Most jet aircraft have 115/200 volt, 400 cycle, 3-phase, 4-wire, wye-connected electrical systems which must be energized by an external power source during ground operations when the engines are not running. Hobart supplies the ground electrical support equipment to take care of the power requirements of the aircraft while at the passenger terminal or on a towing (for brakes, lights, VHF and interphone communication requirements) journey.

The equipment is also used to supply high-quality closely-regulated 400 cycle power for hangars, maintenance shops, calibration, instructional facilities, and other installations where precision bench mockup and test equipment requiring precise power are operated and tested.

capacity, economy, utility—

You get all three in a greater measure with Hobart Ground Power Units. You will have less maintenance costs and down time due to the heavy-duty construction of Hobart 400 cycle units. There are no noisy high speed generators or costly to maintain speed increasers. Common speeds for Hobart Equipment, depending upon the method of drive, are 1200, 1714, and 2400 r.p.m., using 40, 28, and 20 field poles.

Model 3054-37.5 KVA
Diesel engine driven self-propelled



Uses Other than for Aircraft Support

- Airframe manufacturers
- Engine and power plant manufacturers
- Related ground and airborne systems manufacturers
- Component and subsystem manufacturers
- Military procurement, research and development

Submit Your Specifications, without Obligation

Send us your specifications, desired quantities, delivery schedules, and other pertinent requirements which will enable us to furnish complete information and prices. If you wish, a representative will call to discuss your needs—without obligation.

MOTOR GENERATOR CORPORATION, TROY, OHIO
Hobart Auxiliary Power Units

MOTOR GENERATOR CORPORATION, BOX AV-128, TROY, OHIO

Hobart Brothers Affiliate

SEARCHLIGHT ADVERTISERS INDEX—1959 AVIATION WEEK BUYERS' GUIDE

Classification of products and services offered by "SEARCHLIGHT" advertisers in this issue

PRODUCTS

1. Accessories, Aircraft
2. Aids, Training
3. Aircraft, Executive, Personal
4. Antennas and Radiating Equipment
5. Bearings
6. Brushes, Carbon
7. Cables, Assemblies, Swaging, Terminals
8. Capacitors
9. Chargers, Battery
10. Components, Jet
11. Condensers, Mica, etc.
12. Connectors, AN, Coaxial
13. Contactors
14. Engines, Parts
15. Equipment, Aircraft, Ground, Electrical, Electronic, Test
16. Fittings
17. Forgings, Bar Stock
18. Generators
19. Gyros, Altitude, Directional, Horizon
20. Handbooks, Manuals, Technical Publications
21. Hardware Supplies
22. Ignition, Parts
23. Instruments, Engine, Flight, Pressure, Test
24. Inverters, Inverter Parts
25. Lamps
26. Lights, Assemblies, Cockpit
27. Machine, Spec and Print
28. Materials
29. Meters, Test, Panel
30. Motors, Servo, Synchro, etc.
31. Parts, Magneto
32. Potentiometers
33. Radar
34. Radio, Aircraft
35. Rectifiers, Silicon, etc.
36. Relays, Timers
37. Resistors
38. Rings, Moulded Rubber "O", Backup
39. Solenoids
40. Superchargers
41. Switches
42. Tapes, Adhesives, Asbestos
43. Terminals, Boards, Hardware
44. Tires
45. Transistors
46. Transmitters
47. Tubes, Electronic
48. Valves, Check
49. Wire

SERVICES

50. Aircraft
51. Airframe
52. Carburetor, Overhaul, Parts, Repair
53. Chargers, Battery, Repairs, Replacements
54. Charter, Air Cargo
55. Engine, Build-up, Changes, Inspections, Repair, Starters
56. Equipment, Installations, Repairs
57. Executive Aircraft Bases
58. Financing, Aviation
58-A. Flight Test Support
59. Inspections, Aircraft, Engine, Equipment, Instrument
60. Instruments, Installation, Repair, Testing
61. Insurance, Aviation
62. Interiors, Design, Modification, Installation
63. Jacks, Aircraft
64. Janitrol Installations
65. Machine Shop Work
66. Maintenance, Aircraft, Engine, Equipment
67. Overhaul, Services
68. Picture Window Installation
69. Plating
70. Propeller
71. Radar, X and C Bands
72. Radio, Electronics, Installation, Repair, Testing
73. Repair, Aircraft, Airframe, Engine, Equipment
73-A. Representative, Sales, Engineering
73-B. School, Flight, Test
74. Sealing Specialists
75. Storage.

The numbers after the advertiser's name, indicates the products or services offered by the advertiser.

