



# **OPERATING HINTS**

for the

## **Kalee Model Twelve Cinematograph Projector**

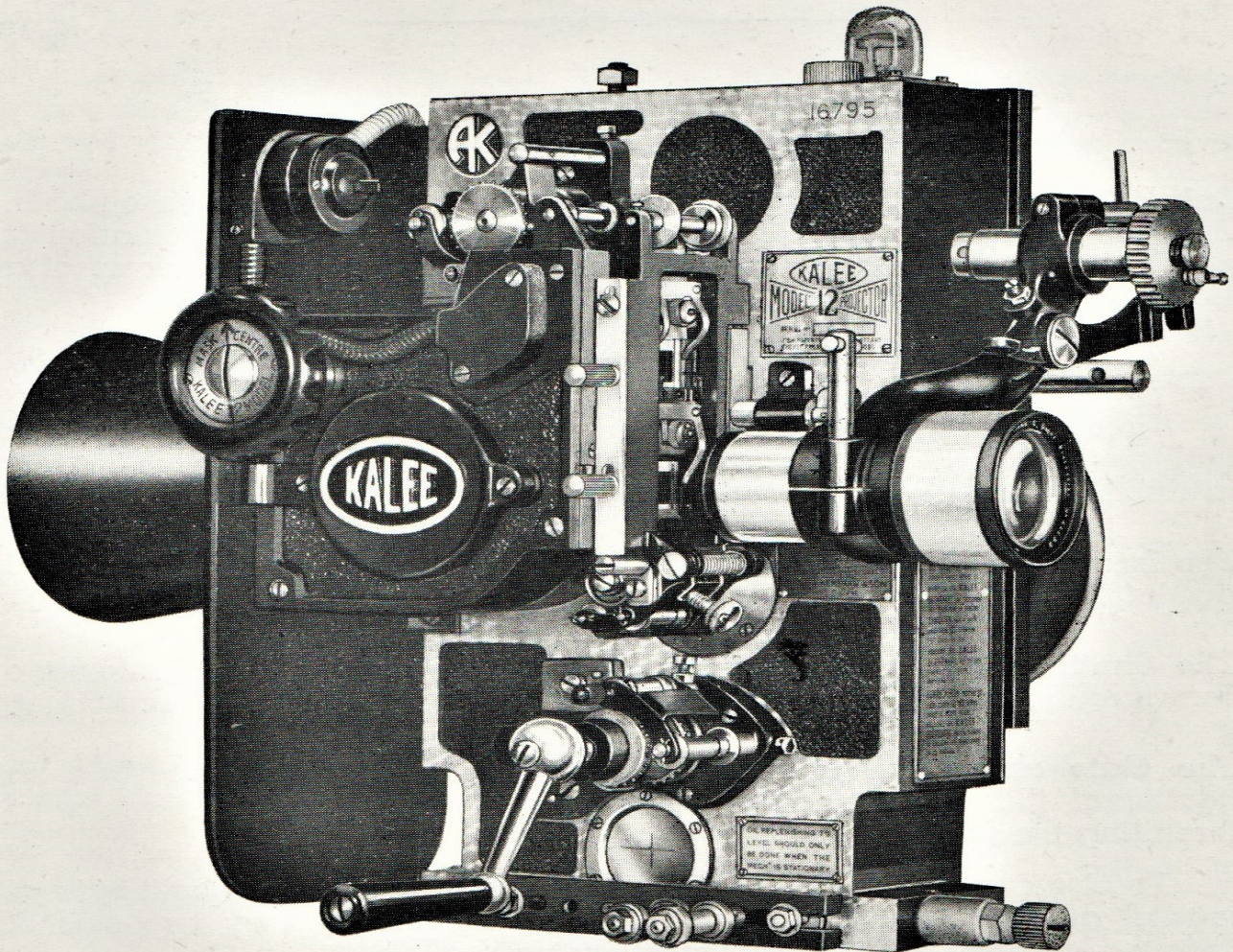






# Kalee Model Twelve

## Projector Mechanism



MANUFACTURERS :

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**LEEDS**

SOLE DISTRIBUTORS :

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# OPERATING HINTS

FOR THE

## KALEE MODEL 12 PROJECTOR

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### SPECIAL FEATURES

**Lubrication.** The box-type Main Frame of the machine forms an oil-bath. A continuously running gear type pump provides constant circulation of oil through a detachable filter and a visible indicator in the form of a transparent dome on top of the machine.

