



ROCKDRILLING EQUIPMENT

ARDILLO BELEGGINGS T/A CK2000/029935/23

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RISK ASSESSMENT FOR AIRLINE FITTINGS MANUFACTURED BY ROCKDRILLING EQUIPMENT

The following product ranges are covered by this assessment:

- a. Everfast fitting*
- b. Quickfit fitting*
- c. Screw type fitting*
- d. Hose menders*
- e. Heavy duty hose clamps*

Rock Drilling Equipment is renowned for producing the best quality products. Our knowledge in this field is unquestioned, and our Airline fittings are performance proven.

As safety has always been a priority to us, we would never compromise quality, reliability and functionality. We strive to keep all manufacturing processes as environmentally friendly as possible.

Rock Drilling Equipment's Airline products were primarily designed for the coupling of hoses to Air and Water supplies in mines. Modifications were done, ensuring better performance, extended lifetime, durability and easy maintenance.

This risk assessment revealed the following significant risk:

Couplings on air supply not secured by means of Safety Chain or sling to prevent whiplash. It must be born in mind that the level of risk increases in direct proportion to the increase in diameter of the equipment and increase in pressure of the fluid.

The most significant safety precaution when using hoses under pressure is to ensure that the delivery end is always secured by means of a safety chain or sling to prevent whiplash in the event of an unplanned disconnection.

Product features include:

- ❖ Robust design of products for ease of installation and durability.*
- ❖ Manufactured from high quality cast iron steel and mild steel.*
- ❖ Quick and effortless connections*

Product range consists of the following:

❖ *Everfast:*

- a. *Female Spuds (12.5mm, 20mm, 25mm, 50mm)*
- b. *Male Spuds (12.5mm, 20mm,25mm, 50mm)*
- c. *Hose Tail pieces (12.5mm, 20mm, 25mm, 50mm)*
- d. *25mm / 50mm Rubber gasket*

❖ *Quickfit:*

- a. *Female Spuds (12.5mm, 20mm, 25mm, 50mm)*
- b. *Male Spuds (12.5mm, 20mm,25mm, 50mm)*
- c. *Hose Tail pieces (12.5mm, 20mm, 25mm, 50mm)*
- d. *25mm / 50mm Rubber gasket*

❖ *Screw type (12mm Series) :*

- a. *Female Spuds (12.5mm)*
- b. *Male Spuds (12.5mm, 20mm,25mm)*
- c. *Hose Tail pieces (12.5mm)*
- d. *Wing nut (12,5mm)*
- e. *12mm Rubber gasket*

❖ *Screw type (25mm Series) :*

- a. *Female Spuds (20mm, 25mm)*
- b. *Male Spuds (20mm,25mm)*
- c. *Hose Tail pieces (12.5mm, 25mm)*
- d. *Wing nut (25mm)*
- e. *25mm Rubber gasket*

❖ *Screw type (50mm Series) :*

- a. *Female Spuds (50mm)*
- b. *Male Spuds (50mm)*
- c. *Hose Tail pieces (50mm)*
- d. *Wing nut (50mm)*
- e. *50mm Rubber gasket*

❖ *Heavy duty hose clamps*

- a. *12.5mm*
- b. *20mm*
- c. *25mm*
- d. *25mm c/w lug*
- e. *50mm c/w lug*
- f. *Bolts & nuts to secure clamps (6mm, 8mm, 10mm)*

❖ *Heavy duty wire hose clamps*

- a. *12.5mm*
- b. *20mm*
- c. *25mm*

❖ *Heavy duty hose menders.*

- a. *12.5mm*
- b. *20mm*
- c. *25mm*
- d. *25mm c/w safety collar*
- e. *50mm*
- f. *50mm c/w safety collar*

❖ *Safety chains or slings to secure coupled hoses.*

Special Personal protective equipment to be worn by persons

- a. *Hand protection.*
- b. *Hearing protection.*

RISK ASSESSMENT CONDUCTED BY

J H Jacobs.

42 years mining experience.

Mine overseer Certificate.

Certificate in Mine Environmental Control.

Certificate in Risk Management – University of Stellenbosch.

Several other certificates in Risk Assessment and Risk Management.

