

BRC TAPE DECKS

1982

Two-track single-speed DD 210

Four-track single-speed DD 410 & DF 410

Four-track two-speed DF 422

Introduction

The BRC tape deck types quoted in the heading all evolve from the basic deck covered by this *Service Sheet*. Produced in single-speed or two-speed form it is fitted with either two-track or four-track heads, depending on individual model presentation. Maximum spool diameter is 7in. Type DF422 is fitted with stop and pause solenoids. Speeds are as follows: Single-speed deck – 3½ ips; two-speed decks – 1½ ips and 3¼ ips. Prefix DF denotes deck with flat 'piano' keys; DD denotes raised moulding type keys.

Dismantling

For access to certain mechanical parts on the underside of the deck it is necessary to release the printed circuit panel; this operation is described in the service manual for the individual model.

Top plate assembly. – Detach tape position indicator drive belt and pulley on feed spool carrier spindle from underside of deck. Take off circlip and washer to remove take-up spool carrier and remove feed spool carrier in similar manner. The removal of the spool carriers reveals nylon friction discs. The take-up spool friction disc is driven by a small belt from the motor pulley, but the feed spool disc is prevented from rotating by a tongue which protrudes into a hole in the deck.

Play key lever assembly removal. – Take off tape position indicator drive belt and nylon pulley on feed spool carrier spindle, then remove circlip and washer to lift out carrier and nylon friction disc. Remove Play lever tension spring and muting switch actuator on underside of deck. To remove Play lever, take off Pause brake assembly by removing circlip and spring securing it to the Play lever, taking care not to lose a washer operating in conjunction with a pin into an extension on the pinch-wheel assembly. Take off grip ring securing Play lever, raise and slide assembly clear.

Operating plate and rewind plate. – Having removed the Play lever assembly, the sections of the operating plate and rewind plate assembly can be lifted out. Release the main drive belt, return spring and tension spring. Invert deck and remove a circlip, washer, spring washer and plain washer securing the sections to the deck.

Head assembly. – The erase and record heads are independently mounted on the head plate with screw adjustments provided for height and level correction. Adjustments are described in the

individual model service manual.

Pinch-wheel carrier assembly. – The pinch-wheel carrier assembly can be lifted from its spindle after disengaging the Pause brake arm and removing a circlip and washer.

Motor. – The motor is secured on a 'floating' suspension by four nuts and spring washers, one of which can be reached after removing the right-hand spool carrier and friction disc. Note and disconnect soldered connections if the motor is to be completely detached.

Operating keys removal. – The Forward, Play, Rewind or Record key can be removed by depressing the key and taking off the tension spring. Ease the key in an upward direction to free it from the assembly; the corresponding lever will automatically return to its natural position.

To replace key, pull the particular lever into its tensioned state, insert key so that the slot engages with the latch bar lug, its front edge behind the lever fork, press home, trip Stop key and reconnect tension spring.

Pause key and lever removal. – Remove Pause brake spring (39) and hinged Play bracket tension spring. Carefully disengage pinch-wheel carrier arm and hinged Play bracket arm (40) by lifting nylon arm slightly, taking care not to lose the washer that rides along the pinch-wheel carrier arm.

From underside of deck, take off Pause lever tension spring and Standby arm tension spring. Swivel aside pinch-wheel carrier arm and release Pause key tension spring. Swivel Pause latch to left-hand side and with a small pair of pliers ease Pause lever over edge of operating plate, at the same time pressing down operating plate, to permit Pause lever to clear a cut-out in deck; then lift lever and key clear of deck.

Stop key removal. – Pull off circlip securing track selector, then ease clear of bracket, taking care not to lose ball bearing, then remove track selector support bracket. (Note: On two-track models only the bracket needs to be released.) Release tension spring on Stop key and remove key as described for operating keys removal.

When replacing key, fit slot under latch plate then, raising the lug and key to place into correct position, press key into position on assembly. Finally, refit tension spring and refit track selector and support bracket into position.

