Knob Handle Alignment Template Use

1.0 Objective & Quality Standard

The objective of this procedure is to ensure consistent and accurate placement of knob handles on cabinet doors and drawer fronts using a dedicated alignment template. Correct alignment prevents visual defects, binding, and customer complaints. The acceptable tolerance for knob center-to-edge distance is ±0.5mm from the specified drawing dimension. All knobs must be installed parallel to the door edge within 0.3mm over 100mm length.

2.0 Required Tools & Gauges

- Knob alignment template (acrylic or metal, laser-cut to exact hole pattern)
- Digital caliper (0-150mm, resolution 0.01mm)
- Pencil or fine-tip marker for marking hole centers
- Center punch (optional, for pilot holes)
- Drill with appropriate diameter bit for knob screw
- Torque screwdriver (set to manufacturer specification, typically 0.6-1.0 Nm)
- Feeler gauge set (0.3mm and 0.5mm)
- Non-marring clamp (to hold template in place)

3.0 Safety & Material Handling

- Wear safety glasses when drilling or using center punch.
- Handle finished doors and drawer fronts with clean, dry hands or cotton gloves to avoid oil or dirt transfer.
- Place workpieces on a non-marring assembly mat to prevent surface scratches.
- Ensure drill is set to low speed to avoid tear-out on finished surfaces.
- Keep work area clear of debris and loose tools to prevent tripping hazards.

4.0 Step-by-Step Procedure

1. Verify the job drawing for the specified knob handle location: measure the required center-to-edge distance from the door/drawer edge (e.g., 25mm from top and side).

2. Select the correct alignment template matching the knob hole pattern and the required offset. Inspect the template for damage or wear; if any edge is chipped or distorted, reject the template and obtain a replacement.

3. Place the door or drawer front face-up on a clean, flat assembly surface. Ensure the workpiece is stable and will not shift during marking.

4. Position the alignment template against the reference edges (top and side) as per the drawing. Use a non-marring clamp to hold the template firmly in place without damaging the surface.

5. Using a fine-tip marker or pencil, mark the center of each knob hole through the template guide holes. Apply light, consistent pressure to avoid enlarging the hole or damaging the template.

6. Remove the template and inspect the marked locations. Use a digital caliper to measure the distance from the marked center to the nearest door edge. Tolerance: ±0.5mm. If out of tolerance, clean the mark and reposition the template.

7. If using a center punch, lightly tap a pilot indentation at each marked center to guide the drill bit. Ensure the punch is perpendicular to the surface.

8. Select the correct drill bit diameter for the knob screw (typically 4mm or 5mm). Drill through the door/drawer front at each marked center, using a slow speed and steady pressure. Drill from the finished face side to minimize tear-out.

9. Remove any dust or debris from the drilled holes using compressed air or a clean cloth. Inspect the holes for splintering or tear-out; if defects exceed 1mm diameter, flag the part for rework.

10. Insert the knob handle screw through the drilled hole from the front, and thread the knob onto the screw from the back. Tighten the screw using a torque screwdriver set to the manufacturer's specification (typically 0.6-1.0 Nm). Do not overtighten.

11. After installation, verify knob alignment using a feeler gauge: place the 0.3mm gauge between the knob base and the door surface. The gauge should fit snugly but not force. If the gap exceeds 0.5mm, loosen and re-tighten the knob.

12. Visually inspect the knob orientation: the handle should be parallel to the door edge within 0.3mm over 100mm. Use a straightedge and feeler gauge if necessary. If misaligned, remove the knob, re-drill if needed, or adjust the template position.

5.0 Verification & Defect Reporting

1. After installation, measure the knob center-to-edge distance using a digital caliper. Record the measurement on the QA checklist. Acceptable range: specified dimension ±0.5mm.

2. Check knob parallelism: place a straightedge along the door edge and measure the gap at the knob base. Gap must be ≤0.3mm over 100mm. If exceeded, flag for rework.

3. If any knob is out of tolerance, red-tag the door/drawer with a non-conformance tag. Attach the tag to the part and log the defect in the ShopDocs QA module with the following details: job number, part ID, measured deviation, and operator name.

4. For rework: remove the knob, fill the incorrect hole with wood filler (if applicable), sand flush, and re-drill using the correct template position. If the part cannot be reworked without cosmetic damage, escalate to the production supervisor for replacement.

5. At the end of each shift, review all logged defects in ShopDocs. Identify recurring issues (e.g., template wear, operator error) and initiate a root cause analysis (RCA) to prevent recurrence.

6. Clean the alignment template after each use with a soft cloth and store it in the designated template rack. Inspect the template weekly for wear; replace if any guide hole diameter has increased by more than 0.1mm.