

FITTINGS, CATALOG OF FLARED, FLARELESS, PIPE THREADED, PORT, HOSE, AND OTHER TYPE TUBE STANDARD CONNECTORS.

**1.0 SCOPE**

THIS AEROSPACE INFORMATION REPORT (AIR) IS WRITTEN AS AN AID FOR LOCATING AND IDENTIFYING VARIOUS FITTING DESIGNS AND CONFIGURATIONS THAT ARE DESIGNATED AS STANDARD PARTS.

- 1.1 TYPES AND STYLES:** TUBE FITTINGS LISTED HEREIN INCLUDE, BUT ARE NOT RESTRICTED TO, TYPES AND STYLES COVERED BY PROCUREMENT SPECIFICATIONS NOTED BELOW.

**2.0 REFERENCES****2.1 MILITARY PROCUREMENT SPECIFICATIONS:**

MIL-F-5509 FITTINGS, FLARED TUBE, FLUID CONNECTION  
MIL-F-6001 FITTINGS, AIRCRAFT, SOLDER TYPE, TUBE  
MIL-F-18280 FITTINGS, FLARELESS TUBE, FLUID CONNECTION  
MIL-F-18866 FITTINGS, HYDRAULIC TUBE FLARED, 37 DEGREE AND FLARELESS, STEEL

**2.2 JOHN F. KENNEDY SPACE CENTER**

KSC-F-124 FITTINGS (PRESSURE CONNECTIONS), FLARED TUBE

**2.3 NATIONAL AEROSPACE PROCUREMENT STANDARDS**

NAS597 FITTINGS, RIGID TUBE CONNECTOR, FLARED TUBE

**2.4 SAE PROCUREMENT PUBLICATION**

AS1576 FITTINGS, WELDED, HYDRAULIC, TITANIUM AND CRES, 3000 PSI.  
MA2050 FITTINGS, WELDED, HYDRAULIC, TITANIUM AND CRES, 20000 KPa, METRIC

- 3.0 DESCRIPTION AND CONFIGURATION HEADINGS:** PART NUMBERS ARE CROSS-INDEXED BY THE FOLLOWING HEADINGS AS APPLICABLE.

**A. TYPE CONNECTION**

1. FLARED
2. FLARED-TO-PORT (O RING SEAL)
3. FLARED-TO-FLARELESS
4. FLARED-TO-HOSE (BUMP STYLE)
5. FLARED-TO-PIPE THREAD
6. FLARED-TO-WELD
7. FLARELESS
8. FLARELESS-TO-PORT (O RING SEAL)
9. FLARELESS-TO-PIPE THREAD
10. FLARELESS-TO-WELD
11. PIPE THREAD
12. PIPE-TO-HOSE (BUMP STYLE)
13. FLANGE
14. HOSE (BUMP STYLE)
15. SOLDER
16. STRAIGHT THREAD
17. UNIVERSAL FITTING
18. WELD

**B. CONFIGURATION**

1. ADAPTER
2. BOLT
3. BUSHING
4. CAP
5. CLUSTER FITTING
6. COLLAR
7. COUPLING
8. CROSS
9. ELBOW
10. FLANGE
11. LOCKNUT
12. MISCELLANEOUS
13. NIPPLE
14. NUT, COUPLING
15. PLUG
16. RING
17. SCREW
18. SLEEVE
19. TEE
20. UNION
21. VALVE
22. WIRE

- 4.0 USAGE OF CATALOG CHART:** PART NUMBERS MAY BE LOCATED BY SELECTING THE REQUIRED CONNECTION AND CONFIGURATION IN 3.0A. AND 3.0B, RESPECTIVELY. SELECT POSSIBLE CANDIDATES FROM VARIOUS PART NUMBERS SHOWN IN THE COLUMN.

**EXAMPLE:** A STRAIGHT FLARELESS CONNECTOR IS REQUIRED TO BE ASSEMBLED TO A VALVE HOUSING INCORPORATING AN MS33649 PORT. THE REQUIREMENT FITS THE DESCRIPTION FOR A FLARELESS-TO-PORT ADAPTER (A.8, B.1). POSSIBLE CANDIDATES INCLUDE MS51843, MS51893, AND AS1299. OTHER CHOICES MAY INCLUDE (A.3, B.1) MS21900, MS24405 OR (A.7, B.19) MS21902.

- 5.0 NUMERICAL INDEX:** TABLE III INCLUDES A NUMERICAL LISTING OF ALL PART NUMBERS INCLUDED IN TABLES I AND II.