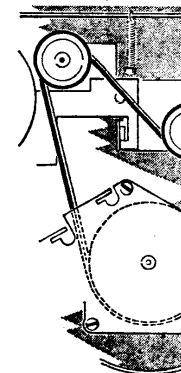
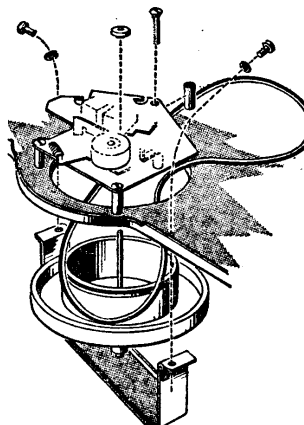
Forward or rewind lever removal. – Invert deck and take off tape position

indicator drive belt. Remove pulley on feed spool carrier spindle and take off forward or rewind lever tension spring. Take off circlip and washer securing feed spool carrier, then grip ring and washer securing forward or rewind lever.

Place deck right way up and lift off feed carrier and friction disc, then take off washers and grip ring on feed spool carrier bush. Release operating plate tension spring. Take off hinged play bracket tension spring, then circlip and washer securing it to chassis. Lift off bracket complete with pause brake spring and pad. Raise operating plate as high as possible and pull the forward or rewind lever as far to the rear of the chassis as possible to permit the tongue at the forked end of the levers to clear holes in chassis, then manoeuvre required lever clear of deck.

Removal of forward or rewind pulley. – Release main drive belt (36), then take off, from underside of deck, a small nylon securing washer and a washer. Pull pulley wheel (5) away from rewind plate assembly (11) taking care not to lose small washer on spindle bush.

Removal of head plate assembly. – Release flywheel support bracket (38) by removing two screws and washers; lift off plastic dust washer from capstan spindle and lower flywheel from underside of deck disengaging main drive belt at the same time. Disengage hinged play bracket (40) from pinch-wheel arm (41) noting small washer on play bracket locating peg. Extract magnetic heads from housings noting their positions for correct refitting. Disengage pause brake spring (39) and unhook tension spring (under deck) from standby arm (45). (Where a pause solenoid is fitted, uncouple from the



Ensure that belt is n

standby arm.) Remove three screws and distance bushes (59) to release head plate assembly; unhook pinch-wheel arm tension spring for access to one of the screws.

Note: When refitting, ensure main drive belt is positioned to relocate in flywheel pulley.

Removal of flywheel and capstan assembly (37 & 38). — Slacken off main drive belt (36) and remove capstan dust washer (29). Take out two screws and spring washers securing flywheel support bracket (38) to deck, then pull flywheel clear of its bushing.

Adjustments

The following mechanical tolerances and clearances are provided as a guide for use when clearing a mechanical fault. A correctly operating deck need not necessarily be within the stated limits. With the keys in the neutral position and the rewind plate held to the left-hand side against the operating pin, the clearance between the rewind pulley and spool carrier should be within the limits 0.02-0.03in.

A similar space should exist between the take-up pulley and spool carrier when the rewind plate is held to the right-hand side.

Adjustment is made by bending the central lug on the rewind plate.

With Play key latched the pressure between capstan and pinch-wheel should be within the limits 700-850gm. Any correction can be made by bending the sleeved lug on Play lever.

Clearance between the lug on the standby arm and the pinch-wheel plate should not exceed 0.005in. Adjustment is made by bending the lug on the standby arm.

Pinch-wheel arm and pinch-wheel plate clearance should not be less than 0.005in. Correction can be made by bending sleeved lug on Play lever.

With Pause and Play keys depressed the space between capstan and pinch-wheel should be within the limits 0.008-0.015in. Correction can be made by bending the lug on Pause key lever. Depress Stop key to check that pause brake clears rewind spool carrier.

With Record and Play keys latched simultaneously the space between the foot of the Record key and Record lever should be between 0.02in and 0.04in.

Adjust by bending the lug on the underside of the Record lever.

Take-up tension on the tape during normal forward motion should be 50-65gm at 2.5cm radius loaded with 200gm. Back tension should be 45-60gm at 2.5cm radius loaded with 200gm.