ADVERTISER	PAGE NO.	KEY TO PRODUCTS OR SERVICES (See Classifications Above)
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ADAMS AIRCRAFT ENGINEERING CO., INC.	F-10	5, 12, 16, 21, 22, 25, 31, 44, 48
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95	162-066-26S	Fuel Quantity Gauge—Aviation Engineering
13	840485	Chemical Air Drier—Kidde
57	412266A	Angle Connextor—Minneapolis
308	T-1270	Light—Master Specialties
62	35A-7130	Mounting Rack—Westinghouse
5	B-4P/NLE-1834-1	Ejectors—Lambert Eng.
133	AT-67-AP	Filter—Denoyer Geppert
178	#870491	Air Bottle—Kidde
13	#870755	Purging Regulator—Kidde
124	#870979	Air Bottle—Kidde
1	E890115-3	Electric Warning Unit—Sperry
64	MHN10984	Wiper Controller—Alco
1	957	Oscillator—R. Rosen
25	9175B	Hydraulic Cyl.—Cleveland Pneumatic
53	100913B	Magnet—Indiana Steel
17	D106018-1	Air Flow Regulator—Airesearch
5	911-001	Valve Regulator—Rhodes Lewis
121	1000-1	Hydraulic Cylinder—National Waterlift
1	17550	Panel Assembly—ARO Equipment
1	56650-1	Compressor—Airesearch
5	EA573-1A	Fuel Transmitter—Liquidometer
97	24113-1-20	Accelerometer—Giannini
5	PR306-6	Filter—Purolator
14	22300-5B5	Magnesyn Pressure Transmitter—Eclipse
6	23100-5AB	Magnesyn Position Transmitter—Friez
2	24008-2B-A-A1	Liquid Level Transmitter—Eclipse
2	24100-14B-4-A1	Indicator—Eclipse
10	FCF-25613	Tank—U.S. Rubber
15	31551-006-05	Shafting—Lear
458	35155-2	Thermocouple—Edison
67	35155-4	Thermocouple—Edison
1	V-37165-2900	Interrupter—Bendix
195	11749	Receptacle—Cannon
6	H12003R2TSL4	Caster—Bassick
22	18422-0	Thermostat—Fenwall
445	RD8180E	Dehydrator—Lear
400	9100F	Right Angle—F. W. Stewart
242	C6334-36	Telescopic Unit—Teleflex
2	D6447	Time Delay Unit—A. W. Haydon
13	APJ6483522	Plug—Grouse Hinde
1	V-6901	Vertical Gyro—Kearfott
1	V-6902	Directional Gyro—Kearfott
17	JG-7013A39	Tank Unit—Minn. Honeywell
1	7150-1 TY-AC-BS-1-1	Ignition Unit—General Lab.
14	C7673-2	Telescopic Unit—Teleflex
234	B4235-A2	Light Assembly—Grimes
15	PA-4832	Fan—Ratron
172	5103-H2-003	Reset Timer—Hayden
30	HE1-3115	Radio Filter—Hopkins Eng.
4	AYLC3674-1	Rotary Actuator Motor—Barber Colman
5	T-2100-3-A	Directional Gyro—Kearfott
12	AYLF2199-3	Temperature Bulb—Barber Colman
3	T2305-1A-A	Free Gyro—Kearfott
13	2651-21	Filler Cap—Royland
2	1440-1	Air Speed Transducer—Kollsman
11	#1531	Microammeter—Weston
2	1589-1D	Voltage Regulator
1	F1780-1500	Fuel Flow Transmitter—Revere Corp.
65	X1100PEPS	Receptacle—Pyle National
17	PA-1110-B	Panel—Bud
1	1176B6-03	Air Speed Transducer—Square D
1	#957	Oscillator—R. Rosen
100	JH950	Starter Motor—Jack & Heintz
22	926-0160	Telstorque Transmitter—Kollsman
1	TP826	Modulator—R. Rosen
3	840B-2	Oscillator—R. Rosen
19	753-300	Intervoltmeter—Rhodes Lewis
3	506DCO-50	Micrometer—Weston
5	516W	Shaft Coupling—Whitney
14	558-1A	Oil Separator—Eclipse Aviation
5	MM-562	Standing Wave Ind.—M. C. Jones
385	564-2A	Oil Separator—Eclipse
646	Q-579-30	Jack—Monowatt
104	AS333/AP	Antenna—Z. W. Machine
82	380	Delay Coil—Shallcross
57	T-200(XN-2)1AKT	Transmitter—Melpar
81	200-03-19	Tank Cap Assembly—East Coast Aero
10	AY201S-1B	Auto-Syn. Eclipse—Pioneer
1350	UJ139	Universal Joint—Apex Dayton
194	155-S4-8D	Coupling—Aeroquip
496	165-790-3	Insulator—Avien
1	MCM-100	Modulator—Magnetics Inc.
