



ARCHON Industries, Inc.

# Full View Sight Flow Indicators

## MODELS:

- ❖ AKG-F
- ❖ AKG-F-AM
- ❖ AKG-S
- ❖ AKG-S-AM
- ❖ AKG-CL



## Installation / Operation / Maintenance Instruction

Instruction #: **1007.1**  
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## **I. STORAGE AND HANDLING**

ALL UNITS SHOULD BE INSPECTED FOR DAMAGE UPON RECEIPT IN CASE IT MAY BE NECESSARY TO SUBMIT A CLAIM TO THE CARRIER. UNITS SHOULD BE STORED WHERE THEY WILL BE PROTECTED FROM THE ELEMENTS AND CORROSIVE FUMES. THE MANNER OF STORAGE SHOULD INSURE THAT THEY CAN NEITHER FALL NOR BE STRUCK BY OTHER OBJECTS. CARE SHOULD BE TAKEN TO PROTECT THE END CONNECTIONS FROM DAMAGE. UNDER NO CIRCUMSTANCES SHOULD THE GLASS EVER HAVE OBJECTS PLACED ON TOP OF IT OR BE STRUCK BY OTHER OBJECTS.

## **II. INSTALLATION**

### **A. GENERAL INSTRUCTIONS**

UNITS SHOULD BE CHECKED TO INSURE THAT THEY CONTAIN NO FOREIGN MATTER AND THAT THE END CONNECTIONS ARE CLEAN, UNDAMAGED, AND IN LINE WITH THE ADJOINING PIPE. USING A FLASHLIGHT, EXAMINE THE GLASS CAREFULLY FOR ANY INDICATIONS OF SCRATCHES OR CLOUDINESS, IF ANY TYPE OF FLAW IS APPARENT, THE UNIT MUST NOT BE INSTALLED UNTIL THE GLASS HAS BEEN REPLACED.

PREPARE PROPER SUPPORTS TO INSURE THAT PIPELINE STRESSES WILL NOT BE TRANSMITTED TO THE SIGHT FLOW INDICATOR. ANY MISALIGNMENT BETWEEN ADJACENT CONNECTIONS MUST BE CORRECTED RATHER THAN FORCING A FIT-UP. LARGE, HEAVY UNITS MUST BE INDEPENDENTLY SUPPORTED TO AVOID STRESSING THE PIPING. BE CERTAIN THAT THE INSTALLATION LOCATION PROVIDES ACCESS FOR COMFORTABLE VIEWING AND MAINTENANCE. KEEP IN MIND THAT THE UNITS MUST BE PLACED SO THAT DAMAGE CANNOT BE INFLICTED BY PASSING TRAFFIC.

CONSIDERATIONS SHOULD BE GIVEN TO LOCATIONS WHERE THE GLASS WILL NOT BE SUBJECTED TO LARGE TEMPERATURE VARIATIONS. FOR INSTANCE, AN INDICATOR MUST NOT BE PLACED IN A HOT PROCESS LINE WHERE THE OPENING OF A DOOR COULD INFLICT SUDDEN BLASTS OF COLD AIR. COLD "WASH DOWN" WATER IS ALSO A FREQUENT ENEMY OF GLASS IN HOT PIPELINES. A POOR CHOICE OF INSTALLATION COULD IMPOSE CONDITIONS OF THERMAL SHOCK (I.E. RAPID HEATING) WHERE THE STRESS VALUES APPROACH TWICE THOSE CAUSED BY TEMPERATURE ALONE AND ARE ADDITIVE TO MECHANICAL STRESSES CAUSED BY PRESSURE AND BOLTING LOADS.