RISK INDEX SEVERITY

SCALE	PEOPLE	EQUIPMENT	MATERIAL	ENVIRONMENT	PROCESS
1 <i>NEGLIGIBLE</i>	Injury not likely to result in a lost time.	Damage not exceeding R 1000	Shortage, wastage or damage causing loss not exceeding R 1000	Negligible change in the environment, short term, no lasting effect, small spill, clean up not exceeding R 1000- No liability and / or compensation costs	Hold up of production or process which can be made up during the same shift - no loss.
	Dressing case only			No negative publicity.	
	No visible injuries.				
2 <i>MINOR</i>	Non reportable injury	Damage between R1000 and R10 000	Shortage, wastage or damage causing loss of between R 1000 - R 10 000	Minor change, short term, no lasting effect, small spill, clean up costing between R1000 - R10 000	Hold up of production or process which can be made up during the next shift.
	Less than 14 days lost			No liability and or compensation costs.	
				No negative publicity	
3 <i>SIGNIFICANT</i>	Injury likely to be reportable 14 days or more lost	Damage between R10 000 and R100 000	Shortage, wastage or damage causing loss of between R10 000 and R 100 000	Spill likely to remain evident for several days or weeks	Hold up of production or process likely to result in loss not more than R100 000
	Fractures, deafness cosmetic scarring			Clean up costing between R10 000 - R100 000	1 panel blast lost
	Small limb amputations.			No liability and or compensation costs but negative publicity may occur.	can not be made up.
4 <i>SERIOUS</i>	Injury resulting in fatal or total disablement such as paraplegic, amputation of 2 limbs, blindness.	Damage between R100 000 - R1m	Shortage, wastage or damage causing loss of between R100 000 and R1m.	Spill likely to have lasting effects on the environment, clean up, liability and or compensation costs between R100 000 and R1m. Serious negative publicity may occur	Hold up of production or process likely to result in loss of between R100 000 and R1m. More than 1 panel for more than 1 day- can not be made up.
5 <i>MAJOR</i>	Multiple fatalities (2 to 4)	Damage between R1m and R5m	Shortage, wastage or damage causing loss of between R1m and R5m	Spill likely to have long lasting effects on the environment, clean up, liability and or compensation costs between R1m and R5. Severe negative publicity may occur	Hold up of production or process likely to result in loss of between R1m and R5m
					Several panels over several days. - can not be made up.
6 <i>CATASTROPHY</i>	More than 4 fatalities.	Damage in excess of R5m	Shortage, wastage or damage causing loss in excess of R5m	Spill likely to affect human, animal and plant life, clean up or liability/ compensation costs in excess of R5m. Effects likely to be permanent or last for several years.	Production/process loss likely to result in losses in excess of R5m. many or all panels lost over several days- can not be made up.

RISK INDEX

PROBABILTY							
S E V E R I T Y	RATING	1	2	3	4	5	6
		1-10 Years	1/Year	1/ Month	1/ Week	1 / Day	> 1/ Day
	1	1	2	5	7	9	12
	2	3	6	8	10	13	16
	3	4	11	14	17	20	24
	4	15	18	21	25	28	31
	5	19	22	26	29	32	34
	6	23	27	30	33	35	36

CLASSIFICATION

RISK INDEX	PRIORITY	REMARKS
1 TO 10	C	Immediate action not required
11 TO 20	B	Requires action when practicable possible
21 TO 36	A	Immediate action required (Serious event)

