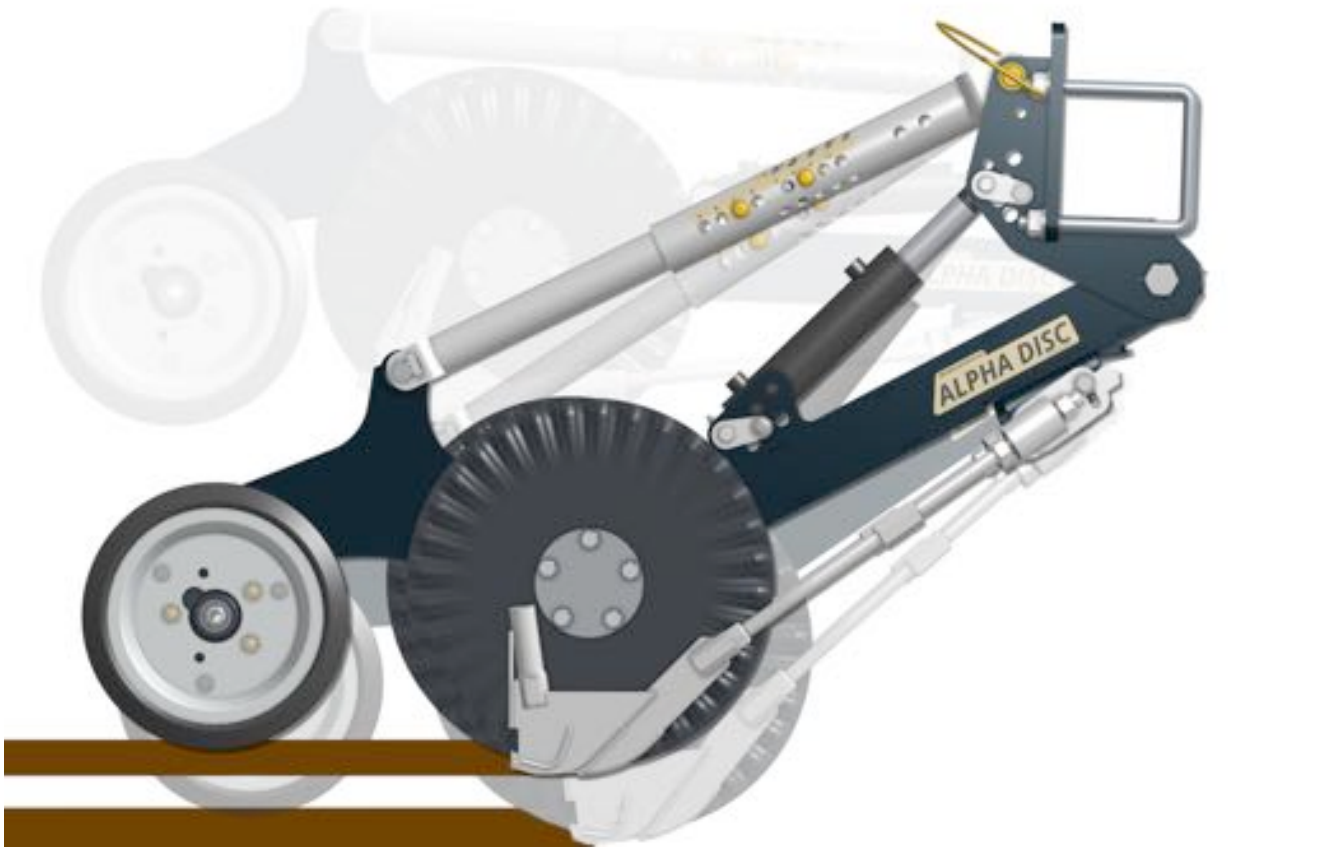


iPaddock-Alpha Disc 2.0 Operation Instructions



Thankyou for buying the iPaddock-Alpha Disc 2.0 seeding system.

iPaddock's Alpha Disc (Patent 2018232895) was designed in Western Australia to achieve narrow row spacings with the benefits and durability of tines, but the trash flow of discs.