The main spindles run in ball bearings and are fitted with efficient "throwbacks" to ensure that all oil is returned to the sump.

Note, however, that a few external bearing points, such as pad rollers and the like, require regular lubrication—see detailed lubrication instructions below.

**The Intermittent Unit** is a complete unit which can be quickly removed and replaced.

**The Shutter** is a two-bladed drum type, fitted with internal automatic centrifugal safety blades and serves also as a fan to keep the gate cool.

**The Gate and Mask Plate.** In addition to the projection aperture an additional illuminated aperture is provided to facilitate framing when threading the film.

Precise control of the film in the gate is provided by a split spring-loaded guide roller providing automatic tracking and by two sets of independently adjustable light steel skates.

The gate opens for threading and is instantly detachable for easy cleaning.

The mask plate, which is hardened to ensure long life, is quickly removed and replaced and slides into position without any screws.

**Masking** is controlled by a conveniently placed large diameter heat insulated knob. An ingenious built-in automatic clutch assures easy positive masking without slip.

The masking knob should be set at centre position when threading. Rotation anti-clockwise raises the picture on the screen.

**Focussing.** Micrometer focussing is provided, critical and rigid, due to complete elimination of backlash. The focus when set can be locked and the lens swung and held out of the way without loss of focus, giving convenient access to the gate for threading and cleaning.



# INSTRUCTIONS FOR MAINTENANCE

Regular attention to cleaning and lubrication are important to ensure the best results. The programme recommended below is based on average running conditions.

**WARNING.** Do not clean the projector when it is running. A rag caught in the shutter or other moving part may injure the operator and damage the machine.

## Daily.

(1) Lubricate the pad roller spindles, the outboard handle bearing supporting the lower sprocket spindle extension, the adapter gear train driving the sound unit—bearings and gear teeth—and top and bottom spool box spindle bearings.

Use Kalee Elevenoil only and oil very sparingly, a single drop only to each oiling point, being careful to wipe off any excess oil.

(2). Check that the level of oil in the oil bath when the machine is stationary corresponds to the cross lines on the oil gauge window in the front of the machine and add oil if necessary.

(3). Clean the gate and mask plate, removing any film emulsion or dirt. A tooth brush is a convenient tool, the end of the handle filed up square serving as a scraper to remove any hard deposit. Under no circumstances use a hard metal scraper, since scratches are an immediate cause of emulsion build-up and film wear. To detach the gate for cleaning swing the lens out of the way, open the gate and then release it by turning the release lever into the horizontal position. To remove the mask plate slide it upwards.

When replacing the gate always replace it onto the projector which bears its number.

**Warning.** The gate latch is mechanically connected with the pad rollers around the intermittent sprocket, thus ensuring that these are automatically withdrawn from engagement before the gate is opened. An interlocking pawl comes into action to maintain the pad rollers in the withdrawn position until the gate is closed again.

If this pawl is tripped, as may happen when cleaning or with the gate detached from the machine, the rollers return to the closed position. If the gate is then shut, the teeth of the intermittent sprocket may be damaged.

Accordingly, the upper knurled knob on the side of the gate which slides to operate the latch, should always be slid down before closing the gate, thus assuring that the pad rollers are in the open position—this re-opens them and re-engages the pawl in the event of this having been tripped.

(4). Wipe off any dirt or oil from the machine.