RISK ASSESSMENT WORK SHEETS

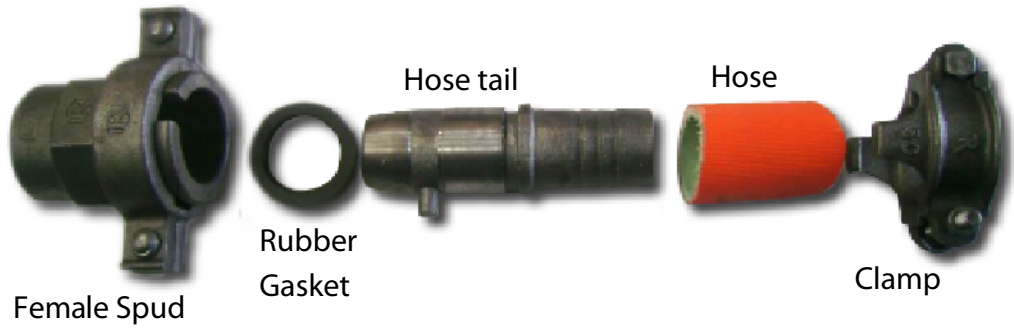
Number	Step/Area Task/Item	Hazard	Undesired event	S	P	RI	R/C	Recommendations
1	Installing a spud on the nipple or coupling on the manifold	Threads on spud and/or manifold damaged.	The spud will not be installed effectively and leakage will occur. This has a cost implication and persons in the vicinity will be exposed to noise.	3	1	4	C	Persons performing this task must be trained and instructed to examine the equipment before installation for damages.
2		Spud not screwed down all the way.	The spud may be dislodged from the manifold when force is put onto it by pull on the hose. This will cause extreme noise in the air is open and wastage of air or water.	3	1	4	c	Persons performing this task must be trained and instructed In the correct installation of spuds.
3	Rubber gasket	Not in position or not in at all	Leakage of air or water. Noise from compressed air may lead to noise induced deafness.	3	1	4	C	Persons performing this task must be trained and instructed to examine the equipment before installation to ensure that gasket is in place. Work gaskets must be replaced. Loose gaskets are available.
4	The Spud	Wear and Tear	Leakage of air or water. Noise from compressed air may lead to noise induced deafness.	3	1	4	C	Persons performing this task must be trained and instructed to examine the equipment and to replace worn items.
5	Hose Tail piece	Wear on Lug or the extreme end of the Tail piece where it fits into the spud.	Leakage of air or water as there will not be an effective seal between the Hose tail piece and the Rubber gasket inside the Spud.	3	1	4	C	Persons performing this task must be trained and instructed to examine the equipment and to replace worn items.
6	Clamps	Bolts and nuts not tightened properly.	Hose may dislodge and cause whiplash which could seriously injure persons nearby.	4	1	15	B	Persons performing this task must be trained and instructed in the effective tightening of bolts and nuts and the hazards associated in not doing so.

7		Wire used to secure the hose to the Tail piece.	Wire clamps are not as effective as steel clamps. Hose may become dislodged and cause whiplash which could seriously injure persons nearby	4	1	15	B	Persons performing this task must be trained and instructed in the effective installation of clamps and the hazards associated therewith. Wire clamps must not be used on sizes in excess of 25mm.
8	Coupling of Hoses	Not secured with Safety chain or sling	Hose may become uncoupled and cause whiplash which could seriously injure persons nearby.	4	1	15	B	Persons performing this task must be trained and instructed in the effective installation of clamps as well as Safety chain or slings and the hazards associated therewith. Safety chains or sling should be compulsory on compressed air hoses to prevent whiplash.
9	Inserting Hose Tail piece into Spud.	Not twisting the Securing device on the spud firmly into position.	The Tail piece will not be properly secured and will cause leakage. It could also cause the hose to dislodge from the spud which in turn could cause whiplash which could injure persons nearby.	4	1	15	B	Persons performing this task must be trained and instructed in the effective installation of the Tail piece into the spud. The securing device on the spud may be lightly tapped with a hammer or other suitable instrument to secure it properly. This of course cannot be done with the quick fit spud where the hose tail is turned into position.
10	Coupling of Hoses using hose mender.	Not ensuring that the Hose ends on both sides are pushed right up to the collar of the hose mender.	Clamping may not be effective which could lead to dislodging of the hose from the hose mender causing whiplash which could seriously injure persons in the vicinity.	4	1	15	B	Persons performing this task must be trained to insert the hose ends on both sides up to the collar and then to secure it with clamps.
11	Hose tails and menders.	Using oil or other lubricant to insert hoses over the hose tail or hose mender.	This will cause ineffective friction between the hose and the tail or mender which could cause the hose to slip off and cause whiplash.	4	1	15	B	Persons performing this task must be trained not to use any lubricant except water to assist in the insertion of the hose tail piece or hose mender into the hose. Hoses can be softened at the end by knocking it with a hammer or other suitable instrument which will soften the hose end making it easier to insert the tail piece or mender.
12	Coupling a hose to a tail piece.	Not ensuring that the hose is pushed all the way up to the collar of the tail piece.	Clamping may not be effective which could lead to dislodging of the hose from the hose tail causing whiplash which could seriously injure persons in the vicinity.	4	1	15	B	Persons performing this task must be trained to insert the hose end right up all the way up to the collar and then to secure it with clamps
13	teel clamps	Lugs of clamps not properly installed over	Clamping may not be effective which could lead to dislodging of	4	1	15	B	Persons performing this task must be trained to insert the clamp lug right up all the way over the collar and then to secure it with b Bolts and nuts.