### **B. INSTRUCTIONS FOR MODELS: AKGF, AKGS AND AKGF-AM, AKGS-AM**

#### **1. MODEL AKGF and AKGS:**

THESE LOW PRESSURE TYPE SIGHT FLOW INDICATORS USED FOR BOTH HORIZONTAL AND VERTICAL FLOW MUST NOT BE INSTALLED WHERE MECHANICAL STRAINS ARE PRESENT IN THE PIPELINES. ANY PIPELINE STRESSES IMPOSED ON THESE UNITS WILL GREATLY AFFECT THE RELIABILITY OF THE GLASS.



## **2. MODEL AKGF-AM, AKGS-AM:**

ARMORED TYPE SIGHT FLOW MODELS: AKGF-AM and AKGS-AM ARE SUITABLE FOR HORIZONTAL AND VERTICAL FLOW IN PIPELINES WHERE MODERATE STRAINS ARE PRESENT.

### **C. INSTRUCTIONS FOR FLANGED MODELS PROVIDED WITH EXTERNAL PLASTIC SHIELD**

BEFORE STARTING INSTALLATION OF FLANGED SIGHT FLOW INDICATORS THAT ARE SHIPPED WITH THE PLASTIC SHIELDS MOUNTED OUTSIDE THE FLANGE DIAMETER, IT IS NECESSARY TO REMOVE THE SHIELD TO ALLOW ACCESS TO THE FLANGES FOR CONNECTING TO MATING PIPING.

1. REMOVE DRIVE PINS AND SPACERS, AND RETAIN FOR LATER INSTALLATION.
2. NOTE THE LOCATION OF THE HOLES FOR THE DRIVE PINS IN THE FLANGES AND IN THE SHIELD, ORIENT THE SHIELD AND SLIDE THE SHIELD OVER THE END OF THE MATING PIPING.
3. POSITION THE SIGHT FLOW INDICATOR BETWEEN MATING FLANGES.
4. INSTALL FLANGE BOLTS AND GASKETS (PROVIDED BY OTHERS) AND TORQUE IN ACCORDANCE WITH THIS INSTRUCTION.

SLIDE THE SHIELD OVER THE SIGHT FLOW INDICATOR, INSTALL SPACERS AND DRIVE PINS.

### **III. START-UP**

**CAUTION:** PRIOR TO START-UP COMPARE THE DATA ON THE INFORMATION TAG TO THE CONDITIONS OF THE SYSTEM. IF ANY DISCREPANCY IS APPARENT CONTACT ARCHON Industries, Inc. FOR CLARIFICATION AND ADVICE.

GASKETS AND SEALS FREQUENTLY ASSUME A COMPRESSION-SET (LOSS OF RESILIENCY) OVER A PERIOD OF TIME. SOME MATERIALS TEND TO COMPRESSION-RELIEVE OR CREEP. IT IS RECOMMENDED THAT THE UNIT HAVE ITS GLASS RETAINER FASTENERS RETORQUED TO THE PROPER VALUE BEFORE START-UP.

**CAUTION:** DO NOT TIGHTEN ANY FASTENERS WHILE THE EQUIPMENT IS IN OPERATION.

CHECK THE GLASS IN THE UNIT BEFORE START-UP TO INSURE THAT THERE ARE NO CHIPS, SCRATCHES, OR BLEMISHES. USE A FLASHLIGHT OR OTHER BRIGHT CONCENTRATED LIGHT TO EXAMINE THE GLASS CAREFULLY. IF ANY TYPE OF FLAW IS APPARENT (SEE SECTION IV), START-UP SHOULD BE DELAYED PENDING THE REPLACEMENT OF THE GLASS AND GASKETS.

#### **IV. ROUTINE MAINTENANCE**

##### **A. GENERAL**

PERIODIC VISUAL INSPECTIONS SHOULD BE MADE TO INSURE THAT NO LEAKS ARE EVIDENT AND THAT THERE IS NO CLOUDING, SCRATCHING OR BLEMISHING OF THE GLASS. IN NEW INSTALLATIONS DAILY INSPECTION IS RECOMMENDED TO ESTABLISH A ROUTINE INSPECTION CYCLE.