**REAFFIRMED CURRENTLY  
BEING REVISED****SEP 1988**

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### **A. TYPE CONNECTION**

## 1. FLARED

## B. CONFIGURATION

| ADAPTER                                          | BOLT                                  | BUSHING                        | CAP                               | CLUSTER FITTING            | COUPLING                   | CROSS                      | ELBOW                                     | FLANGE                     | NUT, COUPLING              | PLUG                       | SLEEVE                               | TEE                                        | UNION                                      |
|--------------------------------------------------|---------------------------------------|--------------------------------|-----------------------------------|----------------------------|----------------------------|----------------------------|-------------------------------------------|----------------------------|----------------------------|----------------------------|--------------------------------------|--------------------------------------------|--------------------------------------------|
| MS39323 Male-to-Female, Reducer                  | AN774 Universal Fitting               | AN894, MS24398 Thread Expander | AN929, KC150, Assy                | MS21953 One Way            | NAS591, Aluminum Lightwt.  | AN827, MS24403             | AN821 MS51505, 90°                        | MS20760 Fixed              | AN817 Long                 | AN806, MS24404, MS51516    | MS20819, MS51533 KC143               | AN804, MS24390 MS51516, BHD on Run         | AN815, MS24392, MS51519                    |
| MS51534, NAS1564, Male-to-Female, Reducer        | AN775, MS24387, Fluid Passage         | KC115 w/Seal Ring              | MS9313 Assy                       | MS21956, 90°, Two Way      | NAS594, Cres, Lightwt.     | MS51517                    | KC118, 90°                                | MS20761, 45° Elbow, Swivel | AN818, Short               | AS1369, KC130 w/Seal Ring  | MS24402, MS51510, KC123 w/Seal Ring  | AN824, MS24402, MS51510, KC123 w/Seal Ring | KC126 w/Seal Ring                          |
| MS21949, Cluster Fitting, Single Port            | MS21949, Cluster Fitting, Single Port | Thread Expander                | MS9315, Assy, w/Silver Plated Nut | MS21955, 180°, Two Way     | NAS652, BHD, Lightwt.      | AS1367, KC117 w/Seal Ring  | AN833, MS24394, MS51507, 90°, BHD & Univ. | MS20762, 90° Elbow, Swivel | MS9197, Cres               | MS9198 Cres                | AN834, MS24395, MS51515, BHD on Side | AN919, MS24399, Reducer                    | AN832, MS24393, MS51520, BHD and Universal |
| KC106 Male-to-Female, Reducer                    | MS21950, Cluster Fitting, Single Port | KC164 w/Seal Ring              | MS51532 Nut                       | MS21949, Bolt, Single Port | MS21951, Bolt, Double Port | MS21951, Bolt, Double Port | AN837, MS24396, MS51509, 45°, BHD & Univ. | MS20762, 90° Elbow, Swivel | MS9199, Aluminum           | MS51531                    | AS1033, BHD on Run, Reducer          | AN834, MS24395, MS51515, BHD on Side       | AN832, MS24393, MS51520, BHD and Universal |
| MS27584 Pneumatic Svce, US Gnd Eqpt to RAF Acft  | MS21951, Cluster Fitting, Double Port | Thread Reducer                 | MS51532 Nut                       | MS21951, Bolt, Double Port | MS21951, Bolt, Double Port | MS21951, Bolt, Double Port | KC128 45°, BHD & Univ. w/Seal Ring        | MS20762, 90° Elbow, Swivel | MS27073, Swivel Tube Conn. | MS27073, Swivel Tube Conn. | AS1033, BHD on Run, Reducer          | AS1033, BHD on Run, Reducer                | MS51501, Small Hex                         |
| MS27587 Engine Oil Svce, US Gnd Eqpt to RAF Acft | MS21951, Cluster Fitting, Double Port | Thread Reducer                 | MS51532 Nut                       | MS21951, Bolt, Double Port | MS21951, Bolt, Double Port | MS21951, Bolt, Double Port | AS1034, 90° Reducer                       | MS20762, 90° Elbow, Swivel | AS1028 w/Lockwire Holes    | AS1028 w/Lockwire Holes    | AS1035, Reducer                      | AS1035, Reducer                            | MS51502, Long, Small Hex                   |
| MS27588 Nitrogen Svce, US Gnd Eqpt to RAF Acft   | MS21951, Cluster Fitting, Double Port | Thread Reducer                 | MS51532 Nut                       | MS21951, Bolt, Double Port | MS21951, Bolt, Double Port | MS21951, Bolt, Double Port | AS1038, 90°, BHD Reducer                  | MS20762, 90° Elbow, Swivel | AS1790, Swivel, Lightwt.   | AS1790, Swivel, Lightwt.   | AS1039, BHD ON Side, Reducer         | AS1039, BHD ON Side, Reducer               | MS9769, Reducer                            |
| MS27590 Hydr Svce US Gnd Eqpt to RAF Acft        | MS21951, Cluster Fitting, Double Port | Thread Reducer                 | MS51532 Nut                       | MS21951, Bolt, Double Port | MS21951, Bolt, Double Port | MS21951, Bolt, Double Port | AS1040, 45°, BHD Reducer                  | MS20762, 90° Elbow, Swivel | AS1792 Lightwt.            | AS1792 Lightwt.            | AS1365, KC114 BHD on Run w/Seal Ring | AS1365, KC114 BHD on Run w/Seal Ring       | AS1037, Reducer BHD                        |
| MS27591 1/4 in. Hydr Svce us Eqpt to RAF Acft    | MS21951, Cluster Fitting, Double Port | Thread Reducer                 | MS51532 Nut                       | MS21951, Bolt, Double Port | MS21951, Bolt, Double Port | MS21951, Bolt, Double Port | AS1366, KC113 90°, BHD w/Seal Ring        | MS20762, 90° Elbow, Swivel | KC142                      | KC142                      | AS1365, KC114 BHD on Run w/Seal Ring | AS1365, KC114 BHD on Run w/Seal Ring       | AS1368 KC125 Reducer w/Seal Ring           |