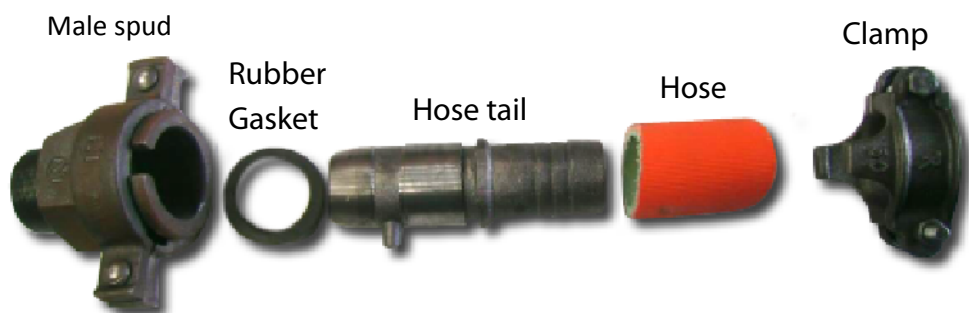
		the collar of the hose tail or hose mender.	the hose from the hose tail or mender causing whiplash which could seriously injure persons in the vicinity.					
14		Lugs of clamps damaged.	Clamping may not be effective which could lead to dislodging of the hose from the hose tail or mender causing whiplash which could seriously injure persons in the vicinity.	4	1	15	B	Persons performing this task must be trained to examine the lugs and to discard any clamp of which the lugs are not in good order.
15	Hose tails and Hose Menders	Collar damaged or worn	Clamping may not be effective which could lead to dislodging of the hose from the hose tail or mender causing whiplash which could seriously injure persons in the vicinity.	4	1	15	B	Persons performing this task must be trained to examine the Tails and menders and to discard any of which the collar is not in good order.
16		Knocking the tails or menders at the ends	The ends will be deformed which will cause inadequate clamping force which could lead to dislodging of the hose from the hose tail or mender causing whiplash which could seriously injure persons in the vicinity.	4	1	15	B	Persons must be trained not to knock the ends of these items. Any of these items which do not have a reasonably round and undamaged end must not be used.
17	Clamp/Hose connection	Clamp installed beyond the hose end on the collar side of the hose tail or Mender.	Clamping may not be effective which could lead to dislodging of the hose from the hose tail or mender causing whiplash which could seriously injure persons in the vicinity.	4	1	15	B	Persons performing this task must be trained to ensure that a piece of hose will be visible beyond the clamp between the clamp and the collar of the Hose Tail or Hose Mender.
18	Bolts and nuts	Bolts bent or bolts and nuts damaged	Clamping may not be effective which could lead to dislodging of the hose from the hose tail or mender causing whiplash which could seriously injure persons in the vicinity.	4	1	15	B	Persons performing this task must be trained to ensure that Bolts and nuts are in good condition. Not to use damaged or bent bolts and nuts. Proper spanners for the size of bolts and nuts must be used to tighten same. The use of monkey wrenches to perform this task should be discouraged as it damages the nuts and bolt heads.