Operating principle

The hydraulic, parallel iPaddock-Alpha Disc 2.0 uses a rippled disc and load bearing press wheel to accurately place seeds in a well defined furrow. Depth control is adjusted with a series of numbered pin holes in the top link of the parallel lift system.

iPaddock-Alpha Disc has been designed for high accuracy without the complexity found on other disc seeding systems. It has also been specifically designed to create a seedbed similar to that achieved with knife point tine precision seeding systems in broadacre farming operations.

With the standard row spacing of 187.5mm (7.38"), the iPaddock-Alpha Disc is offset at 7 degrees to the direction of travel, with 7 degrees of undercut when using the standard iPaddock concave rippled disc. The action of the rippled disc creates a localised tilth around the seed for good early vigour, with each seed row approximately 40mm wide for high seed bed utilisation.

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With constant hydraulic downforce managed by the iPaddock-Alphadisc pressure reducing valve, the geometry of the press wheel to the disc is kept constant at all working heights, maintaining an accurate and constant seeding depth.

Unlike conventional single disc systems, iPaddock-Alphadisc does not have a gauge wheel alongside the disc, with the press wheel used to set the seed depth. The combination of this design with iPaddock's concave rippled disc gives the following benefits:

- Soil throw for pre emergent herbicide incorporation
- Improved herbicide safety, by not feeding topsoil back into the furrow
- Reduced hairpinning
- Self sharpening effect of the rippled disc
- Throwing dry and non wetting topsoil onto the interrow
- Good seed soil contact created by the load bearing press wheel
- Good mud clearance in wet conditions
- Well shaped furrows with moisture seeking and water harvesting capability

The 187.5mm (7.38") dual row design of the iPaddock-Alphadisc allows cost effective narrow row spacings for higher yields and weed competition, with a validated 1% yield increase for every inch reduction in row spacing compared to wider row systems.

The use of the dual row system allows mounting on a single rank toolbar, with a number of benefits:

- Eliminates furrow fill caused on multiple ranks by the rear units filling the front furrows
- Fast checking of seed pipes
- Easy access for maintenance
- Simple & low cost toolbar design

32mm (1-1/4") seed tubes with a high exit point minimise the risk of seed bounce by reducing the exit velocity, while suiting large seeds such as beans. Seed brakes and diffusers are not recommended. The high exit point also minimises the risk of soil blocking the seed tubes.

The iPaddock-Alphadisc seed boot design incorporates a patented long suspended trailing arm, designed to prevent straw blockages between the boot and the disc.

A liquid tube is supplied standard with the iPaddock-Alphadisc, with the liquid placed to the side and above the seed row, which testing has found to provide good fertiliser efficacy and safety.

The iPaddock-Alphadisc is heavily engineered and has minimal moving parts, for little to no maintenance during the sowing operation. Lifetime sealed Agrihubs are used on the discs and the press wheels, and are attached with a single nut. Maintenance access has been provided for with lift features designed to allow easy access to all components while mounted on the toolbar.

Parts and manuals for the iPaddock-Alphadisc are available at www.ipaddock.com.au

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NOTE: The following is general information only and is not a recommendation. Varying soil and climatic conditions are unique to every situation, affecting seed depth & furrow formation, and will influence seed placement, crop establishment, chemical efficacy and safety. All operation and use of the iPaddock-Alphadisc, including chemical use, is at your risk. Always follow chemical labels.

Seed depth and hydraulic downforce

The seed depth is governed by the press wheel position, adjusted using the front pin in the numbered pin hole positions in the top link. As a guide, each hole corresponds to around 10mm change of depth. (NOTE: the rear pin is set to prevent the press wheels from touching the discs when lifted).