1. FLARED (continued)

| ADAPTER                                                                                      | BOLT | BUSHING | CAP | CLUSTER<br>FITTING | COUPLING | CROSS | ELBOW                                          | FLANGE | NUT,<br>COUPLING | PLUG | SLEEVE | TEE                                               | UNION |
|----------------------------------------------------------------------------------------------|------|---------|-----|--------------------|----------|-------|------------------------------------------------|--------|------------------|------|--------|---------------------------------------------------|-------|
| MS27607<br>Body,<br>Nitrogen<br>and Pneu-<br>matic<br>Svce, US<br>Gnd Eqpt<br>to RAF<br>Acft |      |         |     |                    |          |       | KC131<br>90°<br>w/Seal<br>Ring,<br>Swivel Nut  |        |                  |      |        | MS51523,<br>Swivel Nut<br>on Run                  |       |
|                                                                                              |      |         |     |                    |          |       | MS51522,<br>45°<br>Swivel Nut                  |        |                  |      |        | KC107<br>w/Seal<br>Ring,<br>Swivel Nut<br>on Run  |       |
|                                                                                              |      |         |     |                    |          |       | KC132,<br>45°<br>w/Seal<br>Ring,<br>Swivel Nut |        |                  |      |        | MS51524,<br>Swivel Nut<br>on Side                 |       |
|                                                                                              |      |         |     |                    |          |       |                                                |        |                  |      |        | KC109<br>w/Seal<br>Ring,<br>Swivel Nut<br>on Side |       |

MISCELLANEOUS:

| ADAPTER (SPECIAL)                                                    |                                                                 |                                                                 |                                                                           | RING                                            | WIRE                                          |
|----------------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------|
| MS27585<br>Water-Menthol<br>Svce, US Gnd<br>Eqpt to RAF<br>Acft      | MS27588<br>Nitrogen Svce,<br>US Gnd Eqpt to<br>RAF Acft         | MS27591<br>1/4 inch<br>Hydr Svce, US<br>Gnd Eqpt to<br>RAF Acft | MS27607<br>Body, Nitrogen<br>and Pneumatic<br>Svce, US Gnd<br>to RAF Acft | NAS592<br>Alum.<br>AS1097<br>KC103<br>Seal Ring | MS27074<br>Swivel Nut<br>AS1791<br>Swivel Nut |
| MS27586<br>Deminerlized<br>Water Svce,<br>US Gnd Eqpt to<br>RAF Acft | MS27589<br>Oxygen Svce,<br>US Gnd Eqpt to<br>RAF Acft           | MS27592<br>Nipple Svce,<br>US Gnd Eqpt<br>to RAF Acft           | MS27608<br>9/16 Inch<br>Pneumatic Svce,<br>US Gnd Eqpt to<br>RAF Acft     |                                                 |                                               |
| MS27587<br>Engine Oil<br>Svce, US Gnd<br>Eqpt to RAF<br>Acft         | MS27590<br>3/8 Inch Hydr<br>Svce, US Gnd<br>Eqpt to RAF<br>Acft | MS27593<br>Nut Svce, US<br>Gnd Eqpt to<br>RAF Acft              |                                                                           |                                                 |                                               |

