

LESSON PLAN

Date_____

Trade:- Welder

Name_____

Unit/Lesson:-Forty Four

Subject:- Resistance welding process types, principles, power sources and welding parameters. Applications and limitations.

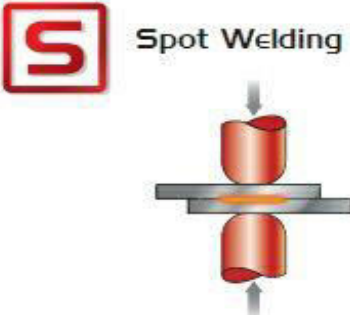
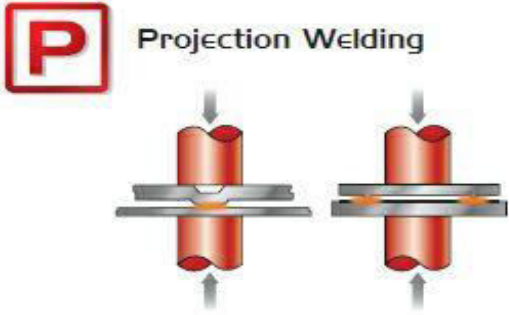
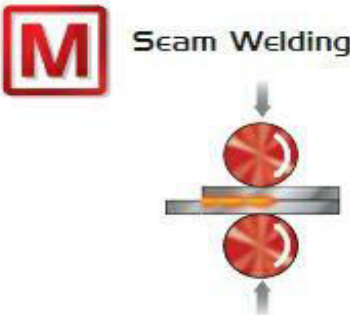
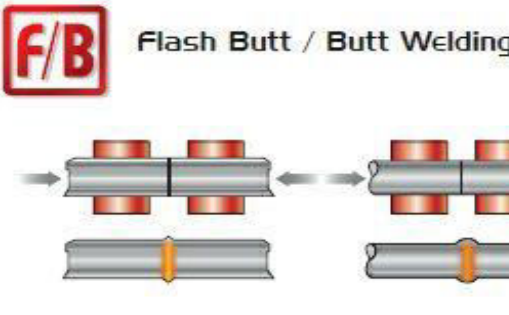
Motivation:- In previous lesson we discuss about Plasma arc welding and cutting process ,equipments, and principle of process.Types of plasma arc and advantages ,applications.

PREPARATION

- 1) (Materials, Tools, Models, Charts and other aids)

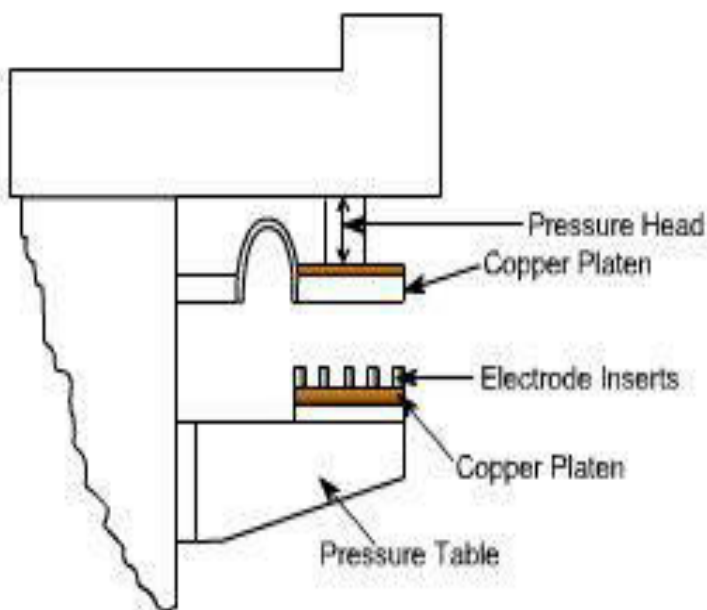
INTRODUCTION:- Resistance welding is non-fusion welding/pressure welding process.