NOTE: it is critical that the press wheel pressure is optimised using the adjustment on the pressure control valve. Follow this procedure to correctly set the downforce on your iPaddock-Alphadisc:

1. Set your initial seed depth position with the top link pin
2. Starting on the minimum pressure setting, drive with the machine in downforce for short distances at a time, increasing the downforce in 100psi increments until the press wheel top links remain against the depth control pin for most of the time while working
3. Recheck the seeding depth, and repeat if required

The optimum press wheel pressure varies with soil types. You are aiming to achieve firm consistent furrows behind each run, without over compacting the soil above the seed. Starting from zero, gradually increase the downforce until the press wheel top links remain against the depth control pin for most of the time (allowing for occasional dips in the paddock surface).

Suggested initial downforce pressures

- 1.5" rams (2021 onwards): *pin positions as per Image 2*
 - Soft/ sandy soils: 100-500 psi
 - Medium to hard well structured loams: 500-1000 psi
 - Very hard soils or pastures: 1000-1400 psi
- 2" rams (early 2020 units): *pin positions as per Image 1*
 - Soft/ sandy soils: 100-300 psi
 - Medium to hard well structured loams: 300-600 psi
 - Very hard soils or pastures: 600-800 psi

NOTE: You should generally run your iPaddock-Alphadiscs at the lowest downforce necessary to achieve good furrow closure and well defined furrows.

Excessive downforce may result in damage to press wheels and reduce the vigour of the crop, through overcompacting the seed and excessive mixing of pre-emergent chemicals into the furrow.

Insufficient downforce will result in inconsistent depth control, poor furrow formation, poor seed-soil contact and potential herbicide toxicity through shallow seed placement.

Changing the downforce pressure of the iPaddock-Alphadisc within the optimum range should not significantly alter the seed depth which is set by the top link pin position.

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In varying soil types, generally set the downforce pressure to suit the firmer soils in the paddock, to ensure consistent seed soil contact and depth control in all areas.

Seed rates on narrow row spacings

In-row plant density is reduced as row spacing decreases. Increasing seed rates by the same proportion as the row space has been reduced helps to maximise the yield and crop competition benefits of narrow row spacings.

Water harvesting & chasing moisture

Increasing the downforce within the optimum range has the effect of driving the seeding module deeper into the profile whilst placing the seed at the correct depth. This is useful when chasing a moist layer deeper in the profile, while creating deeper furrows for concentrating small rainfall events into the furrows.

Sowing speed

iPaddock-Alphadiscs are suited to a wide range of speeds. 8kph to 20kph has delivered good results in the field, conditions dependent. 14kph is suggested as a starting point.

Pre-emergent chemicals

WARNING: DO NOT use Trifluralin or other pre-emergent chemicals that rely on separation for crop safety in soft, loose, cultivated, recently ameliorated, or dry sown sandy conditions, or other situations where the chemical treated soil can flow back into the furrow, as the lack of separation will cause significant crop damage.

The crop competition advantages of the iPaddock-Alphadisc on narrow rows are significant, removing the need for high rates or high risk chemistry sometimes used in wide row systems.

Never exceed 2L/Ha Trifluralin in barley and 1.5L/Ha in wheat. Nil & full rate trial strips are advised.

Servicing and Maintenance

The iPaddock-Alphadisc requires minimum maintenance during use, with no daily or weekly lubrication required.

- Daily / weekly
 - check fittings, hoses and fasteners

- Annually (prior to storage)
 - grease the main swingarm pivot (1 of) and the hydraulic ram ends (2 of)
 - check all fasteners and mounting hardware tensions

Thanks for investing in your iPaddock-Alphadisc. We hope you have many years of dependable service and solid profitable crops from using them.

Feel free to contact us with any feedback or questions at support@ipaddock.com.au
myGrain Solutions, PO Box 861, Esperance WA 6450
Ph: **1300 46 40 40**

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Assembly Instructions for iPaddock-Alphadisc 2.0.2: 2022

NOTE: Some images show the 2020 (2.0.0) units, with some minor differences to 2022 (2.0.2) units

NOTE: Your iPaddock-Alphadisc base units, hydraulic rams, and rotating parts (discs, press wheels and hubs) may be shipped separately to minimise freight costs and shipping time.