| 2. FLARED-TO-PORT (O RING SEAL)                            |                                                                         |                                                                 |                                                             | 3. FLARED-TO-FLARELESS                              |                                     |               | 4. FLARED-TO-HOSE (BUMP STYLE) |                                             |                                           | 5. FLARED-TO-PIPE THREAD                        |  |                                                           | 6. FLARED-TO-WELD |
|------------------------------------------------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------|-------------------------------------|---------------|--------------------------------|---------------------------------------------|-------------------------------------------|-------------------------------------------------|--|-----------------------------------------------------------|-------------------|
| ADAPTER                                                    | BUSHING                                                                 | ELBOW                                                           | TEE                                                         | ADAPTER                                             | ELBOW                               | ADAPTER       | ELBOW                          | ADAPTER                                     | ELBOW                                     | TEE                                             |  | ADAPTER                                                   |                   |
| AN894,<br>MS24398,<br>Female<br>Boss                       | AN894,<br>MS24398,<br>Screw<br>Thread<br>Expander                       | MS51527,<br>90°<br>Straight<br>Thread                           | MS51529,<br>Male Boss<br>on Side                            | MS21900<br>MS24405,<br>MS21923,<br>Flareless<br>BHD | MS24651,<br>90°<br>Flareless<br>BHD | AN807,<br>BHD | AN838,<br>90°, BHD             | AN816,<br>MS51500,<br>Male Pipe<br>Thread   | MS20822,<br>MS51504,<br>90°, Male<br>Pipe | MS20825,<br>MS51512,<br>Male Pipe<br>on Side    |  | MS39322,<br>Female<br>Swivel<br>Nut-to-<br>Weld<br>Socket |                   |
| MS24487,<br>MS39324,<br>MS51525,<br>Straight<br>Thread     | KC115,<br>w/Seal<br>Ring,<br>Screw<br>Thread<br>Expander                | MS9195,<br>MS51528,<br>45°<br>Straight<br>Thread                | MS51530,<br>Male Boss<br>on Run                             | MS24652,<br>90°<br>Flared<br>BHD                    | MS24652,<br>90°<br>Flared<br>BHD    | AN841         | AN839,<br>45°, BHD             | MS51503,<br>Female<br>Pipe<br>Thread        | MS20823,<br>MS51508,<br>45°, Male<br>Pipe | KC122<br>w/Seal<br>Ring<br>Male Pipe<br>on Side |  |                                                           |                   |
| KC133<br>w/Seal<br>Ring,<br>Reducer,<br>Straight<br>Thread | KC129<br>45°<br>Ring,<br>w/Seal<br>Ring,<br>Screw<br>Thread<br>Expander | KC129<br>45°<br>Ring,<br>Straight<br>Thread                     | (Reducer)<br>BHD on Run,<br>Boss on<br>Side                 | MS24654,<br>45°<br>Flareless<br>BHD                 | MS24654,<br>45°<br>Flareless<br>BHD |               |                                | KC116<br>w/Seal Ring<br>Male Pipe<br>Thread | MS51506,<br>90°, Female<br>Pipe           | MS20826,<br>MS51511,<br>Male Pipe<br>on Run     |  |                                                           |                   |
| MS51526,<br>Long,<br>Straight<br>Thread                    | KC164<br>w/Seal<br>Ring,<br>Screw<br>Thread<br>Expander                 | MS9194<br>90°<br>Straight<br>Thread                             | BHD on Run,<br>Boss on Run                                  |                                                     |                                     |               |                                |                                             |                                           |                                                 |  |                                                           |                   |
| KC112<br>w/Seal<br>Ring,<br>Straight<br>Thread             |                                                                         | KC108,<br>90°<br>Ring,<br>w/Seal<br>Ring,<br>Straight<br>Thread | KC119,<br>w/Seal<br>Ring,<br>BHD on Run,<br>Side            |                                                     |                                     |               |                                |                                             |                                           | KC121<br>w/Seal<br>Ring<br>Male Pipe<br>on Run  |  |                                                           |                   |
| KC134<br>w/Seal<br>Ring, BHD<br>to Straight<br>Thread      |                                                                         |                                                                 | MS24388,<br>BHD on Run,<br>Boss on<br>Side                  |                                                     |                                     |               |                                |                                             |                                           | MS51513,<br>Female<br>Pipe on<br>Side           |  |                                                           |                   |
| KC135<br>w/Seal Ring<br>Expander,<br>Straight<br>Thread    |                                                                         |                                                                 | KC120,<br>w/Seal<br>Ring,<br>BHD on Run,<br>Boss on<br>Side |                                                     |                                     |               |                                |                                             |                                           | MS51514,<br>Female<br>Pipe on<br>Run            |  |                                                           |                   |
|                                                            |                                                                         |                                                                 | MS24389,<br>BHD on Run,<br>Boss on Run                      |                                                     |                                     |               |                                |                                             |                                           |                                                 |  |                                                           |                   |
|                                                            |                                                                         |                                                                 | MS9196,<br>Universal<br>on Side                             |                                                     |                                     |               |                                |                                             |                                           |                                                 |  |                                                           |                   |
|                                                            |                                                                         |                                                                 | KC110,<br>w/Seal<br>Ring,<br>Universal<br>on Run            |                                                     |                                     |               |                                |                                             |                                           |                                                 |  |                                                           |                   |

# 7. FLARELESS

| ADAPTER                               | BOLT                                          | CAP                        | CLUSTER FITTING                                                 | CROSS                                                | ELBOW                                                                            | NUT, COUPLING                                    | PLUG    | SLEEVE          | TEE                                                                                                                                                                                                      | UNION                                                                                  | WIRE                |
|---------------------------------------|-----------------------------------------------|----------------------------|-----------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------|---------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------|
| NAS1565, Tube, Reducer                | MS21938, Cluster Fitting Single Port          | MS21914, Assy              | MS21942, One Way                                                | MS21906, MS51894, AS1006, (Reducer)                  | MS21904, MS51820, AS1004, (Reducer)                                              | MS21921, AS1041, (w/Lockwire Holes)              | MS21913 | MS21918         | MS21905, MS51811, AS1005 (Reducer)                                                                                                                                                                       | MS21902                                                                                | MS27074, Swivel Nut |
| NAS1566, Reducer Assy, Male-to-Female | MS21940, MS21941, Cluster Fitting Double Port | MS51890, Assy AS1000, Assy | MS21943, Two Way, 90° MS21944, Two Way, 180° MS21945, Three Way | MS21907, 45°, BHD MS21924, 90°, Long Swivel Lightwt. | MS21907, 45°, BHD MS21924, 90°, Long Swivel Lightwt. MS21926, 90°, Univ. Profile | MS21907, 45°, BHD Swivel AS1790, Swivel Lightwt. | MS51891 | MS21922 MS51825 | MS21909 AS1009 (Reducer) BHD on Side MS21912, AS1003 (Reducer) BHD on Run MS51853, Swivel on Side MS51854, Male Swivel on Run NAS1763, Male Swivel on Run, Reducer NAS1764, Male Swivel on Side, Reducer | MS51812, BHD MS51814, Small Hex MS51895, Reducer AS1007, BHD, Reducer MS21916, Reducer | AS1791, Swivel Nut  |