KEEP GLASSES CLEAN, USING COMMERCIAL GLASS CLEANERS (INCLUDING WINDEX , GLASS WAX, ETC.). CLEANING MUST BE DONE WITHOUT REMOVING THE GLASS. NEVER USE HARSH ABRASIVES, WIRE BRUSHES, STEEL WOOL, METAL SCRAPERS, OR OTHER MATERIALS THAT COULD SCRATCH THE GLASS.

**CAUTION: DO NOT ATTEMPT TO CLEAN WHEN THE EQUIPMENT IS IN OPERATION.**

##### **B. INSPECTION OF GLASS**

TO EXAMINE FOR SCRATCHES, SHINE A BRIGHT CONCENTRATED LIGHT (A POWERFUL FLASHLIGHT WILL SUFFICE) AT ABOUT A 45 DEGREE ANGLE TO THE GLASS. ANYTHING THAT GLISTENS BRIGHTLY MUST BE LOOKED AT CLOSELY. ANY SCRATCH THAT GLISTENS AND CATCHES A FINGERNAIL IS CAUSE FOR REPLACEMENT. ANY STAR-SHAPED OR CRESCENT-SHAPED MARK IS CAUSE FOR REPLACEMENT. IF THE INNER SURFACE APPEARS CLOUDY OR ROUGHENED AND WILL NOT RESPOND TO CLEANING PROCEDURES, THE GLASS MUST BE REPLACED, SINCE THIS IS EVIDENCE OF CHEMICAL ATTACK.

##### **C. REMOVAL OF GLASS**

ONCE A GLASS HAS BEEN REMOVED FROM ITS MOUNTING IN PROCESS EQUIPMENT, REGARDLESS OF THE REASON FOR REMOVAL, DISCARD IT AND SUBSTITUTE A NEW PIECE. USED GLASS MAY CONTAIN HIDDEN DAMAGE AND ARE POOR SAFETY RISKS. BE SURE THAT THE GLASS IS PROPER FOR THE SERVICE. CHECK ANY IN-LINE SAFETY DEVICES FOR COMPATIBILITY WITH THE PRESSURE AND TEMPERATURE LIMITS OF THE GLASS. IF REMOVED, PROTECTIVE SHEILDS TO KEEP COLD AIR, WATER, OR FALLING OBJECTS FROM THE GLASS MUST BE PUT BACK INTO POSITION. GASKETS MUST ALWAYS BE REPLACED WITH GASKETS OF THE SAME MATERIAL ONCE A UNIT HAS BEEN DISASSEMBLED. (SEE SECTION V.)

#### **IV. SERVICE INSTRUCTIONS**

##### **A. DISASSEMBLY**

THESE UNITS MUST BE REMOVED FROM THE LINE AND BENCH DISASSEMBLED. REMOVE THE HEADS BY REMOVING THE CAPSCREWS OR NUTS ON ALL MODELS. CAREFULLY REMOVE THE GLASS, GASKETS, AND OTHER HARDWARE. PLACE EVERYTHING ON A CLEAN WORK SURFACE.

## **B. INSPECTION**

THE GLASS SEATING SURFACES IN THE BODY AND IN THE RETAINER SHOULD BE CAREFULLY CLEANED AND CHECKED TO INSURE THAT THERE ARE NO PIECES OF OLD GASKET MATERIAL, CHIPS, RESIDUE, DIRT, OR OTHER MATERIAL ON THE SURFACES. ANY FOREIGN PARTICLES LEFT ON THE SURFACE COULD CAUSE HIGH LOCAL STRESSES IN THE GLASS POSSIBLY RESULTING IN ITS FAILURE.

### **CRACKED GLASS CAN BE CAUSED BY THE FOLLOWING:**

- (1) PRESSURE IN EXCESS OF THE GLASS RATING.
- (2) HIGH LOCAL STRESSES, WHICH CAN BE DUE TO UNEVEN BOLT TORQUING OR FOREIGN PARTICLES ON THE GLASS SEATING SURFACE.
- (3) THERMAL SHOCK OF THE GLASS.