Image 1: iPaddock-Alphadisc 2.0 Installed (2020 units pictured)

Note: Use 32mm flexible seed hose with iPaddock-Alphadisc units

- Fit the jump arm units to the toolbar.
 - Standard 4" (100mm) M20 U-Bolts are supplied with the units
 - Holes are also provided for 6" (150mm) and 8" (200mm) frames
 - Frame height is ideally between 600-750mm from the ground when working
 - For metric widths, the unit spacing should be 375mm centre to centre. The 2 central (opposing) units are also spaced at this same distance
 - The units are marked "L" and "R", indicating the side of the machine as viewed looking forwards. If oriented correctly, the discs effectively push the soil outwards from centre

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- Fit the hydraulic rams using the 2nd pin hole from the bottom at both ends (see Image 2)
 - Fit the packer washers (supplied) at the rod end (see Image 2)
 - **NOTE:** the early 2020 iPaddock-Alphadisc (2.0.0) units used a 2" ram, while 2021 units onwards use a 1.5" ram, inverted relative to the 2020 units. The downforce pressure required with 2" rams is 0.56x the pressure required with 1.5" rams.

Image 2: 1.5" (2021 onwards) Ram installation



- Fit the top link with the yoke offset downwards as illustrated (see Image 3)
 - The numbered pin holes in the top link set the seeding depth
 - The rear pin holes in the top link prevent the press wheel from touching the disc when lifted, and shouldn't need adjustment after initial setup
 - The front (single) hole holds the press wheel at maximum height, such as when accessing the seedboot, or performing maintenance on the unit

Image 3: 1.5" hydraulic ram and top link installed with suggested hose layout



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- Attach the disc hubs to the disc hub brackets using the nuts and spring washers provided
 - *NEW for 2022: Install the supplied dust cup between the disc hub and the disc hub bracket (not pictured)*
 - Attach the discs to the hubs using M12x20mm bolts and washers
 - **NOTE:** The discs are slightly concave to give some undercut. Attach discs with the **concave side curved away from** the seed boot

Image 4: Disc hubs and discs attached



Image 5: Front seed boot mounting bracket



- Align the seed boots flush against the disc:
 - Loosen the bracket rotation clamp bolts (Image 5) to allow movement
 - Rotate each boot arm with a spanner on the welded flats until the boots sit flush against the discs
 - The kink in the boot arm should be curved slightly upwards for maximum trash clearance (See Image 6)
 - Tighten the front boot arm locking nut at the rubber hanger
 - *New for 2022:* Leave the locking nut at the boot end of the arm loose to allow the boot to self locate - can be tightened in the field if required
 - Adjust the height of the seed boot to 10mm above the base of the disc, then tighten the side bolts on the front boot mounting bracket (Image 5)
 - Rotate the front seed boot mounting bracket with a spanner on the flats to position the boots to just scrape the discs, without creating friction on the disc.
 - Check that both boots touch the discs evenly: adjust each side if required (Image 4)
 - Lock the bracket rotation clamp bolts (Image 5)

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Image 6: Seed boot arms should curve upwards (Note: 2020 unit illustrated)