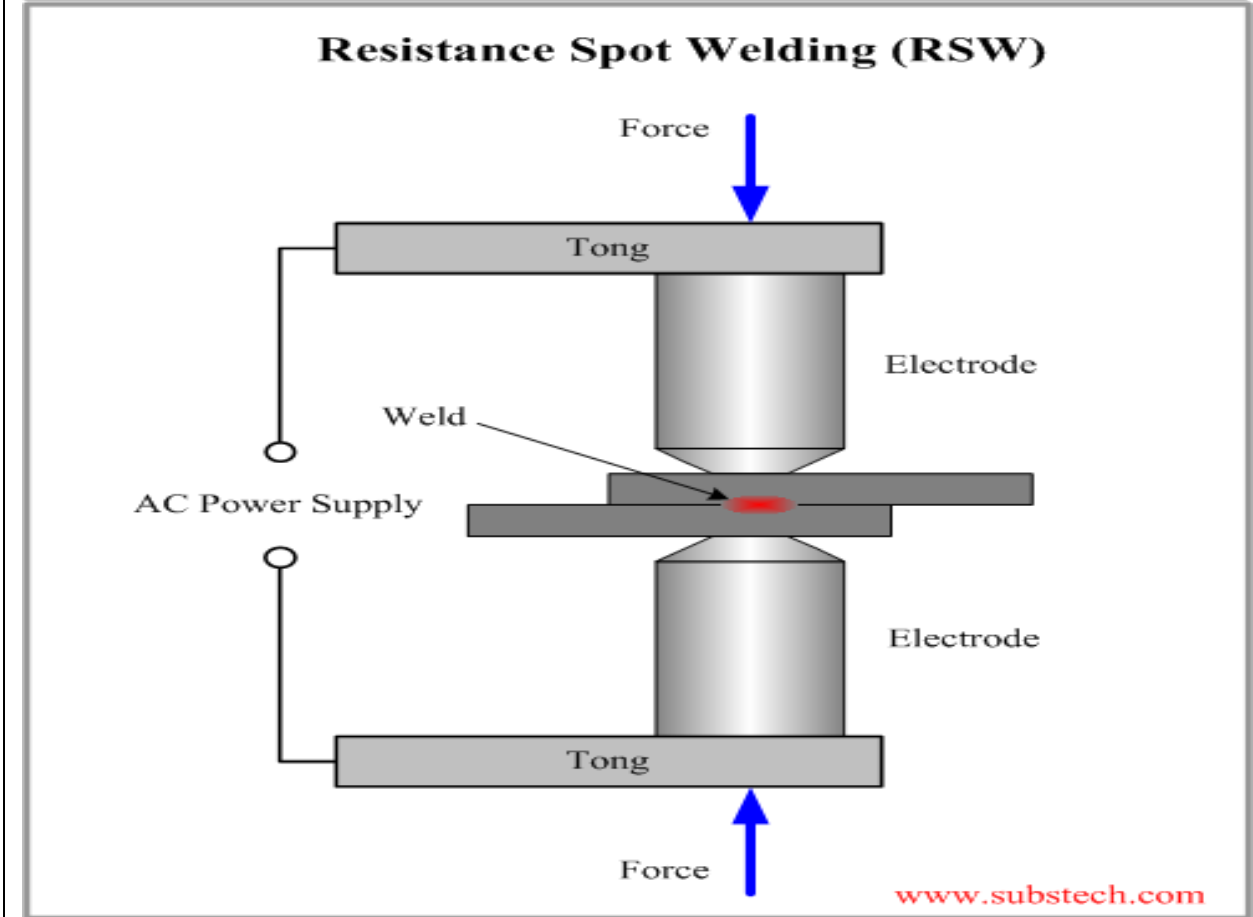
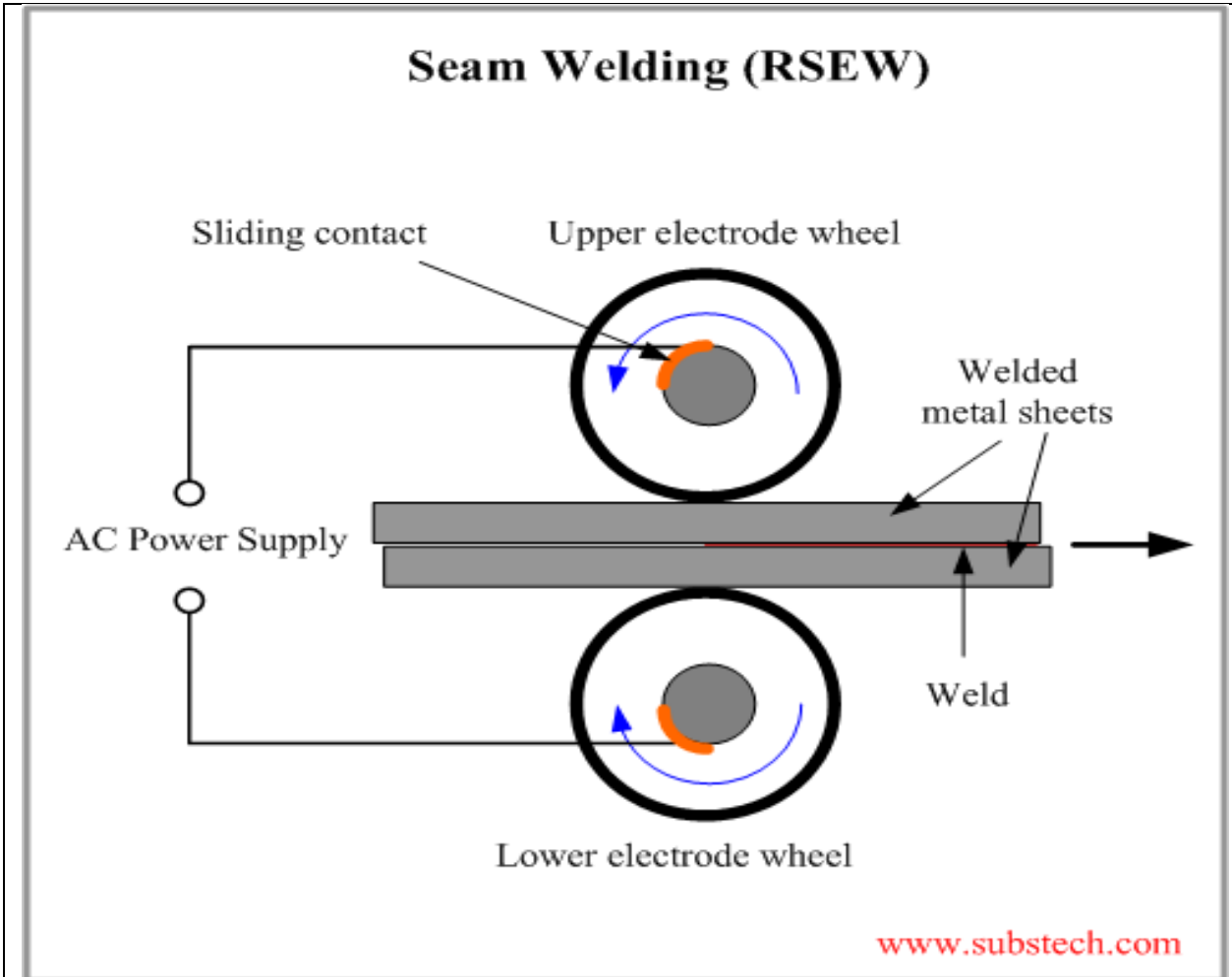
In this process metal not melt and joint completed by pressure.