Note: The brake arm rubber pad *must* disengage the take-up spool carrier before any motion takes place. For correct operation, bend the lugs contacting the brake arm on the Rewind, Play and Forward levers.

Solenoid adjustment (two speed decks). — If the Pause solenoid is out of adjustment proceed as follows:

1. — Depress Play key and check that brake pad is clear of left-hand spool carrier by 0.03in. With the plunger held into the solenoid, turn the plunger screw in a clockwise direction until a gap of 0.008-0.01in is obtained between the capstan and pinch-wheel.

2. — Operate Stop key and, with the Pause solenoid de-energised but with the Pause key depressed, bend lug on standby arm to provide a gap of 0.03in between Pause brake pad and left-hand spool carrier.

3. — Operate Play key and finally release both Play and Pause keys to ensure that pinch-wheel carrier returns and that brake pad is clear of left-hand spool carrier.

If the Stop solenoid is out of adjustment, proceed as follows: Depress Forward wind key then, with plunger held into solenoid, adjust screw linking solenoid to latch plate, so that the latch plate trips key. Turn the screw a further half turn, taking care that the screw head is kept to the bottom of slot in latch plate. Depress Play and Record keys, then energise Stop solenoid when, if correctly adjusted, the latch bar will release both keys.

Belt replacement

Main drive belt (single-speed decks). — To replace the drive belt, first lower the flywheel by releasing two screws securing the flywheel support bracket, taking care to retain the nylon dust washer for refitting. Remove screw and distance piece from rear of head plate to allow the drive belt to be fed under and around spindle bush. Position flywheel and fit replacement belt to pulley, then secure flywheel bracket.

Replace screw and distance piece in head plate and refit nylon dust washer to spindle.

It is not necessary to remove the take-up spool carrier (secured by a circlip and washer below deck) to fit the belt to the drive pulley on the motor shaft, although this can be done if preferred. Note, however, that a few pulleys have an extra groove for 60Hz mains operation. Where such pulleys are encountered in service, use the second groove up for 50Hz mains operation.

Note: It is important to check that the replacement drive belt is not twisted after fitting.

Speed change belt (two-speed decks). — Release the flywheel bracket as described for single-speed models and fit the belt over the flywheel and pulley.

Main drive belt (two-speed decks). — The drive belt for these models is not taken round the flywheel but to a pulley on top of the deck. As in single-speed models, it is not necessary to remove the take-up spool.

Note: It is important to check that the replacement drive belt is not twisted after fitting.

Take-up belt (all decks). — The following applies to both types of tape deck, but in this case the take-up spool carrier is removed to enable the take-up belt to be fitted.

Tape position indicator belt (all decks). — An additional belt below the tape deck is used to drive the tape position indicator. This is fitted to all models.

Cleaning and lubrication

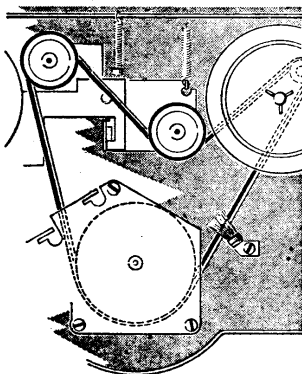
Cleaning. — The use of cleaning fluids such as petrol or carbon-tetrachloride which might damage plastic surfaces or rubber drives should be avoided.

A soft cloth dampened with methylated spirit should be used to clean the working surfaces of the spool carriers, capstan, pinch-wheel, motor pulley and spooling wheels.

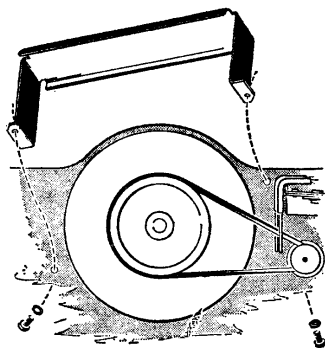
Oxide deposits on the magnetic heads and tape guides may be removed in the same manner, but objects such as screwdrivers should be kept away from the heads to avoid magnetisation.

Pressure pad and friction ring surfaces should be kept clean and fluffy.