| 8. FLARELESS-TO-PORT (O RING SEAL) |                                         |                              |                                                                             |
|------------------------------------|-----------------------------------------|------------------------------|-----------------------------------------------------------------------------|
| ADAPTER                            | BUSHING                                 | ELBOW                        | TEE                                                                         |
| MS51843<br>Male Boss               | MS21915,<br>Screw<br>Thread<br>Expander | MS51839<br>90°<br>Universal  | MS21910,<br>AS1001,<br>(Reducer)<br>BHD on Run,<br>Internal<br>Boss on Side |
| MS51893,<br>Long Male<br>Boss      |                                         | MS51842,<br>45°<br>Universal | MS21911, AS1002<br>(Reducer)<br>BHD on Run,<br>Internal Boss<br>on Run      |
| AS1299,<br>Ring Lock               |                                         |                              | MS51841,<br>Universal<br>on Side                                            |
|                                    |                                         |                              | MS51892,<br>Universal<br>on Run                                             |

| 9. FLARELESS-TO-PIPE THREAD               |                                               |                                            |  |
|-------------------------------------------|-----------------------------------------------|--------------------------------------------|--|
| ADAPTER                                   | ELBOW                                         | TEE                                        |  |
| MS51816,<br>Female Pipe<br>Thread         | MS51813,<br>90° Female<br>Pipe<br>Thread      | MS51818,<br>AS893,<br>Male Pipe<br>on Side |  |
| MS51819,<br>AS896,<br>Male Pipe<br>Thread | MS51815,<br>90°<br>Male Pipe<br>Thread        | MS51821,<br>Female Pipe<br>on Side         |  |
|                                           | MS51817,<br>45°<br>Male Pipe<br>Thread        | MS51822,<br>Female Pipe<br>on Run          |  |
|                                           | AS895, 45°<br>Reducer,<br>Male Pipe<br>Thread | MS51824,<br>AS894,<br>Male Pipe<br>on Run  |  |
|                                           | AS897, 90°<br>Male Pipe<br>Thread             |                                            |  |

| 10. FLARELESS-TO-WELD | ADAPTER |
|-----------------------|---------|
|                       | AS1582  |

| 11. PIPE THREAD |          |                                    |                                                                  |        |                                                          |                                    |
|-----------------|----------|------------------------------------|------------------------------------------------------------------|--------|----------------------------------------------------------|------------------------------------|
| BUSHING         | COUPLING | CROSS                              | ELBOW                                                            | NIPPLE | PLUG                                                     | TEE                                |
| AN912           | AN910    | AN918,<br>Female<br>Pipe<br>Thread | AN914, 90°<br>AN915, 45°<br>Male and<br>Female<br>Pipe<br>Thread | AN911  | MS27769,<br>C'Sink<br>Hex Head<br><br>AN933,<br>Hex Head | AN917,<br>Female<br>Pipe<br>Thread |
|                 |          |                                    | AN916,<br>Female<br>Pipe<br>Thread                               |        | MS20913,<br>Square<br>Head                               |                                    |

| 12. PIPE-TO-HOSE<br>(BUMP STYLE)        |                 |  |
|-----------------------------------------|-----------------|--|
| ADAPTER                                 | ELBOW           |  |
| MS24522,<br>Low<br>Pressure             | MS24518,<br>45° |  |
| AN7023,<br>Connector,<br>Vacuum<br>Hose | MS24519,<br>90° |  |

| 13. FLANGE                       |
|----------------------------------|
| MS20756,<br>Swivel,<br>Retaining |

| 14. HOSE (BUMP STYLE) |                                                                                                          |                                                                                                                    |         |                                        |
|-----------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------|----------------------------------------|
| COLLAR                | ELBOW                                                                                                    | FLANGE                                                                                                             | TEE     | UNION                                  |
| AN876                 | AN846,<br>45° BHD<br>AN848<br>90° BHD<br>MS20758<br>Flange<br>Swivel,<br>45°<br>MS20759<br>Flange<br>90° | AN801,<br>Straight<br>AN802,<br>45°<br>AN803,<br>90°<br>MS20757,<br>Straight<br>MS20758,<br>45°<br>MS20759,<br>90° | MS24521 | MS24520,<br>Mender,<br>Low<br>Pressure |

| 15. SOLDER              |          |               |                  |       |
|-------------------------|----------|---------------|------------------|-------|
| ADAPTER                 | COUPLING | ELBOW         | NUT,<br>COUPLING | TEE   |
| AN780<br>AN785<br>AN800 | AN785    | AN791,<br>45° | AN805            | AN795 |