19	Rubber gasket in Quick fit Spud.	Gasket worn	If the Gasket is worn, a good seal can not be created. Vibration may then cause the Hose tail to become loose which will lead to leakage and even dislodging of the hose from the spud.	3	1	4	C	Persons must be trained to examine the gasket and to discard it if not in good condition and to install a new gasket. The tail end must be properly secured inside the Spud.
20	Wing nut on screw type	Not adequately tightened	Leakage through the rubber seal and disconnection of the wing nut through vibration may cause whiplash which could seriously injure persons in the vicinity.	4	1	15	B	The wing nut may be lightly tapped with a small hammer or other suitable device to ensure it is tight.
21	Rubber seal in screw type.	Gasket worn	If the Gasket is worn, a good seal can not be created. Vibration may then cause the Hose tail to become loose which will lead to leakage and even dislodging of the hose whiplash may then occur.	3	1	4	C	Persons must be trained to examine the gasket and to discard it if not in good condition and to install a new gasket. The tail end must be properly secured inside the Spud.
22	All connections	Connections may become disconnected	Serious leakage will occur of the air or water which may result in significant financial loss. Flooding of the working may occur from water if the disconnection remains open for an extended period of time. Noise from escaping air will cause noise induced hearing loss if persons are exposed for a length of time. Whiplash may occur which could seriously injure persons nearby.	4	1	15		Persons working with these items must be trained in the proper installation. Safety chains or slings must be used to secure the delivery ends of hoses.

50MM Female Spud, Rubber Gasket, Hose Tail piece, Hose and Steel Clamp.



50mm Male Spud, Rubber gasket, Hose tail, Hose and clamp



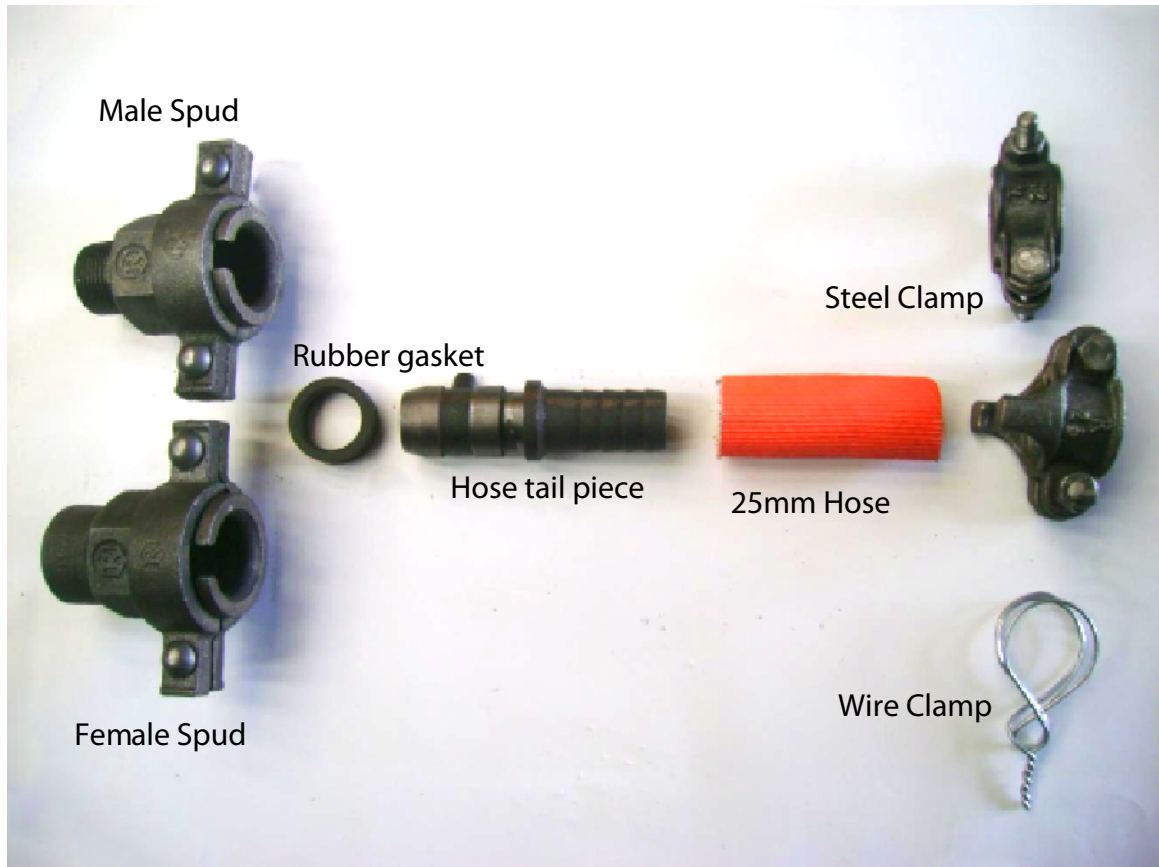
50mm Female spud, Hose tail, & clamp (coupled)