## Weekly.

Clean the sprockets, especially their teeth, also pad and pressure rollers. Use a tooth brush as brush and scraper, as described for cleaning the gate, to remove any accumulated deposit, taking great care not to damage the sprocket teeth. If necessary, a little paraffin may be used to remove dirt, but this should be used with caution, carefully wiped off, and the roller spindles re-lubricated.



## **Fortnightly.**

(1). Drain the oil out of the projector oil bath and replenish. Use Kalee Elevenoil only, which has been selected following careful tests as best meeting the requirements of the mechanism.

To drain off the old oil, unscrew the drain plug at the base of the projector. Do not forget to replace this before pouring in the new oil, removing the filler plug at the top of the machine. Replenish to reach the level indicated by the crossing of the two lines on the oil gauge window in the lower front of the machine. Approximately  $\frac{1}{2}$  to  $\frac{3}{4}$  pint of oil is required, depending upon the rake of the machine.

In the exceptional case of a machine working at an upward rake, filling to the level indicated by the window may result in oil leakage through the bearing of the drive shaft at the back of the machine. In such case the level should be maintained as high as experience indicates to be safe.

(2). If necessary, clean the projection lens, taking great care not to scratch or fingermark the glasses.

The lens should not be taken out of its support since this would necessitate re-focussing.

Carefully wipe off any dust on the glass with a clean camel hair brush, following which the glass can be wiped with a damp chamois leather, finishing with a soft, clean piece of silk or old fine linen—a well laundered handkerchief is most suitable.

To remove any grease use a little cottonwool moistened with methylated spirit—avoid excess of the solvent to prevent a surplus penetrating the lens.

## **Every Three Months.**

Drain and wash out the mechanism with paraffin in accordance with the following procedure:—

1. Drain oil from the mechanism as described above.

2. Remove the oil filter by unscrewing the four screws retaining the transparent oil dome on the top of the machine and lift it out. Unscrew the knurled rose thus exposed at the top of the oil feed pipe (turn it anti-clockwise) then lift out the oil filter (an ordinary small latch key is a convenient hook). This is in the form of a cylinder surrounding the oil feed pipe and held in position by the transparent dome. Soak this in paraffin for about five minutes and brush away any dirt from the gauze with a tooth brush. When replacing, do not overlook the sealing washer under the oil dome, and screw down carefully to avoid cracking the dome.

3. Remove the intermittent unit as described in the special section below.

4. Flush out the machine and intermittent unit with clean paraffin, being careful to drain thoroughly.

5. Re-assemble the machine, taking care to get the "timing" correct—in accordance with the instructions below covering re-assembly of the intermittent unit.

6. Replenish with oil as described above.



# REMOVAL OF INTERMITTENT UNIT

1. Open and detach the gate, take out the mask plate, as described above, and take off the stripper around the intermittent sprocket. This is attached by a 2BA countersunk screw to the bottom of the slot in the gate frame in which the mask plate fits.
2. Detach the circular inspection cover at the back of the machine by taking out the 4 screws securing this.
3. This exposes the intermittent unit which is secured by 2 nuts, one behind the other, which will be noticed to the right hand side below the flywheel. Remove these, when the intermittent unit, complete with intermittent sprocket, can be withdrawn backwards through the frame of the machine. If necessary, turn the masking knob to bring the unit into the most accessible position.

**Warning.** Under no circumstances should the intermittent unit itself be dismantled. In the event of any adjustments or replacements being required, the complete unit should be returned to the nearest G.B-Kalee Service Depot.

## REPLACING AND RE-TIMING INTERMITTENT UNIT

It is important to ensure that this is correctly "timed" in relation to the shutter. Faulty timing results in "ghost" effect in the projected picture, noticeable as a shadow effect at top or bottom of lettering in titles.

To facilitate timing a circular window is provided on the back of the machine having a red line across it.