29	R73-7002-56-00	Cable Tension Reg.—Pacific Scientific
5	75-1021-1	Mounting Bracket—Tison Bros.
65	P3B437M8	Battery Plug—Jay Manufacturing
6	A301W-5	Sensing Switch—Aerotec
30	12P10	Relief Valve—Allen Aircraft
6	A-3000	Antenna Base—Kings Elect.
37	PR306-14	Filter-Purolator
3	32-R-400	Air Compressor—Cornelius
106	17322-2	Thermoswitch—Fenwall
40	AN6203-3	Accumulator—Bendix
20	HC2110	Hyd. Cylinder—Air Associates
84	727TY.72Z2	Air Temp. Gauge—Weston
13	BDJ-29AAY	Cowl Flap Ind.—G.E.
463	40R1201	Solenoid—General Controls
82	B60821	Solenoid—Leland
198	MF9-713-15A	Pump—Vickers
80	PF12-713-25	Pump—Vickers
353	D7818	Pump—Adel
109	TF57400-23	Pump—Thompson
2	167W4200	Pump—N. Y. Air Brake
1	FR-2-A1	Vent Valve—Edipse
35	A3-M047	Valve—Airmark Plastics
52	LGA—10FB	IRS Valve—Lundy
18	18-100-022	Valve—Gan Precision
6	201M16	Press Valve—Purolator
3	WE432-10	Valve—Whittaker
3	WE477-1-½F	Valve—Whittaker
33	747A	Valve—RH—Des Lewis
14	K1207-8-16	Valve—Kohler
208	6252-2	Valve—Whittaker
75	8326—20	Valve—Waterman
145	35801-3	Valve—Kohler
39	27936-2	Valve—Adel
3	105306-1	Valve—Airesearch
28	982051	Valve—Kidde
98	5343M	Valve—Allen
107	K1207-16-12	Valve—Kohler
18	#840482	Valve—Kidde
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26	POBX-6	Relay—Allied
7	6141-H67B	Relay—Cutler Hammer
941	A-10	Transformer—U.T.C.
26	PHC70	Transformer—Chicago
12	HP-80	Transformer—Westinghouse
74	BX341	Transformer—
34	BX1067	Transformer—B.T.C.
116	7307	Transformer—Raytheon
32	182	Transformer—Tresco
217	TFAO1AH	Transformer—N.Y.T.C.
469	HQA14	Choke—U.T.C.
49	CG-40	Choke—U.T.C.
30	C-1003	Choke—Stancor
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43	RBD-2220	Motor—Haltzer Cabot
34	#7100F	Motor—Hansen
99	1300-20	Motor—Transicoil
13	26675	Motor—Airesearch
10	32355-4	Motor—Airesearch
13	XC-33666	Motor—U. S. Electrical
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5	C97A-28	Heater—Janitrol
8	164-BT2	Actuator—Lear
4	164-DP4	Actuator—Lear
10	R170-M1	Actuator—Airbore
5	189W-R	Actuator—Lear
145	420DY	Actuator—Lear
157	420FC	Actuator—Lear
15	550EN	Screw Jack—Lear
6	577-P	Screw Jack—Lear
23	GYLC4163	Actuator—Barber Colman
1	400FJ	Actuator—Lear
2	400JE	Actuator—Lear
78	TTO-1A	Position Meter—Bendix
40	AN6203-1	Accumulator Bendix
340	AN6207-8	Valve—Kohler
495	AN6207-12	Valve—Kohler
138	AN6209-4D	Valve—Kenyon
131	AN6209-8	Valve—Hydro-Aire
42	AN6213-2	Valve—Bendix
26	AN6235-2A	Element—Skinner
100	AN6236-2H	Filter—Purolator
220	AN6237-1	Filter—Purolator
87	1-3140-28	Level Indicator—Parker
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28	H2-99RH	Brake—Hayes
113	D2-540-1	Brake—B. F. Goodrich
100	RF3-50	Noise Filter—Lewis
28	TOE-8A-6P	Oscillator—Bendix
11	MR11D	Antenna Loop Unit—Bendix
23	TA12B	Transmitter—Bendix
13	F4401W	Switch—Aerotec
71	RG8395JX	Switch—Lear
43	RV2-S-238-3	Potentiometer—Technology Inst.
37	567604	Oil Filter—Skinner
75	102633	Flex. Hot Air Duct—Flexonics Corp.
28	S3904-0706	Flex. Hose—Titeflex Inst.
26	FA160	Altimeter—Wallace & Tierman
363	661102B	Phase Adapters—Sperry & White Indus.
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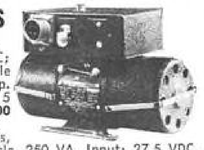
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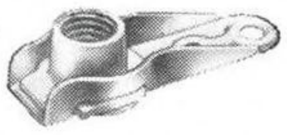
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