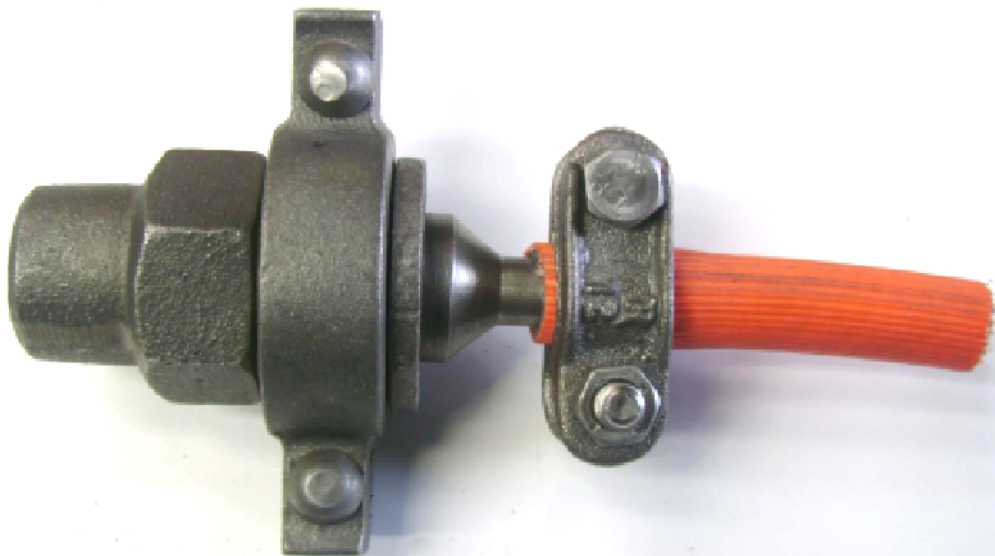
25mm spud, Hose tail, hose mender & clamp (coupled)



25mm spud, Rubber gasket, Hose tail, & clamp



12mm Female spud, Hose tail, & clamp (Coupled)