The intermittent driving gear, which can be seen through this window, is marked with a corresponding white line and a third line will be noticed engraved on the flywheel of the intermittent unit.

The following procedure must be followed:—

1. Set the masking knob centrally.
2. Turn the mechanism to bring the white line on the intermittent driving gear parallel with the red line across the timing window.
3. Engage the intermittent unit in its mounting but without bringing the gears into mesh with those of the projector. When entering the unit be particularly careful not to damage the teeth of the intermittent sprocket.
4. Turn the flywheel to bring the line engraved on it parallel with the other pair, push the unit finally home and secure it with the two clamping nuts.

It will probably be necessary to turn the flywheel slightly to permit the teeth of the gears to engage. Further, since spiral gearing is employed, the flywheel will turn slightly as the unit is finally pushed home, thus slightly disturbing the setting. Correct timing is obtained only when the three lines are simultaneously parallel, the intermittent unit being fully engaged, and a few trials may be required to secure this condition.



5. Check by running the machine and examining the picture on the screen, paying particular attention to sharpness of lettering of titles. If necessary, final adjustment can be made by altering the shutter setting. This is clamped on its flange by 3 screws through slotted holes which allow limited angular adjustment. To get at these, remove the detachable guard from the front of the light box, when they can be reached by a long screwdriver through the central hole in the front cover of the shutter.

It is not necessary to remove the front of the light box, and this is not recommended, since to do so involves dismantling the masking knob which should not be undertaken on account of the probability of losing one of the springs or rollers of the internal clutch and the difficulty of reassembling this correctly.

## HINTS ON POSSIBLE OPERATING TROUBLES

### Film Damage.

May be caused by damaged spools (bent flanges) or build-up of emulsion on mask plate or guide rollers, or in fire traps (which must be kept clean), or by guide or pressure rollers sticking due to dirt or lack of oil. An excessive lower loop may cause trouble due to the film running against the shutter housing.

### Picture "Jump."

1. Poor print or damaged film perforations.
2. Gate skate tension incorrect. May be too much or too little. Tension can be altered by turning the knurled adjustment nuts. Always employ the minimum tension consistent with satisfactory projection since excessive tension leads to rapid wear of both machine and film.
3. Incorrect adjustment of pad rollers on intermittent sprocket. These should clear the sprocket diameter by two thicknesses of film. To adjust, first set Masking Knob centrally then raise the lower roller well clear of the sprocket by screwing down the knurled nut at the bottom of the gate behind the roller mounting. Notice this is split and locked by a clamping screw which should first be eased. Adjust the upper roller first by releasing and rotating the eccentric spindle engaged by the gate latch bar, then adjust the lower roller, employing the knurled nut.
4. Teeth of intermittent sprocket worn. To remove for inspection first detach the stripper as described above, then the screw and key washer on the end of the intermittent spindle securing the sprocket which can be drawn off endways. Clean the sprocket teeth and examine with a magnifying glass. If worn on one side only, the sprocket can be reversed on its spindle, thus gaining a new lease of life.

**WARNING.** When removing or replacing the sprocket be particularly careful not to use excessive force since this may result in bending or otherwise damaging the intermittent spindle.

5. A strained spindle resulting in the sprocket running out of truth will result in an unsteady picture. Do not attempt to straighten but refer to nearest G.B-Kalee Service Depot.



### **"Weave"—i.e., Sideways Motion of Picture.**

1. Poor or damaged film.

2. Film guide roller at top of gate sticking, due to dirt or lack of oil.

**Note.**—Sticking may also be due to excess of oil or use of an unsuitable heavy oil.

3. Guide roller or mask plate worn. The guide roller is split with one flange "floating." The other "Guiding" flange must be in accurate alignment with the edge of the gate aperture. If disturbed re-align with a straight edge.