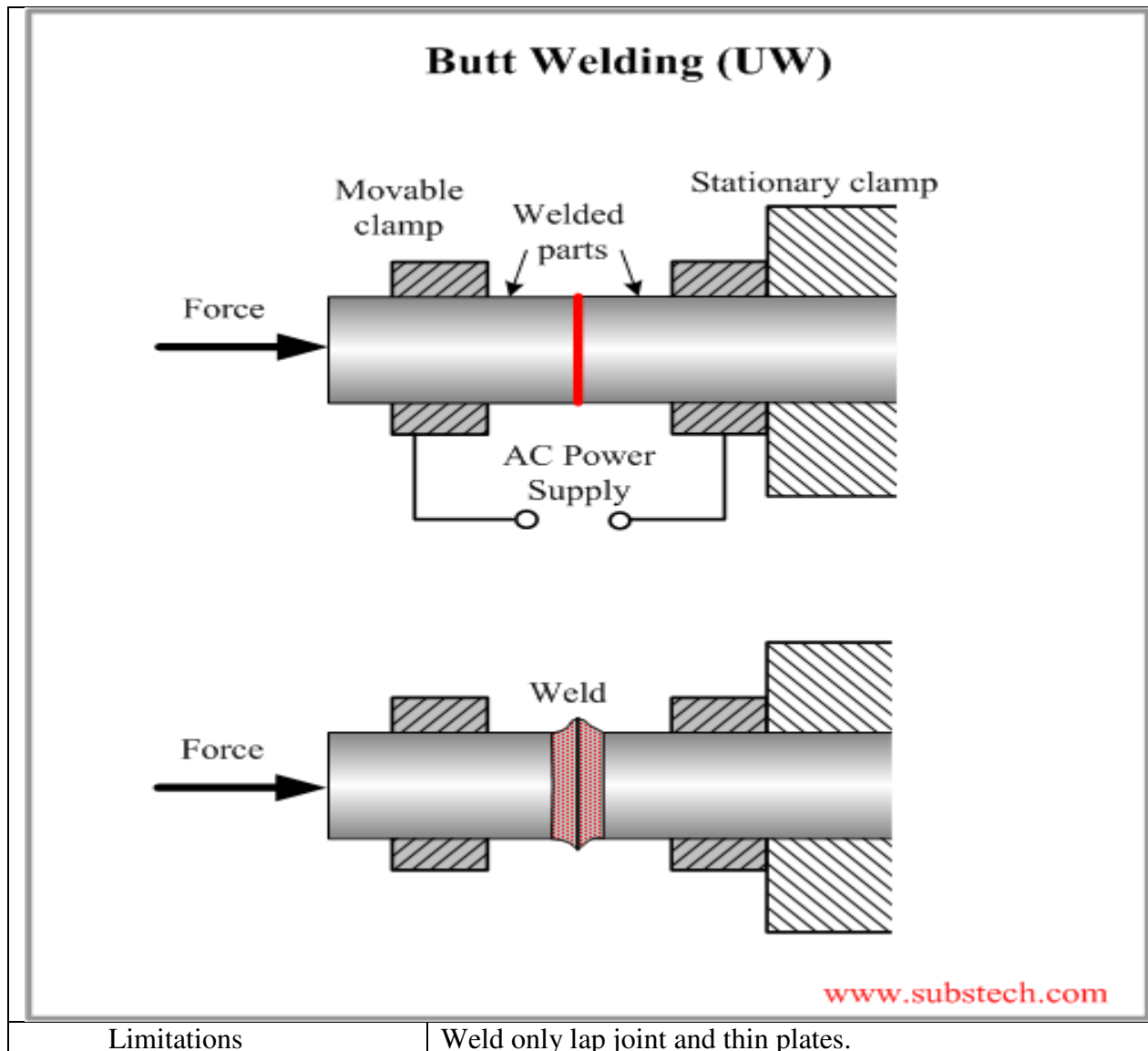
Topic	Information Point	Spot Hint
Resistance Welding	The resistance during resistance heating is composed of the contact resistances on the two plates and of their material resistance. The reduction of the electrode force down to 90% increases the heat input rate by 105%, the reduction of the welding current down to 90% decreases the heat rate to 80% and a welding time reduction to 90% decreases the heat rate to 92%.	
Types	<ol style="list-style-type: none"> 1. Spot welding 2. Seam welding 3. Butt welding (simple butt and flash butt) 4. Projection welding 5. Percussion welding 	
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Equipments	Power source AC/DC and every process have his own setup.
Welding parameters	