16. STRAIGHT THREAD

| ADAPTER                                                     | BUSHING                               | CLUSTER FITTING        | COUPLING                    | CROSS              | ELBOW                  | FLANGE                  | LOCKNUT                               | PLUG                               | TEE   | VALVE                    |
|-------------------------------------------------------------|---------------------------------------|------------------------|-----------------------------|--------------------|------------------------|-------------------------|---------------------------------------|------------------------------------|-------|--------------------------|
| MS27612, Hydraulic Bleeder                                  | AN893, MS24397, Screw Thread Expander | MS21946, One Way       | MS9016, Screw Thread, Plain | AN937, Female Boss | AN939, 90° Female Boss | AN871 Female Boss, Weld | AN924, MS51860, MS51888, AN6289, Boss | AN814, MS24391, MS9015             | AN938 | AN6204, MS27611, Bleeder |
| MS27585 Methanol Svec, US Gnd Eqpt RAF Acft                 | MS9016 Screw Thread, Plain            | MS21958, Two Way, 180° | NAS424, Female Boss         |                    | AN941, 45° Female Boss |                         | MS9099, Boss, Aluminum                | MS9405, Silver Plate, Metal Gasket |       |                          |
| MS27586 Demineralized Water Svec, U.S. Gnd Eqpt to RAF Acft |                                       | MS21959, Two Way, 90°  |                             |                    |                        |                         | MS9100, Boss, Cres                    | MS9953, Aluminum                   |       |                          |
|                                                             |                                       | MS21960, Three Way     |                             |                    |                        |                         | MS9200, Boss, Aluminum                | MS9954, Aluminum w/Lockwire Holes  |       |                          |
|                                                             |                                       |                        |                             |                    |                        |                         | MS9201, Boss, Cres                    |                                    |       |                          |
|                                                             |                                       |                        |                             |                    |                        |                         | MS9553, Boss, Cres                    |                                    |       |                          |
|                                                             |                                       |                        |                             |                    |                        |                         | MS21264, w/Lockwire Holes             |                                    |       |                          |
|                                                             |                                       |                        |                             |                    |                        |                         | NAS1410, Boss                         |                                    |       |                          |
|                                                             |                                       |                        |                             |                    |                        |                         | AS1027, w/Lockwire Holes              |                                    |       |                          |

| 17. UNIVERSAL FITTING |                                           |       |
|-----------------------|-------------------------------------------|-------|
| BOLT                  | ELBOW                                     | TEE   |
| NAS551                | NAS552, 90°<br>NAS553, 75°<br>NAS554, 45° | AN779 |

| 18. WELD                              |                                               |                                  |                                 |
|---------------------------------------|-----------------------------------------------|----------------------------------|---------------------------------|
| ELBOW                                 | SLEEVE                                        | TEE                              | UNION                           |
| AS1584, 90°<br>3000 PSI,<br>Hydraulic | AS1581,<br>Flareless<br>3000 PSI<br>Hydraulic | AS1583,<br>3000 PSI<br>Hydraulic | AS1585<br>Reducer,<br>Hydraulic |

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TABLE II  
B. CONFIGURATION (Metric)

| A. TYPE CONNECTION    | ADAPTER                | BUSHING                       | CAP ASSEMBLY          | CROSS                | ELBOW                                                                                                                                                                                                                                                  | NUT COUPLING                                                                               | PLUG   | RING          | SLEEVE                                        | TEE                                                                                                                                                                              | UNION                                                                           |
|-----------------------|------------------------|-------------------------------|-----------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------|---------------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| 7. Flareless          | MA2046, Metric to Inch | MA2036, Screw Thread Expander | MA2035, Pressure Seal | MA2028, Reduced Body | MA2026, 90°, Reduced Body<br>MA2029, 45°, BHD,<br>Reduced Body<br>MA2030, 90°, BHD,<br>Reduced Body<br>MA2040, Sleeve Coupling<br>MA2044, 90°, High Profile, BHD<br>MA2045, 90°, Low Profile, BHD<br>MA2048, 45°, Swivel Nut<br>MA2050, 90° Swivel Nut | MA2072, Olive, Female<br>MA2073, Olive, Male<br>MA2040, Sleeve Coupling<br>MA2047, Wire-on | MA2034 | MA2074, Olive | MA2041, Coupling                              | MA2027, Reduced Body<br>MA2031, BHD on Side,<br>Reduced Body<br>MA2049, Swivel Nut on Run,<br>Reduced Body<br>MA2051, Swivel Nut on Side<br>MA2054, BHD on Run,<br>Reduced Body  | MA2025<br>MA2037, Reducer<br>MA2043, BHD Univ.<br>MA2058, BHD Reducer<br>MA2068 |
| 8. Flareless-to-Port  | MA2068                 |                               |                       |                      |                                                                                                                                                                                                                                                        |                                                                                            |        |               |                                               | MA2032, Boss on Side,<br>Reduced Body<br>MA2033, BHD & Boss on Run,<br>Reduced Body<br>MA2053, BHD on Run, Boss on Side,<br>Reduced Body<br>MA2056, Boss on Run,<br>Reduced Body |                                                                                 |
| 10. Flareless-to-Weld | MA2065, Hyd.           |                               |                       |                      |                                                                                                                                                                                                                                                        |                                                                                            |        |               | MA2067, Olive, Hyd.<br>MA2064, Male Flareless |                                                                                                                                                                                  | MA2065 Hyd.                                                                     |
| 18. Weld              |                        |                               |                       | MA2071, Hyd.         | MA2069, 90°, Hyd.                                                                                                                                                                                                                                      |                                                                                            |        | MA2062 Hyd.   |                                               | MA2070 Hydraulic                                                                                                                                                                 | MA2066 Reducer                                                                  |