### **Noisy Running.**

May be due to too large film loops or faulty adjustment of pad rollers. "Hard running" indicates inadequate lubrication of mechanism or adapter gearing which should be checked immediately. Do not over oil. "Little but often" is preferable. A noise occurs as the projector slows down when switched off, due to the closing of the safety blades in the shutter which is no cause for concern. A pronounced high speed clicking while the machine is running suggests faulty adjustment or wear in the intermittent unit. Do not attempt to adjust but refer to nearest G.B.-Kalee Service Depot.

### **"Ghost"**

Is noticeable as a shadow effect especially marked at either top or bottom of lettering in titles due to faulty timing of the intermittent unit. Refer to instructions above for re-timing when replacing the intermittent unit. Note that, since the intermittent fly-wheel makes three revolutions per revolution of the driving gear marked with the timing line there referred to, the three lines can be in correct alignment once only in three revolutions of the fly-wheel.

### **Slack Take-up or Excess Film from Top Spool.**

Ease the screw locking the knurled thimble on the spool spindle, increase tension by turning the thimble clockwise and re-locking.

### **Failure of Oil Circulation.**

1. Oil level too low—particularly in case of a machine working at an upward rake.

2. Choked pump inlet or filter. Can be freed by turning machine backwards by hand for a few revolutions, but better avoided by regular draining and replenishing of oil and periodic flushing with paraffin as recommended above.

### **Oil Leakage from Bearings.**

The bearings throughout the machine are fitted with efficient "flingers" and wells with return passages to ensure return of oil to the sump. It is, however, important to avoid a build up of grease or dirt between the edge of the well and the spindle which may result in an oil leakage due to capillary action. Remedy is cleanliness with particular attention to the clearance around the spindle outlet.

### **Creep of Masking Action.**

This results from wear of the locking rollers in the clutch built into the Masking Knob. Cure is to replace the rollers which should be done by a G.B.-Kalee Engineer. The operator is warned against dismantling this himself on account of the probability of losing one of the small rollers or springs and the difficulty of re-assembling correctly.



# PROJECTION TABLE FOR CINEMATOGRAPH LENSES

Showing width of Screen Picture at different distances with Lenses of different focal lengths

“Talkie” Mask aperture 0.825 in. wide.