Single Sheet Thickness mm	Electrode Tip Dia mm	Electrode Force Kgf					Weld Time 50 Hz					Weld Current K Amps					Single Sheet Thickness mm	Min Slug Dia mm
		Uncoated Mild Steel		Coated Mild Steel			Uncoated Mild Steel		Coated Mild Steel			Uncoated Mild Steel		Coated Mild Steel				
		Medium Force Setting	High Force Setting	Hot Dip Zinc	E Z	I Z & Zinc Nickel	Medium Force Setting	High Force Setting	Hot Dip Zinc	E Z	I Z & Zinc Nickel	Medium Force Setting	High Force Setting	Hot Dip Zinc	E Z	I Z & Zinc Nickel		
0.4 - 0.6	4 from	90	133	150	150	140	5	4	6	6	4	4	5	7	6	6		
	to	115	183	204	204	196	7	5	8	8	6	6	8	9	8	8.5		
0.6 - 0.8	4 from	125	175	194	194	183	7	6	8	8	6	5	6	8	7	7	0.6	3.9
	to	133	204	224	224	224	10	8	10	10	8	7	9	10	9	9.5	0.7	4.2
0.8 - 1.0	5 from	140	194	224	224	214	9	7	9	9	7	6	7	9	8	8	0.8	4.5
	to	150	265	296	296	285	12	10	12	12	10	8	10	11	10	10.5	0.9	4.7
1.0 - 1.2	5 from	163	255	285	285	275	11	8	10	10	8	7	8	10	9	9	1.0	5.5
	to	183	326	367	367	347	15	12	13	13	12	9	12	13	13	12	1.1	5.5
1.2 - 1.6	6 from	194	306	347	347	326	14	9	11	11	9	8	10	14	12	11	1.2	5.5
	to	214	408	459	459	438	18	13	15	15	13	11	13	16	15	14	1.4	5.9
1.6 - 2.0	7 from	265	398	449	449	428	18	10	12	12	10	9	12	18	14	13	1.6	6.3
	to	296	527	561	561	540	22	14	16	16	14	13	15	21	17	16.5	1.8	6.7
2.0 - 2.5	8 from	347	510	550	550	530	22	12	14	14	12	10	14	22	17	16	2.0	7.1
	to	377	632	693	693	663	28	16	18	18	16	15	18	26	22	21	2.2	7.4
2.5 - 3.0	9 from	449	612	673	673	652	28	15	17	17	15	12	17	26	19	18	2.5	7.9
	to	479	765	815	815	795	35	20	21	21	20	17	20	30	24	23	3.0	8.6







Questions:-

1. What is resistance welding?
2. How many types of Resistance welding?
3. What is difference between Spot and Butt welding?
- 4.

Next Lesson:- Metalizing- types of metalizing, principles, equipments, advantages and applications. Manual oxy-acetylene powder coating process. Principles of operations and applications.

Assignments:- Resistance welding process types, principles, power sources and welding parameters. Applications and limitations.

Checked by.....

Instructor.....