IT IS IMPORTANT TO DETERMINE THE CAUSE. SIMPLY PUTTING IN A NEW GLASS WILL NOT ALLEVIATE THE CAUSE FOR REPLACEMENT. CONSULTATION WITH THE MANUFACTURER MAY GREATLY EXTEND THE SERVICE LIFE AND RELIABILITY OF THE UNITS IN SERVICE. CHECK YOUR OPERATING CONDITIONS AGAINST THE RATINGS ON THE UNIT'S NAMEPLATE OR ACCOMPANYING LITERATURE. IF THERE ARE ANY QUESTIONS ABOUT THE APPLICABILITY OF THE UNIT FOR THE SERVICE INTENDED, DO NOT PROCEED WITHOUT VERIFYING THE UNIT WITH THE MAINTENANCE SUPERVISOR OR ENGINEER.

## **C. REASSEMBLY - GENERAL INSTRUCTIONS**

ALWAYS REASSEMBLE SIGHT FLOW INDICATORS USING NEW GLASS AND GASKETS. THE POTENTIAL OF HIDDEN DAMAGE MAKES USED GLASS AND GASKETS A POOR SAFETY RISK. CHECK THE NEW GLASS TO INSURE THAT THERE ARE NO BUMPS, CHIPS, SCRATCHES, OR OTHER IMPERFECTIONS. BE CERTAIN THAT THE GASKETS ARE CLEAN.

THE GLASS AND GASKETS SHOULD BE VERIFIED AS CORRECT FOR THE APPLICATION. GENERALLY, A DIRECT REPLACEMENT OF THE GLASS AND GASKETS THAT WERE IN THE UNIT BEFORE DISASSEMBLY SHOULD BE CORRECT, BUT CHECK WITH THE MAINTENANCE SUPERVISOR RATHER THAN TAKE CHANCES. USE ONLY GASKETS THAT HAVE BEEN SPECIFIED BY THE MANUFACTURER OR THE SUPERVISING ENGINEER. BE CERTAIN THAT THEY ARE CLEAN AND FRESH WITH NO BUMPS OR TEARS.

USING A TORQUE WRENCH, TIGHTEN THE FASTENERS IN A REGULAR PATTERN TO AVOID UNEVEN LOADS ON THE GLASS. (FOR TYPICAL TIGHTENING PATTERNS, SEE FIGURE A) TORQUE INDIVIDUAL FASTENERS IN SMALL AMOUNTS, MOVING TO THE NEXT FASTENER AFTER EACH INCREMENT OF TORQUE. A MAXIMUM DIFFERENCE OF 3 FT-LBS. BETWEEN FASTENERS SHOULD BE MAINTAINED ON LARGER UNITS; THERE SHOULD BE LESS ON SMALLER UNITS. CONTINUE TORQUING UNTIL THE VALUE RECOMMENDED FOR THE UNIT IS ATTAINED (SEE TORQUE CHART).

| Model            | Size        | Torque per Fastener<br>(ft-lbs.) |
|------------------|-------------|----------------------------------|
| AKGF and AKGF-AM | All         | 12-14                            |
| AKGS and AKGS-AM | 1/2" & 3/4" | 5                                |
|                  | 1"          | 8                                |
|                  | 1-1/2"      | 10                               |
|                  | 2"          | 12                               |

**TORQUE CHART**

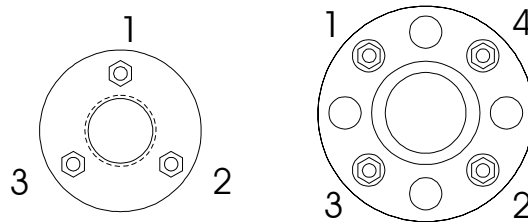


Figure A