FOCUS OF LENS IN INCHES																							
Distance Lens to Screen. Feet.	1 1/2 in.	1 3/4 in.	2 in.	2 1/4 in.	2 1/2 in.	2 3/4 in.	3 in.	3 1/4 in.	3 1/2 in.	3 3/4 in.	4 in.	4 1/4 in.	4 1/2 in.	4 3/4 in.	5 in.	5 1/4 in.	5 1/2 in.	5 3/4 in.	6 in.	6 1/4 in.	6 1/2 in.	6 3/4 in.	7 in.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
10	5 6 4 8	1 3 8 3	3 3 0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	8 3 7 0	2 5 6 4	4 6 0	1 3 3 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	11 0 9 5	3 7 4 6	6 6 0	4 5 4 1	3 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25	13 9 11	9 10 3 9	2 8 3 7	6 6 5 1	4 10	4 6 4 1	3 11	3 9 3 0	7 3 5 3	5 3 2 3	4 1 4 0	3 3 3 3	5 3 3 3	4 1 4 0	3 7 3 7	4 3 4 3	5 3 4 3	6 3 5 3	7 3 5 3	8 3 6 3	9 3 7 3	10 3 8 3	11 3 9 3
30	16 6 14	0 12 4 11	0 9 9 9	0 8 3 7	6 7 6 2	5 9 4 10	4 8 4 8	3 6 3 6	2 5 5 5	1 4 10	5 8 5 8	4 7 4 7	3 6 3 6	2 4 2 4	1 3 1	0 2 0 2	1 1 1 1	0 1 0 1	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
35	19 3 16	6 14 5 12	10 11 4 10	6 9 7 8	10 8 3 7	8 7 2 6	7 4 6 11	6 3 6 3	5 2 5 2	4 1 4 1	3 0 3 0	2 9 2 9	1 8 1 8	0 7 0 7	0 6 0 6	0 5 0 5	0 4 0 4	0 3 0 3	0 2 0 2	0 1 0 1	0 0 0 0	0 0 0 0	0 0 0 0
40	22 0 18	10 16 6 14	8 13 0 12	0 11 0 9	5 8 9 8	3 7 8 7	2 8 8 8	1 7 1 7	0 6 0 6	0 5 0 5	0 4 0 4	0 3 0 3	0 2 0 2	0 1 0 1	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
45	24 9 21	2 18 6 16	6 14 9 13	6 12 4 11	4 10 6 9	11 9 3 8	8 7 4 11	7 6 7 6	6 5 6 5	5 4 5 4	4 3 4 3	3 2 3 2	2 1 2 1	1 0 1 0	0 9 0 9	0 8 0 8	0 7 0 7	0 6 0 6	0 5 0 5	0 4 0 4	0 3 0 3	0 2 0 2	0 1 0 1
50	27 6 23	7 20 7 18	4 16 6 15	0 13 9 12	8 11 9 11	0 10 3 9	8 7 4 11	7 6 7 6	6 5 6 5	5 4 5 4	4 3 4 3	3 2 3 2	2 1 2 1	1 0 1 0	0 9 0 9	0 8 0 8	0 7 0 7	0 6 0 6	0 5 0 5	0 4 0 4	0 3 0 3	0 2 0 2	0 1 0 1
55	30 3 25	9 22 7 20	2 18 0 16	6 15 0 13	10 12 10 12	1 11 3 10	9 8 9 8	8 7 4 11	7 6 7 6	6 5 6 5	5 4 5 4	4 3 4 3	3 2 3 2	2 1 2 1	1 0 1 0	0 9 0 9	0 8 0 8	0 7 0 7	0 6 0 6	0 5 0 5	0 4 0 4	0 3 0 3	0 2 0 2
60	33 0 28	0 24 8 22	0 19 6 18	0 16 6 15	0 13 11 3	0 10 3 9	8 7 4 11	7 6 7 6	6 5 6 5	5 4 5 4	4 3 4 3	3 2 3 2	2 1 2 1	1 0 1 0	0 9 0 9	0 8 0 8	0 7 0 7	0 6 0 6	0 5 0 5	0 4 0 4	0 3 0 3	0 2 0 2	0 1 0 1
65	— 30	6 26 9 23	10 21 1 19	6 17 0 16	6 15 3 14	3 13 4 12	5 11 11 11	4 10 10 10	3 9 9 9	2 8 8 8	1 7 1 7	0 6 0 6	0 5 0 5	0 4 0 4	0 3 0 3	0 2 0 2	0 1 0 1	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