Image 7a,b,c: Press wheel hubs



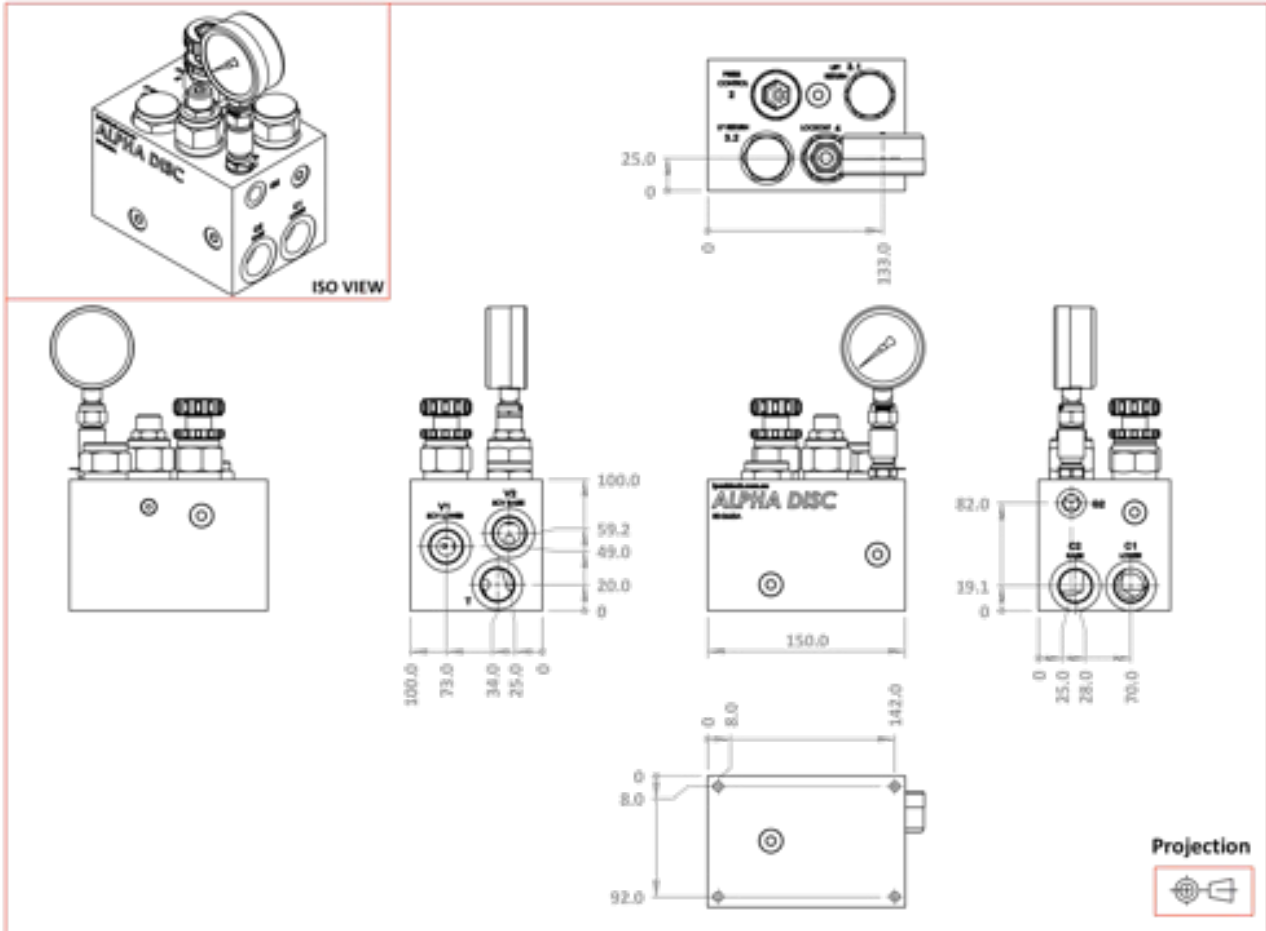
- *NEW for 2022: Fit the supplied dust cup between the hub and the press wheel arm (Image 7c)*
- Insert the steel bushes into the press wheel hubs from the outside, and bolt the hubs to the press wheel arms using the bolts and washers as pictured in Image 7.
- Fit domed dust caps and press wheels to the press wheel hubs using M12x25mm bolts and washers (see Image 6)

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Hydraulics: iPaddock-Alphadisc Hydraulic Pressure Control Valve

Image 6: iPaddock-Alphadisc Pressure Control Valve

Technical Details



CAUTION: Keep clear from moving parts at all times.

NOTE: This is an active pressure control valve and requires a continual supply from a Closed Centre hydraulic circuit on the tractor. It is not suited for Open Centre hydraulic systems.