TABLE III  
NUMERICAL INDEX

| A N         |                       | A S         |                       | K C         |                       | M A (Metric) |                       | M S         |                       | N A S       |                       |
|-------------|-----------------------|-------------|-----------------------|-------------|-----------------------|--------------|-----------------------|-------------|-----------------------|-------------|-----------------------|
| Drawing No. | Configuration Heading | Drawing No. | Configuration Heading | Drawing No. | Configuration Heading | Drawing No.  | Configuration Heading | Drawing No. | Configuration Heading | Drawing No. | Configuration Heading |
| AN774       | A.1, B.2              | AS893       | A.9, B.19             | KC103       | A.1, B.16             | MA2025       | A.7, B.20             | MS9015      | A.16, B.15            | NAS424      | A.16, B.7             |
| AN775       | A.1, B.2              | AS894       | A.9, B.19             | KC106       | A.1, B.1              | MA2026       | A.7, B.9              | MS9016      | A.16, B.3             | NAS551      | A.17, B.2             |
| AN779       | A.17, B.19            | AS895       | A.9, B.3              | KC107       | A.1, B.18             | MA2027       | A.7, B.19             | MS9017      | A.16, B.7             | NAS552      | A.17, B.9             |
| AN780       | A.15, B.1             | AS896       | A.9, B.1              | KC108       | A.2, B.9              | MA2028       | A.7, B.8              | MS9018      | A.16, B.11            | NAS553      | A.17, B.9             |
| AN783       | A.2, B.19             | AS897       | A.9, B.3              | KC109       | A.1, B.19             | MA2029       | A.7, B.9              | MS9019      | A.16, B.11            | NAS554      | A.17, B.9             |
| AN784       | A.2, B.19             | AS1000      | A.7, B.4              | KC110       | A.1, B.19             | MA2030       | A.7, B.9              | MS9020      | A.2, B.9              | NAS591      | A.1, B.7              |
| AN785       | A.15, B.7             | AS1001      | A.8, B.19             | KC111       | A.2, B.1              | MA2031       | A.7, B.19             | MS9021      | A.2, B.9              | NAS592      | A.1, B.16             |
| AN791       | A.15, B.9             | AS1002      | A.8, B.19             | KC112       | A.1, B.18             | MA2032       | A.8, B.19             | MS9022      | A.2, B.19             | NAS593      | A.1, B.14             |
| AN795       | A.15, B.19            | AS1003      | A.7, B.19             | KC113       | A.1, B.3              | MA2033       | A.8, B.19             | MS9023      | A.1, B.14             | NAS594      | A.1, B.7              |
| AN801       | A.14, B.10            | AS1004      | A.7, B.9              | KC114       | A.5, B.1              | MA2034       | A.7, B.15             | MS9024      | A.1, B.14             | NAS596      | A.1, B.14             |
| AN802       | A.14, B.10            | AS1005      | A.7, B.19             | KC115       | A.1, B.8              | MA2035       | A.7, B.4              | MS9025      | A.1, B.14             | NAS597      | A.1, B.7              |
| AN803       | A.14, B.10            | AS1006      | A.7, B.8              | KC116       | A.1, B.9              | MA2036       | A.7, B.1              | MS9026      | A.16, B.11            | NAS598      | A.1, B.7              |
| AN804       | A.1, B.18             | AS1007      | A.7, B.20             | KC117       | A.2, B.19             | MA2037       | A.7, B.2              | MS9027      | A.16, B.11            | NAS599      | A.1, B.11             |
| AN805       | A.15, B.14            | AS1008      | A.7, B.9              | KC118       | A.2, B.19             | MA2038       | A.7, B.14             | MS9028      | A.1, B.4              | NAS1564     | A.1, B.1              |
| AN806       | A.1, B.14             | AS1009      | A.7, B.19             | KC119       | A.5, B.19             | MA2039       | A.7, B.18             | MS9029      | A.1, B.4              | NAS1565     | A.7, B.1              |
| AN807       | A.4, B.1              | AS1010      | A.7, B.9              | KC120       | A.5, B.19             | MA2040       | A.7, B.18             | MS9030      | A.1, B.4              | NAS1566     | A.7, B.1              |
| AN814       | A.16, B.15            | AS1011      | A.16, B.11            | KC121       | A.5, B.19             | MA2041       | A.7, B.18             | MS9031      | A.1, B.4              | NAS1567     | A.7, B.1              |
| AN815       | A.1, B.20             | AS1012      | A.1, B.14             | KC122       | A.5, B.19             | MA2042       | A.7, B.20             | MS9032      | A.1, B.4              | NAS1761     | A.7, B.9              |
| AN816       | A.5, B.1              | AS1013      | A.1, B.19             | KC123       | A.1, B.19             | MA2043       | A.7, B.9              | MS9033      | A.16, B.15            | NAS1762     | A.7, B.9              |
| AN817       | A.1, B.14             | AS1014      | A.1, B.9              | KC124       | A.1, B.20             | MA2044       | A.7, B.9              | MS9034      | A.16, B.11            | NAS1763     | A.7, B.9              |
| AN818       | A.1, B.14             | AS1015      | A.1, B.18             | KC125       | A.1, B.20             | MA2045       | A.7, B.1              | MS9035      | A.16, B.15            | NAS1764     | A.7, B.9              |
| AN821       | A.1, B.9              | AS1016      | A.1, B.18             | KC126       | A.1, B.20             | MA2046       | A.7, B.1              | MS9036      | A.16, B.15            |             |                       |