70	— 33	0 28 10 25	8 22 8 21	0 19 3 17	8 16 6 15	4 14 5 13	4 12 10 11	3 11 11 11	2 10 10 10	1 9 9 9	0 8 8 8	0 7 7 7	0 6 6 6	0 5 5 5	0 4 4 4	0 3 3 3	0 2 2 2	0 1 1 1	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
75	— —	30 11 27	6 24 4 22	6 20 7 18	10 17 8 16	6 15 5 14	4 13 9 12	3 12 12 12	2 11 11 11	1 10 10 10	0 9 9 9	0 8 8 8	0 7 7 7	0 6 6 6	0 5 5 5	0 4 4 4	0 3 3 3	0 2 2 2	0 1 1 1	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
80	— —	33 0 29	4 26 0 24	0 22 6 23	0 20 4 21	6 16 6 15	4 14 8 13	3 13 10 13	2 12 12 12	1 11 11 11	0 10 10 10	0 9 9 9	0 8 8 8	0 7 7 7	0 6 6 6	0 5 5 5	0 4 4 4	0 3 3 3	0 2 2 2	0 1 1 1	0 0 0 0	0 0 0 0	0 0 0 0
85	— —	— 31	2 27 9 25	6 23 4 21	4 19 11 18	8 17 6 16	6 15 7 14	5 14 8 13	4 13 10 13	3 12 12 12	2 11 11 11	1 10 10 10	0 9 9 9	0 8 8 8	0 7 7 7	0 6 6 6	0 5 5 5	0 4 4 4	0 3 3 3	0 2 2 2	0 1 1 1	0 0 0 0	0 0 0 0
90	— —	— 33	0 29 6 27	0 24 9 22	8 21 2 19	10 18 6 17	6 16 6 15	5 15 7 14	4 14 8 13	3 13 10 13	2 12 12 12	1 11 11 11	0 10 10 10	0 9 9 9	0 8 8 8	0 7 7 7	0 6 6 6	0 5 5 5	0 4 4 4	0 3 3 3	0 2 2 2	0 1 1 1	0 0 0 0
95	— —	— 31	3 28 0 30	6 26 1 24	0 22 3 20	11 19 6 18	6 16 6 15	5 15 7 14	4 14 8 13	3 13 10 13	2 12 12 12	1 11 11 11	0 10 10 10	0 9 9 9	0 8 8 8	0 7 7 7	0 6 6 6	0 5 5 5	0 4 4 4	0 3 3 3	0 2 2 2	0 1 1 1	0 0 0 0
100	— —	— 33	0 30 6 27	0 27 6 25	4 23 7 22	0 20 7 19	4 17 5 16	3 16 6 15	2 15 7 14	1 14 8 13	0 13 10 13	0 12 12 12	0 11 11 11	0 10 10 10	0 9 9 9	0 8 8 8	0 7 7 7	0 6 6 6	0 5 5 5	0 4 4 4	0 3 3 3	0 2 2 2	0 1 1 1
110	— —	— —	— —	— —	— —	— —	2 20 18 10 18	0 17 2 16	1 16 6 15	0 15 7 14	0 14 8 13	0 13 10 13	0 12 12 12	0 11 11 11	0 10 10 10	0 9 9 9	0 8 8 8	0 7 7 7	0 6 6 6	0 5 5 5	0 4 4 4	0 3 3 3	0 2 2 2
120	— —	— —	— —	— —	— —	— —	0 22 0 21	1 20 18 10 18	0 17 2 16	1 16 6 15	0 15 7 14	0 14 8 13	0 13 10 13	0 12 12 12	0 11 11 11	0 10 10 10	0 9 9 9	0 8 8 8	0 7 7 7	0 6 6 6	0 5 5 5	0 4 4 4	0 3 3 3
130	— —	— —	— —	— —	— —	— —	0 22 0 21	1 20 18 10 18	0 17 2 16	1 16 6 15	0 15 7 14	0 14 8 13	0 13 10 13	0 12 12 12	0 11 11 11	0 10 10 10	0 9 9 9	0 8 8 8	0 7 7 7	0 6 6 6	0 5 5 5	0 4 4 4	0 3 3 3
140	— —	— —	— —	— —	— —	— —	0 22 0 21	1 20 18 10 18	0 17 2 16	1 16 6 15	0 15 7 14	0 14 8 13	0 13 10 13	0 12 12 12	0 11 11 11	0 10 10 10	0 9 9 9	0 8 8 8	0 7 7 7	0 6 6 6	0 5 5 5	0 4 4 4	0 3 3 3
150	— —	— —	— —	— —	— —	— —	0 22 0 21	1 20 18 10 18	0 17 2 16	1 16 6 15	0 15 7 14	0 14 8 13	0 13 10 13	0 12 12 12	0 11 11 11	0 10 10 10	0 9 9 9	0 8 8 8	0 7 7 7	0 6 6 6	0 5 5 5	0 4 4 4	0 3 3 3

The height of the picture is approximately 3/4 the width.