The iPaddock Pressure Control Valve eliminates the need for accumulators in the hydraulic system, and is designed to maintain constant downforce pressure regardless of the position of the units. When combined with the parallel action of the iPaddock-Alphadisc 2.0, this results in consistent press wheel pressure and accurate seed placement across the full range of travel.

The valve requires constant charge pressure from a load sensing hydraulic system on the tractor. There is minimal flow demand on the tractor other than when the units are moving up or down.

To set the downforce pressure:

- put the tractor valve into continuous flow in the "Lower" position
- watching the pressure gauge, adjust the hand control to achieve the required pressure

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Connecting the iPaddock-Alphadisc Pressure Control Valve

- V1: connect to tractor coupler, "Lower" circuit.
- V2: connect to tractor coupler, "Raise" circuit
- T (Recommended): direct return to tank (ie. not via the tractor hydraulic bank). Connecting this port is preferable, but not essential. It allows very low downforce pressures (below 200psi), and minimises pressure spikes potentially caused by couplers "locking out", which may result in damaged seals.
- C1: Main line to "Lower" circuits on the toolbar
- C2: Main line to "Raise" circuits on the toolbar
- G1, G2: Gauge ports

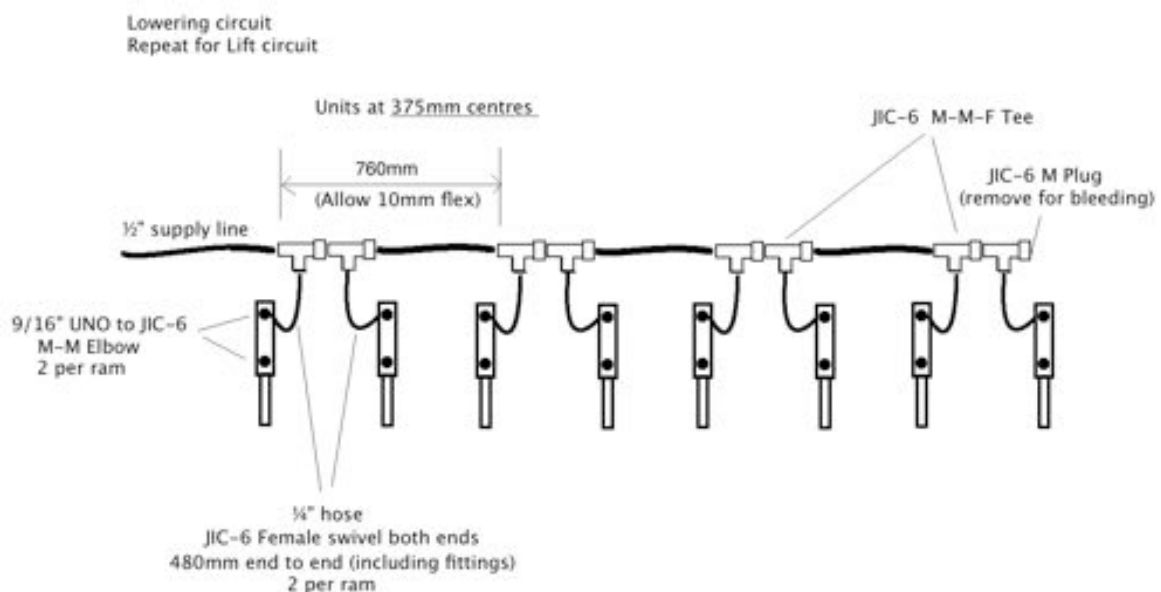
All ports 3/4" BSPP except Gauge ports which are 1/4" BSPP.

Mounting: 4 x M8 threaded

Hydraulics: Layout

Image 7: Suggested hydraulic layout (up to 15m widths)

Contact iPaddock for suggested schematics for wider machines



- Bleeding the hydraulics:
 - Work the units up and down, then bleed the air out of the end of each main supply line with the units all raised, then repeat with the units fully lowered
 - Continue until all air is eliminated from the oil

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