12mm Hose mender with Clamps and 3mm Safety sling



25mm Hose mender with Clamps and Safety Sling



50mm Hose mender with Clamps and 4mm Safety Sling



25mm Mild steel Hose mender



50mm Mild steel Hose mender c/w Safety lug



Quick fit male Spud and Hose Tail piece



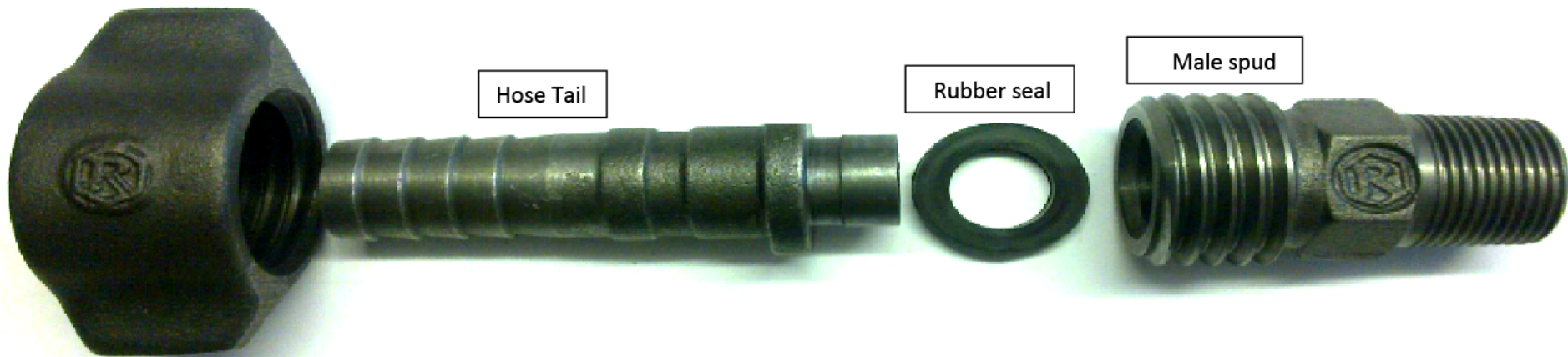
SCREW TYPE

Wing nut

Hose Tail

Rubber seal

Male spud



SCREW TYPE

Male spud, Rubber seal. Hose tail
and wing nut coupled



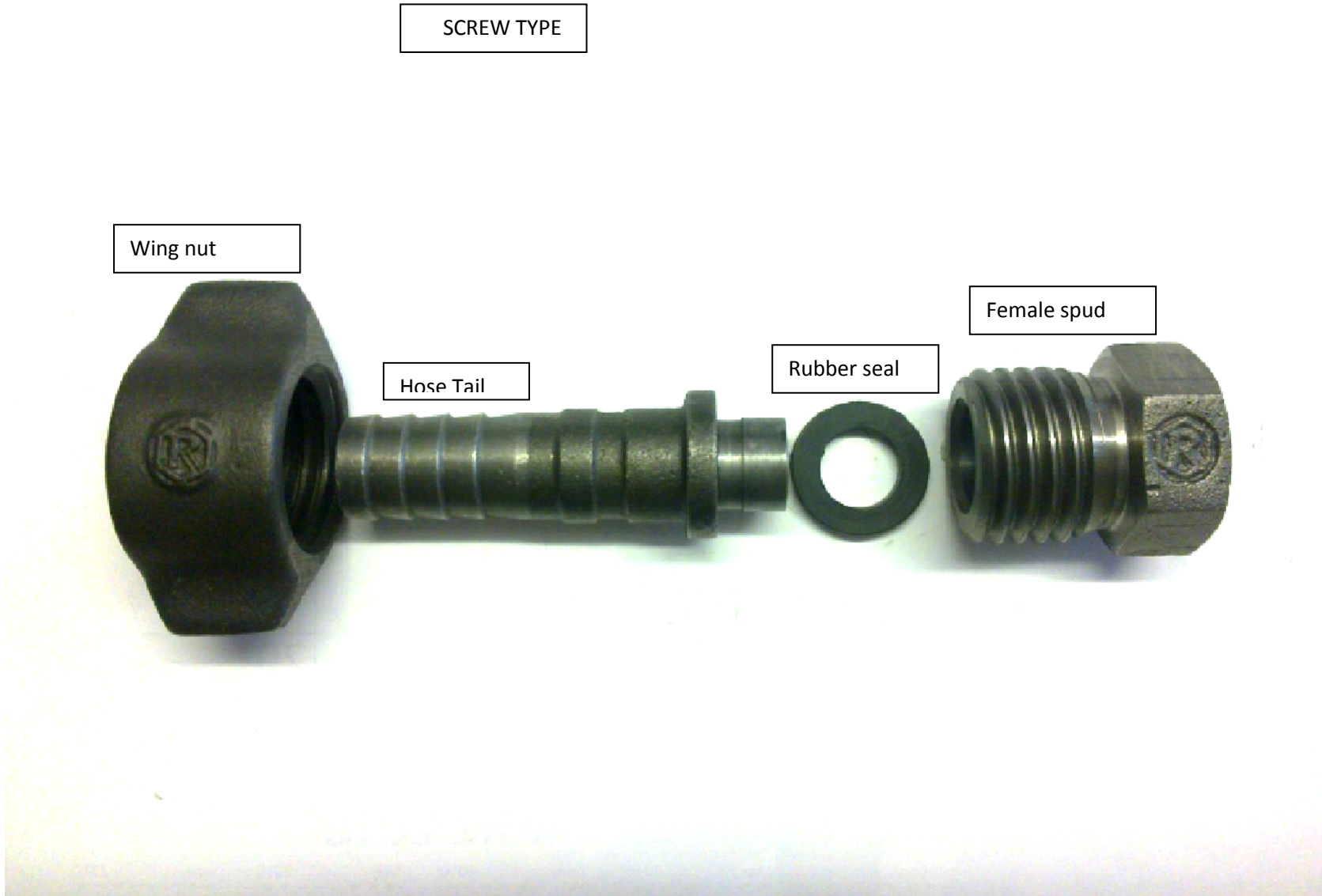
SCREW TYPE

Wing nut

Hose Tail

Rubber seal

Female spud



SCREW TYPE

Female spud, Rubber seal. Hose
tail and wing nut coupled