| AN824       | A.1, B.18             | AS1017      | A.1, B.8              | KC127       | A.1, B.19             | MA2047       | A.7, B.19             | MS9037      | A.16, B.15            |             |                       |
| AN827       | A.1, B.8              | AS1018      | A.1, B.9              | KC128       | A.1, B.9              | MA2048       | A.7, B.19             | MS9038      | A.16, B.15            |             |                       |
| AN832       | A.1, B.20             | AS1019      | A.1, B.19             | KC129       | A.2, B.9              | MA2049       | A.7, B.9              | MS9039      | A.13, B.10            |             |                       |
| AN833       | A.1, B.9              | AS1020      | A.1, B.9              | KC130       | A.1, B.15             | MA2050       | A.7, B.9              | MS9040      | A.14, B.18            |             |                       |
| AN834       | A.1, B.9              | AS1021      | A.1, B.9              | KC131       | A.1, B.9              | MA2051       | A.8, B.19             | MS9041      | A.14, B.9             |             |                       |
| AN837       | A.1, B.19             | AS1022      | A.7, B.14             | KC132       | A.1, B.9              | MA2052       | A.7, B.19             | MS9042      | A.14, B.10            |             |                       |
| AN838       | A.4, B.9              | AS1023      | A.1, B.9              | KC133       | A.2, B.1              | MA2053       | A.7, B.19             | MS9043      | A.14, B.9             |             |                       |
| AN839       | A.4, B.9              | AS1024      | A.1, B.9              | KC134       | A.2, B.1              | MA2054       | A.8, B.19             | MS9044      | A.14, B.10            |             |                       |
| AN841       | A.4, B.9              | AS1025      | A.1, B.9              | KC135       | A.2, B.1              | MA2055       | A.7, B.20             | MS9045      | A.1, B.10             |             |                       |
| AN846       | A.14, B.9             | AS1026      | A.1, B.9              | KC136       | A.2, B.1              | MA2056       | A.7, B.20             | MS9046      | A.1, B.10             |             |                       |
| AN848       | A.14, B.9             | AS1027      | A.1, B.9              | KC137       | A.2, B.1              | MA2057       | A.7, B.20             | MS9047      | A.1, B.10             |             |                       |
| AN871       | A.16, B.10            | AS1028      | A.1, B.9              | KC138       | A.1, B.14             | MA2058       | A.7, B.20             | MS9048      | A.1, B.10             |             |                       |
| AN876       | A.14, B.6             | AS1029      | A.1, B.9              | KC139       | A.1, B.14             |              |                       | MS9049      | A.1, B.10             |             |                       |
| AN893       | A.16, B.3             | AS1030      | A.1, B.9              | KC140       | A.1, B.14             |              |                       | MS9050      | A.1, B.10             |             |                       |
| AN894       | A.1, B.3              | AS1031      | A.1, B.9              | KC141       | A.1, B.14             |              |                       | MS9051      | A.1, B.10             |             |                       |
|             | A.2, B.1              | AS1032      | A.1, B.9              | KC142       | A.1, B.14             |              |                       | MS9052      | A.1, B.10             |             |                       |
|             | A.2, B.3              | AS1033      | A.1, B.9              | KC143       | A.1, B.14             |              |                       | MS9053      | A.1, B.10             |             |                       |
| AN910       | A.11, B.7             | AS1034      | A.1, B.9              | KC144       | A.1, B.14             |              |                       | MS9054      | A.1, B.10             |             |                       |
| AN911       | A.11, B.13            | AS1035      | A.1, B.9              | KC145       | A.1, B.14             |              |                       | MS9055      | A.1, B.10             |             |                       |
| AN912       | A.11, B.3             | AS1036      | A.1, B.9              | KC146       | A.1, B.14             |              |                       | MS9056      | A.1, B.10             |             |                       |
| AN914       | A.11, B.9             | AS1037      | A.1, B.9              | KC147       | A.1, B.14             |              |                       | MS9057      | A.1, B.10             |             |                       |
| AN915       | A.11, B.9             | AS1038      | A.1, B.9              | KC148       | A.1, B.14             |              |                       | MS9058      | A.1, B.10             |             |                       |
| AN916       | A.11, B.9             | AS1039      | A.1, B.9              | KC149       | A.1, B.14             |              |                       | MS9059      | A.1, B.10             |             |                       |
| AN917       | A.11, B.19            | AS1040      | A.1, B.9              | KC150       | A.1, B.14             |              |                       | MS9060      | A.1, B.10             |             |                       |
| AN918       | A.11, B.8             | AS1041      | A.7, B.14             | KC151       | A.1, B.14             |              |                       | MS9061      | A.1, B.10             |             |                       |

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