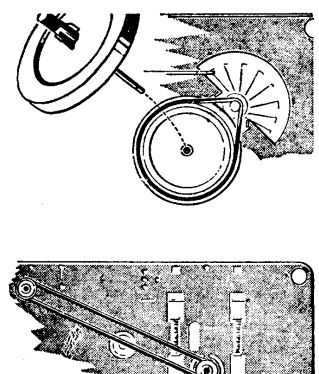
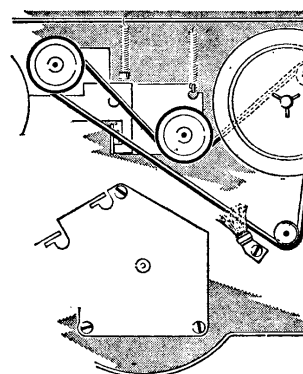
Lubrication. — A fine graphite grease should be applied sparingly to the parts listed after dismantling and cleaning.



Ensure that belt is not twisted



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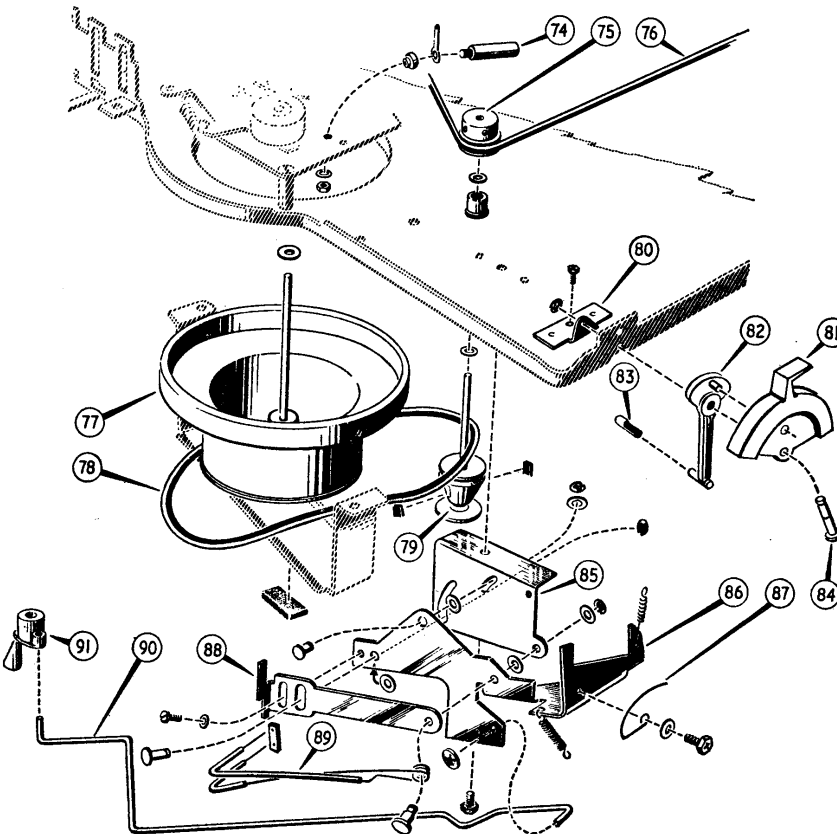
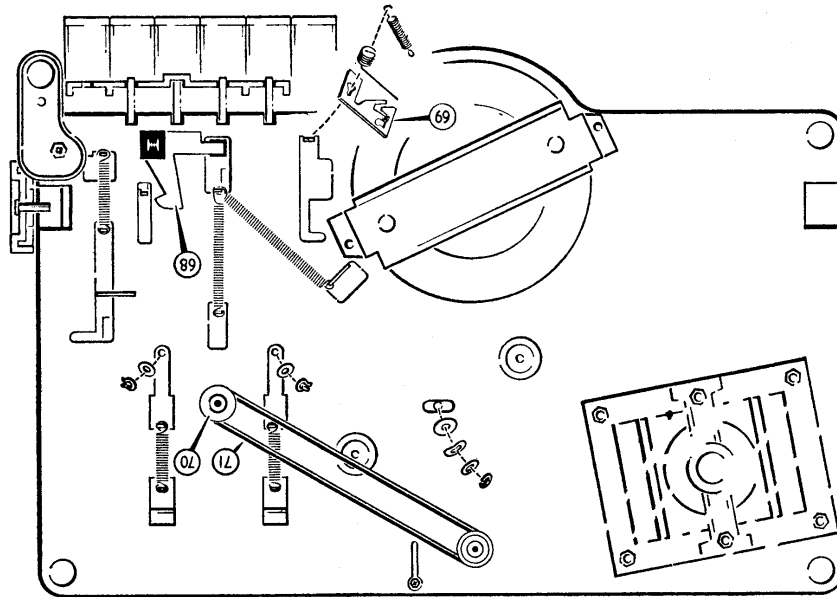


1982 BRC TAPE DECKS

whenever signs of friction between bearing surfaces become apparent. Take care that it does not get on to the drive surfaces of wheels or the motor pulley. If this happens, the grease must be removed using a cloth dampened with methylated spirit.

1. Pause key latch assembly.
2. Pinch-wheel carrier arm.
3. Slot in pinch-wheel carrier.

Important. Do not lubricate tape position indicator.



COMPONENT KEY

- 1 Spool carrier
- 2 Friction disc, left-hand
- 3 Cellulose acetate washer
- 4 Grip ring
- 5 Rewind pulley
- 6 Friction belt
- 7 Friction disc, right-hand
- 8 Operating plate pin
- 9 Play lever
- 10 Operating plate
- 11 Rewind plate riveting assembly
- 12 Control key (flat type)
- 13 Record key (flat type)
- 14 Track-knob pin
- 15 Track knob
- 16 Track knob shank
- 17 Ball bearing
- 18 Track knob spring
- 19 Track knob bracket
- 20 Connecting link
- 21 Track switch bell crank
- 22 Interlock rod
- 23 Record/Play switch coupling
- 24 Latch bar
- 25 Spool retainer
- 26 Rewind lever riveting assembly
- 27 Forward lever riveting assembly
- 28 Pause lever
- 29 Dust washer
- 30 Tape position indicator
- 31 Brake keeper
- 32 Brake shoe
- 33 Buffer
- 34 Brake arm
- 35 Brush assembly
- 36 Drive belt
- 37 Flywheel assembly
- 38 Flywheel support bracket
- 39 Pause brake spring
- 40 Hinged play bracket assembly
- 41 Pinch-wheel arm riveting assembly
- 42 Pinch-wheel plate riveting assembly
- 43 Pressure bracket assembly
- 44 Pinch-wheel grinding assembly
- 45 Standby arm
- 46 Erase head retaining bracket
- 47 Erase head (4-track)
- 48 Erase head (2-track)
- 49 Head clamping spring
- 50 Compression spring, erase pillar
- 51 Record/Play head bracket
- 52 Record/Play head
- 53 Head clamping spring
- 54 Erase head adjustment screw
- 55 Compression spring, signal head (Azimuth)
- 56 Head plate riveting assembly
- 57 Tape guide boss, right-hand
- 58 Tape guide platform
- 59 Tape guide boss, left-hand
- 60 Head plate distance bush
- 61 Grommet distance bush
- 62 Grommet
- 63 Motor stud
- 64 Motor
- 65 Fan
- 66 Motor pulley
- 67 Leaf spring for Stop key
- 68 Record lever
- 69 Record latch
- 70 Pause latch
- 71 Tape position indicator pulley
- 72 Tape position indicator belt
- 73 Stop solenoid contact pin
- 74 Lay pulley
- 75 Drive belt
- 76 Flywheel assembly
- 77 Speed change belt
- 78 Stepped pulley spindle assembly
- 79 Speed change knob bracket
- 80 Speed change knob
- 81 Knob shank
- 82 Compression ring
- 83 Knob pin
- 84 Fork bracket
- 85 Fork index
- 86 Speed change detect spring
- 87 Fork stop
- 88 Speed change fork
- 89 Connecting rod
- 90 Speed compensation lever

